FCC Test Report

Report No.:	RFDLK-WTW-P20070248-1
FCC ID:	KA2APX2810A1
Test Model:	DAP-X2810
Received Date:	Jul. 14, 2020
Test Date:	Jul. 28 ~ Nov. 24, 2020
Issued Date:	Nov. 26, 2020
Applicant:	D-Link Corporation
Address:	17595 Mt. Herrmann, Fountain Valley, California, United States, 92708
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFDLK-WTW-P20070248-1	Original Release	Nov. 26, 2020

1 Certificate of Conformity

Product:	Nuclias Connect AX1800 Access Point
Brand:	D-Link Corporation
Test Model:	DAP-X2810
Sample Status:	Engineering Sample
Applicant:	D-Link Corporation
Test Date:	Jul. 28 ~ Nov. 24, 2020
Standards:	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 RF characteristics under the conditions specified in this report.

Prepared by :  , **Date:** Nov. 26, 2020

Gina Liu / Specialist

Approved by :  , **Date:** Nov. 26, 2020

Dylan Chiou / Senior Project Engineer

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 -3.78 dB at 0.57796 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0 dB at 5150 MHz and 17235 MHz and 17265 MHz and 17385 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB 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	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Nuclias Connect AX1800 Access Point
Brand	D-Link Corporation
Test Model	DAP-X2810
Status of EUT	Engineering Sample
Power Supply Rating	12 Vdc (Adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6 Mbps 802.11n: up to 400 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201 Mbps
Operating Frequency	5180 ~ 5240 MHz, 5745 ~ 5825 MHz
Number of Channel	5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20) 2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40) 1 for 802.11ac (VHT80), 802.11ax (HE80) 5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20) 2 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40) 1 for 802.11ac (VHT80), 802.11ax (HE80)
Output Power	CDD Mode: 696.006 mW for 5180 ~ 5240 MHz 469.971 mW for 5745 ~ 5825 MHz Beamforming Mode: 307.864 mW for 5180 ~ 5240 MHz 235.002 mW for 5745 ~ 5825 MHz
Antenna Type	PIFA antenna with 4.3 dBi gain (Chain 1) PIFA antenna with 4.2 dBi gain (Chain 2)
Antenna Connector	i-pex(MHF)
Accessory Device	Refer to Note as below
Data Cable Supplied	N/A

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Beamforming	TX Function
802.11a	Not Support	2TX (MIMO)
802.11n (HT20)	Support	2TX (MIMO)
802.11n (HT40)	Support	2TX (MIMO)
802.11ac (VHT20)	Support	2TX (MIMO)
802.11ac (VHT40)	Support	2TX (MIMO)
802.11ac (VHT80)	Support	2TX (MIMO)
802.11ax (HE20)	Support	2TX (MIMO)
802.11ax (HE40)	Support	2TX (MIMO)
802.11ax (HE80)	Support	2TX (MIMO)

   * The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40 / VHT80 and 802.11ax mode for HE20 / HE40 / HE80, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

   *For 802.11n and 802.11ac and 802.11ax, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	ASIAN	WB-18Q12FU1(US)	I/P: 100-240 Vac, 50-60 Hz, 0.6 A O/P: 12 Vdc, 1.5 A
Adapter 2	ASIAN	WA-30P12R	I/P: 100-240 Vac, 50-60 Hz, 0.9 A O/P: 12 Vdc, 2.5 A
Console cable	N/A	N/A	--

3. 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.
4. 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.
5. The manufacturer announced that the device has two operating modes, access point mode and client mode. When switched to client mode, the U-NII-1 output power will follow the client mode power table, and comply with FCC Part 15E section15.407 (a)(1)(iv) regulations .

3.2 Description of Test Modes

For 5180 ~ 5240 MHz

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

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

Channel	Frequency (MHz)
42	5210

For 5745 ~ 5825 MHz:

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

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

Channel	Frequency (MHz)
155	5775

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	EUT with Adapter (WB18Q12FU1)
B	-	√	√	-	EUT with POE
C	-	√	√	-	EUT with Adapter (WA-30P12R)

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. "-" means no effect.

Radiated Emission Test (Above 1 GHz):

☒ 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.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
		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
	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
		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 1 GHz):

☒ 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.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A~C	5180-5240	802.11a	36 to 48	40	OFDM	BPSK	6.0

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.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A~C	5180-5240	802.11a	36 to 48	40	OFDM	BPSK	6.0

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.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	5180-5240	802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6.0
		802.11n (HT20)	36 to 48	36, 40, 48	OFDM	BPSK	6.5
		802.11n (HT40)	38 to 46	38, 46	OFDM	BPSK	13.5
		802.11ac (VHT20)	36 to 48	36, 40, 48	OFDM	BPSK	7.2
		802.11ac (VHT40)	38 to 46	38, 46	OFDM	BPSK	15.0
		802.11ac (VHT80)	42	42	OFDM	BPSK	29.3
		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
	5745-5825	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
		802.11n (HT20)	149 to 165	149, 157, 165	OFDM	BPSK	6.5
		802.11n (HT40)	151 to 159	151, 159	OFDM	BPSK	13.5
		802.11ac (VHT20)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
		802.11ac (VHT40)	151 to 159	151, 159	OFDM	BPSK	15.0
		802.11ac (VHT80)	155	155	OFDM	BPSK	29.3
		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	22 deg. C, 67 % RH	120 Vac, 60 Hz	Greg Lin
RE<1G	22 deg. C, 67 % RH	120 Vac, 60 Hz	Greg Lin
PLC	25 deg. C, 75 % RH	120 Vac, 60 Hz	Greg Lin
APCM	25 deg. C, 60 % RH	120 Vac, 60 Hz	Ivan Tseng

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

For 5180 ~ 5240 MHz

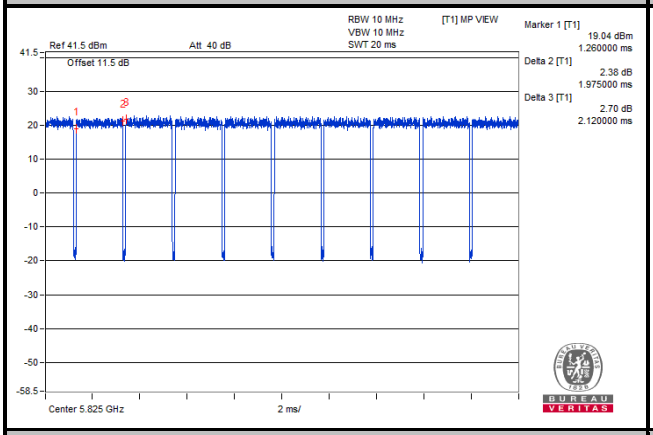
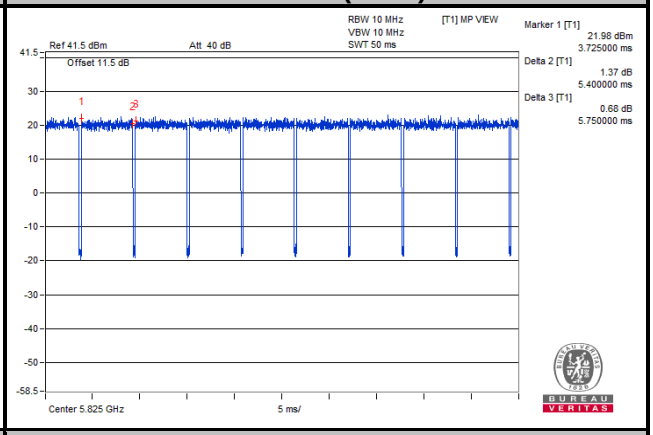
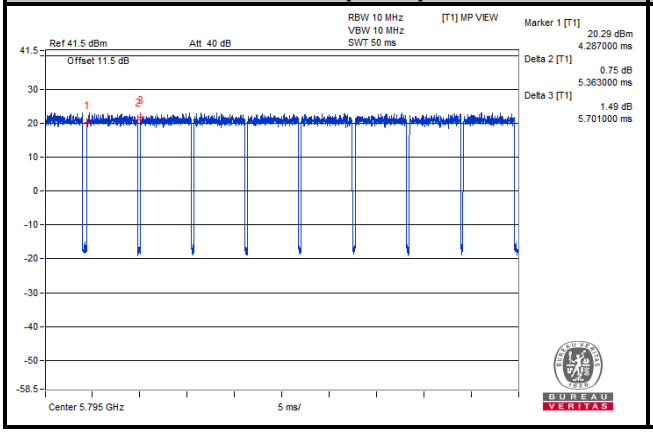
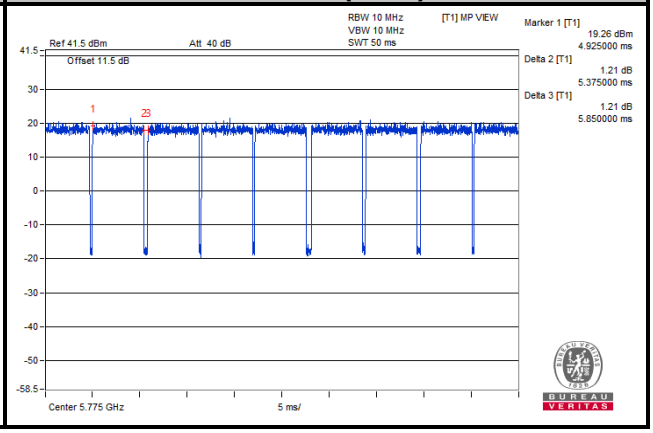
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 1.975/2.12 = 0.932, Duty factor = 10 * log(1/0.932) = 0.31

802.11ax (HE20): Duty cycle = 5.4/5.75 = 0.939, Duty factor = 10 * log(1/0.939) = 0.27

802.11ax (HE40): Duty cycle = 5.363/5.701 = 0.941, Duty factor = 10 * log(1/0.941) = 0.27

802.11ax (HE80): Duty cycle = 5.375/5.85 = 0.919, Duty factor = 10 * log(1/0.919) = 0.37

802.11a	802.11ax (HE20)
	
802.11ax (HE40)	**802.11ax (HE80)**
	

For 5745 ~ 5825 MHz:

Duty cycle of test signal is < 98 %, duty factor is required.

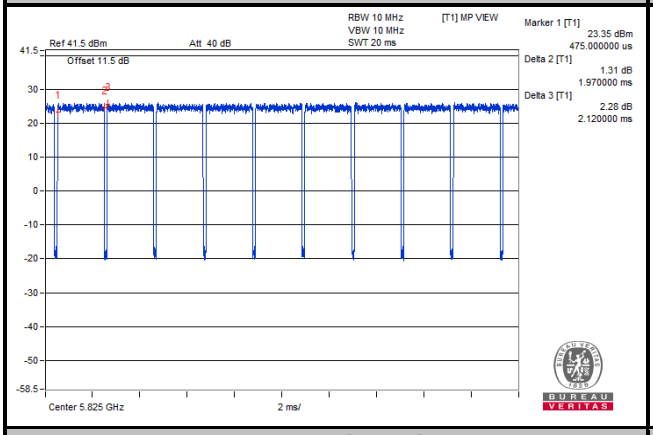
802.11a: Duty cycle = 1.97/2.12 = 0.929, Duty factor = 10 * log(1/0.929) = 0.32

802.11ax (HE20): Duty cycle = 5.4/5.737 = 0.941, Duty factor = 10 * log(1/0.941) = 0.26

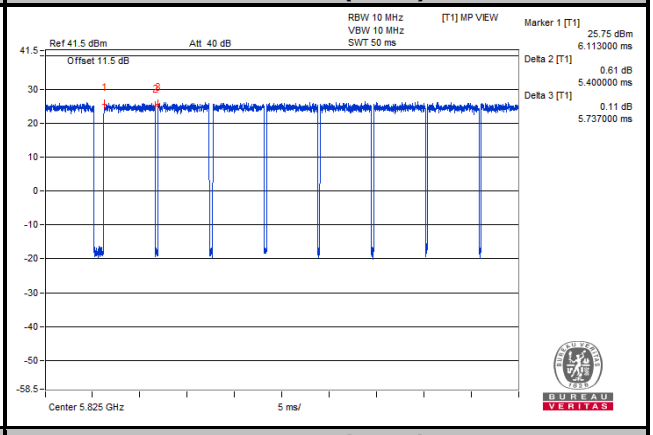
802.11ax (HE40): Duty cycle = 5.376/5.776 = 0.931, Duty factor = 10 * log(1/0.931) = 0.31

802.11ax (HE80): Duty cycle = 5.363/5.688 = 0.943, Duty factor = 10 * log(1/0.943) = 0.26

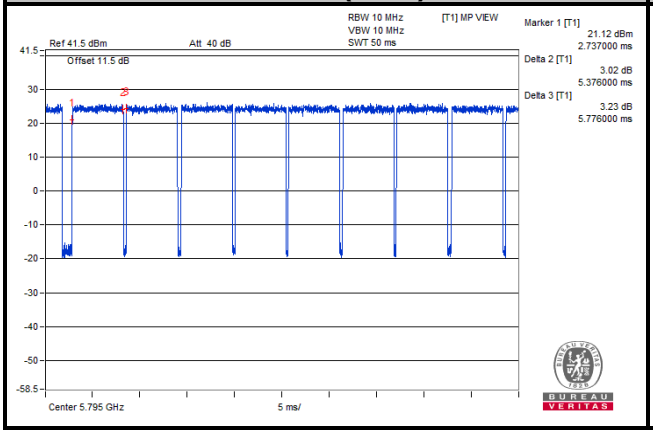
802.11a



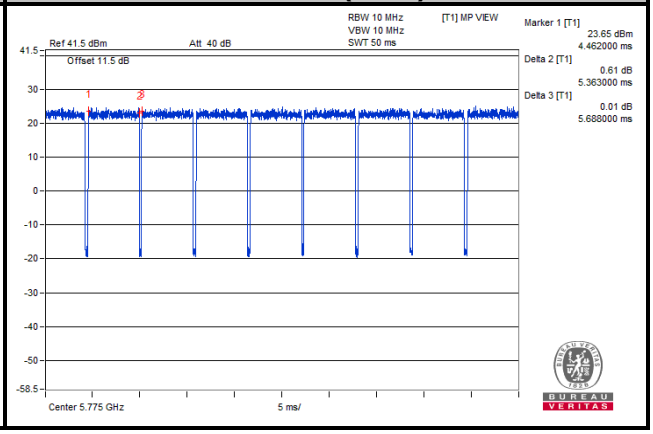
802.11ax (HE20)



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.	Notebook	Lenovo	81A4	YD02TWF5	PPD-QCNFA435	--
B.	POE	UBIQUITI	GP-H480-050G	N/A	N/A	Provided by client
C.	Load	N/A	N/A	N/A	N/A	--

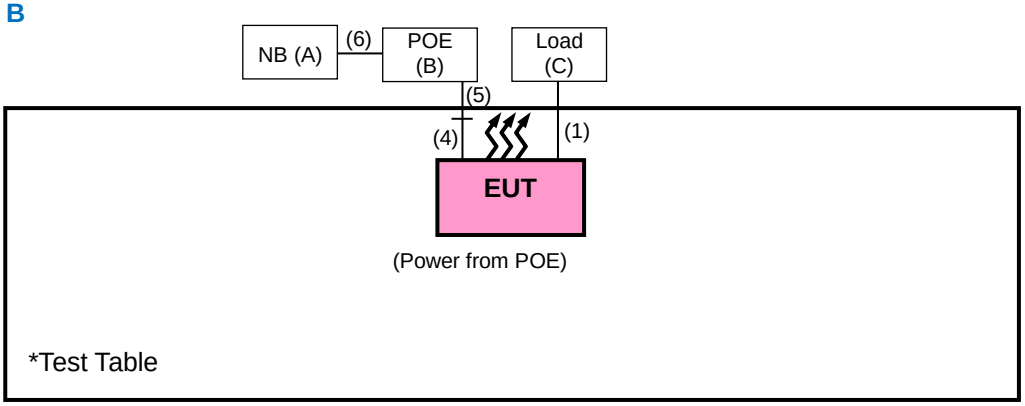
ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Console Cable	1	1.8	N	0	Accessory of the EUT
2.	LAN Cable	1	10	N	0	RJ45
3.	Adapter Cable	1	1.0	N	0	Accessory of the EUT
4.	LAN Cable	1	1.5	N	0	RJ45
5.	LAN Cable	1	1.5	N	0	RJ45
6.	LAN Cable	1	1.0	N	0	RJ45

Note:

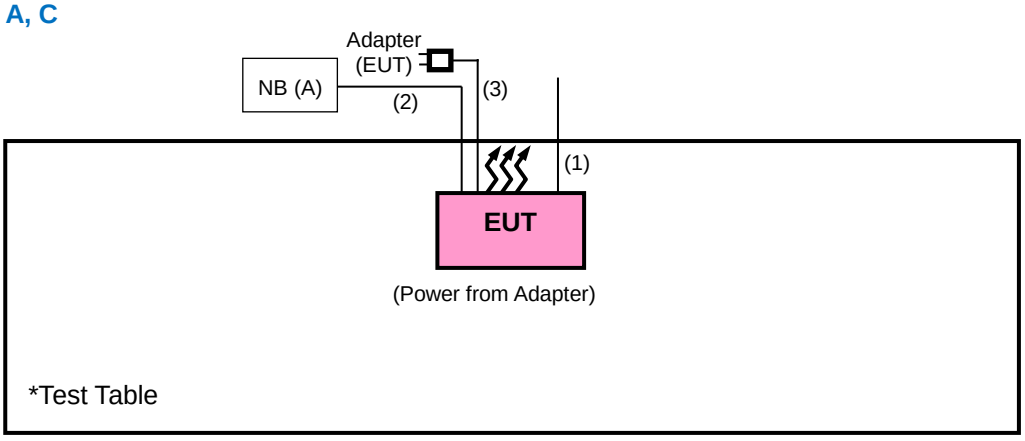
1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as communication partner to transfer data.

3.4.1 Configuration of System under Test

Mode B



Mode A, C



3.5 General Description of Applied Standards and References

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

Test Standard:

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

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedures 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 1000 MHz, 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 20 dB under any condition of modulation.

