FCC Test Report

Report No.:	RFBCKS-WTW-P21020435-1
FCC ID:	2AZFR-AR1
Test Model:	AR1
Received Date:	Feb. 20, 2021
Test Date:	Feb. 25 to Mar. 13, 2021
Issued Date:	Apr. 21, 2021
Applicant:	Palo Alto Networks Inc.
Address:	3000 Tannery Way, Santa Clara, CA 95054
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RFBCKS-WTW-P21020435-1	Original release.	Apr. 21, 2021

1 Certificate of Conformity

Product: Okyo Garde

Brand: OKYO

Test Model: AR1

Sample Status: Engineering sample

Applicant: Palo Alto Networks Inc.

Test Date: Feb. 25 to Mar. 13, 2021

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 : Vivian Huang , **Date:** Apr. 21, 2021

Vivian Huang / Specialist

Approved by : , **Date:** Apr. 21, 2021

Clark Lin / Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -18.65dB at 0.15391MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	PASS	Meet the requirement of limit. Minimum passing margin is -0.7dB at 5138.50MHz and 5150.00MHz.
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	5.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Okyo Garde
Brand	OKYO
Test Model	AR1
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462 GHz **5GHz:** 5.18~ 5.24 GHz, 5.26 ~ 5.32 GHz, 5.50 ~ 5.72 GHz, 5.745 ~ 5.825 GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 25 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 12 802.11ac (VHT80), 802.11ax (HE80): 6
Output Power	**CDD Mode:** **2.412 ~ 2.462 GHz:** 475.491 mW **5.18 ~ 5.24 GHz:** 441.267 mW **5.26 ~ 5.32 GHz:** 247.522 mW **5.5 ~ 5.72 GHz:** 242.505 mW **5.745 ~ 5.825 GHz:** 467.378 mW **Beamforming Mode:** **2.412 ~ 2.462 GHz:** 449.66 mW **5.18 ~ 5.24 GHz:** 331.426 mW **55.26 ~ 5.32 GHz:** 83.005 mW **5.5 ~ 5.72 GHz:** 86.533 mW **5.745 ~ 5.825 GHz:** 343.809 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1, AC Power cord x1 (Unshielded, 1m)
Cable Supplied	Ethernet cable x1 (Unshielded, 1m)

Note:

1. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3
WLAN 2.4GHz	WLAN 5GHz (Low Band)	WLAN 5GHz (High Band)

2. Simultaneously transmission condition.

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

3. The EUT power needs to be supplied from a power adapter, the information is as below table:

Brand	Model No.	Spec.
LITEON	HA-1600-12	Input: 100-240Vac, ~1.7A, 50-60Hz Output: 12Vdc, 5.0A, 60.0W DC output cable (Unshielded, 1 m with one core)

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

Antenna No.	RF Chain No.	Antenna Net Gain (dBi)	Frequency Range	Antenna Type	Connector Type	Cable Length
1	2.4G Chain3	3.6	2.4~2.4835 GHz	PCB	i-pex(MHF)	105 mm
	5G (Low Band) Chain3	5.2	5.15~5.35 GHz			
2	2.4G Chain2	2.9	2.4~2.4835 GHz	PCB	i-pex(MHF)	146 mm
	5G (Low Band) Chain2	4.6	5.15~5.35 GHz			
3	2.4G Chain1	3.6	2.4~2.4835 GHz	PCB	i-pex(MHF)	53 mm
	5G (Low Band) Chain1	4.7	5.15~5.35 GHz			
4	2.4G Chain0	3.5	2.4~2.4835 GHz	PCB	i-pex(MHF)	122 mm
	5G (Low Band) Chain0	4.5	5.15~5.35 GHz			
5	5G (High Band) Chain3	4.5	5.47~5.85 GHz	PCB	i-pex(MHF)	71 mm
6	5G (High Band) Chain2	4.6	5.47~5.85 GHz	PCB	i-pex(MHF)	119 mm
7	5G (High Band) Chain1	4.8	5.47~5.85 GHz	PCB	i-pex(MHF)	75 mm
8	5G (High Band) Chain0	4.4	5.47~5.85 GHz	PCB	i-pex(MHF)	54 mm

5. The EUT incorporates a MIMO function.

2.4GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11b	4TX	4RX
802.11g	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
VHT20	4TX	4RX
VHT40	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
5GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX
802.11ax (HE20)	4TX	4RX
802.11ax (HE40)	4TX	4RX
802.11ax (HE80)	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), ac 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)

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

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						
For Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE40)	5180-5240 5745-5825	38 to 46 151 to 159	46	OFDMA	BPSK	MCS0
For Radio 3						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE40)	5180-5240 5745-5825	38 to 46 151 to 159	159	OFDMA	BPSK	MCS0

Power Line Conducted Emission Test:

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

CDD Mode						
For Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE40)	5180-5240 5745-5825	38 to 46 151 to 159	46	OFDMA	BPSK	MCS0
For Radio 3						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11ax (HE40)	5180-5240 5745-5825	38 to 46 151 to 159	159	OFDMA	BPSK	MCS0

Antenna Port Conducted Measurement:

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

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

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

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25deg. C, 67%RH	120Vac, 60Hz	Sampson Chen
RE<1G	23deg. C, 64%RH	120Vac, 60Hz	Sampson Chen
PLC	25deg. C, 71%RH	120Vac, 60Hz	Sampson Chen
APCM	25deg. C, 60%RH	120Vac, 60Hz	Eric Peng

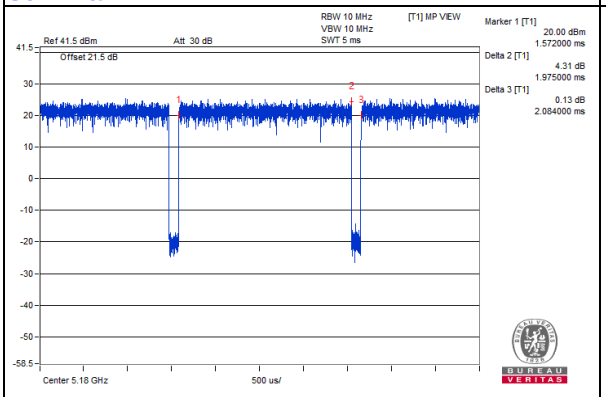
3.3 Duty Cycle of Test Signal

For U-NII-1:

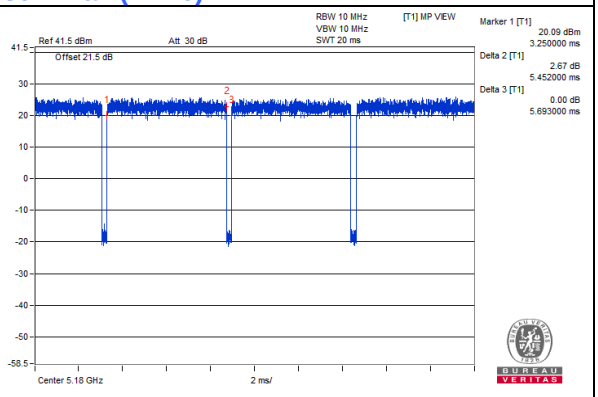
Duty cycle of test signal is < 98 %, duty factor shall be considered.

802.11a: Duty cycle = 1.975ms / 2.084 ms=0.948, Duty factor = 10 * log (1/Duty cycle) = 0.23 dB
802.11ax (HE20): Duty cycle = 5.452 ms /5.693 ms=0.958, Duty factor = 10 * log (1/Duty cycle) = 0.19 dB
802.11ax (HE40): Duty cycle = 5.445 ms /5.72 ms=0.952, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE80): Duty cycle = 5.443 ms /5.788 ms=0.94, Duty factor = 10 * log (1/Duty cycle) = 0.27 dB

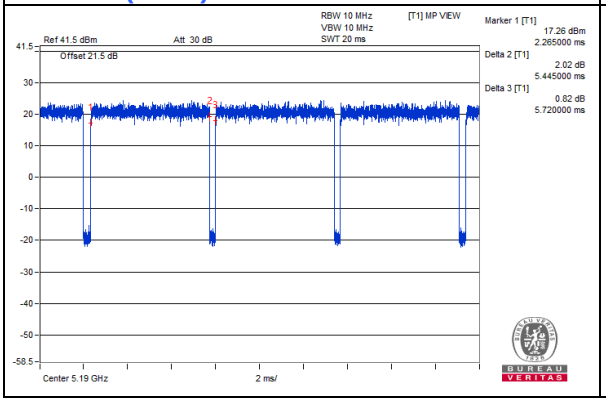
802.11a



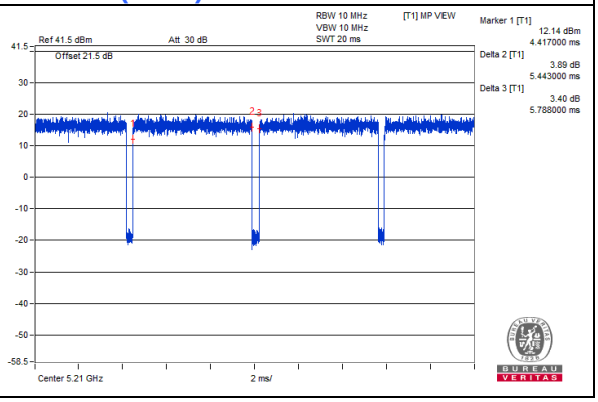
802.11ax (HE20)



802.11ax (HE40)



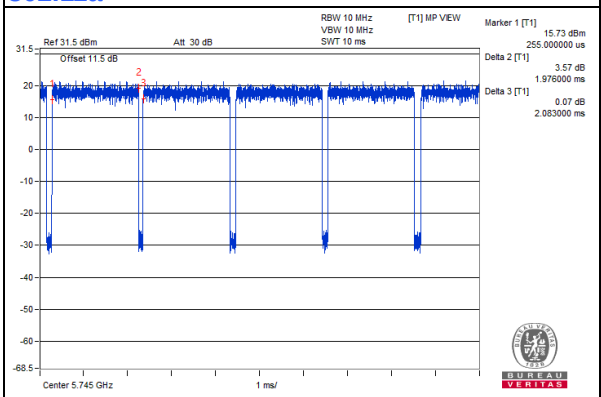
802.11ax (HE80)



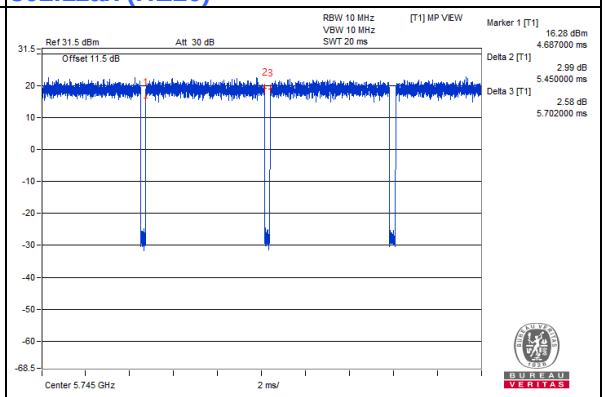
For U-NII-3:
Duty cycle of test signal is < 98 %, duty factor shall be considered.

802.11a: Duty cycle = 1.976 ms / 2.083 ms=0.949, Duty factor = 10 * log (1/Duty cycle) = 0.23 dB
802.11ax (HE20): Duty cycle = 5.45 ms /5.702 ms=0.956, Duty factor = 10 * log (1/Duty cycle) = 0.20 dB
802.11ax (HE40): Duty cycle = 5.451 ms /5.703 ms=0.956, Duty factor = 10 * log (1/Duty cycle) = 0.20 dB
802.11ax (HE80): Duty cycle = 5.448 ms /5.715 ms=0.953, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB

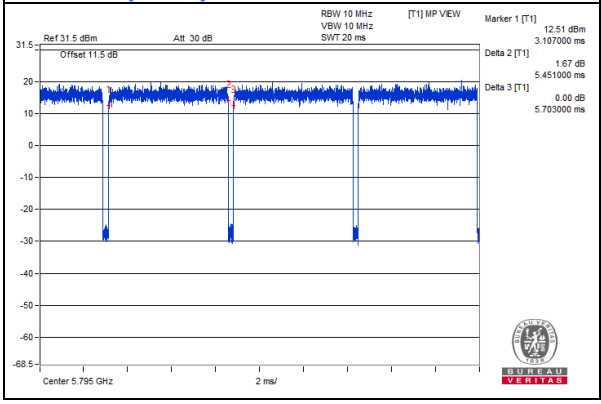
802.11a



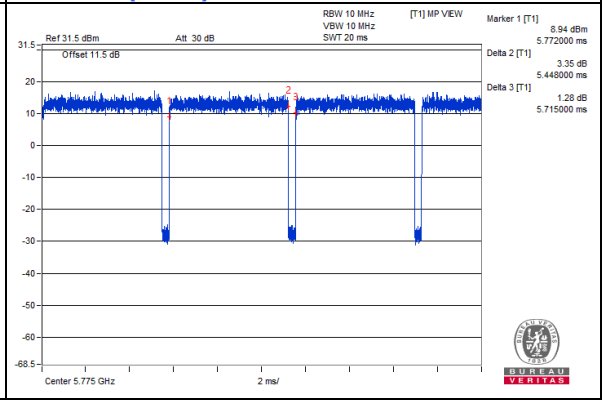
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	NA	Provided by Lab
B.	Switch	D-Link	DGS-1005D	DR8WC92000523	NA	Provided by Lab

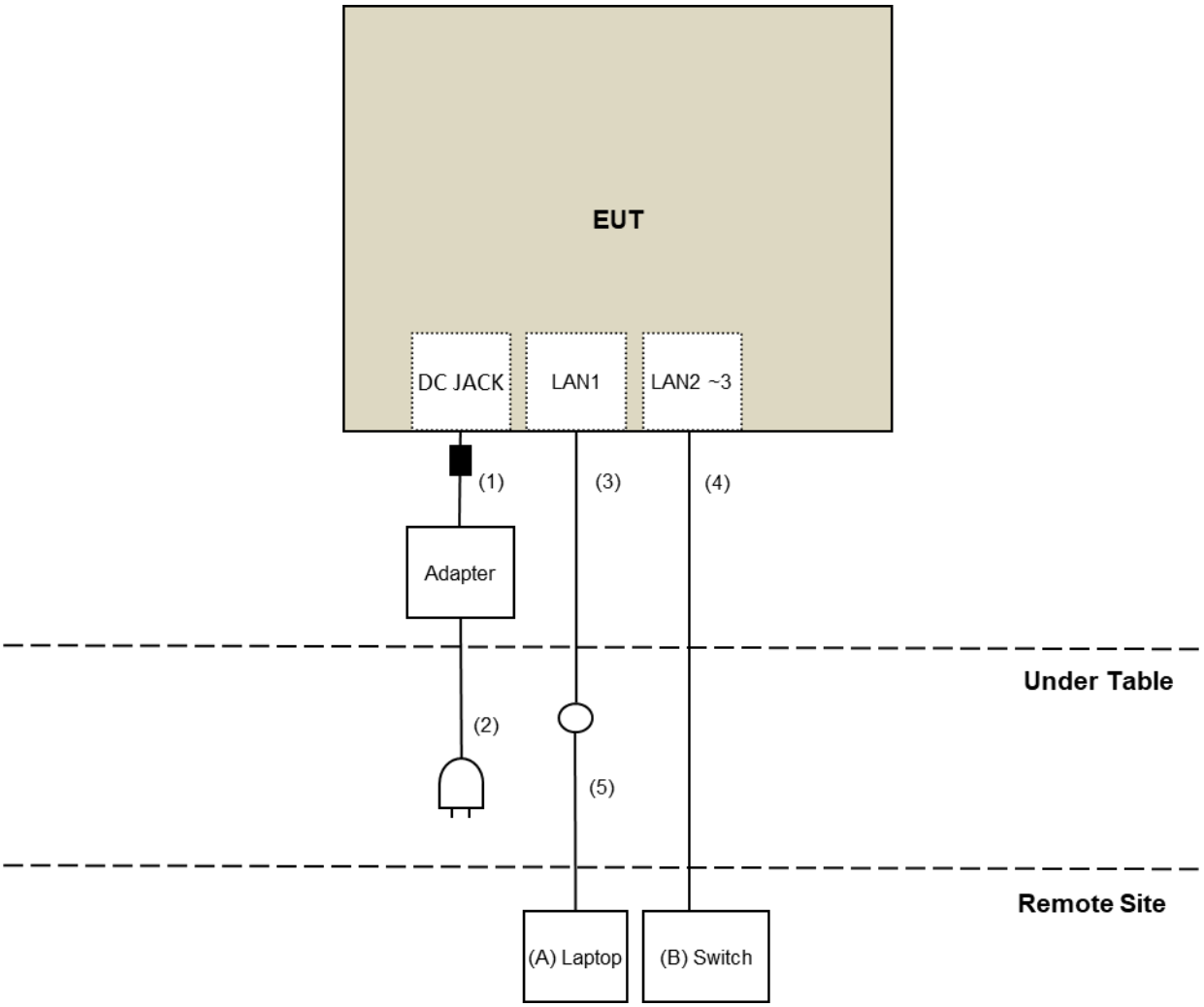
Note:

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

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

Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard and references

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

Test Standard:

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

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

References Test Guidance:

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

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

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

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

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

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

Note:

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

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

4.1.2 Test Instruments

For Radiated emission & Bandedge & OOBE test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 01, 2020	Nov. 30, 2021
Pre-Amplifier EMCI	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Mar. 05, 2021	Mar. 04, 2022
RF Cable	5D-FB	LOOPCAB-001	Jan. 07, 2021	Jan. 06, 2022
RF Cable	5D-FB	LOOPCAB-002	Jan. 07, 2021	Jan. 06, 2022
Pre-Amplifier EMCI	EMC330N	980701	Mar. 10, 2021	Mar. 09, 2022
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 06, 2020	Nov. 05, 2021
RF Cable	8D	966-6-1	Apr. 04, 2020	Apr. 03, 2021
RF Cable	8D	966-4-2	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-3	Mar. 18, 2020	Mar. 17, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-03	Jan. 11, 2021	Jan. 10, 2022
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 22, 2020	Nov. 21, 2021
Pre-Amplifier EMCI	EMC 12630 SE	980638	Apr. 08, 2020	Apr. 07, 2021
RF Cable	EMC104-SM-SM-1200	160922	Dec. 25, 2020	Dec. 24, 2021
RF Cable	EMC104-SM-SM-2000	180502	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 11, 2021	Jan. 10, 2022
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 22, 2020	Nov. 21, 2021
RF Cable	EMC102-KM-KM-1200	160924	Jan. 11, 2021	Jan. 10, 2022
RF Cable	EMC-KM-KM-4000	200214	Mar. 10, 2021	Mar. 09, 2022
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
3. Tested Date: Mar. 11 to 13, 2021

For other test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	May 29, 2020	May 28, 2021
Power meter Anritsu	ML2495A	1529002	July 22, 2020	July 21, 2021
Power sensor Anritsu	MA2411B	1339443	July 22, 2020	July 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 14, 2021	Jan. 13, 2022
True RMS Clamp Meter FLUKE	325	31130711WS	June 06, 2020	June 05, 2021
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

