FCC Test Report

Report No.:	RFBAOZ-WTW-P21060932-1
FCC ID:	WT8DNWAP440
Test Model:	AP440
Received Date:	2021/7/8
Test Date:	2021/7/19 ~ 2021/8/17
Issued Date:	2021/9/22
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

Testing Laboratory
2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBAOZ-WTW-P21060932-1	Original release.	2021/9/22

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:** 2021/9/22

Phoenix Huang / Specialist

Approved by : , **Date:** 2021/9/22

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 -3.99 dB at 22.82422 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 5150.00 MHz, 15720.00 MHz and 17355.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

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

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

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	5.18 ~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	**CDD Mode:** **5.18 ~ 5.24 GHz (Outdoor):** 51.796 mW **5.18 ~ 5.24 GHz (Indoor):** 660.155 mW **5.745 ~ 5.825 GHz:** 741.793 mW **Beamforming Mode:** **5.18 ~ 5.24 GHz (Outdoor):** 25.62 mW **5.18 ~ 5.24 GHz (Indoor):** 660.155 mW **5.745 ~ 5.825 GHz:** 670.417 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. 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)

2. 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.		

3. 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

4. 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)

5. 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.

6. 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.
7. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

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

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

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

Channel	Frequency
155	5775 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	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0

Radiated Emission Test (Below 1GHz):

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

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

Power Line Conducted Emission Test:

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

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

Antenna Port Conducted Measurement:

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

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		42	42	OFDM	BPSK	MCS0
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		155	155	OFDM	BPSK	MCS0
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0
Beamforming Mode (output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80)		42	42	OFDM	BPSK	MCS0
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80)		155	155	OFDM	BPSK	MCS0
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0

Test Condition:

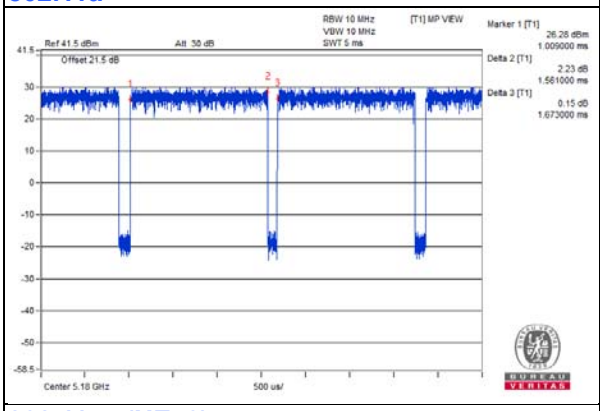
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	25deg. C, 66~70%RH	120Vac, 60Hz	Tom Yang, Noah Chang
RE<1G	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
PLC	25deg. C, 66%RH	120Vac, 60Hz	Tom Yang
APCM	24deg. C, 68%RH	120Vac, 60Hz	Eric Peng

3.3 Duty Cycle of Test Signal

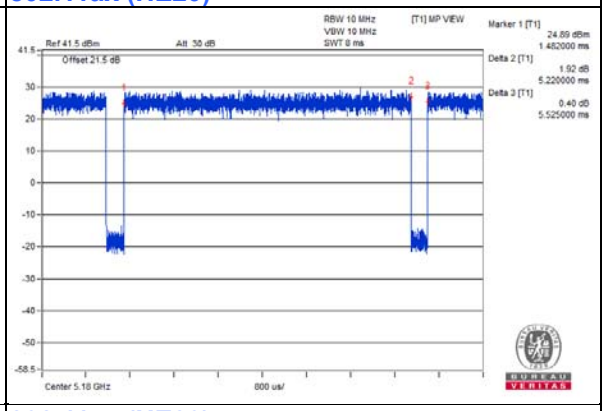
Duty cycle of test signal is < 98%, duty factor shall be considered.

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

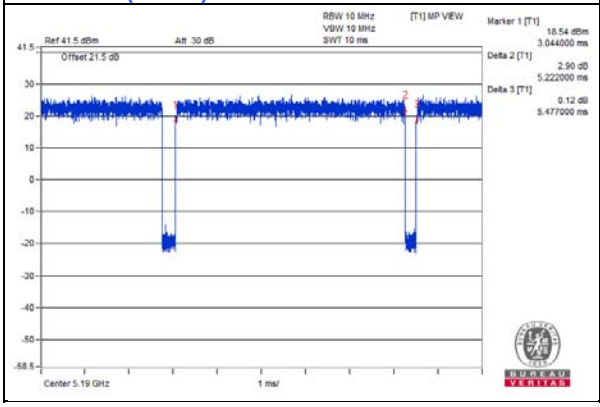
802.11a



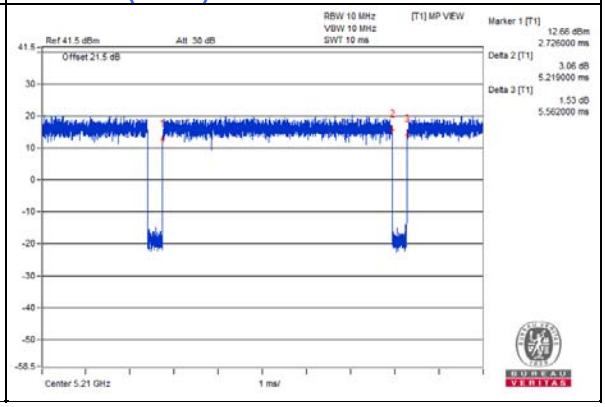
802.11ax (HE20)



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

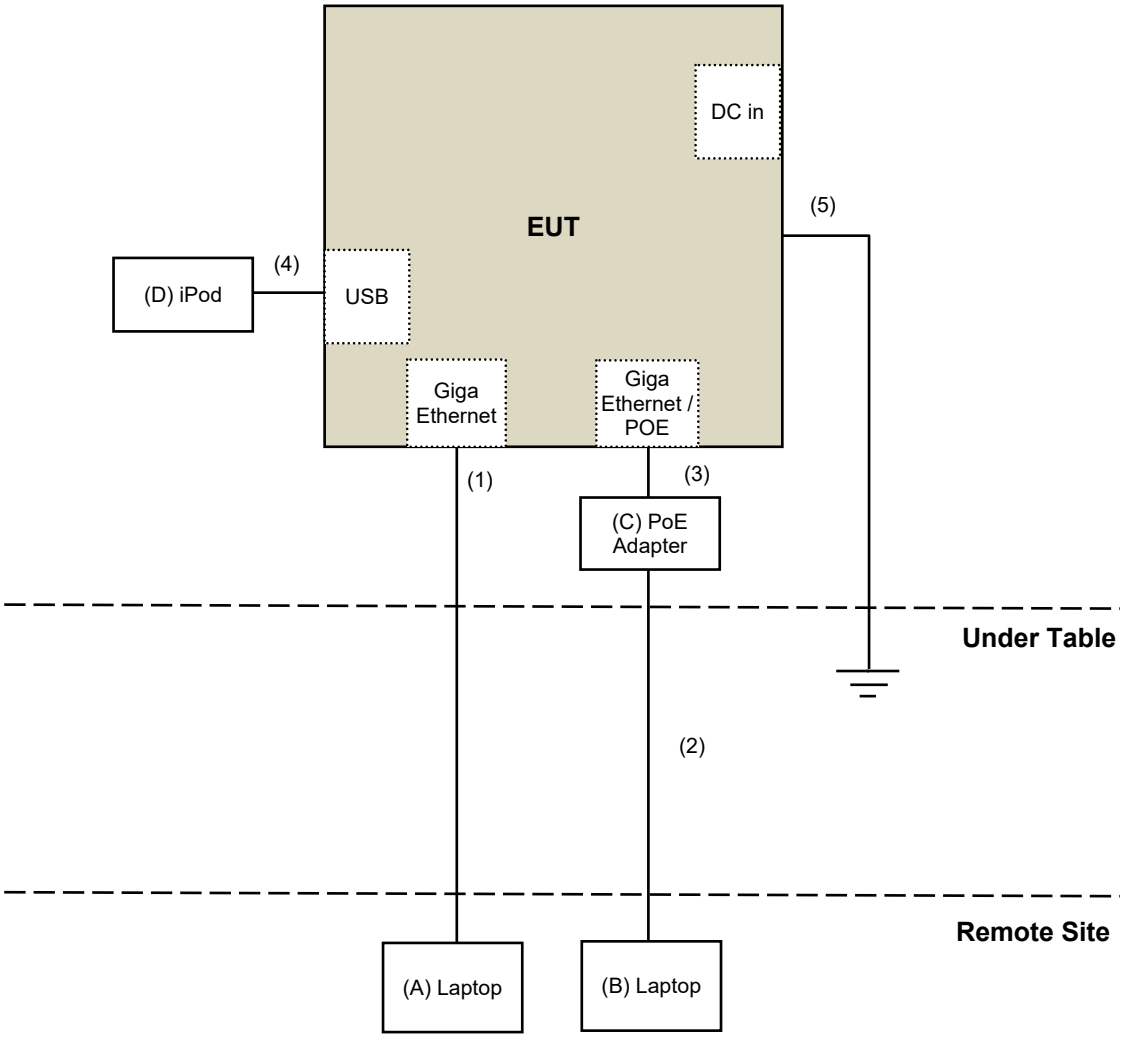
Note:

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

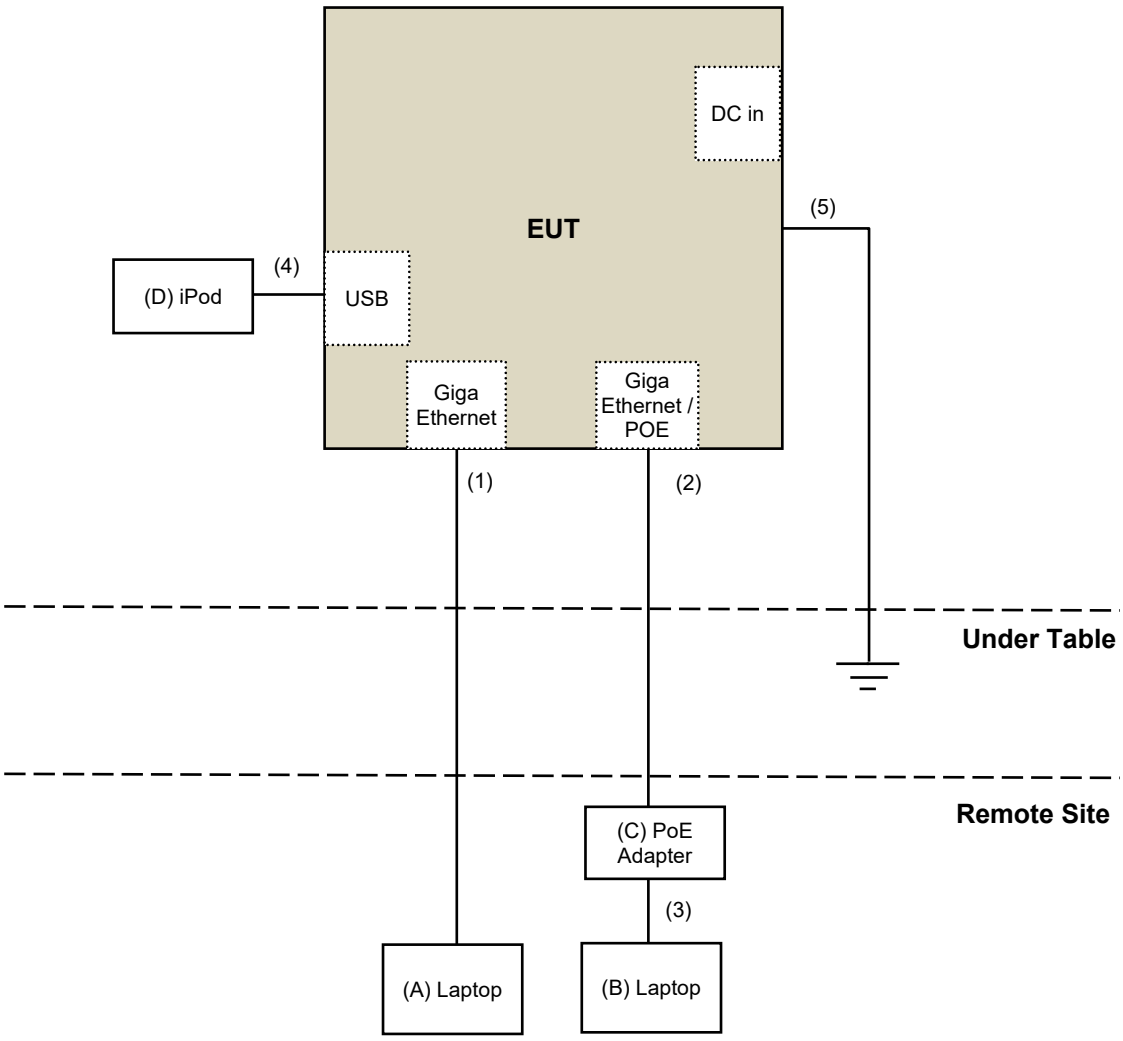
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	3	No	0	Provided by Lab
4.	USB Cable	1	0.1	Yes	0	Provided by Lab
5.	GND Cable	1	2	No	0	Provided by Lab

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 ~ 2021/8/6

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:

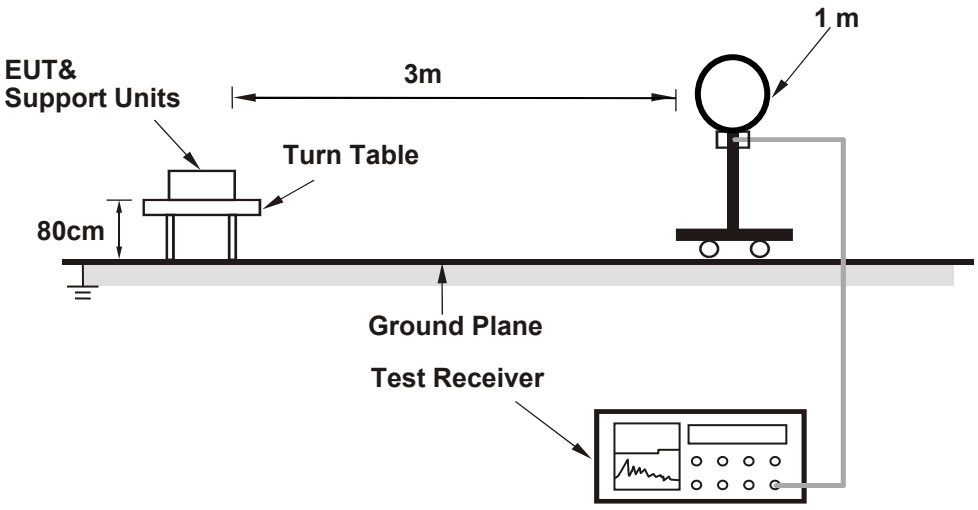
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

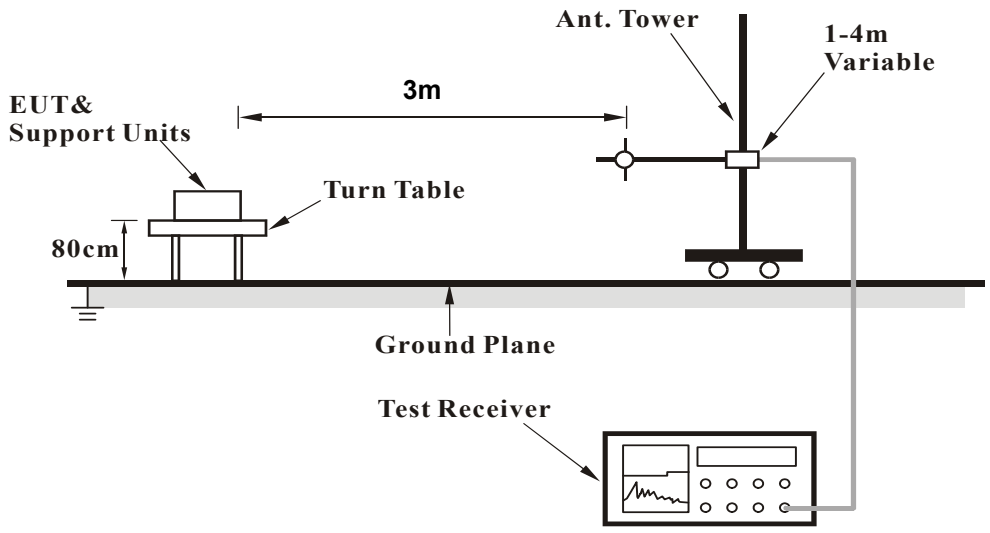
No deviation.