Limits of Unwanted Emission Out of the Restricted Bands

Applicable To			Limit	
789033 D02 General UNII Test Procedures New Rules v02r01			Field Strength at 3 m	
			PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	**Applicable To**		**EIRP Limit**	**Equivalent Field Strength at 3 m**
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
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	

*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

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100980	Apr. 20, 2020	Apr. 19, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
			Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 29, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 29, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 18, 2020	Feb. 17, 2021
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 18, 2020	Jan. 17, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 18, 2020	Jan. 17, 2021
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020
			Sep. 09, 2020	Sep. 08, 2021
AC Power Source EEC	6905S	1991553	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021

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 HwaYa Chamber 9.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

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 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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:

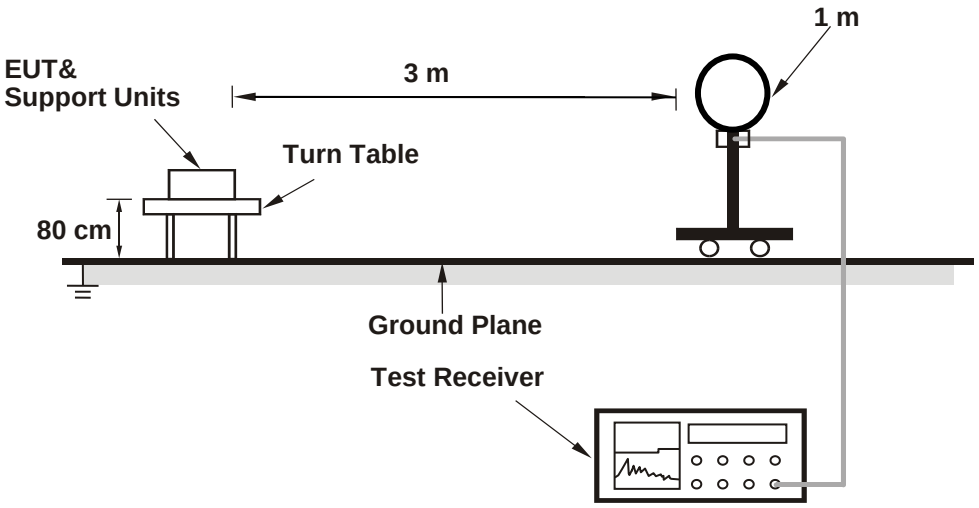
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
   (11a: RBW = 1 MHz, VBW = 1 kHz ; 11ax (HE20): RBW = 1 MHz, VBW = 1 kHz ;
   11ax (HE40): RBW = 1 MHz, VBW = 1 kHz ; 11ax (HE80): RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

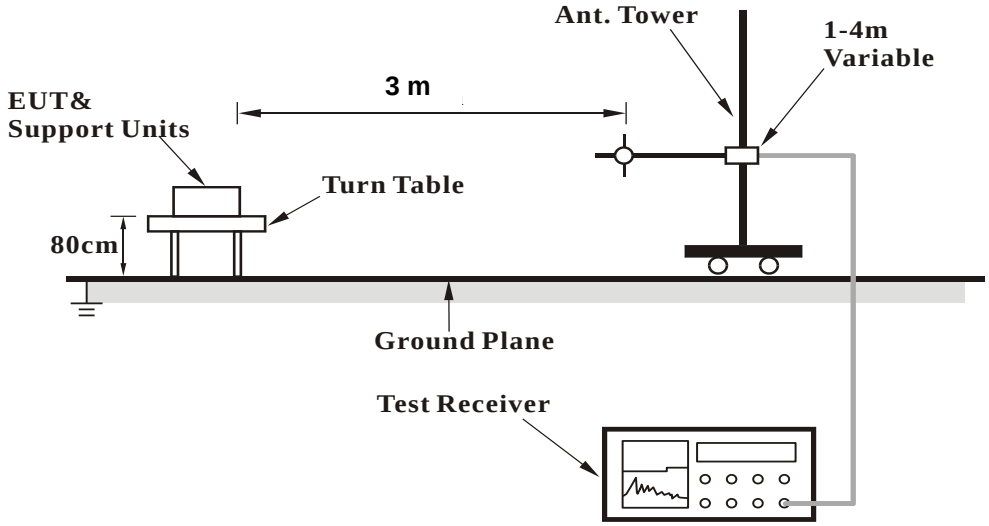
No deviation.

4.1.5 Test Setup

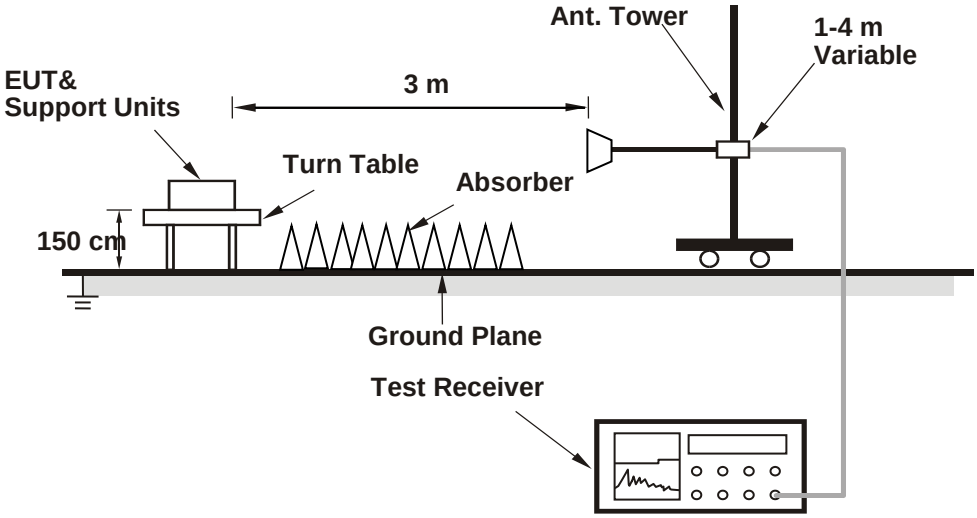
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1 GHz Data：

802.11a

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	62.5 PK	74.0	-11.5	2.85 H	144	60.4	2.1
2	5150.00	48.7 AV	54.0	-5.3	2.85 H	144	46.6	2.1
3	*5180.00	112.5 PK			2.85 H	144	76.2	36.3
4	*5180.00	101.5 AV			2.85 H	144	65.2	36.3
5	#10360.00	55.5 PK	68.2	-12.7	1.31 H	323	40.4	15.1
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	5150.00	66.4 PK	74.0	-7.6	2.58 V	187	64.3	2.1
2	**5150.00**	**53.0 AV**	**54.0**	**-1.0**	**2.58 V**	**187**	**50.9**	**2.1**
3	*5180.00	118.0 PK			2.58 V	187	81.7	36.3
4	*5180.00	107.8 AV			2.58 V	187	71.5	36.3
5	#10360.00	55.8 PK	68.2	-12.4	2.56 V	240	40.7	15.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	113.1 PK			2.82 H	137	76.9	36.2
2	*5200.00	103.0 AV			2.82 H	137	66.8	36.2
3	#10400.00	56.5 PK	74.0	-17.5	1.34 H	327	41.3	15.2
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	*5200.00	119.5 PK			2.31 V	185	83.3	36.2
2	*5200.00	109.4 AV			2.31 V	185	73.2	36.2
3	#10400.00	56.9 PK	68.2	-11.3	2.54 V	238	41.7	15.2

Remarks:

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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	113.4 PK			2.93 H	152	77.3	36.1
2	*5240.00	103.4 AV			2.93 H	152	67.3	36.1
3	5350.00	52.3 PK	74.0	-21.7	2.93 H	152	50.3	2.0
4	5350.00	42.2 AV	54.0	-11.8	2.93 H	152	40.2	2.0
5	#10480.00	56.2 PK	68.2	-12.0	1.29 H	317	41.1	15.1
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	*5240.00	118.4 PK			2.37 V	185	82.3	36.1
2	*5240.00	108.3 AV			2.37 V	185	72.2	36.1
3	5350.00	54.3 PK	74.0	-19.7	2.37 V	185	52.3	2.0
4	5350.00	43.5 AV	54.0	-10.5	2.37 V	185	41.5	2.0
5	#10480.00	56.9 PK	68.2	-11.3	2.63 V	234	41.8	15.1

Remarks:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5745.00	111.1 PK			3.50 H	276	73.8	37.3
2	*5745.00	100.7 AV			3.50 H	276	63.4	37.3
3	11490.00	58.3 PK	74.0	-15.7	1.43 H	176	42.8	15.5
4	11490.00	46.2 AV	54.0	-7.8	1.43 H	176	30.7	15.5
5	#17235.00	66.0 PK	68.2	-2.2	1.99 H	131	43.1	22.9
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	*5745.00	111.7 PK			2.51 V	91	74.4	37.3
2	*5745.00	101.9 AV			2.51 V	91	64.6	37.3
3	11490.00	62.7 PK	74.0	-11.3	1.25 V	78	47.2	15.5
4	11490.00	49.7 AV	54.0	-4.3	1.25 V	78	34.2	15.5
5	**#17235.00**	**67.2 PK**	**68.2**	**-1.0**	**2.72 V**	**88**	**44.3**	**22.9**

Remarks:

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

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	111.6 PK			3.10 H	282	74.1	37.5
2	*5785.00	101.5 AV			3.10 H	282	64.0	37.5
3	11570.00	58.4 PK	74.0	-15.6	1.49 H	181	43.2	15.2
4	11570.00	46.8 AV	54.0	-7.2	1.49 H	181	31.6	15.2
5	#17235.00	66.3 PK	68.2	-1.9	1.89 H	129	43.4	22.9
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	*5785.00	112.7 PK			3.72 V	86	75.2	37.5
2	*5785.00	102.5 AV			3.72 V	86	65.0	37.5
3	11570.00	64.1 PK	74.0	-9.9	1.18 V	90	48.9	15.2
4	11570.00	51.4 AV	54.0	-2.6	1.18 V	90	36.2	15.2
5	#17355.00	66.8 PK	68.2	-1.4	2.73 V	89	44.1	22.7

Remarks:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5825.00	111.3 PK			2.64 H	281	73.9	37.4
2	*5825.00	101.2 AV			2.64 H	281	63.8	37.4
3	11650.00	58.4 PK	74.0	-15.6	1.51 H	177	43.2	15.2
4	11650.00	46.3 AV	54.0	-7.7	1.51 H	177	31.1	15.2
5	#17475.00	66.3 PK	68.2	-1.9	1.89 H	122	43.0	23.3
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	*5825.00	112.8 PK			2.53 V	93	75.4	37.4
2	*5825.00	102.9 AV			2.53 V	93	65.5	37.4
3	11650.00	64.9 PK	74.0	-9.1	1.04 V	75	49.7	15.2
4	11650.00	52.0 AV	54.0	-2.0	1.04 V	75	36.8	15.2
5	#17475.00	66.7 PK	68.2	-1.5	2.53 V	88	43.4	23.3

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.

802.11ax (HE20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.3 PK	74.0	-11.7	2.79 H	141	60.2	2.1
2	5150.00	48.5 AV	54.0	-5.5	2.79 H	141	46.4	2.1
3	*5180.00	109.1 PK			2.79 H	141	72.8	36.3
4	*5180.00	96.4 AV			2.79 H	141	60.1	36.3
5	#10360.00	55.7 PK	68.2	-12.5	1.24 H	326	40.6	15.1
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	5150.00	66.4 PK	74.0	-7.6	2.44 V	185	64.3	2.1
2	5150.00	52.7 AV	54.0	-1.3	2.44 V	185	50.6	2.1
3	*5180.00	115.5 PK			2.44 V	185	79.2	36.3
4	*5180.00	102.8 AV			2.44 V	185	66.5	36.3
5	#10360.00	56.4 PK	68.2	-11.8	2.67 V	233	41.3	15.1

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	112.3 PK			2.78 H	153	76.1	36.2
2	*5200.00	99.5 AV			2.78 H	153	63.3	36.2
3	#10400.00	56.5 PK	68.2	-11.7	1.36 H	324	41.3	15.2
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	*5200.00	118.6 PK			2.41 V	186	82.4	36.2
2	*5200.00	105.8 AV			2.41 V	186	69.6	36.2
3	#10400.00	57.1 PK	68.2	-11.1	2.55 V	232	41.9	15.2

Remarks:

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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	112.2 PK			2.88 H	147	76.1	36.1
2	*5240.00	99.0 AV			2.88 H	147	62.9	36.1
3	5350.00	52.3 PK	74.0	-21.7	2.88 H	147	50.3	2.0
4	5350.00	40.4 AV	54.0	-13.6	2.88 H	147	38.4	2.0
5	#10480.00	56.2 PK	68.2	-12.0	1.25 H	311	41.1	15.1
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	*5240.00	118.6 PK			2.37 V	183	82.5	36.1
2	*5240.00	105.3 AV			2.37 V	183	69.2	36.1
3	5350.00	54.9 PK	74.0	-19.1	2.37 V	183	52.9	2.0
4	5350.00	42.8 AV	54.0	-11.2	2.37 V	183	40.8	2.0
5	#10480.00	56.9 PK	68.2	-11.3	2.51 V	233	41.8	15.1

Remarks:

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

CHANNEL	TX Channel 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5745.00	115.2 PK			3.00 H	281	77.9	37.3
2	*5745.00	102.6 AV			3.00 H	281	65.3	37.3
3	11490.00	57.8 PK	74.0	-16.2	1.77 H	178	42.3	15.5
4	11490.00	44.8 AV	54.0	-9.2	1.77 H	178	29.3	15.5
5	#17235.00	65.8 PK	68.2	-2.4	2.07 H	125	42.9	22.9
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	*5745.00	117.0 PK			2.40 V	95	79.7	37.3
2	*5745.00	104.0 AV			2.40 V	95	66.7	37.3
3	11490.00	62.7 PK	74.0	-11.3	1.07 V	76	47.2	15.5
4	11490.00	49.9 AV	54.0	-4.1	1.07 V	76	34.4	15.5
5	#17235.00	67.1 PK	68.2	-1.1	2.84 V	90	44.2	22.9

Remarks:

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

CHANNEL	TX Channel 157	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	114.3 PK			2.68 H	279	76.8	37.5
2	*5785.00	100.6 AV			2.68 H	279	63.1	37.5
3	11570.00	60.1 PK	74.0	-13.9	1.07 H	312	44.9	15.2
4	11570.00	47.2 AV	54.0	-6.8	1.07 H	312	32.0	15.2
5	#17355.00	66.2 PK	68.2	-2.0	1.96 H	130	43.5	22.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	115.2 PK			2.26 V	101	77.7	37.5
2	*5785.00	102.7 AV			2.26 V	101	65.2	37.5
3	11570.00	62.5 PK	74.0	-11.5	2.70 V	90	47.3	15.2
4	11570.00	49.9 AV	54.0	-4.1	2.70 V	90	34.7	15.2
5	#17355.00	67.1 PK	68.2	-1.1	2.82 V	85	44.4	22.7

Remarks:

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

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		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	*5825.00	112.3 PK			2.80 H	281	74.9	37.4
2	*5825.00	99.1 AV			2.80 H	281	61.7	37.4
3	11650.00	60.0 PK	74.0	-14.0	1.62 H	308	44.8	15.2
4	11650.00	47.4 AV	54.0	-6.6	1.62 H	308	32.2	15.2
5	#17475.00	66.5 PK	68.2	-1.7	2.03 H	128	43.2	23.3
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	*5825.00	115.0 PK			2.43 V	98	77.6	37.4
2	*5825.00	101.7 AV			2.43 V	98	64.3	37.4
3	11650.00	63.6 PK	74.0	-10.4	2.82 V	88	48.4	15.2
4	11650.00	49.8 AV	54.0	-4.2	2.82 V	88	34.6	15.2
5	#17475.00	67.0 PK	68.2	-1.2	2.80 V	87	43.7	23.3

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.

802.11ax (HE40)

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.5 PK	74.0	-13.5	2.81 H	146	58.4	2.1
2	5150.00	47.5 AV	54.0	-6.5	2.81 H	146	45.4	2.1
3	*5190.00	99.7 PK			2.81 H	146	63.5	36.2
4	*5190.00	87.4 AV			2.81 H	146	51.2	36.2
5	#10380.00	56.1 PK	68.2	-12.1	1.26 H	321	40.9	15.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.9 PK	74.0	-9.1	2.42 V	184	62.8	2.1
2	5150.00	52.7 AV	54.0	-1.3	2.42 V	184	50.6	2.1
3	*5190.00	106.6 PK			2.42 V	184	70.4	36.2
4	*5190.00	93.7 AV			2.42 V	184	57.5	36.2
5	#10380.00	56.8 PK	74.0	-17.2	2.53 V	248	41.6	15.2

Remarks:

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

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	109.3 PK			2.76 H	134	73.1	36.2
2	*5230.00	96.4 AV			2.76 H	134	60.2	36.2
3	5350.00	52.7 PK	74.0	-21.3	2.76 H	134	50.7	2.0
4	5350.00	41.4 AV	54.0	-12.6	2.76 H	134	39.4	2.0
5	#10460.00	55.6 PK	68.2	-12.6	1.26 H	336	40.5	15.1
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	*5230.00	115.7 PK			2.53 V	186	79.5	36.2
2	*5230.00	102.7 AV			2.53 V	186	66.5	36.2
3	5350.00	55.9 PK	74.0	-18.1	2.53 V	186	53.9	2.0
4	5350.00	44.7 AV	54.0	-9.3	2.53 V	186	42.7	2.0
5	#10460.00	56.7 PK	68.2	-11.5	2.45 V	236	41.6	15.1

Remarks:

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

CHANNEL	TX Channel 151	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5755.00	111.1 PK			3.33 H	278	73.8	37.3
2	*5755.00	99.2 AV			3.33 H	278	61.9	37.3
3	11510.00	60.4 PK	74.0	-13.6	1.57 H	312	45.1	15.3
4	11510.00	47.7 AV	54.0	-6.3	1.57 H	312	32.4	15.3
5	#17265.00	66.2 PK	68.2	-2.0	1.97 H	127	43.2	23.0
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	*5755.00	113.4 PK			2.27 V	98	76.1	37.3
2	*5755.00	100.6 AV			2.27 V	98	63.3	37.3
3	11510.00	61.2 PK	74.0	-12.8	1.08 V	85	45.9	15.3
4	11510.00	48.6 AV	54.0	-5.4	1.08 V	85	33.3	15.3
5	**#17265.00**	**67.2 PK**	**68.2**	**-1.0**	**2.95 V**	**89**	**44.2**	**23.0**

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.