NOTE:
1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Mar. 06, 2021

4.1.3 Test Procedure

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

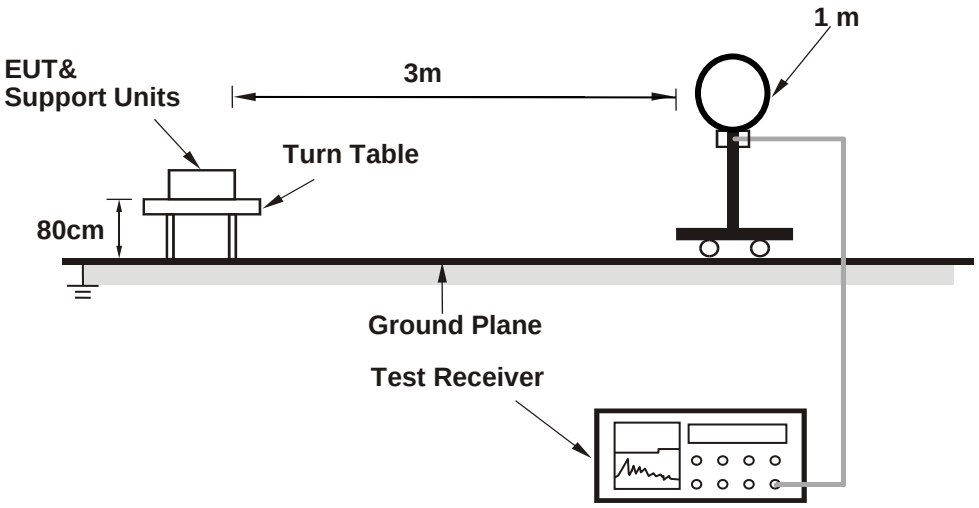
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

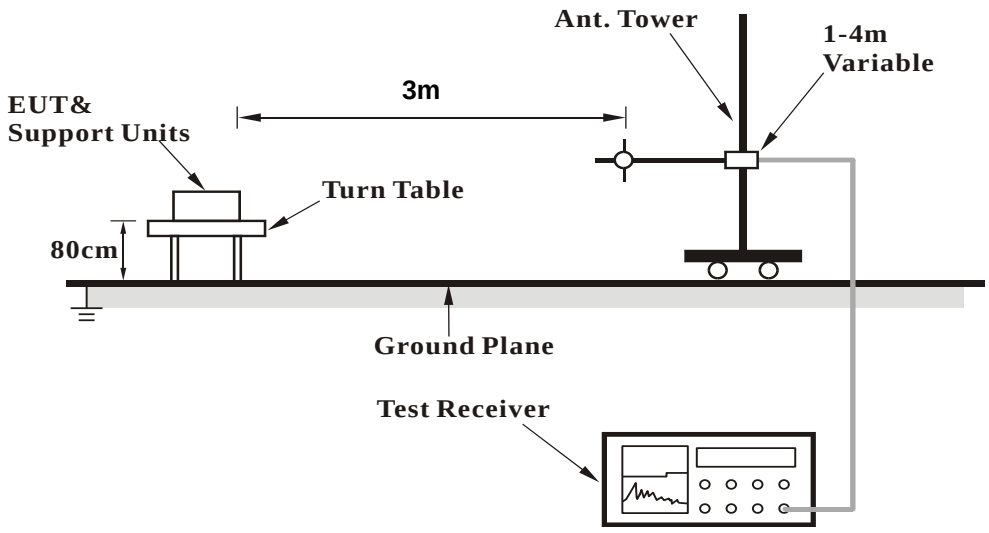
No deviation.

4.1.5 Test Setup

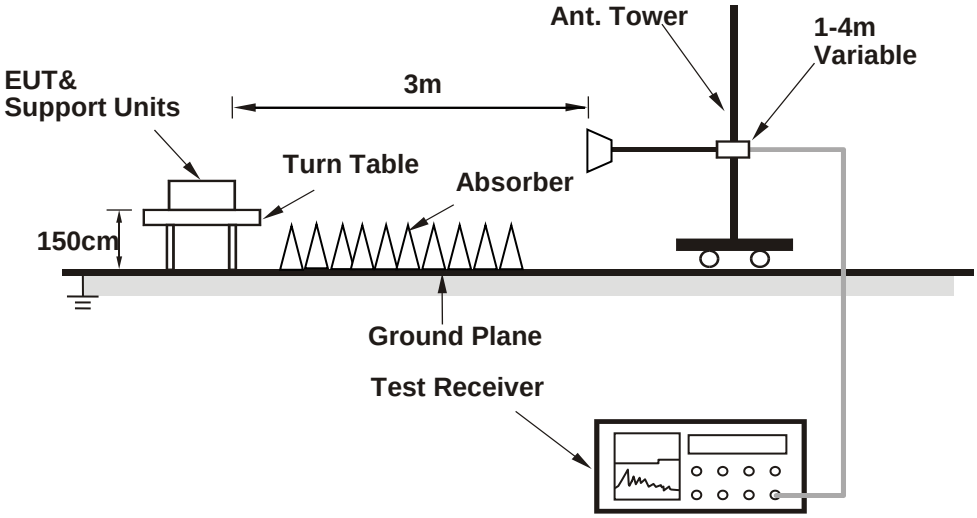
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop Computer which is placed on remote site.
b. Controlling software (qdart_conn.win.1.0_installer_00079.1_CS.zip) 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	57.5 PK	74.0	-16.5	1.53 H	5	56.4	1.1
2	5150.00	44.3 AV	54.0	-9.7	1.53 H	5	43.2	1.1
3	*5180.00	115.7 PK			1.53 H	5	114.7	1.0
4	*5180.00	107.5 AV			1.53 H	5	106.5	1.0
5	#10360.00	50.5 PK	68.2	-17.7	1.77 H	57	40.2	10.3
6	15540.00	55.4 PK	74.0	-18.6	1.54 H	86	43.4	12.0
7	15540.00	41.6 AV	54.0	-12.4	1.54 H	86	29.6	12.0
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	5146.40	53.8 PK	74.0	-20.2	1.77 V	91	52.7	1.1
2	5146.40	44.1 AV	54.0	-9.9	1.77 V	91	43.0	1.1
3	*5180.00	115.6 PK			1.77 V	91	114.6	1.0
4	*5180.00	107.1 AV			1.77 V	91	106.1	1.0
5	#10360.00	47.6 PK	68.2	-20.6	1.54 V	221	37.3	10.3
6	15540.00	52.0 PK	74.0	-22.0	1.29 V	196	40.0	12.0
7	15540.00	39.8 AV	54.0	-14.2	1.29 V	196	27.8	12.0

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 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	50.9 PK	74.0	-23.1	1.50 H	7	49.8	1.1
2	5150.00	40.8 AV	54.0	-13.2	1.50 H	7	39.7	1.1
3	*5200.00	115.3 PK			1.50 H	7	114.2	1.1
4	*5200.00	107.3 AV			1.50 H	7	106.2	1.1
5	#10400.00	51.1 PK	68.2	-17.1	1.74 H	82	40.7	10.4
6	15600.00	55.2 PK	74.0	-18.8	1.56 H	86	43.2	12.0
7	15600.00	41.3 AV	54.0	-12.7	1.56 H	86	29.3	12.0
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	5150.00	53.6 PK	74.0	-20.4	1.72 V	105	52.5	1.1
2	5150.00	44.1 AV	54.0	-9.9	1.72 V	105	43.0	1.1
3	*5200.00	115.6 PK			1.72 V	105	114.5	1.1
4	*5200.00	107.0 AV			1.72 V	105	105.9	1.1
5	#10400.00	47.2 PK	68.2	-21.0	1.53 V	224	36.8	10.4
6	15600.00	51.8 PK	74.0	-22.2	1.33 V	181	39.8	12.0
7	15600.00	39.8 AV	54.0	-14.2	1.33 V	181	27.8	12.0

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 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	5139.00	50.5 PK	74.0	-23.5	1.45 H	9	49.4	1.1
2	5139.00	41.2 AV	54.0	-12.8	1.45 H	9	40.1	1.1
3	*5240.00	115.3 PK			1.45 H	9	114.5	0.8
4	*5240.00	107.2 AV			1.45 H	9	106.4	0.8
5	5376.00	48.8 PK	74.0	-25.2	1.45 H	9	47.9	0.9
6	5376.00	37.8 AV	54.0	-16.2	1.45 H	9	36.9	0.9
7	#10480.00	50.4 PK	68.2	-17.8	1.71 H	71	40.1	10.3
8	15720.00	55.4 PK	74.0	-18.6	1.54 H	71	44.2	11.2
9	15720.00	41.5 AV	54.0	-12.5	1.54 H	71	30.3	11.2
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	5140.00	49.5 PK	74.0	-24.5	1.73 V	95	48.4	1.1
2	5140.00	40.1 AV	54.0	-13.9	1.73 V	95	39.0	1.1
3	*5240.00	115.3 PK			1.73 V	95	114.5	0.8
4	*5240.00	106.9 AV			1.73 V	95	106.1	0.8
5	5350.00	48.0 PK	74.0	-26.0	1.73 V	95	47.2	0.8
6	5350.00	37.0 AV	54.0	-17.0	1.73 V	95	36.2	0.8
7	#10480.00	47.1 PK	68.2	-21.1	1.54 V	214	36.8	10.3
8	15720.00	51.8 PK	74.0	-22.2	1.36 V	187	40.6	11.2
9	15720.00	40.1 AV	54.0	-13.9	1.36 V	187	28.9	11.2

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 149：5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.24	50.2 PK	68.2	-18.0	1.58 H	93	48.8	1.4
2	*5745.00	115.6 PK			1.58 H	93	113.9	1.7
3	*5745.00	107.0 AV			1.58 H	93	105.3	1.7
4	#5940.52	50.2 PK	68.2	-18.0	1.58 H	93	48.4	1.8
5	11490.00	49.8 PK	74.0	-24.2	1.44 H	342	37.7	12.1
6	11490.00	40.2 AV	54.0	-13.8	1.44 H	342	28.1	12.1
7	#17235.00	57.4 PK	68.2	-10.8	1.46 H	241	41.2	16.2
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	#5650.00	53.9 PK	68.2	-14.3	1.90 V	135	52.5	1.4
2	*5745.00	117.3 PK			1.90 V	135	115.6	1.7
3	*5745.00	108.1 AV			1.90 V	135	106.4	1.7
4	#5941.26	55.0 PK	68.2	-13.2	1.90 V	135	53.2	1.8
5	11490.00	45.8 PK	74.0	-28.2	1.64 V	258	33.7	12.1
6	11490.00	37.4 AV	54.0	-16.6	1.64 V	258	25.3	12.1
7	#17235.00	55.1 PK	68.2	-13.1	1.23 V	177	38.9	16.2

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 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	#5571.27	50.5 PK	68.2	-17.7	1.61 H	98	49.2	1.3
2	*5785.00	115.1 PK			1.61 H	98	113.3	1.8
3	*5785.00	107.1 AV			1.61 H	98	105.3	1.8
4	#5940.58	48.9 PK	68.2	-19.3	1.61 H	98	47.1	1.8
5	11570.00	50.8 PK	74.0	-23.2	1.76 H	55	38.8	12.0
6	11570.00	38.4 AV	54.0	-15.6	1.76 H	55	26.4	12.0
7	#17355.00	55.8 PK	68.2	-12.4	1.55 H	77	38.8	17.0
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	#5585.11	52.0 PK	68.2	-16.2	1.92 V	143	50.7	1.3
2	*5785.00	117.1 PK			1.92 V	143	115.3	1.8
3	*5785.00	107.8 AV			1.92 V	143	106.0	1.8
4	#5970.78	53.1 PK	68.2	-15.1	1.92 V	143	51.3	1.8
5	11570.00	45.5 PK	74.0	-28.5	1.66 V	264	33.5	12.0
6	11570.00	37.4 AV	54.0	-16.6	1.66 V	264	25.4	12.0
7	#17355.00	54.7 PK	68.2	-13.5	1.20 V	177	37.7	17.0

Remarks:

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

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	#5626.53	50.6 PK	68.2	-17.6	1.64 H	96	49.2	1.4
2	*5825.00	115.7 PK			1.64 H	96	113.9	1.8
3	*5825.00	107.7 AV			1.64 H	96	105.9	1.8
4	#6010.95	50.4 PK	68.2	-17.8	1.64 H	96	48.6	1.8
5	11650.00	50.4 PK	74.0	-23.6	1.73 H	72	38.7	11.7
6	11650.00	38.4 AV	54.0	-15.6	1.73 H	72	26.7	11.7
7	#17475.00	55.5 PK	68.2	-12.7	1.58 H	65	36.6	18.9
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	#5639.13	52.2 PK	68.2	-16.0	1.83 V	139	50.8	1.4
2	*5825.00	116.9 PK			1.83 V	139	115.1	1.8
3	*5825.00	107.7 AV			1.83 V	139	105.9	1.8
4	#6011.69	52.7 PK	68.2	-15.5	1.83 V	139	50.9	1.8
5	11650.00	45.4 PK	74.0	-28.6	1.61 V	249	33.7	11.7
6	11650.00	36.9 AV	54.0	-17.1	1.61 V	249	25.2	11.7
7	#17475.00	55.4 PK	68.2	-12.8	1.26 V	169	36.5	18.9

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 (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	57.2 PK	74.0	-16.8	1.55 H	10	56.1	1.1
2	5150.00	44.1 AV	54.0	-9.9	1.55 H	10	43.0	1.1
3	*5180.00	116.8 PK			1.55 H	10	115.8	1.0
4	*5180.00	106.8 AV			1.55 H	10	105.8	1.0
5	#10360.00	50.7 PK	68.2	-17.5	1.66 H	75	40.4	10.3
6	15540.00	55.4 PK	74.0	-18.6	1.55 H	82	43.4	12.0
7	15540.00	41.4 AV	54.0	-12.6	1.55 H	82	29.4	12.0
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	5150.00	59.2 PK	74.0	-14.8	1.52 V	178	58.1	1.1
2	5150.00	45.6 AV	54.0	-8.4	1.52 V	178	44.5	1.1
3	*5180.00	116.3 PK			1.52 V	178	115.3	1.0
4	*5180.00	106.0 AV			1.52 V	178	105.0	1.0
5	#10360.00	47.3 PK	68.2	-20.9	1.56 V	236	37.0	10.3
6	15540.00	52.0 PK	74.0	-22.0	1.28 V	176	40.0	12.0
7	15540.00	40.2 AV	54.0	-13.8	1.28 V	176	28.2	12.0

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 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	51.3 PK	74.0	-22.7	1.53 H	2	50.2	1.1
2	5150.00	41.1 AV	54.0	-12.9	1.53 H	2	40.0	1.1
3	*5200.00	56.7 PK			1.53 H	2	55.6	1.1
4	*5200.00	43.8 AV			1.53 H	2	42.7	1.1
5	#10400.00	51.1 PK	68.2	-17.1	1.66 H	85	40.7	10.4
6	15600.00	55.6 PK	74.0	-18.4	1.50 H	65	43.6	12.0
7	15600.00	41.7 AV	54.0	-12.3	1.50 H	65	29.7	12.0
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	5150.00	59.2 PK	74.0	-14.8	1.49 V	176	58.1	1.1
2	5150.00	45.3 AV	54.0	-8.7	1.49 V	176	44.2	1.1
3	*5200.00	115.8 PK			1.49 V	176	114.7	1.1
4	*5200.00	105.8 AV			1.49 V	176	104.7	1.1
5	#10400.00	47.7 PK	68.2	-20.5	1.54 V	220	37.3	10.4
6	15600.00	51.6 PK	74.0	-22.4	1.28 V	171	39.6	12.0
7	15600.00	39.5 AV	54.0	-14.5	1.28 V	171	27.5	12.0

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 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	5147.00	50.6 PK	74.0	-23.4	1.38 H	4	49.5	1.1
2	5147.00	40.5 AV	54.0	-13.5	1.38 H	4	39.4	1.1
3	*5240.00	116.6 PK			1.38 H	4	115.8	0.8
4	*5240.00	106.4 AV			1.38 H	4	105.6	0.8
5	5350.00	47.5 PK	74.0	-26.5	1.38 H	4	46.7	0.8
6	5350.00	37.2 AV	54.0	-16.8	1.38 H	4	36.4	0.8
7	#10480.00	50.5 PK	68.2	-17.7	1.73 H	83	40.2	10.3
8	15720.00	55.5 PK	74.0	-18.5	1.50 H	63	44.3	11.2
9	15720.00	41.7 AV	54.0	-12.3	1.50 H	63	30.5	11.2
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	5048.70	50.2 PK	74.0	-23.8	1.58 V	182	49.3	0.9
2	5048.70	40.9 AV	54.0	-13.1	1.58 V	182	40.0	0.9
3	*5240.00	115.9 PK			1.58 V	182	115.1	0.8
4	*5240.00	105.8 AV			1.58 V	182	105.0	0.8
5	5375.90	49.0 PK	74.0	-25.0	1.58 V	182	48.1	0.9
6	5375.90	39.9 AV	54.0	-14.1	1.58 V	182	39.0	0.9
7	#10480.00	47.2 PK	68.2	-21.0	1.54 V	236	36.9	10.3
8	15720.00	52.0 PK	74.0	-22.0	1.27 V	173	40.8	11.2
9	15720.00	40.1 AV	54.0	-13.9	1.27 V	173	28.9	11.2

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 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	#5632.58	50.6 PK	68.2	-17.6	1.46 H	5	49.2	1.4
2	*5745.00	116.1 PK			1.46 H	5	114.4	1.7
3	*5745.00	106.3 AV			1.46 H	5	104.6	1.7
4	#5932.46	51.5 PK	68.2	-16.7	1.46 H	5	49.7	1.8
5	11490.00	50.6 PK	74.0	-23.4	1.67 H	63	38.5	12.1
6	11490.00	38.6 AV	54.0	-15.4	1.67 H	63	26.5	12.1
7	#17235.00	56.1 PK	68.2	-12.1	1.54 H	58	39.9	16.2
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	#5645.99	51.7 PK	68.2	-16.5	1.65 V	167	50.3	1.4
2	*5745.00	117.4 PK			1.65 V	167	115.7	1.7
3	*5745.00	106.9 AV			1.65 V	167	105.2	1.7
4	#5938.34	54.1 PK	68.2	-14.1	1.65 V	167	52.3	1.8
5	11490.00	45.5 PK	74.0	-28.5	1.61 V	242	33.4	12.1
6	11490.00	37.4 AV	54.0	-16.6	1.61 V	242	25.3	12.1
7	#17235.00	55.0 PK	68.2	-13.2	1.20 V	192	38.8	16.2

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 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	#5583.86	49.8 PK	68.2	-18.4	1.41 H	12	48.5	1.3
2	*5785.00	116.9 PK			1.41 H	12	115.1	1.8
3	*5785.00	106.8 AV			1.41 H	12	105.0	1.8
4	#5983.45	49.7 PK	68.2	-18.5	1.41 H	12	47.9	1.8
5	11570.00	50.9 PK	74.0	-23.1	1.70 H	76	38.9	12.0
6	11570.00	39.0 AV	54.0	-15.0	1.70 H	76	27.0	12.0
7	#17355.00	55.8 PK	68.2	-12.4	1.57 H	59	38.8	17.0
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	#5588.02	50.7 PK	68.2	-17.5	1.69 V	173	49.4	1.3
2	*5785.00	117.6 PK			1.69 V	173	115.8	1.8
3	*5785.00	107.2 AV			1.69 V	173	105.4	1.8
4	#5985.84	51.9 PK	68.2	-16.3	1.69 V	173	50.1	1.8
5	11570.00	45.6 PK	74.0	-28.4	1.70 V	267	33.6	12.0
6	11570.00	37.0 AV	54.0	-17.0	1.70 V	267	25.0	12.0
7	#17355.00	55.6 PK	68.2	-12.6	1.29 V	187	38.6	17.0