4.1.5 Test Setup

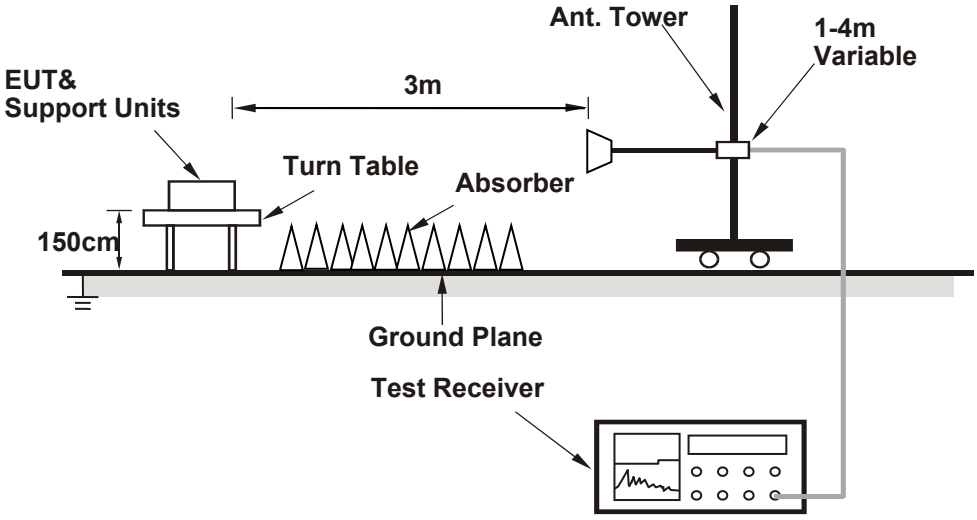
For Radiated emission below 30MHz



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 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.1 PK	74.0	-10.9	1.59 H	334	58.4	4.7
2	**5150.00**	**53.0 AV**	**54.0**	**-1.0**	**1.59 H**	**334**	**48.3**	**4.7**
3	*5180.00	122.7 PK			1.59 H	334	118.1	4.6
4	*5180.00	113.3 AV			1.59 H	334	108.7	4.6
5	#10360.00	55.5 PK	68.2	-12.7	1.47 H	147	42.1	13.4
6	15540.00	58.4 PK	74.0	-15.6	1.67 H	308	43.9	14.5
7	15540.00	48.6 AV	54.0	-5.4	1.67 H	308	34.1	14.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.0 PK	74.0	-10.0	2.14 V	11	59.3	4.7
2	5150.00	52.9 AV	54.0	-1.1	2.14 V	11	48.2	4.7
3	*5180.00	122.8 PK			2.14 V	11	118.2	4.6
4	*5180.00	112.9 AV			2.14 V	11	108.3	4.6
5	#10360.00	51.4 PK	68.2	-16.8	1.79 V	194	38.0	13.4
6	15540.00	53.6 PK	74.0	-20.4	2.97 V	214	39.1	14.5
7	15540.00	42.4 AV	54.0	-11.6	2.97 V	214	27.9	14.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.8 PK	74.0	-11.2	1.58 H	329	58.1	4.7
2	5150.00	52.5 AV	54.0	-1.5	1.58 H	329	47.8	4.7
3	*5200.00	124.9 PK			1.58 H	329	120.5	4.4
4	*5200.00	115.8 AV			1.58 H	329	111.4	4.4
5	#10400.00	54.0 PK	68.2	-14.2	1.59 H	78	40.4	13.6
6	15600.00	58.4 PK	74.0	-15.6	1.73 H	293	43.9	14.5
7	15600.00	48.7 AV	54.0	-5.3	1.73 H	293	34.2	14.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.4 PK	74.0	-11.6	1.40 V	114	57.7	4.7
2	5150.00	51.9 AV	54.0	-2.1	1.40 V	114	47.2	4.7
3	*5200.00	122.9 PK			1.40 V	114	118.5	4.4
4	*5200.00	114.7 AV			1.40 V	114	110.3	4.4
5	#10400.00	50.4 PK	68.2	-17.8	1.54 V	204	36.8	13.6
6	15600.00	54.1 PK	74.0	-19.9	3.02 V	207	39.6	14.5
7	15600.00	42.8 AV	54.0	-11.2	3.02 V	207	28.3	14.5

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 48：5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	126.1 PK			1.89 H	324	121.7	4.4
2	*5240.00	116.9 AV			1.89 H	324	112.5	4.4
3	5350.00	57.0 PK	74.0	-17.0	1.89 H	324	52.7	4.3
4	5350.00	47.0 AV	54.0	-7.0	1.89 H	324	42.7	4.3
5	#10480.00	54.1 PK	68.2	-14.1	1.78 H	177	40.4	13.7
6	15720.00	63.3 PK	74.0	-10.7	1.68 H	302	48.9	14.4
7	15720.00	52.6 AV	54.0	-1.4	1.68 H	302	38.2	14.4
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	*5240.00	124.8 PK			1.37 V	114	120.4	4.4
2	*5240.00	115.6 AV			1.37 V	114	111.2	4.4
3	5350.00	55.7 PK	74.0	-18.3	1.37 V	114	51.4	4.3
4	5350.00	45.6 AV	54.0	-8.4	1.37 V	114	41.3	4.3
5	#10480.00	53.0 PK	68.2	-15.2	1.49 V	204	39.3	13.7
6	15720.00	56.8 PK	74.0	-17.2	2.99 V	210	42.4	14.4
7	15720.00	45.8 AV	54.0	-8.2	2.99 V	210	31.4	14.4

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.80	59.5 PK	68.2	-8.7	1.96 H	314	55.0	4.5
2	*5745.00	123.0 PK			1.96 H	315	118.0	5.0
3	*5745.00	113.8 AV			1.96 H	315	108.8	5.0
4	#5935.60	59.5 PK	68.2	-8.7	1.96 H	314	54.4	5.1
5	11490.00	54.9 PK	74.0	-19.1	1.24 H	69	40.3	14.6
6	11490.00	45.1 AV	54.0	-8.9	1.24 H	69	30.5	14.6
7	#17235.00	66.8 PK	68.2	-1.4	1.21 H	337	48.8	18.0
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	#5622.43	58.4 PK	68.2	-9.8	1.05 V	112	53.9	4.5
2	*5745.00	120.9 PK			1.05 V	112	115.9	5.0
3	*5745.00	111.4 AV			1.05 V	112	106.4	5.0
4	#5965.90	56.8 PK	68.2	-11.4	1.05 V	112	51.6	5.2
5	11490.00	50.5 PK	74.0	-23.5	1.50 V	344	35.9	14.6
6	11490.00	46.3 AV	54.0	-7.7	1.50 V	344	31.7	14.6
7	#17235.00	66.0 PK	68.2	-2.2	1.47 V	213	48.0	18.0

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 157：5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5630.00	60.5 PK	68.2	-7.7	1.97 H	312	56.0	4.5
2	*5785.00	122.8 PK			1.97 H	312	117.7	5.1
3	*5785.00	113.4 AV			1.97 H	312	108.3	5.1
4	#5951.20	60.6 PK	68.2	-7.6	1.97 H	312	55.5	5.1
5	11570.00	53.7 PK	74.0	-20.3	1.29 H	59	39.1	14.6
6	11570.00	44.2 AV	54.0	-9.8	1.29 H	59	29.6	14.6
7	#17355.00	66.7 PK	68.2	-1.5	1.21 H	65	48.5	18.2
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	#5647.99	55.9 PK	68.2	-12.3	1.06 V	111	51.4	4.5
2	*5785.00	120.4 PK			1.06 V	111	115.3	5.1
3	*5785.00	111.0 AV			1.06 V	111	105.9	5.1
4	#5976.78	53.7 PK	68.2	-14.5	1.06 V	111	48.5	5.2
5	11570.00	50.8 PK	74.0	-23.2	1.45 V	360	36.2	14.6
6	11570.00	46.6 AV	54.0	-7.4	1.45 V	360	32.0	14.6
7	#17355.00	65.9 PK	68.2	-2.3	1.42 V	228	47.7	18.2

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 802.11a	Channel	CH 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5630.00	59.3 PK	68.2	-8.9	2.34 H	304	54.8	4.5
2	*5825.00	123.0 PK			2.34 H	304	118.0	5.0
3	*5825.00	113.7 AV			2.34 H	304	108.7	5.0
4	#5954.00	59.8 PK	68.2	-8.4	2.34 H	304	54.7	5.1
5	11650.00	53.4 PK	74.0	-20.6	1.26 H	61	39.0	14.4
6	11650.00	43.9 AV	54.0	-10.1	1.26 H	61	29.5	14.4
7	#17475.00	66.8 PK	68.2	-1.4	1.23 H	67	48.0	18.8
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	#5628.57	56.1 PK	68.2	-12.1	1.03 V	114	51.6	4.5
2	*5825.00	120.6 PK			1.03 V	114	115.6	5.0
3	*5825.00	111.7 AV			1.03 V	114	106.7	5.0
4	#5974.62	53.4 PK	68.2	-14.8	1.03 V	114	48.2	5.2
5	11650.00	50.6 PK	74.0	-23.4	1.50 V	359	36.2	14.4
6	11650.00	46.6 AV	54.0	-7.4	1.50 V	359	32.2	14.4
7	#17475.00	65.7 PK	68.2	-2.5	1.51 V	205	46.9	18.8

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 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.1 PK	74.0	-10.9	1.62 H	326	58.4	4.7
2	5150.00	52.8 AV	54.0	-1.2	1.62 H	326	48.1	4.7
3	*5180.00	123.7 PK			1.62 H	326	119.1	4.6
4	*5180.00	113.1 AV			1.62 H	326	108.5	4.6
5	#10360.00	54.1 PK	68.2	-14.1	1.59 H	148	40.7	13.4
6	15540.00	56.1 PK	74.0	-17.9	1.77 H	299	41.6	14.5
7	15540.00	47.5 AV	54.0	-6.5	1.77 H	299	33.0	14.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5147.90	64.9 PK	74.0	-9.1	1.04 V	99	60.1	4.8
2	5147.90	52.0 AV	54.0	-2.0	1.04 V	99	47.2	4.8
3	*5180.00	121.3 PK			1.04 V	99	116.7	4.6
4	*5180.00	109.8 AV			1.04 V	99	105.2	4.6
5	#10360.00	51.7 PK	68.2	-16.5	1.75 V	179	38.3	13.4
6	15540.00	54.0 PK	74.0	-20.0	2.95 V	223	39.5	14.5
7	15540.00	42.7 AV	54.0	-11.3	2.95 V	223	28.2	14.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5147.00	65.5 PK	74.0	-8.5	1.54 H	328	60.7	4.8
2	5147.00	52.8 AV	54.0	-1.2	1.54 H	328	48.0	4.8
3	*5200.00	126.2 PK			1.54 H	328	121.8	4.4
4	*5200.00	115.0 AV			1.54 H	328	110.6	4.4
5	#10400.00	53.5 PK	68.2	-14.7	1.52 H	360	39.9	13.6
6	15600.00	60.3 PK	74.0	-13.7	1.75 H	297	45.8	14.5
7	15600.00	50.4 AV	54.0	-3.6	1.75 H	297	35.9	14.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.4 PK	74.0	-10.6	1.04 V	139	58.7	4.7
2	5150.00	51.3 AV	54.0	-2.7	1.04 V	139	46.6	4.7
3	*5200.00	125.0 PK			1.04 V	139	120.6	4.4
4	*5200.00	112.6 AV			1.04 V	139	108.2	4.4
5	#10400.00	50.7 PK	68.2	-17.5	1.49 V	200	37.1	13.6
6	15600.00	53.8 PK	74.0	-20.2	2.98 V	194	39.3	14.5
7	15600.00	42.4 AV	54.0	-11.6	2.98 V	194	27.9	14.5

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 48：5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	127.8 PK			1.92 H	322	123.4	4.4
2	*5240.00	115.9 AV			1.92 H	322	111.5	4.4
3	5350.00	57.7 PK	74.0	-16.3	1.92 H	322	53.4	4.3
4	5350.00	46.9 AV	54.0	-7.1	1.92 H	322	42.6	4.3
5	#10480.00	52.3 PK	68.2	-15.9	1.92 H	152	38.6	13.7
6	15720.00	63.6 PK	74.0	-10.4	1.70 H	300	49.2	14.4
7	**15720.00**	**53.0 AV**	**54.0**	**-1.0**	**1.70 H**	**300**	**38.6**	**14.4**
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	*5240.00	125.4 PK			1.04 V	124	121.0	4.4
2	*5240.00	112.9 AV			1.04 V	124	108.5	4.4
3	5350.00	55.6 PK	74.0	-18.4	1.04 V	124	51.3	4.3
4	5350.00	45.0 AV	54.0	-9.0	1.04 V	124	40.7	4.3
5	#10480.00	53.0 PK	68.2	-15.2	1.54 V	219	39.3	13.7
6	15720.00	57.3 PK	74.0	-16.7	3.04 V	211	42.9	14.4
7	15720.00	46.3 AV	54.0	-7.7	3.04 V	211	31.9	14.4

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5645.60	60.1 PK	68.2	-8.1	1.92 H	309	55.6	4.5
2	*5745.00	123.8 PK			1.92 H	309	118.8	5.0
3	*5745.00	113.3 AV			1.92 H	309	108.3	5.0
4	#5944.40	60.3 PK	68.2	-7.9	1.92 H	309	55.2	5.1
5	11490.00	54.1 PK	74.0	-19.9	1.29 H	66	39.5	14.6
6	11490.00	44.9 AV	54.0	-9.1	1.29 H	66	30.3	14.6
7	#17235.00	66.9 PK	68.2	-1.3	1.15 H	68	48.9	18.0
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	#5646.08	55.6 PK	68.2	-12.6	1.04 V	110	51.1	4.5
2	*5745.00	122.0 PK			1.04 V	110	117.0	5.0
3	*5745.00	111.3 AV			1.04 V	110	106.3	5.0
4	#5935.30	54.0 PK	68.2	-14.2	1.04 V	110	48.9	5.1
5	11490.00	50.6 PK	74.0	-23.4	1.48 V	338	36.0	14.6
6	11490.00	45.2 AV	54.0	-8.8	1.48 V	338	30.6	14.6
7	#17235.00	65.6 PK	68.2	-2.6	1.49 V	202	47.6	18.0

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 157：5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.60	58.9 PK	68.2	-9.3	2.02 H	310	54.4	4.5
2	*5785.00	123.2 PK			2.02 H	310	118.1	5.1
3	*5785.00	112.8 AV			2.02 H	310	107.7	5.1
4	#5925.60	59.0 PK	68.2	-9.2	2.02 H	310	53.9	5.1
5	11570.00	53.3 PK	74.0	-20.7	1.19 H	65	38.7	14.6
6	11570.00	43.8 AV	54.0	-10.2	1.19 H	65	29.2	14.6
7	**#17355.00**	**67.2 PK**	**68.2**	**-1.0**	**1.10 H**	**60**	**49.0**	**18.2**
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	#5649.20	54.4 PK	68.2	-13.8	1.07 V	107	49.9	4.5
2	*5785.00	120.8 PK			1.07 V	107	115.7	5.1
3	*5785.00	111.0 AV			1.07 V	107	105.9	5.1
4	#5935.85	54.4 PK	68.2	-13.8	1.07 V	107	49.3	5.1
5	11570.00	50.8 PK	74.0	-23.2	1.47 V	334	36.2	14.6
6	11570.00	45.1 AV	54.0	-8.9	1.47 V	334	30.5	14.6
7	#17355.00	65.5 PK	68.2	-2.7	1.45 V	198	47.3	18.2

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 (HE20)	Channel	CH 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.20	58.9 PK	68.2	-9.3	2.11 H	307	54.4	4.5
2	*5825.00	123.0 PK			2.11 H	307	118.0	5.0
3	*5825.00	112.4 AV			2.11 H	307	107.4	5.0
4	#5942.00	58.8 PK	68.2	-9.4	2.11 H	307	53.7	5.1
5	11650.00	53.7 PK	74.0	-20.3	1.31 H	69	39.3	14.4
6	11650.00	43.4 AV	54.0	-10.6	1.31 H	69	29.0	14.4
7	#17475.00	66.9 PK	68.2	-1.3	1.09 H	66	48.1	18.8
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	#5634.26	56.7 PK	68.2	-11.5	1.10 V	111	52.2	4.5
2	*5825.00	123.1 PK			1.10 V	111	118.1	5.0
3	*5825.00	110.7 AV			1.10 V	111	105.7	5.0
4	#5952.37	53.1 PK	68.2	-15.1	1.10 V	111	47.9	5.2
5	11650.00	50.4 PK	74.0	-23.6	1.49 V	344	36.0	14.4
6	11650.00	45.1 AV	54.0	-8.9	1.49 V	344	30.7	14.4
7	#17475.00	65.2 PK	68.2	-3.0	1.54 V	194	46.4	18.8

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 38：5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.3 PK	74.0	-10.7	1.40 H	324	58.6	4.7
2	5150.00	52.9 AV	54.0	-1.1	1.40 H	324	48.2	4.7
3	*5190.00	119.7 PK			1.40 H	324	115.2	4.5
4	*5190.00	108.8 AV			1.40 H	324	104.3	4.5
5	#10380.00	54.6 PK	68.2	-13.6	1.40 H	87	41.2	13.4
6	15570.00	57.0 PK	74.0	-17.0	1.80 H	299	42.4	14.6
7	15570.00	46.2 AV	54.0	-7.8	1.80 H	299	31.6	14.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5148.80	64.0 PK	74.0	-10.0	1.04 V	97	59.2	4.8
2	5148.80	52.8 AV	54.0	-1.2	1.04 V	97	48.0	4.8
3	*5190.00	117.9 PK			1.04 V	97	113.4	4.5
4	*5190.00	106.3 AV			1.04 V	97	101.8	4.5
5	#10380.00	47.0 PK	68.2	-21.2	1.50 V	194	33.6	13.4
6	15570.00	48.8 PK	74.0	-25.2	2.84 V	183	34.2	14.6
7	15570.00	38.5 AV	54.0	-15.5	2.84 V	183	23.9	14.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.5 PK	74.0	-10.5	1.76 H	323	58.8	4.7
2	5150.00	52.7 AV	54.0	-1.3	1.76 H	323	48.0	4.7
3	*5230.00	120.9 PK			1.76 H	323	116.5	4.4
4	*5230.00	111.7 AV			1.76 H	323	107.3	4.4
5	#10460.00	54.2 PK	68.2	-14.0	1.25 H	109	40.6	13.6
6	15690.00	57.1 PK	74.0	-16.9	1.77 H	295	42.6	14.5
7	15690.00	46.3 AV	54.0	-7.7	1.77 H	295	31.8	14.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.1 PK	74.0	-10.9	1.04 V	99	58.4	4.7
2	5150.00	52.0 AV	54.0	-2.0	1.04 V	99	47.3	4.7
3	*5230.00	120.8 PK			1.04 V	99	116.4	4.4
4	*5230.00	108.4 AV			1.04 V	99	104.0	4.4
5	#10460.00	46.5 PK	68.2	-21.7	1.56 V	170	32.9	13.6
6	15690.00	47.8 PK	74.0	-26.2	2.87 V	197	33.3	14.5
7	15690.00	38.0 AV	54.0	-16.0	2.87 V	197	23.5	14.5