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5795.00	113.4 PK			3.11 H	280	75.9	37.5
2	*5795.00	100.7 AV			3.11 H	280	63.2	37.5
3	11590.00	60.6 PK	74.0	-13.4	1.59 H	302	45.5	15.1
4	11590.00	47.7 AV	54.0	-6.3	1.59 H	302	32.6	15.1
5	#17385.00	65.9 PK	68.2	-2.3	1.99 H	130	43.4	22.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5795.00	114.9 PK			2.26 V	97	77.4	37.5
2	*5795.00	101.7 AV			2.26 V	97	64.2	37.5
3	11590.00	61.9 PK	74.0	-12.1	2.63 V	93	46.8	15.1
4	11590.00	48.5 AV	54.0	-5.5	2.63 V	93	33.4	15.1
5	**#17385.00**	**67.2 PK**	**68.2**	**-1.0**	**2.66 V**	**87**	**44.7**	**22.5**

Remarks:

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

802.11ax (HE80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.3 PK	74.0	-15.7	2.80 H	142	56.2	2.1
2	5150.00	45.2 AV	54.0	-8.8	2.80 H	142	43.1	2.1
3	*5210.00	95.7 PK			2.80 H	142	59.5	36.2
4	*5210.00	82.4 AV			2.80 H	142	46.2	36.2
5	5350.00	52.2 PK	74.0	-21.8	2.80 H	142	50.2	2.0
6	5350.00	40.6 AV	54.0	-13.4	2.80 H	142	38.6	2.0
7	#10420.00	55.0 PK	68.2	-13.2	1.35 H	331	39.8	15.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.1 PK	74.0	-7.9	2.30 V	186	64.0	2.1
2	5150.00	52.7 AV	54.0	-1.3	2.30 V	186	50.6	2.1
3	*5210.00	101.8 PK			2.30 V	186	65.6	36.2
4	*5210.00	88.6 AV			2.30 V	186	52.4	36.2
5	5350.00	52.9 PK	74.0	-21.1	2.30 V	186	50.9	2.0
6	5350.00	42.3 AV	54.0	-11.7	2.30 V	186	40.3	2.0
7	#10420.00	55.6 PK	68.2	-12.6	2.59 V	235	40.4	15.2

Remarks:

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

CHANNEL	TX Channel 155	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5775.00	109.5 PK			3.15 H	285	72.0	37.5
2	*5775.00	97.5 AV			3.15 H	285	60.0	37.5
3	11550.00	59.4 PK	74.0	-14.6	1.61 H	315	44.1	15.3
4	11550.00	47.3 AV	54.0	-6.7	1.61 H	315	32.0	15.3
5	#17325.00	66.3 PK	68.2	-1.9	2.03 H	122	43.5	22.8
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	*5775.00	111.2 PK			2.63 V	95	73.7	37.5
2	*5775.00	99.0 AV			2.63 V	95	61.5	37.5
3	11550.00	59.9 PK	74.0	-14.1	1.27 V	85	44.6	15.3
4	11550.00	47.6 AV	54.0	-6.4	1.27 V	85	32.3	15.3
5	#17325.00	67.1 PK	68.2	-1.1	3.03 V	85	44.3	22.8

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.

9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

802.11a

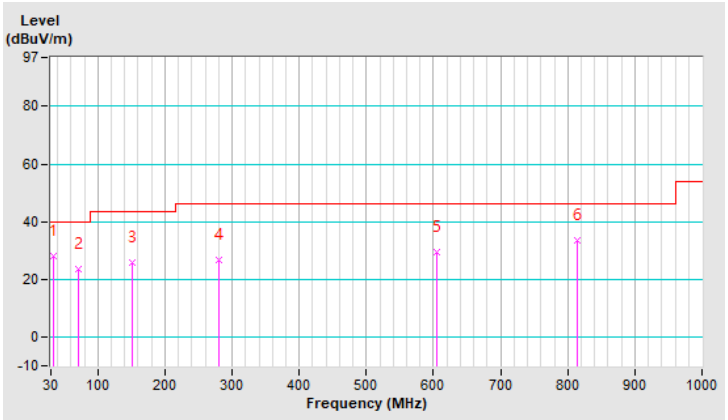
Mode A

CHANNEL	TX Channel 40	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	33.88	27.9 QP	40.0	-12.1	1.50 H	108	38.5	-10.6
2	70.74	23.6 QP	40.0	-16.4	1.25 H	59	34.7	-11.1
3	152.22	25.7 QP	43.5	-17.8	1.00 H	115	34.4	-8.7
4	281.23	26.5 QP	46.0	-19.5	1.00 H	82	33.9	-7.4
5	605.21	29.4 QP	46.0	-16.6	1.25 H	56	30.1	-0.7
6	814.73	33.4 QP	46.0	-12.6	1.50 H	2	30.4	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.

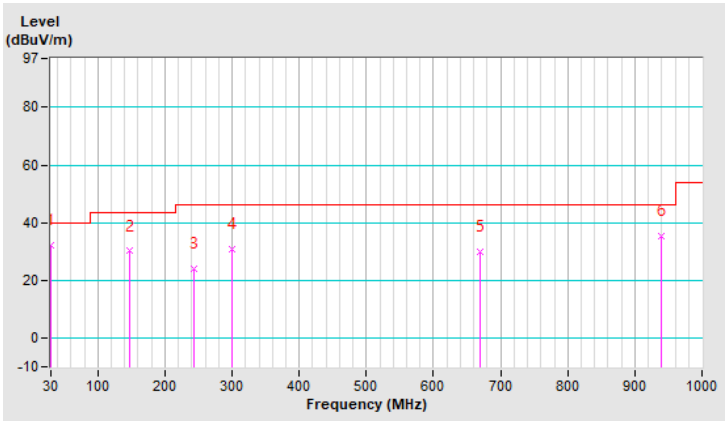


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	32.2 QP	40.0	-7.8	1.25 V	341	42.7	-10.5
2	146.40	30.1 QP	43.5	-13.4	1.00 V	109	38.8	-8.7
3	242.43	23.8 QP	46.0	-22.2	1.50 V	65	33.1	-9.3
4	299.66	30.8 QP	46.0	-15.2	1.00 V	272	37.9	-7.1
5	669.23	30.1 QP	46.0	-15.9	1.25 V	223	29.8	0.3
6	938.89	35.2 QP	46.0	-10.8	1.00 V	43	29.9	5.3

Remarks:

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



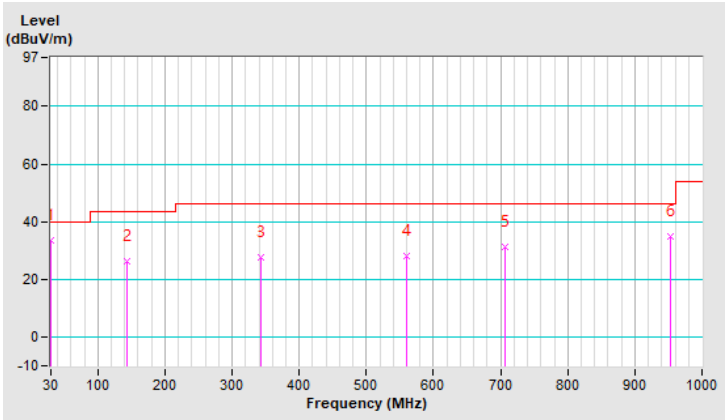
Mode B

CHANNEL	TX Channel 40	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	30.00	33.7 QP	40.0	-6.3	1.25 H	28	44.2	-10.5
2	142.52	26.2 QP	43.5	-17.3	1.00 H	126	35.2	-9.0
3	343.31	27.5 QP	46.0	-18.5	1.50 H	156	33.6	-6.1
4	559.62	28.0 QP	46.0	-18.0	1.00 H	12	30.0	-2.0
5	707.06	31.1 QP	46.0	-14.9	1.00 H	265	30.2	0.9
6	953.44	35.1 QP	46.0	-10.9	1.25 H	337	29.5	5.6

Remarks:

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

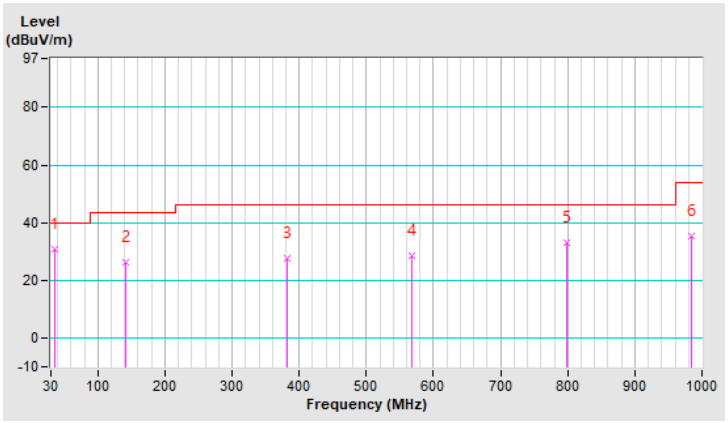


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	36.79	30.9 QP	40.0	-9.1	1.25 V	244	41.1	-10.2
2	140.58	26.4 QP	43.5	-17.1	1.00 V	181	35.6	-9.2
3	381.14	27.5 QP	46.0	-18.5	1.50 V	239	32.7	-5.2
4	568.35	28.4 QP	46.0	-17.6	1.00 V	32	30.1	-1.7
5	798.24	33.0 QP	46.0	-13.0	1.00 V	357	30.2	2.8
6	984.48	35.5 QP	54.0	-18.5	1.25 V	252	29.6	5.9

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 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.



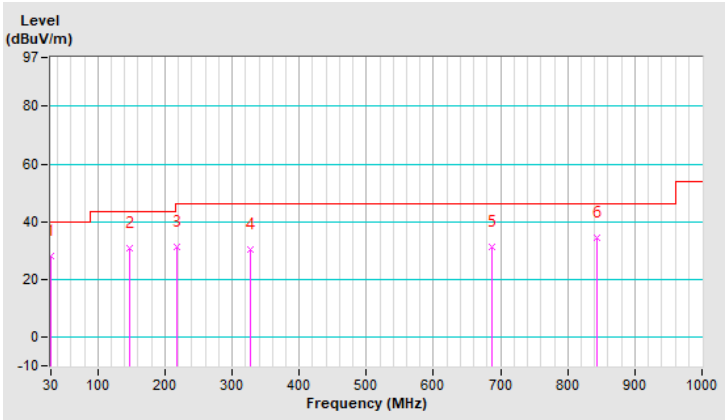
Mode C

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	28.1 QP	40.0	-11.9	1.25 H	10	38.6	-10.5
2	146.40	30.9 QP	43.5	-12.6	1.50 H	105	39.6	-8.7
3	218.18	31.1 QP	46.0	-14.9	1.00 H	282	42.1	-11.0
4	326.82	30.5 QP	46.0	-15.5	1.00 H	151	36.9	-6.4
5	686.69	31.3 QP	46.0	-14.7	1.25 H	150	30.6	0.7
6	843.83	34.5 QP	46.0	-11.5	1.00 H	235	31.0	3.5

Remarks:

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

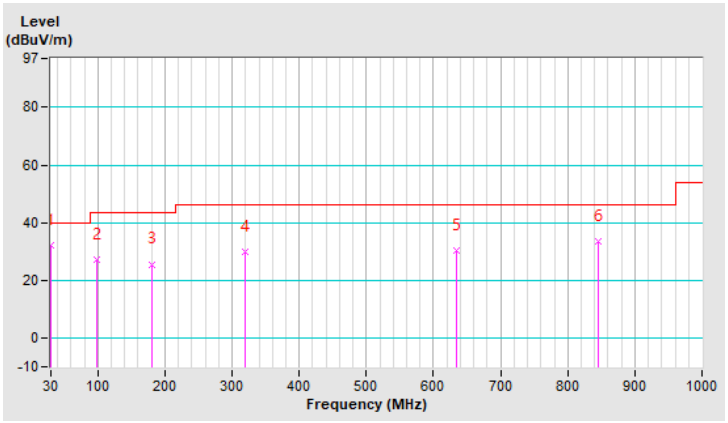


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	32.3 QP	40.0	-7.7	1.25 V	296	42.8	-10.5
2	97.90	27.2 QP	43.5	-16.3	1.00 V	184	41.0	-13.8
3	180.35	25.6 QP	43.5	-17.9	1.00 V	18	35.7	-10.1
4	319.06	29.9 QP	46.0	-16.1	1.00 V	38	36.5	-6.6
5	634.31	30.2 QP	46.0	-15.8	1.00 V	293	30.3	-0.1
6	844.80	33.4 QP	46.0	-12.6	1.50 V	274	29.9	3.5

Remarks:

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
			Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 20, 2020	Feb. 19, 2021
V-LISN SCHWARZBECK (Peripheral)	NNBL 8226-2	8226-142	Jul. 31, 2020	Jul. 30, 2021
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	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 HwaYa Shielded Room 1 (Conduction 1).
3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

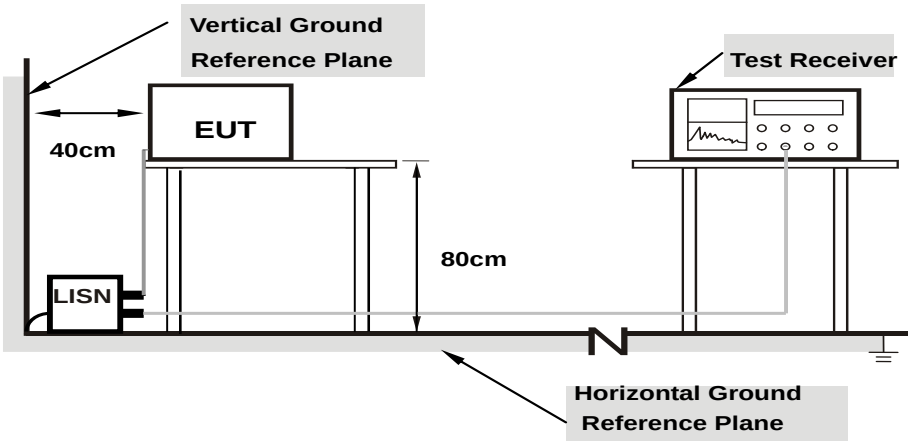
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 150 kHz to 30 MHz was searched. Emission levels under (Limit -20 dB) 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.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

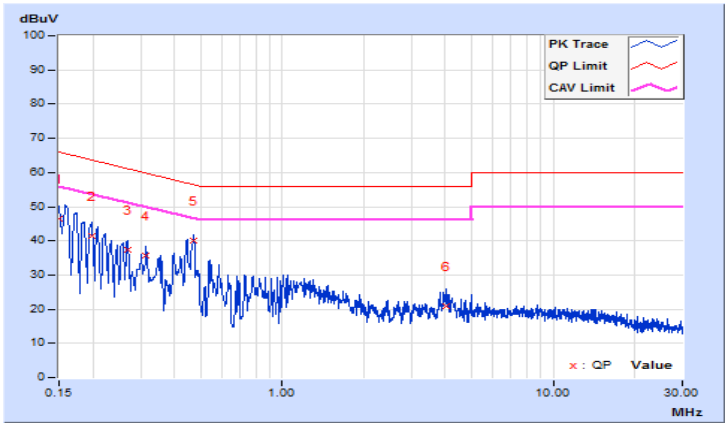
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/8/7
Test Mode	Mode A		

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	9.63	36.82	21.94	46.45	31.57	66.00	56.00	-19.55	-24.43
2	0.19780	9.62	31.96	18.31	41.58	27.93	63.70	53.70	-22.12	-25.77
3	0.26779	9.63	27.77	14.12	37.40	23.75	61.19	51.19	-23.79	-27.44
4	0.31400	9.64	25.92	14.19	35.56	23.83	59.86	49.86	-24.30	-26.03
5	0.47000	9.65	30.29	26.21	39.94	35.86	56.51	46.51	-16.57	-10.65
6	4.03800	9.79	11.12	2.44	20.91	12.23	56.00	46.00	-35.09	-33.77

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

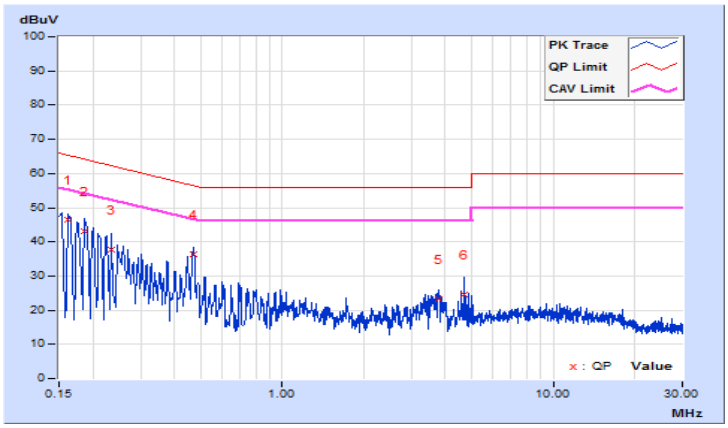


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/8/7
Test Mode	Mode A		

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	0.16200	9.66	36.67	22.40	46.33	32.06	65.36	55.36	-19.03	-23.30
2	0.18600	9.65	33.52	18.53	43.17	28.18	64.21	54.21	-21.04	-26.03
3	0.23400	9.65	28.05	11.47	37.70	21.12	62.31	52.31	-24.61	-31.19
4	0.47000	9.67	26.69	20.50	36.36	30.17	56.51	46.51	-20.15	-16.34
5	3.79400	9.81	13.55	3.01	23.36	12.82	56.00	46.00	-32.64	-33.18
6	4.67000	9.83	14.68	3.55	24.51	13.38	56.00	46.00	-31.49	-32.62