Remarks:

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

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	#5640.15	50.3 PK	68.2	-17.9	1.48 H	7	48.9	1.4
2	*5825.00	116.9 PK			1.48 H	7	115.1	1.8
3	*5825.00	106.7 AV			1.48 H	7	104.9	1.8
4	#5926.65	50.4 PK	68.2	-17.8	1.48 H	7	48.6	1.8
5	11650.00	49.8 PK	74.0	-24.2	1.74 H	84	38.1	11.7
6	11650.00	37.9 AV	54.0	-16.1	1.74 H	84	26.2	11.7
7	#17475.00	55.4 PK	68.2	-12.8	1.55 H	61	36.5	18.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.18	53.9 PK	68.2	-14.3	1.83 V	139	52.5	1.4
2	*5825.00	116.9 PK			1.83 V	139	115.1	1.8
3	*5825.00	107.7 AV			1.83 V	139	105.9	1.8
4	#6011.60	52.3 PK	68.2	-15.9	1.83 V	139	50.5	1.8
5	11650.00	46.3 PK	74.0	-27.7	1.62 V	248	34.6	11.7
6	11650.00	37.6 AV	54.0	-16.4	1.62 V	248	25.9	11.7
7	#17475.00	55.3 PK	68.2	-12.9	1.27 V	191	36.4	18.9

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 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	69.3 PK	74.0	-4.7	1.22 H	20	68.2	1.1
2	**5150.00**	**53.3 AV**	**54.0**	**-0.7**	**1.22 H**	**20**	**52.2**	**1.1**
3	*5190.00	114.5 PK			1.22 H	20	113.5	1.0
4	*5190.00	103.4 AV			1.22 H	20	102.4	1.0
5	#10380.00	49.8 PK	68.2	-18.4	1.70 H	96	39.5	10.3
6	15570.00	54.2 PK	74.0	-19.8	1.47 H	59	42.1	12.1
7	15570.00	40.2 AV	54.0	-13.8	1.47 H	59	28.1	12.1
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	5142.30	61.9 PK	74.0	-12.1	2.28 V	243	60.8	1.1
2	5142.30	51.7 AV	54.0	-2.3	2.28 V	243	50.6	1.1
3	*5190.00	113.2 PK			2.28 V	243	112.2	1.0
4	*5190.00	102.8 AV			2.28 V	243	101.8	1.0
5	#10380.00	46.5 PK	68.2	-21.7	1.53 V	239	36.2	10.3
6	15570.00	50.6 PK	74.0	-23.4	1.30 V	176	38.5	12.1
7	15570.00	38.2 AV	54.0	-15.8	1.30 V	176	26.1	12.1

Remarks:

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

RF Mode	TX 802.11ax (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	52.2 PK	74.0	-21.8	1.38 H	23	51.1	1.1
2	5150.00	40.6 AV	54.0	-13.4	1.38 H	23	39.5	1.1
3	*5230.00	113.8 PK			1.38 H	23	112.9	0.9
4	*5230.00	104.5 AV			1.38 H	23	103.6	0.9
5	5376.00	48.1 PK	74.0	-25.9	1.38 H	23	47.2	0.9
6	5376.00	38.3 AV	54.0	-15.7	1.38 H	23	37.4	0.9
7	#10460.00	50.6 PK	68.2	-17.6	1.77 H	57	40.2	10.4
8	15690.00	55.9 PK	74.0	-18.1	1.58 H	80	44.6	11.3
9	15690.00	41.8 AV	54.0	-12.2	1.58 H	80	30.5	11.3
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	5143.00	50.7 PK	74.0	-23.3	2.31 V	244	49.6	1.1
2	5143.00	40.7 AV	54.0	-13.3	2.31 V	244	39.6	1.1
3	*5230.00	114.8 PK			2.31 V	244	113.9	0.9
4	*5230.00	104.0 AV			2.31 V	244	103.1	0.9
5	5375.90	49.1 PK	74.0	-24.9	2.31 V	244	48.2	0.9
6	5375.90	37.8 AV	54.0	-16.2	2.31 V	244	36.9	0.9
7	#10460.00	47.2 PK	68.2	-21.0	1.54 V	239	36.8	10.4
8	15690.00	52.0 PK	74.0	-22.0	1.31 V	186	40.7	11.3
9	15690.00	39.8 AV	54.0	-14.2	1.31 V	186	28.5	11.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
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	#5648.66	49.5 PK	68.2	-18.7	1.56 H	103	48.1	1.4
2	*5755.00	115.7 PK			1.56 H	103	114.0	1.7
3	*5755.00	103.7 AV			1.56 H	103	102.0	1.7
4	#5954.37	49.2 PK	68.2	-19.0	1.56 H	103	47.4	1.8
5	11510.00	50.3 PK	74.0	-23.7	1.72 H	73	38.2	12.1
6	11510.00	37.9 AV	54.0	-16.1	1.72 H	73	25.8	12.1
7	#17265.00	54.8 PK	68.2	-13.4	1.51 H	76	38.8	16.0
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	#5643.42	54.0 PK	68.2	-14.2	2.31 V	200	52.6	1.4
2	*5755.00	115.8 PK			2.31 V	200	114.1	1.7
3	*5755.00	105.2 AV			2.31 V	200	103.5	1.7
4	#5952.03	51.8 PK	68.2	-16.4	2.31 V	200	50.0	1.8
5	11510.00	46.0 PK	74.0	-28.0	1.66 V	239	33.9	12.1
6	11510.00	37.4 AV	54.0	-16.6	1.66 V	239	25.3	12.1
7	#17265.00	55.6 PK	68.2	-12.6	1.24 V	204	39.6	16.0

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 (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	#5618.66	49.9 PK	68.2	-18.3	1.61 H	105	48.5	1.4
2	*5795.00	115.9 PK			1.61 H	105	114.0	1.9
3	*5795.00	103.8 AV			1.61 H	105	101.9	1.9
4	#5942.87	49.8 PK	68.2	-18.4	1.61 H	105	48.0	1.8
5	11590.00	51.1 PK	74.0	-22.9	1.70 H	85	39.1	12.0
6	11590.00	38.7 AV	54.0	-15.3	1.70 H	85	26.7	12.0
7	#17385.00	55.8 PK	68.2	-12.4	1.54 H	65	38.0	17.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5608.01	53.0 PK	68.2	-15.2	2.37 V	194	51.6	1.4
2	*5795.00	116.1 PK			2.37 V	194	114.2	1.9
3	*5795.00	105.4 AV			2.37 V	194	103.5	1.9
4	#5971.28	51.6 PK	68.2	-16.6	2.37 V	194	49.8	1.8
5	11590.00	46.3 PK	74.0	-27.7	1.59 V	262	34.3	12.0
6	11590.00	37.7 AV	54.0	-16.3	1.59 V	262	25.7	12.0
7	#17385.00	55.3 PK	68.2	-12.9	1.27 V	194	37.5	17.8

Remarks:

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

RF Mode	TX 802.11ax (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	5138.50	61.7 PK	74.0	-12.3	1.19 H	20	60.6	1.1
2	**5138.50**	**53.3 AV**	**54.0**	**-0.7**	**1.19 H**	**20**	**52.2**	**1.1**
3	*5210.00	110.8 PK			1.19 H	20	109.8	1.0
4	*5210.00	99.4 AV			1.19 H	20	98.4	1.0
5	5350.00	49.6 PK	74.0	-24.4	1.19 H	20	48.8	0.8
6	5350.00	39.0 AV	54.0	-15.0	1.19 H	20	38.2	0.8
7	#10420.00	45.6 PK	68.2	-22.6	1.75 H	91	35.2	10.4
8	15630.00	50.6 PK	74.0	-23.4	1.43 H	53	38.8	11.8
9	15630.00	36.5 AV	54.0	-17.5	1.43 H	53	24.7	11.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.3 PK	74.0	-10.7	1.38 V	16	62.2	1.1
2	5150.00	52.4 AV	54.0	-1.6	1.38 V	16	51.3	1.1
3	*5210.00	109.4 PK			1.38 V	16	108.4	1.0
4	*5210.00	98.3 AV			1.38 V	16	97.3	1.0
5	5350.00	49.1 PK	74.0	-24.9	1.38 V	16	48.3	0.8
6	5350.00	39.0 AV	54.0	-15.0	1.38 V	16	38.2	0.8
7	#10420.00	44.3 PK	68.2	-23.9	1.50 V	232	33.9	10.4
8	15630.00	50.4 PK	74.0	-23.6	1.35 V	181	38.6	11.8
9	15630.00	35.2 AV	54.0	-18.8	1.35 V	181	23.4	11.8

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 (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	#5644.11	59.0 PK	68.2	-9.2	1.72 H	266	57.6	1.4
2	*5775.00	114.5 PK			1.72 H	266	112.7	1.8
3	*5775.00	101.2 AV			1.72 H	266	99.4	1.8
4	#5937.89	50.6 PK	68.2	-17.6	1.72 H	266	48.8	1.8
5	11550.00	50.0 PK	74.0	-24.0	1.74 H	63	37.9	12.1
6	11550.00	38.0 AV	54.0	-16.0	1.74 H	63	25.9	12.1
7	#17325.00	55.5 PK	68.2	-12.7	1.54 H	83	39.1	16.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5647.89	59.5 PK	68.2	-8.7	2.10 V	138	58.1	1.4
2	*5775.00	113.2 PK			2.10 V	138	111.4	1.8
3	*5775.00	103.4 AV			2.10 V	138	101.6	1.8
4	#5928.17	54.5 PK	68.2	-13.7	2.10 V	138	52.7	1.8
5	11550.00	51.3 PK	74.0	-22.7	1.69 V	57	39.2	12.1
6	11550.00	39.0 AV	54.0	-15.0	1.69 V	57	26.9	12.1
7	#17325.00	55.6 PK	68.2	-12.6	1.53 V	64	39.2	16.4

Remarks:

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

Below 1GHz Data:

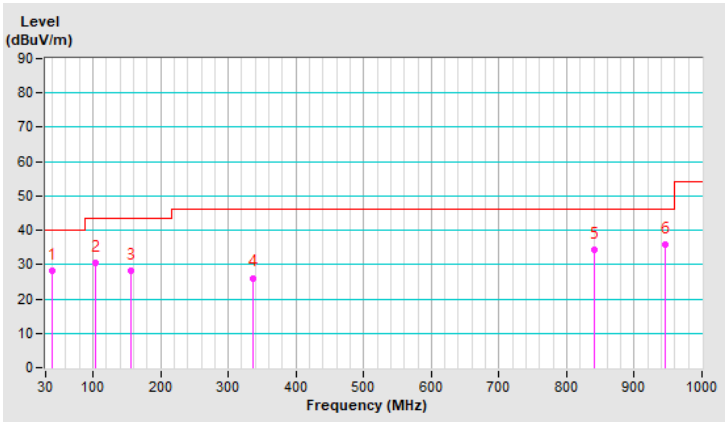
For radio 2:

RF Mode	TX 802.11ax (HE40)	Channel	CH 46：5230 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	39.17	28.2 QP	40.0	-11.8	1.50 H	219	37.3	-9.1
2	103.32	30.5 QP	43.5	-13.0	2.00 H	298	42.9	-12.4
3	155.64	28.2 QP	43.5	-15.3	1.00 H	155	36.8	-8.6
4	337.34	26.1 QP	46.0	-19.9	1.00 H	45	33.3	-7.2
5	840.85	34.2 QP	46.0	-11.8	2.00 H	336	31.3	2.9
6	944.98	35.8 QP	46.0	-10.2	2.50 H	149	31.3	4.5

Remarks:

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

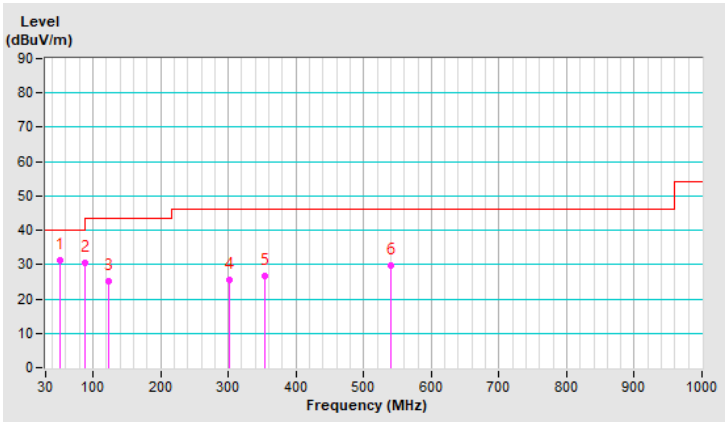


RF Mode	TX 802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	51.80	31.1 QP	40.0	-8.9	1.50 V	299	40.0	-8.9
2	87.64	30.5 QP	40.0	-9.5	1.00 V	15	45.2	-14.7
3	122.23	25.1 QP	43.5	-18.4	2.00 V	211	35.6	-10.5
4	301.34	25.4 QP	46.0	-20.6	1.00 V	355	33.5	-8.1
5	354.56	26.6 QP	46.0	-19.4	1.00 V	202	33.4	-6.8
6	540.30	29.8 QP	46.0	-16.2	1.00 V	215	32.3	-2.5

Remarks:

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



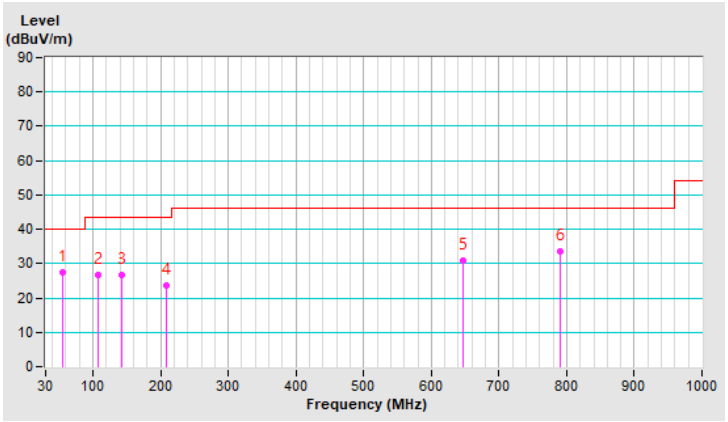
For radio 3:

RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 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	55.70	27.5 QP	40.0	-12.5	1.50 H	351	36.5	-9.0
2	108.30	26.8 QP	43.5	-16.7	2.00 H	266	38.4	-11.6
3	141.90	26.8 QP	43.5	-16.7	2.00 H	270	35.6	-8.8
4	209.43	23.7 QP	43.5	-19.8	1.00 H	360	35.7	-12.0
5	646.99	30.8 QP	46.0	-15.2	1.00 H	0	31.0	-0.2
6	790.33	33.4 QP	46.0	-12.6	2.00 H	291	31.4	2.0

Remarks:

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

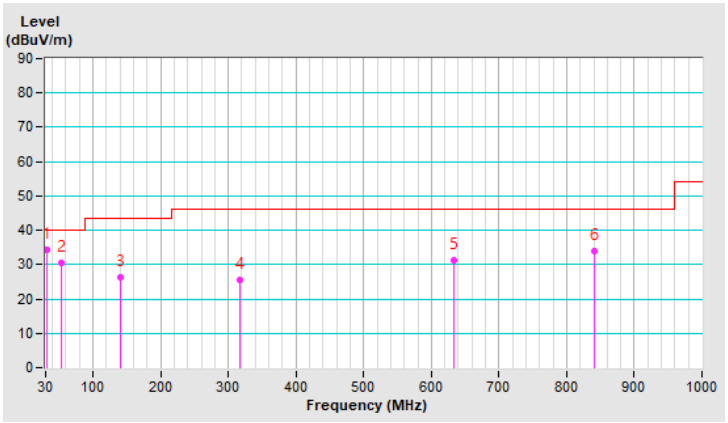


RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	31.31	34.3 QP	40.0	-5.7	1.00 V	65	44.4	-10.1
2	52.99	30.6 QP	40.0	-9.4	1.50 V	282	39.4	-8.8
3	140.82	26.2 QP	43.5	-17.3	1.50 V	360	35.1	-8.9
4	316.44	25.6 QP	46.0	-20.4	1.50 V	5	33.1	-7.5
5	633.15	31.4 QP	46.0	-14.6	2.00 V	342	31.9	-0.5
6	841.67	33.8 QP	46.0	-12.2	2.00 V	135	30.8	3.0

Remarks:

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 20, 2020	Oct. 19, 2021
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 27, 2020	Oct. 26, 2021
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 26, 2020	Oct. 25, 2021
RF Cable	5D-FB	COCCAB-001	Sep. 26, 2020	Sep. 25, 2021
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 29, 2020	Aug. 28, 2021
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3 Tested Date: Feb. 25, 2021

4.2.3 Test Procedure

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

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

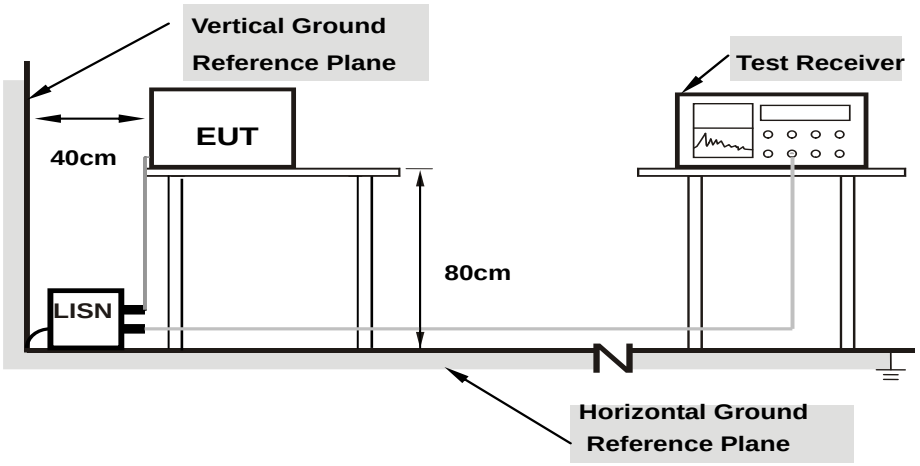
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

4.2.7 Test Results

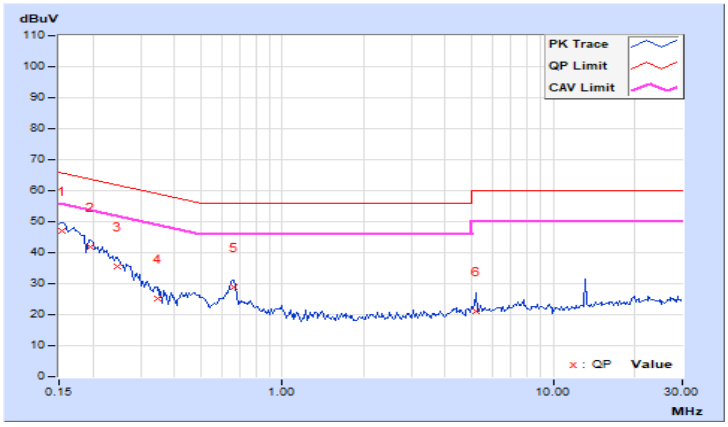
For radio 2:

RF Mode	TX 802.11ax (HE40)	**Channel**	CH 46：5230 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**	**37.19**	**21.91**	**47.14**	**31.86**	**65.79**	**55.79**	**-18.65**	**-23.93**
2	0.19687	9.97	31.89	19.20	41.86	29.17	63.74	53.74	-21.88	-24.57
3	0.24766	9.97	25.67	13.45	35.64	23.42	61.84	51.84	-26.20	-28.42
4	0.34531	9.98	15.08	6.75	25.06	16.73	59.07	49.07	-34.01	-32.34
5	0.66563	10.01	18.83	12.53	28.84	22.54	56.00	46.00	-27.16	-23.46
6	5.21484	10.24	10.95	6.75	21.19	16.99	60.00	50.00	-38.81	-33.01

Remarks:

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

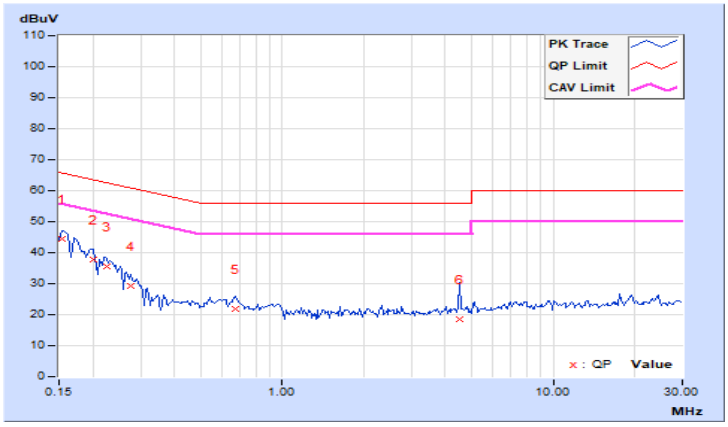


RF Mode	TX 802.11ax (HE40)	Channel	CH 46：5230 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	0.15391	9.92	34.56	17.91	44.48	27.83	65.79	55.79	-21.31	-27.96
2	0.20078	9.95	27.82	13.92	37.77	23.87	63.58	53.58	-25.81	-29.71
3	0.22422	9.95	25.60	12.80	35.55	22.75	62.66	52.66	-27.11	-29.91
4	0.27500	9.95	19.15	6.41	29.10	16.36	60.97	50.97	-31.87	-34.61
5	0.67344	9.98	12.05	6.10	22.03	16.08	56.00	46.00	-33.97	-29.92
6	4.51953	10.15	8.53	3.45	18.68	13.60	56.00	46.00	-37.32	-32.40

Remarks:

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



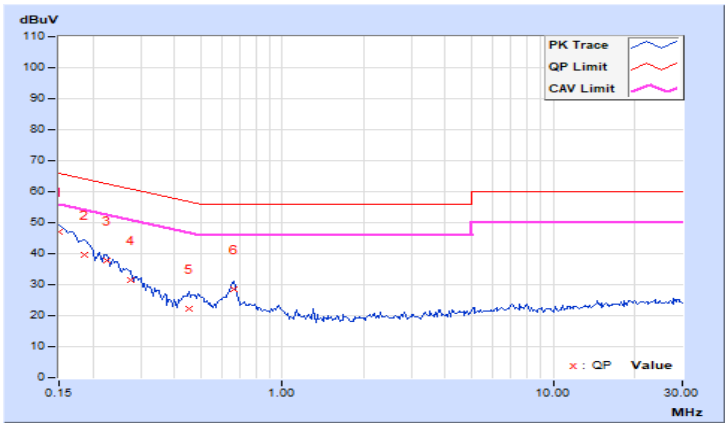
For radio 3:

RF Mode	TX 802.11ax (HE40)	**Channel**	CH 159：5795 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	0.15000	9.95	37.13	23.11	47.08	33.06	66.00	56.00	-18.92	-22.94
2	0.18516	9.96	29.66	10.27	39.62	20.23	64.25	54.25	-24.63	-34.02
3	0.22422	9.97	27.64	14.62	37.61	24.59	62.66	52.66	-25.05	-28.07
4	0.27500	9.98	21.38	8.20	31.36	18.18	60.97	50.97	-29.61	-32.79
5	0.45469	9.99	12.27	5.34	22.26	15.33	56.79	46.79	-34.53	-31.46
6	0.66172	10.01	18.43	11.48	28.44	21.49	56.00	46.00	-27.56	-24.51

Remarks:

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

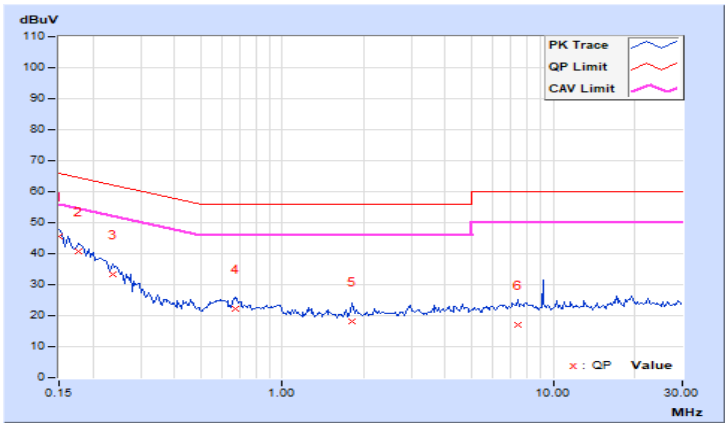


RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

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	35.68	20.97	45.60	30.89	66.00	56.00	-20.40	-25.11
2	0.17734	9.94	30.96	15.71	40.90	25.65	64.61	54.61	-23.71	-28.96
3	0.23594	9.95	23.29	9.53	33.24	19.48	62.24	52.24	-29.00	-32.76
4	0.66953	9.98	12.21	6.30	22.19	16.28	56.00	46.00	-33.81	-29.72
5	1.81250	10.03	8.08	5.43	18.11	15.46	56.00	46.00	-37.89	-30.54
6	7.41016	10.28	6.80	4.79	17.08	15.07	60.00	50.00	-42.92	-34.93

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

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	19.17	19.12	19.05	19.28	329.337	25.18	30	Pass
40	5200	19.19	19.21	19.10	19.31	332.946	25.22	30	Pass
48	5240	18.70	19.36	19.14	19.40	329.56	25.18	30	Pass
149	5745	20.70	20.59	20.82	20.42	462.976	26.66	30	Pass
157	5785	20.50	20.52	20.94	20.47	460.516	26.63	30	Pass
165	5825	20.10	20.45	20.74	20.11	434.389	26.38	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	18.91	18.98	18.76	18.96	310.738	24.92	30	Pass
40	5200	18.76	19.21	18.98	19.13	319.445	25.04	30	Pass
48	5240	18.62	19.15	18.99	19.15	316.477	25.00	30	Pass
149	5745	20.60	20.29	20.55	20.04	436.147	26.40	30	Pass
157	5785	20.31	20.36	20.61	20.16	434.874	26.38	30	Pass
165	5825	19.97	20.34	20.72	19.91	423.436	26.27	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.54	19.78	19.46	19.65	365.575	25.63	30	Pass
46	5230	19.88	20.35	20.13	20.40	418.354	26.22	30	Pass
151	5755	20.20	20.26	20.51	19.84	419.726	26.23	30	Pass
159	5795	20.13	20.49	21.00	20.10	443.204	26.47	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.08	18.25	18.18	18.30	264.477	24.22	30	Pass
155	5775	20.04	20.29	20.65	19.81	419.695	26.23	30	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	19.13	19.20	19.01	19.24	328.585	25.17	30	Pass
40	5200	19.02	19.48	19.26	19.36	339.146	25.30	30	Pass
48	5240	18.86	19.43	19.20	19.38	334.486	25.24	30	Pass
149	5745	20.80	20.58	20.82	20.32	462.942	26.66	30	Pass
157	5785	20.53	20.61	20.85	20.42	459.832	26.63	30	Pass
165	5825	20.23	20.56	21.01	20.15	448.898	26.52	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.82	20.01	19.71	19.90	387.435	25.88	30	Pass
46	5230	20.16	20.57	20.34	20.62	441.267	26.45	30	Pass
151	5755	20.46	20.55	20.77	20.11	446.638	26.50	30	Pass
159	5795	20.35	20.70	21.25	20.34	467.378	26.70	30	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.30	18.51	18.44	18.56	280.169	24.47	30	Pass
155	5775	20.26	20.49	20.85	20.10	442.061	26.45	30	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	18.91	18.98	18.76	18.96	310.738	24.92	25.23	Pass
40	5200	18.76	19.21	18.98	19.13	319.445	25.04	25.23	Pass
48	5240	18.62	19.15	18.99	19.15	316.477	25.00	25.23	Pass
149	5745	19.51	19.20	19.48	18.96	339.927	25.31	25.4	Pass
157	5785	19.25	19.30	19.51	19.06	339.122	25.30	25.4	Pass
165	5825	19.02	19.34	19.68	18.92	336.58	25.27	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.01	19.25	18.94	19.11	323.569	25.10	25.23	Pass
46	5230	18.81	19.25	19.02	19.28	324.694	25.11	25.23	Pass
151	5755	19.20	19.26	19.51	18.84	333.4	25.23	25.4	Pass
159	5795	19.01	19.26	19.85	19.02	340.354	25.32	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.08	18.25	18.18	18.30	264.477	24.22	25.23	Pass
155	5775	19.06	19.33	19.58	18.88	334.292	25.24	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	19.13	19.20	19.01	19.24	328.585	25.17	25.23	Pass
40	5200	18.92	19.38	19.16	19.26	331.426	25.20	25.23	Pass
48	5240	18.81	19.38	19.15	19.32	330.46	25.19	25.23	Pass
149	5745	19.48	19.30	19.52	19.02	343.165	25.36	25.4	Pass
157	5785	19.33	19.29	19.49	19.11	341.012	25.33	25.4	Pass
165	5825	19.15	19.33	19.76	18.95	341.075	25.33	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	19.15	19.28	19.02	19.21	330.115	25.19	25.23	Pass
46	5230	18.92	19.29	19.08	19.32	329.317	25.18	25.23	Pass
151	5755	19.31	19.42	19.60	19.02	343.809	25.36	25.4	Pass
159	5795	19.04	19.31	19.87	19.06	343.067	25.35	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.

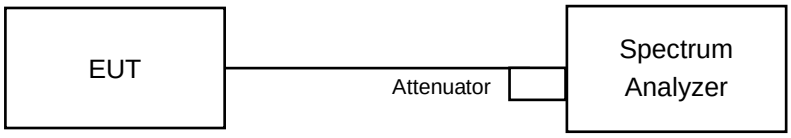
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	18.30	18.51	18.44	18.56	280.169	24.47	25.23	Pass
155	5775	19.14	19.35	19.71	19.02	341.475	25.33	25.4	Pass

Note: 1. For U-NII-1: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.77-6) = 25.23 dBm.
2. For U-NII-3: The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 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

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.56	16.44	16.56	16.56
40	5200	16.44	16.44	16.44	16.44
48	5240	16.44	16.56	16.44	16.44
149	5745	16.43	16.34	16.44	16.43
157	5785	16.56	16.56	16.56	16.44
165	5825	16.61	16.92	17.04	16.68

802.11ax (HE20)

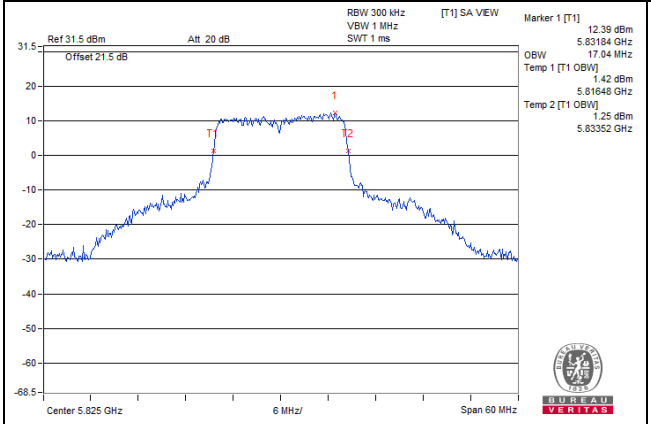
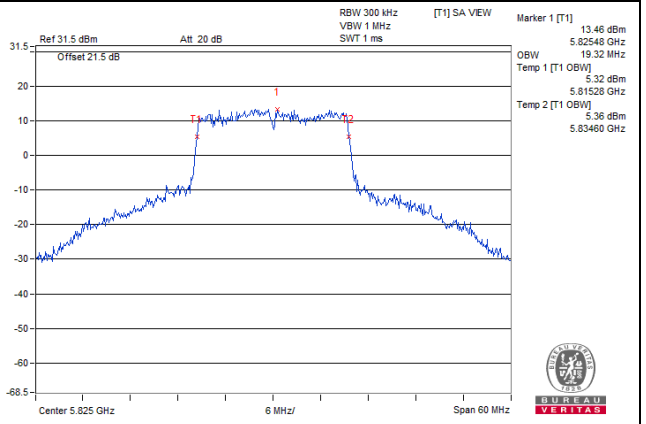
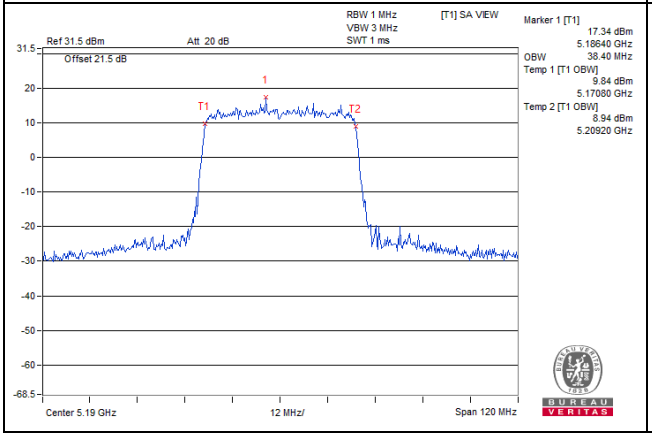
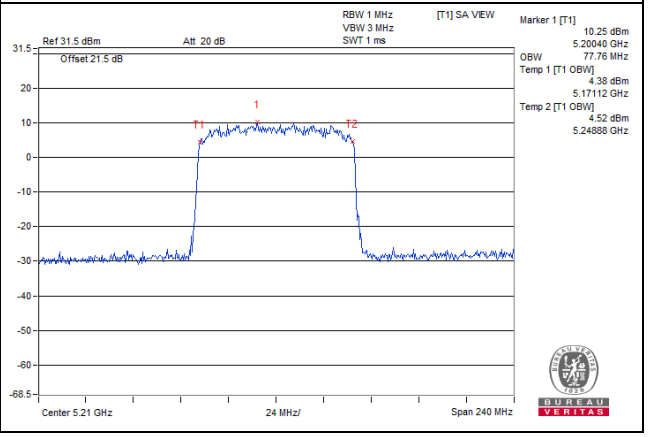
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.96	18.96	19.08	18.84
40	5200	18.84	19.08	18.84	18.84
48	5240	18.84	19.08	18.96	19.08
149	5745	19.08	18.84	18.96	18.96
157	5785	18.96	18.96	18.96	19.08
165	5825	19.08	19.08	19.32	19.08

802.11ax (HE40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	37.92	38.4	38.16	38.16
46	5230	37.92	38.16	38.16	38.16
151	5755	37.92	38.16	38.09	38.16
159	5795	38.16	38.4	38.4	38.16

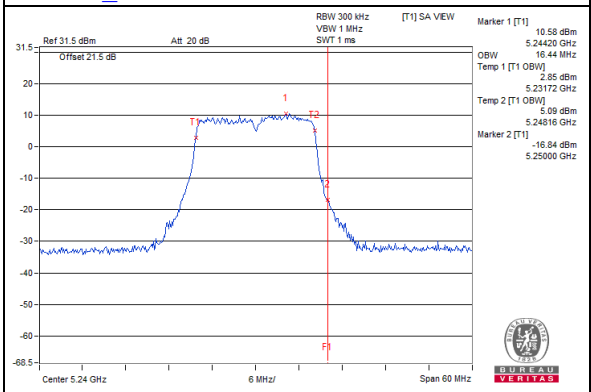
802.11ax (HE80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.76	77.28	77.28	77.28
155	5775	77.28	77.28	77.28	77.28

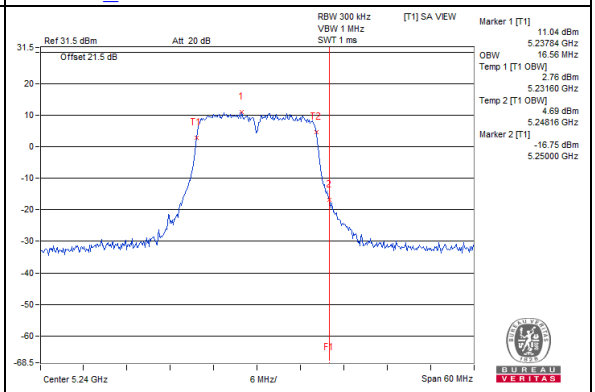
Spectrum Plot of Max. Value	
802.11a_Chain 2 / CH165	**802.11ax (HE20)_Chain 2 / CH165**
	