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 151：5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.20	66.7 PK	68.2	-1.5	2.15 H	61	62.2	4.5
2	*5755.00	121.3 PK			1.72 H	61	116.3	5.0
3	*5755.00	110.3 AV			1.72 H	61	105.3	5.0
4	#5958.80	59.6 PK	68.2	-8.6	2.15 H	61	54.5	5.1
5	11510.00	54.3 PK	74.0	-19.7	1.25 H	62	39.7	14.6
6	11510.00	43.2 AV	54.0	-10.8	1.25 H	62	28.6	14.6
7	#17265.00	61.3 PK	68.2	-6.9	1.05 H	46	43.4	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	#5646.89	66.2 PK	68.2	-2.0	1.07 V	110	61.7	4.5
2	*5755.00	119.8 PK			1.07 V	110	114.8	5.0
3	*5755.00	108.3 AV			1.07 V	110	103.3	5.0
4	#5948.10	53.9 PK	68.2	-14.3	1.07 V	110	48.8	5.1
5	11510.00	51.2 PK	74.0	-22.8	1.46 V	333	36.6	14.6
6	11510.00	45.4 AV	54.0	-8.6	1.46 V	333	30.8	14.6
7	#17265.00	59.4 PK	68.2	-8.8	1.48 V	199	41.5	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5646.80	66.7 PK	68.2	-1.5	2.00 H	67	62.2	4.5
2	*5795.00	120.2 PK			2.00 H	67	115.1	5.1
3	*5795.00	110.0 AV			2.00 H	67	104.9	5.1
4	#5930.00	66.8 PK	68.2	-1.4	2.00 H	67	61.7	5.1
5	11590.00	53.6 PK	74.0	-20.4	1.35 H	63	39.0	14.6
6	11590.00	43.0 AV	54.0	-11.0	1.35 H	63	28.4	14.6
7	#17385.00	61.5 PK	68.2	-6.7	1.05 H	33	43.2	18.3
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	#5632.76	61.3 PK	68.2	-6.9	1.04 V	115	56.8	4.5
2	*5795.00	118.9 PK			1.04 V	115	113.8	5.1
3	*5795.00	118.1 AV			1.04 V	115	113.0	5.1
4	#5928.60	59.1 PK	68.2	-9.1	1.04 V	115	54.0	5.1
5	11590.00	50.7 PK	74.0	-23.3	1.50 V	324	36.1	14.6
6	11590.00	45.0 AV	54.0	-9.0	1.50 V	324	30.4	14.6
7	#17385.00	59.7 PK	68.2	-8.5	1.52 V	183	41.4	18.3

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 (HE80)	Channel	CH 42：5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.0 PK	74.0	-11.0	1.53 H	326	58.3	4.7
2	5150.00	52.6 AV	54.0	-1.4	1.53 H	326	47.9	4.7
3	*5210.00	115.5 PK			1.53 H	326	111.1	4.4
4	*5210.00	102.4 AV			1.53 H	326	98.0	4.4
5	5363.00	57.8 PK	74.0	-16.2	1.53 H	326	53.4	4.4
6	5363.00	45.4 AV	54.0	-8.6	1.53 H	326	41.0	4.4
7	#10420.00	54.0 PK	68.2	-14.2	1.55 H	104	40.5	13.5
8	15630.00	55.0 PK	74.0	-19.0	1.71 H	286	40.4	14.6
9	15630.00	44.0 AV	54.0	-10.0	1.71 H	286	29.4	14.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5144.90	62.3 PK	74.0	-11.7	1.06 V	110	57.5	4.8
2	5144.90	52.6 AV	54.0	-1.4	1.06 V	110	47.8	4.8
3	*5210.00	111.2 PK			1.06 V	110	106.8	4.4
4	*5210.00	99.9 AV			1.06 V	110	95.5	4.4
5	5376.00	53.5 PK	74.0	-20.5	1.06 V	110	49.1	4.4
6	5376.00	42.8 AV	54.0	-11.2	1.06 V	110	38.4	4.4
7	#10420.00	47.6 PK	68.2	-20.6	1.57 V	220	34.1	13.5
8	15630.00	46.7 PK	74.0	-27.3	2.96 V	203	32.1	14.6
9	15630.00	35.3 AV	54.0	-18.7	2.96 V	203	20.7	14.6

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 155：5775 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5643.60	66.8 PK	68.2	-1.4	1.95 H	61	62.3	4.5
2	*5775.00	118.1 PK			1.95 H	61	113.0	5.1
3	*5775.00	107.1 AV			1.95 H	61	102.0	5.1
4	#5927.60	65.0 PK	68.2	-3.2	1.95 H	61	59.9	5.1
5	11550.00	53.0 PK	74.0	-21.0	1.35 H	66	38.4	14.6
6	11550.00	44.0 AV	54.0	-10.0	1.35 H	66	29.4	14.6
7	#17325.00	61.1 PK	68.2	-7.1	1.05 H	49	43.0	18.1
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	#5634.03	65.8 PK	68.2	-2.4	1.09 V	112	61.3	4.5
2	*5775.00	115.1 PK			1.09 V	112	110.0	5.1
3	*5775.00	104.0 AV			1.09 V	112	98.9	5.1
4	#5930.80	61.5 PK	68.2	-6.7	1.09 V	112	56.4	5.1
5	11550.00	53.2 PK	74.0	-20.8	1.43 V	341	38.6	14.6
6	11550.00	44.7 AV	54.0	-9.3	1.43 V	341	30.1	14.6
7	#17325.00	59.4 PK	68.2	-8.8	1.44 V	210	41.3	18.1

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.

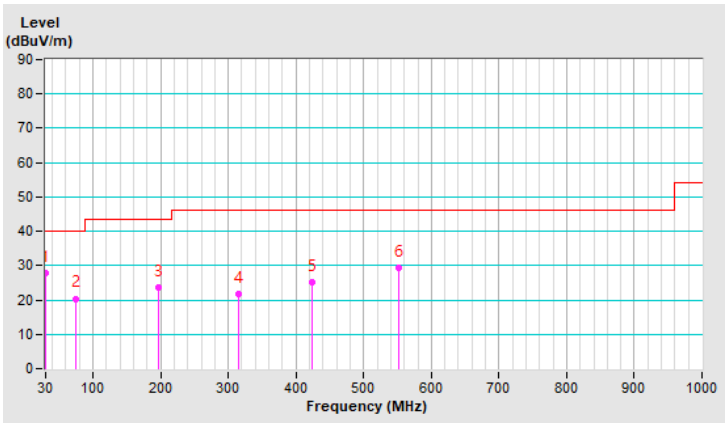
Below 1GHz Data:

RF Mode	TX 802.11a	Channel	CH 149：5745 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	30.07	27.8 QP	40.0	-12.2	1.00 H	2	37.1	-9.3
2	73.96	20.4 QP	40.0	-19.6	1.50 H	354	31.9	-11.5
3	195.99	23.5 QP	43.5	-20.0	2.00 H	175	34.0	-10.5
4	314.90	21.6 QP	46.0	-24.4	1.50 H	167	27.5	-5.9
5	424.75	25.2 QP	46.0	-20.8	2.00 H	179	28.0	-2.8
6	552.74	29.3 QP	46.0	-16.7	1.00 H	327	29.4	-0.1

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 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.

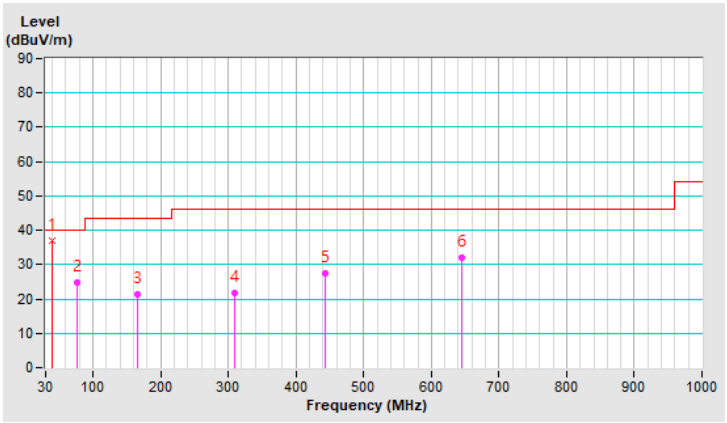


RF Mode	TX 802.11a	Channel	CH 149：5745 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	39.10	36.9 QP	40.0	-3.1	1.00 V	127	45.4	-8.5
2	77.48	24.8 QP	40.0	-15.2	1.50 V	47	37.2	-12.4
3	165.48	21.2 QP	43.5	-22.3	2.00 V	204	29.2	-8.0
4	309.28	21.7 QP	46.0	-24.3	1.50 V	9	27.9	-6.2
5	442.94	27.3 QP	46.0	-18.7	3.00 V	176	29.5	-2.2
6	644.02	32.1 QP	46.0	-13.9	1.00 V	353	29.8	2.3

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 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: 2021/8/5

4.2.3 Test Procedure

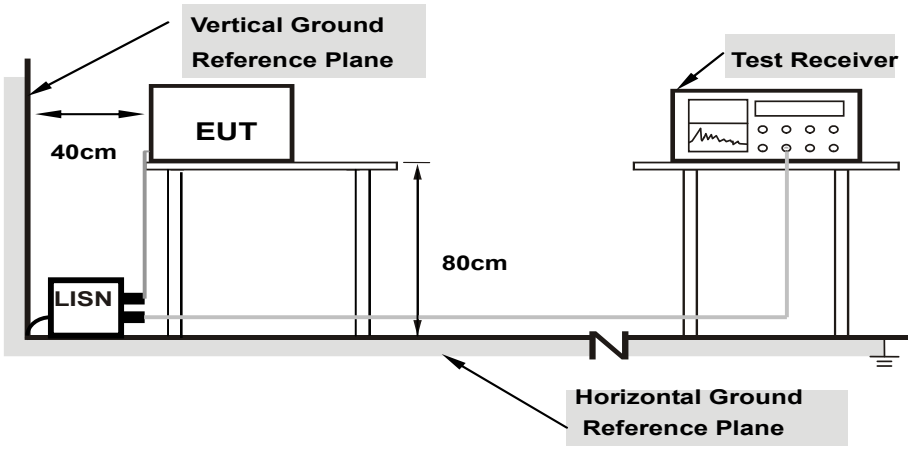
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

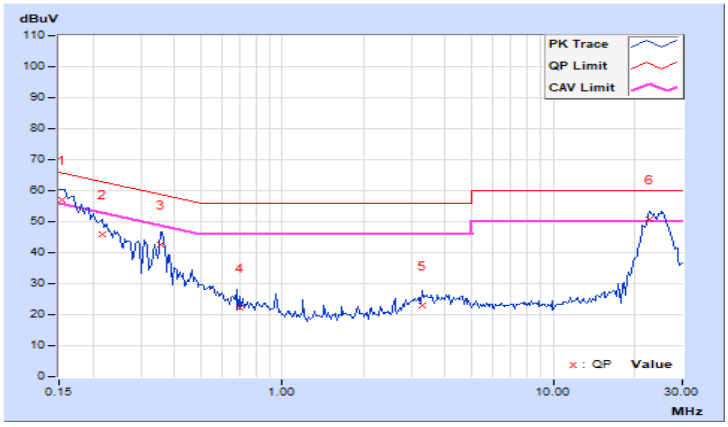
4.2.7 Test Results

RF Mode	TX 802.11a	Channel	CH 149：5745 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	0.15391	9.95	47.13	32.04	57.08	41.99	65.79	55.79	-8.71	-13.80
2	0.21641	9.97	36.07	21.58	46.04	31.55	62.96	52.96	-16.92	-21.41
3	0.35703	9.99	32.71	29.77	42.70	39.76	58.80	48.80	-16.10	-9.04
4	0.69688	10.01	12.12	4.24	22.13	14.25	56.00	46.00	-33.87	-31.75
5	3.29688	10.13	12.79	6.47	22.92	16.60	56.00	46.00	-33.08	-29.40
6	**22.82422**	**11.18**	**39.65**	**34.83**	**50.83**	**46.01**	**60.00**	**50.00**	**-9.17**	**-3.99**

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

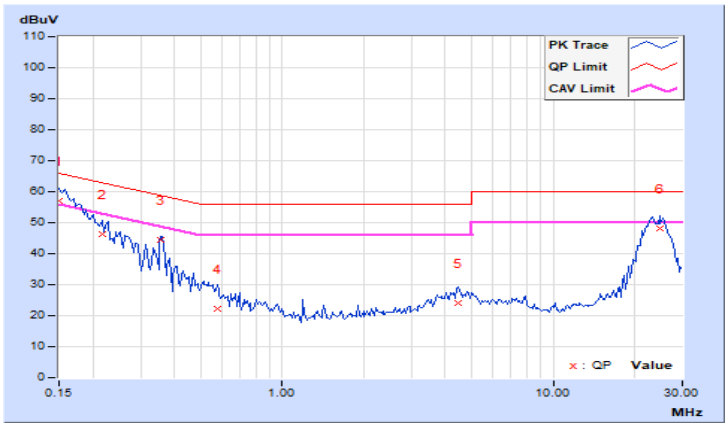


RF Mode	TX 802.11a	Channel	CH 149：5745 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15000	9.92	47.23	31.40	57.15	41.32	66.00	56.00	-8.85	-14.68
2	0.21641	9.95	36.21	21.74	46.16	31.69	62.96	52.96	-16.80	-21.27
3	0.35703	9.96	34.33	28.80	44.29	38.76	58.80	48.80	-14.51	-10.04
4	0.57578	9.97	12.16	0.71	22.13	10.68	56.00	46.00	-33.87	-35.32
5	4.48047	10.14	13.78	5.95	23.92	16.09	56.00	46.00	-32.08	-29.91
6	24.82813	10.90	37.42	32.73	48.32	43.63	60.00	50.00	-11.68	-6.37

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)

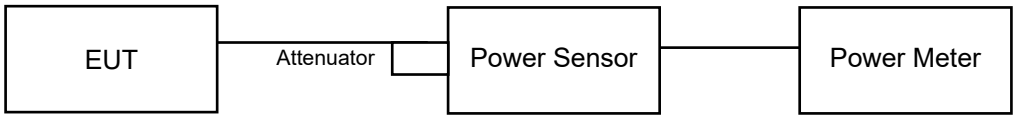
*B is the 26 dB emission bandwidth in megahertz

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



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Results

For U-NII-1 Band (Outdoor mode)

CDD Mode

802.11a

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.61	13.52	51.397	17.11	30	Pass
40	5200	14.68	13.47	51.61	17.13	30	Pass
48	5240	14.73	13.43	51.746	17.14	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
36	5180	17.11	3.8	123.31	20.91	21	Pass
40	5200	17.13	3.8	123.88	20.93	21	Pass
48	5240	17.14	3.8	124.165	20.94	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ac (VHT20)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.55	13.21	49.451	16.94	30	Pass
40	5200	14.59	13.10	49.191	16.92	30	Pass
48	5240	14.88	12.83	49.948	16.99	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
36	5180	16.94	3.8	118.577	20.74	21	Pass
40	5200	16.92	3.8	118.032	20.72	21	Pass
48	5240	16.99	3.8	119.95	20.79	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ac (VHT40)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.58	13.41	50.636	17.04	30	Pass
46	5230	14.61	13.15	49.561	16.95	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
38	5190	17.04	3.8	121.339	20.84	21	Pass
46	5230	16.95	3.8	118.85	20.75	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ac (VHT80)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	14.50	13.32	49.662	16.96	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
42	5210	16.96	3.8	119.124	20.76	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE20)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.63	13.35	50.667	17.05	30	Pass
40	5200	14.68	13.20	50.269	17.01	30	Pass
48	5240	15.00	12.93	51.256	17.10	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
36	5180	17.05	3.8	121.619	20.85	21	Pass
40	5200	17.01	3.8	120.504	20.81	21	Pass
48	5240	17.10	3.8	123.027	20.90	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE40)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.70	13.48	51.796	17.14	30	Pass
46	5230	14.78	13.27	51.293	17.10	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
38	5190	17.14	3.8	124.165	20.94	21	Pass
46	5230	17.10	3.8	123.027	20.90	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE80)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	14.62	13.45	51.104	17.08	30	Pass

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Max. Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
42	5210	17.08	3.8	122.462	20.88	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

Beamforming Mode

802.11ac (VHT20)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	11.41	10.15	24.187	13.84	29.19	Pass
40	5200	11.38	9.95	23.626	13.73	29.19	Pass
48	5240	11.80	9.78	24.642	13.92	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
36	5180	13.84	6.81	116.145	20.65	21	Pass
40	5200	13.73	6.81	113.24	20.54	21	Pass
48	5240	13.92	6.81	118.304	20.73	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ac (VHT40)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	11.52	10.26	24.808	13.95	29.19	Pass
46	5230	11.58	10.05	24.504	13.89	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
38	5190	13.95	6.81	119.124	20.76	21	Pass
46	5230	13.89	6.81	117.49	20.70	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ac (VHT80)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	11.42	10.25	24.46	13.88	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
42	5210	13.88	6.81	117.22	20.69	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE20)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	11.59	10.29	25.112	14.00	29.19	Pass
40	5200	11.65	10.10	24.855	13.95	29.19	Pass
48	5240	11.95	9.90	25.44	14.06	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
36	5180	14.00	6.81	120.504	20.81	21	Pass
40	5200	13.95	6.81	119.124	20.76	21	Pass
48	5240	14.06	6.81	122.18	20.87	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE40)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	11.66	10.40	25.62	14.09	29.19	Pass
46	5230	11.72	10.19	25.307	14.03	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
38	5190	14.09	6.81	123.027	20.90	21	Pass
46	5230	14.03	6.81	121.339	20.84	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

802.11ax (HE80)

Conducted Power

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	11.58	10.39	25.328	14.04	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

EIRP

Chan.	Chan. Freq. (MHz)	Total Power (dBm)	Directional Gain (dBi)	EIRP (mW)	EIRP (dBm)	EIRP Limit (dBm)	Pass / Fail
42	5210	14.04	6.81	121.619	20.85	21	Pass

*For device is outdoor access point and antenna at any elevation angle above 30 degrees as measured from the horizon, therefore Max. e.i.r.p ≦ 125mW(21 dBm) to compliance.

