FCC Test Report (DFS Band)

Report No.:	RFBAOZ-WTW-P21060932-3
FCC ID:	WT8DNWAP440
Test Model:	AP440
Received Date:	2021/7/8
Test Date:	2021/7/19 ~ 2021/8/17
Issued Date:	2021/10/25
Applicant:	Datto, Inc.
Address:	101 Merritt 7, Norwalk, CT 06851 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P21060932-3	Original release.	2021/10/25

1 Certificate of Conformity

Product:	2x2 WiFi 6 Access Point
Brand:	datto
Test Model:	AP440
Sample Status:	Engineering sample
Applicant:	Datto, Inc.
Test Date:	2021/7/19 ~ 2021/8/17
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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

Prepared by : Phoenix Huang , **Date:** 2021/10/25

Phoenix Huang / Specialist

Approved by : , **Date:** 2021/10/25

Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(8)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -5.17 dB at 23.53371 MHz.
15.407(b) (1/2/3/4(i/ii)/8)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0 dB at 5350.00 MHz and 5470.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

Note:
1. For U-NII-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	5.4 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	2x2 WiFi 6 Access Point
Brand	datto
Test Model	AP440
Status of EUT	Engineering sample
Power Supply Rating	48-57 Vdc / 0.5A from POE 12 Vdc / 2.6A 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 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	5.26 ~ 5.32 GHz, 5.5 ~ 5.58 GHz & 5.66 ~ 5.72 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 13 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 6 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	**CDD Mode:** **5.26 ~ 5.32 GHz:** 246.095 mW **5.5 ~ 5.58 GHz & 5.66 ~ 5.72 GHz:** 247.751 mW **Beamforming Mode:** **5.26 ~ 5.32 GHz:** 202.917 mW **5.5 ~ 5.58 GHz & 5.66 ~ 5.72 GHz:** 202.421 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RFBAOZ-WTW-P21060932-1 as the following:
   - ◆ Add DFS band <5.26 ~ 5.32 GHz, 5.50 ~ 5.72 GHz> by software.
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 radios as following table:

Radio 1	Radio 2	Radio 3
WLAN 2.4GHz	WLAN 5GHz	2.4G/5G Background Scanning (Rx only)

4. 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.		

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

Ant. No.	RF Chain No.	Brand	Model No.	Ant. Net Gain (dBi)	Freq. Range (GHz)	Ant. Type	Connector Type	Cable Length (mm)
1	Chain 0	Walsin	RFPCA291200NNLB001	3.5 3.8	2.4~2.5 5.15~5.85	PIFA	None	-
2	Chain 1	Walsin	RFMTA311207IMLB301	3.3 3.8	2.4~2.5 5.15~5.85	PCB	i-pex(MHF)	75
3 (Background Ant)	-	Walsin	RFPCA291725IMLB301	0.9 3.8	2.4~2.5 5.15~5.85	PCB	i-pex(MHF)	250

6. The EUT incorporates a MIMO function:

5GHz Band			
MODULATION MODE	**Radio 2 (5GHz Band)**		**Radio 3 (Background Scanning)**
	TX & RX CONFIGURATION		**RX CONFIGURATION**
802.11a	2TX	2RX	1RX
802.11n (HT20)	2TX	2RX	1RX
802.11n (HT40)	2TX	2RX	1RX
802.11ac (VHT20)	2TX	2RX	1RX
802.11ac (VHT40)	2TX	2RX	1RX
802.11ac (VHT80)	2TX	2RX	1RX
802.11ax (HE20)	2TX	2RX	1RX
802.11ax (HE40)	2TX	2RX	1RX
802.11ax (HE80)	2TX	2RX	1RX

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

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

Pre-test Mode	Description
Mode A	Power from adapter
Mode B	**Power from POE**

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

8. 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.
9. 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

FOR 5500 ~ 5580MHz & 5660 ~ 5720MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	132	5660 MHz
104	5520 MHz	136	5680 MHz
108	5540 MHz	140	5700 MHz
112	5560 MHz	144	5720 MHz
116	5580 MHz		

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	134	5670 MHz
110	5550 MHz	142	5710 MHz

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

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane (below 1GHz)** and **Z-plane (above 1GHz)**.

Radiated Emission Test (Above 1GHz):

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11a	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
802.11a	5500-5580 & 5660-5720	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, 138	OFDMA	BPSK	MCS0

Radiated Emission Test (Below 1GHz):

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ax (HE40)	5260-5320, 5500-5580 & 5660-5720	54 to 62, 102 to 142	134	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.

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ax (HE40)	5260-5320, 5500-5580 & 5660-5720	54 to 62, 102 to 142	134	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.

CDD 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
802.11ax (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
802.11a	5500-5580 & 5660-5720	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, 138	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, 138	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
802.11ax (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
802.11ac (VHT20)	5500-5580 & 5660-5720	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, 138	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, 138	OFDMA	BPSK	MCS0

Test Condition:

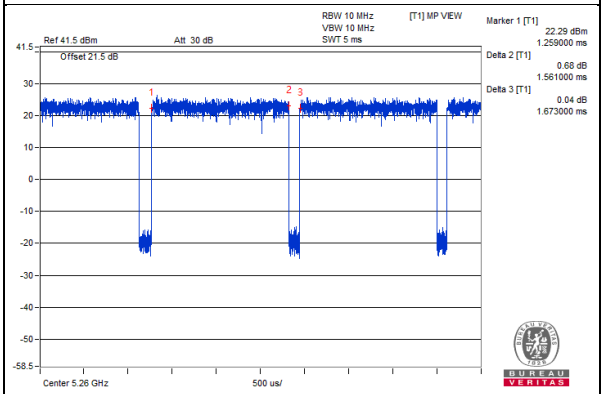
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	25deg. C, 66~70%RH	120Vac, 60Hz	Tom Yang, Noah Chang
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
APCM	24deg. C, 68%RH	120Vac, 60Hz	Eric Peng

3.3 Duty Cycle of Test Signal

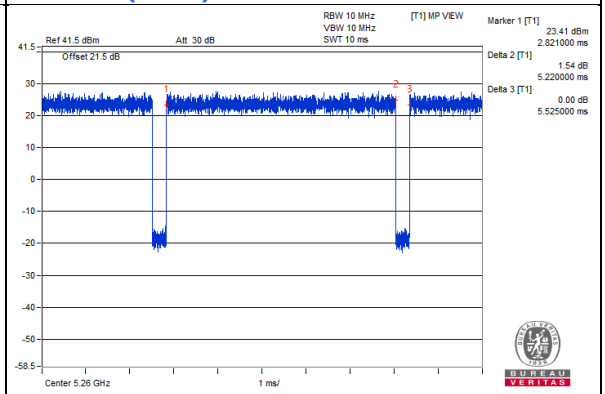
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = 1.561 ms/1.673 ms = 0.933, Duty factor = 10 * log (1/Duty cycle) = 0.3 dB
802.11ax (HE20): Duty cycle = 5.22 ms/5.525 ms = 0.945, Duty factor = 10 * log (1/Duty cycle) = 0.25 dB
802.11ax (HE40): Duty cycle = 5.222 ms/5.477 ms = 0.953, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE80): Duty cycle = 5.219 ms/5.562 ms = 0.938, Duty factor = 10 * log (1/Duty cycle) = 0.28 dB

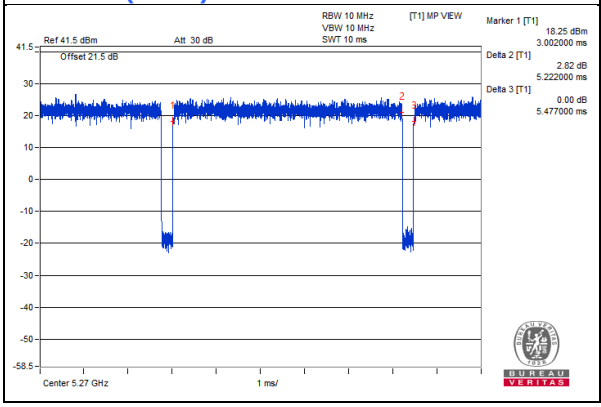
802.11a



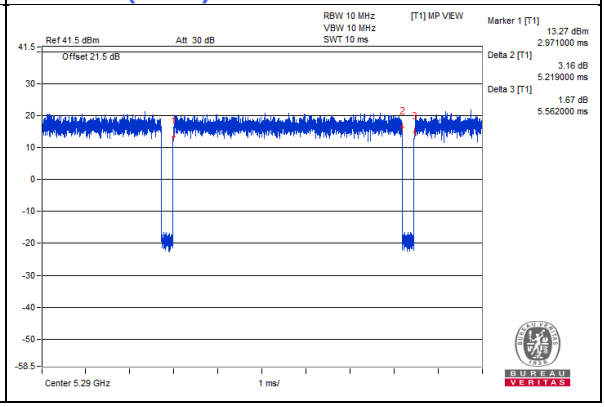
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	DoC	Provided by Lab
B.	Laptop	DELL	E5430	4YV4VY1	DoC	Provided by Lab
C.	PoE Adapter	PHIHONG	POEA30U-1AT-2	NA	NA	Supplied by client
D.	iPod	Apple	MC749TA/A	CC4DM9M8DFDM	NA	Provided by Lab

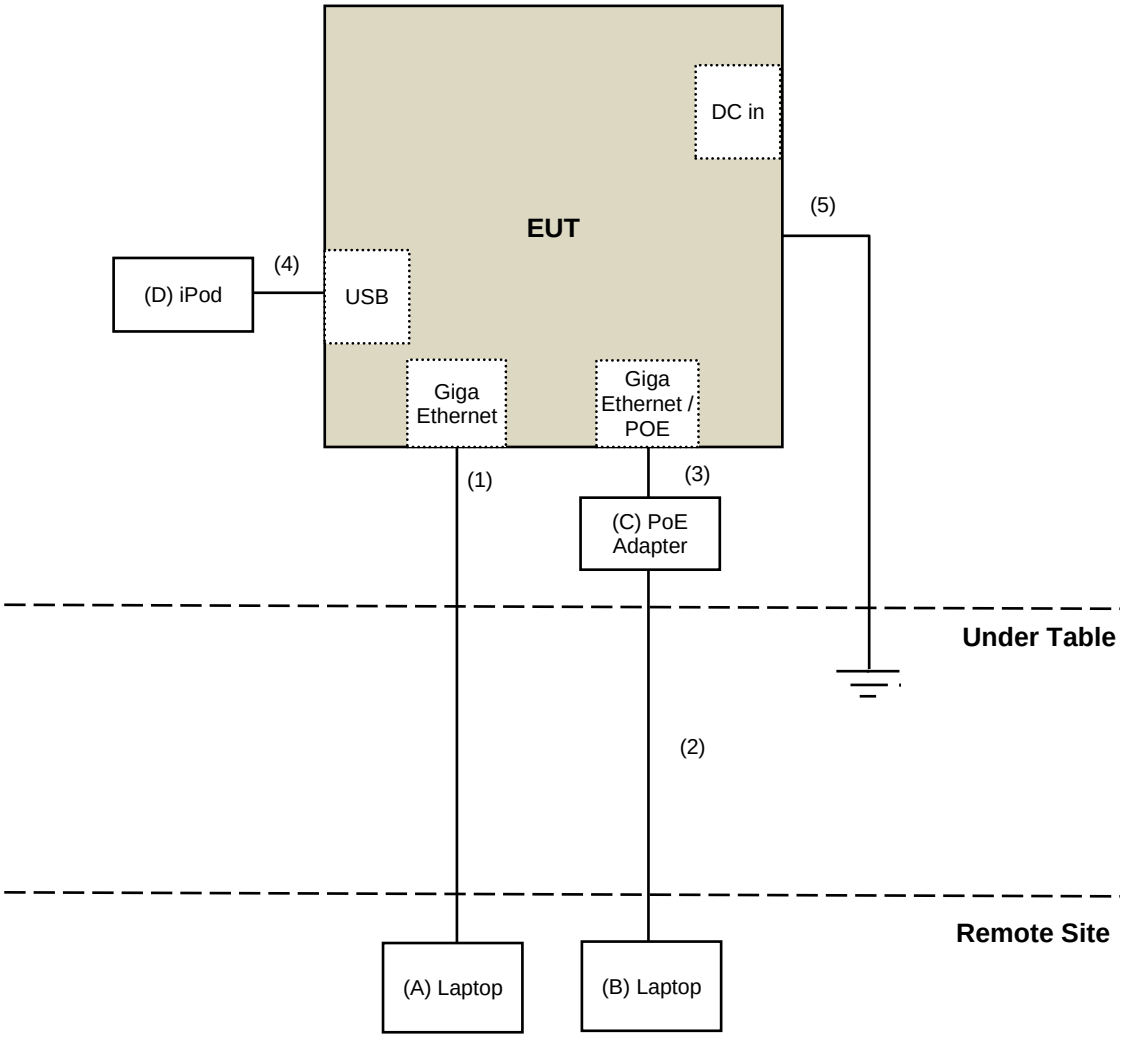
Note:

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

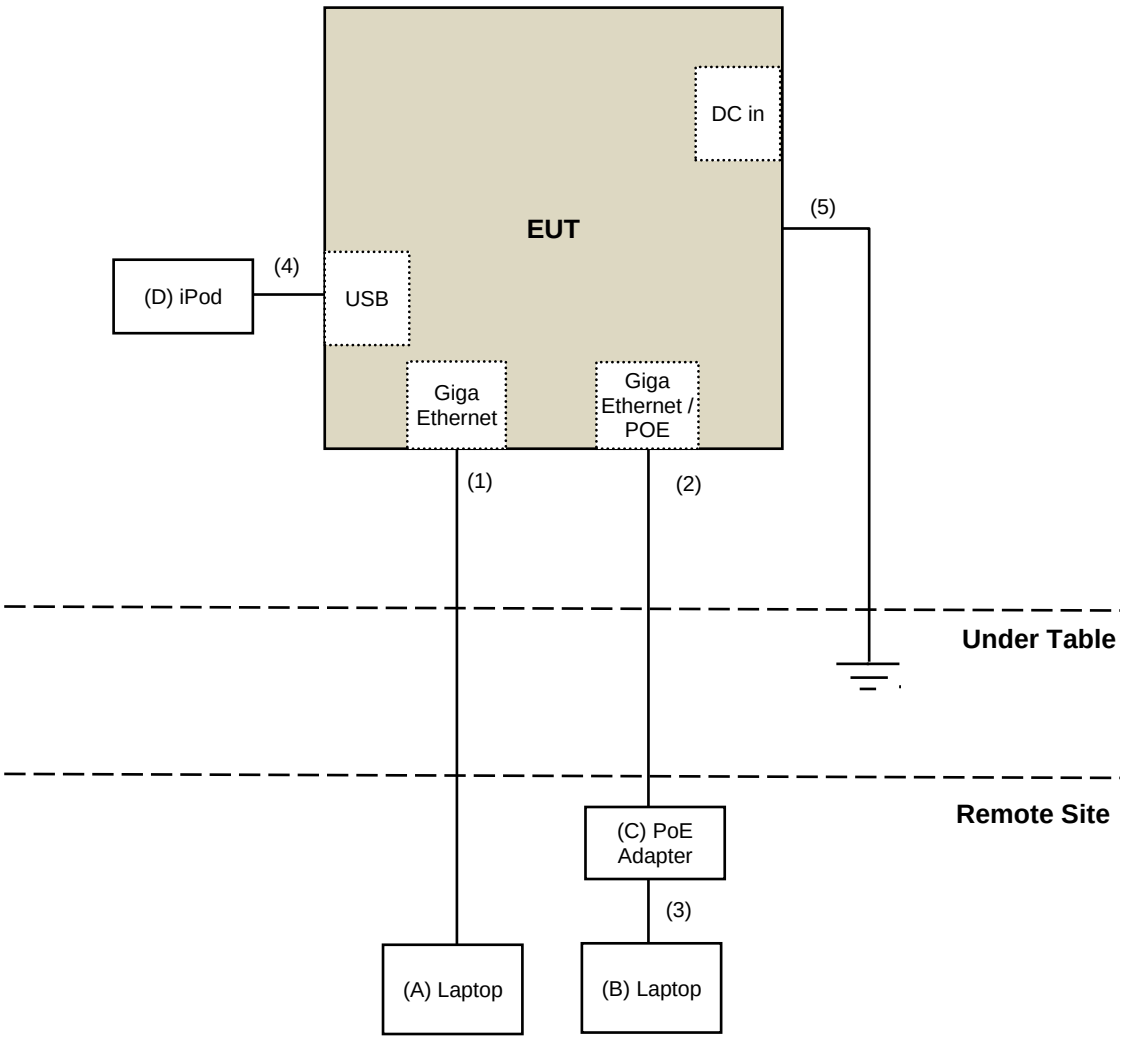
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	3	No	0	Provided by Lab
4.	USB Cable	1	0.1	Yes	0	Provided by Lab
5.	GND Cable	1	2	No	0	Provided by Lab

3.4.1 Configuration of System under Test

AC Power Conducted Emissions test



Radiated Emissions test:



3.5 General Description of Applied Standards and References

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

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

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

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

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

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

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

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

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

Note:

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

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

4.1.2 Test Instruments

For Radiated Emission test:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
MXE EMI Receiver(20 Hz to 44 GHz) Keysight	N9038A	MY54450088	2021/7/6	2022/7/5
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2021/1/7	2022/1/6
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2021/1/7	2022/1/6
Pre_Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	2020/10/20	2021/10/19
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	2020/11/5	2021/11/4
RF Coaxial Cable COMMATE/PEWC	8D	966-3-1	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-2	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-3	2021/3/16	2022/3/15
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2020/9/24	2021/9/23
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2020/11/22	2021/11/21
Pre_Amplifier EMCI	EMC12630SE	980384	2021/1/11	2022/1/10
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180601	2021/6/8	2022/6/7
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	210201	2021/5/13	2022/5/12
Fix tool for Boresight antenna tower LIOW GUU	FBA-01	FBA_SIP01	NA	NA
Spectrum Analyzer Keysight	N9030A	MY54490679	2021/7/9	2022/7/8
Pre_Amplifier EMCI	EMC184045SE	980387	2021/1/11	2022/1/10
SHF-EHF Horn Schwarzbeck	BBHA 9170	BBHA9170519	2020/11/22	2021/11/21
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2021/1/11	2022/1/10
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	2021/3/10	2022/3/9

Note: 1. The test was performed in 966 Chamber No. 3.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2021/7/19 ~ 2021/8/7

For other test items:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7
Power Meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Pulse Power Sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA
DC POWER SUPPLY Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	2021/1/14	2022/1/13
True RMS Clamp Meter Fluke	325	31130711WS	2021/6/2	2022/6/1

Note: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2021/8/17

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

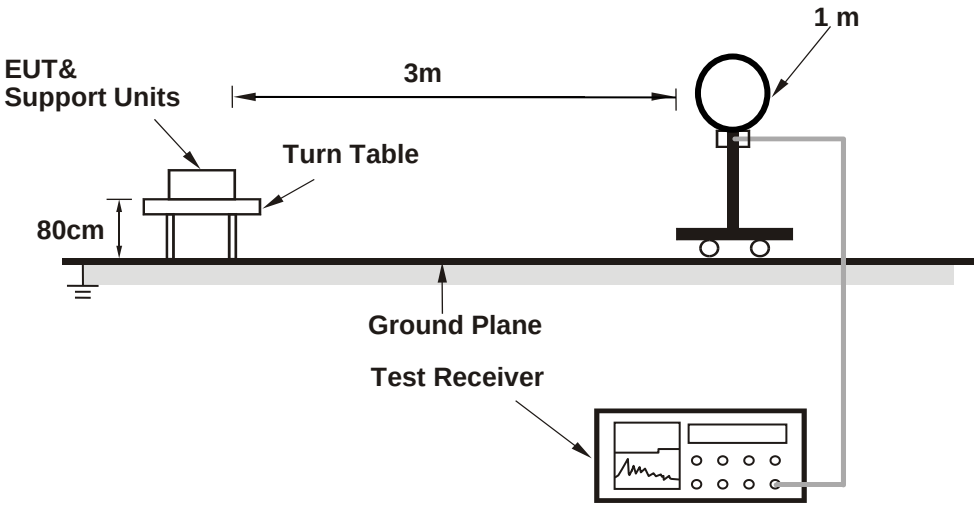
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

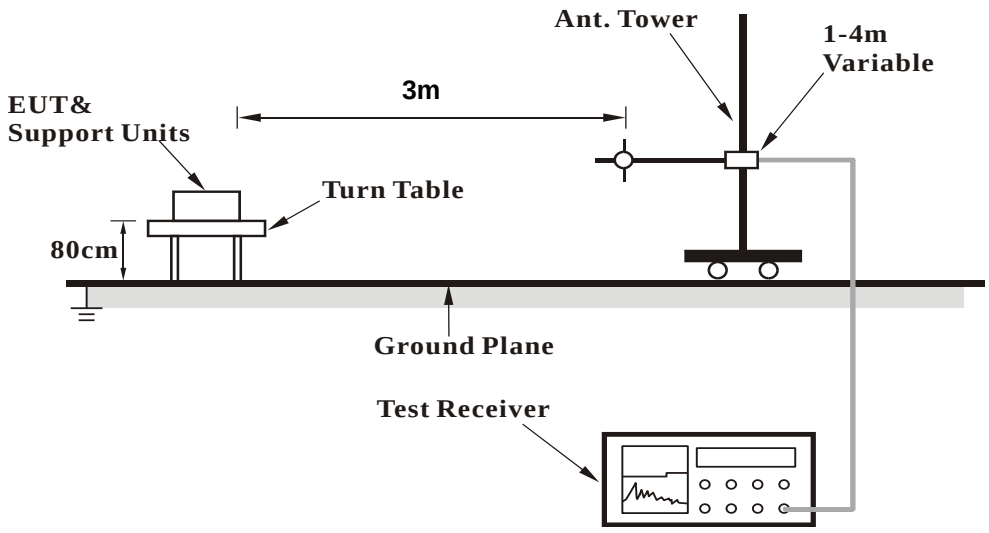
No deviation.

4.1.5 Test Setup

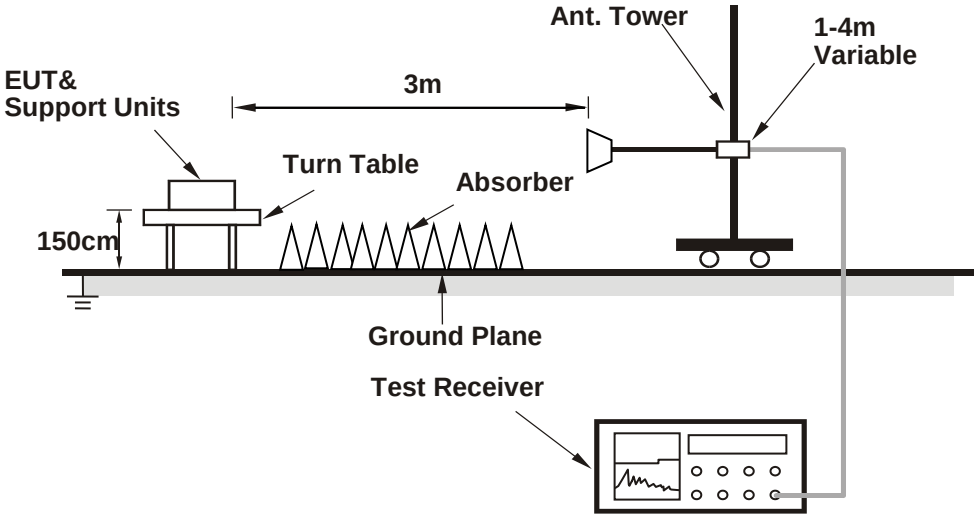
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Placed the EUT on the testing table.
b. Controlling software (qdart_conn.win.1.0_installer_00084.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

RF Mode	TX 802.11a	**Channel**	CH 52：5260 MHz
Frequency Range	1GHz ~ 40GHz	**Detector Function**	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	56.1 PK	74.0	-17.9	1.46 H	326	51.4	4.7
2	5150.00	45.2 AV	54.0	-8.8	1.46 H	326	40.5	4.7
3	*5260.00	120.4 PK			1.46 H	326	116.1	4.3
4	*5260.00	111.5 AV			1.46 H	326	107.2	4.3
5	#10520.00	55.6 PK	68.2	-12.6	1.44 H	146	41.8	13.8
6	15780.00	56.2 PK	74.0	-17.8	1.73 H	308	41.9	14.3
7	15780.00	46.5 AV	54.0	-7.5	1.73 H	308	32.2	14.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	53.5 PK	74.0	-20.5	1.33 V	122	48.8	4.7
2	5150.00	42.4 AV	54.0	-11.6	1.33 V	122	37.7	4.7
3	*5260.00	117.5 PK			1.33 V	122	113.2	4.3
4	*5260.00	108.9 AV			1.33 V	122	104.6	4.3
5	#10520.00	49.5 PK	68.2	-18.7	1.53 V	190	35.7	13.8
6	15780.00	50.8 PK	74.0	-23.2	2.96 V	198	36.5	14.3
7	15780.00	40.7 AV	54.0	-13.3	2.96 V	198	26.4	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.