802.11ax (HE40)_Chain 1 / CH38	**802.11ax (HE80)_Chain 0 / CH42**
	

Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

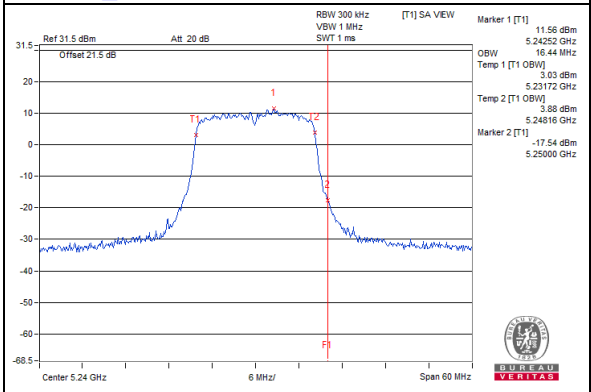
802.11a_Chain 0 / CH48



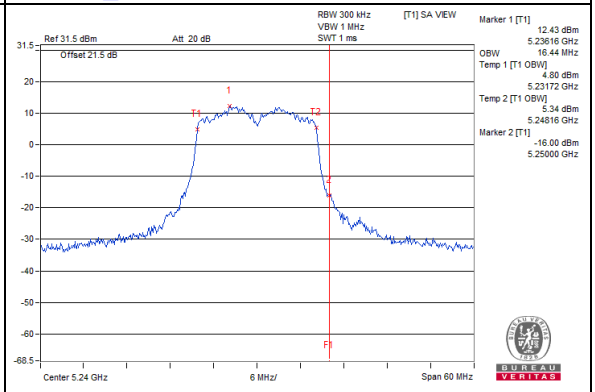
802.11a_Chain 1 / CH48



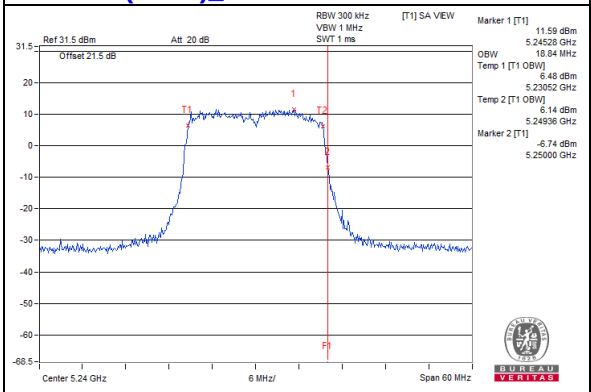
802.11a_Chain 2 / CH48



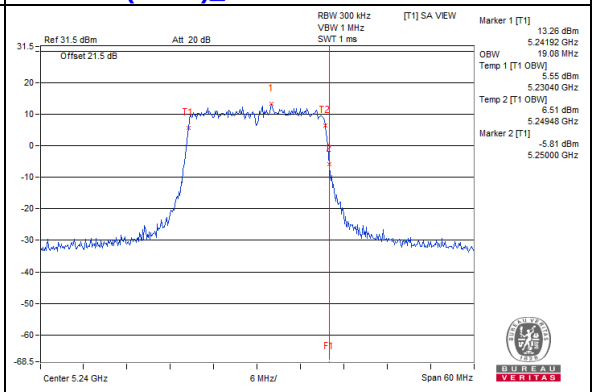
802.11a_Chain 3 / CH48



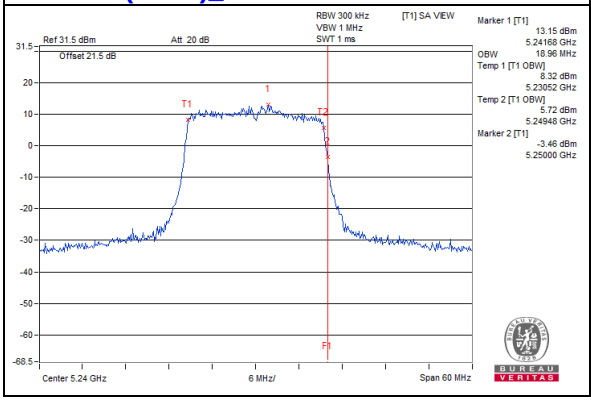
802.11ax (HE20)_Chain 0 / CH48



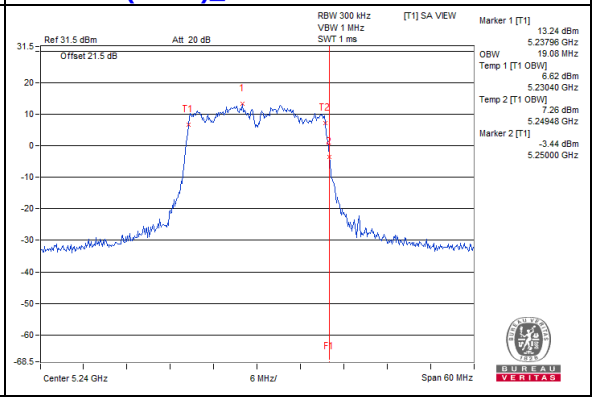
802.11ax (HE20)_Chain 1 / CH48

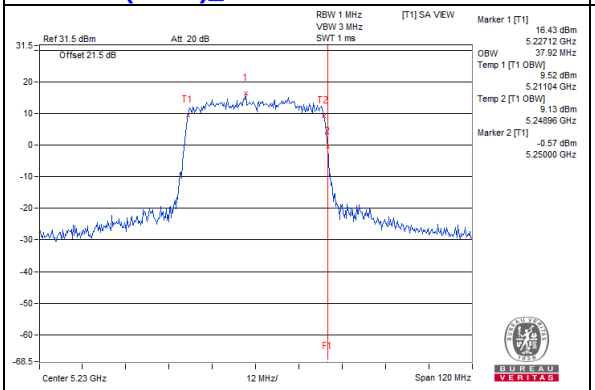
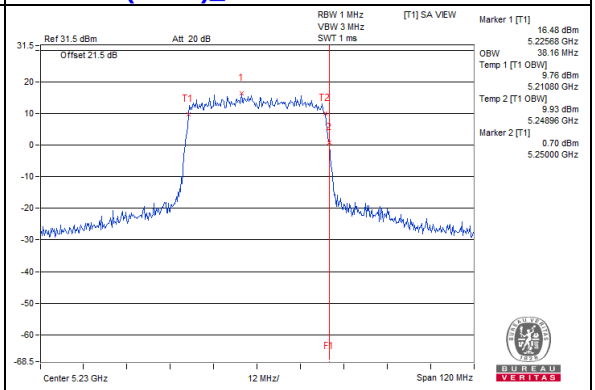
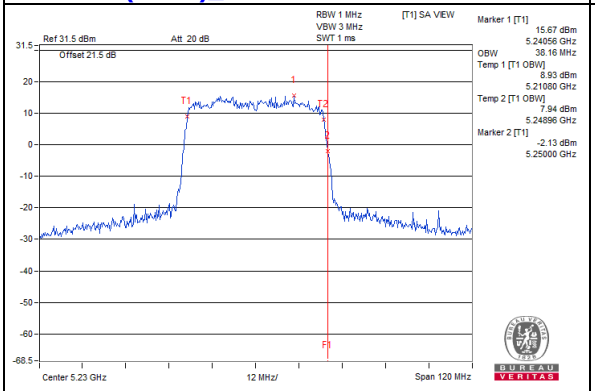
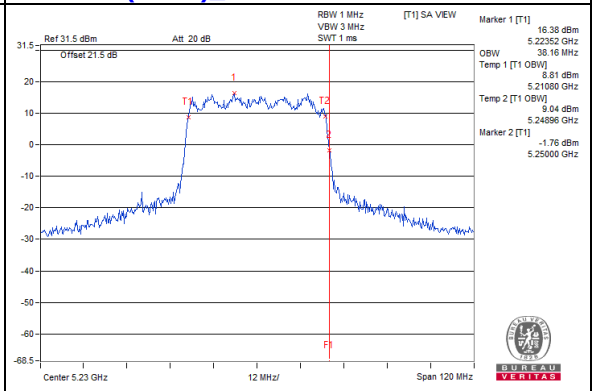
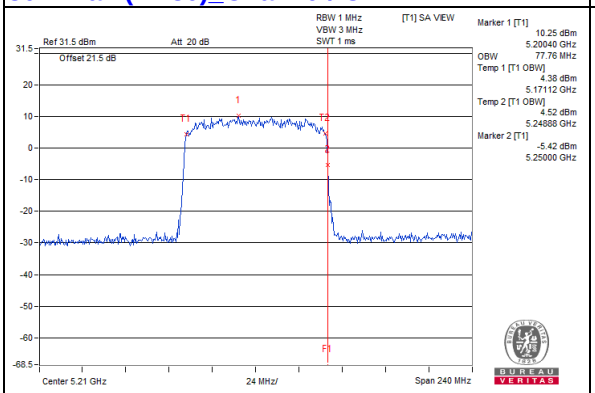
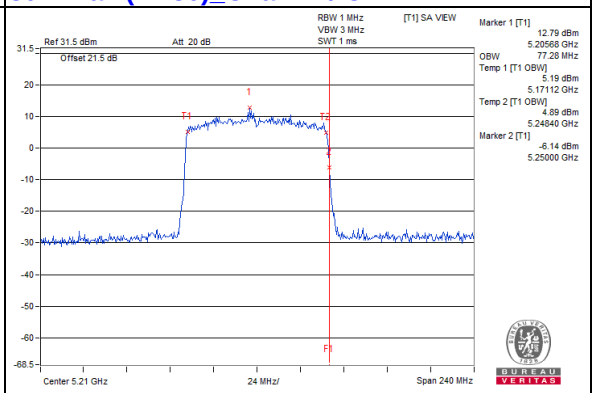
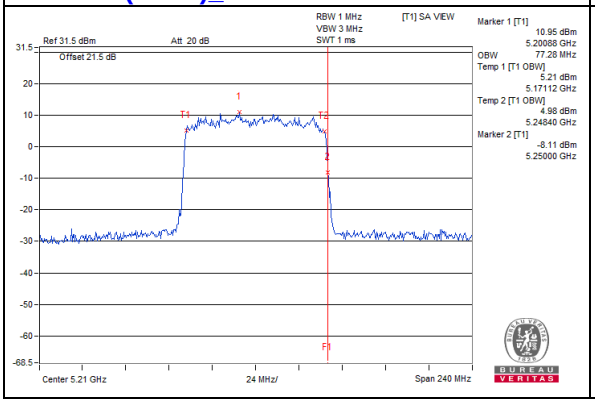
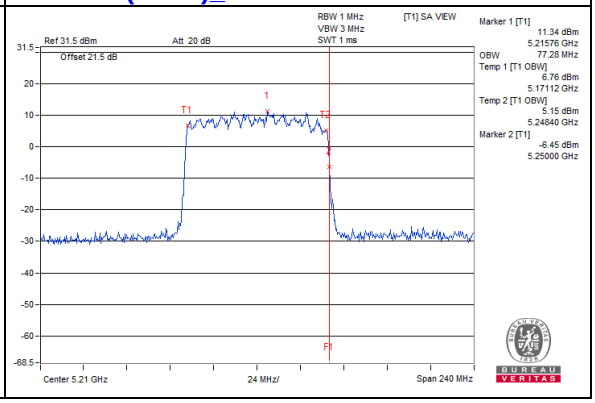


802.11ax (HE20)_Chain 2 / CH48



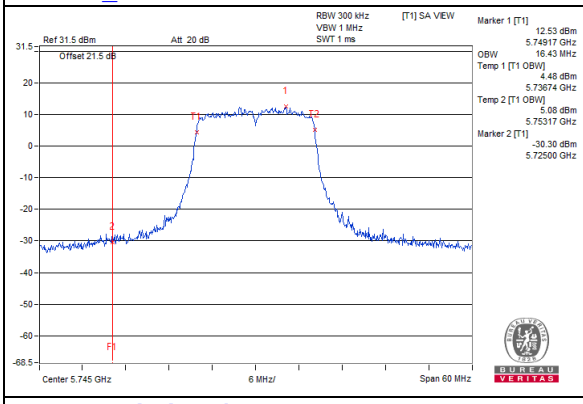
802.11ax (HE20)_Chain 3 / CH48



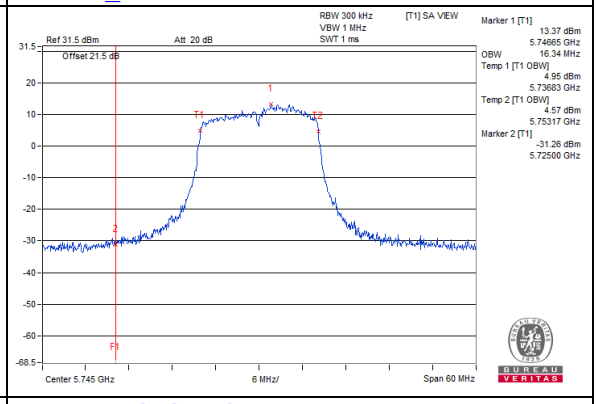
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2A band)	
802.11ax (HE40)_Chain 0 / CH46	**802.11ax (HE40)_Chain 1 / CH46**
	