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

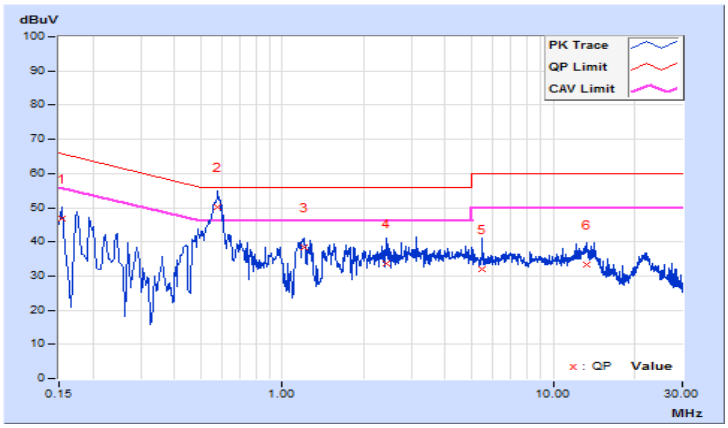


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/11/23
Test Mode	Mode B		

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	0.15400	9.58	37.29	26.63	46.87	36.21	65.78	55.78	-18.91	-19.57
2	**0.57796**	**9.59**	**40.59**	**32.63**	**50.18**	**42.22**	**56.00**	**46.00**	**-5.82**	**-3.78**
3	1.19800	9.61	28.81	20.77	38.42	30.38	56.00	46.00	-17.58	-15.62
4	2.41400	9.64	24.00	16.37	33.64	26.01	56.00	46.00	-22.36	-19.99
5	5.46200	9.68	22.45	16.40	32.13	26.08	60.00	50.00	-27.87	-23.92
6	13.26200	9.75	23.53	17.11	33.28	26.86	60.00	50.00	-26.72	-23.14

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

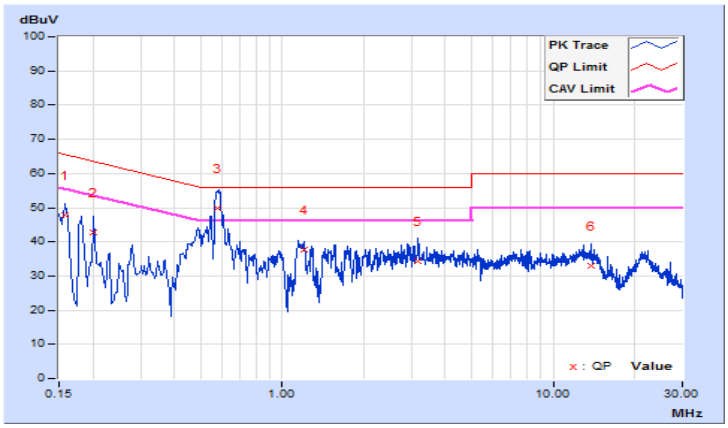


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/11/23
Test Mode	Mode B		

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	0.15770	9.56	38.19	26.41	47.75	35.97	65.58	55.58	-17.83	-19.61
2	0.20200	9.57	33.18	17.14	42.75	26.71	63.53	53.53	-20.78	-26.82
3	0.57342	9.57	40.37	32.30	49.94	41.87	56.00	46.00	-6.06	-4.13
4	1.19800	9.58	28.07	20.31	37.65	29.89	56.00	46.00	-18.35	-16.11
5	3.16600	9.63	24.73	17.87	34.36	27.50	56.00	46.00	-21.64	-18.50
6	13.88600	9.78	23.28	16.52	33.06	26.30	60.00	50.00	-26.94	-23.70

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

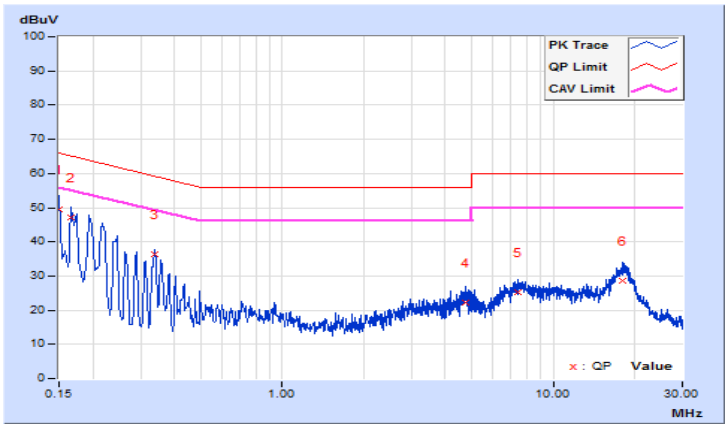


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/8/7
Test Mode	Mode C		

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	9.63	39.96	26.21	49.59	35.84	66.00	56.00	-16.41	-20.16
2	0.16600	9.63	37.61	26.04	47.24	35.67	65.16	55.16	-17.92	-19.49
3	0.33800	9.64	26.70	24.56	36.34	34.20	59.25	49.25	-22.91	-15.05
4	4.77000	9.80	12.46	3.66	22.26	13.46	56.00	46.00	-33.74	-32.54
5	7.39400	9.84	15.34	7.89	25.18	17.73	60.00	50.00	-34.82	-32.27
6	17.99000	9.91	18.82	12.39	28.73	22.30	60.00	50.00	-31.27	-27.70

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

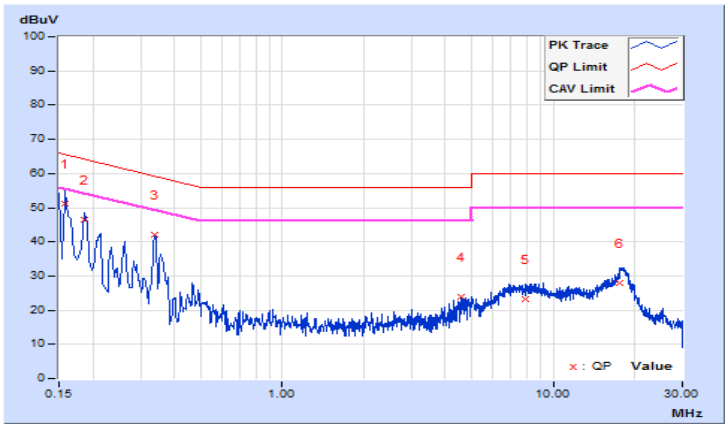


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Greg Lin	**Test Date**	2020/8/7
Test Mode	Mode C		

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	0.15800	9.66	41.54	28.07	51.20	37.73	65.57	55.57	-14.37	-17.84
2	0.18600	9.65	36.93	21.45	46.58	31.10	64.21	54.21	-17.63	-23.11
3	0.33800	9.66	32.36	29.18	42.02	38.84	59.25	49.25	-17.23	-10.41
4	4.56600	9.83	13.94	2.58	23.77	12.41	56.00	46.00	-32.23	-33.59
5	7.86200	9.88	13.39	5.78	23.27	15.66	60.00	50.00	-36.73	-34.34
6	17.70600	10.01	17.79	11.24	27.80	21.25	60.00	50.00	-32.20	-28.75

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 ≦ 125 mW (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)
	√	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A			250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C			250 mW (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 $N_{ANT} \leq 4$;

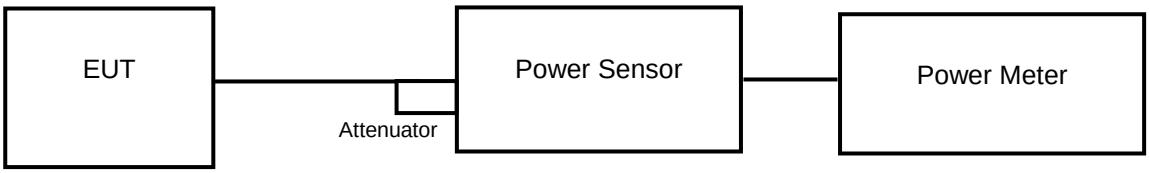
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20 MHz channel widths with $N_{ANT} \geq 5$.

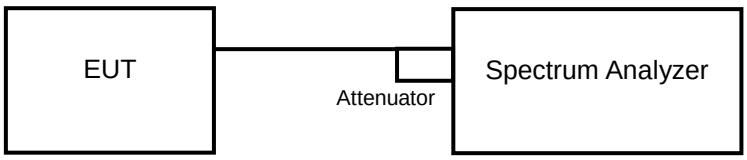
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

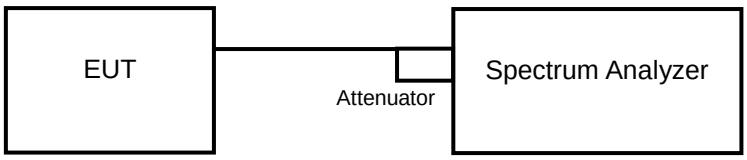
<Power Output Measurement>



or



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

<802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ax (HE20), 802.11ax (HE40)>

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.

<802.11ac (VHT80), 802.11ax (HE80)>

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz.
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
k. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

Power Output:

<AP Mode>

CDD Mode

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	21.19	20.53	244.502	23.88	30	Pass
40	5200	25.50	25.33	696.006	28.43	30	Pass
48	5240	24.58	24.27	554.379	27.44	30	Pass
149	5745	22.74	22.52	366.58	25.64	30	Pass
157	5785	22.88	22.59	375.64	25.75	30	Pass
165	5825	22.23	22.04	327.065	25.15	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.67	20.33	224.576	23.51	30	Pass
40	5200	25.17	24.28	596.768	27.76	30	Pass
48	5240	24.51	24.20	545.515	27.37	30	Pass
149	5745	23.64	23.54	457.15	26.60	30	Pass
157	5785	22.23	22.03	326.697	25.14	30	Pass
165	5825	21.19	21.06	259.166	24.14	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.27	14.77	63.643	18.04	30	Pass
46	5230	24.97	24.51	596.539	27.76	30	Pass
151	5755	22.91	22.78	385.105	25.86	30	Pass
159	5795	23.37	23.20	426.2	26.30	30	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.63	20.30	222.763	23.48	30	Pass
40	5200	25.14	24.22	590.829	27.71	30	Pass
48	5240	24.47	24.16	540.513	27.33	30	Pass
149	5745	23.68	23.61	462.961	26.66	30	Pass
157	5785	22.26	22.10	330.448	25.19	30	Pass
165	5825	21.23	21.11	261.861	24.18	30	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.24	14.76	63.342	18.02	30	Pass
46	5230	24.93	24.28	579.088	27.63	30	Pass
151	5755	22.95	22.83	389.109	25.90	30	Pass
159	5795	23.43	23.31	434.582	26.38	30	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.21	12.82	40.084	16.03	30	Pass
155	5775	23.43	23.34	436.067	26.40	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.71	20.36	226.403	23.55	30	Pass
40	5200	25.20	24.52	614.27	27.88	30	Pass
48	5240	24.55	24.22	549.343	27.40	30	Pass
149	5745	23.77	23.65	469.971	26.72	30	Pass
157	5785	22.35	22.12	334.72	25.25	30	Pass
165	5825	21.31	21.16	265.824	24.25	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.30	14.80	64.084	18.07	30	Pass
46	5230	24.97	24.59	601.791	27.79	30	Pass
151	5755	23.01	22.97	398.139	26.00	30	Pass
159	5795	23.51	23.34	440.163	26.44	30	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.25	12.89	40.588	16.08	30	Pass
155	5775	23.52	23.41	444.186	26.48	30	Pass

Beamforming Mode

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.66	17.32	112.296	20.50	28.74	Pass
40	5200	22.16	21.27	298.405	24.75	28.74	Pass
48	5240	21.50	21.19	272.776	24.36	28.74	Pass
149	5745	20.63	20.53	228.591	23.59	28.74	Pass
157	5785	19.22	19.02	163.36	22.13	28.74	Pass
165	5825	18.18	18.05	129.592	21.13	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 7.26 dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	12.26	11.76	31.824	15.03	28.74	Pass
46	5230	21.96	21.50	298.29	24.75	28.74	Pass
151	5755	19.90	19.77	192.566	22.85	28.74	Pass
159	5795	20.36	20.19	213.115	23.29	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 7.26 dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.62	17.29	111.389	20.47	28.74	Pass
40	5200	22.13	21.21	295.435	24.70	28.74	Pass
48	5240	21.46	21.15	270.275	24.32	28.74	Pass
149	5745	20.67	20.60	231.496	23.65	28.74	Pass
157	5785	19.25	19.09	165.236	22.18	28.74	Pass
165	5825	18.22	18.10	130.94	21.17	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 7.26 dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	12.23	11.75	31.673	15.01	28.74	Pass
46	5230	21.92	21.27	289.564	24.62	28.74	Pass
151	5755	19.94	19.82	194.568	22.89	28.74	Pass
159	5795	20.42	20.30	217.306	23.37	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 7.26 dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	10.20	9.81	20.043	13.02	28.74	Pass
155	5775	20.42	20.33	218.049	23.39	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}]$ = 7.26 dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ax (HE20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.71	17.36	113.47	20.55	28.74	Pass
40	5200	22.20	21.52	307.864	24.88	28.74	Pass
48	5240	21.55	21.22	275.324	24.40	28.74	Pass
149	5745	20.76	20.64	235.002	23.71	28.74	Pass
157	5785	19.34	19.11	167.372	22.24	28.74	Pass
165	5825	18.30	18.15	132.921	21.24	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ax (HE40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	12.30	11.80	32.118	15.07	28.74	Pass
46	5230	21.97	21.59	301.61	24.79	28.74	Pass
151	5755	20.00	19.96	199.083	22.99	28.74	Pass
159	5795	20.50	20.33	220.097	23.43	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

802.11ax (HE80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	10.25	9.89	20.342	13.08	28.74	Pass
155	5775	20.51	20.40	222.108	23.47	28.74	Pass

Note:
Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.

<Client Mode>

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.15	18.54	153.674	21.87	24	Pass
40	5200	19.01	18.85	150.411	21.77	24	Pass
48	5240	19.11	18.82	157.678	21.98	24	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.73	19.26	178.306	22.51	24	Pass
40	5200	19.59	19.48	179.707	22.55	24	Pass
48	5240	19.51	19.18	172.125	22.36	24	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.22	14.70	62.778	17.98	24	Pass
46	5230	20.88	20.49	234.405	23.70	24	Pass

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.77	19.32	180.349	22.56	24	Pass
40	5200	19.62	19.50	180.747	22.57	24	Pass
48	5240	19.54	19.22	173.51	22.39	24	Pass

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.24	14.73	63.136	18.00	24	Pass
46	5230	20.96	20.56	238.501	23.77	24	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.17	12.84	39.98	16.02	24	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.76	19.41	181.921	22.60	24	Pass
40	5200	19.70	19.58	184.107	22.65	24	Pass
48	5240	19.61	19.28	176.134	22.46	24	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.30	14.80	64.084	18.07	24	Pass
46	5230	21.02	20.64	242.351	23.84	24	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	13.25	12.89	40.588	16.08	24	Pass

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	20.71	20.93
40	5200	39.07	43.51
48	5240	33.69	34.44

802.11ax (HE20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	21.80	22.05
40	5200	41.95	37.68
48	5240	35.45	34.89

802.11ax (HE40)

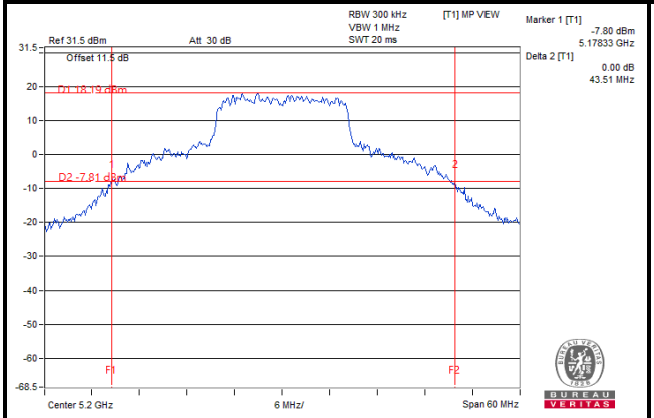
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	42.24	42.26
46	5230	80.11	86.41

802.11ax (HE80)

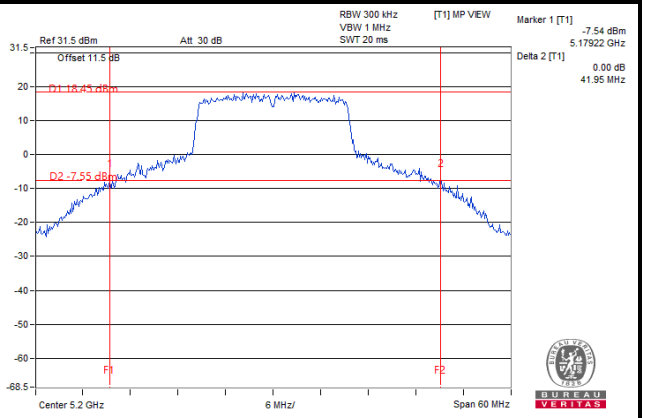
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	82.82	82.90

Spectrum Plot of Worst Value

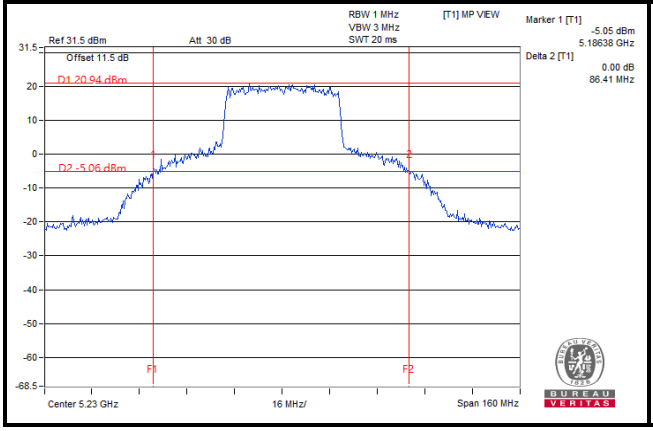
802.11a



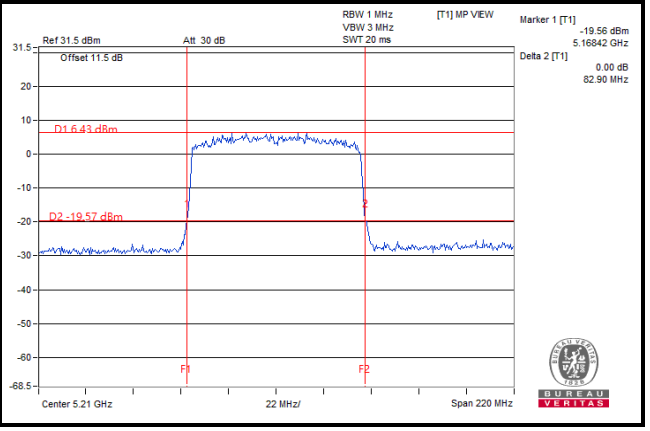
802.11ax (HE20)



802.11ax (HE40)