For U-NII-1 Band (Indoor mode) & U-NII-3 Band

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	24.44	23.35	494.243	26.94	30	Pass
40	5200	24.39	23.12	479.906	26.81	30	Pass
48	5240	24.88	23.66	539.883	27.32	30	Pass
149	5745	26.01	25.35	741.793	28.70	30	Pass
157	5785	25.52	24.73	653.618	28.15	30	Pass
165	5825	25.45	24.44	628.723	27.98	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.82	21.48	332.03	25.21	30	Pass
40	5200	25.61	24.12	622.141	27.94	30	Pass
48	5240	24.98	23.79	554.106	27.44	30	Pass
149	5745	25.50	24.49	636.003	28.03	30	Pass
157	5785	24.99	23.87	559.282	27.48	30	Pass
165	5825	24.89	23.72	543.824	27.35	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	22.10	20.93	286.061	24.56	30	Pass
46	5230	24.97	23.50	537.923	27.31	30	Pass
151	5755	24.91	23.75	546.879	27.38	30	Pass
159	5795	24.91	23.91	555.779	27.45	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	18.89	17.58	134.726	21.29	30	Pass
155	5775	23.60	22.64	412.741	26.16	30	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	23.11	21.69	352.215	25.47	30	Pass
40	5200	25.88	24.36	660.155	28.20	30	Pass
48	5240	25.20	24.01	582.899	27.66	30	Pass
149	5745	25.72	24.73	670.417	28.26	30	Pass
157	5785	25.23	24.12	591.652	27.72	30	Pass
165	5825	25.12	23.96	573.973	27.59	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	22.31	21.16	300.833	24.78	30	Pass
46	5230	25.23	23.71	568.39	27.55	30	Pass
151	5755	25.18	24.01	581.377	27.64	30	Pass
159	5795	25.12	24.13	583.909	27.66	30	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.12	17.85	142.612	21.54	30	Pass
155	5775	23.88	22.91	439.777	26.43	30	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.82	21.48	332.03	25.21	29.19	Pass
40	5200	25.61	24.12	622.141	27.94	29.19	Pass
48	5240	24.98	23.79	554.106	27.44	29.19	Pass
149	5745	25.50	24.49	636.003	28.03	29.19	Pass
157	5785	24.99	23.87	559.282	27.48	29.19	Pass
165	5825	24.89	23.72	543.824	27.35	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	22.10	20.93	286.061	24.56	29.19	Pass
46	5230	24.97	23.50	537.923	27.31	29.19	Pass
151	5755	24.91	23.75	546.879	27.38	29.19	Pass
159	5795	24.91	23.91	555.779	27.45	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	18.89	17.58	134.726	21.29	29.19	Pass
155	5775	23.60	22.64	412.741	26.16	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	23.11	21.69	352.215	25.47	29.19	Pass
40	5200	25.88	24.36	660.155	28.20	29.19	Pass
48	5240	25.20	24.01	582.899	27.66	29.19	Pass
149	5745	25.72	24.73	670.417	28.26	29.19	Pass
157	5785	25.23	24.12	591.652	27.72	29.19	Pass
165	5825	25.12	23.96	573.973	27.59	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	22.31	21.16	300.833	24.78	29.19	Pass
46	5230	25.23	23.71	568.39	27.55	29.19	Pass
151	5755	25.18	24.01	581.377	27.64	29.19	Pass
159	5795	25.12	24.13	583.909	27.66	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

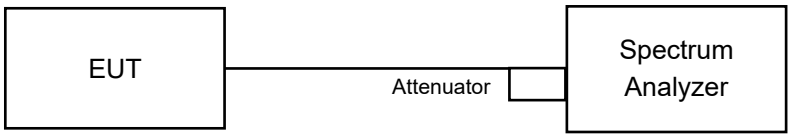
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.12	17.85	142.612	21.54	29.19	Pass
155	5775	23.88	22.91	439.777	26.43	29.19	Pass

Note: The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power limit shall be reduced to 30-(6.81-6) = 29.19 dBm.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Results

For U-NII-1 Band (Outdoor mode)

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	16.44	16.44
48	5240	16.44	16.44

802.11ax (HE20)

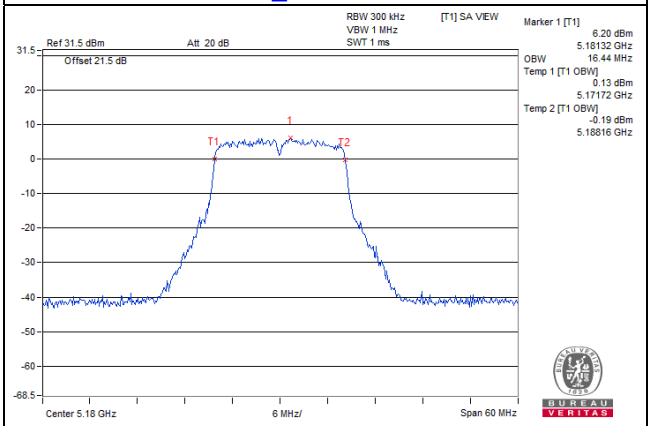
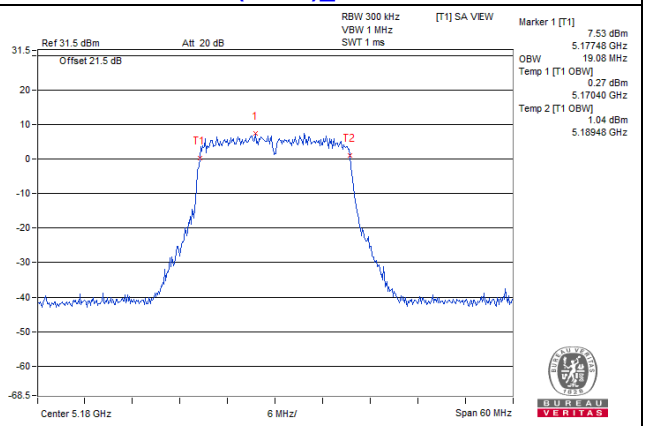
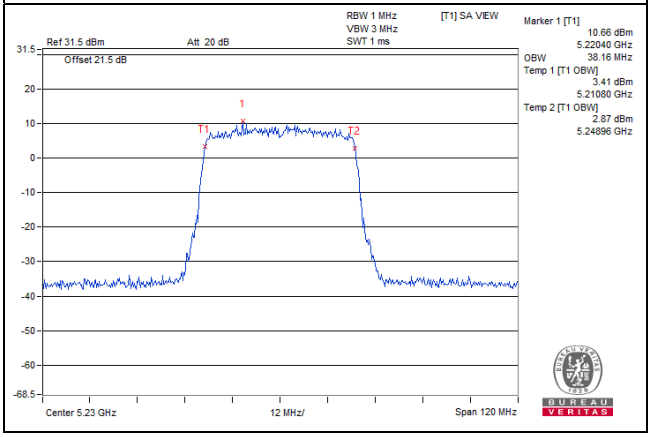
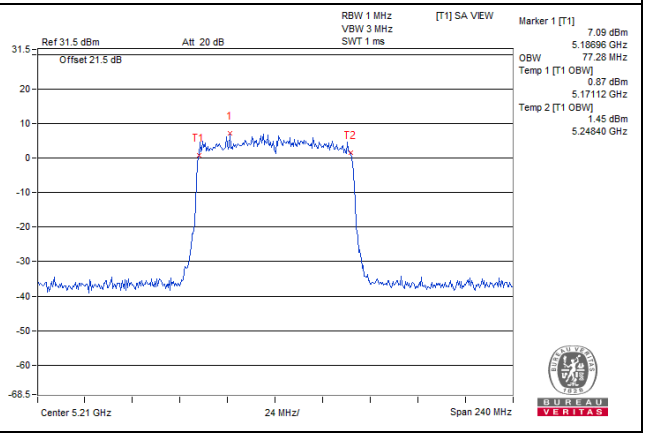
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	19.08
40	5200	19.08	19.08
48	5240	19.08	18.96

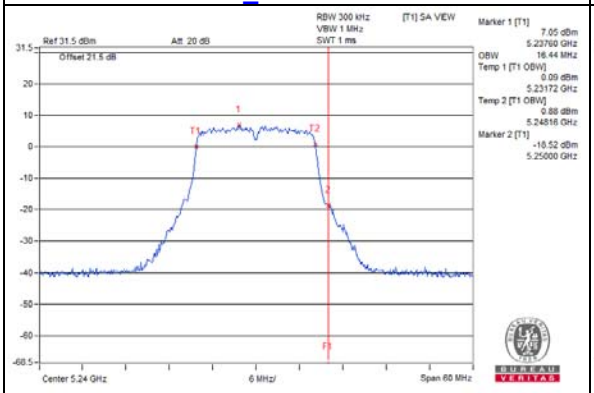
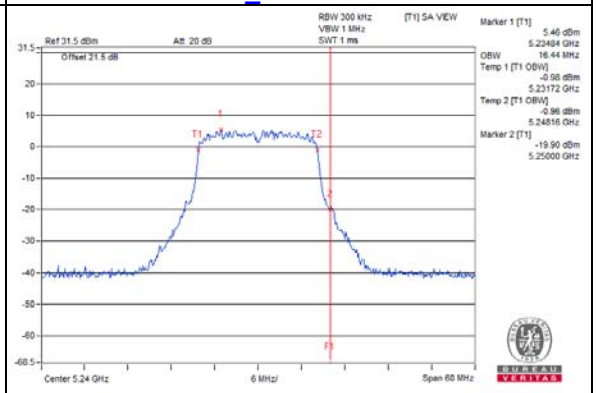
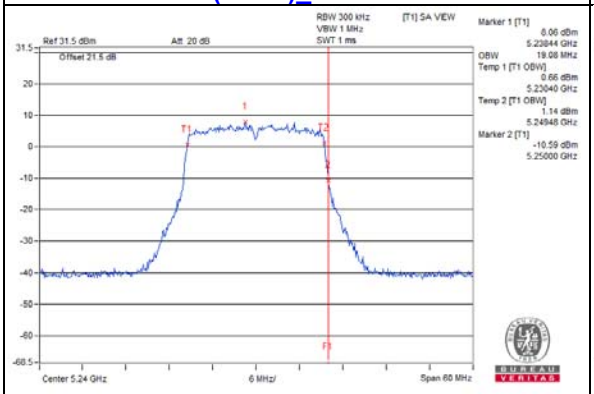
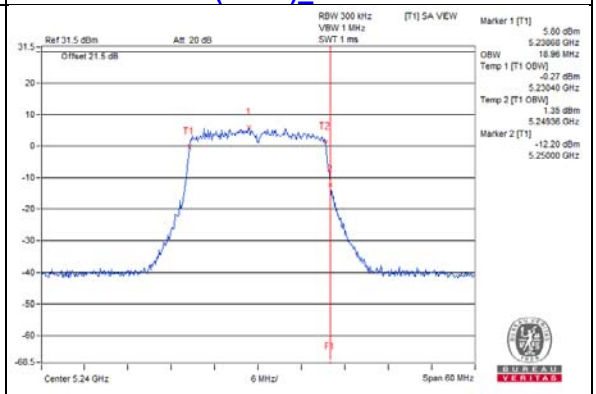
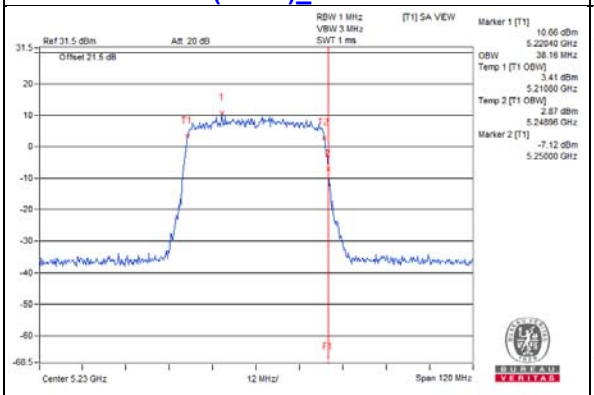
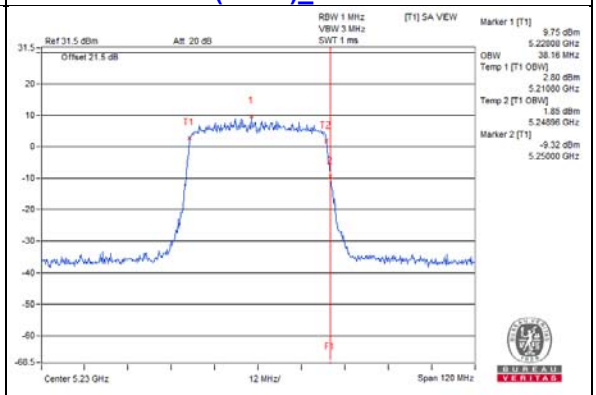
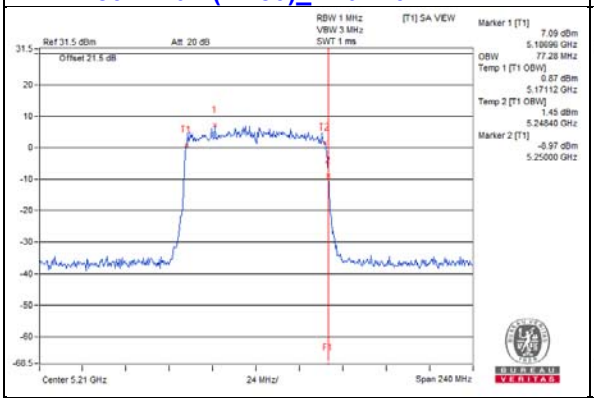
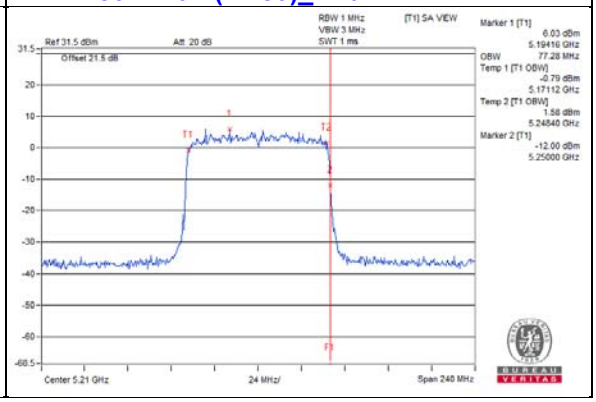
802.11ax (HE40)

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

802.11ax (HE80)

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

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH36	**802.11ax (HE20)_Chain 0 / CH36**
	
802.11ax (HE40)_Chain 0 / CH46	**802.11ax (HE80)_Chain 2 / CH46**
	

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

For U-NII-1 Band (Indoor mode) & U-NII-3 Band

CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	16.44	16.44
48	5240	16.43	16.43
149	5745	26.76	16.56
157	5785	23.52	16.56
165	5825	24.96	16.44

802.11ax (HE20)

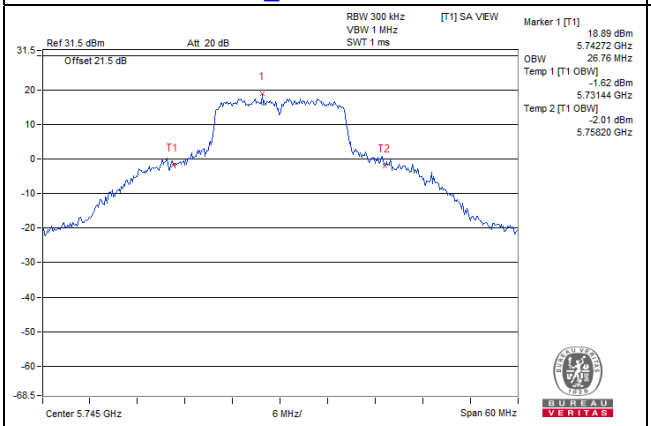
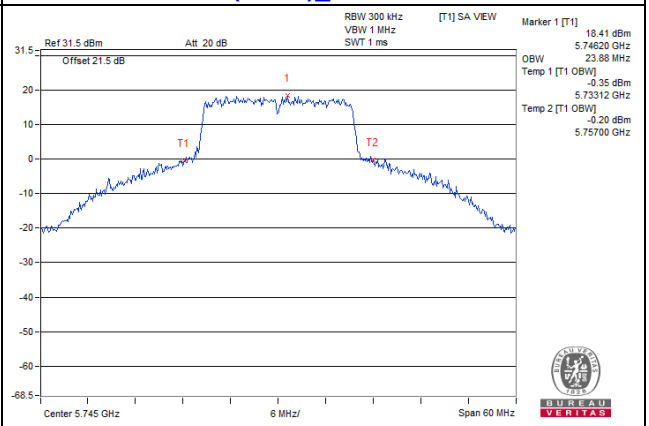
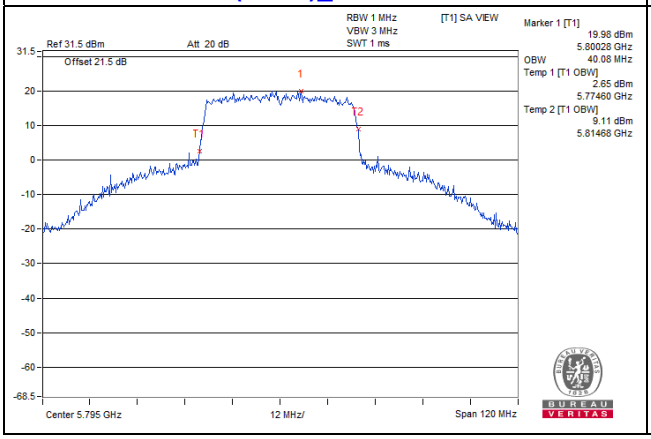
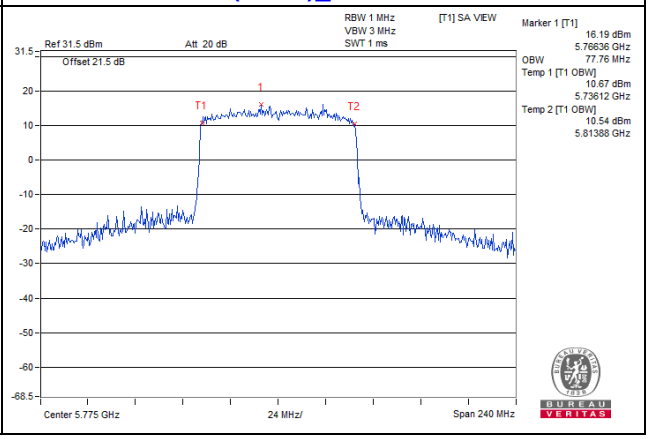
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	19.08
40	5200	19.08	19.08
48	5240	18.87	19.05
149	5745	23.88	18.96
157	5785	19.08	19.08
165	5825	19.08	19.08