802.11ax (HE40)_Chain 2 / CH46	**802.11ax (HE40)_Chain 3 / CH46**
	
802.11ax (HE80)_Chain 0 / CH42	**802.11ax (HE80)_Chain 1 / CH42**
	
802.11ax (HE80)_Chain 2 / CH42	**802.11ax (HE80)_Chain 3 / CH42**
	

Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

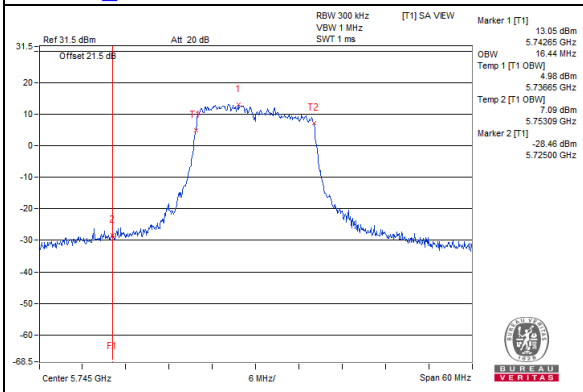
802.11a_Chain 0 / CH149



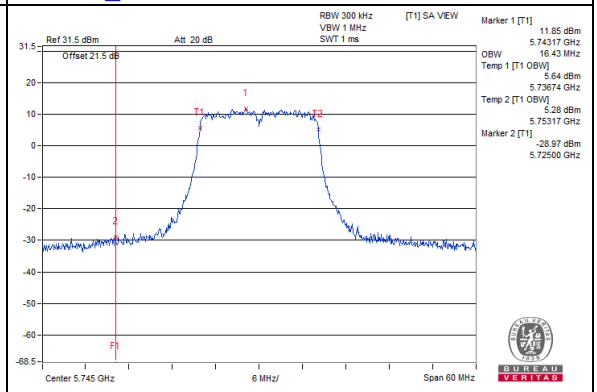
802.11a_Chain 1 / CH149



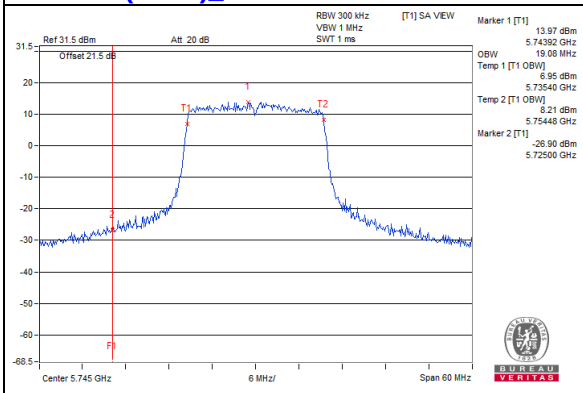
802.11a_Chain 2 / CH149



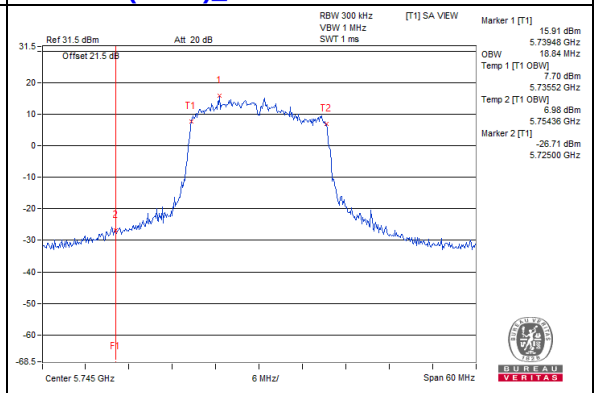
802.11a_Chain 3 / CH149



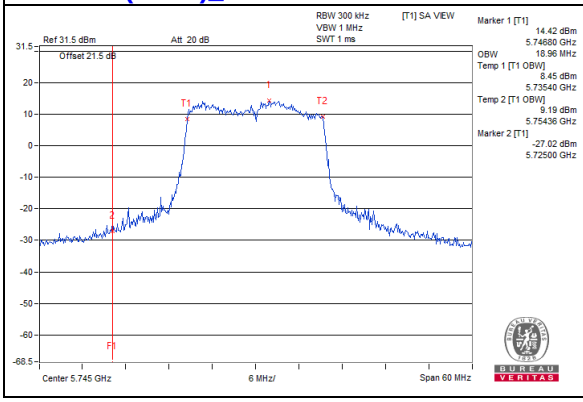
802.11ax (HE20)_Chain 0 / CH149



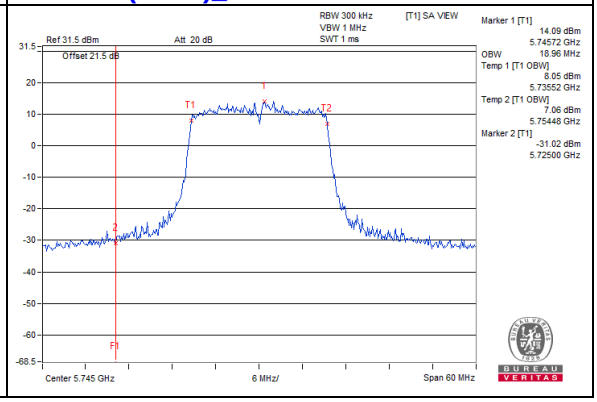
802.11ax (HE20)_Chain 1 / CH149



802.11ax (HE20)_Chain 2 / CH149

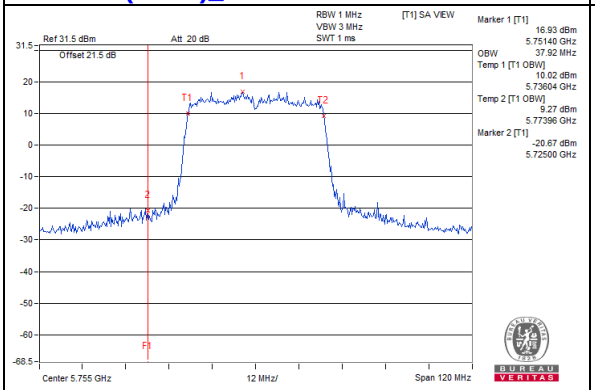


802.11ax (HE20)_Chain 3 / CH149

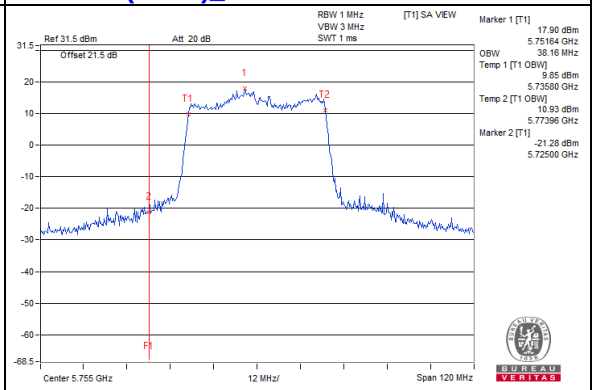


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

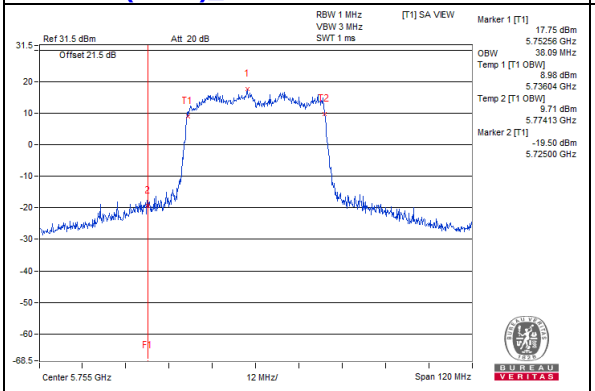
802.11ax (HE40)_Chain 0 / CH151



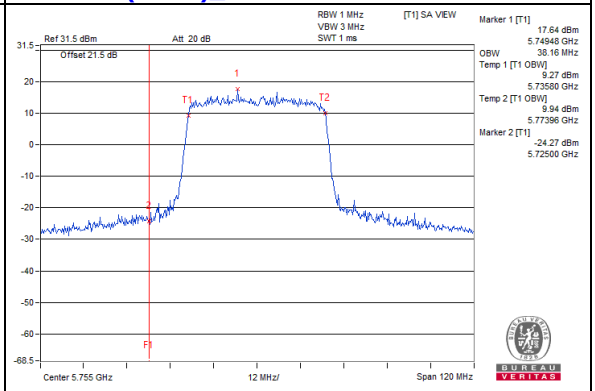
802.11ax (HE40)_Chain 1 / CH151



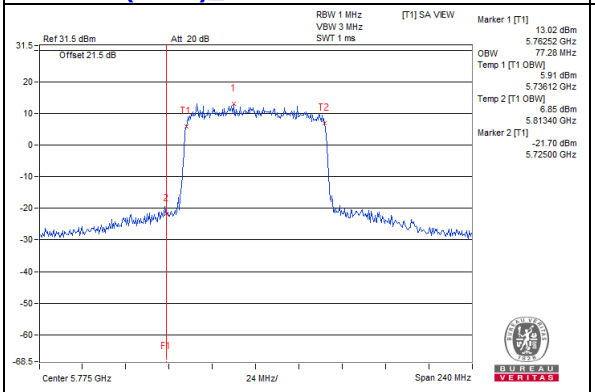
802.11ax (HE40)_Chain 2 / CH151



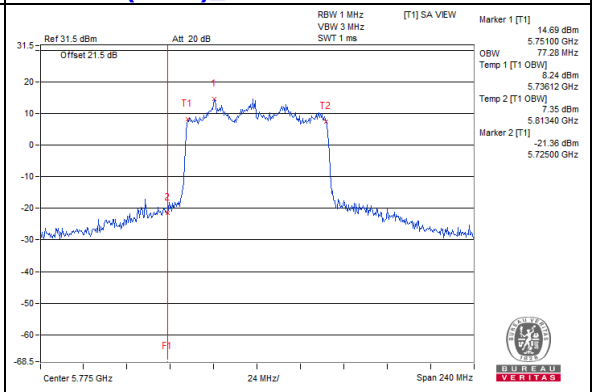
802.11ax (HE40)_Chain 3 / CH151



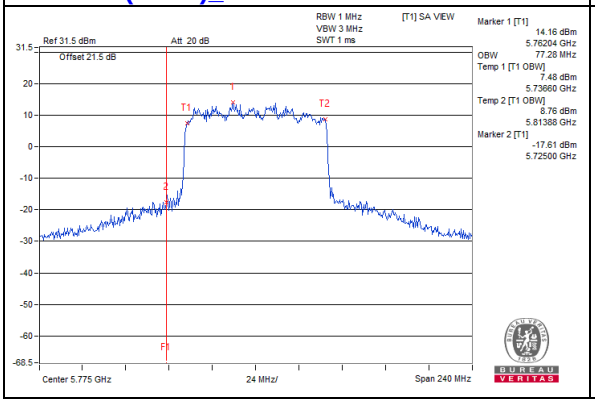
802.11ax (HE80)_Chain 0 / CH155



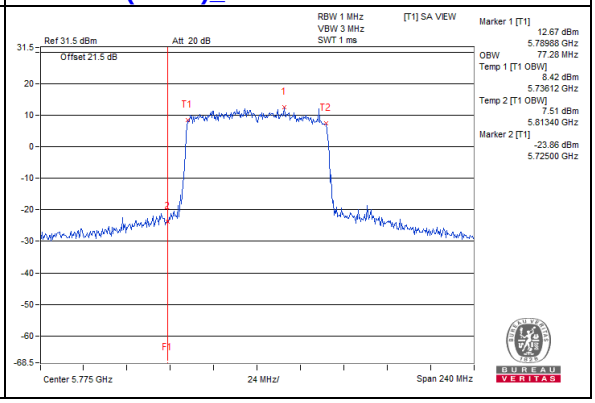
802.11ax (HE80)_Chain 1 / CH155



802.11ax (HE80)_Chain 2 / CH155



802.11ax (HE80)_Chain 3 / CH155

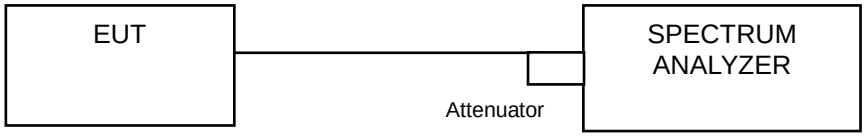


4.5 Peak Power Spectral Density Measurement

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:

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:

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

CDD Mode

For U-NII-1:

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	5.77	5.90	4.93	6.58	0.23	12.09	12.23	Pass
40	5200	5.46	5.49	6.56	5.95	0.23	12.14	12.23	Pass
48	5240	4.02	6.34	5.42	6.77	0.23	12.01	12.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power density limit shall be reduced to 17-(10.77-6) = 12.23 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 Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	5.45	5.56	6.12	6.23	0.19	12.06	12.23	Pass
40	5200	5.61	5.36	5.63	6.79	0.19	12.09	12.23	Pass
48	5240	5.65	6.06	6.02	5.96	0.19	12.13	12.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power density limit shall be reduced to 17-(10.77-6) = 12.23 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 Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	3.90	3.44	3.14	4.70	0.21	10.07	12.23	Pass
46	5230	3.14	3.98	4.26	5.22	0.21	10.45	12.23	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.77 dBi > 6 dBi, so the power density limit shall be reduced to 17-(10.77-6) = 12.23 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 Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	-0.43	-0.99	-0.95	0.17	0.27	5.76	12.23	Pass

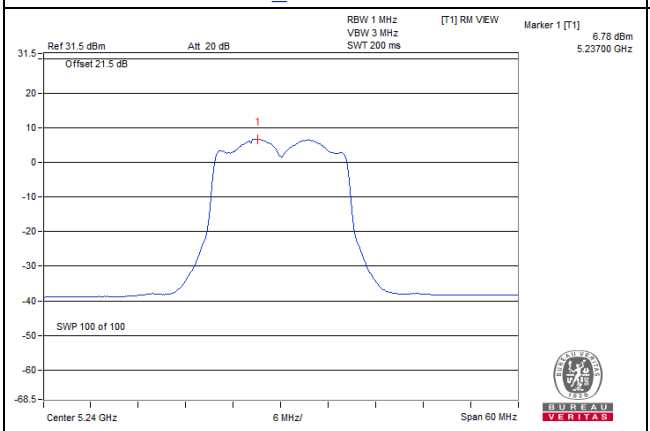
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. The directional gain= 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 4] = 10.77 dBi > 6 dBi, so the power density limit shall be reduced to 17-(10.77-6) = 12.23 dBm.

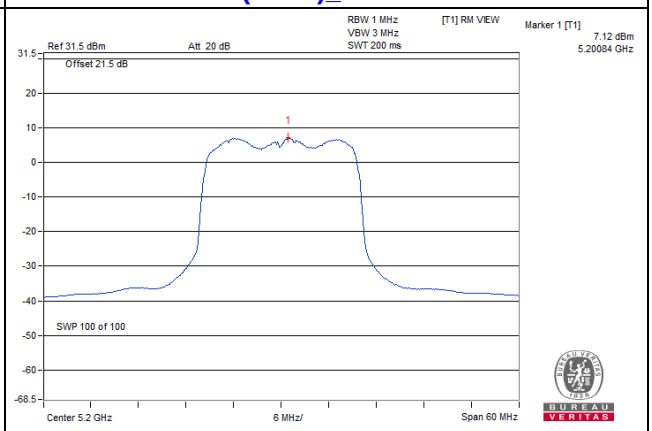
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

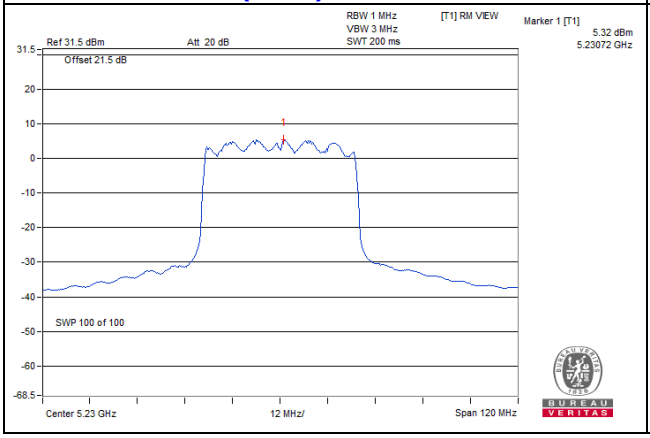
802.11a_Chain 3 / CH48



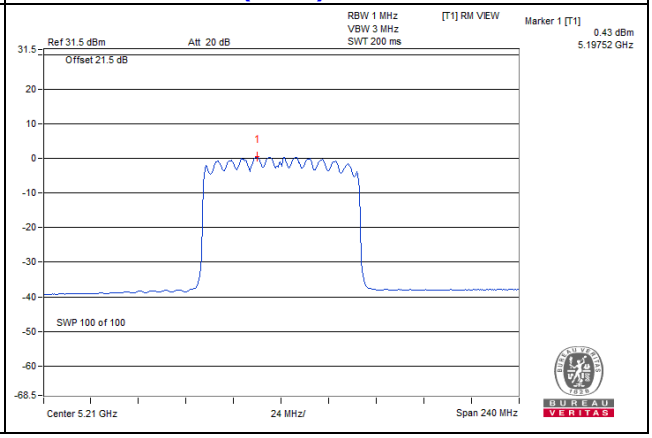
802.11ax (HE20)_Chain 3 / CH40



802.11ax (HE40)_Chain 3 / CH46



802.11ax (HE80)_Chain 3 / CH42



For U-NII-3:

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3						
149	5745	-1.75	-0.51	-0.48	-1.47	0.23	3.3372	5.23	7.45	25.40	PASS
157	5785	-1.01	-1.72	-0.98	-1.25	0.23	3.1765	5.02	7.24	25.40	PASS
165	5825	-1.71	-0.56	-0.47	-1.84	0.23	3.2738	5.15	7.37	25.40	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 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 (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3						
149	5745	-1.59	-1.37	-1.33	-2.79	0.20	2.8093	4.49	6.71	25.40	PASS
157	5785	-2.49	-2.09	-2.15	-2.65	0.20	2.4424	3.88	6.10	25.40	PASS
165	5825	-3.32	-1.85	-0.88	-3.00	0.20	2.5491	4.06	6.28	25.40	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 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 (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3						
151	5755	-5.12	-4.17	-4.70	-5.20	0.20	1.3928	1.44	3.66	25.40	PASS
159	5795	-5.64	-4.46	-4.39	-5.54	0.20	1.3331	1.25	3.47	25.40	PASS

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain= 10 log[$(10^{G0/20} + 10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2$ / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

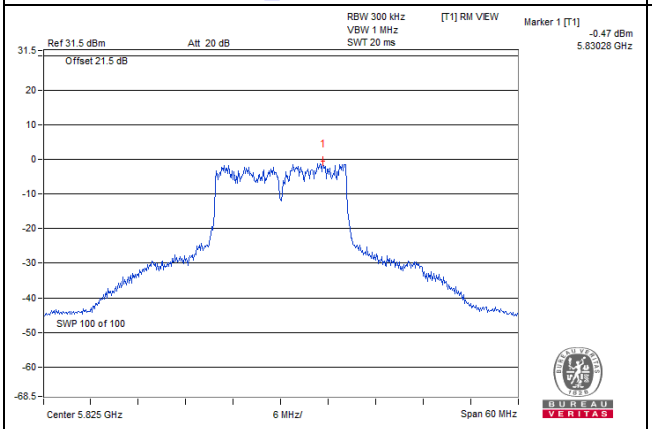
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (mW/300kHz)	Total PSD (dBm/300kHz)	Total PSD (dBm/500kHz)	PSD Limit (dBm/500kHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3						
155	5775	-8.13	-7.46	-6.99	-8.51	0.21	0.7072	-1.50	0.72	25.40	PASS

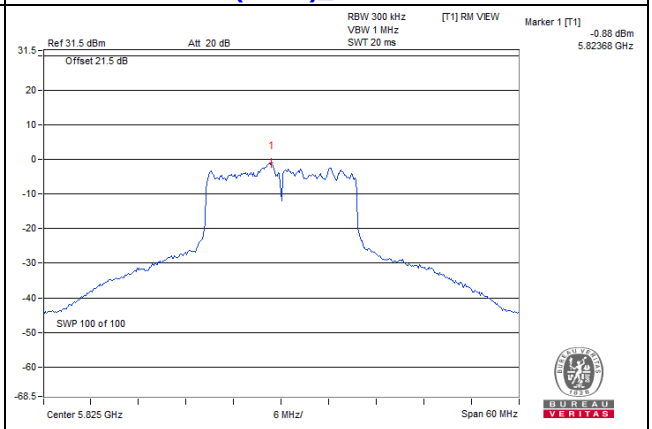
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain= 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$)^2 / 4] = 10.6 dBi > 6 dBi, so the power limit shall be reduced to 30-(10.6-6) = 25.4 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

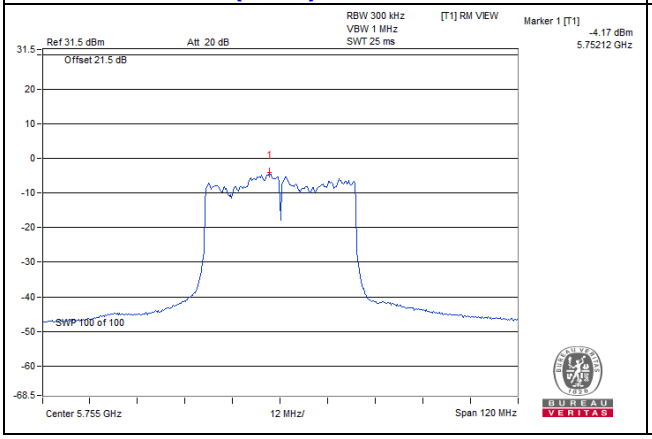
802.11a_Chain 2 / CH165



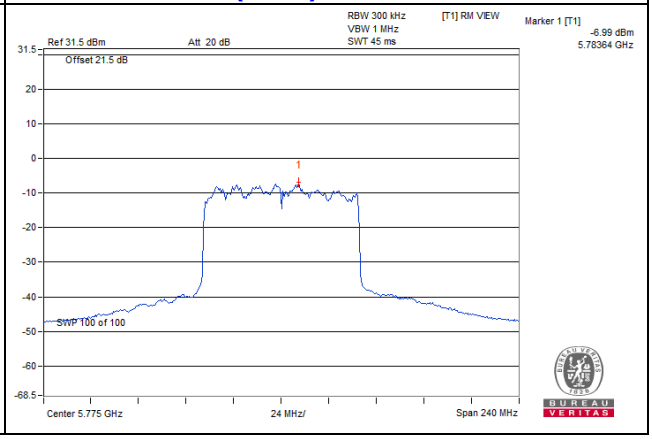
802.11ax (HE20)_Chain 2 / CH165



802.11ax (HE40)_Chain 1 / CH151



802.11ax (HE80)_Chain 2 / CH155

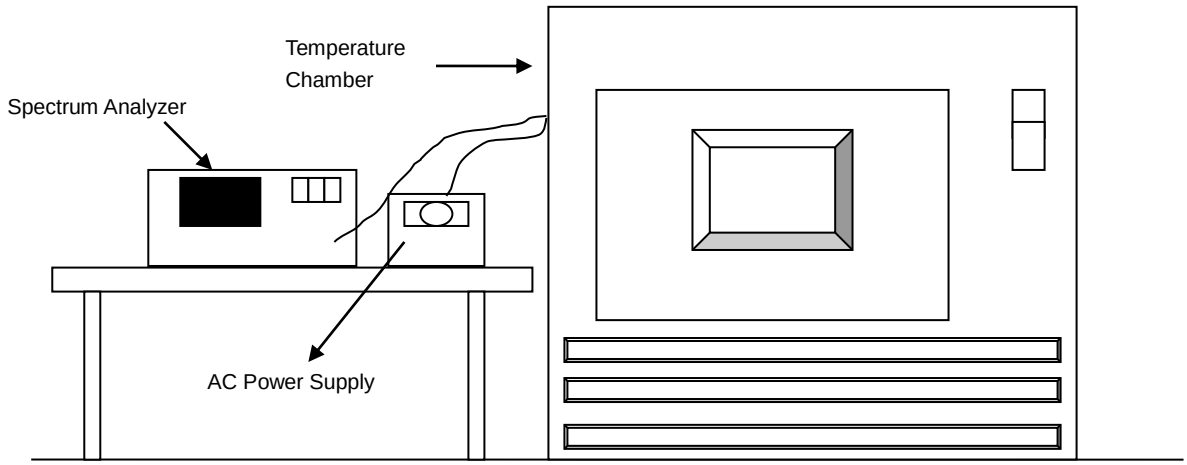


4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

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

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

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

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

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
45	120	5179.9921	PASS	5179.9935	PASS	5179.9949	PASS	5179.9929	PASS
40	120	5179.9875	PASS	5179.9874	PASS	5179.9853	PASS	5179.9881	PASS
30	120	5179.9907	PASS	5179.9906	PASS	5179.9885	PASS	5179.9876	PASS
20	120	5179.9983	PASS	5179.9968	PASS	5179.9946	PASS	5179.9978	PASS
10	120	5180.0056	PASS	5180.0056	PASS	5180.009	PASS	5180.0077	PASS

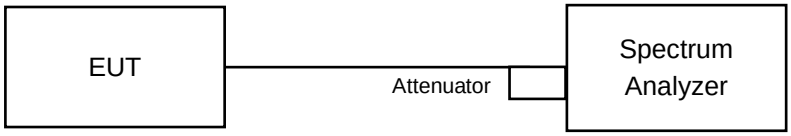
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9986	PASS	5179.9973	PASS	5179.9941	PASS	5179.9981	PASS
	120	5179.9983	PASS	5179.9968	PASS	5179.9946	PASS	5179.9978	PASS
	102	5179.9985	PASS	5179.9961	PASS	5179.9944	PASS	5179.9985	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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	15.7	15.33	15.76	16.33	0.5	Pass
157	5785	16.33	15.79	15.98	16.32	0.5	Pass
165	5825	16.34	15.75	16.35	16.09	0.5	Pass

802.11ax (HE20)