RF Mode	TX 802.11a	Channel	CH 60：5300 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	121.2 PK			1.73 H	322	116.9	4.3
2	*5300.00	112.2 AV			1.73 H	322	107.9	4.3
3	10600.00	52.8 PK	74.0	-21.2	1.73 H	124	39.2	13.6
4	10600.00	45.4 AV	54.0	-8.6	1.73 H	124	31.8	13.6
5	15900.00	56.9 PK	74.0	-17.1	1.73 H	305	42.8	14.1
6	15900.00	46.9 AV	54.0	-7.1	1.73 H	305	32.8	14.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	118.2 PK			1.42 V	99	113.9	4.3
2	*5300.00	109.6 AV			1.42 V	99	105.3	4.3
3	10600.00	48.8 PK	74.0	-25.2	1.48 V	189	35.2	13.6
4	10600.00	37.6 AV	54.0	-16.4	1.48 V	189	24.0	13.6
5	15900.00	50.0 PK	74.0	-24.0	2.92 V	184	35.9	14.1
6	15900.00	40.2 AV	54.0	-13.8	2.92 V	184	26.1	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.

RF Mode	TX 802.11a	Channel	CH 64：5320 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	121.6 PK			1.49 H	320	117.3	4.3
2	*5320.00	112.4 AV			1.49 H	320	108.1	4.3
3	5353.00	62.4 PK	74.0	-11.6	1.49 H	320	58.1	4.3
4	5353.00	50.5 AV	54.0	-3.5	1.49 H	320	46.2	4.3
5	10640.00	52.5 PK	74.0	-21.5	1.25 H	100	38.8	13.7
6	10640.00	45.4 AV	54.0	-8.6	1.25 H	100	31.7	13.7
7	15960.00	57.2 PK	74.0	-16.8	1.79 H	292	43.1	14.1
8	15960.00	47.2 AV	54.0	-6.8	1.79 H	292	33.1	14.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	117.8 PK			1.37 V	115	113.5	4.3
2	*5320.00	109.2 AV			1.37 V	115	104.9	4.3
3	5350.00	60.8 PK	74.0	-13.2	1.37 V	115	56.5	4.3
4	5350.00	49.0 AV	54.0	-5.0	1.37 V	115	44.7	4.3
5	10640.00	48.5 PK	74.0	-25.5	1.50 V	183	34.8	13.7
6	10640.00	37.6 AV	54.0	-16.4	1.50 V	183	23.9	13.7
7	15960.00	50.6 PK	74.0	-23.4	2.94 V	175	36.5	14.1
8	15960.00	40.7 AV	54.0	-13.3	2.94 V	175	26.6	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.

RF Mode	TX 802.11a	Channel	CH 100：5500 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5440.00	57.9 PK	74.0	-16.1	1.63 H	293	53.5	4.4
2	5440.00	42.6 AV	54.0	-11.4	1.63 H	293	38.2	4.4
3	5459.00	55.8 PK	74.0	-18.2	1.63 H	293	51.4	4.4
4	5459.00	45.1 AV	54.0	-8.9	1.63 H	293	40.7	4.4
5	#5470.00	64.2 PK	68.2	-4.0	1.63 H	293	59.7	4.5
6	*5500.00	121.5 PK			1.63 H	293	116.8	4.7
7	*5500.00	112.1 AV			1.63 H	293	107.4	4.7
8	11000.00	62.3 PK	74.0	-11.7	1.19 H	64	48.0	14.3
9	11000.00	51.5 AV	54.0	-2.5	1.19 H	64	37.2	14.3
10	#16500.00	57.4 PK	68.2	-10.8	1.75 H	305	41.6	15.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5458.00	56.4 PK	74.0	-17.6	1.04 V	114	52.0	4.4
2	5458.00	45.7 AV	54.0	-8.3	1.04 V	114	41.3	4.4
3	#5467.90	60.7 PK	68.2	-7.5	1.04 V	114	56.2	4.5
4	*5500.00	119.0 PK			1.04 V	114	114.3	4.7
5	*5500.00	110.1 AV			1.04 V	114	105.4	4.7
6	11000.00	48.8 PK	74.0	-25.2	1.42 V	186	34.5	14.3
7	11000.00	37.6 AV	54.0	-16.4	1.42 V	186	23.3	14.3
8	#16500.00	50.5 PK	68.2	-17.7	2.94 V	169	34.7	15.8

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 116：5580 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	120.7 PK			1.63 H	293	116.2	4.5
2	*5580.00	111.4 AV			1.63 H	293	106.9	4.5
3	11160.00	57.0 PK	74.0	-17.0	1.18 H	70	42.9	14.1
4	11160.00	45.5 AV	54.0	-8.5	1.18 H	70	31.4	14.1
5	#16740.00	56.4 PK	68.2	-11.8	1.73 H	297	39.6	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	118.1 PK			1.33 V	124	113.6	4.5
2	*5580.00	109.5 AV			1.33 V	124	105.0	4.5
3	11160.00	49.0 PK	74.0	-25.0	1.53 V	195	34.9	14.1
4	11160.00	37.6 AV	54.0	-16.4	1.53 V	195	23.5	14.1
5	#16740.00	50.2 PK	68.2	-18.0	2.87 V	187	33.4	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.

RF Mode	TX 802.11a	Channel	CH 140：5700 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	120.2 PK			1.39 H	295	115.6	4.6
2	*5700.00	110.6 AV			1.39 H	295	106.0	4.6
3	#5725.00	61.2 PK	68.2	-7.0	1.39 H	295	56.5	4.7
4	11400.00	53.5 PK	74.0	-20.5	1.33 H	63	39.0	14.5
5	11400.00	43.5 AV	54.0	-10.5	1.33 H	63	29.0	14.5
6	#17100.00	56.5 PK	68.2	-11.7	1.79 H	308	38.7	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	118.1 PK			1.34 V	123	113.5	4.6
2	*5700.00	109.7 AV			1.34 V	123	105.1	4.6
3	#5725.00	58.4 PK	68.2	-9.8	1.34 V	123	53.7	4.7
4	11400.00	48.6 PK	74.0	-25.4	1.54 V	179	34.1	14.5
5	11400.00	37.6 AV	54.0	-16.4	1.54 V	179	23.1	14.5
6	#17100.00	49.8 PK	68.2	-18.4	2.95 V	189	32.0	17.8

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 144：5720 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.3 PK	74.0	-15.7	2.12 H	311	53.9	4.4
2	5460.00	46.7 AV	54.0	-7.3	2.12 H	311	42.3	4.4
3	#5470.00	57.4 PK	68.2	-10.8	2.12 H	311	52.9	4.5
4	*5720.00	117.0 PK			2.12 H	311	112.3	4.7
5	*5720.00	107.9 AV			2.12 H	311	103.2	4.7
6	#5850.00	58.3 PK	68.2	-9.9	2.12 H	311	53.3	5.0
7	11440.00	54.0 PK	74.0	-20.0	1.23 H	60	39.4	14.6
8	11440.00	46.3 AV	54.0	-7.7	1.23 H	60	31.7	14.6
9	#17160.00	57.0 PK	68.2	-11.2	1.74 H	302	39.2	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	57.9 PK	74.0	-16.1	1.31 V	135	53.5	4.4
2	5460.00	46.5 AV	54.0	-7.5	1.31 V	135	42.1	4.4
3	#5470.00	57.3 PK	68.2	-10.9	1.31 V	135	52.8	4.5
4	*5720.00	114.6 PK			1.31 V	135	109.9	4.7
5	*5720.00	106.4 AV			1.31 V	135	101.7	4.7
6	#5850.00	57.7 PK	68.2	-10.5	1.31 V	135	52.7	5.0
7	11440.00	49.0 PK	74.0	-25.0	1.43 V	183	34.4	14.6
8	11440.00	37.7 AV	54.0	-16.3	1.43 V	183	23.1	14.6
9	#17160.00	49.8 PK	68.2	-18.4	2.94 V	176	32.0	17.8

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 52：5260 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	56.5 PK	74.0	-17.5	1.49 H	331	51.8	4.7
2	5150.00	45.0 AV	54.0	-9.0	1.49 H	331	40.3	4.7
3	*5260.00	123.6 PK			1.49 H	331	119.3	4.3
4	*5260.00	110.8 AV			1.49 H	331	106.5	4.3
5	#10520.00	53.8 PK	68.2	-14.4	1.41 H	103	40.0	13.8
6	15780.00	57.1 PK	74.0	-16.9	1.85 H	292	42.8	14.3
7	15780.00	47.3 AV	54.0	-6.7	1.85 H	292	33.0	14.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	55.7 PK	74.0	-18.3	1.05 V	123	51.0	4.7
2	5150.00	43.1 AV	54.0	-10.9	1.05 V	123	38.4	4.7
3	*5260.00	119.0 PK			1.05 V	123	114.7	4.3
4	*5260.00	108.2 AV			1.05 V	123	103.9	4.3
5	#10520.00	48.3 PK	68.2	-19.9	1.48 V	171	34.5	13.8
6	15780.00	49.7 PK	74.0	-24.3	2.93 V	180	35.4	14.3
7	15780.00	40.2 AV	54.0	-13.8	2.93 V	180	25.9	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.

RF Mode	TX 802.11ax (HE20)	Channel	CH 60：5300 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	121.2 PK			1.47 H	325	116.9	4.3
2	*5300.00	110.7 AV			1.47 H	325	106.4	4.3
3	10600.00	53.5 PK	74.0	-20.5	1.77 H	125	39.9	13.6
4	10600.00	45.6 AV	54.0	-8.4	1.77 H	125	32.0	13.6
5	15900.00	56.8 PK	74.0	-17.2	1.86 H	300	42.7	14.1
6	15900.00	47.0 AV	54.0	-7.0	1.86 H	300	32.9	14.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	119.3 PK			1.11 V	107	115.0	4.3
2	*5300.00	108.3 AV			1.11 V	107	104.0	4.3
3	10600.00	48.8 PK	74.0	-25.2	1.49 V	184	35.2	13.6
4	10600.00	37.4 AV	54.0	-16.6	1.49 V	184	23.8	13.6
5	15900.00	49.3 PK	74.0	-24.7	2.88 V	177	35.2	14.1
6	15900.00	39.7 AV	54.0	-14.3	2.88 V	177	25.6	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.

RF Mode	TX 802.11ax (HE20)	Channel	CH 64：5320 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	122.4 PK			1.46 H	332	118.1	4.3
2	*5320.00	111.6 AV			1.46 H	332	107.3	4.3
3	5350.00	59.8 PK	74.0	-14.2	1.46 H	332	55.5	4.3
4	5350.00	50.4 AV	54.0	-3.6	1.46 H	332	46.1	4.3
5	10640.00	53.8 PK	74.0	-20.2	1.56 H	105	40.1	13.7
6	10640.00	45.3 AV	54.0	-8.7	1.56 H	105	31.6	13.7
7	15960.00	56.5 PK	74.0	-17.5	1.78 H	299	42.4	14.1
8	15960.00	46.9 AV	54.0	-7.1	1.78 H	299	32.8	14.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	119.5 PK			1.10 V	116	115.2	4.3
2	*5320.00	108.7 AV			1.10 V	116	104.4	4.3
3	5350.00	63.1 PK	74.0	-10.9	1.10 V	116	58.8	4.3
4	5350.00	50.5 AV	54.0	-3.5	1.10 V	116	46.2	4.3
5	10640.00	48.8 PK	74.0	-25.2	1.46 V	175	35.1	13.7
6	10640.00	37.9 AV	54.0	-16.1	1.46 V	175	24.2	13.7
7	15960.00	49.5 PK	74.0	-24.5	2.86 V	179	35.4	14.1
8	15960.00	39.7 AV	54.0	-14.3	2.86 V	179	25.6	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.

RF Mode	TX 802.11ax (HE20)	Channel	CH 100：5500 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5437.00	58.2 PK	74.0	-15.8	1.40 H	323	53.8	4.4
2	5437.00	42.1 AV	54.0	-11.9	1.40 H	323	37.7	4.4
3	5457.50	56.4 PK	74.0	-17.6	1.40 H	323	52.0	4.4
4	5457.50	45.2 AV	54.0	-8.8	1.40 H	323	40.8	4.4
5	#5470.00	63.4 PK	68.2	-4.8	1.40 H	323	58.9	4.5
6	*5500.00	122.8 PK			1.40 H	323	118.1	4.7
7	*5500.00	111.5 AV			1.40 H	323	106.8	4.7
8	11000.00	58.2 PK	74.0	-15.8	1.40 H	63	43.9	14.3
9	11000.00	49.1 AV	54.0	-4.9	1.40 H	63	34.8	14.3
10	#16500.00	56.6 PK	68.2	-11.6	1.81 H	279	40.8	15.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5460.00	58.2 PK	74.0	-15.8	1.02 V	115	53.8	4.4
2	5460.00	48.2 AV	54.0	-5.8	1.02 V	115	43.8	4.4
3	#5470.00	63.8 PK	68.2	-4.4	1.02 V	115	59.3	4.5
4	*5500.00	120.9 PK			1.02 V	115	116.2	4.7
5	*5500.00	109.4 AV			1.02 V	115	104.7	4.7
6	11000.00	48.9 PK	74.0	-25.1	1.44 V	194	34.6	14.3
7	11000.00	37.7 AV	54.0	-16.3	1.44 V	194	23.4	14.3
8	#16500.00	50.1 PK	68.2	-18.1	2.95 V	198	34.3	15.8

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 116：5580 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	121.1 PK			2.00 H	318	116.6	4.5
2	*5580.00	110.7 AV			2.00 H	318	106.2	4.5
3	11160.00	57.0 PK	74.0	-17.0	1.25 H	70	42.9	14.1
4	11160.00	45.6 AV	54.0	-8.4	1.25 H	70	31.5	14.1
5	#16740.00	56.7 PK	68.2	-11.5	1.79 H	307	39.9	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	120.4 PK			1.08 V	126	115.9	4.5
2	*5580.00	106.9 AV			1.08 V	126	102.4	4.5
3	11160.00	49.2 PK	74.0	-24.8	1.44 V	200	35.1	14.1
4	11160.00	38.0 AV	54.0	-16.0	1.44 V	200	23.9	14.1
5	#16740.00	50.4 PK	68.2	-17.8	2.94 V	189	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.

RF Mode	TX 802.11ax (HE20)	Channel	CH 140：5700 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	122.1 PK			1.95 H	308	117.5	4.6
2	*5700.00	109.9 AV			1.95 H	308	105.3	4.6
3	#5725.00	63.2 PK	68.2	-5.0	1.95 H	308	58.5	4.7
4	11400.00	53.6 PK	74.0	-20.4	1.34 H	61	39.1	14.5
5	11400.00	43.3 AV	54.0	-10.7	1.34 H	61	28.8	14.5
6	#17100.00	57.5 PK	68.2	-10.7	1.75 H	298	39.7	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	120.5 PK			1.05 V	127	115.9	4.6
2	*5700.00	107.1 AV			1.05 V	127	102.5	4.6
3	#5725.00	59.4 PK	68.2	-8.8	1.05 V	127	54.7	4.7
4	11400.00	48.3 PK	74.0	-25.7	1.49 V	190	33.8	14.5
5	11400.00	37.4 AV	54.0	-16.6	1.49 V	190	22.9	14.5
6	#17100.00	49.9 PK	68.2	-18.3	2.95 V	208	32.1	17.8

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 144：5720 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.6 PK	74.0	-15.4	2.00 H	305	54.2	4.4
2	5460.00	47.1 AV	54.0	-6.9	2.00 H	305	42.7	4.4
3	#5470.00	58.7 PK	68.2	-9.5	2.00 H	305	54.2	4.5
4	*5720.00	118.2 PK			2.00 H	305	113.5	4.7
5	*5720.00	106.7 AV			2.00 H	305	102.0	4.7
6	#5850.00	58.9 PK	68.2	-9.3	2.00 H	305	53.9	5.0
7	11440.00	53.5 PK	74.0	-20.5	1.41 H	54	38.9	14.6
8	11440.00	46.0 AV	54.0	-8.0	1.41 H	54	31.4	14.6
9	#17160.00	56.8 PK	68.2	-11.4	1.80 H	293	39.0	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.7 PK	74.0	-15.3	1.03 V	128	54.3	4.4
2	5460.00	46.4 AV	54.0	-7.6	1.03 V	128	42.0	4.4
3	#5470.00	58.4 PK	68.2	-9.8	1.03 V	128	53.9	4.5
4	*5720.00	115.9 PK			1.03 V	128	111.2	4.7
5	*5720.00	105.2 AV			1.03 V	128	100.5	4.7
6	#5850.00	59.0 PK	68.2	-9.2	1.03 V	128	54.0	5.0
7	11440.00	48.8 PK	74.0	-25.2	1.44 V	207	34.2	14.6
8	11440.00	37.6 AV	54.0	-16.4	1.44 V	207	23.0	14.6
9	#17160.00	50.6 PK	68.2	-17.6	2.96 V	194	32.8	17.8

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 54：5270 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	57.4 PK	74.0	-16.6	1.46 H	332	52.7	4.7
2	5150.00	45.8 AV	54.0	-8.2	1.46 H	332	41.1	4.7
3	*5270.00	120.7 PK			1.46 H	332	116.4	4.3
4	*5270.00	108.3 AV			1.46 H	332	104.0	4.3
5	#10540.00	53.3 PK	68.2	-14.9	1.13 H	108	39.6	13.7
6	15810.00	57.1 PK	74.0	-16.9	1.82 H	311	42.9	14.2
7	15810.00	46.4 AV	54.0	-7.6	1.82 H	311	32.2	14.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	55.8 PK	74.0	-18.2	1.08 V	109	51.1	4.7
2	5150.00	44.9 AV	54.0	-9.1	1.08 V	109	40.2	4.7
3	*5270.00	117.3 PK			1.08 V	109	113.0	4.3
4	*5270.00	105.8 AV			1.08 V	109	101.5	4.3
5	#10540.00	47.0 PK	68.2	-21.2	1.55 V	170	33.3	13.7
6	15810.00	48.0 PK	74.0	-26.0	2.87 V	176	33.8	14.2
7	15810.00	37.9 AV	54.0	-16.1	2.87 V	176	23.7	14.2

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 62：5310 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	118.3 PK			1.45 H	334	114.0	4.3
2	*5310.00	109.0 AV			1.45 H	334	104.7	4.3
3	5350.00	64.0 PK	74.0	-10.0	1.45 H	334	59.7	4.3
4	**5350.00**	**53.0 AV**	**54.0**	**-1.0**	**1.45 H**	**334**	**48.7**	**4.3**
5	10620.00	53.0 PK	74.0	-21.0	1.58 H	131	39.3	13.7
6	10620.00	45.5 AV	54.0	-8.5	1.58 H	131	31.8	13.7
7	15930.00	55.6 PK	74.0	-18.4	1.73 H	292	41.5	14.1
8	15930.00	45.9 AV	54.0	-8.1	1.73 H	292	31.8	14.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	117.4 PK			1.03 V	117	113.1	4.3
2	*5310.00	106.1 AV			1.03 V	117	101.8	4.3
3	5350.00	63.0 PK	74.0	-11.0	1.03 V	117	58.7	4.3
4	5350.00	52.4 AV	54.0	-1.6	1.03 V	117	48.1	4.3
5	10620.00	46.7 PK	74.0	-27.3	1.52 V	183	33.0	13.7
6	10620.00	35.7 AV	54.0	-18.3	1.52 V	183	22.0	13.7
7	15930.00	48.2 PK	74.0	-25.8	2.90 V	192	34.1	14.1
8	15930.00	38.2 AV	54.0	-15.8	2.90 V	192	24.1	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 102：5510 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	61.2 PK	74.0	-12.8	1.85 H	313	56.8	4.4
2	5460.00	52.5 AV	54.0	-1.5	1.85 H	313	48.1	4.4
3	**#5470.00**	**67.2 PK**	**68.2**	**-1.0**	**1.85 H**	**313**	**62.7**	**4.5**
4	*5510.00	120.4 PK			1.85 H	313	115.7	4.7
5	*5510.00	109.2 AV			1.85 H	313	104.5	4.7
6	11020.00	57.4 PK	74.0	-16.6	1.16 H	68	43.2	14.2
7	11020.00	48.2 AV	54.0	-5.8	1.16 H	68	34.0	14.2
8	#16530.00	55.5 PK	68.2	-12.7	1.70 H	281	39.6	15.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	61.3 PK	74.0	-12.7	1.02 V	112	56.9	4.4
2	5460.00	52.1 AV	54.0	-1.9	1.02 V	112	47.7	4.4
3	#5470.00	65.9 PK	68.2	-2.3	1.02 V	112	61.4	4.5
4	*5510.00	116.7 PK			1.02 V	112	112.0	4.7
5	*5510.00	106.2 AV			1.02 V	112	101.5	4.7
6	11020.00	46.7 PK	74.0	-27.3	1.56 V	183	32.5	14.2
7	11020.00	35.6 AV	54.0	-18.4	1.56 V	183	21.4	14.2
8	#16530.00	48.4 PK	68.2	-19.8	2.91 V	184	32.5	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 110：5550 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	118.8 PK			2.20 H	309	114.3	4.5
2	*5550.00	108.8 AV			2.20 H	309	104.3	4.5
3	11100.00	54.2 PK	74.0	-19.8	1.08 H	69	40.3	13.9
4	11100.00	45.7 AV	54.0	-8.3	1.08 H	69	31.8	13.9
5	#16650.00	55.4 PK	68.2	-12.8	1.77 H	286	39.0	16.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	116.6 PK			1.03 V	108	112.1	4.5
2	*5550.00	105.8 AV			1.03 V	108	101.3	4.5
3	11100.00	47.0 PK	74.0	-27.0	1.61 V	179	33.1	13.9
4	11100.00	35.9 AV	54.0	-18.1	1.61 V	179	22.0	13.9
5	#16650.00	49.0 PK	68.2	-19.2	2.91 V	175	32.6	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 134：5670 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	119.8 PK			1.95 H	309	115.3	4.5
2	*5670.00	108.0 AV			1.95 H	309	103.5	4.5
3	#5725.00	60.1 PK	68.2	-8.1	1.95 H	309	55.4	4.7
4	11340.00	54.0 PK	74.0	-20.0	1.20 H	62	39.6	14.4
5	11340.00	43.0 AV	54.0	-11.0	1.20 H	62	28.6	14.4
6	#17010.00	55.1 PK	68.2	-13.1	1.67 H	292	37.3	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	116.7 PK			1.05 V	121	112.2	4.5
2	*5670.00	105.9 AV			1.05 V	121	101.4	4.5
3	#5725.00	57.8 PK	68.2	-10.4	1.05 V	121	53.1	4.7
4	11340.00	47.2 PK	74.0	-26.8	1.57 V	180	32.8	14.4
5	11340.00	36.0 AV	54.0	-18.0	1.57 V	180	21.6	14.4
6	#17010.00	49.0 PK	68.2	-19.2	2.90 V	181	31.2	17.8

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 142：5710 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.7 PK	74.0	-15.3	1.98 H	302	54.3	4.4
2	5460.00	46.1 AV	54.0	-7.9	1.98 H	302	41.7	4.4
3	#5470.00	57.1 PK	68.2	-11.1	1.98 H	302	52.6	4.5
4	*5710.00	116.0 PK			1.98 H	302	111.3	4.7
5	*5710.00	104.5 AV			1.98 H	302	99.8	4.7
6	#5850.00	59.7 PK	68.2	-8.5	1.98 H	302	54.7	5.0
7	11420.00	53.9 PK	74.0	-20.1	1.47 H	69	39.4	14.5
8	11420.00	45.8 AV	54.0	-8.2	1.47 H	69	31.3	14.5
9	#17130.00	56.1 PK	68.2	-12.1	1.76 H	285	38.4	17.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.4 PK	74.0	-15.6	1.04 V	107	54.0	4.4
2	5460.00	46.0 AV	54.0	-8.0	1.04 V	107	41.6	4.4
3	#5470.00	56.8 PK	68.2	-11.4	1.04 V	107	52.3	4.5
4	*5710.00	113.2 PK			1.04 V	107	108.5	4.7
5	*5710.00	102.6 AV			1.04 V	107	97.9	4.7
6	#5850.00	60.0 PK	68.2	-8.2	1.04 V	107	55.0	5.0
7	11420.00	46.6 PK	74.0	-27.4	1.56 V	168	32.1	14.5
8	11420.00	35.3 AV	54.0	-18.7	1.56 V	168	20.8	14.5
9	#17130.00	48.4 PK	68.2	-19.8	2.97 V	172	30.7	17.7