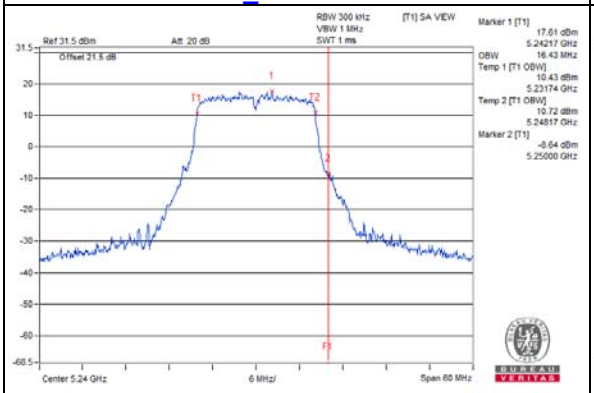
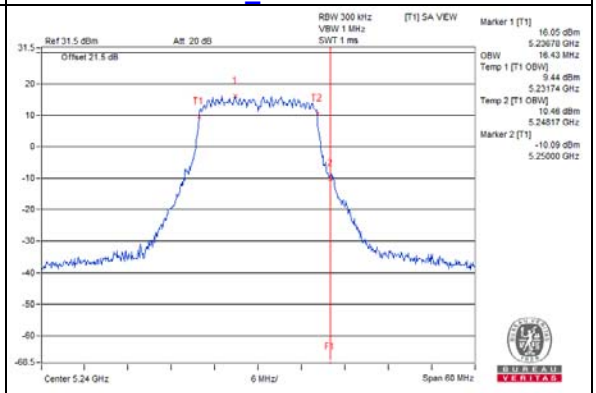
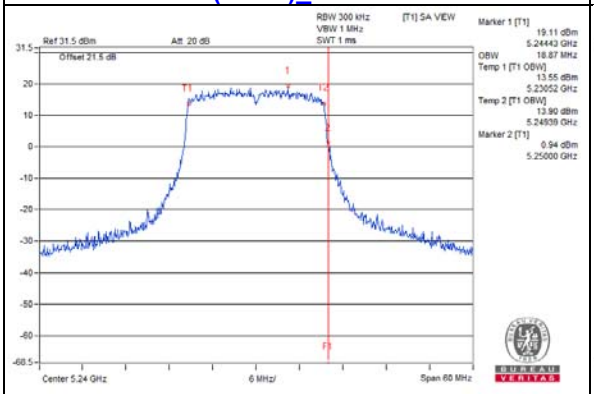
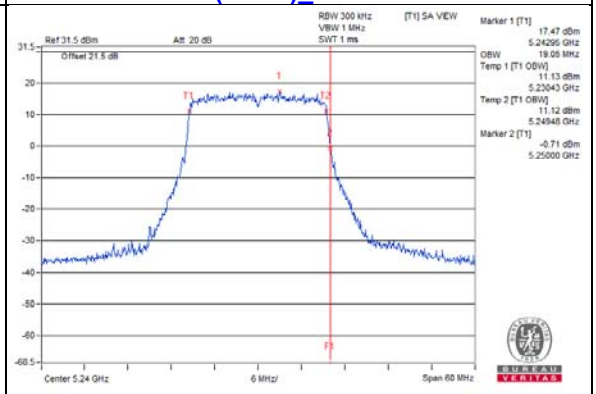
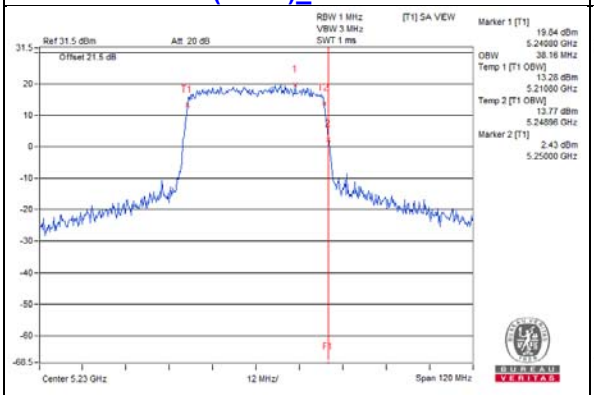
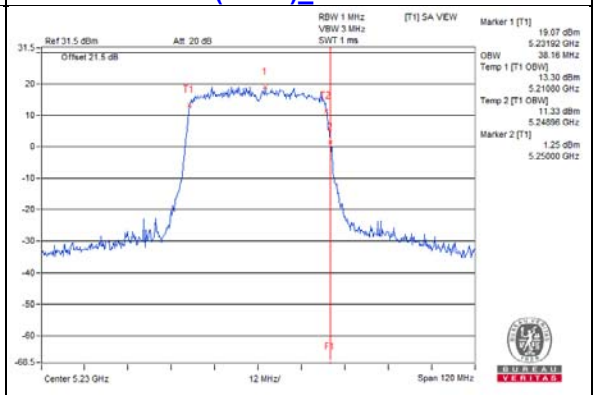
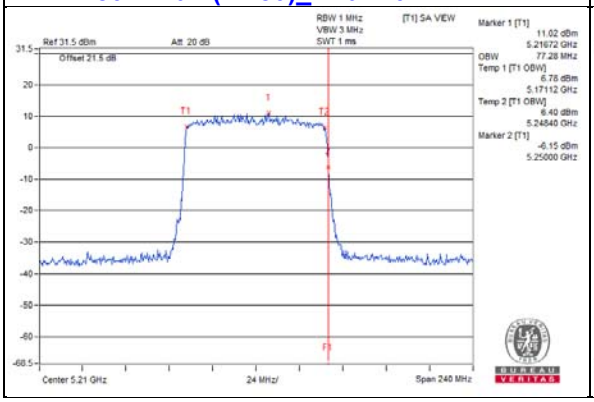
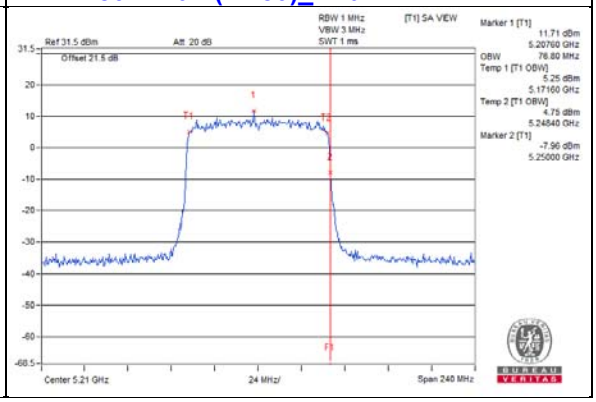
802.11ax (HE40)

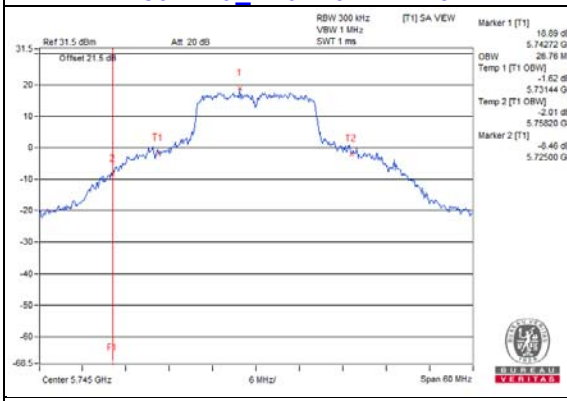
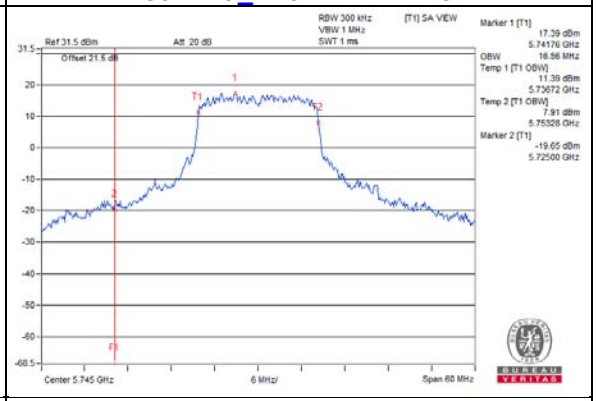
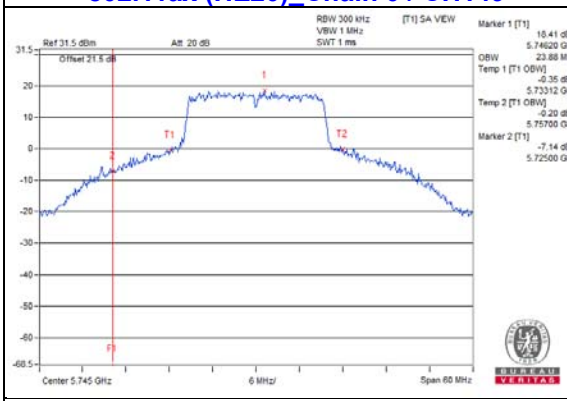
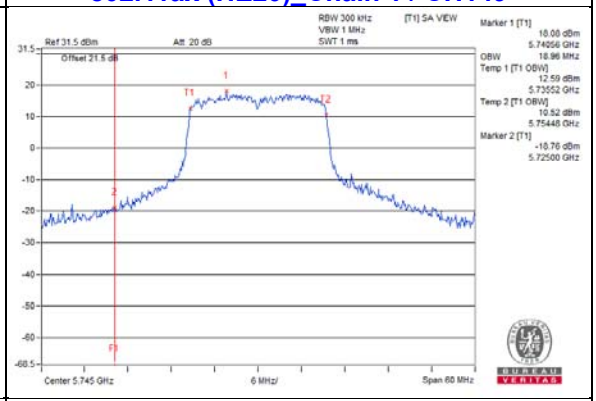
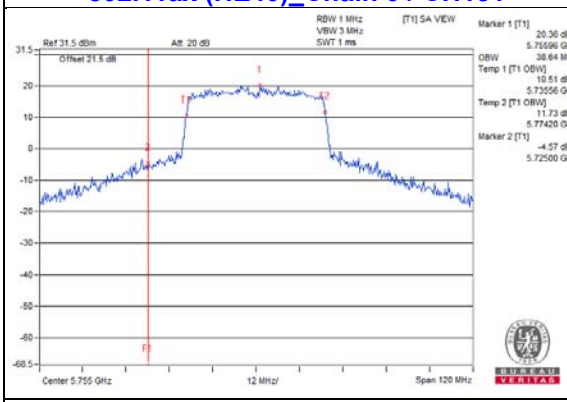
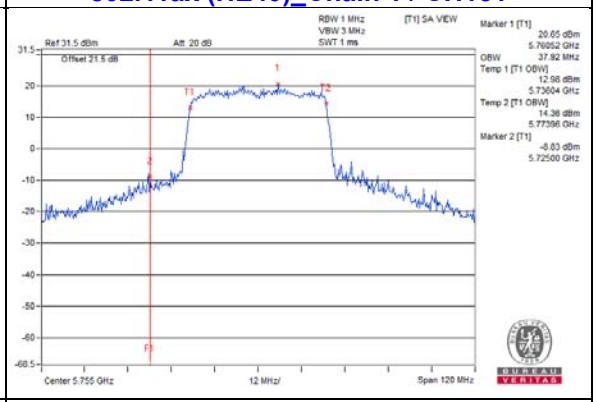
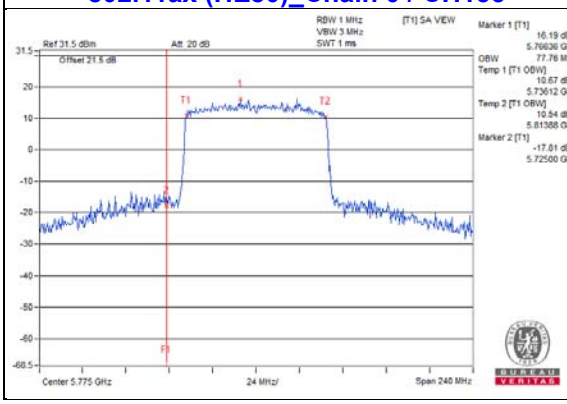
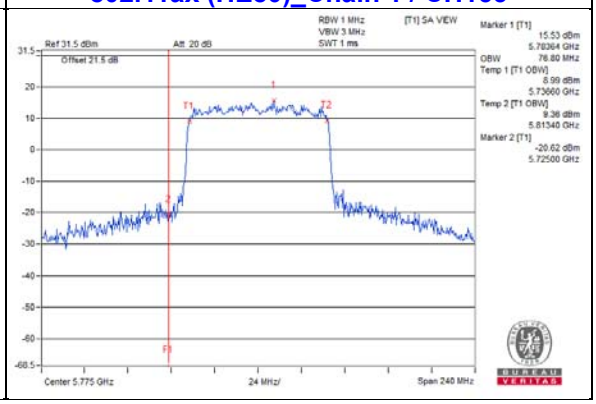
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.92	37.92
46	5230	38.16	38.16
151	5755	38.64	37.92
159	5795	40.08	38.16

802.11ax (HE80)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.28	76.8
155	5775	77.76	76.8

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH149	**802.11ax (HE20)_Chain 0 / CH149**
	
802.11ax (HE40)_Chain 0 / CH159	**802.11ax (HE80)_Chain 0 / CH155**
	

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

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

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup

4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

For U-NII-1 band:

Using method SA-2

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

For U-NII-3 band:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
4. Scale the observed power level to an equivalent value in 500 kHz by adjusting (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-1 Band (Outdoor mode)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	3.27	2.02	0.30	6.00	16.19	Pass
40	5200	3.11	2.13	0.30	5.96	16.19	Pass
48	5240	3.61	1.72	0.30	6.08	16.19	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 17-(6.81-6) = 16.19 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				
36	5180	2.91	1.68	0.25	5.60	16.19	Pass
40	5200	2.74	1.54	0.25	5.44	16.19	Pass
48	5240	2.73	0.81	0.25	5.13	16.19	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 17-(6.81-6) = 16.19 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				
38	5190	-0.27	-0.91	0.21	2.64	16.19	Pass
46	5230	-0.09	-1.35	0.21	2.54	16.19	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 17-(6.81-6) = 16.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

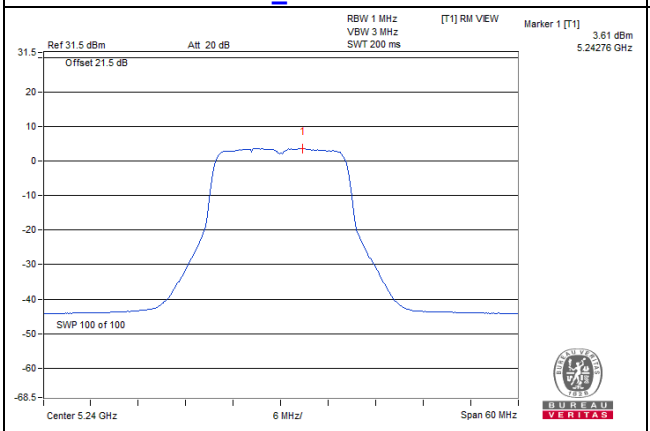
802.11ax (HE80)

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				
42	5210	-3.38	-4.57	0.28	-0.65	16.19	Pass

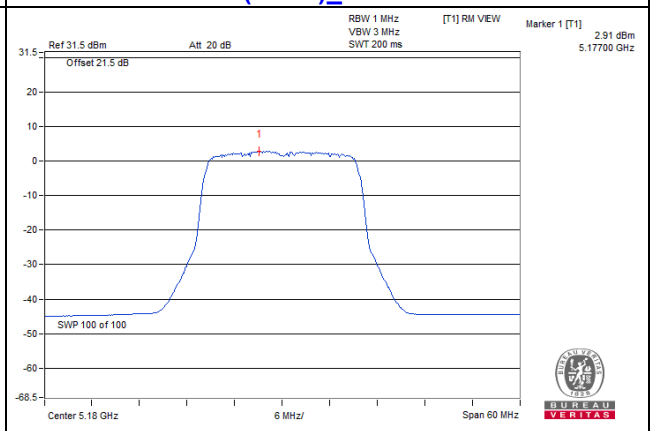
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.81-6) = 16.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