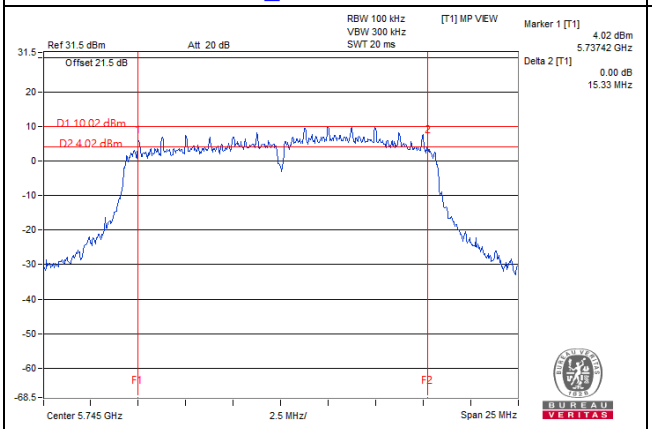
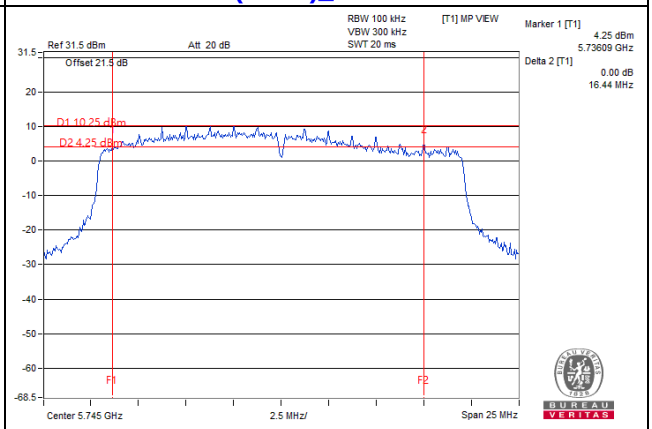
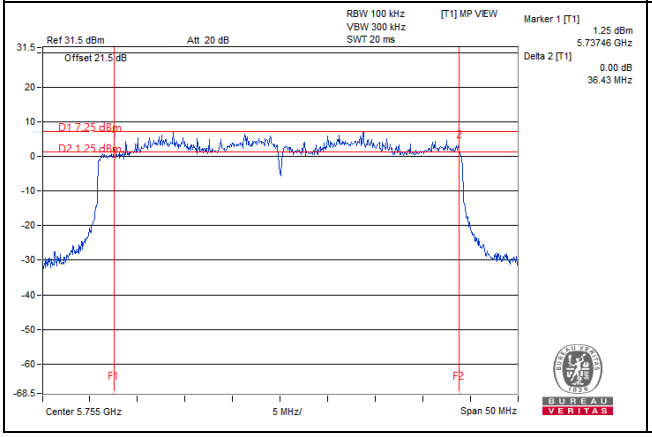
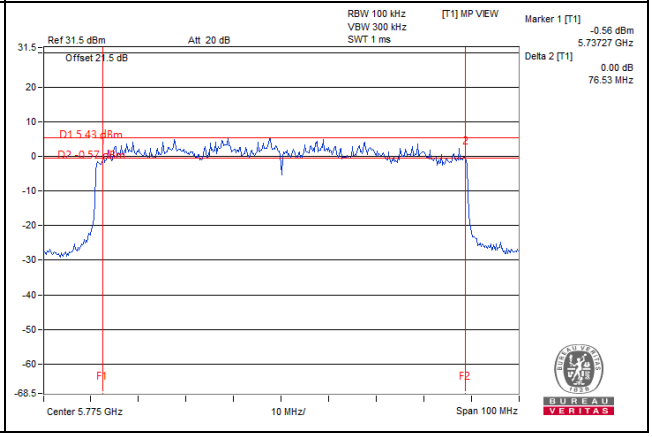
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	18.9	16.44	18.76	18.95	0.5	Pass
157	5785	18.94	18.12	18.12	18.82	0.5	Pass
165	5825	18.96	18.36	18.93	18.83	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.89	37.5	36.43	38.14	0.5	Pass
159	5795	38.04	37.77	37.81	37.92	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.56	76.58	76.53	77.7	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH149	**802.11ax (HE20)_Chain 1 / CH149**
	
802.11ax (HE40)_Chain 2 / CH151	**802.11ax (HE80)_Chain 2 / CH155**
	

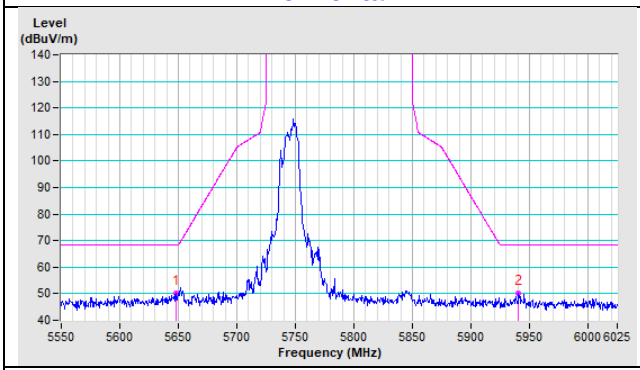
5 Pictures of Test Arrangements

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

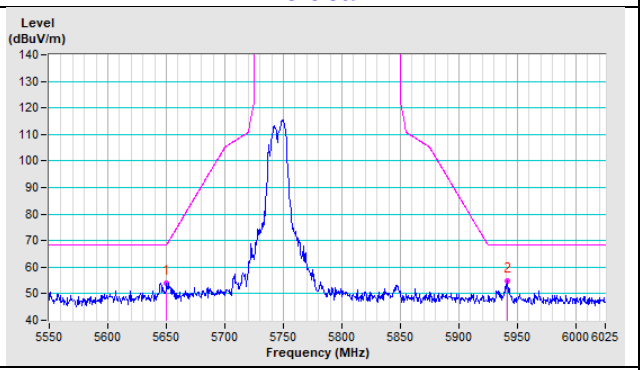
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a CH 149：5745 MHz

Horizontal

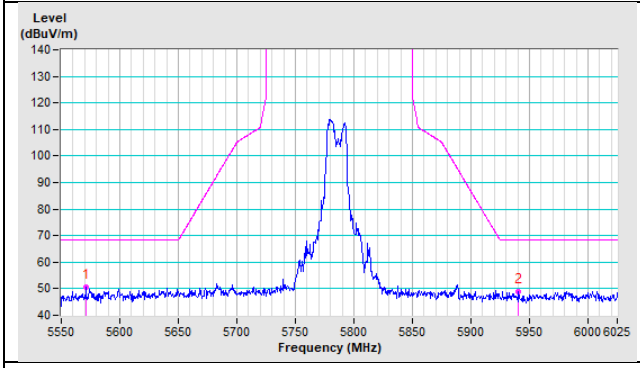


Vertical

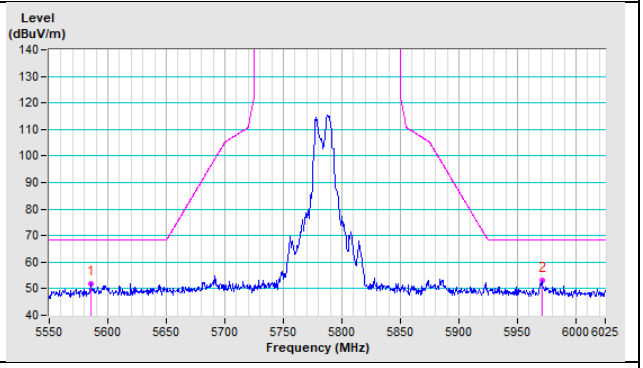


802.11a CH 157：5785 MHz

Horizontal

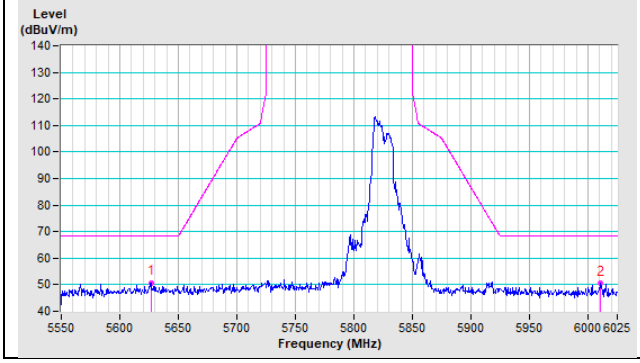


Vertical

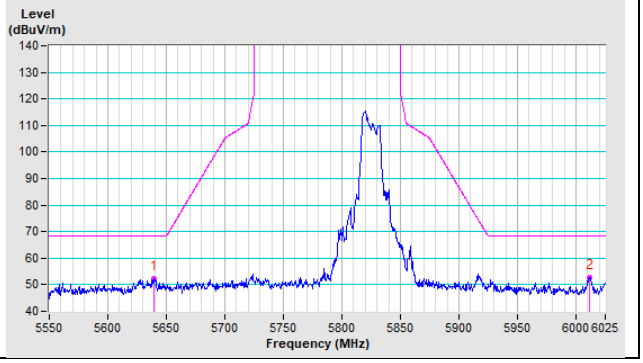


802.11a CH 165：5825 MHz

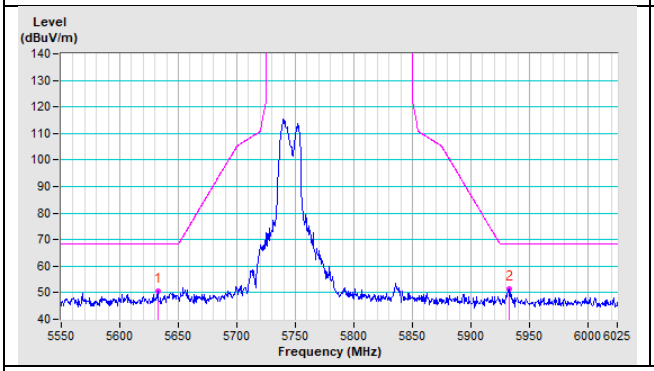
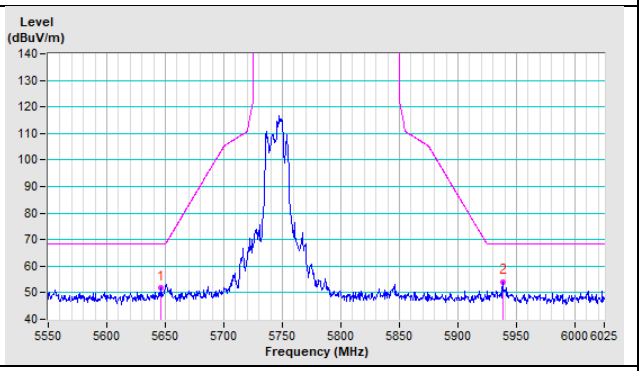
Horizontal



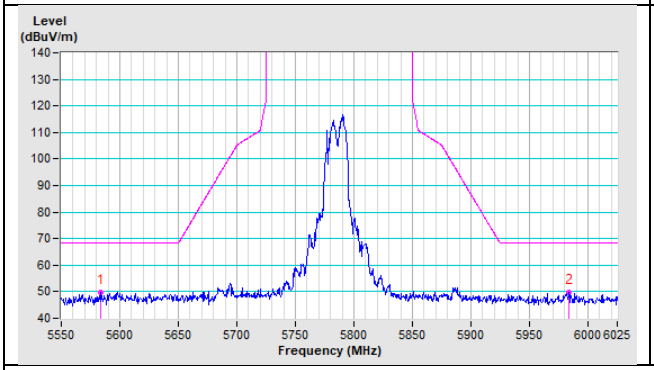
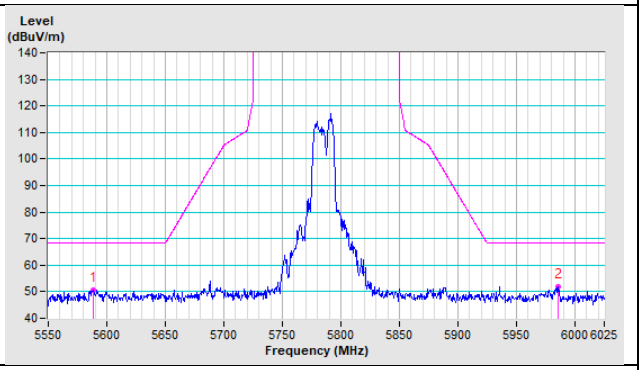
Vertical



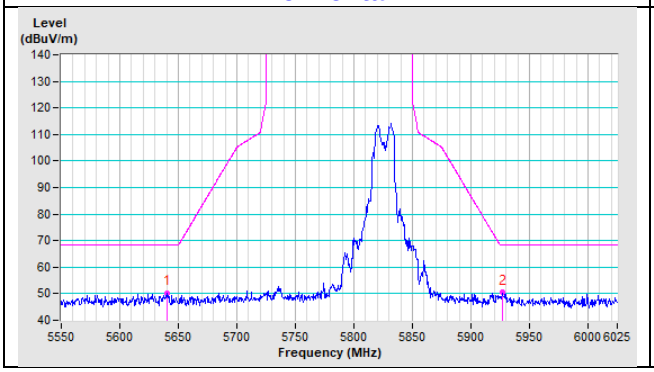
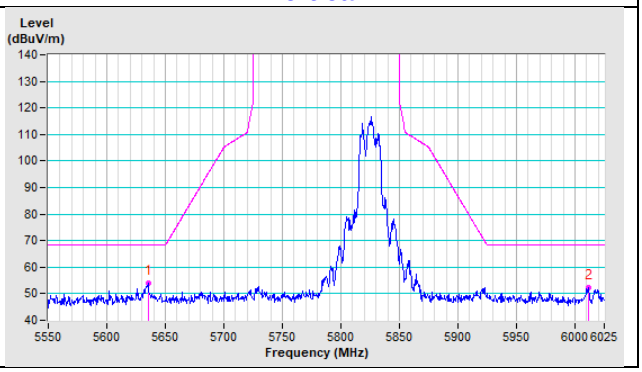
802.11ax (HE20) CH 149：5745 MHz

Horizontal	Vertical
	

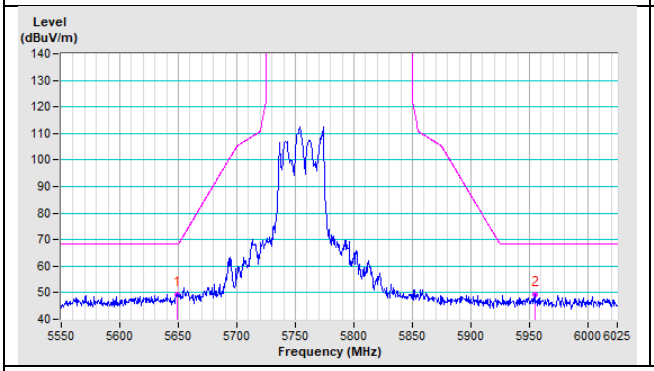
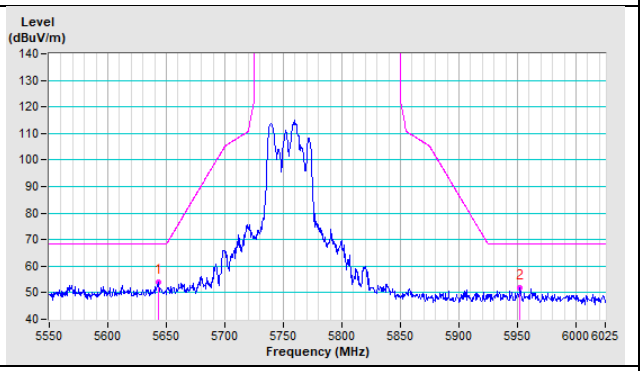
802.11ax (HE20) CH 157：5785 MHz

Horizontal	Vertical
	

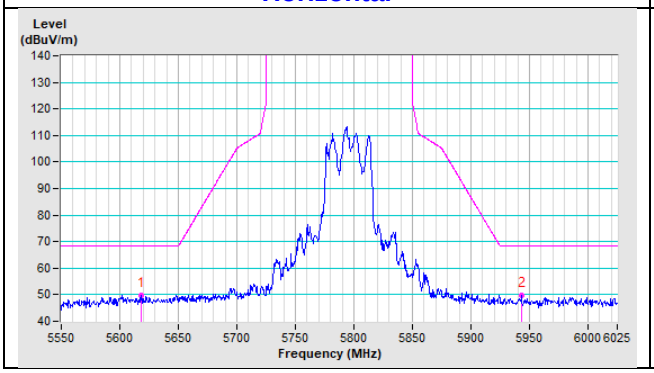
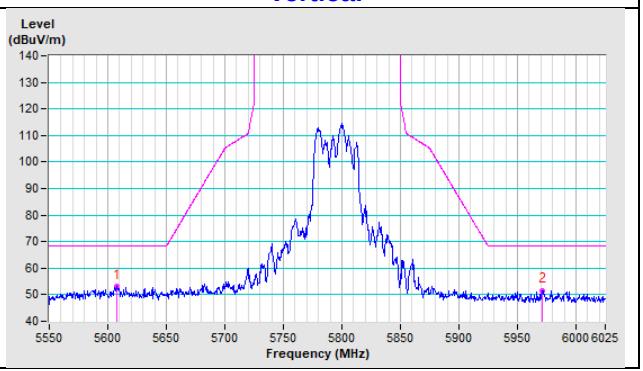
802.11ax (HE20) CH 165：5825 MHz

Horizontal	Vertical
	

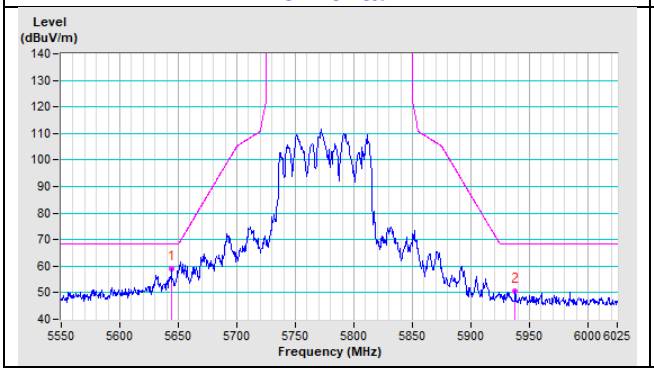
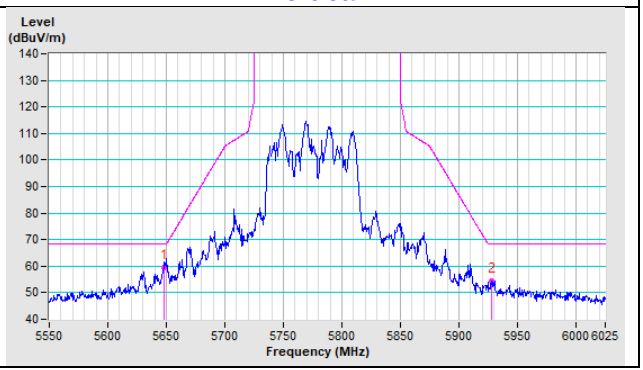
802.11ax (HE40) CH 151：5755 MHz

Horizontal	Vertical
	

802.11ax (HE40) CH 159：5795 MHz

Horizontal	Vertical
	

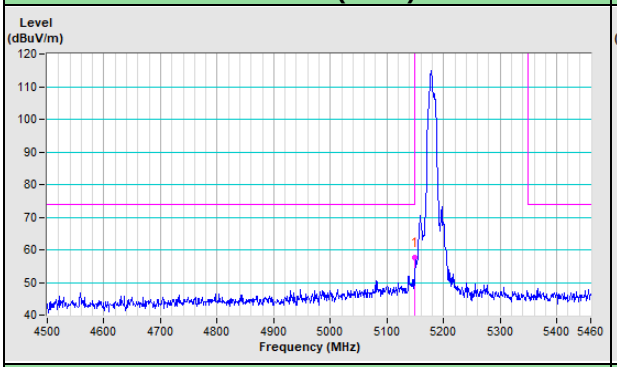
802.11ax (HE80) CH 155：5775 MHz

Horizontal	Vertical
	

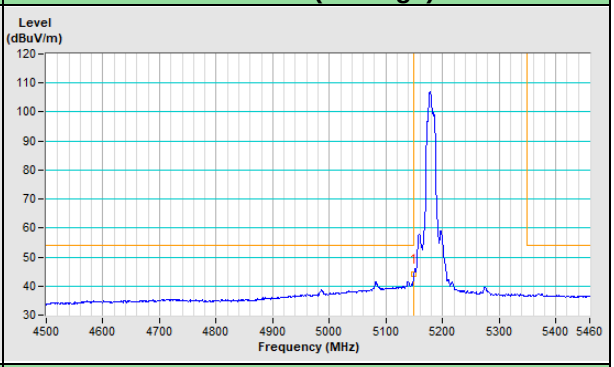
Annex B- Band-edge measurement (For U-NII-1 band)