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 58：5290 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	57.6 PK	74.0	-16.4	1.45 H	332	52.9	4.7
2	5150.00	46.1 AV	54.0	-7.9	1.45 H	332	41.4	4.7
3	*5290.00	112.9 PK			1.45 H	332	108.6	4.3
4	*5290.00	103.1 AV			1.45 H	332	98.8	4.3
5	5350.00	62.0 PK	74.0	-12.0	1.45 H	332	57.7	4.3
6	**5350.00**	**53.0 AV**	**54.0**	**-1.0**	**1.45 H**	**332**	**48.7**	**4.3**
7	#10580.00	53.0 PK	68.2	-15.2	1.55 H	132	39.3	13.7
8	15870.00	54.6 PK	74.0	-19.4	1.70 H	282	40.4	14.2
9	15870.00	43.7 AV	54.0	-10.3	1.70 H	282	29.5	14.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5125.60	55.5 PK	74.0	-18.5	1.09 V	120	50.7	4.8
2	5125.60	43.5 AV	54.0	-10.5	1.09 V	120	38.7	4.8
3	5147.30	55.0 PK	74.0	-19.0	1.09 V	120	50.2	4.8
4	5147.30	44.9 AV	54.0	-9.1	1.09 V	120	40.1	4.8
5	*5290.00	111.2 PK			1.09 V	120	106.9	4.3
6	*5290.00	100.8 AV			1.09 V	120	96.5	4.3
7	5350.00	63.1 PK	74.0	-10.9	1.09 V	120	58.8	4.3
8	5350.00	52.2 AV	54.0	-1.8	1.09 V	120	47.9	4.3
9	#10580.00	47.1 PK	68.2	-21.1	1.53 V	208	33.4	13.7
10	15870.00	46.6 PK	74.0	-27.4	2.99 V	216	32.4	14.2
11	15870.00	35.1 AV	54.0	-18.9	2.99 V	216	20.9	14.2

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 106：5530 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5456.80	61.9 PK	74.0	-12.1	1.94 H	316	57.5	4.4
2	5456.80	52.6 AV	54.0	-1.4	1.94 H	316	48.2	4.4
3	#5463.90	66.9 PK	68.2	-1.3	1.94 H	316	62.4	4.5
4	*5530.00	115.3 PK			1.94 H	316	110.7	4.6
5	*5530.00	105.4 AV			1.94 H	316	100.8	4.6
6	#5725.00	58.9 PK	68.2	-9.3	1.94 H	316	54.2	4.7
7	11060.00	54.7 PK	74.0	-19.3	1.13 H	63	40.6	14.1
8	11060.00	44.6 AV	54.0	-9.4	1.13 H	63	30.5	14.1
9	#16590.00	55.5 PK	68.2	-12.7	1.71 H	283	39.4	16.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5452.80	62.9 PK	74.0	-11.1	1.04 V	116	58.5	4.4
2	5452.80	52.6 AV	54.0	-1.4	1.04 V	116	48.2	4.4
3	#5464.80	64.1 PK	68.2	-4.1	1.04 V	116	59.6	4.5
4	*5530.00	113.7 PK			1.04 V	116	109.1	4.6
5	*5530.00	102.3 AV			1.04 V	116	97.7	4.6
6	#5752.50	55.5 PK	68.2	-12.7	1.04 V	116	50.5	5.0
7	11060.00	46.6 PK	74.0	-27.4	1.56 V	207	32.5	14.1
8	11060.00	35.6 AV	54.0	-18.4	1.56 V	207	21.5	14.1
9	#16590.00	45.6 PK	68.2	-22.6	2.93 V	202	29.5	16.1

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.

RF Mode	TX 802.11ax (HE80)	Channel	CH 138：5690 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	59.3 PK	74.0	-14.7	1.79 H	312	54.9	4.4
2	5460.00	47.5 AV	54.0	-6.5	1.79 H	312	43.1	4.4
3	#5470.00	58.7 PK	68.2	-9.5	1.79 H	312	54.2	4.5
4	*5690.00	112.9 PK			1.79 H	312	108.4	4.5
5	*5690.00	102.1 AV			1.79 H	312	97.6	4.5
6	#5850.00	60.8 PK	68.2	-7.4	1.79 H	312	55.8	5.0
7	11380.00	54.2 PK	74.0	-19.8	1.33 H	66	39.7	14.5
8	11380.00	46.1 AV	54.0	-7.9	1.33 H	66	31.6	14.5
9	#17070.00	54.7 PK	68.2	-13.5	1.62 H	295	36.8	17.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	59.0 PK	74.0	-15.0	1.00 V	113	54.6	4.4
2	5460.00	47.1 AV	54.0	-6.9	1.00 V	113	42.7	4.4
3	#5470.00	58.9 PK	68.2	-9.3	1.00 V	113	54.4	4.5
4	*5690.00	110.9 PK			1.00 V	113	106.4	4.5
5	*5690.00	100.3 AV			1.00 V	113	95.8	4.5
6	#5850.00	61.3 PK	68.2	-6.9	1.00 V	113	56.3	5.0
7	11380.00	46.9 PK	74.0	-27.1	1.53 V	197	32.4	14.5
8	11380.00	35.7 AV	54.0	-18.3	1.53 V	197	21.2	14.5
9	#17070.00	45.8 PK	68.2	-22.4	2.94 V	203	27.9	17.9

Remarks:

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

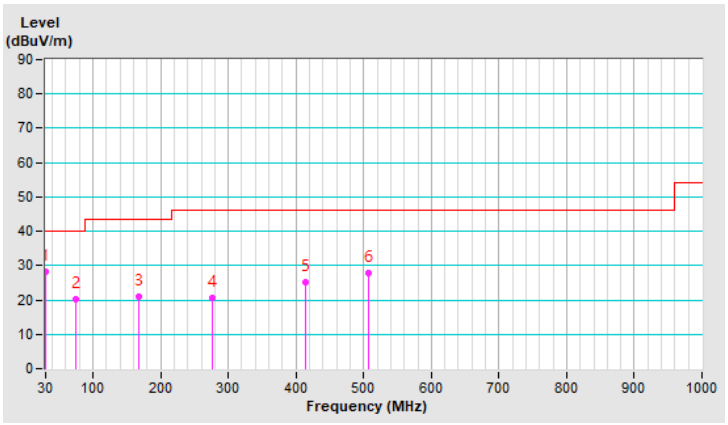
Below 1GHz Data:

RF Mode	TX 802.11ax (HE40)	Channel	CH 134：5670 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.06	28.2 QP	40.0	-11.8	1.00 H	306	37.5	-9.3
2	74.91	20.3 QP	40.0	-19.7	1.50 H	14	31.9	-11.6
3	168.01	20.8 QP	43.5	-22.7	2.00 H	106	28.9	-8.1
4	276.02	20.6 QP	46.0	-25.4	3.00 H	176	28.0	-7.4
5	413.84	25.2 QP	46.0	-20.8	1.00 H	266	28.5	-3.3
6	507.00	27.7 QP	46.0	-18.3	1.50 H	72	28.5	-0.8

Remarks:

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

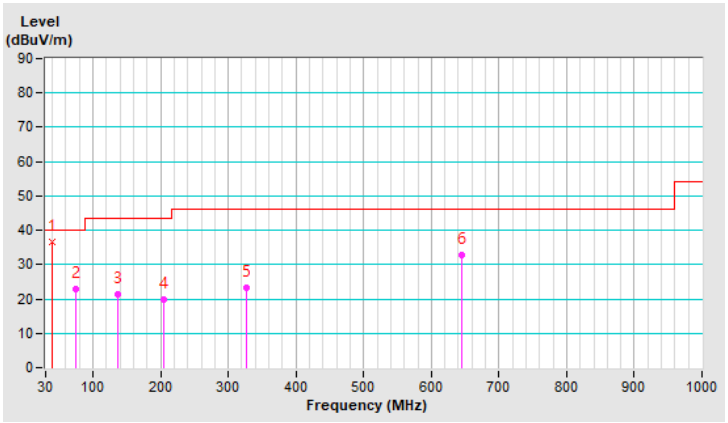


RF Mode	TX 802.11ax (HE40)	Channel	CH 134：5670 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	39.01	36.7 QP	40.0	-3.3	1.00 V	352	45.2	-8.5
2	74.07	23.0 QP	40.0	-17.0	1.00 V	288	34.5	-11.5
3	136.98	21.2 QP	43.5	-22.3	1.50 V	24	29.4	-8.2
4	204.66	19.8 QP	43.5	-23.7	2.00 V	110	30.5	-10.7
5	327.42	23.2 QP	46.0	-22.8	1.50 V	244	28.7	-5.5
6	644.50	32.7 QP	46.0	-13.3	3.00 V	74	30.3	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.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver R&S	ESCS 30	847124/029	2020/10/20	2021/10/19
LISN R&S	ESH3-Z5	848773/004	2020/10/27	2021/10/26
LISN R & S	ESH3-Z5	835239/001	2021/3/26	2022/3/25
50 ohms Terminator	50	3	2020/10/26	2021/10/25
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2020/9/26	2021/9/25
Fixed attenuator STI	STI02-2200-10	005	2020/8/29	2021/8/28
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The test was performed in Conduction 1.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2021/8/7

4.2.3 Test Procedure

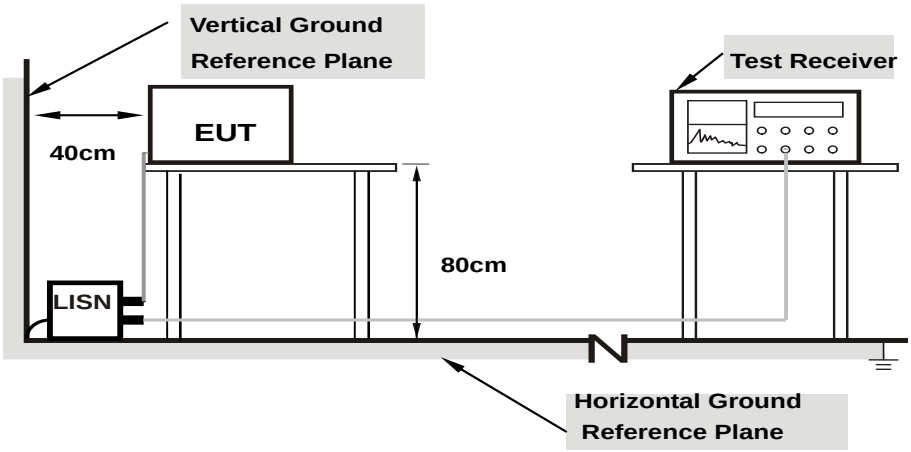
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

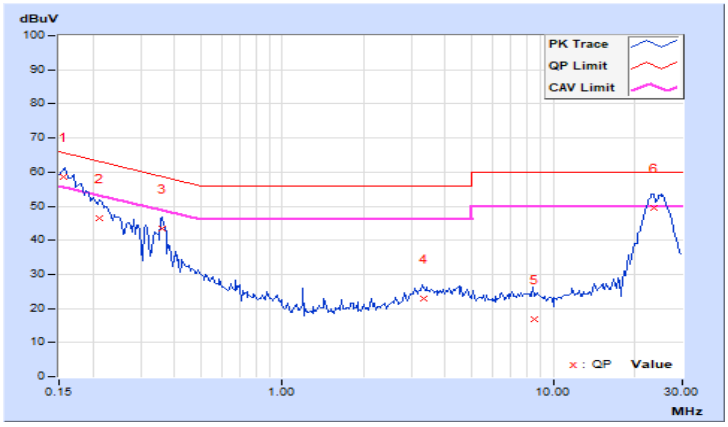
4.2.7 Test Results

RF Mode	TX 802.11ax (HE40)	Channel	CH 134：5670 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15641	9.95	48.52	30.73	58.47	40.68	65.65	55.65	-7.18	-14.97
2	0.21143	9.97	36.37	20.66	46.34	30.63	63.15	53.15	-16.81	-22.52
3	0.36208	9.99	33.50	29.46	43.49	39.45	58.68	48.68	-15.19	-9.23
4	3.30945	10.14	12.59	6.33	22.73	16.47	56.00	46.00	-33.27	-29.53
5	8.55954	10.44	6.43	1.15	16.87	11.59	60.00	50.00	-43.13	-38.41
6	**23.53371**	**11.20**	**38.46**	**33.63**	**49.66**	**44.83**	**60.00**	**50.00**	**-10.34**	**-5.17**

Remarks:

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

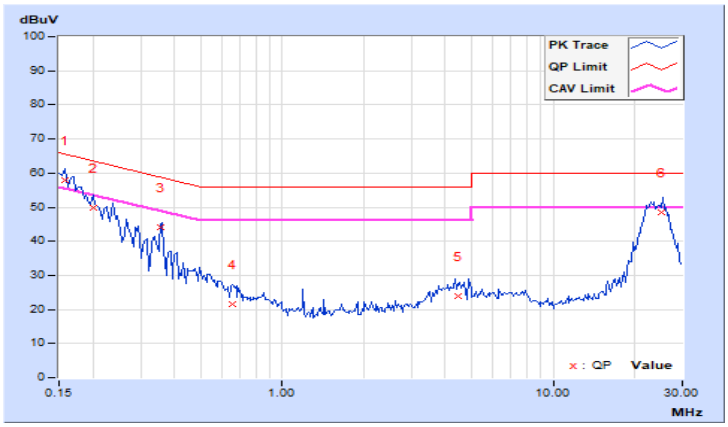


RF Mode	TX 802.11ax (HE40)	Channel	CH 134：5670 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15694	9.92	47.93	30.10	57.85	40.02	65.62	55.62	-7.77	-15.60
2	0.20099	9.95	39.73	24.15	49.68	34.10	63.57	53.57	-13.89	-19.47
3	0.35457	9.96	34.01	28.29	43.97	38.25	58.85	48.85	-14.88	-10.60
4	0.65664	9.98	11.53	1.25	21.51	11.23	56.00	46.00	-34.49	-34.77
5	4.48573	10.14	13.71	5.94	23.85	16.08	56.00	46.00	-32.15	-29.92
6	24.95954	10.90	37.52	32.90	48.42	43.80	60.00	50.00	-11.58	-6.20

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,

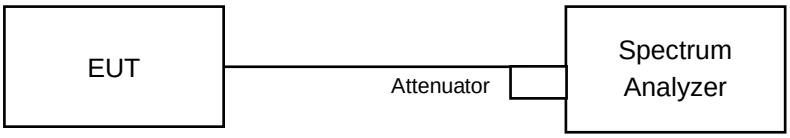
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

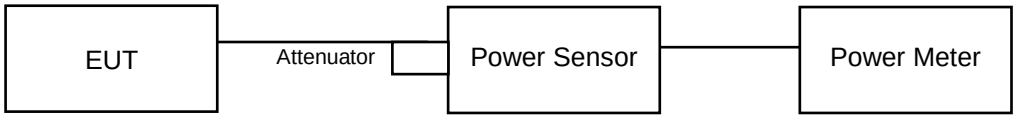
4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT

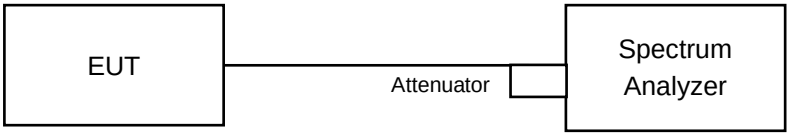
For channel straddling 5725MHz:



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 channel straddling 5725MHz:
Follow FCC KDB 789033 UNII test procedure:
Method SA-2

1. Set span to encompass the 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. Detector = RMS.
7. Trace average at least 100 traces in power averaging mode
8. Compute power by integrating the spectrum across the 26 dB EBW of the signal.
9. Duty factor need added to measured value (duty cycle < 98 percent).

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 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

CDD 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	18.49	17.18	122.871	20.89	24	Pass
60	5300	18.47	17.13	121.949	20.86	24	Pass
64	5320	18.47	17.15	122.187	20.87	24	Pass
100	5500	18.19	17.30	119.621	20.78	24	Pass
116	5580	18.21	17.31	120.049	20.79	24	Pass
140	5700	18.21	17.31	120.049	20.79	24	Pass
*144 (U-NII-2C Band)	5720	17.56	16.31	106.931	20.29	22.88	Pass
*144 (U-NII-3 Band)	5720	11.04	9.72	23.666	13.74	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	20.81	24.18 > 24
60	5300	20.82	24.18 > 24
64	5320	20.9	24.2 > 24
100	5500	20.83	24.18 > 24
116	5580	20.92	24.2 > 24
140	5700	20.93	24.2 > 24
144 (U-NII-2C Band)	5720	15.43	22.88 < 24

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

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	18.96	17.22	131.428	21.19	24	Pass
60	5300	19.08	17.03	131.376	21.19	24	Pass
64	5320	19.15	17.06	133.04	21.24	24	Pass
100	5500	19.02	17.69	138.548	21.42	24	Pass
116	5580	19.23	17.81	144.148	21.59	24	Pass
140	5700	18.40	17.96	131.7	21.20	24	Pass
*144 (U-NII-2C Band)	5720	17.04	16.70	103.044	20.13	23.02	Pass
*144 (U-NII-3 Band)	5720	11.46	10.81	27.568	14.40	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	21.98	24.42 > 24
60	5300	22.01	24.42 > 24
64	5320	21.91	24.4 > 24
100	5500	21.75	24.37 > 24
116	5580	21.66	24.35 > 24
140	5700	21.86	24.39 > 24
144 (U-NII-2C Band)	5720	15.93	23.02 < 24

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

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	21.66	19.76	241.179	23.82	24	Pass
62	5310	21.65	19.55	236.375	23.74	24	Pass
102	5510	21.38	19.87	234.455	23.70	24	Pass
110	5550	21.41	19.93	236.758	23.74	24	Pass
134	5670	21.37	20.18	241.32	23.83	24	Pass
*142 (U-NII-2C Band)	5710	20.27	19.34	201.707	23.05	24	Pass
*142 (U-NII-3 Band)	5710	10.17	8.84	18.937	12.77	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
54	5270	42.09	27.24 > 24
62	5310	42.5	27.28 > 24
102	5510	42.14	27.24 > 24
110	5550	42.4	27.27 > 24
134	5670	41.9	27.22 > 24
142 (U-NII-2C Band)	5710	36.11	26.57 > 24

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

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	19.37	17.50	142.731	21.55	24	Pass
106	5530	21.20	19.89	229.325	23.60	24	Pass
*138 (U-NII-2C Band)	5690	19.95	19.33	196.689	22.94	24	Pass
*138 (U-NII-3 Band)	5690	5.92	5.71	8.134	9.10	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
58	5290	82.95	30.18 > 24
106	5530	82.94	30.18 > 24
138 (U-NII-2C Band)	5690	76.39	29.83 > 24

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

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	19.16	17.45	138.004	21.40	24	Pass
60	5300	19.31	17.32	139.261	21.44	24	Pass
64	5320	19.38	17.32	140.647	21.48	24	Pass
100	5500	19.24	17.99	146.897	21.67	24	Pass
116	5580	19.53	18.04	153.422	21.86	24	Pass
140	5700	18.62	18.18	138.544	21.42	24	Pass
*144 (U-NII-2C Band)	5720	17.48	16.90	111.086	20.46	23.02	Pass
*144 (U-NII-3 Band)	5720	11.92	11.07	30.01	14.77	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	21.98	24.42 > 24
60	5300	22.01	24.42 > 24
64	5320	21.91	24.4 > 24
100	5500	21.75	24.37 > 24
116	5580	21.66	24.35 > 24
140	5700	21.86	24.39 > 24
144 (U-NII-2C Band)	5720	15.93	23.02 < 24

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

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	21.66	19.98	246.095	23.91	24	Pass
62	5310	21.65	19.79	241.497	23.83	24	Pass
102	5510	21.38	20.12	240.206	23.81	24	Pass
110	5550	21.41	20.16	242.109	23.84	24	Pass
134	5670	21.37	20.44	247.751	23.94	24	Pass
*142 (U-NII-2C Band)	5710	20.62	19.67	218.187	23.39	24	Pass
*142 (U-NII-3 Band)	5710	10.27	8.99	19.473	12.89	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
54	5270	42.09	27.24 > 24
62	5310	42.5	27.28 > 24
102	5510	42.14	27.24 > 24
110	5550	42.4	27.27 > 24
134	5670	41.9	27.22 > 24
142 (U-NII-2C Band)	5710	36.11	26.57 > 24

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

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	19.57	17.72	149.729	21.75	24	Pass
106	5530	21.41	20.15	241.871	23.84	24	Pass
*138 (U-NII-2C Band)	5690	20.35	19.66	214.063	23.31	24	Pass
*138 (U-NII-3 Band)	5690	6.22	6.03	8.735	9.41	30	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
58	5290	82.95	30.18 > 24
106	5530	82.94	30.18 > 24
138 (U-NII-2C Band)	5690	76.39	29.83 > 24

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

Beamforming Mode

Power Output:

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	18.96	17.22	131.428	21.19	23.19	Pass
60	5300	19.08	17.03	131.376	21.19	23.19	Pass
64	5320	19.15	17.06	133.04	21.24	23.19	Pass
100	5500	19.02	17.69	138.548	21.42	23.19	Pass
116	5580	19.23	17.81	144.148	21.59	23.19	Pass
140	5700	18.40	17.96	131.7	21.20	23.19	Pass
*144 (U-NII-2C Band)	5720	17.04	16.70	103.044	20.13	22.21	Pass
*144 (U-NII-3 Band)	5720	11.46	10.81	27.568	14.40	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	21.98	24.42 > 24
60	5300	22.01	24.42 > 24
64	5320	21.91	24.4 > 24
100	5500	21.75	24.37 > 24
116	5580	21.66	24.35 > 24
140	5700	21.86	24.39 > 24
144 (U-NII-2C Band)	5720	15.93	23.02 < 24

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

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	20.54	18.92	191.223	22.82	23.19	Pass
62	5310	20.56	18.74	188.58	22.75	23.19	Pass
102	5510	20.41	18.95	188.424	22.75	23.19	Pass
110	5550	20.46	18.99	190.423	22.80	23.19	Pass
134	5670	20.41	19.25	194.04	22.88	23.19	Pass
*142 (U-NII-2C Band)	5710	19.48	18.29	163.794	22.14	23.19	Pass
*142 (U-NII-3 Band)	5710	8.89	7.92	14.62	11.65	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
54	5270	42.09	27.24 > 24
62	5310	42.5	27.28 > 24
102	5510	42.14	27.24 > 24
110	5550	42.4	27.27 > 24
134	5670	41.9	27.22 > 24
142 (U-NII-2C Band)	5710	36.11	26.57 > 24

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

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	19.37	17.50	142.731	21.55	23.19	Pass
106	5530	20.24	18.94	184.025	22.65	23.19	Pass
*138 (U-NII-2C Band)	5690	19.59	18.73	176.522	22.47	23.19	Pass
*138 (U-NII-3 Band)	5690	5.38	4.87	6.949	8.42	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
58	5290	82.95	30.18 > 24
106	5530	82.94	30.18 > 24
138 (U-NII-2C Band)	5690	76.39	29.83 > 24

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

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	19.16	17.45	138.004	21.40	23.19	Pass
60	5300	19.31	17.32	139.261	21.44	23.19	Pass
64	5320	19.38	17.32	140.647	21.48	23.19	Pass
100	5500	19.24	17.99	146.897	21.67	23.19	Pass
116	5580	19.53	18.04	153.422	21.86	23.19	Pass
140	5700	18.62	18.18	138.544	21.42	23.19	Pass
*144 (U-NII-2C Band)	5720	17.48	16.90	111.086	20.46	22.21	Pass
*144 (U-NII-3 Band)	5720	11.92	11.07	30.01	14.77	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
52	5260	21.98	24.42 > 24
60	5300	22.01	24.42 > 24
64	5320	21.91	24.4 > 24
100	5500	21.75	24.37 > 24
116	5580	21.66	24.35 > 24
140	5700	21.86	24.39 > 24
144 (U-NII-2C Band)	5720	15.93	23.02 < 24

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

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	20.81	19.16	202.917	23.07	23.19	Pass
62	5310	20.80	18.96	198.931	22.99	23.19	Pass
102	5510	20.55	19.22	197.061	22.95	23.19	Pass
110	5550	20.61	19.29	199.998	23.01	23.19	Pass
134	5670	20.47	19.59	202.421	23.06	23.19	Pass
*142 (U-NII-2C Band)	5710	19.57	18.77	174.01	22.41	23.19	Pass
*142 (U-NII-3 Band)	5710	9.26	8.41	16.118	12.07	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
54	5270	42.09	27.24 > 24
62	5310	42.5	27.28 > 24
102	5510	42.14	27.24 > 24
110	5550	42.4	27.27 > 24
134	5670	41.9	27.22 > 24
142 (U-NII-2C Band)	5710	36.11	26.57 > 24

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

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	19.57	17.72	149.729	21.75	23.19	Pass
106	5530	20.56	19.29	198.681	22.98	23.19	Pass
*138 (U-NII-2C Band)	5690	19.76	19.04	186.279	22.70	23.19	Pass
*138 (U-NII-3 Band)	5690	5.63	5.34	7.541	8.77	29.19	Pass

Note: * Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-2 and use spectrum analyzer test. The duty factor was included in the total power.