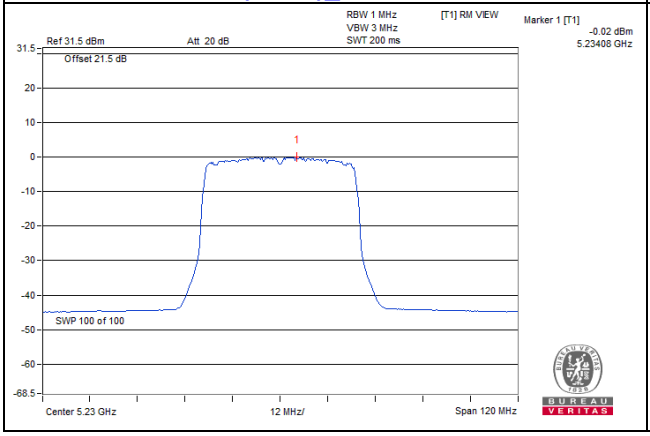
802.11a_Chain 0 / CH48



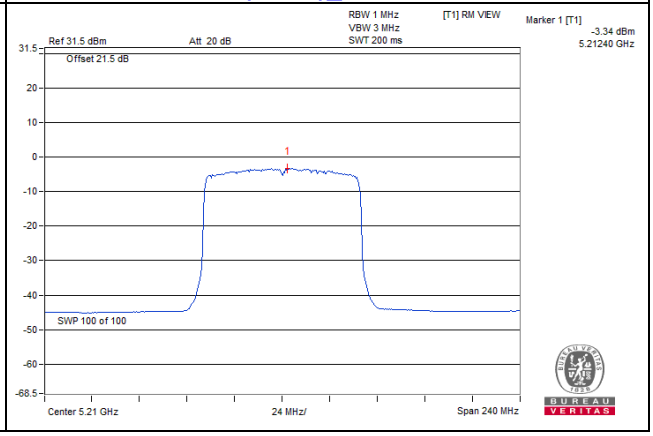
802.11ax (HE20)_Chain 0 / CH36



802.11ax (HE40)_Chain 0 / CH46



802.11ax (HE80)_Chain 0 / CH42



For U-NII-1 Band (Indoor mode)

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	12.82	12.01	0.30	15.75	16.19	Pass
40	5200	12.62	12.01	0.30	15.64	16.19	Pass
48	5240	13.43	12.17	0.30	16.16	16.19	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 17-(6.81-6) = 16.19 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				
36	5180	10.85	9.96	0.25	13.68	16.19	Pass
40	5200	13.52	12.18	0.25	16.16	16.19	Pass
48	5240	13.50	12.18	0.25	16.15	16.19	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 17-(6.81-6) = 16.19 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				
38	5190	7.56	6.63	0.21	10.34	16.19	Pass
46	5230	9.88	9.29	0.21	12.81	16.19	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 17-(6.81-6) = 16.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

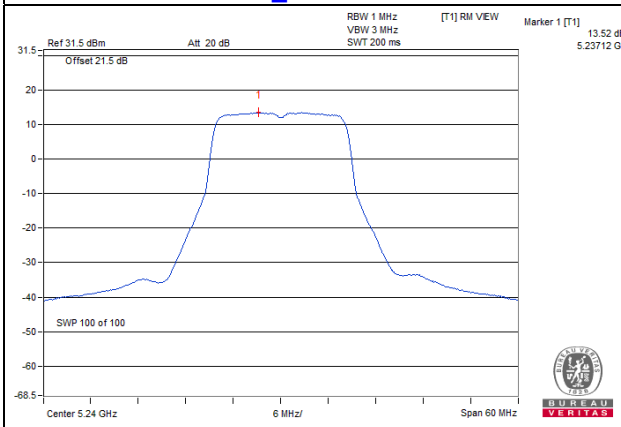
802.11ax (HE80)

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				
42	5210	1.11	0.13	0.28	3.93	16.19	Pass

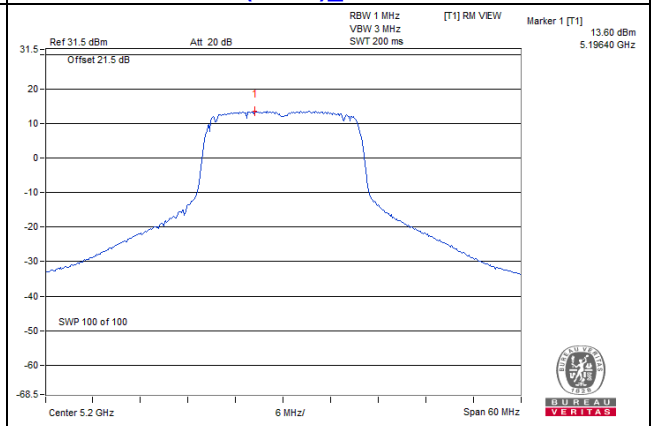
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 17-(6.81-6) = 16.19 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

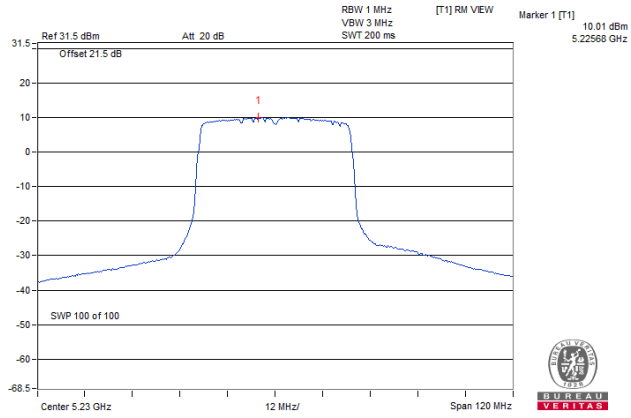
802.11a_Chain 0 / CH48



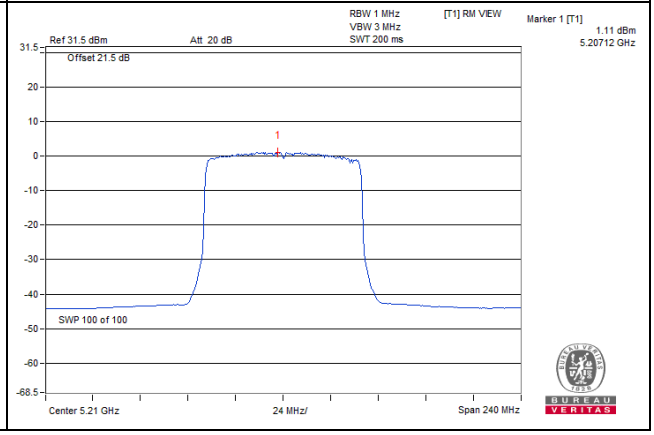
802.11ax (HE20)_Chain 0 / CH40



802.11ax (HE40)_Chain 0 / CH46



802.11ax (HE80)_Chain 0 / CH42



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					
149	5745	9.46	8.69	0.30	12.40	14.62	29.19	Pass
157	5785	8.72	8.60	0.30	11.97	14.19	29.19	Pass
165	5825	8.73	8.22	0.30	11.79	14.01	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					
149	5745	8.50	7.87	0.25	11.45	13.67	29.19	Pass
157	5785	8.05	7.73	0.25	11.15	13.37	29.19	Pass
165	5825	7.94	7.03	0.25	10.77	12.99	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					
151	5755	4.26	4.60	0.21	7.65	9.87	29.19	Pass
159	5795	5.05	4.59	0.21	8.04	10.26	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.

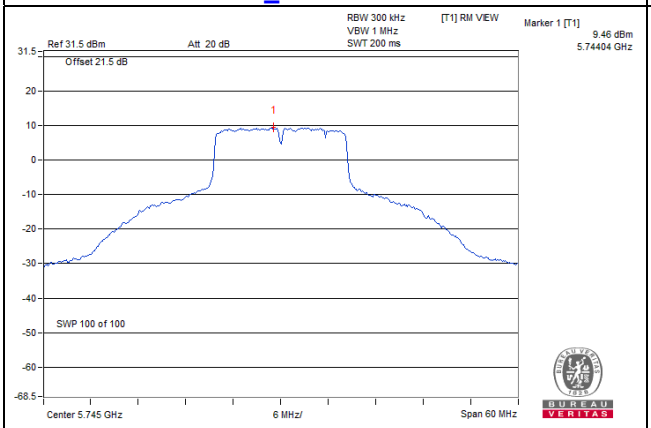
802.11ax (HE80)

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					
155	5775	0.63	0.26	0.28	3.74	5.96	29.19	Pass

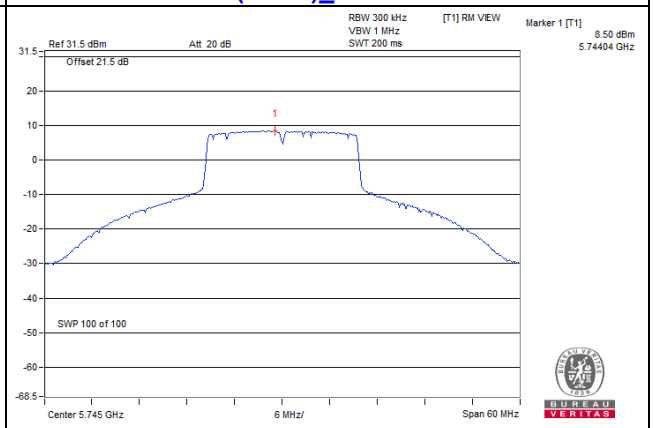
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 3.8 dBi + 10log(2) = 6.81 dBi > 6dBi, so the power density limit shall be reduced to 30-(6.81-6) = 29.19 dBm.
3. Refer to section 3.3 for duty cycle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

Spectrum Plot of Worst Value

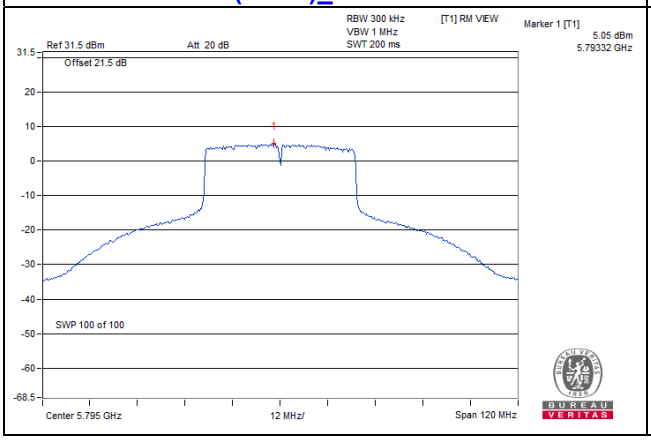
802.11a_Chain 0 / CH149



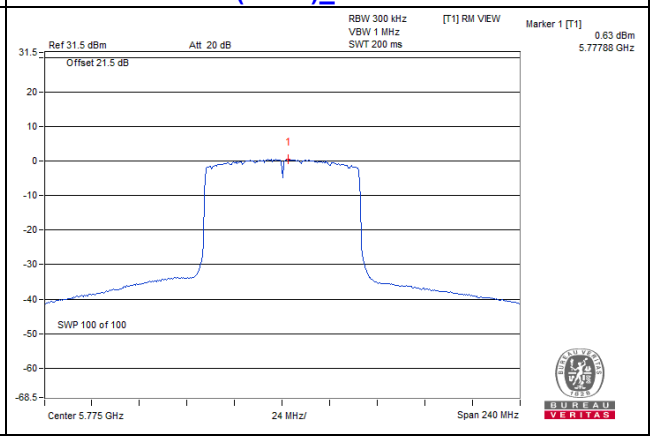
802.11ax (HE20)_Chain 0 / CH149



802.11ax (HE40)_Chain 0 / CH159



802.11ax (HE80)_Chain 0 / CH155

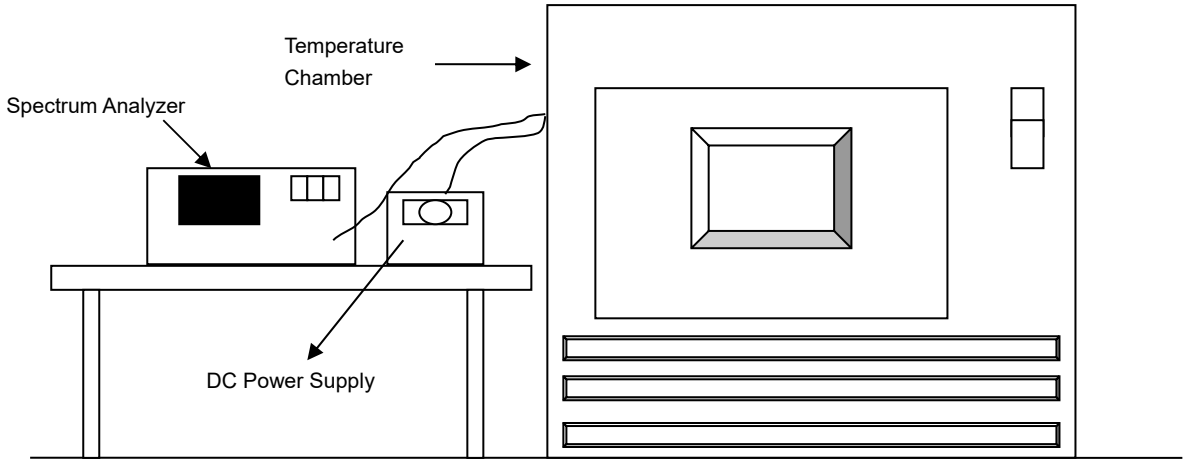


4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (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	5179.9882	Pass	5179.9876	Pass	5179.9918	Pass	5179.991	Pass
40	12	5179.9915	Pass	5179.9911	Pass	5179.9944	Pass	5179.9933	Pass
30	12	5179.9997	Pass	5180.0032	Pass	5180.0026	Pass	5180.0016	Pass
20	12	5179.9785	Pass	5179.9785	Pass	5179.9814	Pass	5179.9816	Pass
10	12	5179.9884	Pass	5179.986	Pass	5179.988	Pass	5179.9904	Pass
0	12	5180.0031	Pass	5180.0037	Pass	5180.0061	Pass	5180.0014	Pass
-10	12	5180.0017	Pass	5180.0032	Pass	5180.0003	Pass	5179.9999	Pass
-20	12	5179.9766	Pass	5179.9745	Pass	5179.9769	Pass	5179.9784	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 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	5179.9788	Pass	5179.9788	Pass	5179.9822	Pass	5179.981	Pass
	12	5179.9785	Pass	5179.9785	Pass	5179.9814	Pass	5179.9816	Pass
	10.2	5179.9793	Pass	5179.9782	Pass	5179.9806	Pass	5179.981	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		
149	5745	16.33	15.75	0.5	Pass
157	5785	16.33	15.8	0.5	Pass
165	5825	16.33	16.37	0.5	Pass

802.11ax (HE20)

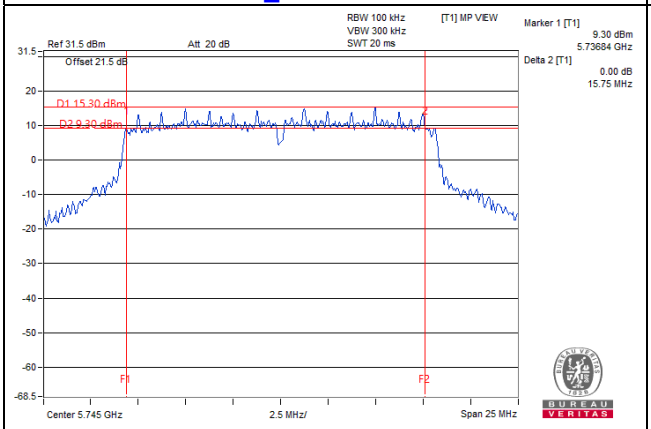
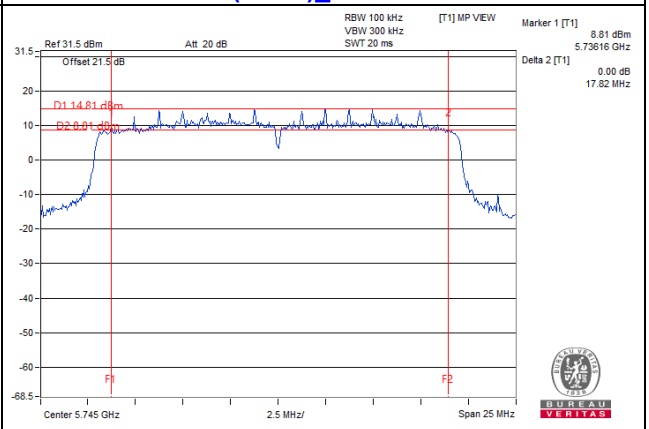
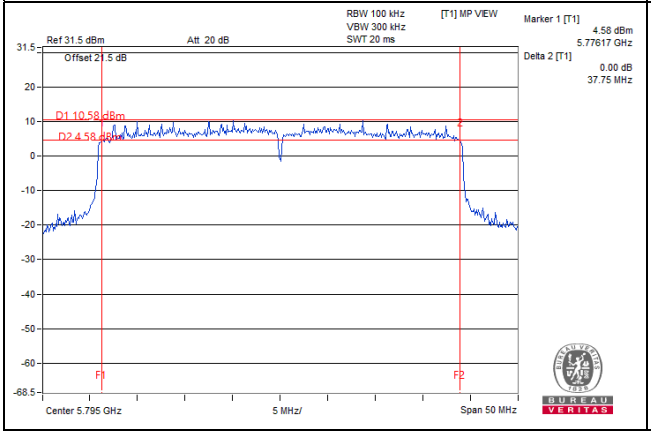
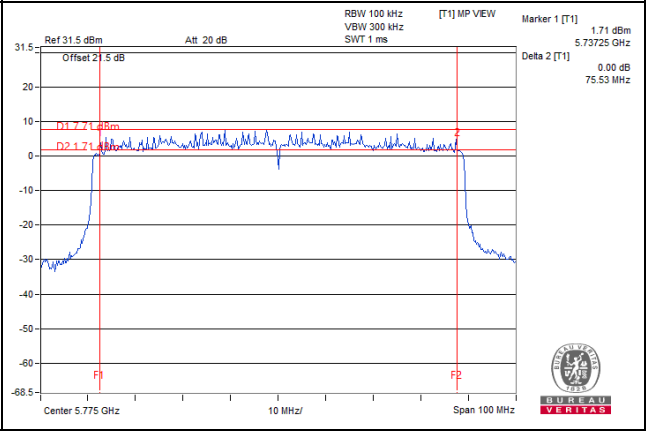
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	18.74	17.82	0.5	Pass
157	5785	18.37	18.13	0.5	Pass
165	5825	18.53	18.53	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	37.84	37.91	0.5	Pass
159	5795	38.22	37.75	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	77.13	75.53	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH149	**802.11ax (HE20)_Chain 1 / CH149**
	