802.11a Channel 36

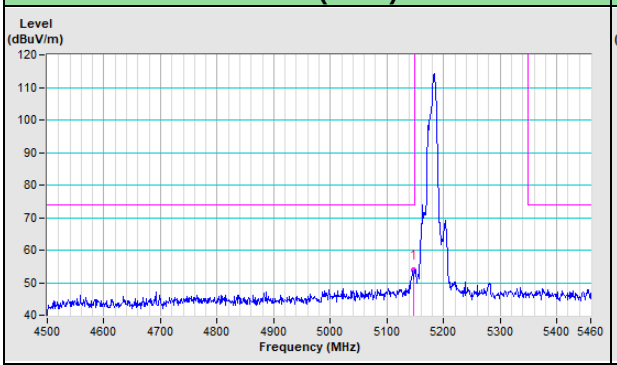
Horizontal (Peak)



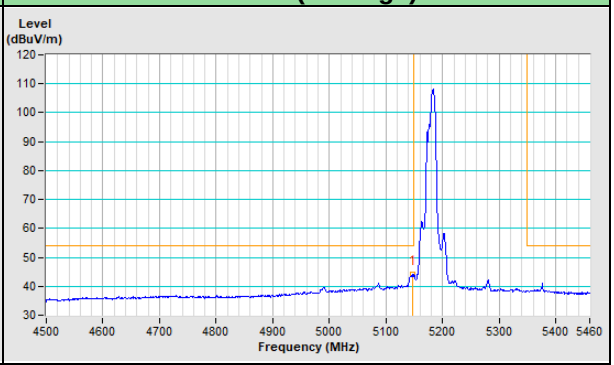
Horizontal (Average)



Vertical (Peak)

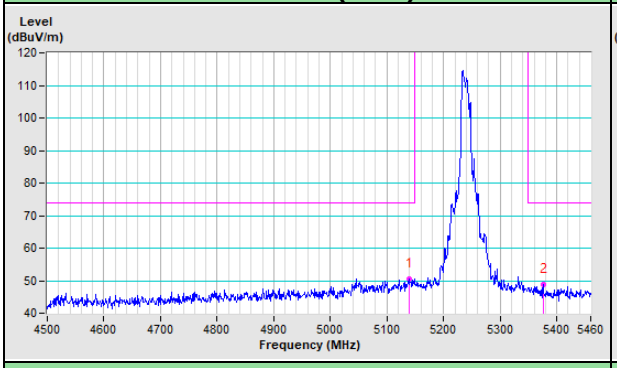


Vertical (Average)

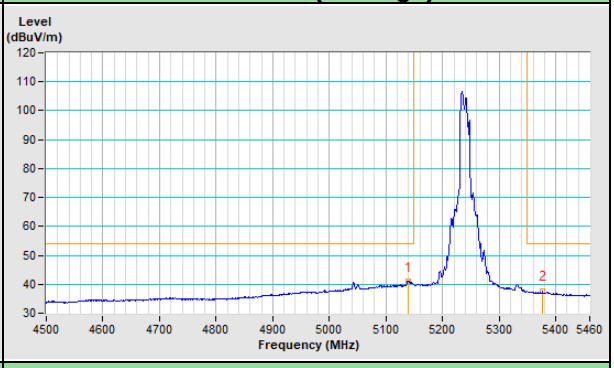


802.11a Channel 48

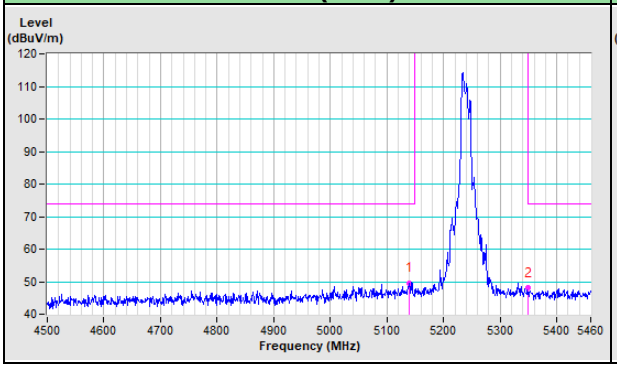
Horizontal (Peak)



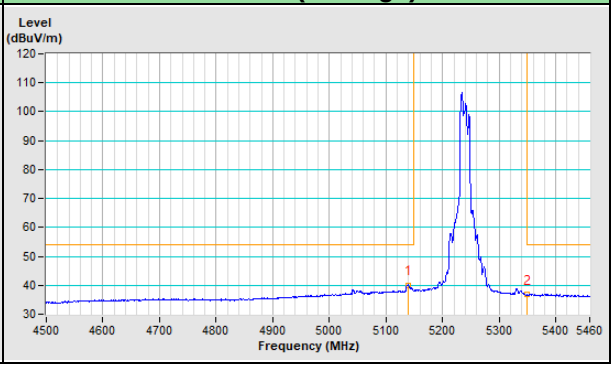
Horizontal (Average)



Vertical (Peak)

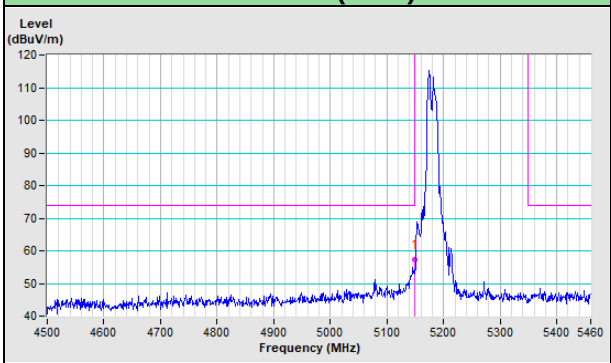


Vertical (Average)

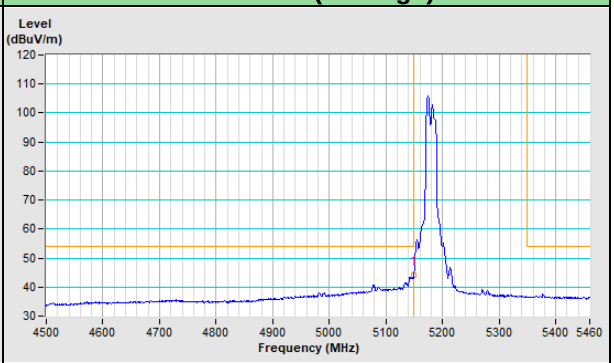


802.11ax (HE20) Channel 36

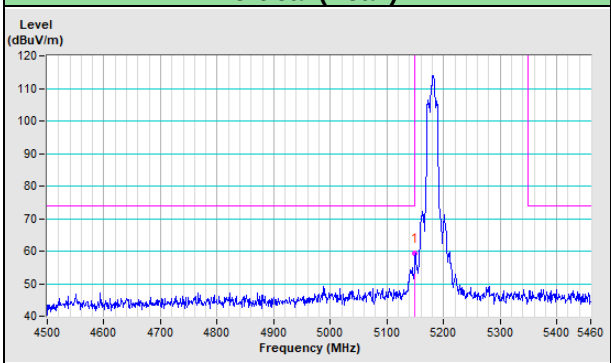
Horizontal (Peak)



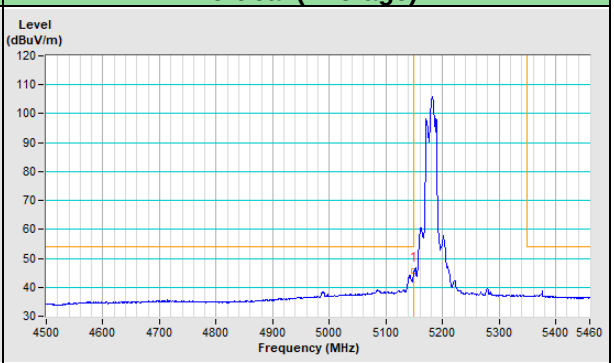
Horizontal (Average)



Vertical (Peak)

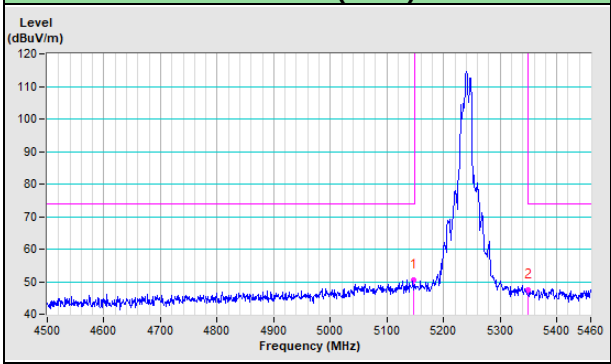


Vertical (Average)

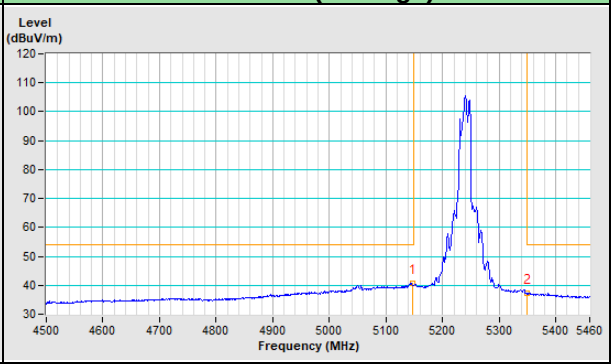


802.11ax (HE20) Channel 48

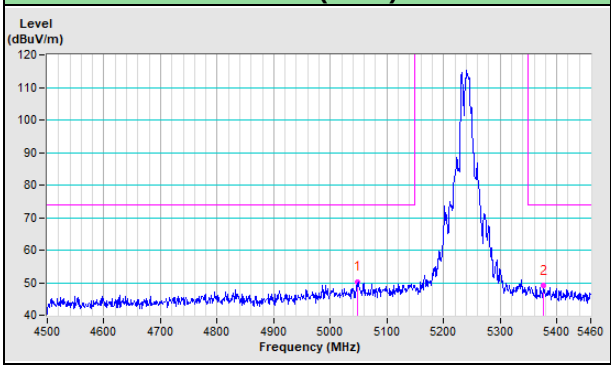
Horizontal (Peak)



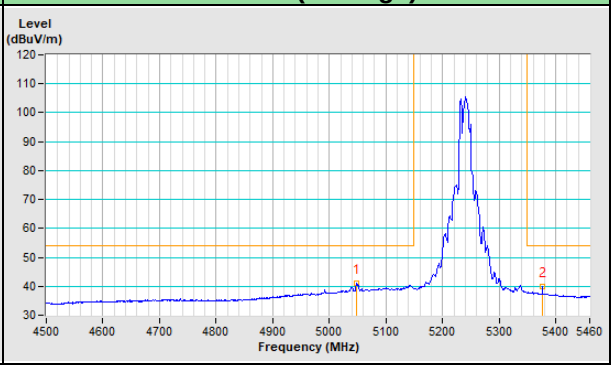
Horizontal (Average)



Vertical (Peak)

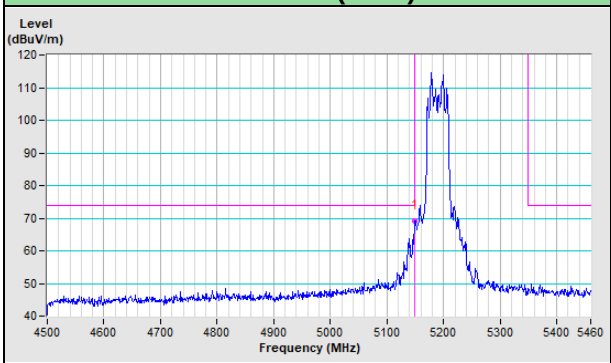


Vertical (Average)

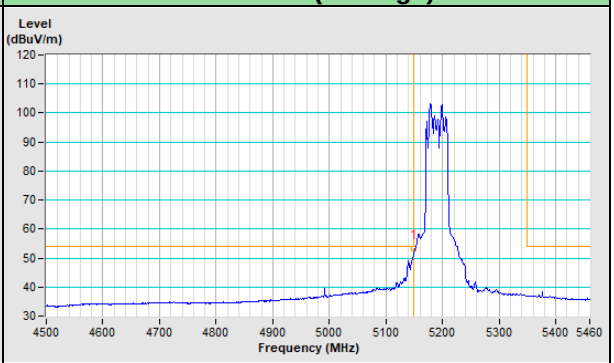


802.11ax (HE40) Channel 38

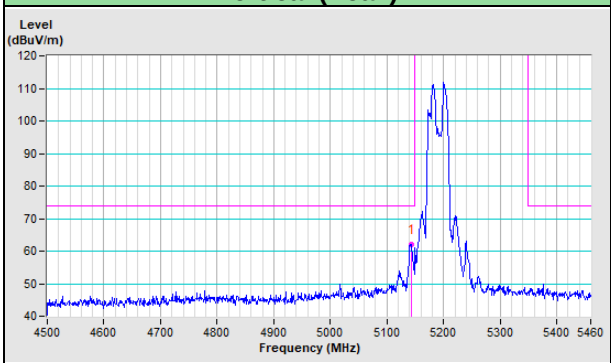
Horizontal (Peak)



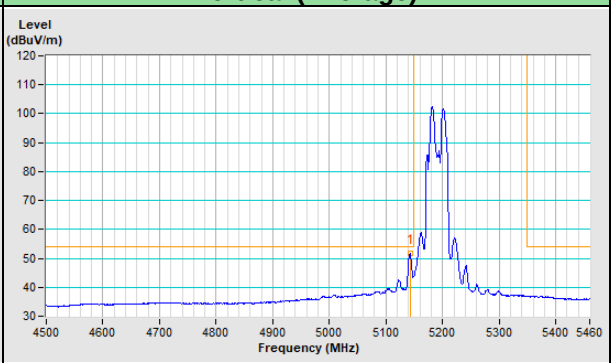
Horizontal (Average)



Vertical (Peak)

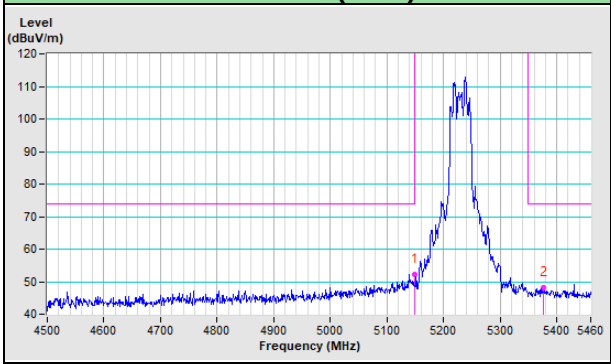


Vertical (Average)

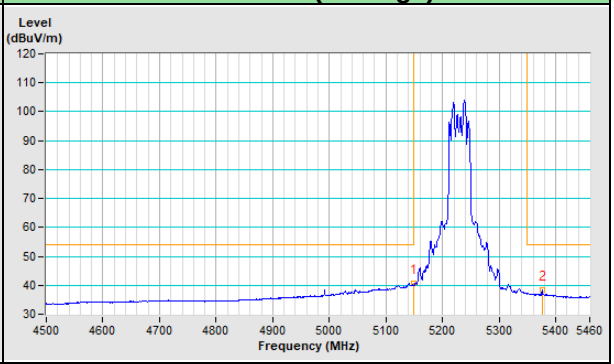


802.11ax (HE40) Channel 46

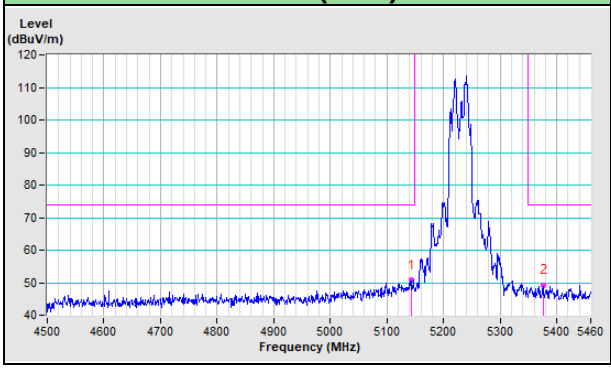
Horizontal (Peak)



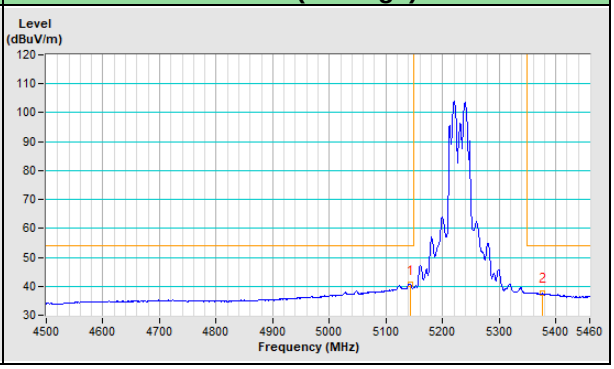
Horizontal (Average)

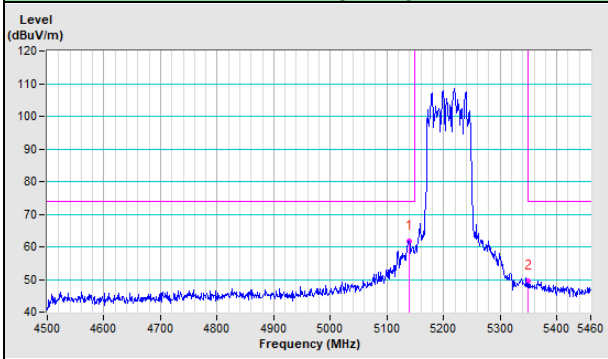
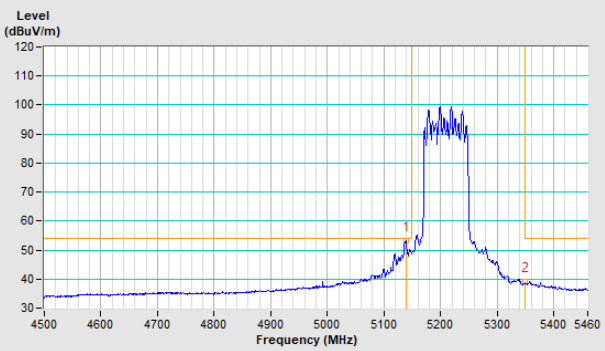
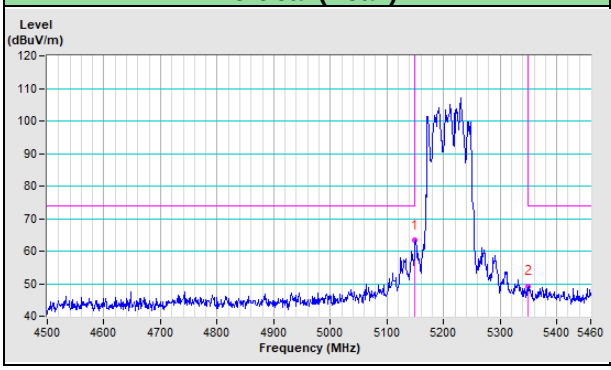
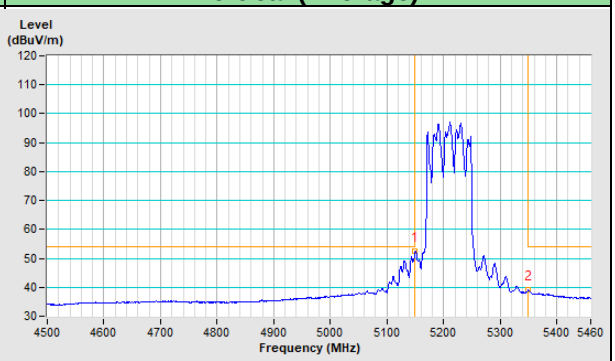


Vertical (Peak)



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.

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