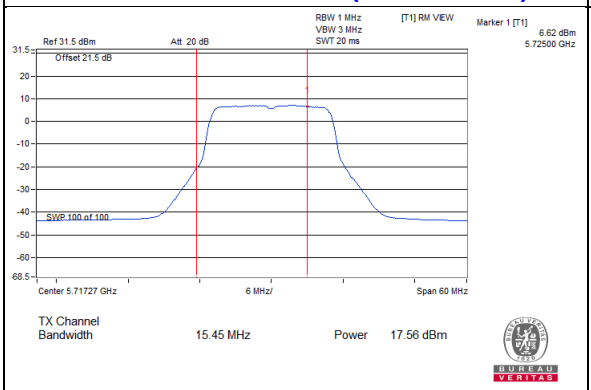
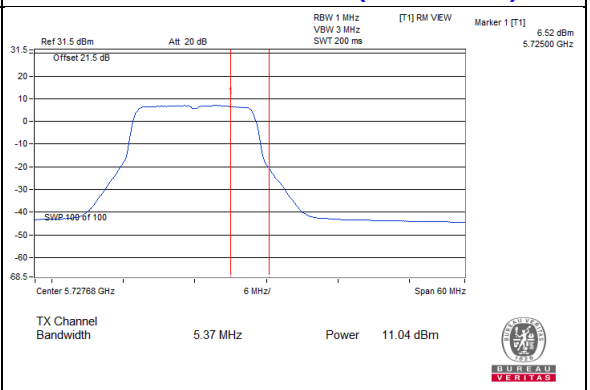
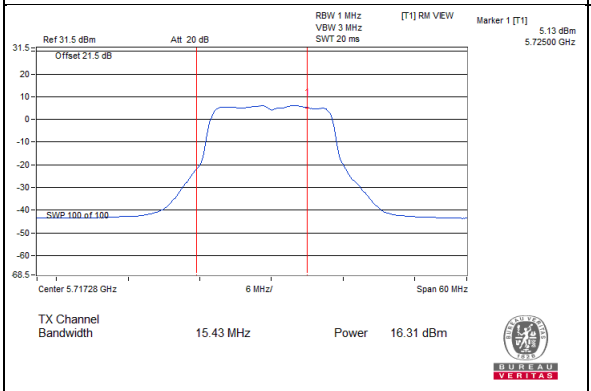
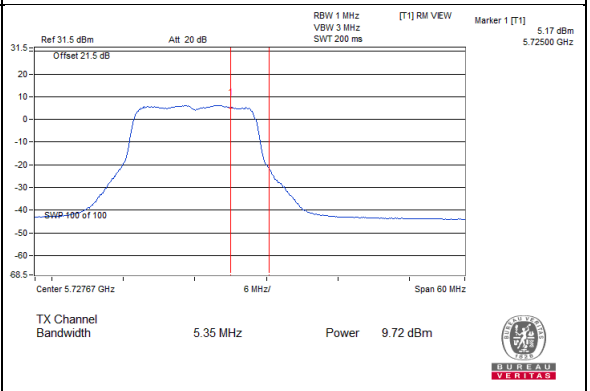
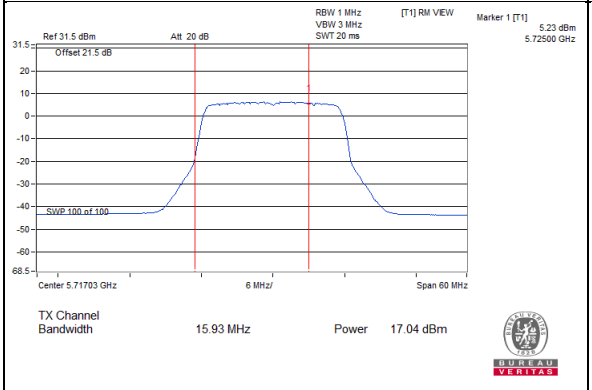
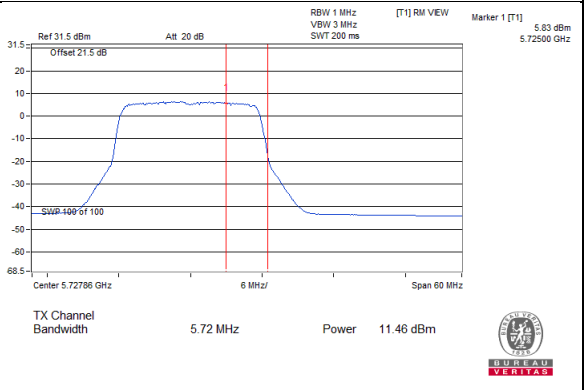
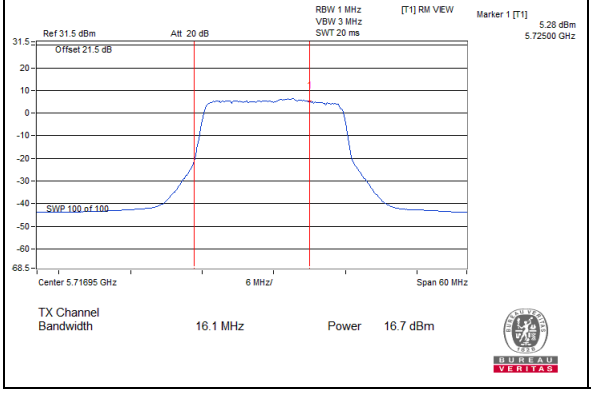
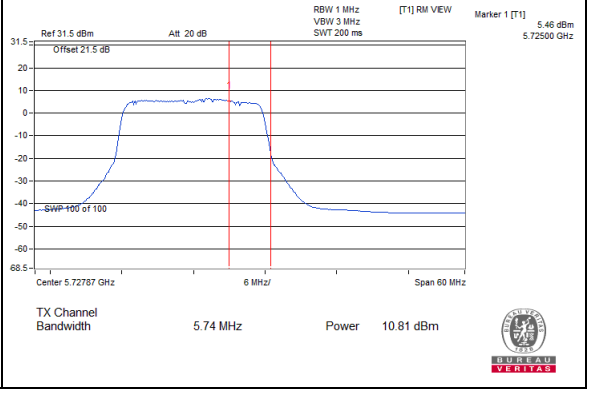
1. For U-NII-2A, U-NII-2C: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(6.81-6)”.
2. For U-NII-3: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

Determined Power Limit			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Power Limit (dBm)
58	5290	82.95	30.18 > 24
106	5530	82.94	30.18 > 24
138 (U-NII-2C Band)	5690	76.39	29.83 > 24

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

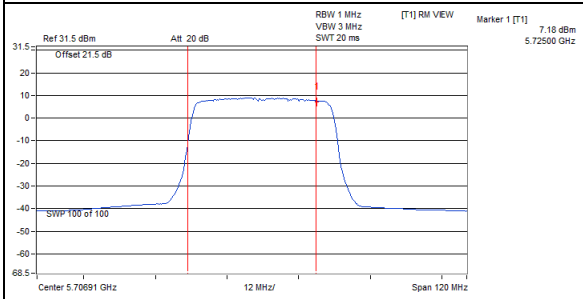
For channel straddling 5725MHz of Power

CDD 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 15.45 MHz Power 17.56 dBm	 TX Channel Bandwidth 5.37 MHz Power 11.04 dBm
802.11a_Chain 1 / CH144 (U-NII-2C Band)	**802.11a_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 15.43 MHz Power 16.31 dBm	 TX Channel Bandwidth 5.35 MHz Power 9.72 dBm
802.11ac (VHT20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 15.93 MHz Power 17.04 dBm	 TX Channel Bandwidth 5.72 MHz Power 11.46 dBm
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.1 MHz Power 16.7 dBm	 TX Channel Bandwidth 5.74 MHz Power 10.81 dBm

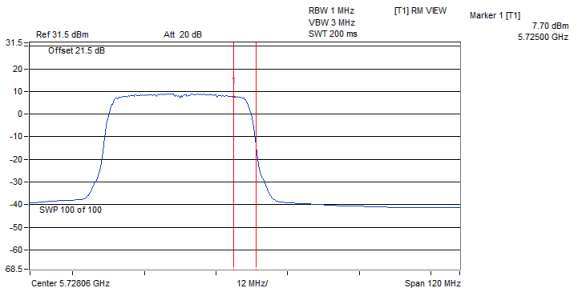
Spectrum Plot Value of Power

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



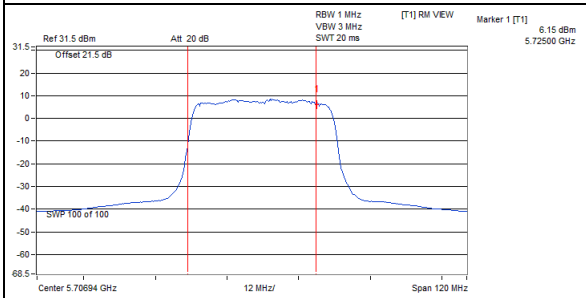
TX Channel Bandwidth 36.17 MHz Power 20.27 dBm

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



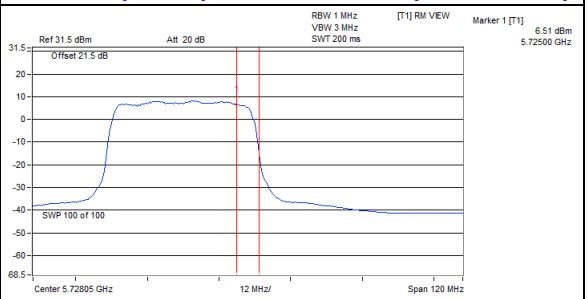
TX Channel Bandwidth 6.13 MHz Power 10.17 dBm

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



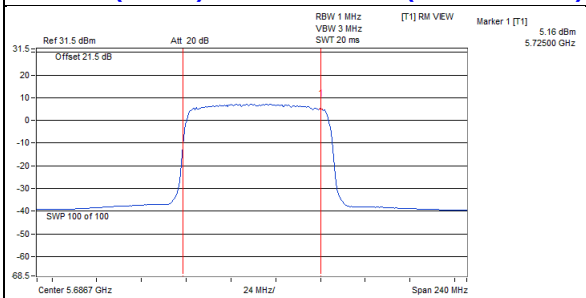
TX Channel Bandwidth 36.11 MHz Power 19.34 dBm

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



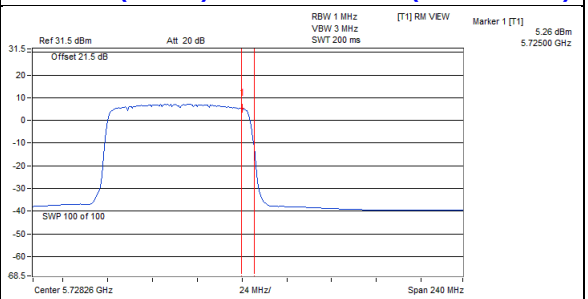
TX Channel Bandwidth 6.11 MHz Power 8.84 dBm

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



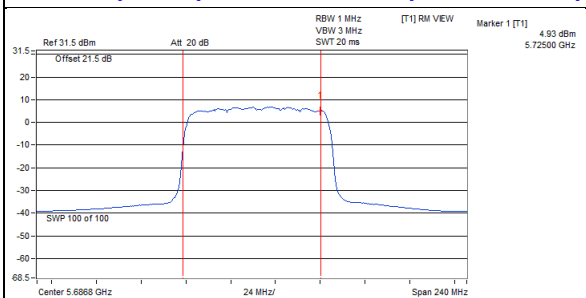
TX Channel Bandwidth 76.6 MHz Power 19.95 dBm

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



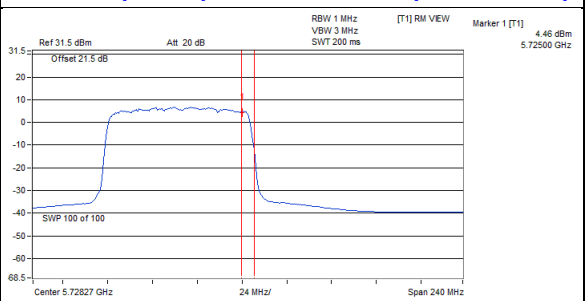
TX Channel Bandwidth 6.53 MHz Power 5.92 dBm

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



TX Channel Bandwidth 76.39 MHz Power 19.33 dBm

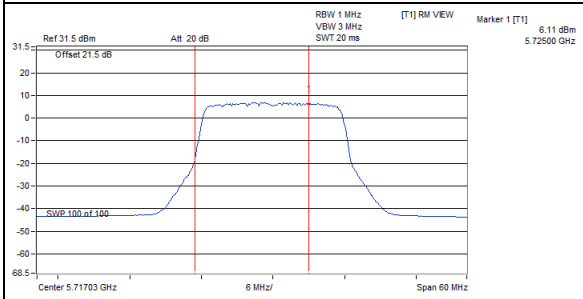
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3 Band)



TX Channel Bandwidth 6.54 MHz Power 5.71 dBm

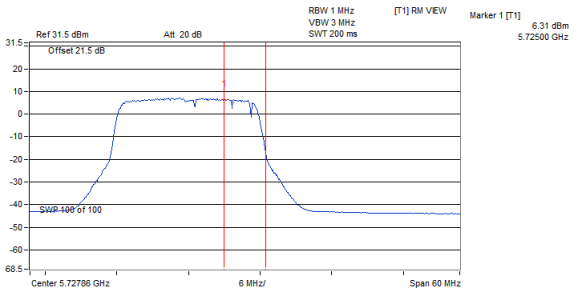
Spectrum Plot Value of Power

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



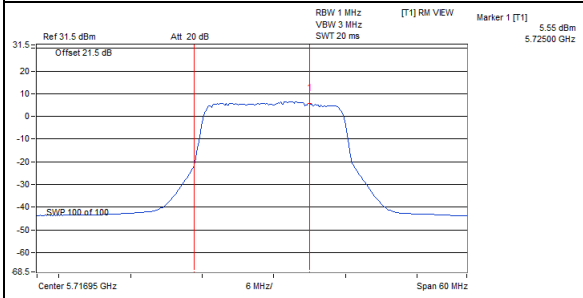
TX Channel Bandwidth 15.93 MHz Power 17.48 dBm

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



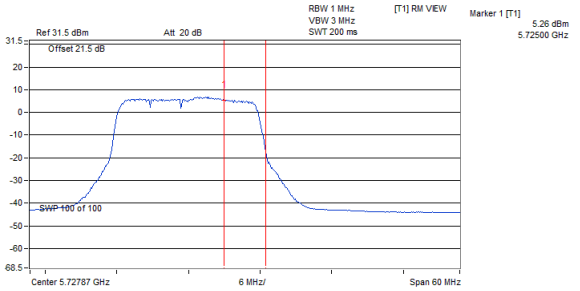
TX Channel Bandwidth 5.72 MHz Power 11.92 dBm

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



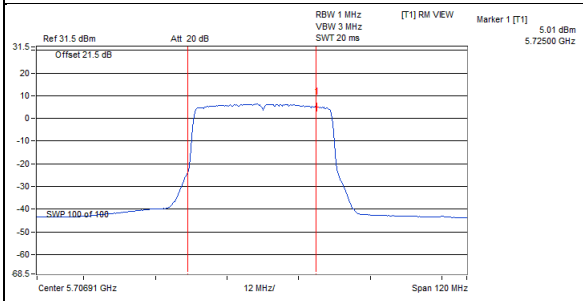
TX Channel Bandwidth 16.1 MHz Power 16.9 dBm

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



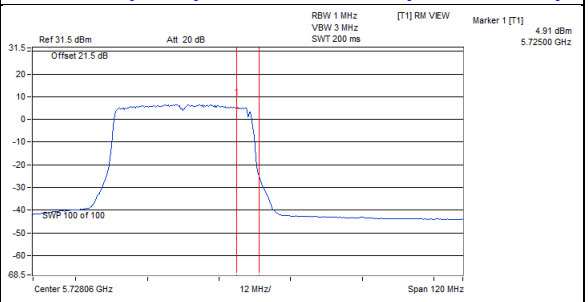
TX Channel Bandwidth 5.74 MHz Power 11.07 dBm

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



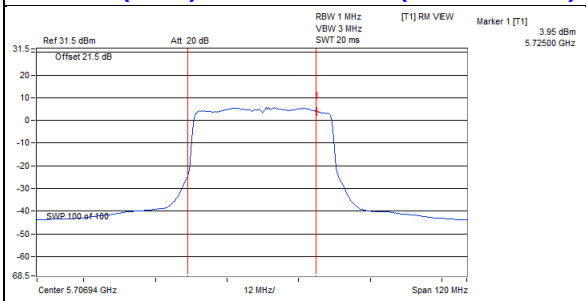
TX Channel Bandwidth 36.17 MHz Power 20.62 dBm

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



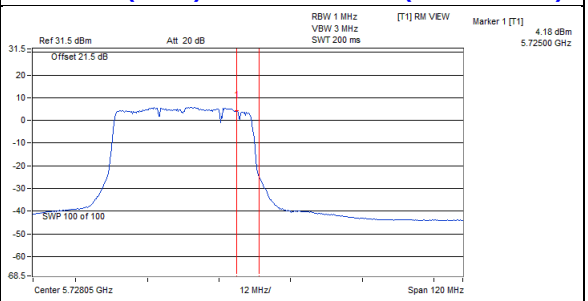
TX Channel Bandwidth 6.13 MHz Power 10.27 dBm

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

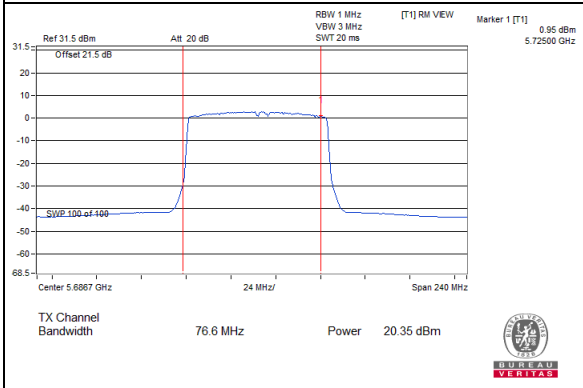
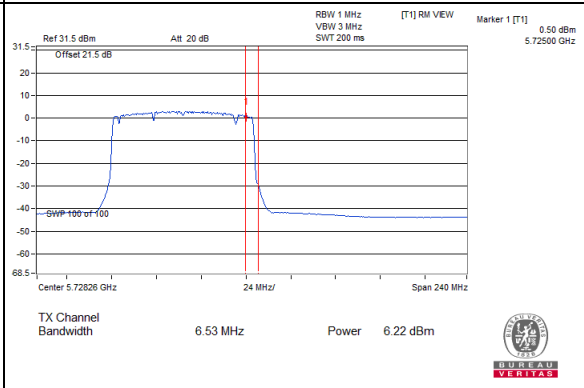
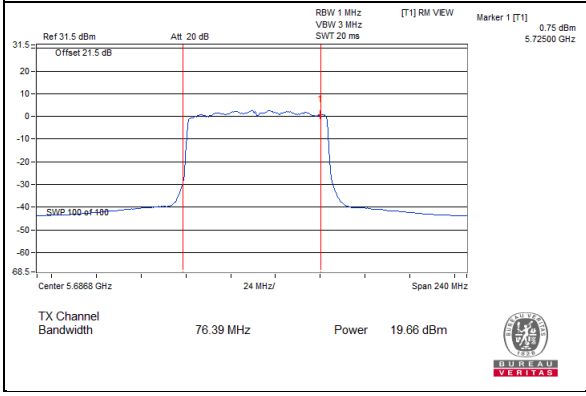
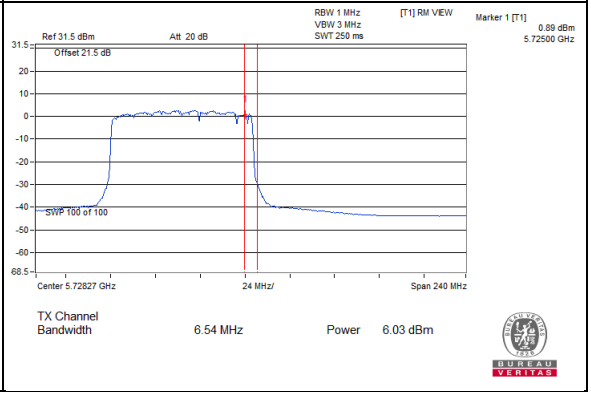


TX Channel Bandwidth 36.11 MHz Power 19.67 dBm

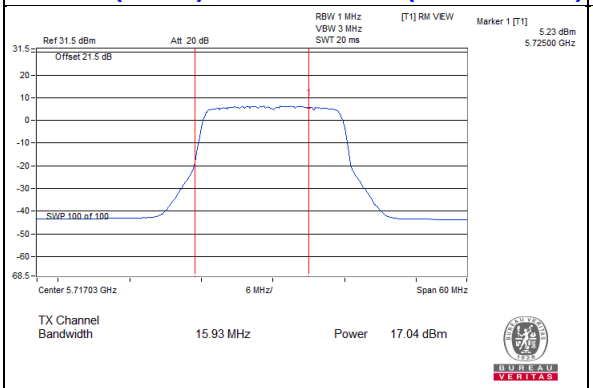
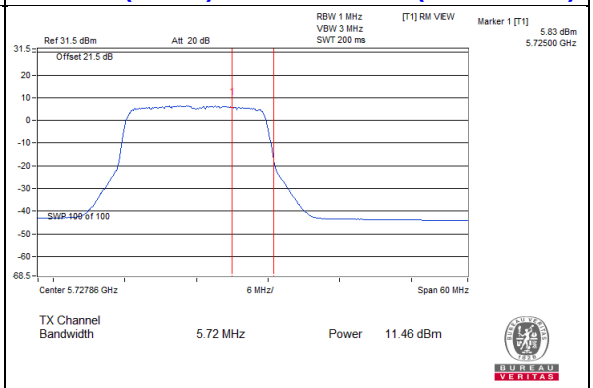
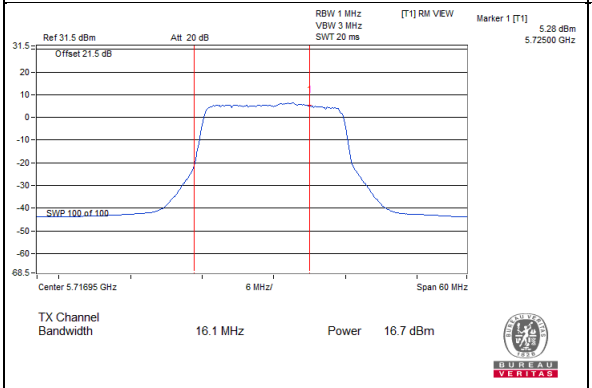
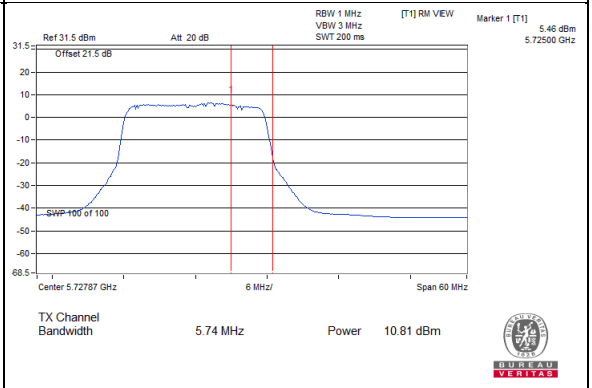
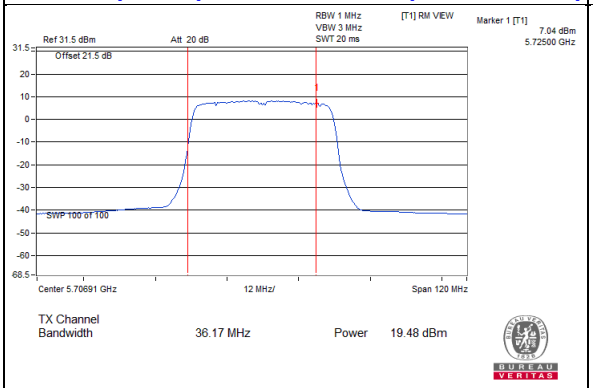
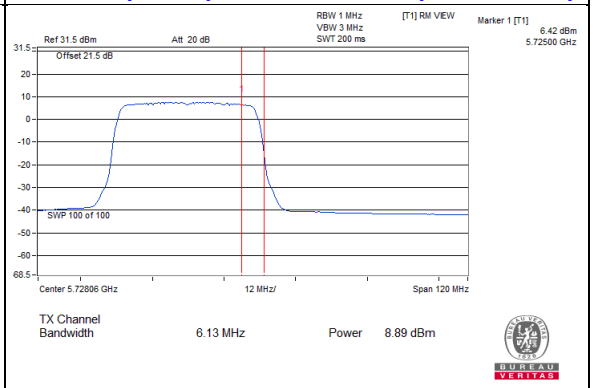
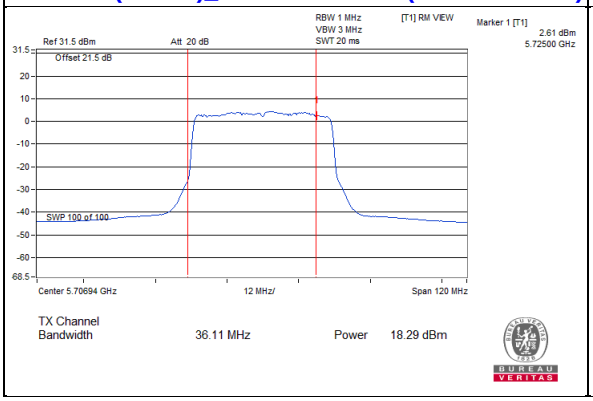
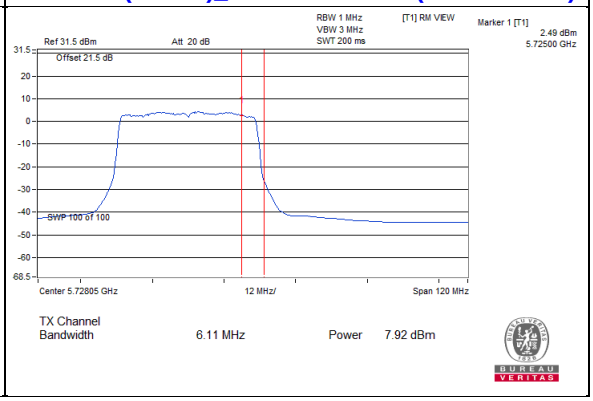
802.11ax (HE40)_Chain 1 / CH142 (U-NII-3 Band)