802.11ax (HE40)_Chain 1 / CH159	**802.11ax (HE80)_Chain 1 / CH155**
	

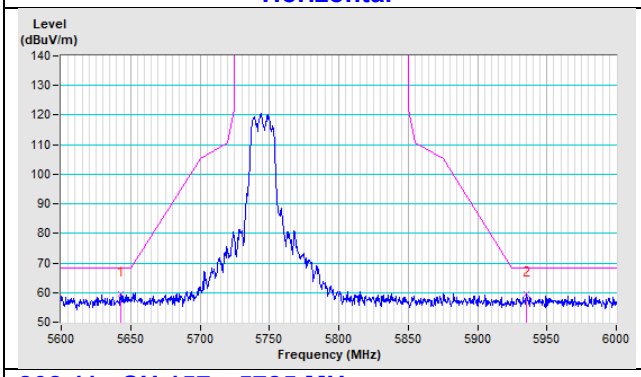
5 Pictures of Test Arrangements

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

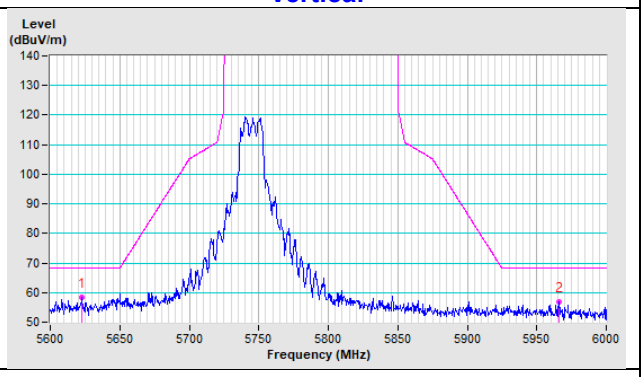
Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a CH 149：5745 MHz

Horizontal

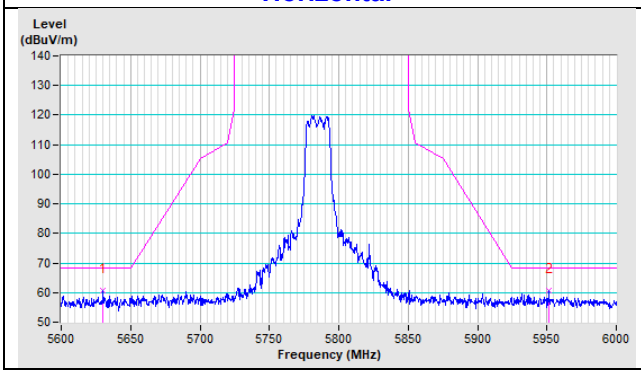


Vertical

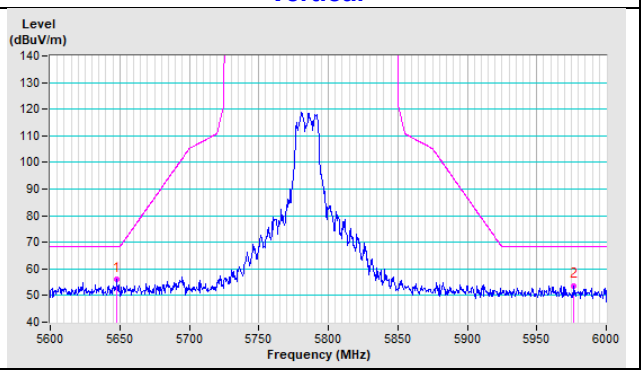


802.11a CH 157：5785 MHz

Horizontal

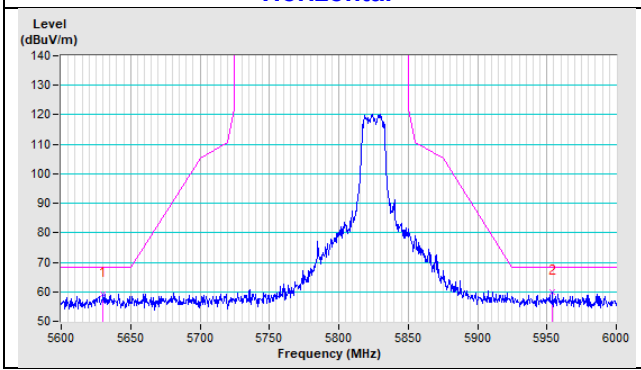


Vertical

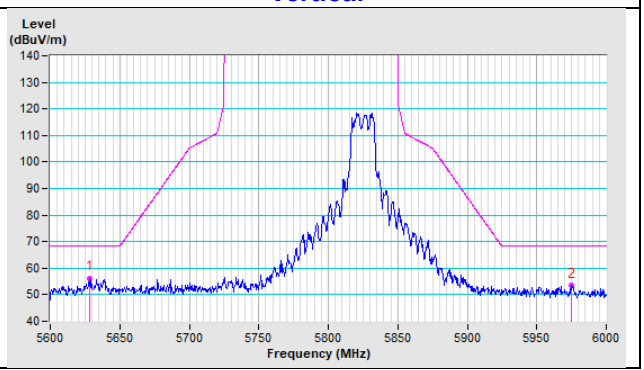


802.11a CH 165：5825 MHz

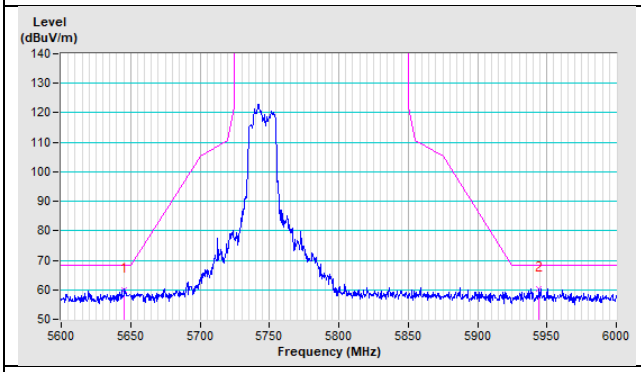
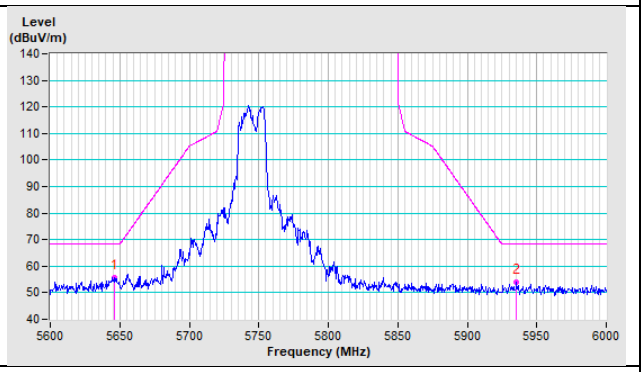
Horizontal



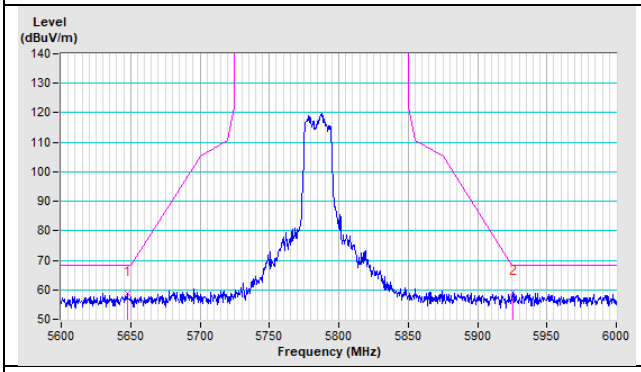
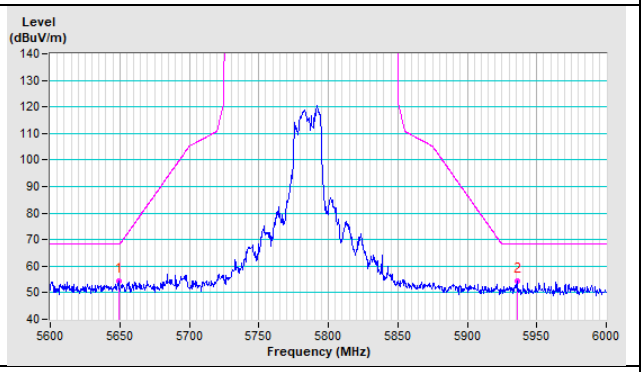
Vertical



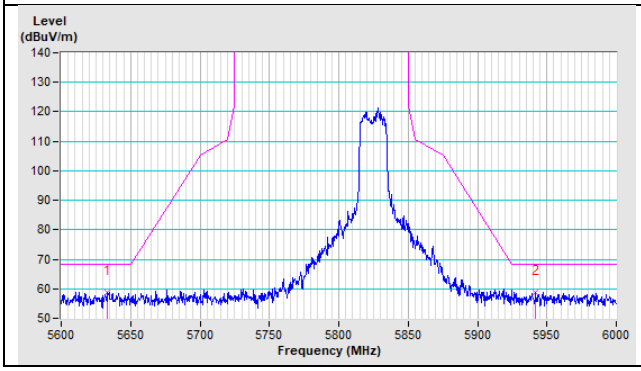
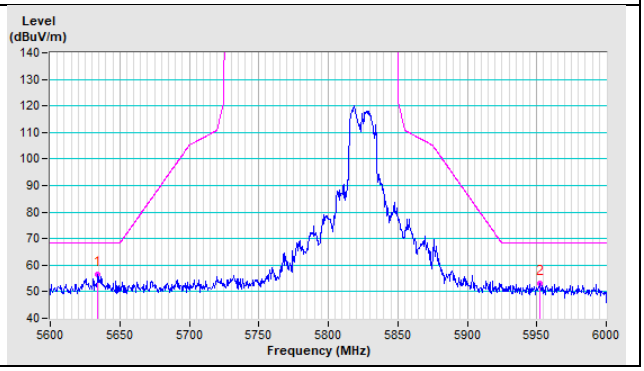
802.11ax (HE20) CH 149：5745 MHz

Horizontal	Vertical
	

802.11ax (HE20) CH 157：5785 MHz

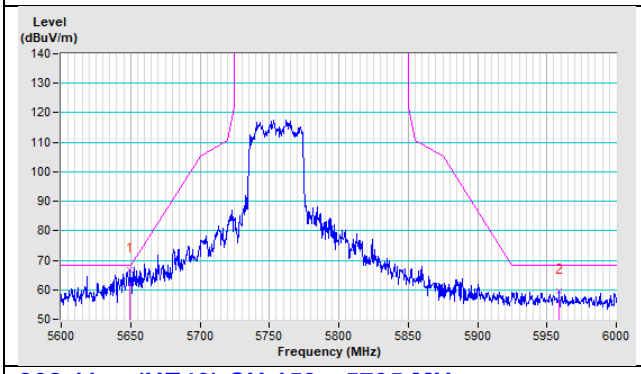
Horizontal	Vertical
	

802.11ax (HE20) CH 165：5825 MHz

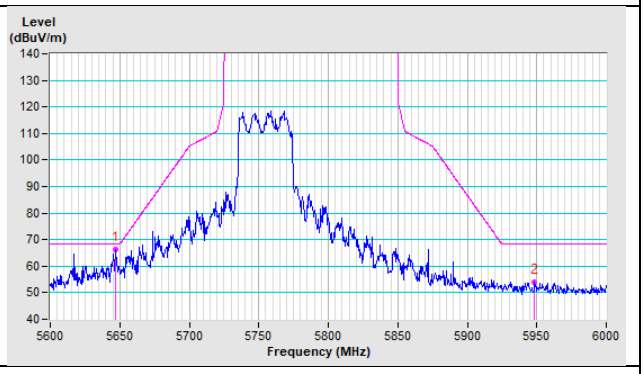
Horizontal	Vertical
	

802.11ax (HE40) CH 151：5755 MHz

Horizontal

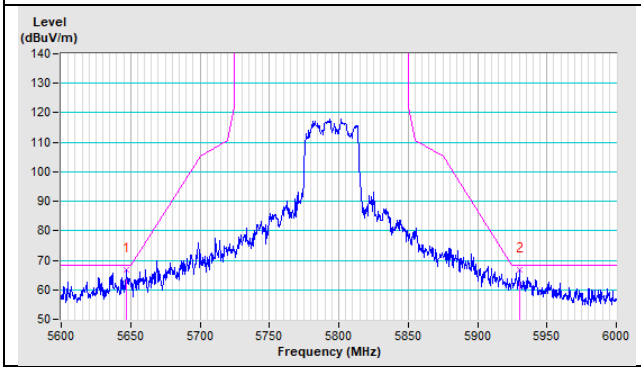


Vertical

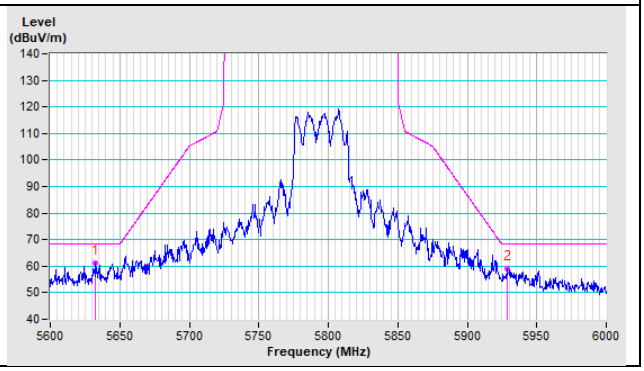


802.11ax (HE40) CH 159：5795 MHz

Horizontal

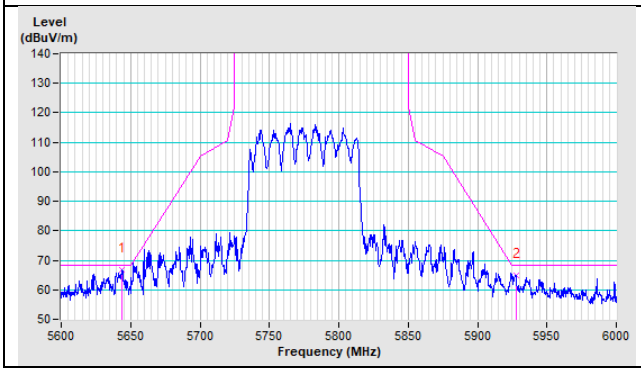


Vertical

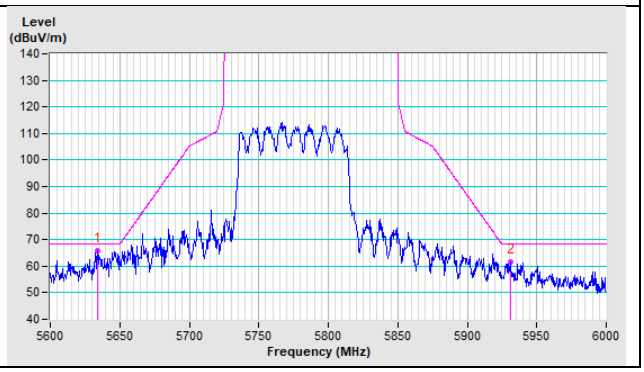


802.11ax (HE80) CH 155：5775 MHz

Horizontal



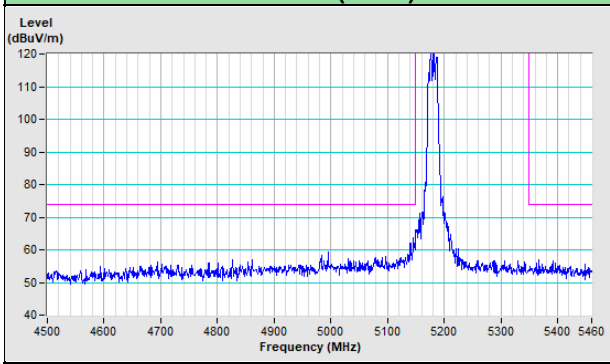
Vertical



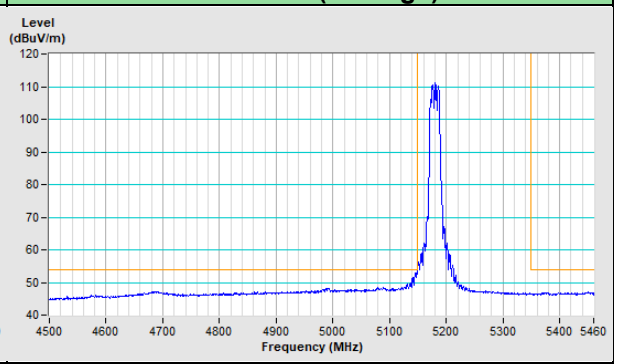
Annex B - Band-Edge Measurement (For U-NII-1 band)

802.11a Channel 36

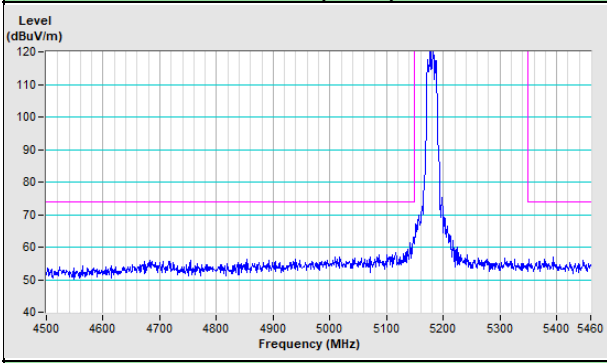
Horizontal (Peak)



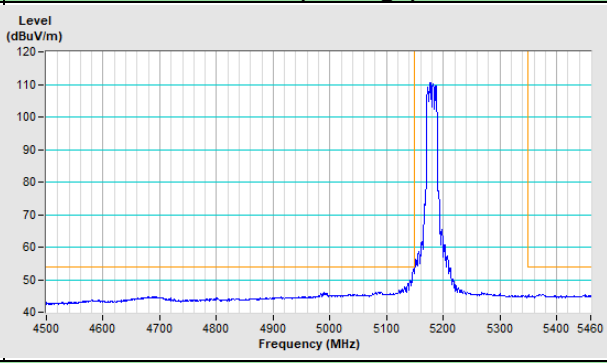
Horizontal (Average)