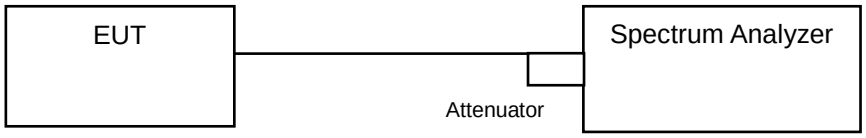


802.11ax (HE80)



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
36	5180	16.44	16.44
40	5200	24.36	29.52
48	5240	17.76	19.08
149	5745	16.52	16.52
157	5785	16.44	16.44
165	5825	16.44	16.44

802.11ax (HE20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.96	18.96
40	5200	22.08	19.92
48	5240	19.56	19.56
149	5745	19.08	19.08
157	5785	19.08	18.96
165	5825	19.08	19.08

802.11ax (HE40)

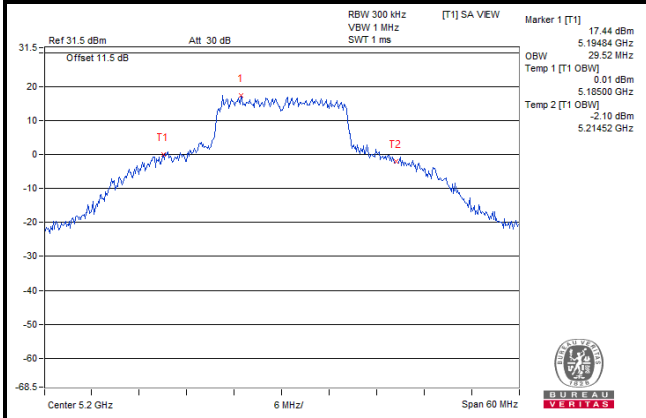
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.92	38.04
46	5230	38.88	39.36
151	5755	38.16	38.16
159	5795	38.16	38.40

802.11ax (HE80)

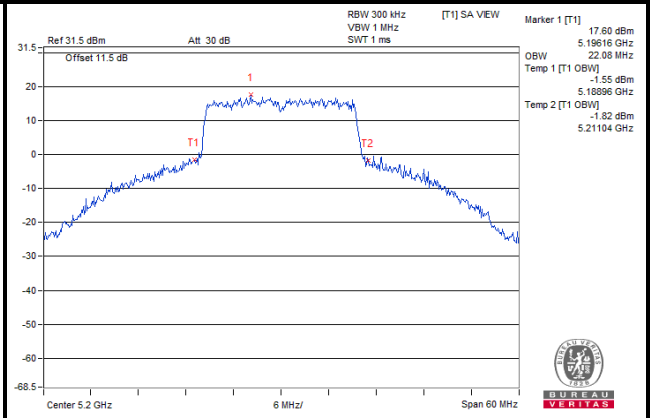
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.28	77.28
155	5775	77.28	77.76

Spectrum Plot of Worst Value

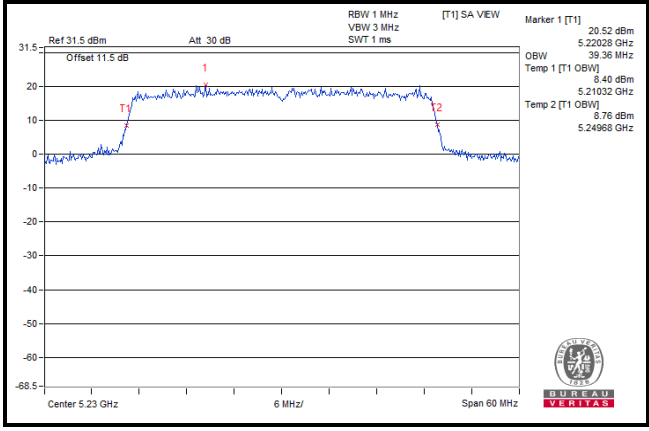
802.11a



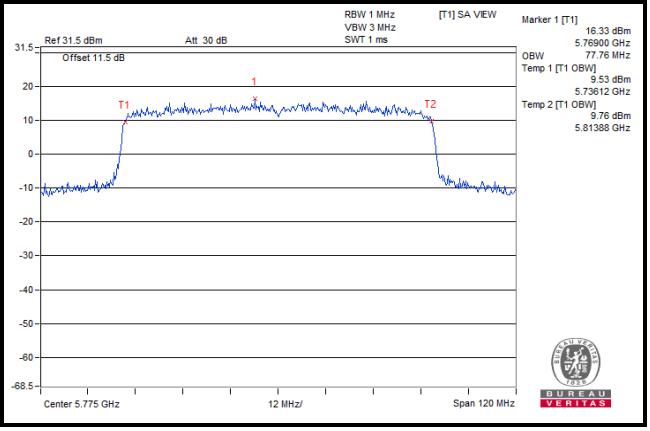
802.11ax (HE20)



802.11ax (HE40)



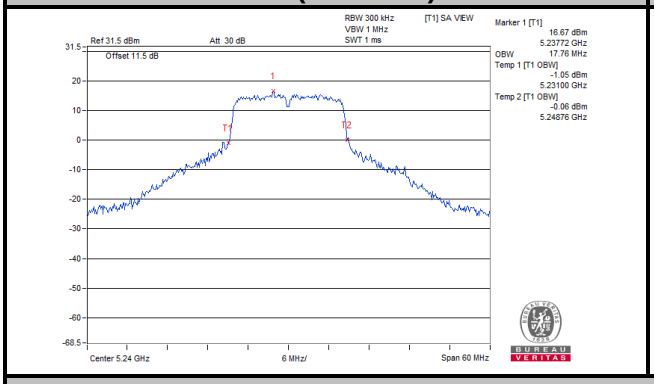
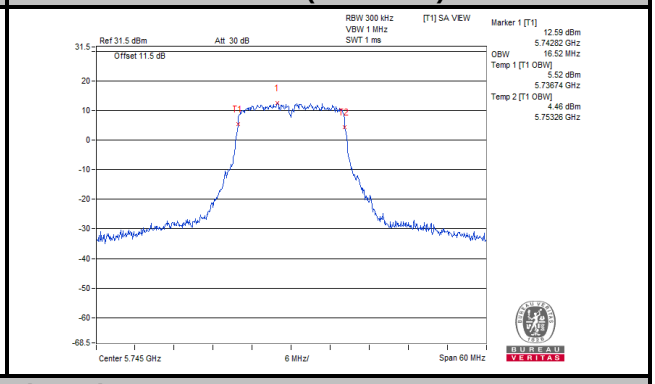
802.11ax (HE80)



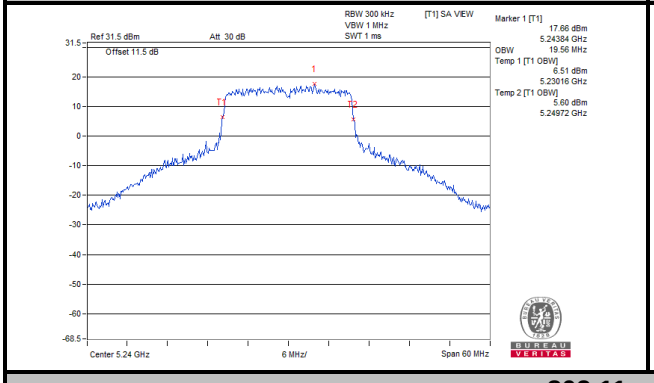
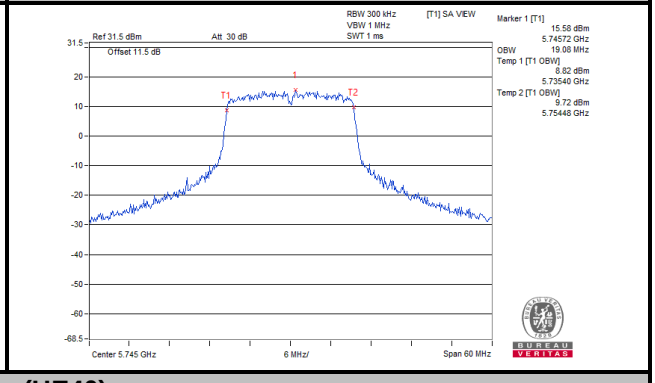
Chain 0

Spectrum Plot for Nearby DFS Band

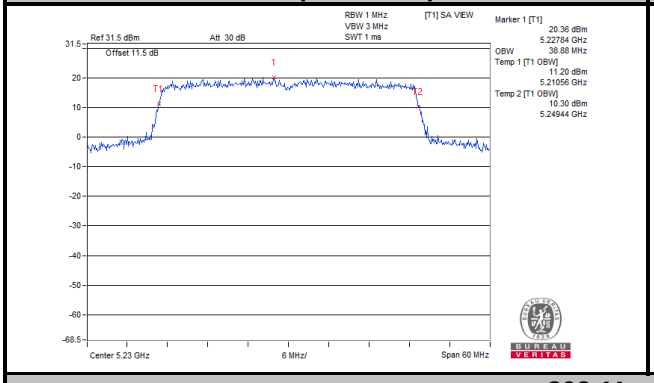
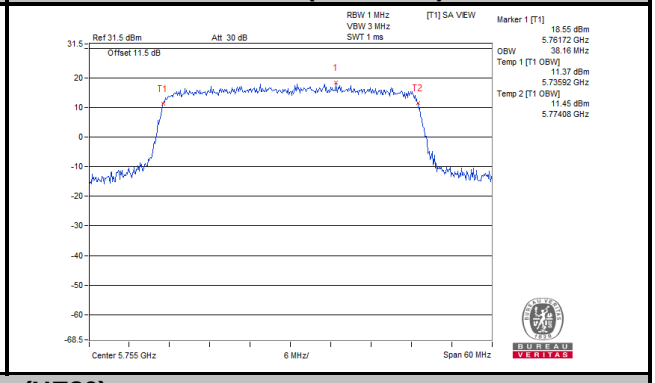
802.11a

Ch 48 (5240 MHz)	Ch 149 (5745 MHz)
	

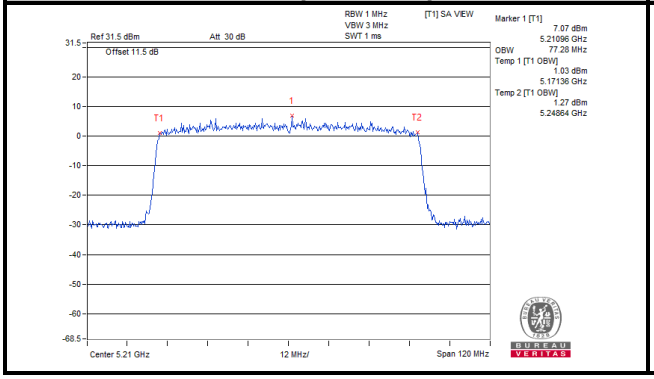
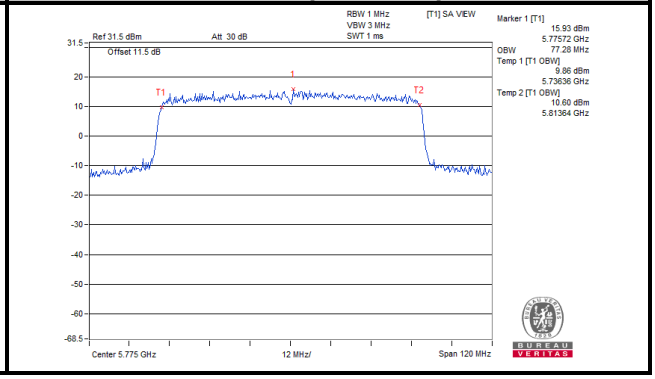
802.11ax (HE20)

Ch 48 (5240 MHz)	Ch 149 (5745 MHz)
	

802.11ax (HE40)

Ch 46 (5230 MHz)	Ch 151 (5755 MHz)
	

802.11ax (HE80)

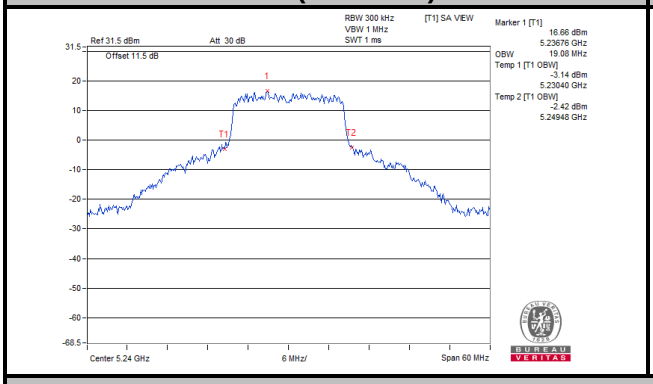
Ch 42 (5210 MHz)	Ch 155 (5775 MHz)
	

Chain 1

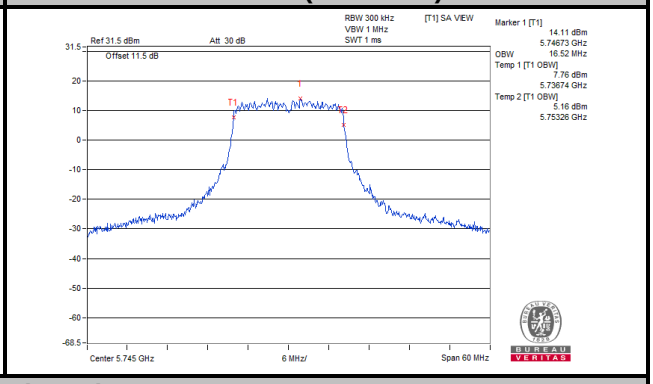
Spectrum Plot for Nearby DFS Band

802.11a

Ch 48 (5240 MHz)

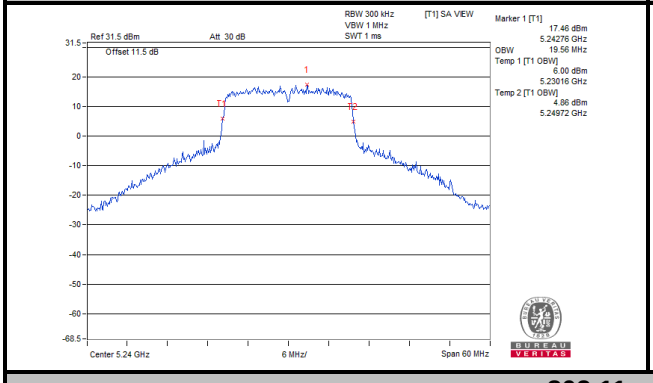


Ch 149 (5745 MHz)

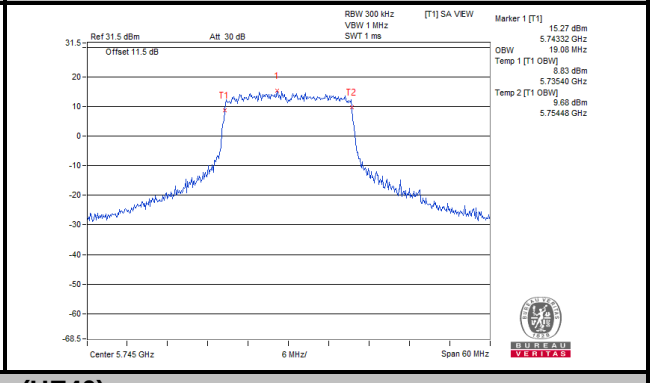


802.11ax (HE20)

Ch 48 (5240 MHz)

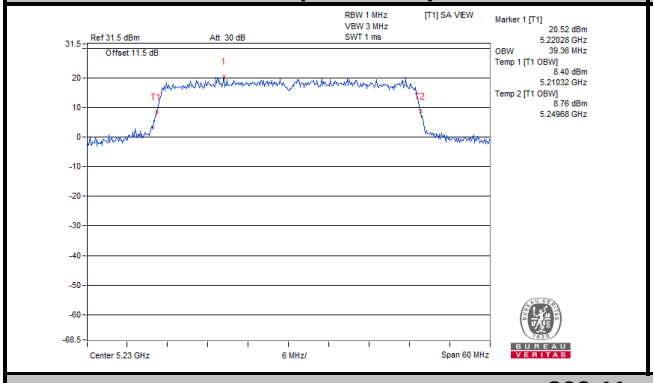


Ch 149 (5745 MHz)

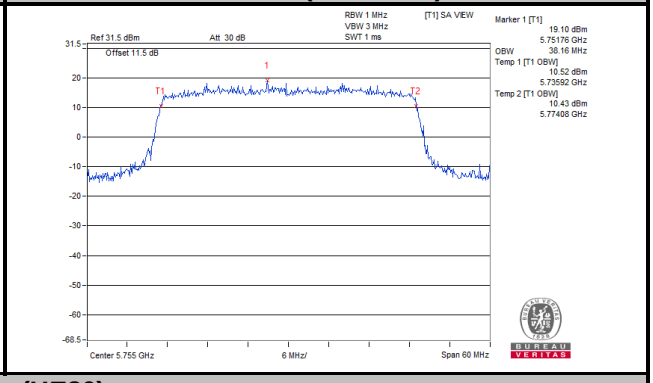


802.11ax (HE40)

Ch 46 (5230 MHz)

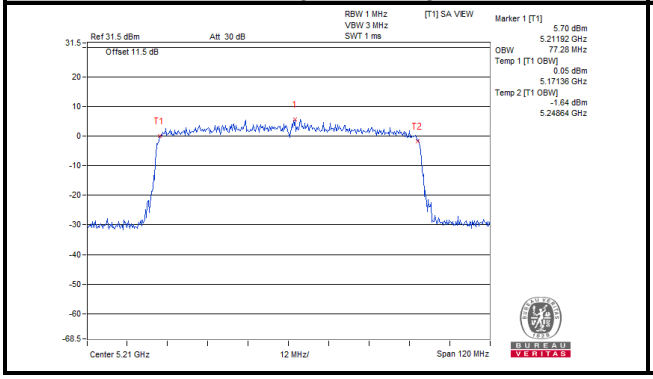


Ch 151 (5755 MHz)

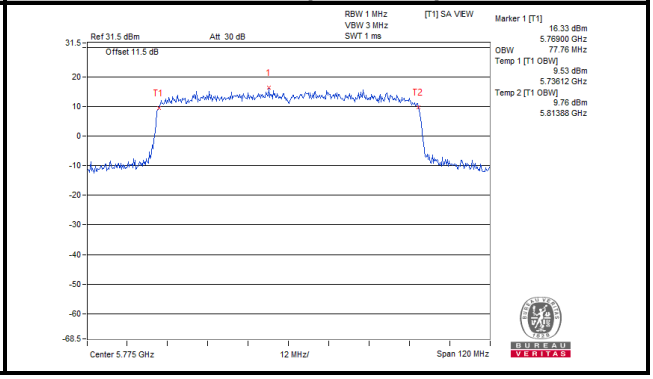


802.11ax (HE80)