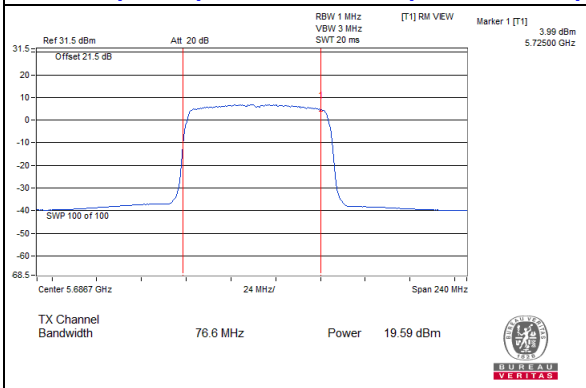
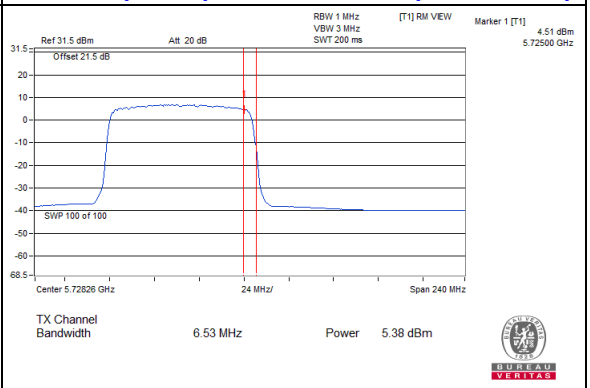
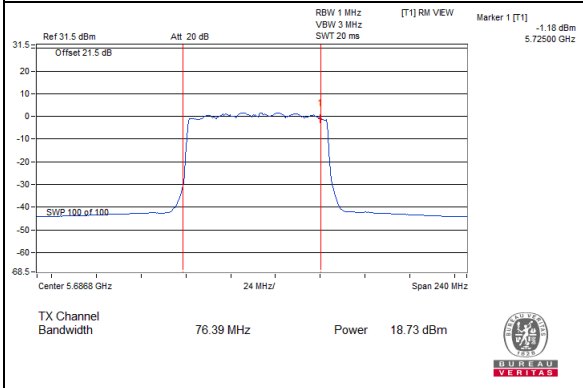
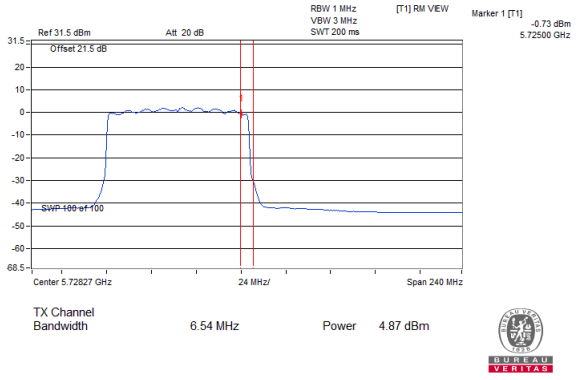
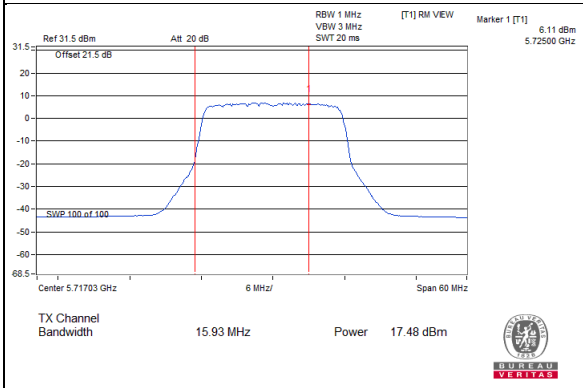
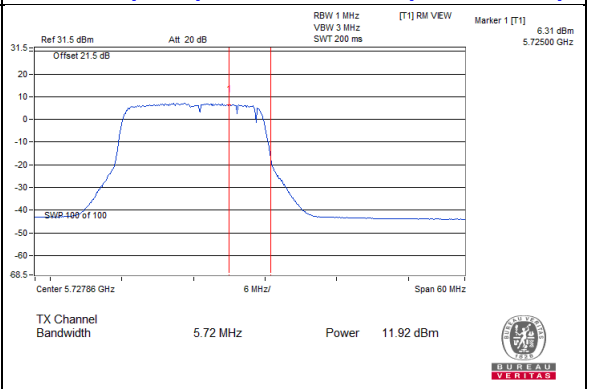
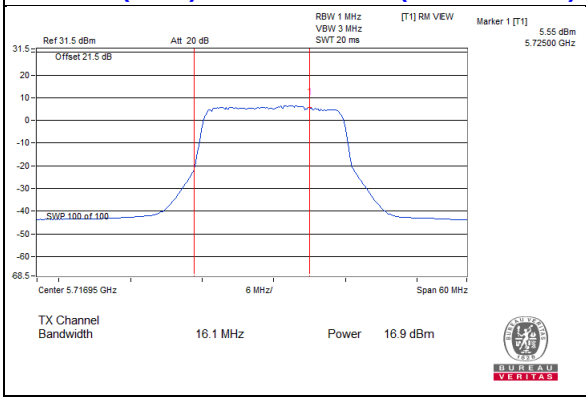
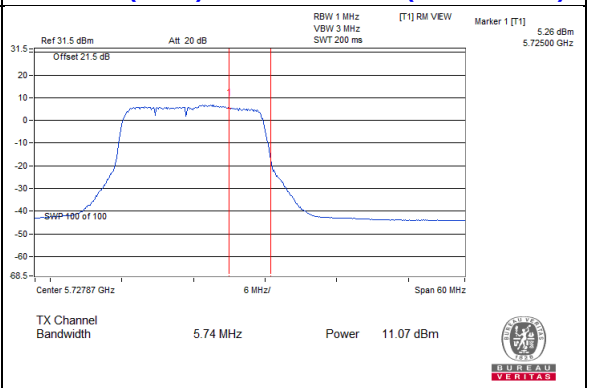


TX Channel Bandwidth 6.11 MHz Power 8.99 dBm

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 76.6 MHz Power 20.35 dBm	 TX Channel Bandwidth 6.53 MHz Power 6.22 dBm
802.11ax (HE80)_Chain 1 / CH138 (U-NII-2C Band)	**802.11ax (HE80)_Chain 1 / CH138 (U-NII-3 Band)**
 TX Channel Bandwidth 76.39 MHz Power 19.66 dBm	 TX Channel Bandwidth 6.54 MHz Power 6.03 dBm

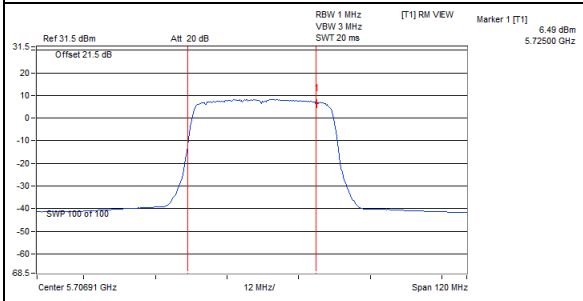
Beamforming Mode

Spectrum Plot Value of Power	
802.11ac (VHT20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 0 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 15.93 MHz Power 17.04 dBm	 TX Channel Bandwidth 5.72 MHz Power 11.46 dBm
802.11ac (VHT20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ac (VHT20)_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.1 MHz Power 16.7 dBm	 TX Channel Bandwidth 5.74 MHz Power 10.81 dBm
802.11ac (VHT40)_Chain 0 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 0 / CH142 (U-NII-3 Band)**
 TX Channel Bandwidth 36.17 MHz Power 19.48 dBm	 TX Channel Bandwidth 6.13 MHz Power 8.89 dBm
802.11ac (VHT40)_Chain 1 / CH142 (U-NII-2C Band)	**802.11ac (VHT40)_Chain 1 / CH142 (U-NII-3 Band)**
 TX Channel Bandwidth 36.11 MHz Power 18.29 dBm	 TX Channel Bandwidth 6.11 MHz Power 7.92 dBm

Spectrum Plot Value of Power	
802.11ac (VHT80)_Chain 0 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 0 / CH138 (U-NII-3 Band)**
 TX Channel Bandwidth 76.6 MHz Power 19.59 dBm	 TX Channel Bandwidth 6.53 MHz Power 5.38 dBm
802.11ac (VHT80)_Chain 1 / CH138 (U-NII-2C Band)	**802.11ac (VHT80)_Chain 1 / CH138 (U-NII-3 Band)**
 TX Channel Bandwidth 76.39 MHz Power 18.73 dBm	 TX Channel Bandwidth 6.54 MHz Power 4.87 dBm
802.11ax (HE20)_Chain 0 / CH144 (U-NII-2C Band)	**802.11ax (HE20)_Chain 0 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 15.93 MHz Power 17.48 dBm	 TX Channel Bandwidth 5.72 MHz Power 11.92 dBm
802.11ax (HE20)_Chain 1 / CH144 (U-NII-2C Band)	**802.11ax (HE20)_Chain 1 / CH144 (U-NII-3 Band)**
 TX Channel Bandwidth 16.1 MHz Power 16.9 dBm	 TX Channel Bandwidth 5.74 MHz Power 11.07 dBm

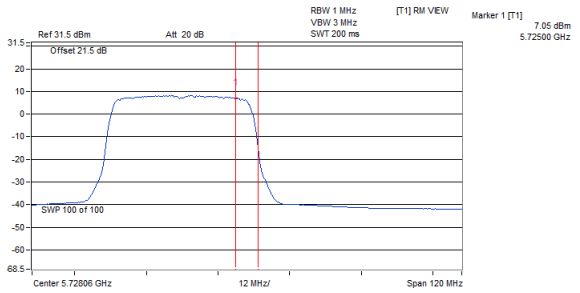
Spectrum Plot Value of Power

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



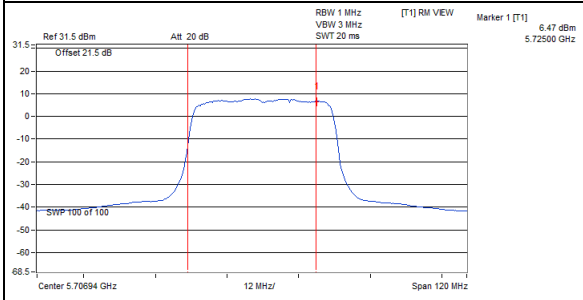
TX Channel Bandwidth 36.17 MHz Power 19.57 dBm

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



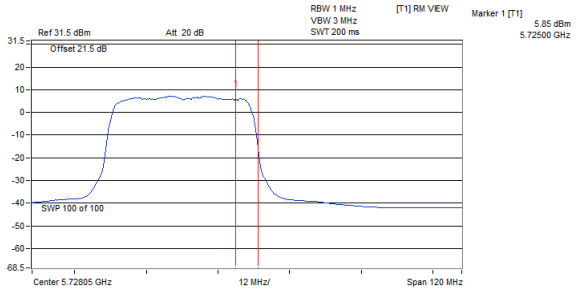
TX Channel Bandwidth 6.13 MHz Power 9.26 dBm

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



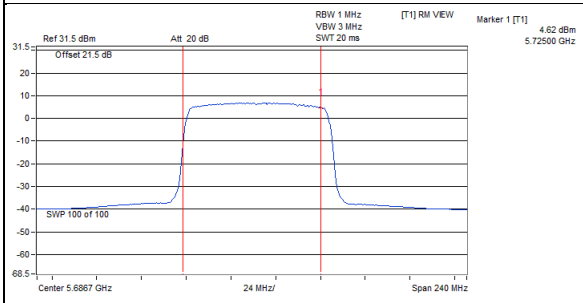
TX Channel Bandwidth 36.11 MHz Power 18.77 dBm

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



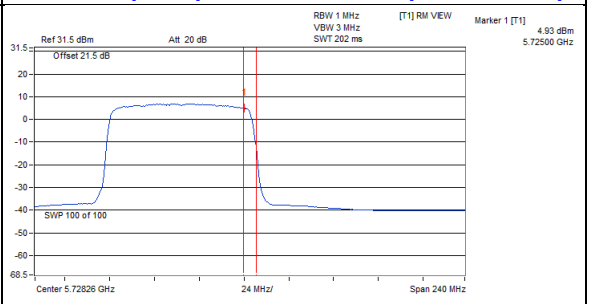
TX Channel Bandwidth 6.11 MHz Power 8.41 dBm

802.11ax (HE80)_Chain 0 / CH138 (U-NII-2C Band)



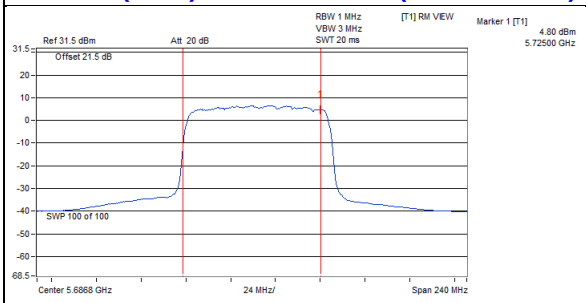
TX Channel Bandwidth 76.6 MHz Power 19.76 dBm

802.11ax (HE80)_Chain 0 / CH138 (U-NII-3 Band)



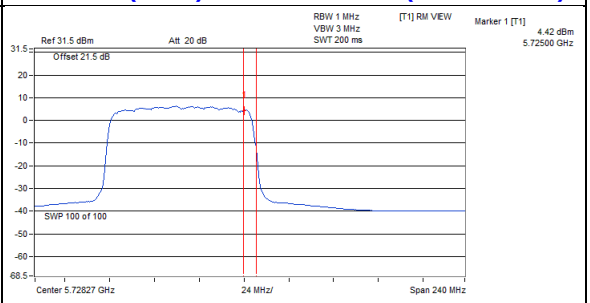
TX Channel Bandwidth 6.53 MHz Power 5.63 dBm

802.11ax (HE80)_Chain 1 / CH138 (U-NII-2C Band)



TX Channel Bandwidth 76.39 MHz Power 19.04 dBm

802.11ax (HE80)_Chain 1 / CH138 (U-NII-3 Band)



TX Channel Bandwidth 6.54 MHz Power 5.34 dBm

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.93	20.81
60	5300	20.82	20.84
64	5320	20.9	21.05
100	5500	20.83	20.95
116	5580	20.92	21.21
140	5700	20.93	20.98
144 (U-NII-2C Band)	5720	15.45	15.43

802.11ax (HE20)

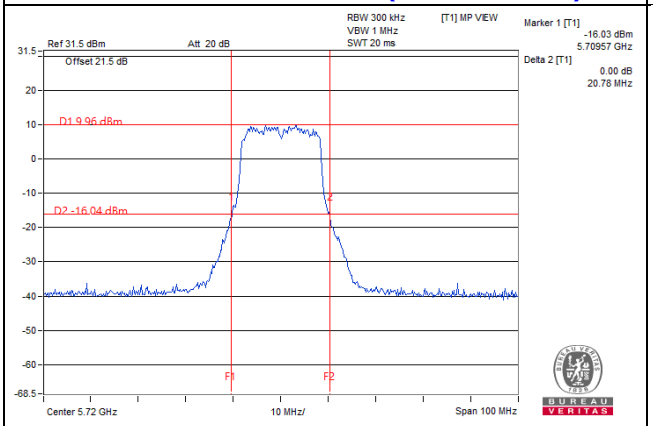
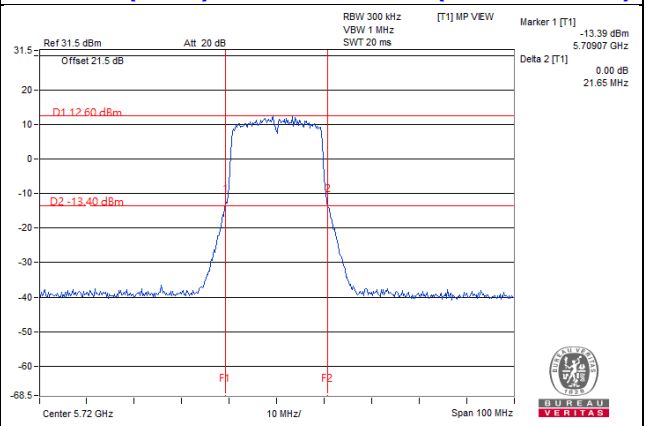
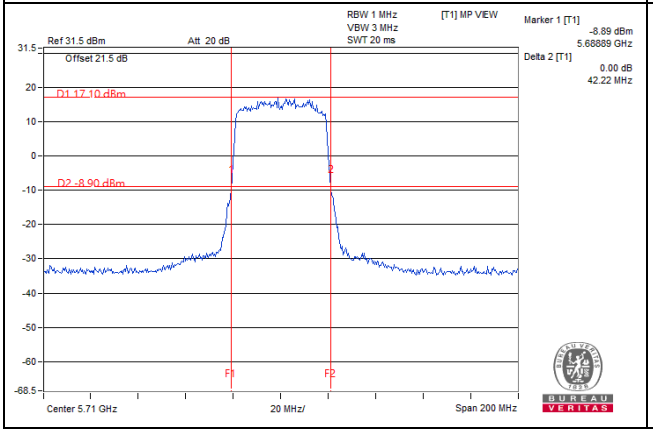
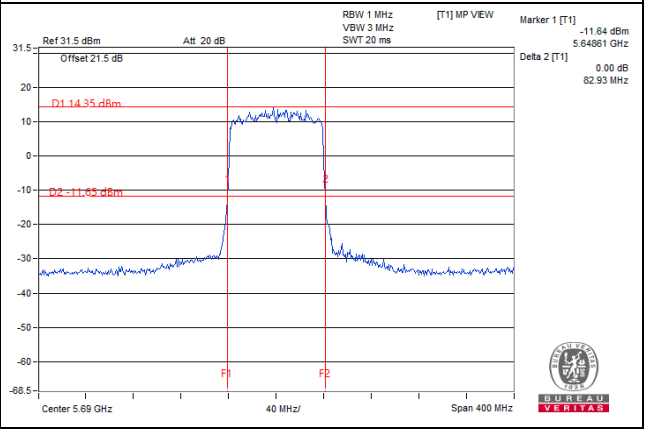
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	22.11	21.98
60	5300	22.21	22.01
64	5320	22.26	21.91
100	5500	21.75	22.31
116	5580	22	21.66
140	5700	21.99	21.86
144 (U-NII-2C Band)	5720	15.93	16.1

802.11ax (HE40)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	42.09	42.22
62	5310	42.5	42.62
102	5510	42.14	42.55
110	5550	42.46	42.4
134	5670	41.9	42.44
142 (U-NII-2C Band)	5710	36.17	36.11

802.11ax (HE80)

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	82.95	83.2
106	5530	82.94	83.28
138 (U-NII-2C Band)	5690	76.6	76.39

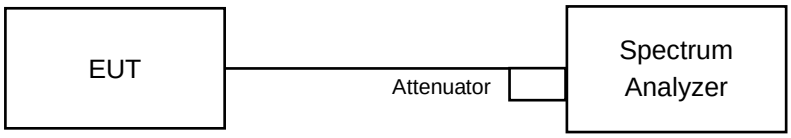
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH144 (U-NII-2C Band)	**802.11ax (HE20)_Chain 0 / CH144 (U-NII-2C Band)**
	
802.11ax (HE40)_Chain 1 / CH142 (U-NII-2C Band)	**802.11ax (HE80)_Chain 1 / CH138 (U-NII-2C Band)**
	

Note:

1. The 26dB bandwidth below 5725MHz = 5725MHz - Marker 1
2. The 26dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

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

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.44	16.44
60	5300	16.44	16.44
64	5320	16.44	16.44
100	5500	16.44	16.44
116	5580	16.44	16.44
140	5700	16.44	16.44
144 (U-NII-2C Band)	5720	13.28	13.28
144 (U-NII-3 Band)	5720	3.16	3.16

802.11ax (HE20)