Vertical (Peak)

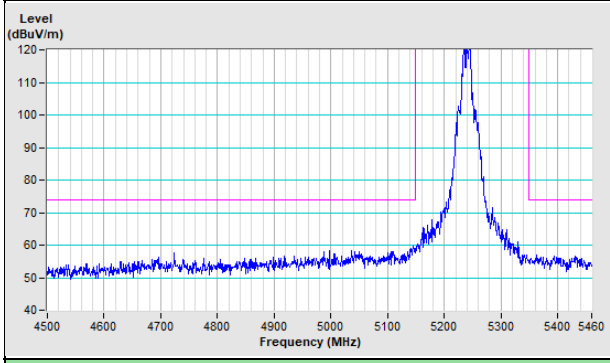


Vertical (Average)

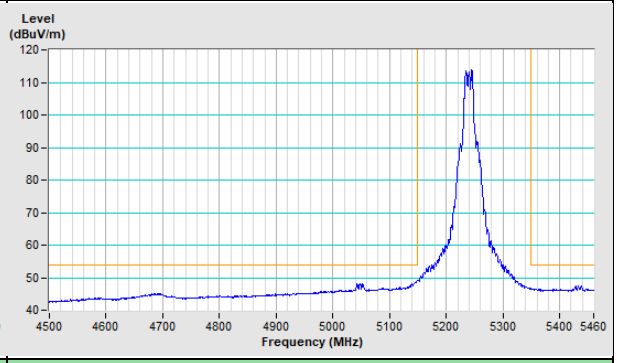


802.11a Channel 48

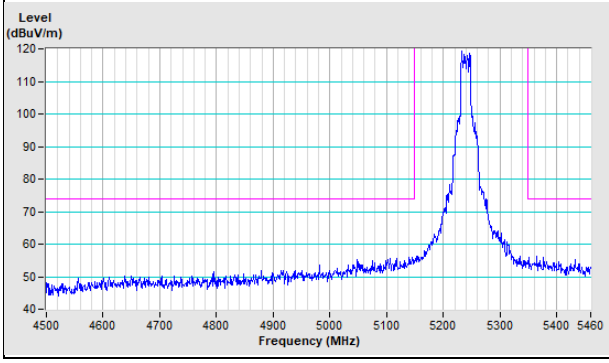
Horizontal (Peak)



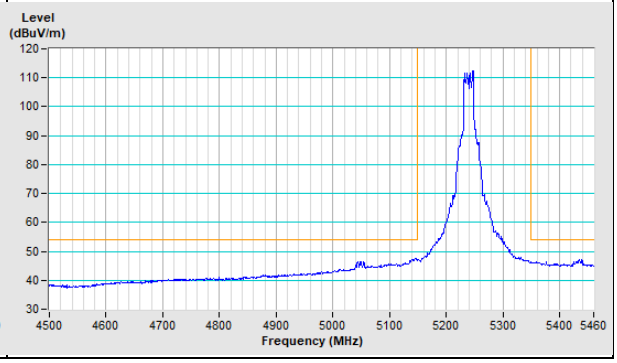
Horizontal (Average)



Vertical (Peak)

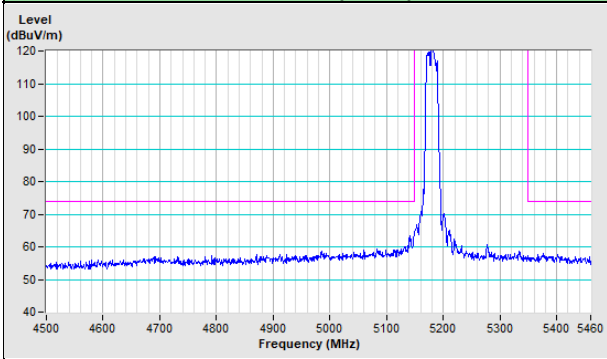


Vertical (Average)

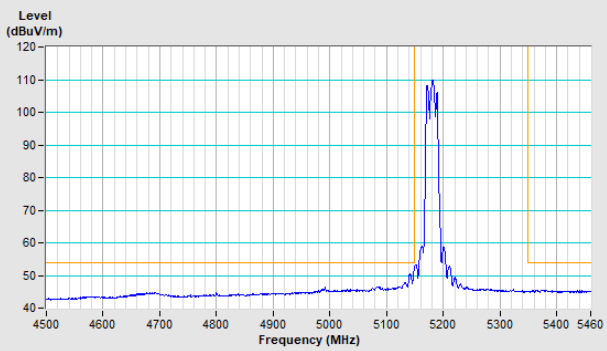


802.11ax (HE20) Channel 36

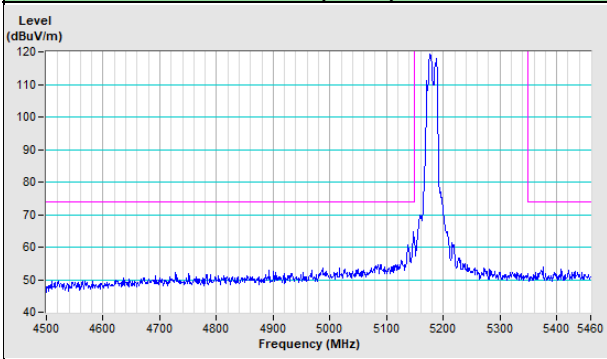
Horizontal (Peak)



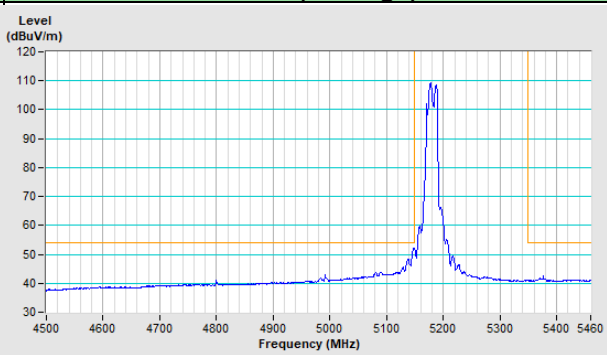
Horizontal (Average)



Vertical (Peak)

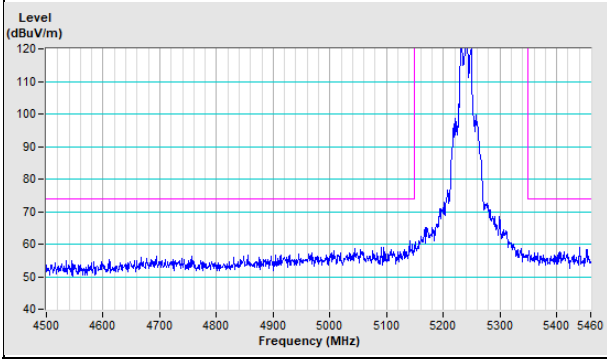


Vertical (Average)

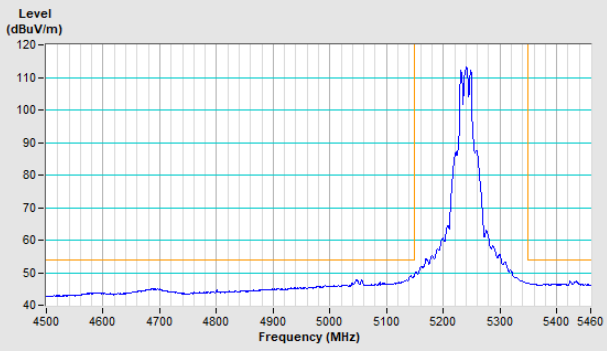


802.11ax (HE20) Channel 48

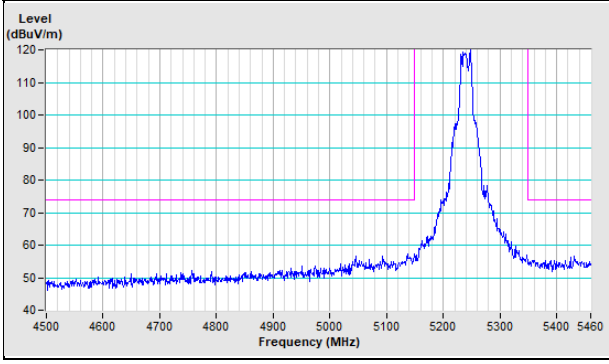
Horizontal (Peak)



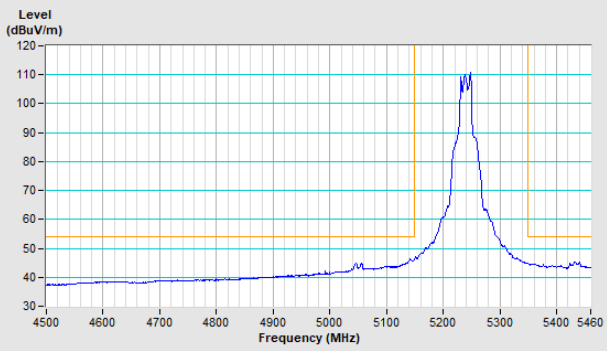
Horizontal (Average)



Vertical (Peak)

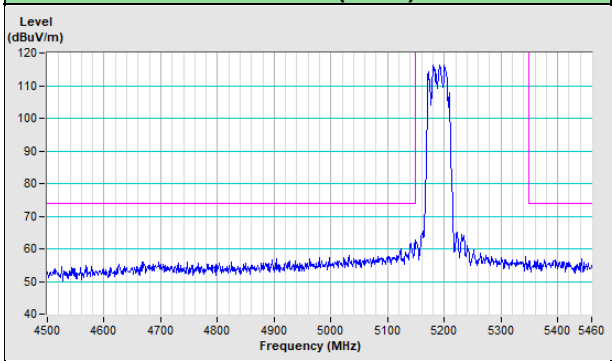


Vertical (Average)

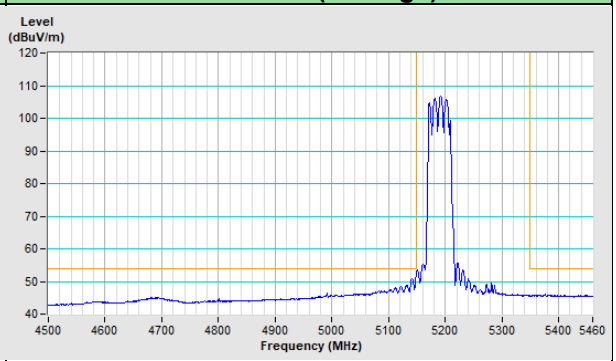


802.11ax (HE40) Channel 38

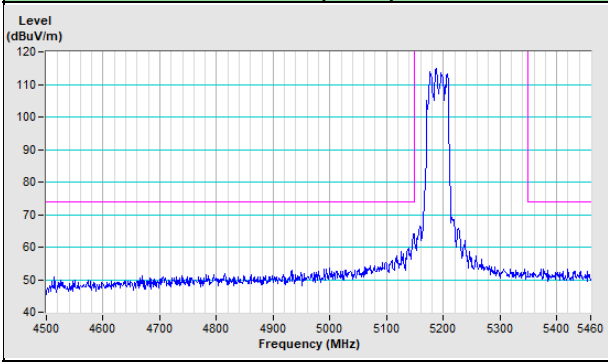
Horizontal (Peak)



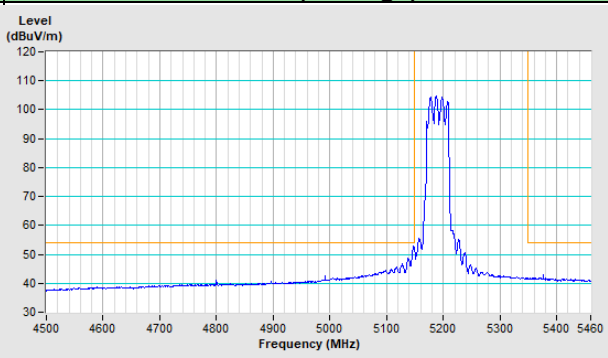
Horizontal (Average)



Vertical (Peak)

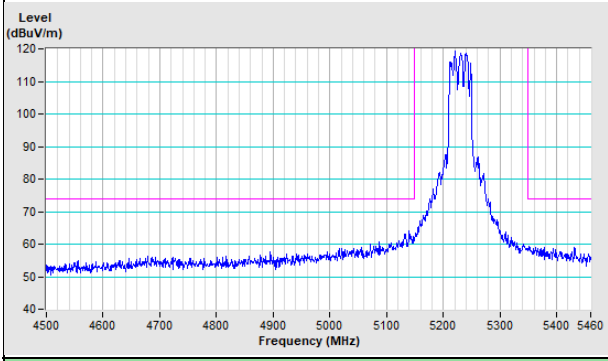


Vertical (Average)

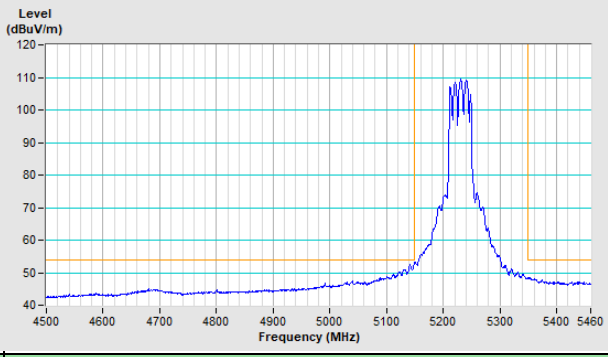


802.11ax (HE40) Channel 46

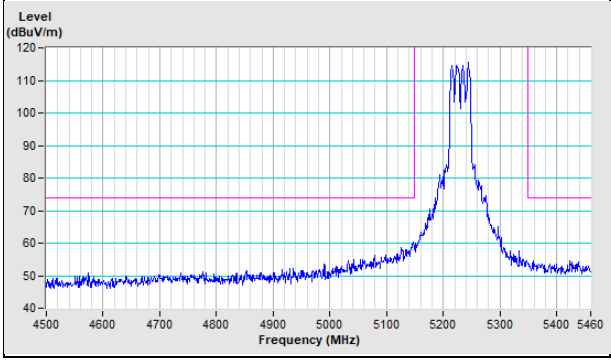
Horizontal (Peak)



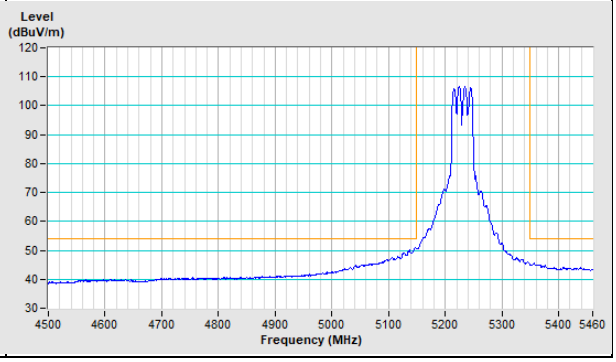
Horizontal (Average)

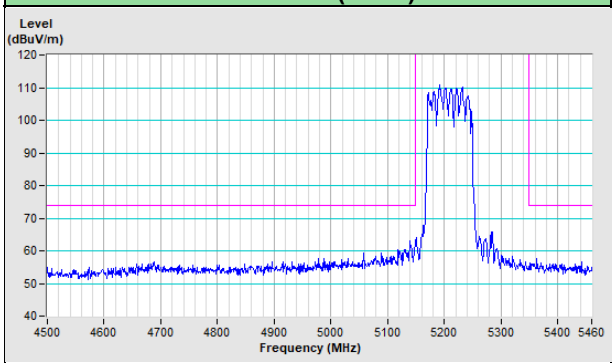
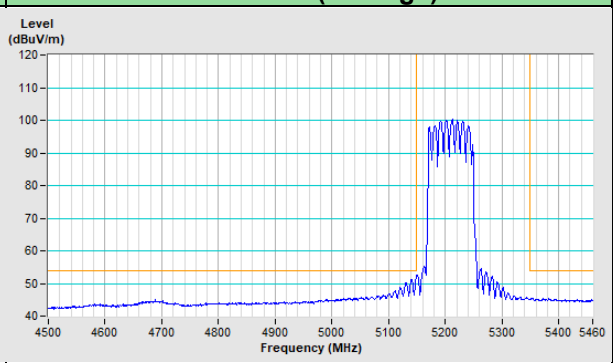
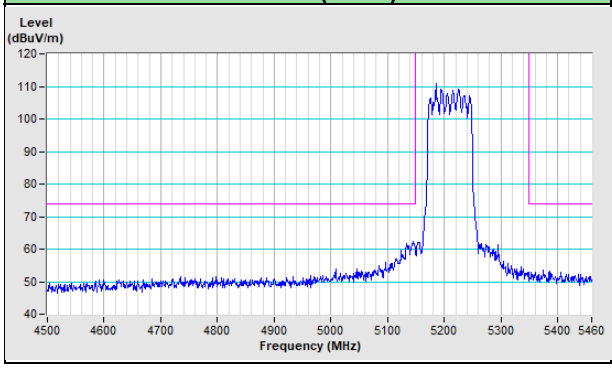
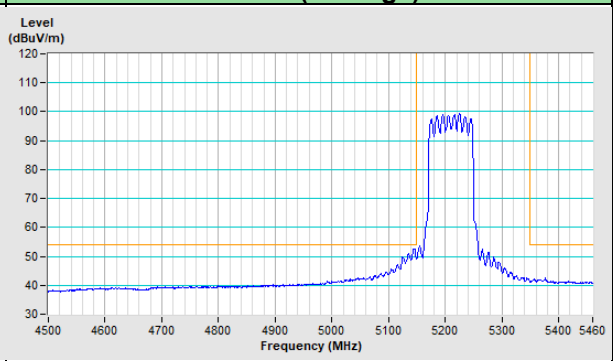


Vertical (Peak)



Vertical (Average)



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

Appendix – Information of the Testing Laboratories

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

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

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

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

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

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

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

--- END ---