Ch 42 (5210 MHz)



Ch 155 (5775 MHz)

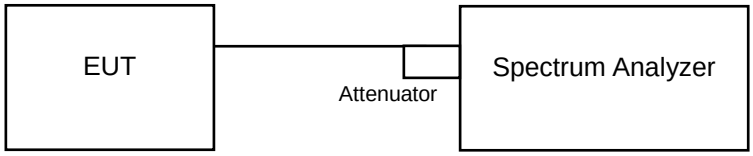


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

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 Procedures

For U-NII-1 band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, 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 RBW, 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 (raising) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz).
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 Conditions

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

4.5.7 Test Results

For U-NII-1 Band

<AP Mode>

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	8.14	7.69	0.31	11.24	15.74	Pass
40	5200	11.98	12.32	0.31	15.47	15.74	Pass
48	5240	11.43	11.04	0.31	14.56	15.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 17-(7.26-6) = 15.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	6.84	6.64	0.27	10.02	15.74	Pass
40	5200	11.28	9.94	0.27	13.94	15.74	Pass
48	5240	10.71	10.19	0.27	13.74	15.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 17-(7.26-6) = 15.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-1.35	-1.98	0.27	1.62	15.74	Pass
46	5230	7.80	7.69	0.27	11.02	15.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 17-(7.26-6) = 15.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-6.28	-7.21	0.37	-3.34	15.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 17-(7.26-6) = 15.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

<Client Mode>

802.11a

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	6.00	5.88	0.31	9.26	9.74	Pass
40	5200	5.94	5.74	0.31	9.16	9.74	Pass
48	5240	6.03	6.20	0.31	9.43	9.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 11-(7.26-6) = 9.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	6.24	5.69	0.27	9.26	9.74	Pass
40	5200	6.07	6.10	0.27	9.37	9.74	Pass
48	5240	5.78	6.13	0.27	9.24	9.74	Pass

17Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 11-(7.26-6) = 9.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-1.35	-1.98	0.27	1.62	9.74	Pass
46	5230	4.59	4.31	0.27	7.73	9.74	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 11-(7.26-6) = 9.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

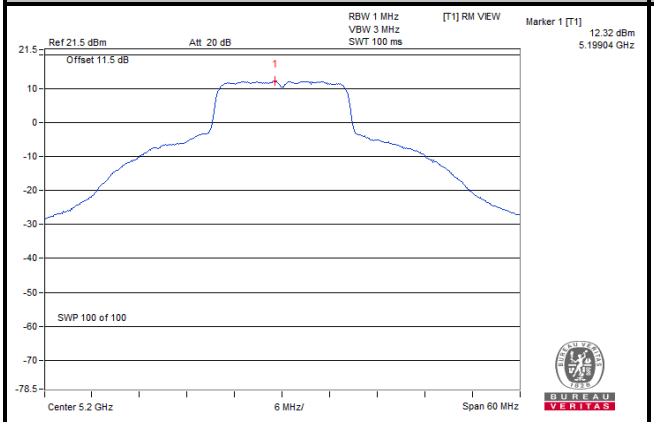
Channel	Frequency (MHz)	PSD (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-6.28	-7.21	0.37	-3.34	9.74	Pass

Note:

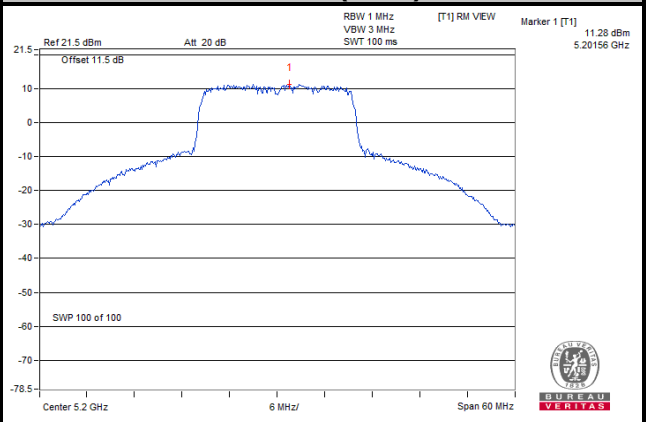
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1 Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.26$ dBi > 6 dBi , so the power density limit shall be reduced to 11-(7.26-6) = 9.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

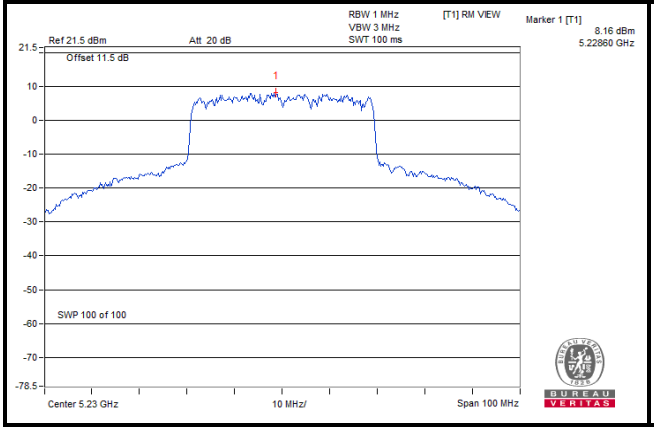
802.11a



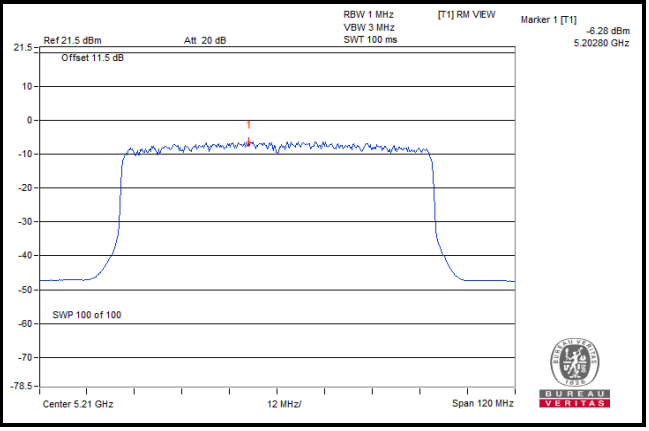
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



For U-NII-3 Band

802.11a

TX Chain	Channel	Frequency (MHz)	PSD w/o Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	-0.38	1.84	3.01	0.32	5.17	28.74	Pass
	157	5785	-0.09	2.13	3.01	0.32	5.46	28.74	Pass
	165	5825	0.47	2.69	3.01	0.32	6.02	28.74	Pass
1	149	5745	0.42	2.64	3.01	0.32	5.97	28.74	Pass
	157	5785	0.37	2.59	3.01	0.32	5.92	28.74	Pass
	165	5825	0.15	2.37	3.01	0.32	5.7	28.74	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 7.26 > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	149	5745	-0.23	1.99	3.01	0.26	5.26	28.74	Pass
	157	5785	-0.94	1.28	3.01	0.26	4.55	28.74	Pass
	165	5825	-2.09	0.13	3.01	0.26	3.4	28.74	Pass
1	149	5745	-0.51	1.71	3.01	0.26	4.98	28.74	Pass
	157	5785	-1.39	0.83	3.01	0.26	4.1	28.74	Pass
	165	5825	-2.54	-0.32	3.01	0.26	2.95	28.74	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 7.26 > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	151	5755	-3.07	-0.85	3.01	0.31	2.47	28.74	Pass
	159	5795	-2.74	-0.52	3.01	0.31	2.8	28.74	Pass
1	151	5755	-3.39	-1.17	3.01	0.31	2.15	28.74	Pass
	159	5795	-2.84	-0.62	3.01	0.31	2.7	28.74	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 7.26 > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

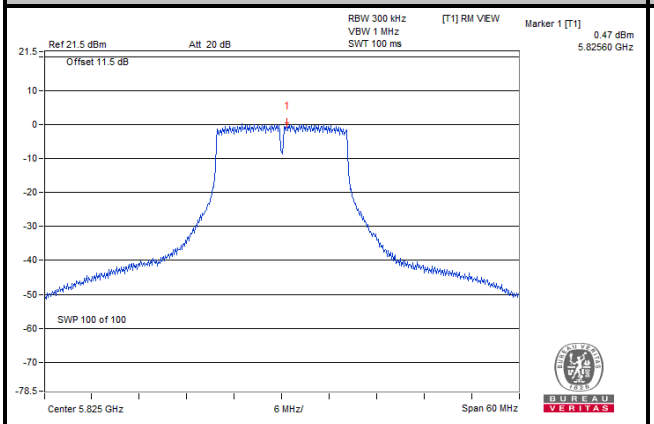
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)					
0	155	5775	-4.79	-2.57	3.01	0.26	0.7	28.74	Pass
1	155	5775	-5.7	-3.48	3.01	0.26	-0.21	28.74	Pass

Note:

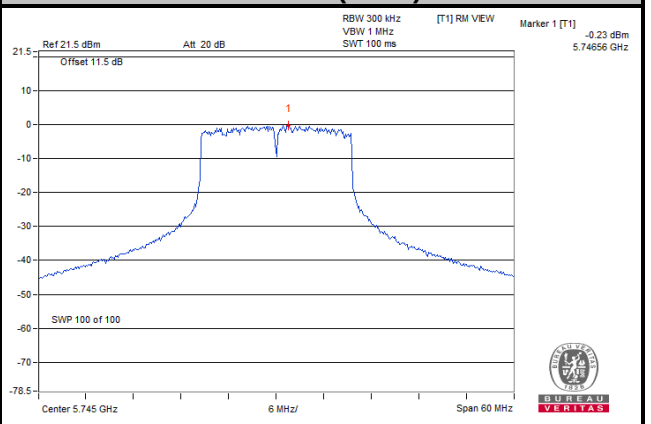
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 7.26 > 6 dBi , so the power density limit shall be reduced to 30-(7.26-6) = 28.74 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

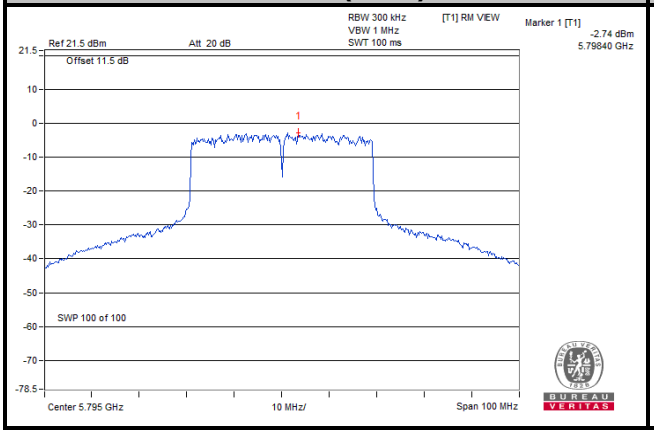
802.11a



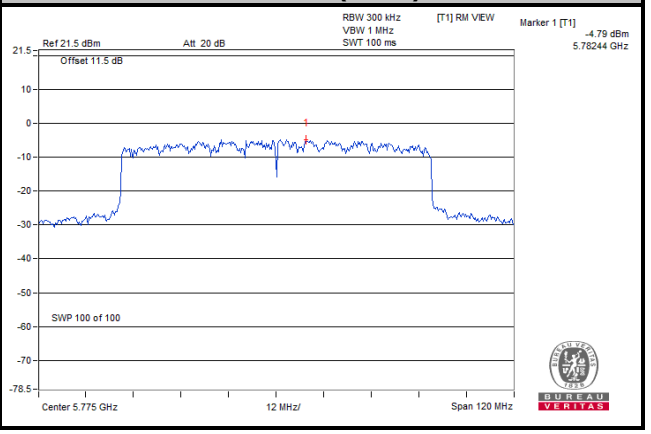
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

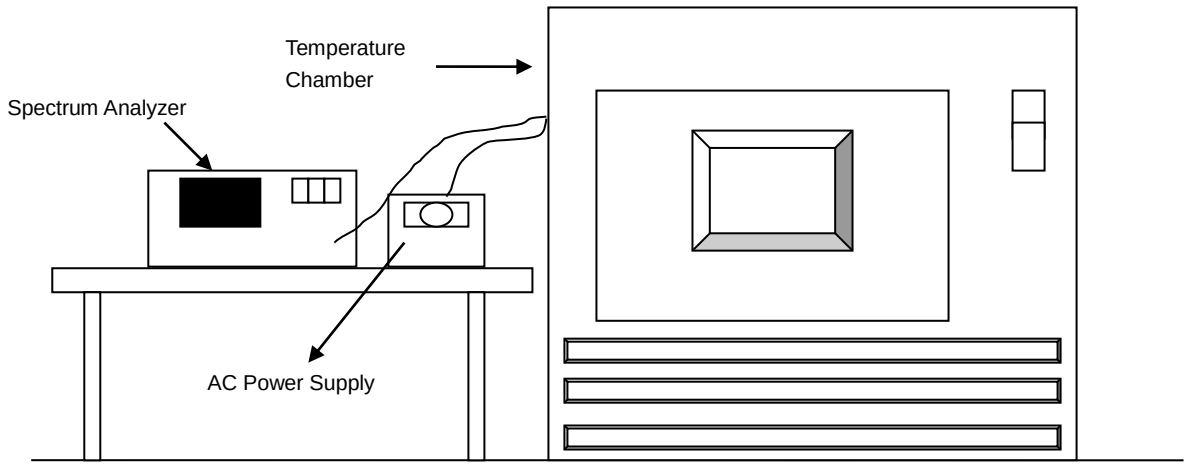


4.6 Frequency Stability

4.6.1 Limit 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: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
40	120	5179.9965	PASS	5179.9968	PASS	5179.9922	PASS	5179.9947	PASS
30	120	5180.005	PASS	5180.0073	PASS	5180.0053	PASS	5180.0062	PASS
20	120	5179.9905	PASS	5179.9916	PASS	5179.9947	PASS	5179.9934	PASS
10	120	5179.9831	PASS	5179.9814	PASS	5179.9792	PASS	5179.9835	PASS
0	120	5180.003	PASS	5180.0028	PASS	5180.0025	PASS	5180.0044	PASS

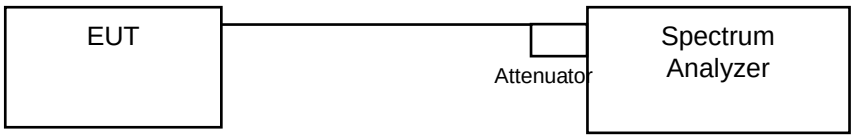
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9912	PASS	5179.9922	PASS	5179.9939	PASS	5179.994	PASS
	120	5179.9905	PASS	5179.9916	PASS	5179.9947	PASS	5179.9934	PASS
	102	5179.9897	PASS	5179.9907	PASS	5179.9953	PASS	5179.9928	PASS

4.7 6 dB Bandwidth Measurement

4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

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) = 100 kHz
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)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	15.81	16.08	0.5	Pass
157	5785	15.83	15.50	0.5	Pass
165	5825	15.70	15.51	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	18.51	18.68	0.5	Pass
157	5785	18.45	18.12	0.5	Pass
165	5825	18.62	18.46	0.5	Pass

802.11ax (HE40)

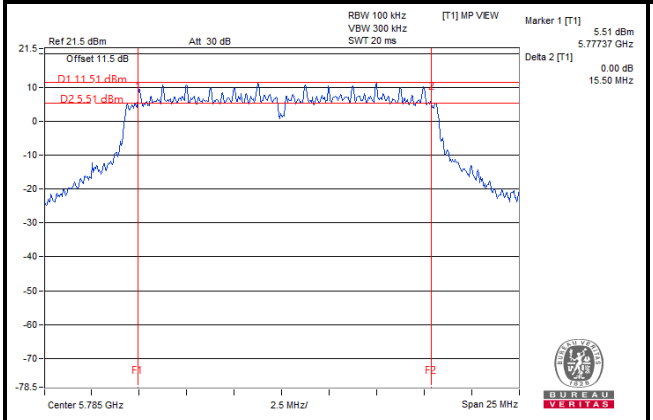
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	38.08	37.91	0.5	Pass
159	5795	37.82	37.75	0.5	Pass

802.11ax (HE80)

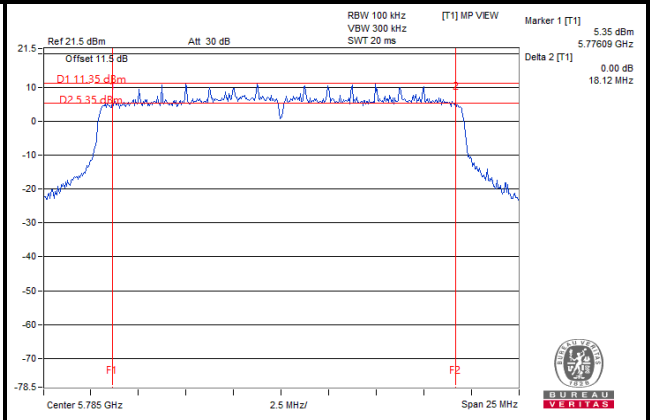
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.49	71.83	0.5	Pass

Spectrum Plot of Worst Value

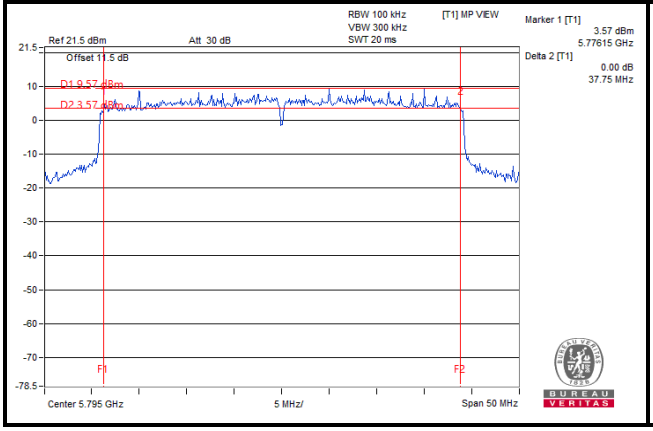
802.11a



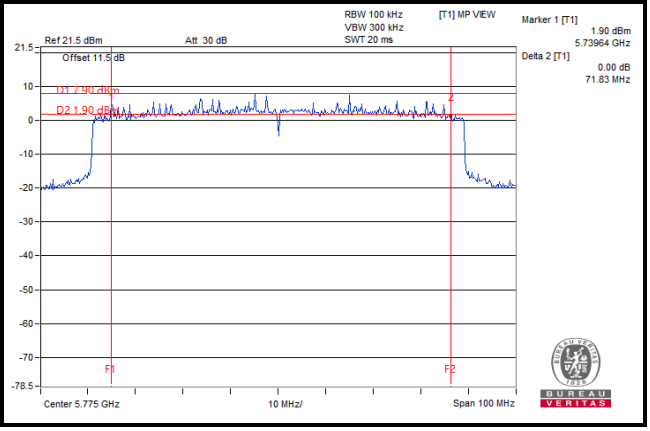
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