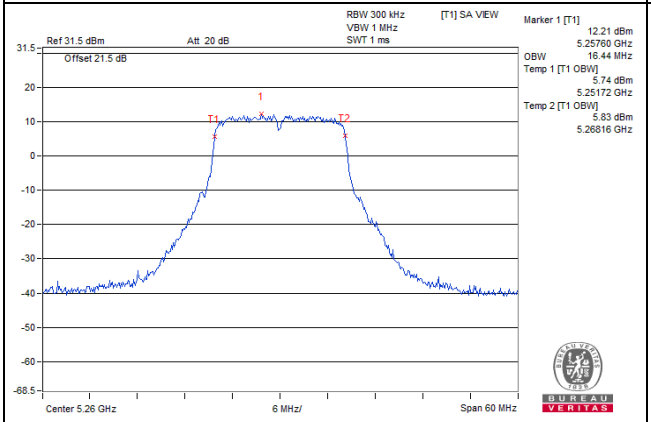
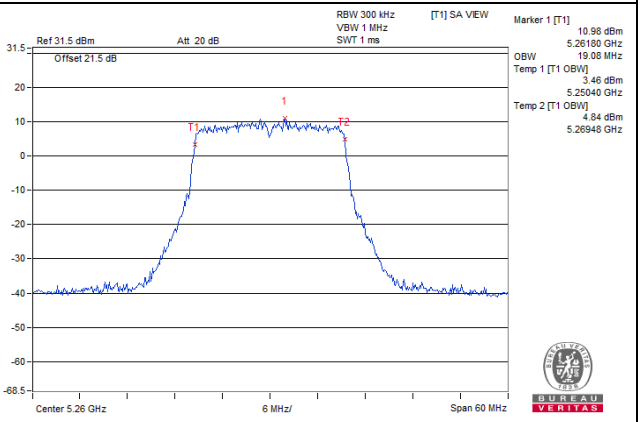
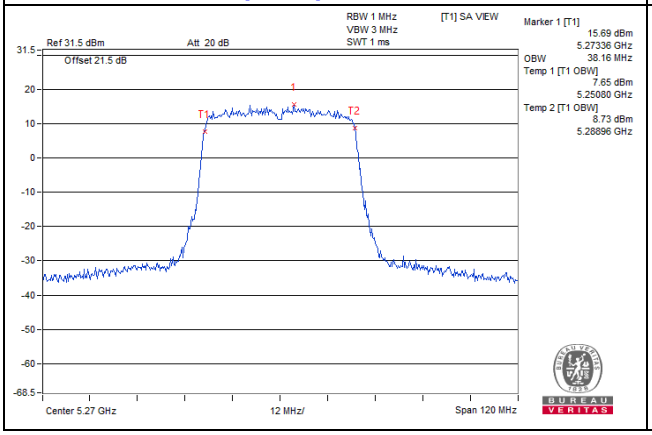
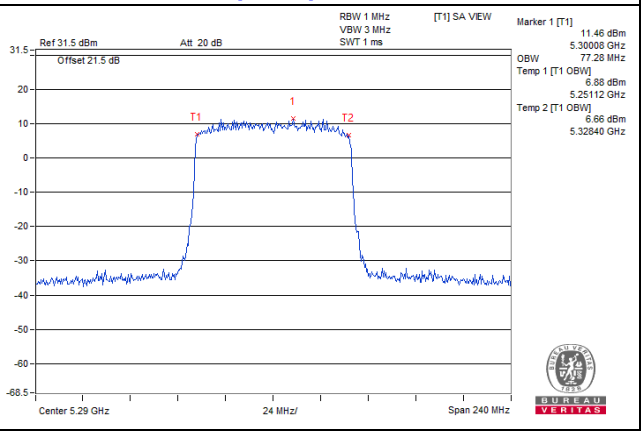
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	18.96	19.08
60	5300	18.96	18.96
64	5320	18.96	19.08
100	5500	19.08	19.08
116	5580	19.08	18.84
140	5700	18.96	18.96
144 (U-NII-2C Band)	5720	14.6	14.6
144 (U-NII-3 Band)	5720	4.48	4.48

802.11ax (HE40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	37.92	38.16
62	5310	37.92	37.92
102	5510	37.92	38.16
110	5550	38.16	38.16
134	5670	37.92	38.16
142 (U-NII-2C Band)	5710	33.96	33.96
142 (U-NII-3 Band)	5710	3.96	3.96

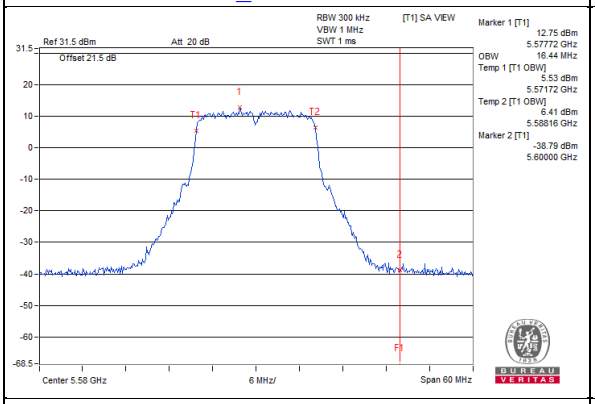
802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	77.28	77.28
106	5530	76.8	77.28
138 (U-NII-2C Band)	5690	73.88	73.88
138 (U-NII-3 Band)	5690	3.4	3.4

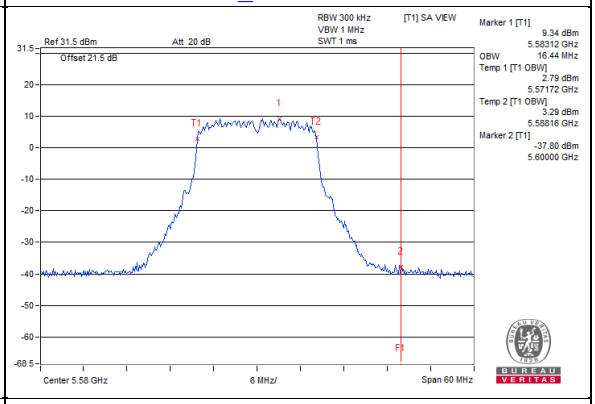
Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH52	**802.11ax (HE20)_Chain 1 / CH52**
	
802.11ax (HE40)_Chain 1 / CH54	**802.11ax (HE80)_Chain 0 / CH58**
	

Verify that the 5600 – 5650 MHz band is notched.
Test results demonstrating last channel shall not exceed the band edge on 5600~5650MHz

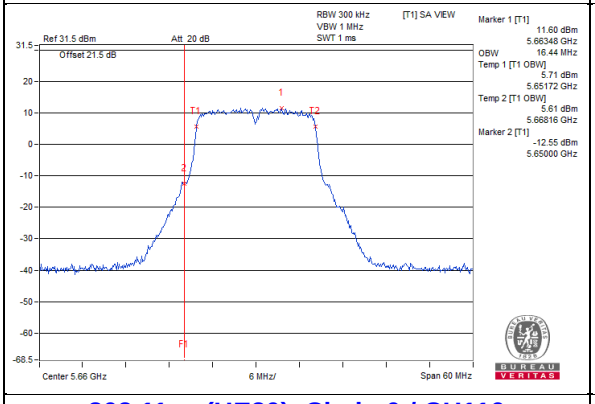
802.11a_Chain 0 / CH116



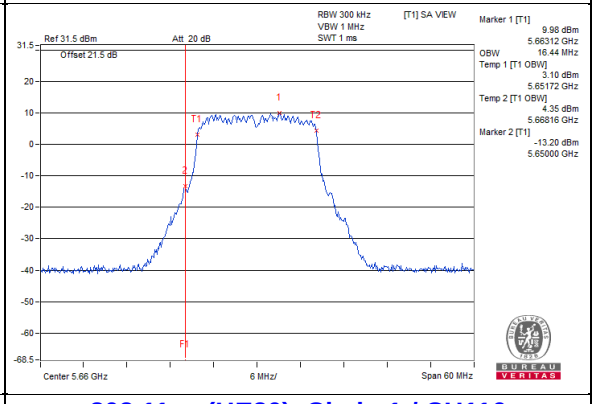
802.11a_Chain 1 / CH116



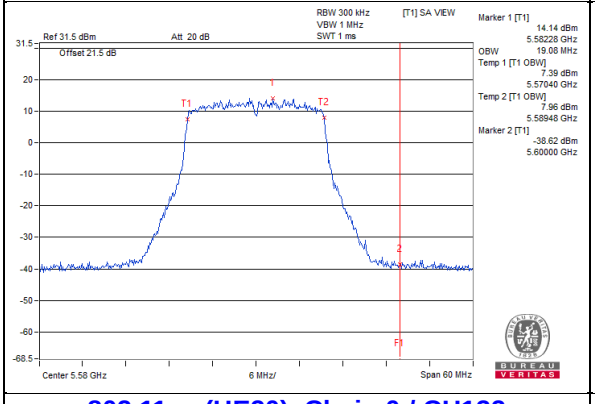
802.11a_Chain 0 / CH132



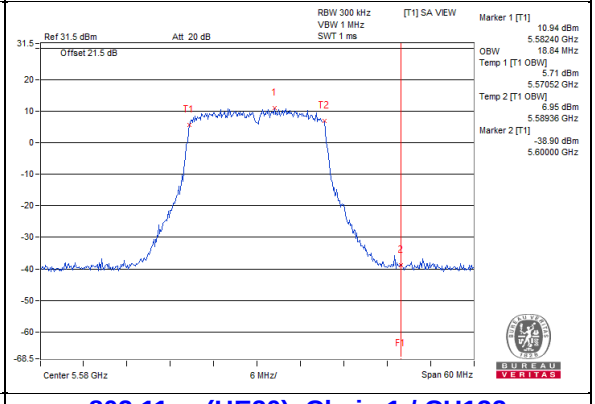
802.11a_Chain 1 / CH132



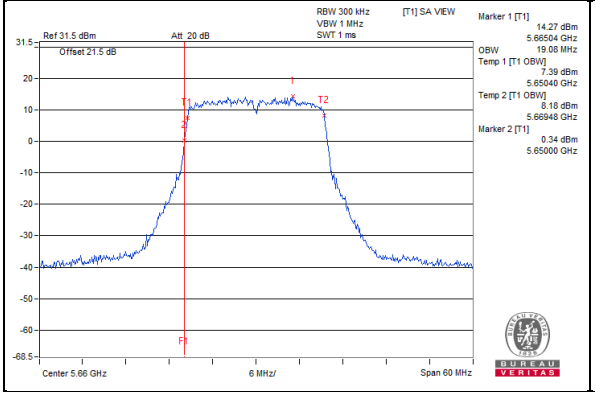
802.11ax (HE20)_Chain 0 / CH116



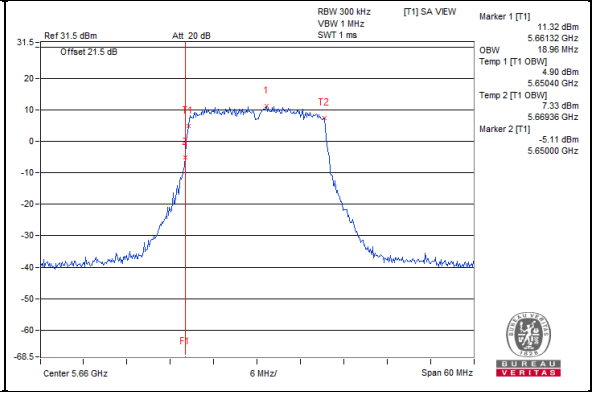
802.11ax (HE20)_Chain 1 / CH116



802.11ax (HE20)_Chain 0 / CH132

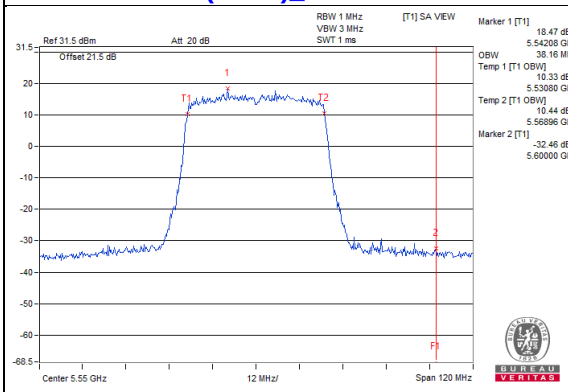


802.11ax (HE20)_Chain 1 / CH132

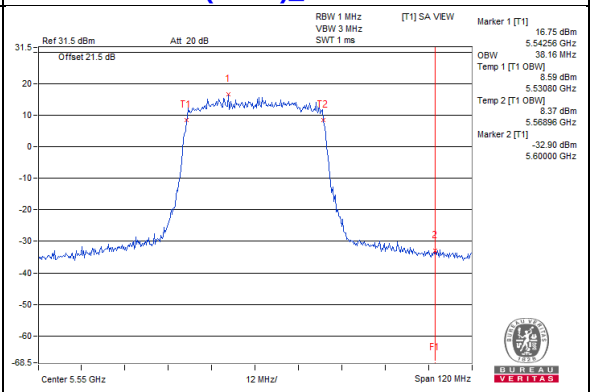


Verify that the 5600 / 5650 MHz band is notched.
Test results demonstrating last channel shall not exceed the band edge on 5600~5650MHz

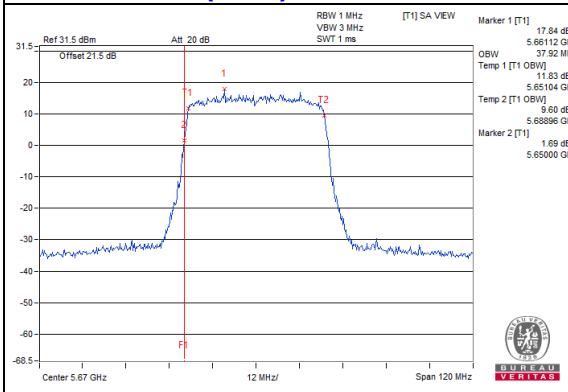
802.11ax (HE40)_Chain 0 / CH110



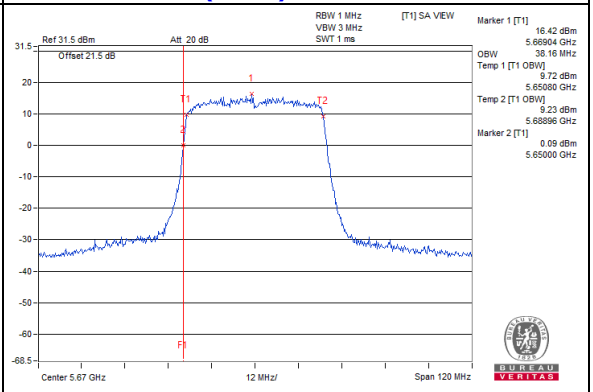
802.11ax (HE40)_Chain 1 / CH110



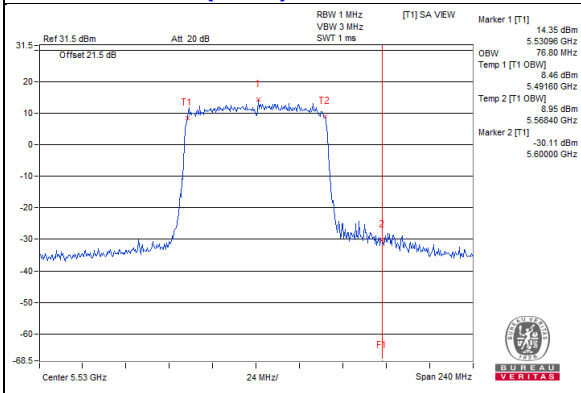
802.11ax (HE40)_Chain 0 / CH134



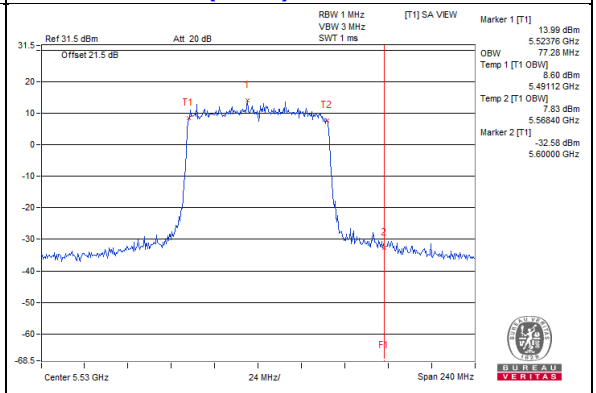
802.11ax (HE40)_Chain 1 / CH134



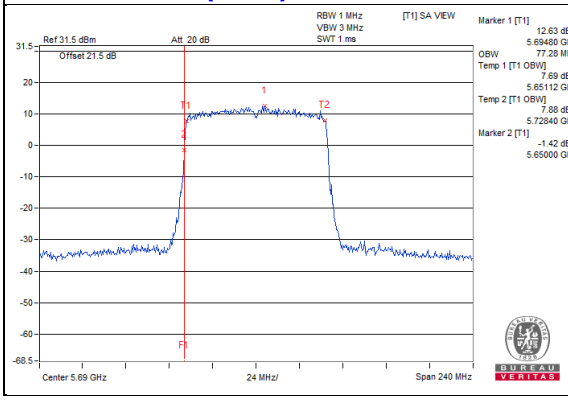
802.11ax (HE80)_Chain 0 / CH106



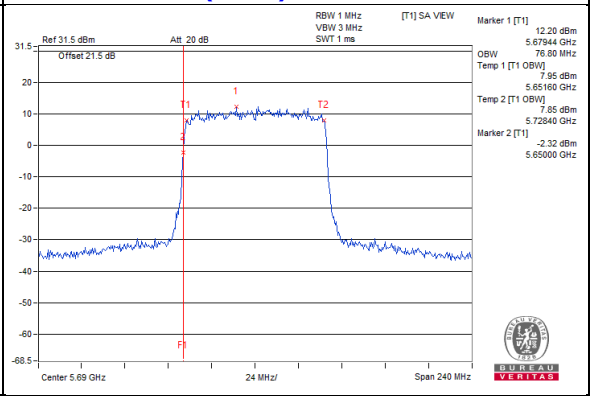
802.11ax (HE80)_Chain 1 / CH106



802.11ax (HE80)_Chain 0 / CH138



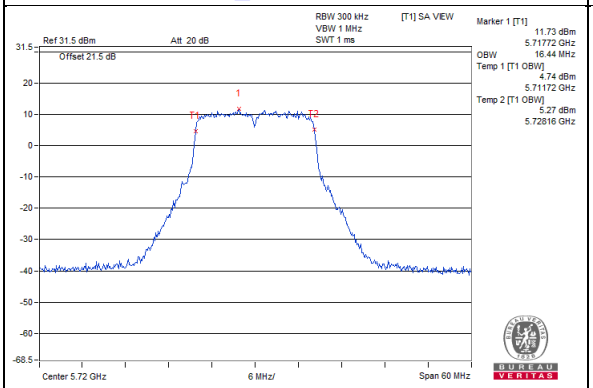
802.11ax (HE80)_Chain 1 / CH138



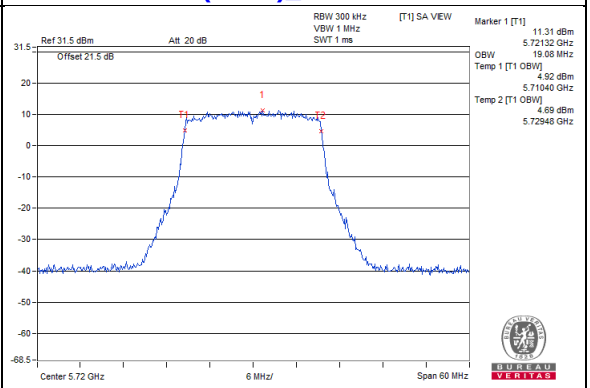
For channel straddling 5725MHz of OCP99% BW

Spectrum Plot Value of OCP99% BW

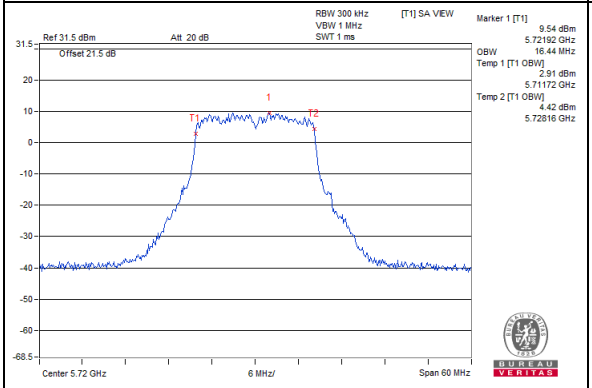
802.11a_Chain 0 / CH144



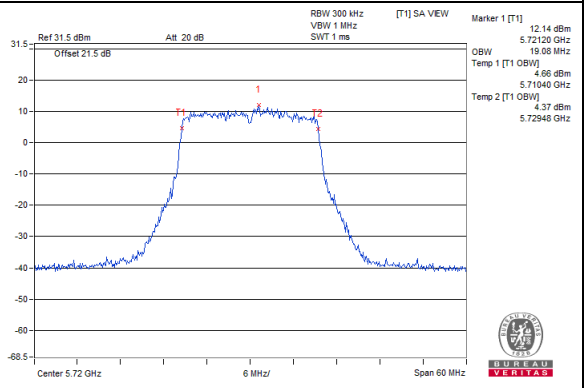
802.11ax (HE20)_Chain 0 / CH144



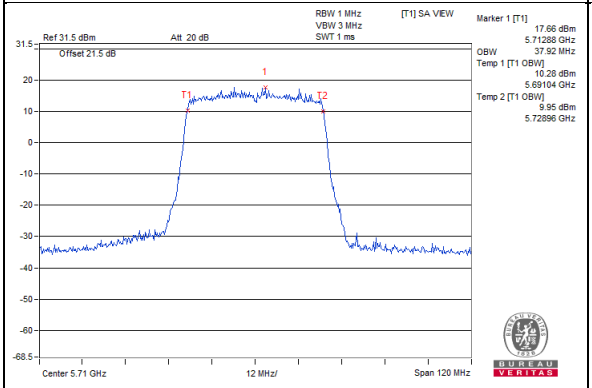
802.11a_Chain 1 / CH144



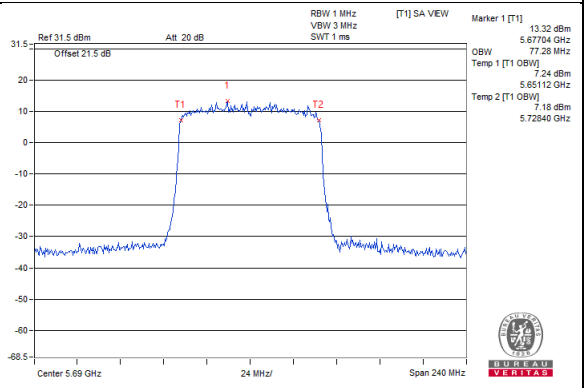
802.11ax (HE20)_Chain 1 / CH144



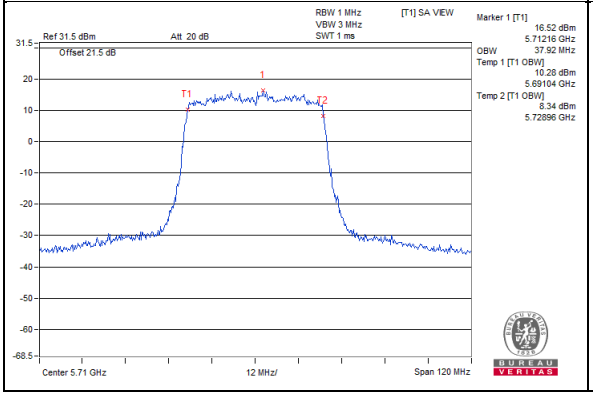
802.11ax (HE40)_Chain 0 / CH142



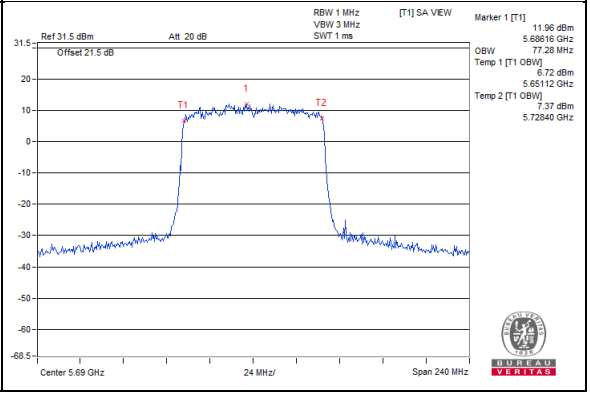
802.11ax (HE80)_Chain 0 / CH138



802.11ax (HE40)_Chain 1 / CH142



802.11ax (HE80)_Chain 1 / CH138



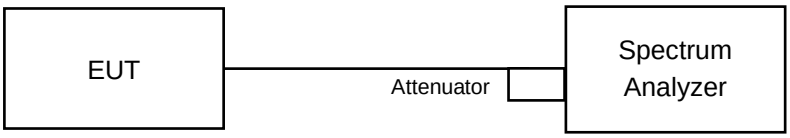
Note: The OCP99% bandwidth below 5725MHz = 5725MHz – Temp 1
The OCP99% bandwidth above 5725MHz = Temp 2 – 5725MHz

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-2

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

For U-NII-3 band:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

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

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	7.00	5.67	0.30	9.70	10.19	Pass
60	5300	7.08	5.42	0.30	9.64	10.19	Pass
64	5320	7.01	5.71	0.30	9.72	10.19	Pass
100	5500	7.24	6.20	0.30	10.06	10.19	Pass
116	5580	7.28	5.69	0.30	9.87	10.19	Pass
140	5700	6.50	5.81	0.30	9.48	10.19	Pass
144 (U-NII-2C Band)	5720	6.57	6.11	0.30	9.66	10.19	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.81-6) = 10.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	6.84	5.54	0.25	9.50	10.19	Pass
60	5300	7.05	5.66	0.25	9.67	10.19	Pass
64	5320	7.60	5.59	0.25	9.97	10.19	Pass
100	5500	7.32	6.22	0.25	10.06	10.19	Pass
116	5580	7.57	6.09	0.25	10.15	10.19	Pass
140	5700	6.95	6.45	0.25	9.96	10.19	Pass
144 (U-NII-2C Band)	5720	6.89	6.51	0.25	9.96	10.19	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.81-6) = 10.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

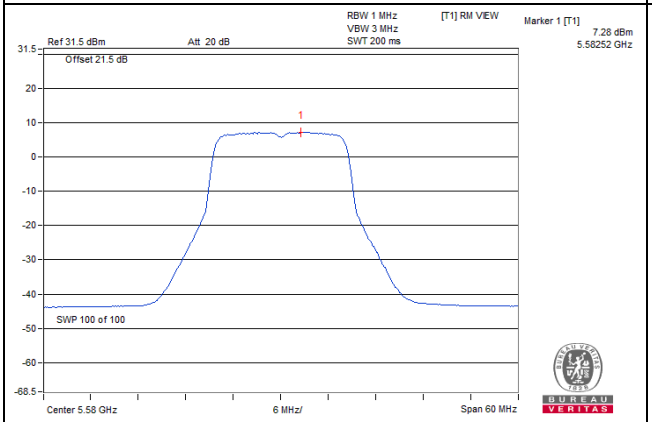
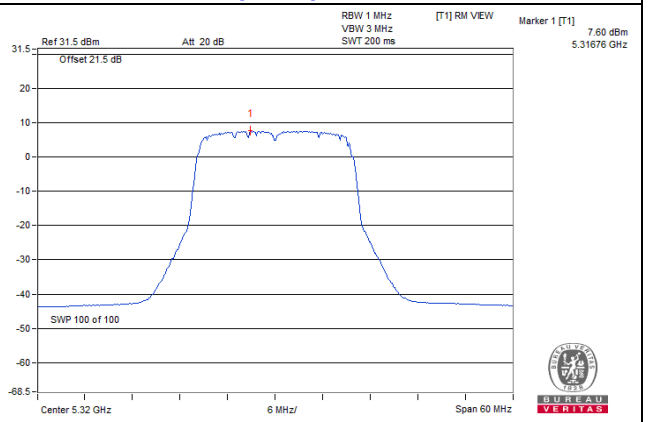
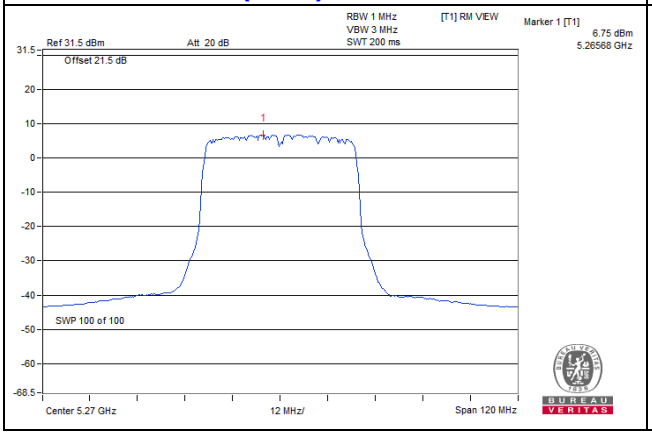
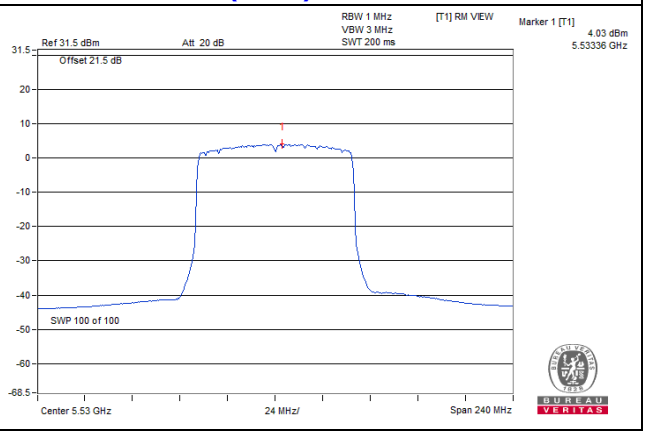
Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	6.69	5.65	0.21	9.42	10.19	Pass
62	5310	6.40	5.12	0.21	9.02	10.19	Pass
102	5510	6.60	5.45	0.21	9.28	10.19	Pass
110	5550	6.67	4.96	0.21	9.12	10.19	Pass
134	5670	5.84	5.37	0.21	8.83	10.19	Pass
142 (U-NII-2C Band)	5710	6.59	5.76	0.21	9.41	10.19	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.81-6) = 10.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	1.61	0.15	0.28	4.23	10.19	Pass
106	5530	3.90	2.72	0.28	6.64	10.19	Pass
138 (U-NII-2C Band)	5690	2.78	2.26	0.28	5.81	10.19	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 11-(6.81-6) = 10.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH116	**802.11ax (HE20)_Chain 0 / CH64**
	
802.11ax (HE40)_Chain 0 / CH54	**802.11ax (HE80)_Chain 0 / CH106**
	

For U-NII-3 band:

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)		Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
144 (U-NII-3 Band)	5720	2.76	0.00	0.30	4.91	7.13	29.19	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 = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.81-6) = 29.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)		Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
144 (U-NII-3 Band)	5720	1.00	0.24	0.25	3.89	6.11	29.19	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 = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.81-6) = 29.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)		Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
142 (U-NII-3 Band)	5710	0.20	-1.34	0.21	2.72	4.94	29.19	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 = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.81-6) = 29.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

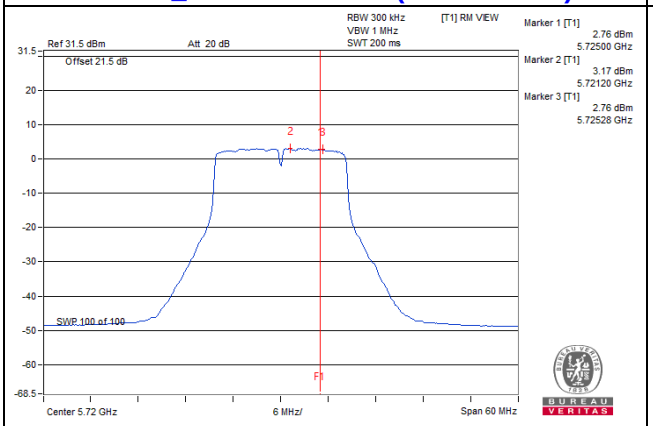
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)		Duty Factor (dB)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1					
138 (U-NII-3 Band)	5690	-4.49	-4.47	0.28	-1.19	1.03	29.19	Pass

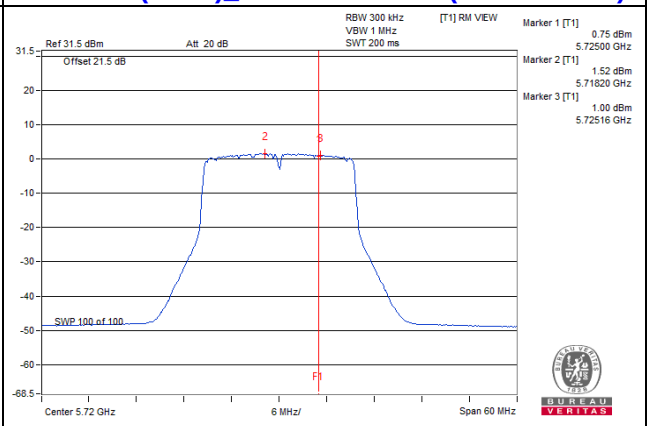
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.81-6) = 29.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

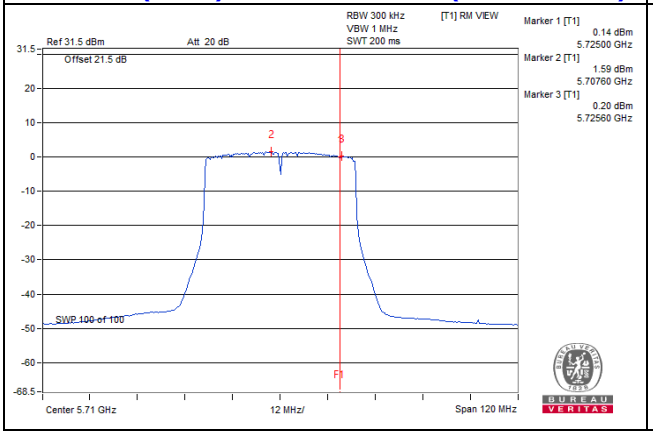
802.11a_Chain 0 / CH144 (U-NII-3 Band)



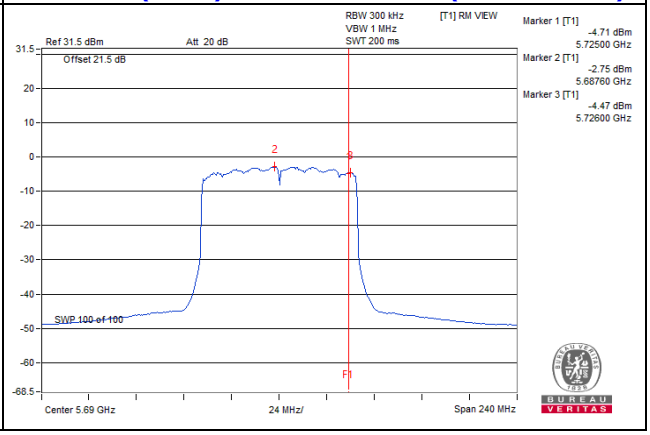
802.11ax (HE20)_Chain 0 / CH144 (U-NII-3 Band)



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



802.11ax (HE80)_Chain 1 / CH138 (U-NII-3 Band)

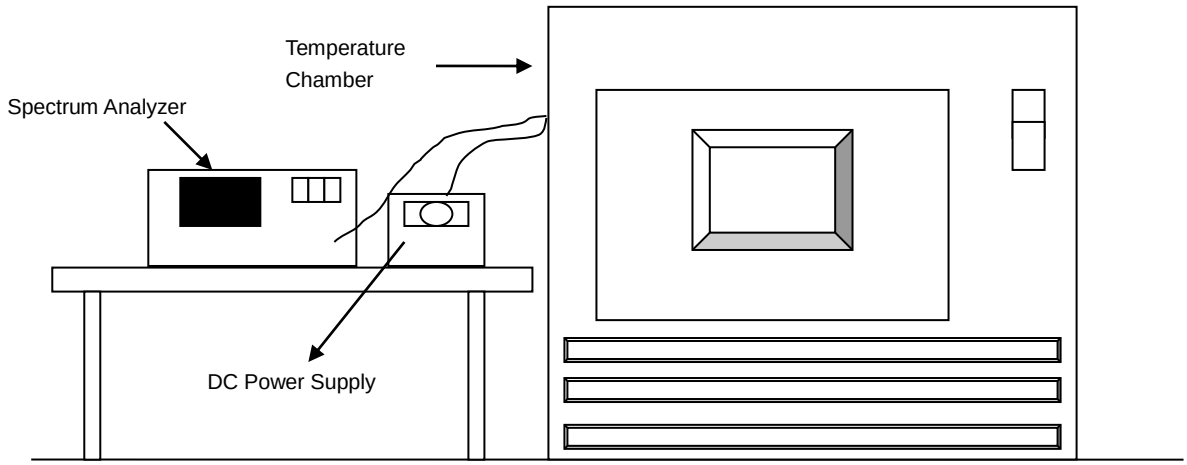


4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 Minutes.

e. Repeat step (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	12	5259.9913	Pass	5259.9915	Pass	5259.9951	Pass	5259.9912	Pass
40	12	5259.986	Pass	5259.9873	Pass	5259.9912	Pass	5259.9873	Pass
30	12	5259.9841	Pass	5259.9845	Pass	5259.9818	Pass	5259.9851	Pass
20	12	5259.9867	Pass	5259.9878	Pass	5259.9905	Pass	5259.9878	Pass
10	12	5259.99	Pass	5259.9918	Pass	5259.9934	Pass	5259.992	Pass
0	12	5259.9857	Pass	5259.984	Pass	5259.9832	Pass	5259.9872	Pass
-10	12	5260.0235	Pass	5260.0214	Pass	5260.023	Pass	5260.0226	Pass
-20	12	5259.9974	Pass	5259.9995	Pass	5259.9976	Pass	5259.9981	Pass

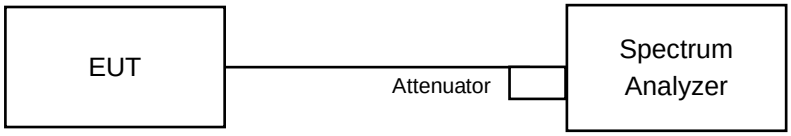
Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	13.8	5259.9874	Pass	5259.9886	Pass	5259.99	Pass	5259.987	*Pass*
	12	5259.9867	Pass	5259.9878	Pass	5259.9905	Pass	5259.9878	*Pass*
	10.2	5259.9874	Pass	5259.9869	Pass	5259.9904	Pass	5259.9882	*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

CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (U-NII-3 Band)	5720	2.87	3.15	0.5	Pass

802.11ax (HE20)

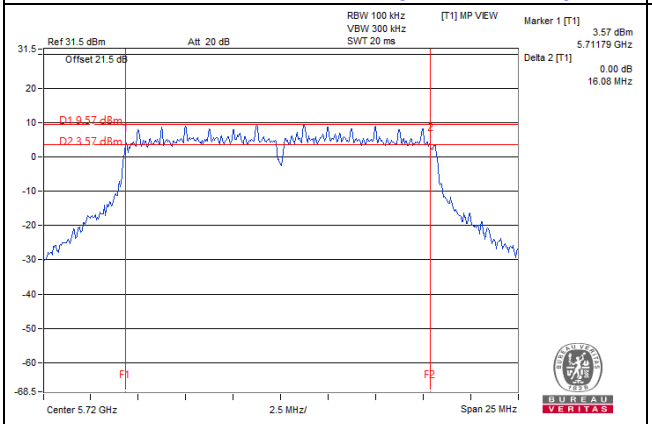
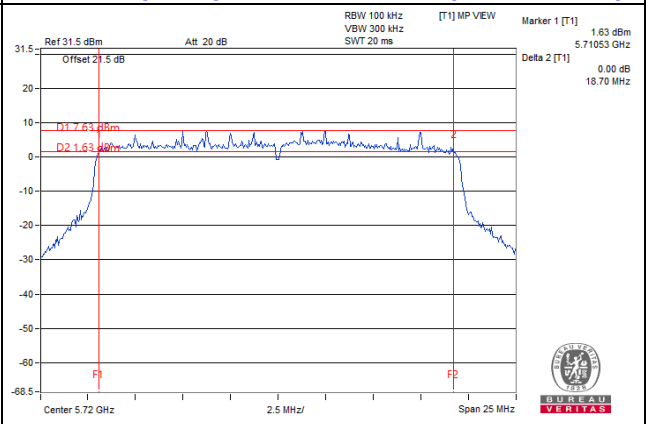
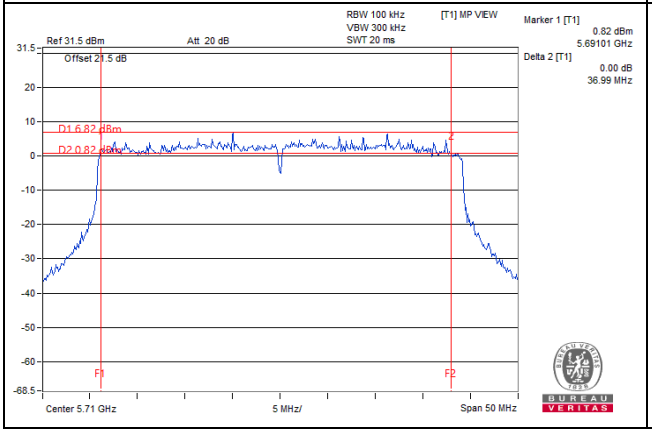
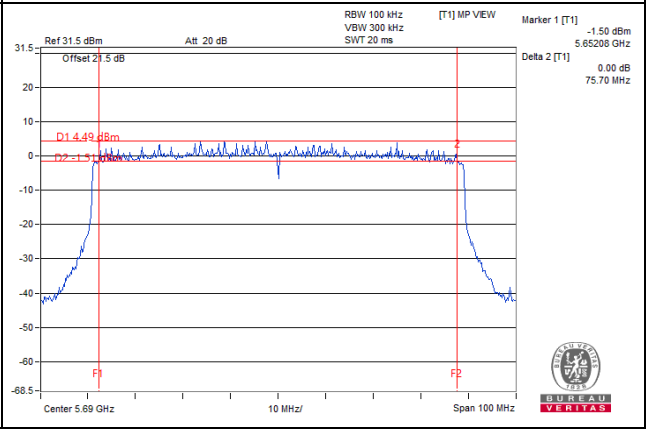
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144 (U-NII-3 Band)	5720	4.28	4.23	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142 (U-NII-3 Band)	5710	3.91	3	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138 (U-NII-3 Band)	5690	2.78	3.17	0.5	Pass

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

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

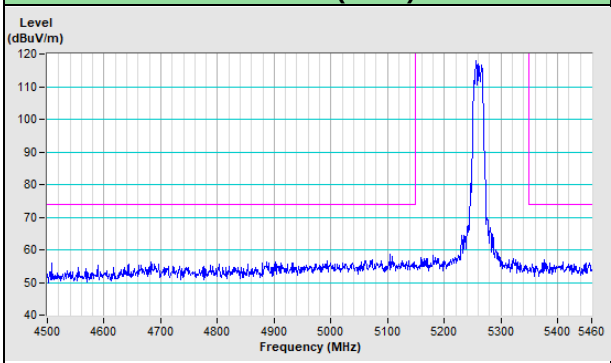
5 Pictures of Test Arrangements

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

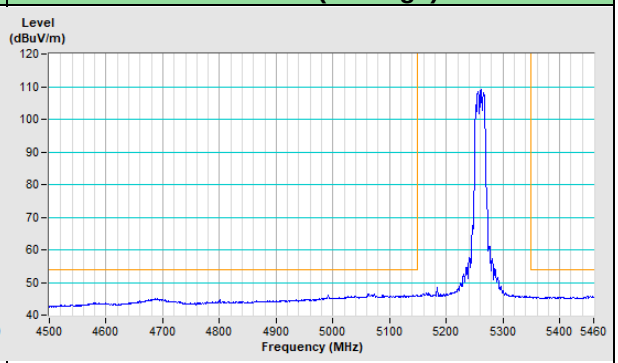
Annex A - Band-Edge Measurement (For U-NII-2A, U-NII-2C band)

802.11a Channel 52

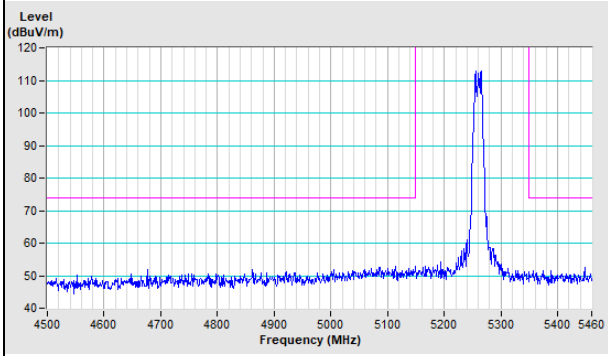
Horizontal (Peak)



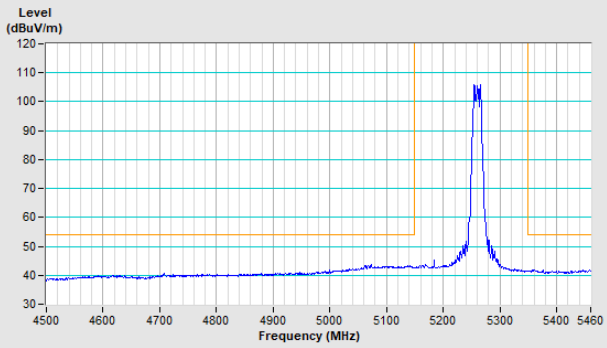
Horizontal (Average)



Vertical (Peak)

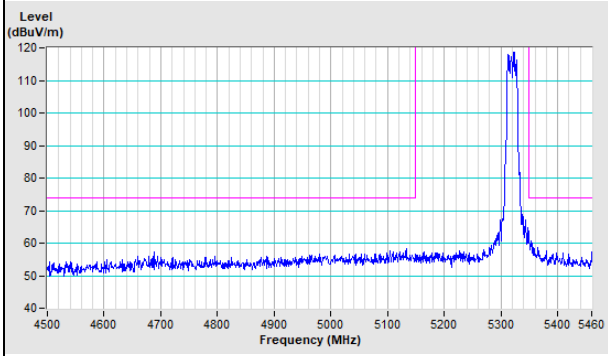


Vertical (Average)

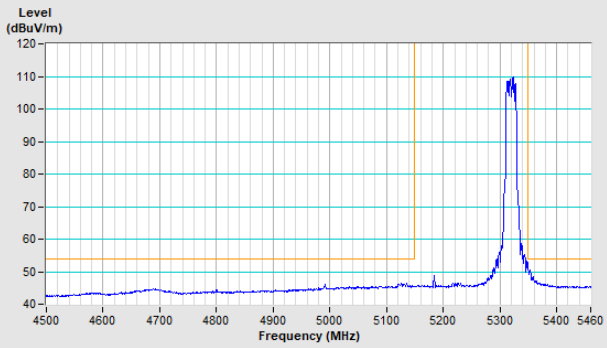


802.11a Channel 64

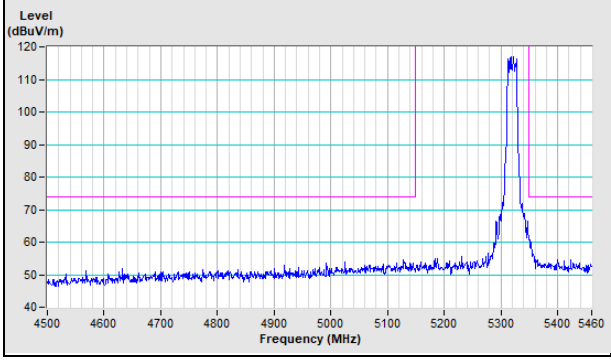
Horizontal (Peak)



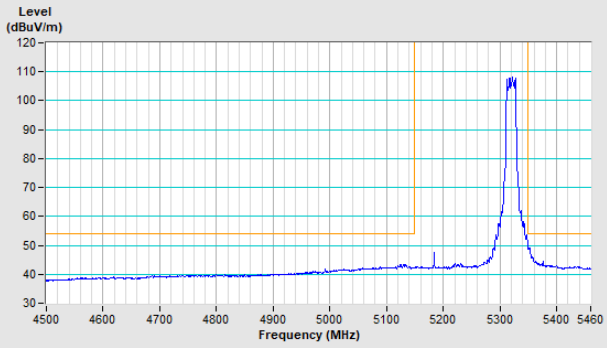
Horizontal (Average)

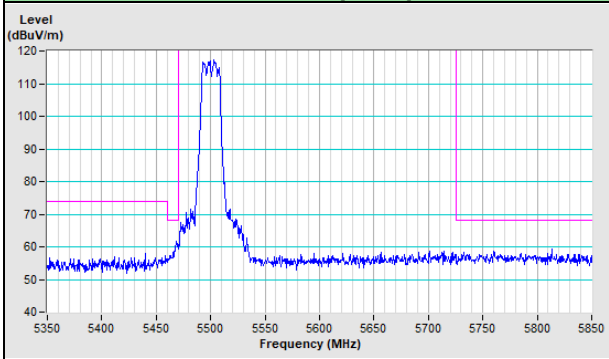
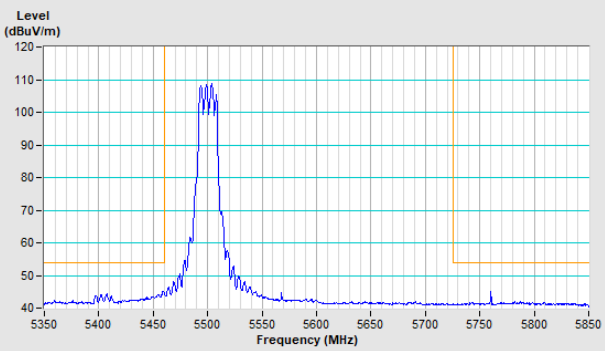
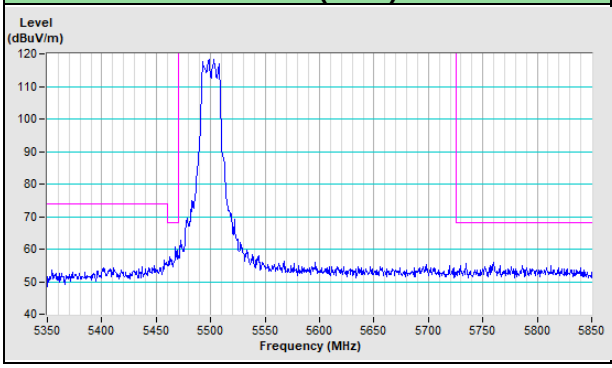
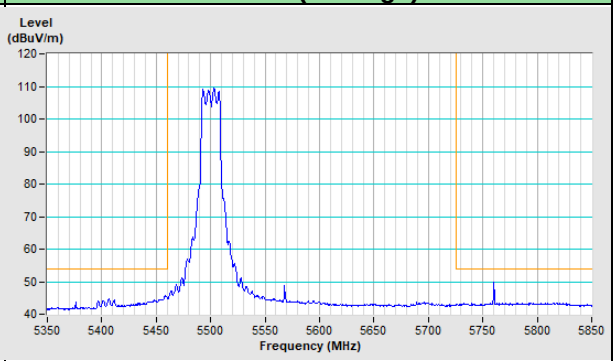