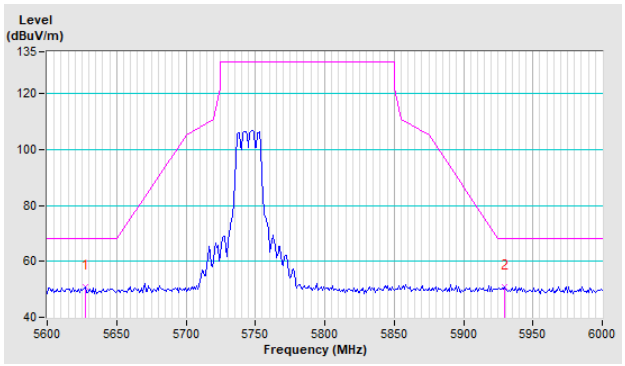
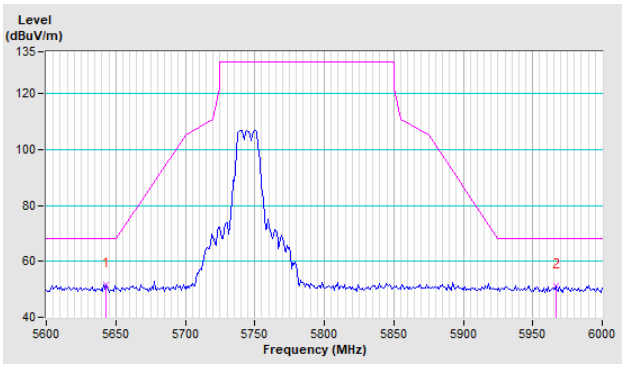
5 Pictures of Test Arrangements

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

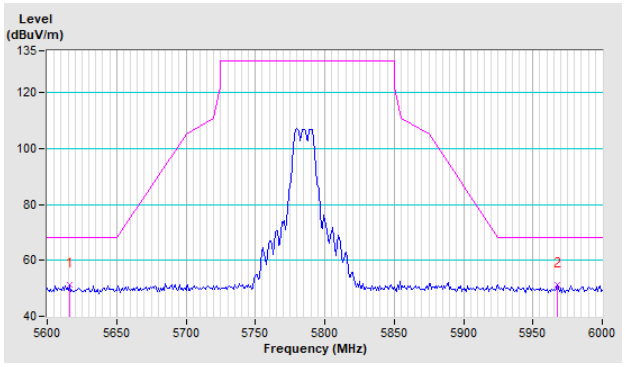
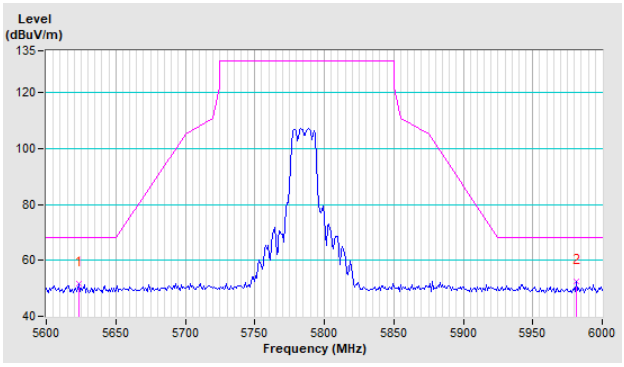
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

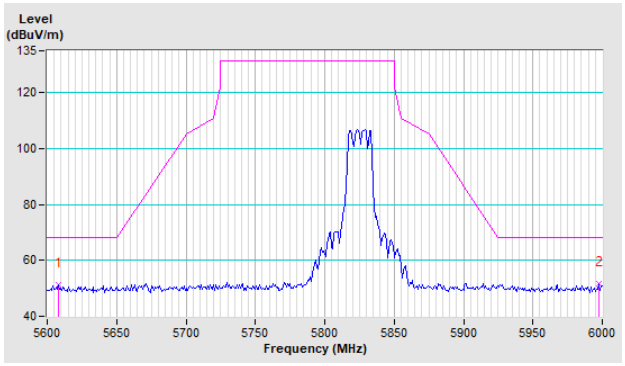
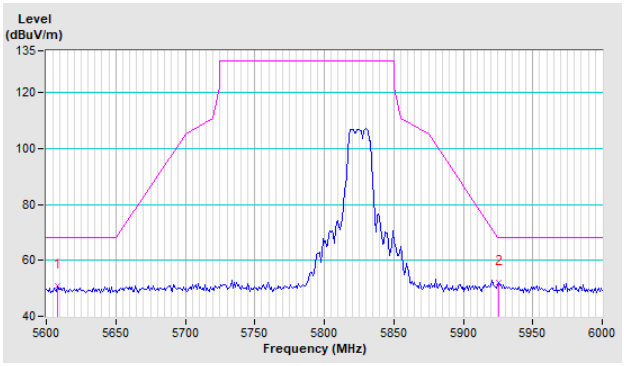
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

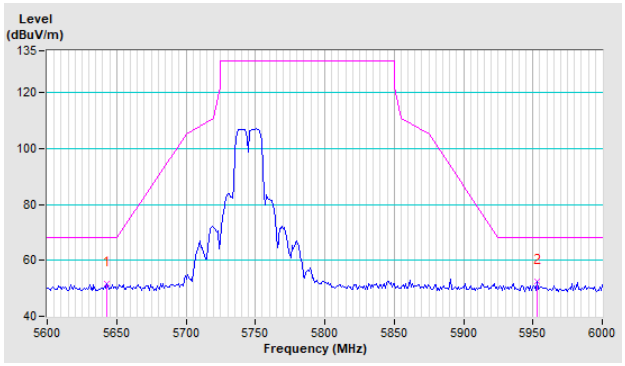
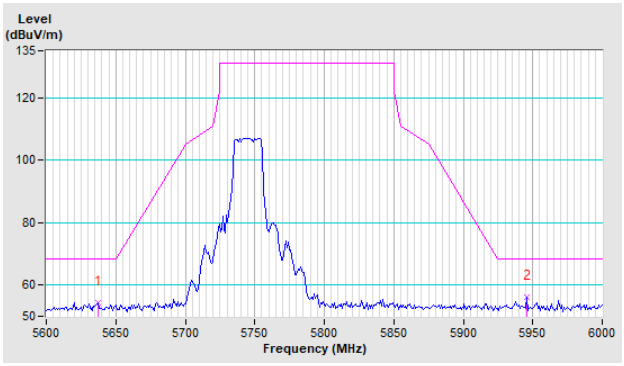
Horizontal	Vertical
	

CH 165 5825 MHz

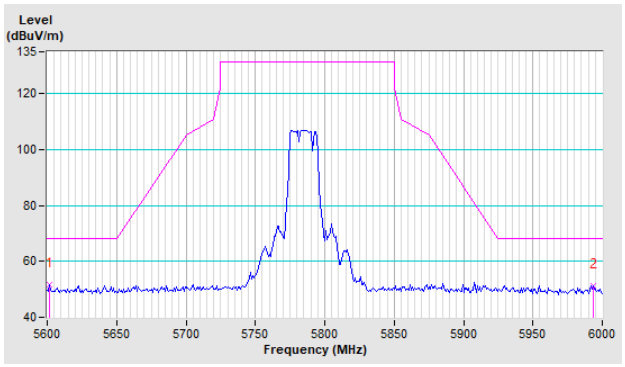
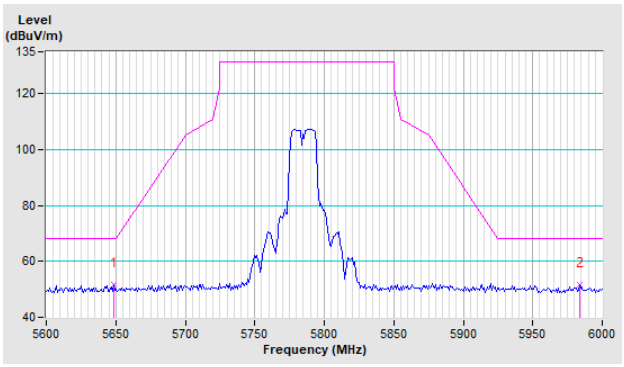
Horizontal	Vertical
	

802.11ax (HE20)

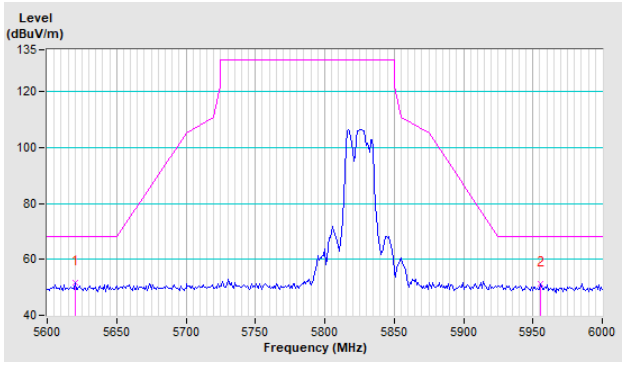
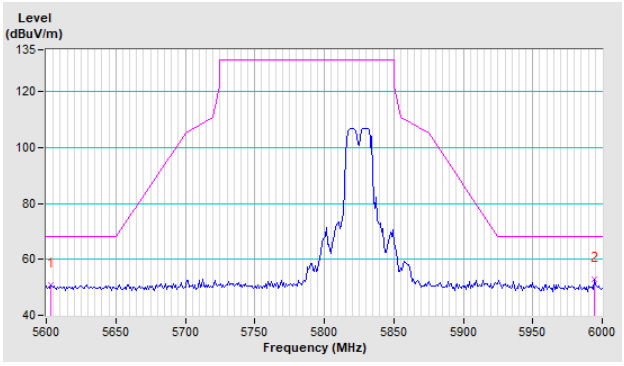
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

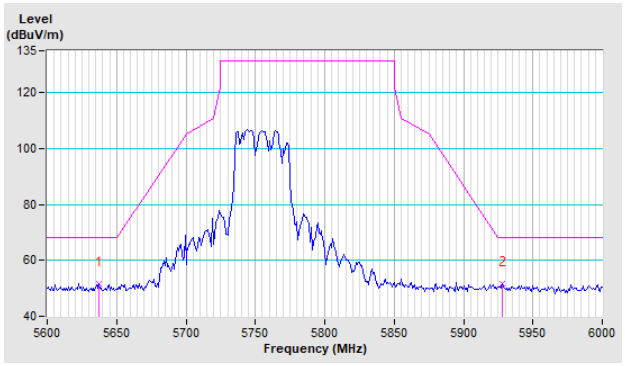
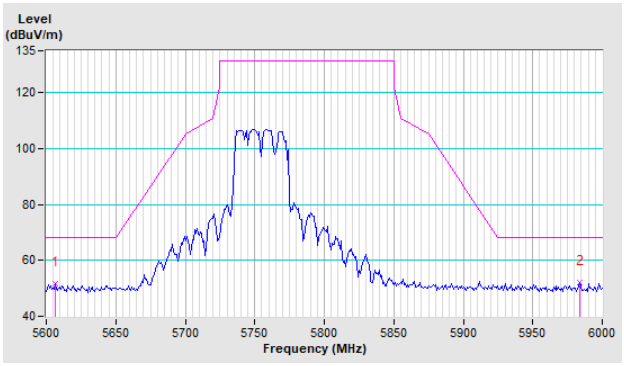
Horizontal	Vertical
	

CH 165 5825 MHz

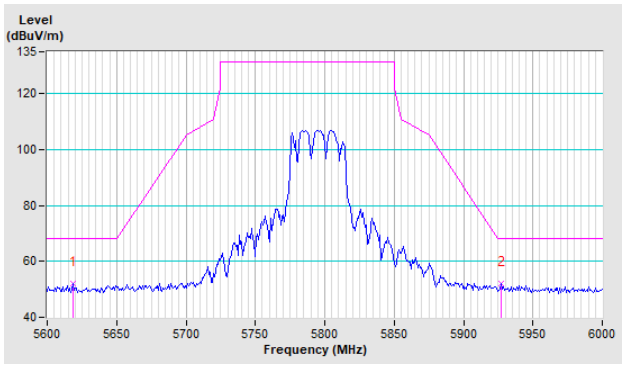
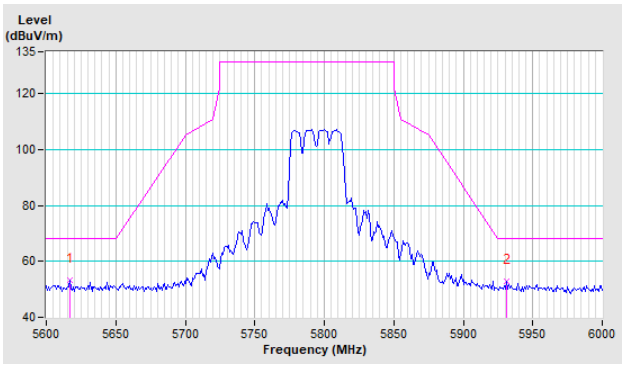
Horizontal	Vertical
	

802.11ax (HE40)

CH 151 5755 MHz

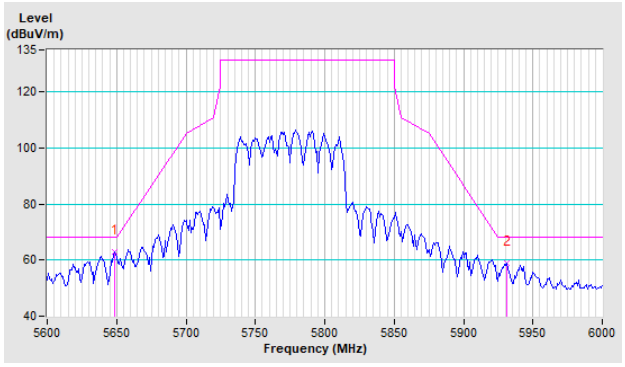
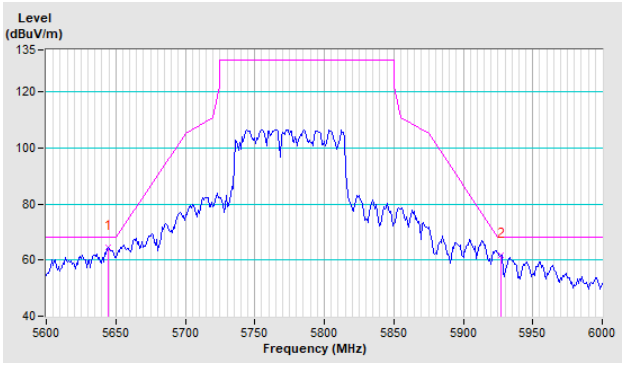
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

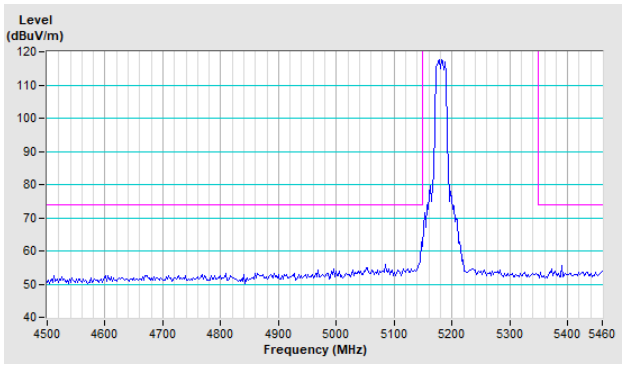
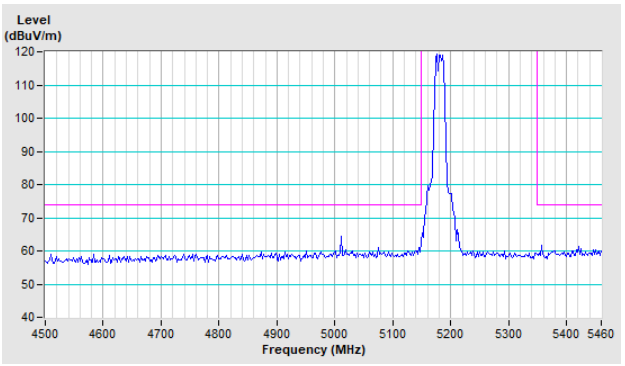
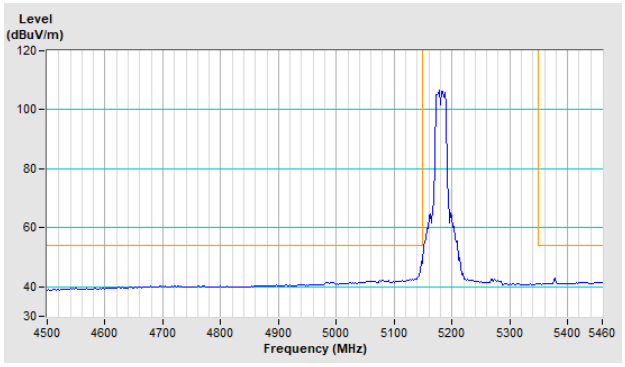
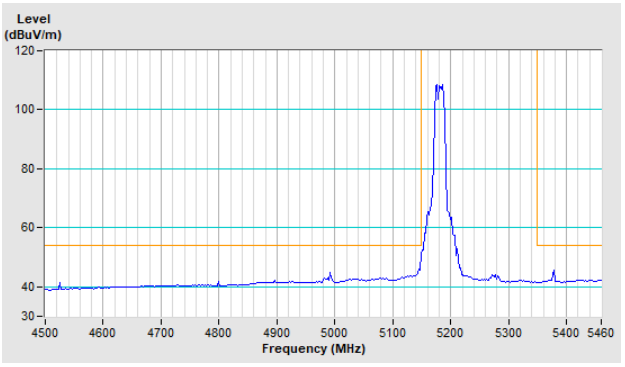
802.11ax (HE80)

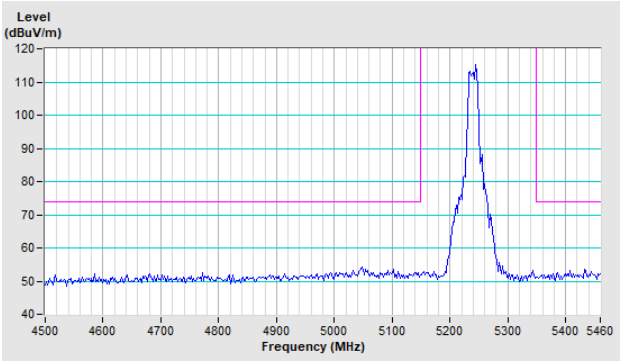
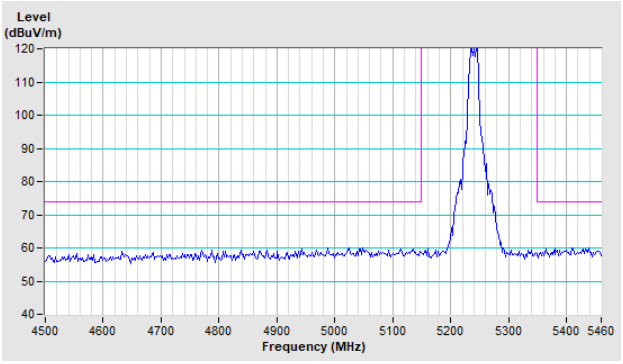
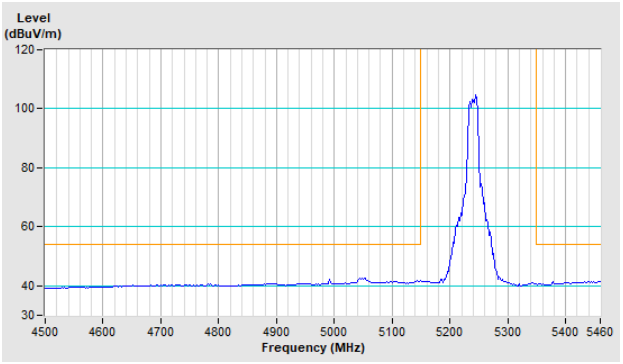
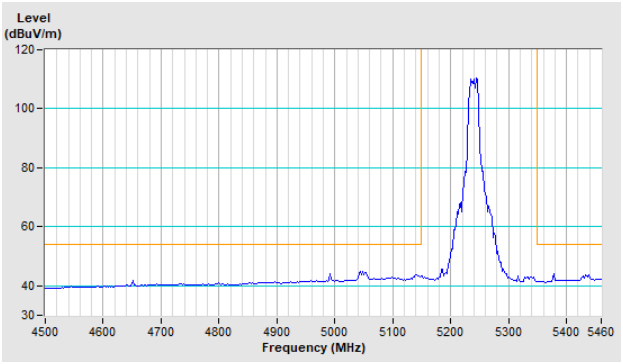
CH 155 5775 MHz

Horizontal	Vertical
	

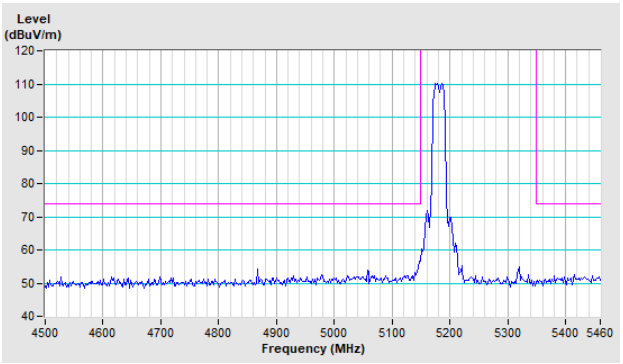
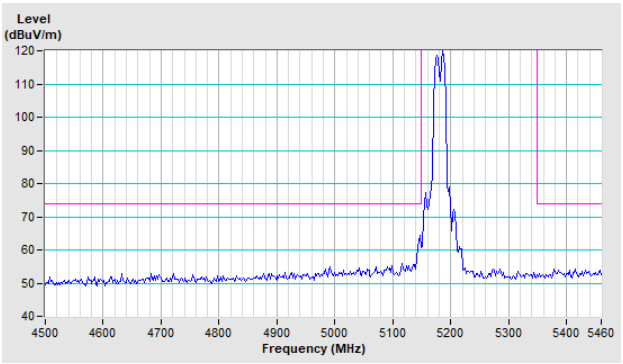
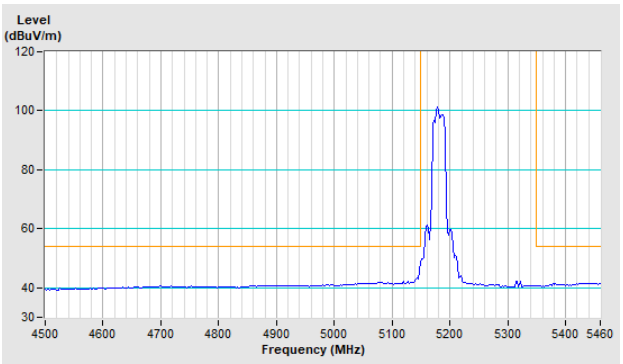
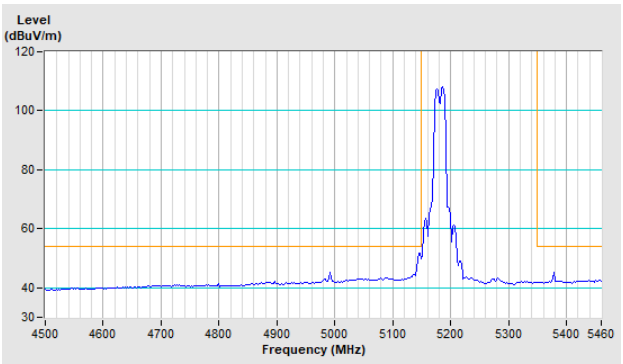
Annex B- Band-edge measurement

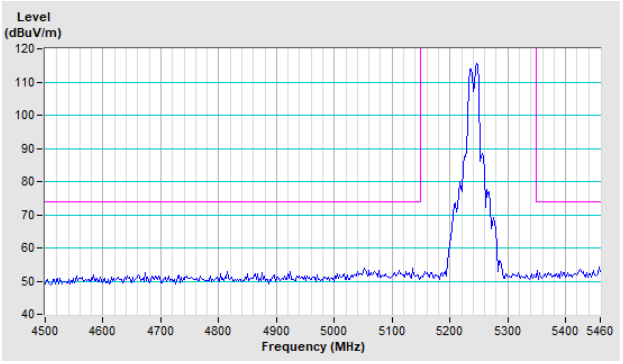
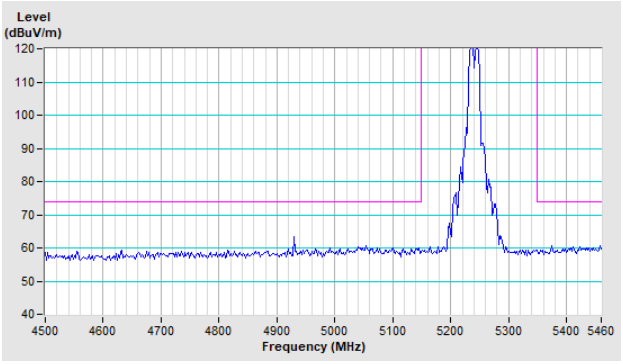
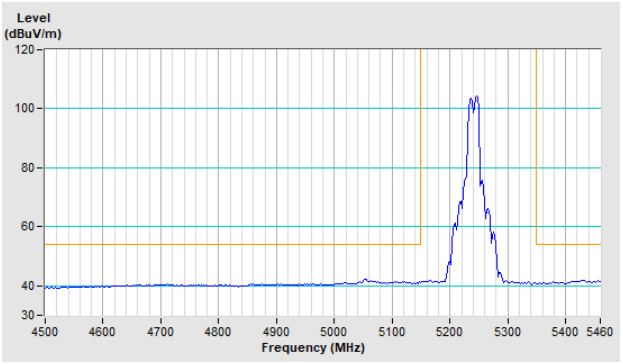
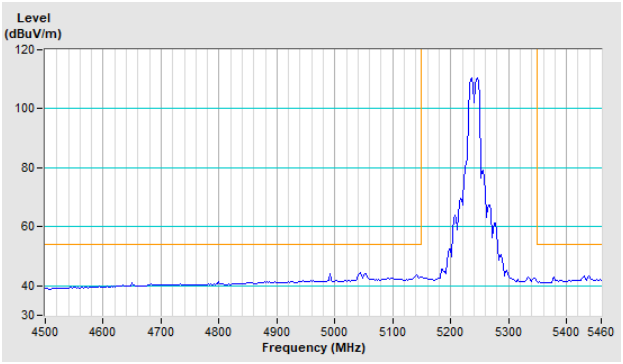
802.11a

CH 36 5180 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

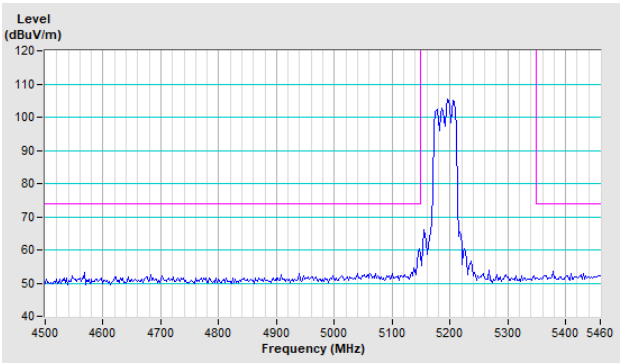
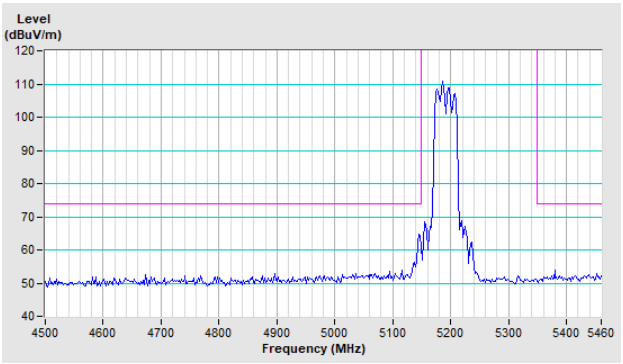
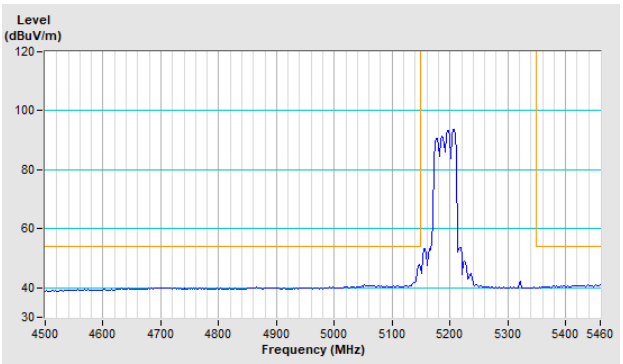
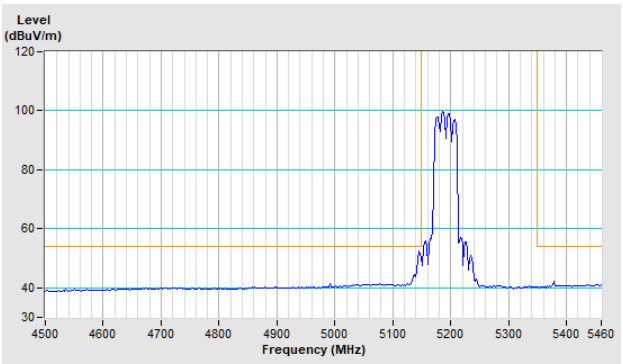
CH 48 5240 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

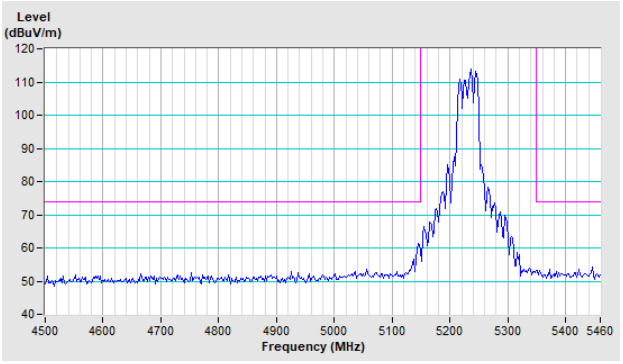
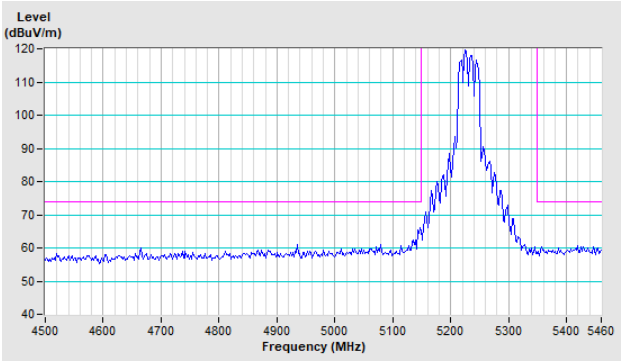
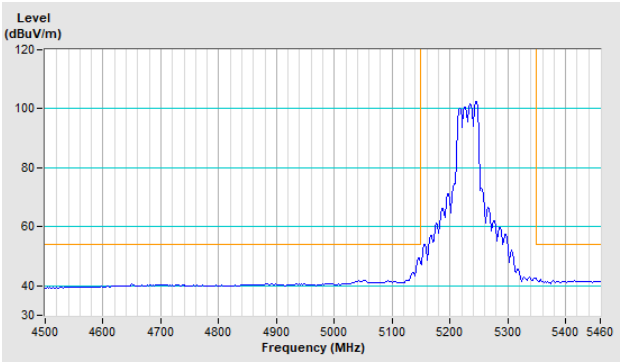
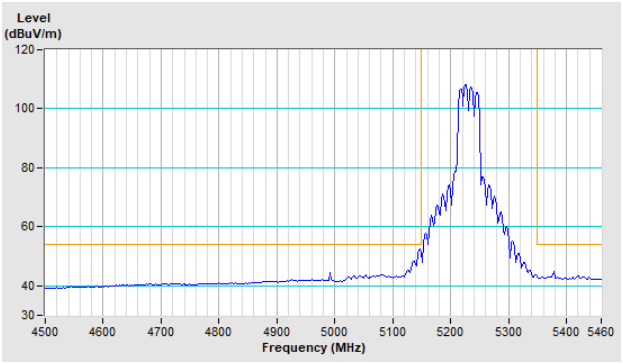
802.11ax (HE20)

CH 36 5180 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

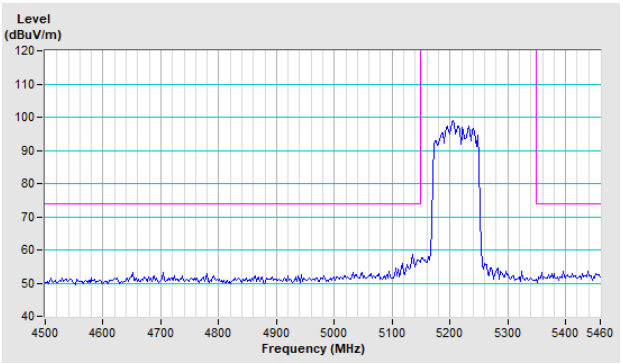
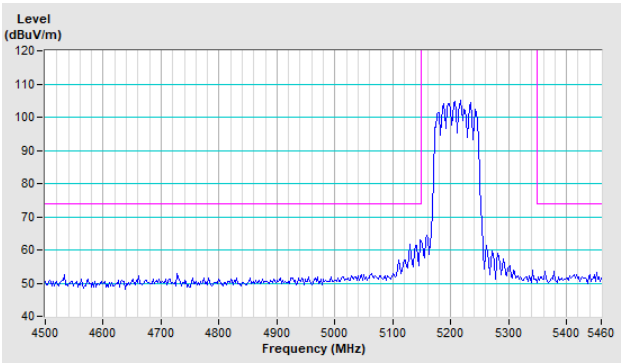
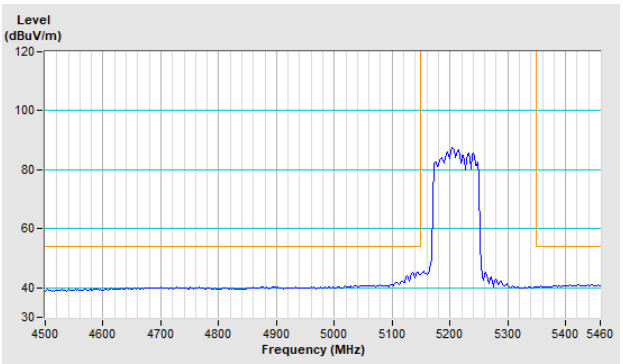
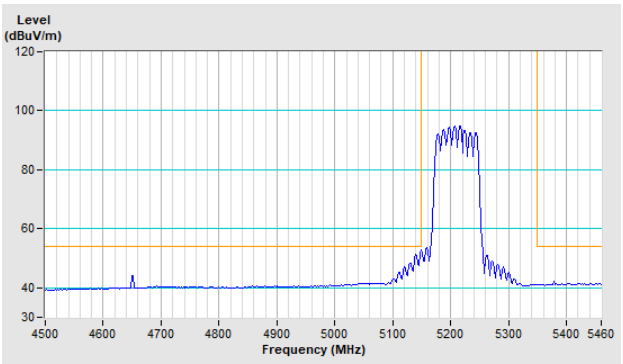
CH 48 5240 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

802.11ax (HE40)

CH 38 5190 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

CH 46 5230 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

802.11ax (HE80)

CH 42 5210 MHz	
Peak	
Horizontal	**Vertical**
	
Average	
Horizontal	**Vertical**
	

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
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Tel: 886-3-6668565
Fax: 886-3-6668323

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

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

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

--- END ---