Vertical (Peak)



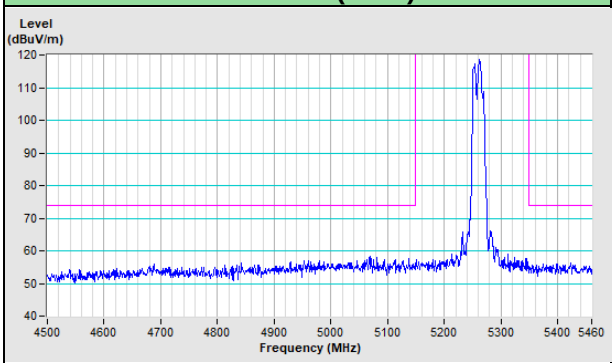
Vertical (Average)



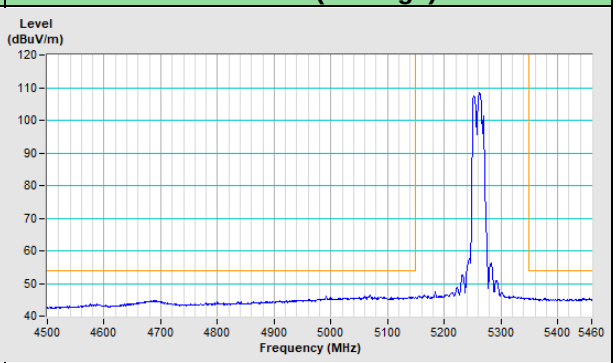
802.11a Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE20) Channel 52

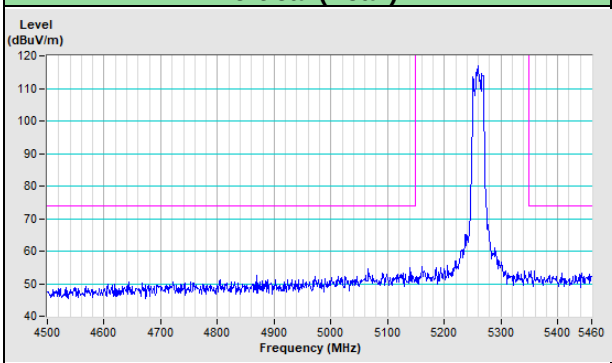
Horizontal (Peak)



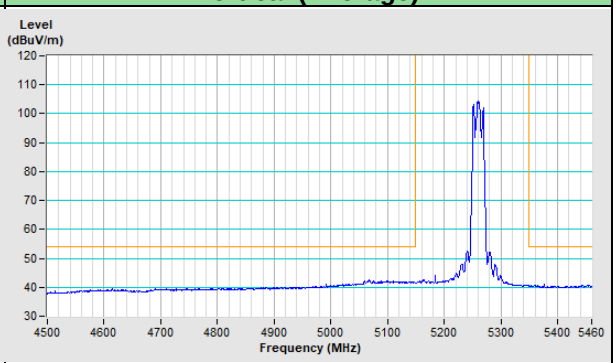
Horizontal (Average)



Vertical (Peak)

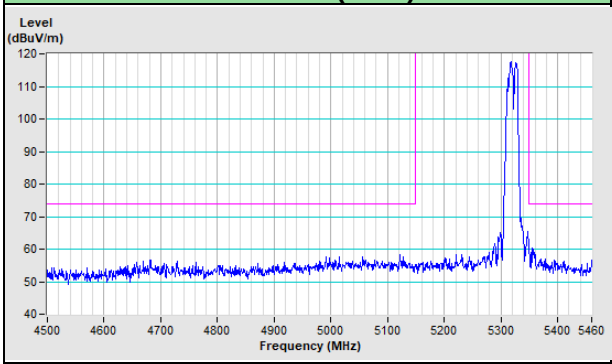


Vertical (Average)

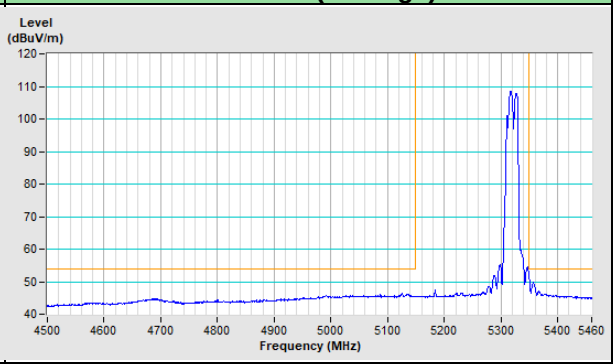


802.11ax (HE20) Channel 64

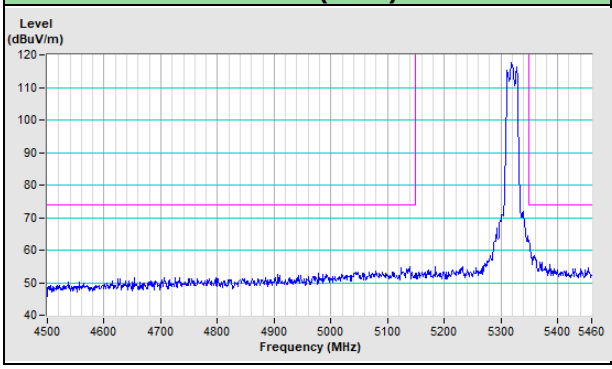
Horizontal (Peak)



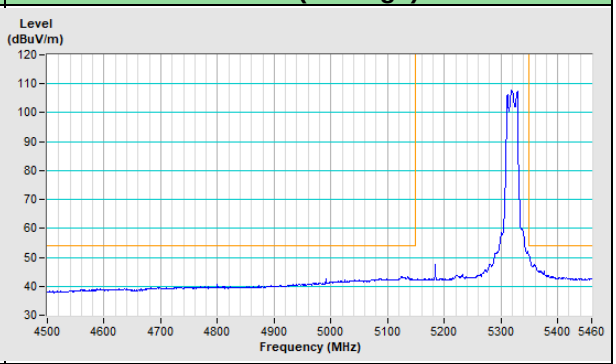
Horizontal (Average)

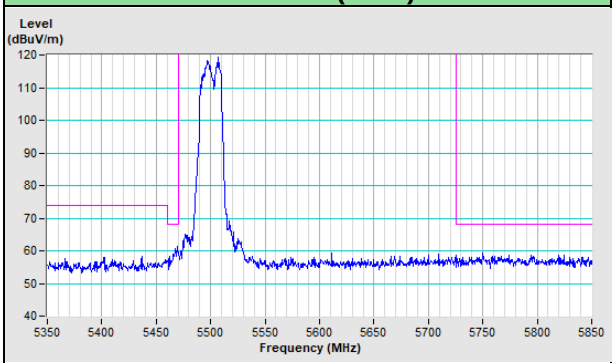
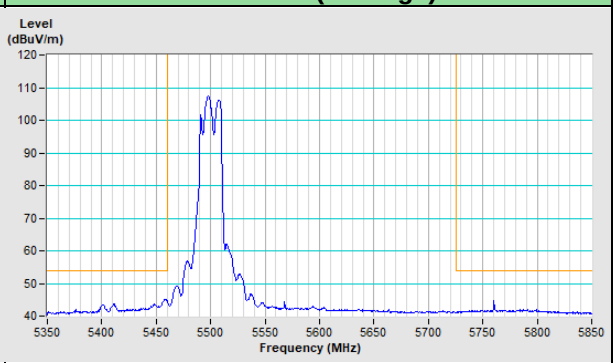
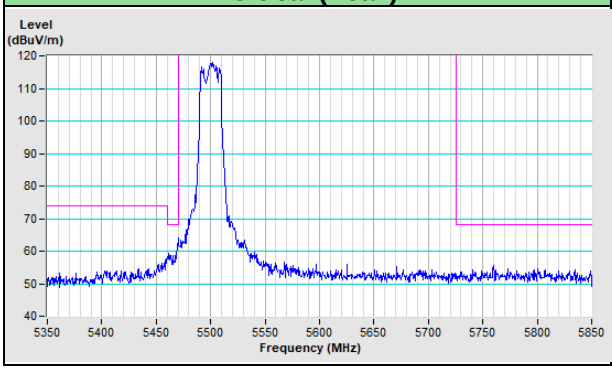
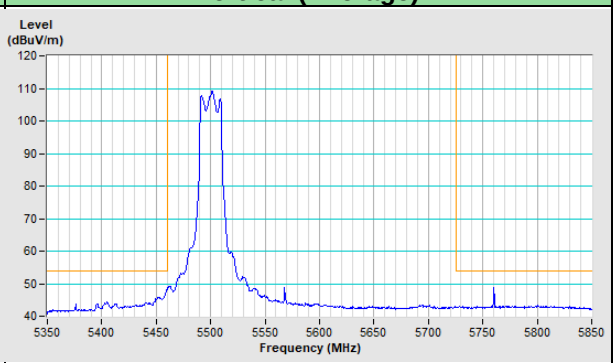


Vertical (Peak)



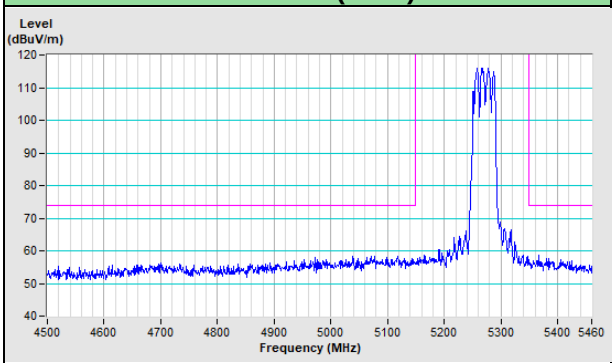
Vertical (Average)



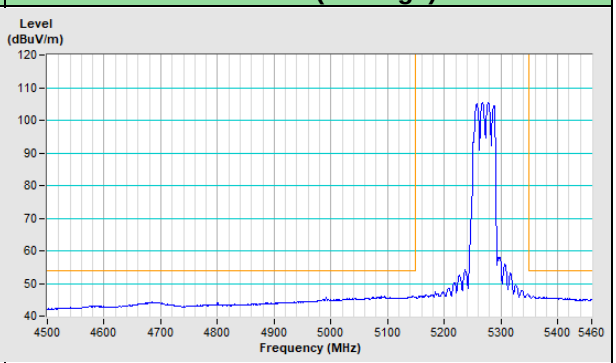
802.11ax (HE20) Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 54

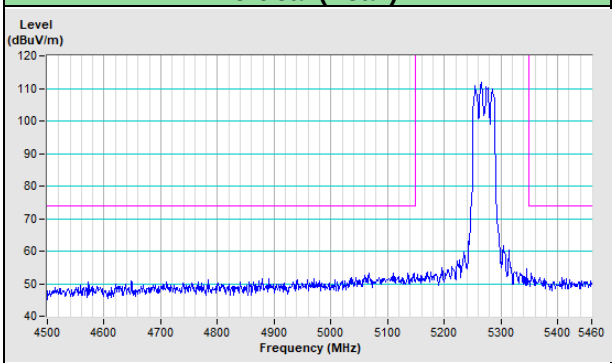
Horizontal (Peak)



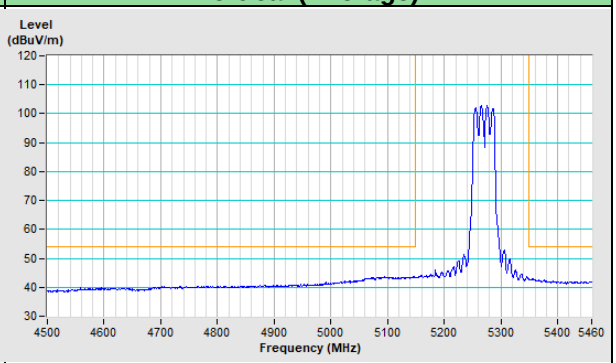
Horizontal (Average)



Vertical (Peak)

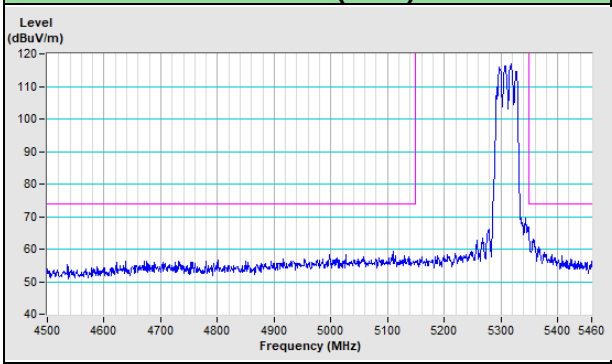


Vertical (Average)

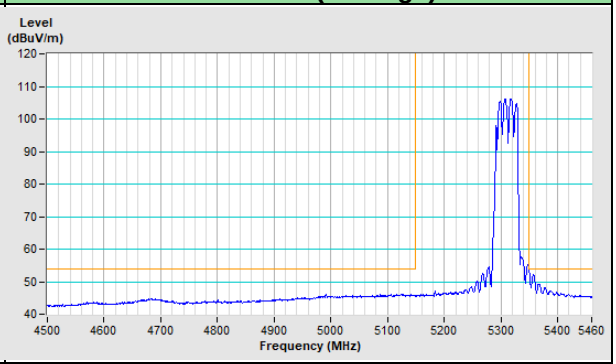


802.11ax (HE40) Channel 62

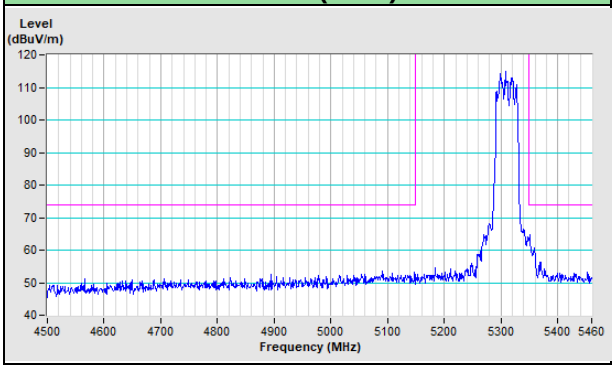
Horizontal (Peak)



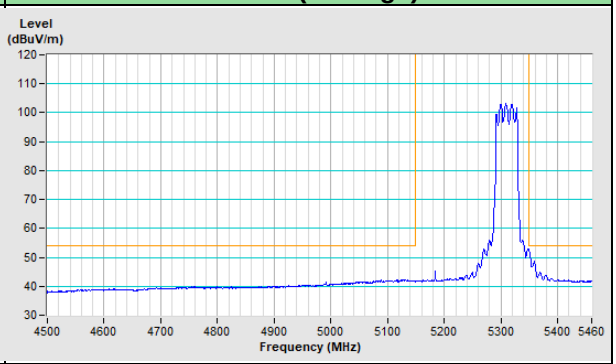
Horizontal (Average)

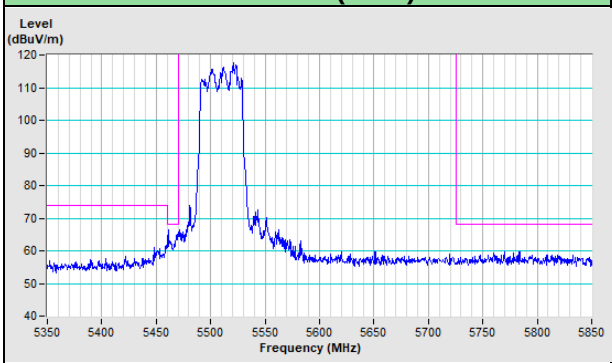
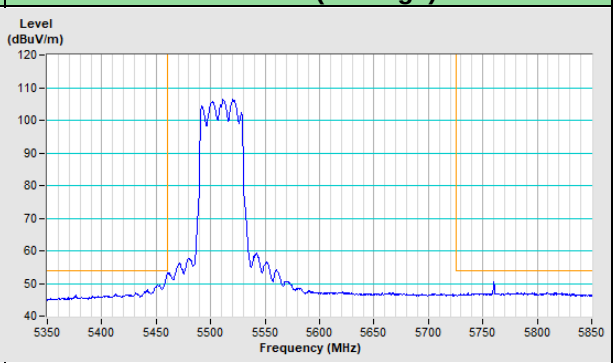
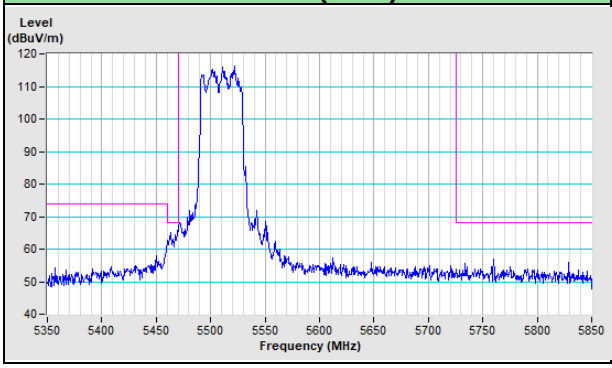
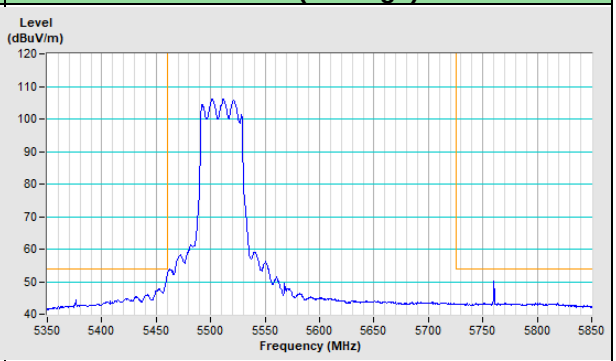


Vertical (Peak)



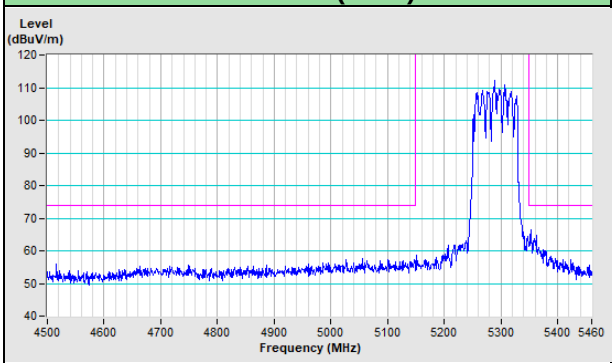
Vertical (Average)



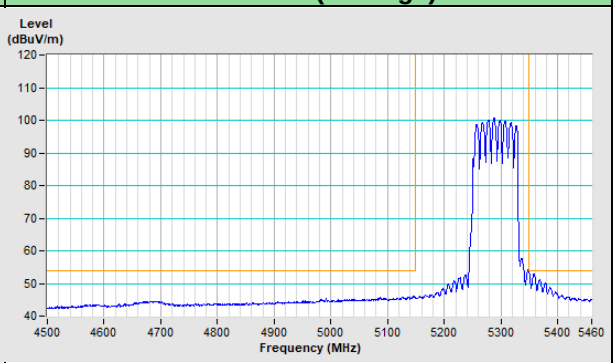
802.11ax (HE40) Channel 102	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE80) Channel 58

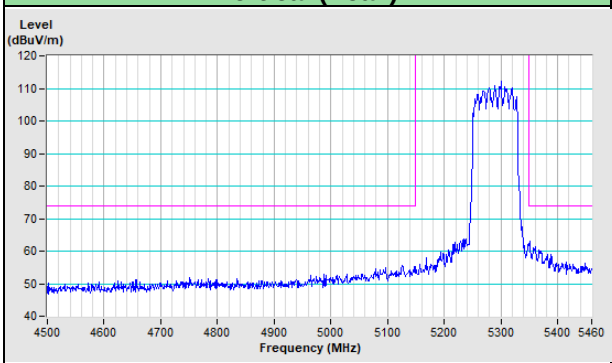
Horizontal (Peak)



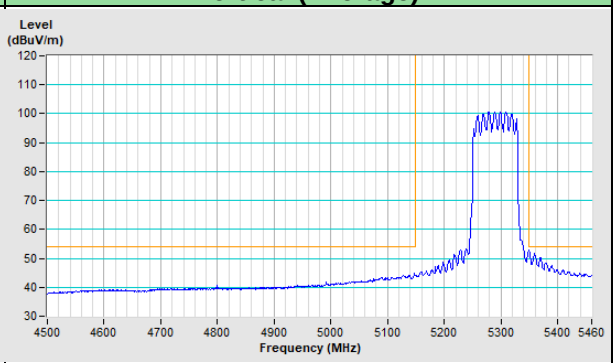
Horizontal (Average)



Vertical (Peak)

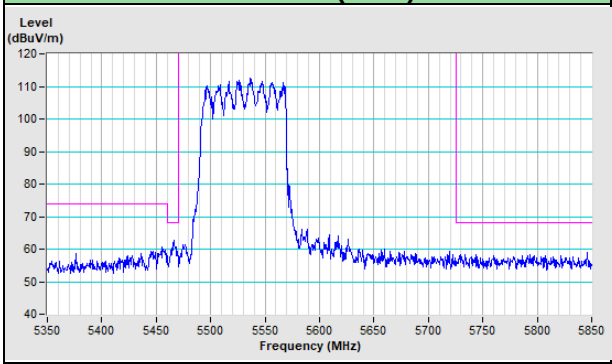


Vertical (Average)

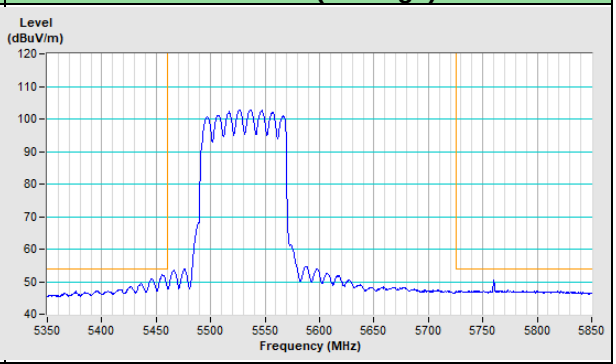


802.11ax (HE80) Channel 106

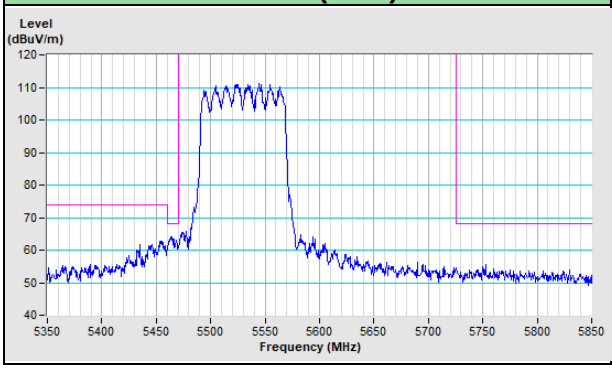
Horizontal (Peak)



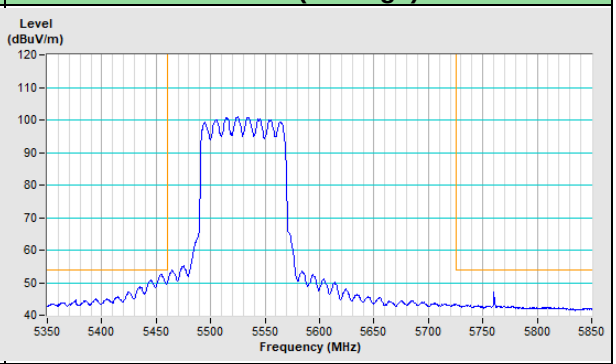
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



Appendix – Information of the Testing Laboratories

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

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

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

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