FCC Test Report

Report No.:	RFBDUI-WTW-P20110876A
FCC ID:	KA2R15A1
Test Model:	R15
Received Date:	Feb. 20, 2021
Test Date:	Feb. 26 ~ Jun. 22, 2021
Issued Date:	May 24, 2022
Applicant:	D-Link Corporation
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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

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RFBDUI-WTW-P20110876A	Original Release	May 24, 2022

1 Certificate of Conformity

Product:	AX1500 Wi-Fi 6 AI Router, AX1500 SMART ROUTER (refer to item 3.1 for more details)
Brand:	D-Link
Test Model:	R15
Sample Status:	Engineering Sample
Applicant:	D-Link Corporation
Test Date:	Feb. 26 ~ Jun. 22, 2021
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 : Lena Wang , **Date:** May 24, 2022

Lena Wang / Specialist

Approved by : Jeremy Lin , **Date:** May 24, 2022

Jeremy Lin / 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)(9)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -10.79 dB at 0.43350 MHz.
15.407(b) (1/2/3/4(i/ii)/9))	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.7 dB at 5350.00 MHz and 5725.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	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	AX1500 Wi-Fi 6 AI Router, AX1500 SMART ROUTER
Product Difference	For Marketing purpose
Brand	D-Link
Test Model	R15
Status of EUT	Engineering Sample
Power Supply Rating	12.0 Vdc, 1A (adapter or host equipment)
Modulation Type	1024 QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	5260 ~ 5320 MHz, 5500 ~ 5720 MHz,
Number of Channel	5260 ~ 5320 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) 5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20) 6 for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40) 3 for 802.11ac (VHT80), 802.11ax (HE80)
Output Power	CDD Mode: 234.893 mW for 5260 ~ 5320 MHz 221.989 mW for 5500 ~ 5720 MHz Beamforming Mode: 117.455 mW for 5260 ~ 5320 MHz 111.002 mW for 5500 ~ 5720 MHz
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RFBDUI-WTW-P20110876-1) are adding 5.26GHz to 5.32GHz and 5.50GHz to 5.72GHz by software.

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

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

*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)

*The EUT is not supported partial RU Function.

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	Amigo	AMS159A-1201000FU (US)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 2	YOUNGHOPE	YHSW-120100UA (US)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 3	Amigo	AMS159A-1201000FV (EU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 4	Amigo	AMS159A-1201000F (US+ UK) AMS159A-1201000F (EU+ UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 5	Amigo	AMS159A-1201000FS (AU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 6	Amigo	AMS195-1201000FY (IN)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 7	Amigo	AMS195-1201000FK (KR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 8	Amigo	AMS159A-1201000FX (BR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 9	Amigo	AMS159A-1201000FB (UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 10	YOUNGHOPE	YHSW-120100VA (EU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 11	YOUNGHOPE	YHSW-120100BA (UK)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 12	YOUNGHOPE	YHSW120100SA (AU)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 13	YOUNGHOPE	YHSW-120100BZA (BR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 14	YOUNGHOPE	YHSW-120100IA (IN)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
Adapter 15	YOUNGHOPE	YHSW-120100KA (KR)	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 12 Vdc, 1 A
CAT5E 24AWG CCA BLACK CABLE	Nienyi	NYS4709 REV.0	1M

* Adapter 1, 3-9 and Adapter 2, 10-15 only different in plug. Therefore, use US Type as a representative for test.

4. The following antennas were provided to the EUT.

Ant. Type	Router External Antenna
Connecter Type	MHF compatible
Antenna Gain (dBi)	
Model	**4900 ~ 5825 MHz**
AOX20X-091050-00	5.3
AOX20X-091051-00	4.9

5. 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.
6. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
7. WLAN 2.4GHz and WLAN 5GHz can transmit at same time.
8. Spurious emission of the simultaneous operation (WLAN 2.4GHz, 5GHz) has been evaluated and no non-compliance was found.

3.2 Description of Test Modes

For 5260 ~ 5320 MHz

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

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

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5720 MHz

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

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

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

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

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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 **Z-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	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
		802.11ax (HE20)	52 to 64	52, 60, 64	OFDMA	BPSK	MCS0
		802.11ax (HE40)	54 to 62	54, 62	OFDMA	BPSK	MCS0
		802.11ax (HE80)	58	58	OFDMA	BPSK	MCS0
	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
		802.11ax (HE20)	100 to 144	100, 116, 140, 144	OFDMA	BPSK	MCS0
		802.11ax (HE40)	102 to 142	102, 110, 134, 142	OFDMA	BPSK	MCS0
		802.11ax (HE80)	106 to 138	106, 122, 138	OFDMA	BPSK	MCS0

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, B	5260-5320	802.11a	52 to 64	64	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, B	5260-5320	802.11a	52 to 64	64	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	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
		802.11ax (HE20)	52 to 64	52, 60, 64	OFDMA	BPSK	MCS0
		802.11ax (HE40)	54 to 62	54, 62	OFDMA	BPSK	MCS0
		802.11ax (HE80)	58	58	OFDMA	BPSK	MCS0
	5500-5720	802.11a	100 to 144	100, 116, 140, 144	OFDM	BPSK	6.0
		802.11ax (HE20)	100 to 144	100, 116, 140, 144	OFDMA	BPSK	MCS0
		802.11ax (HE40)	102 to 142	102, 110, 134, 142	OFDMA	BPSK	MCS0
		802.11ax (HE80)	106 to 138	106, 122, 138	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Greg Lin
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Greg Lin
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Greg Lin, Han Wu
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang

3.3 Duty Cycle of Test Signal

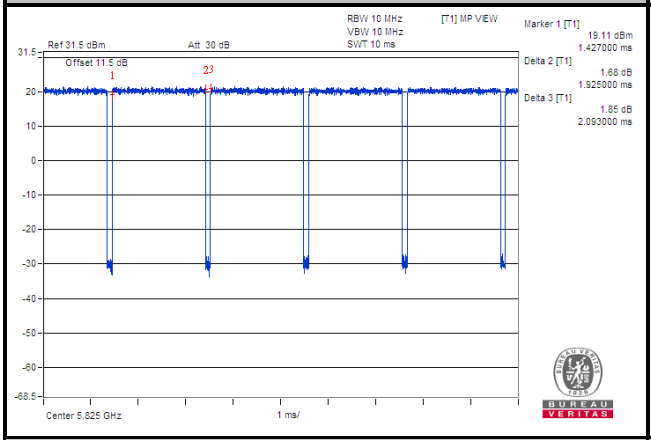
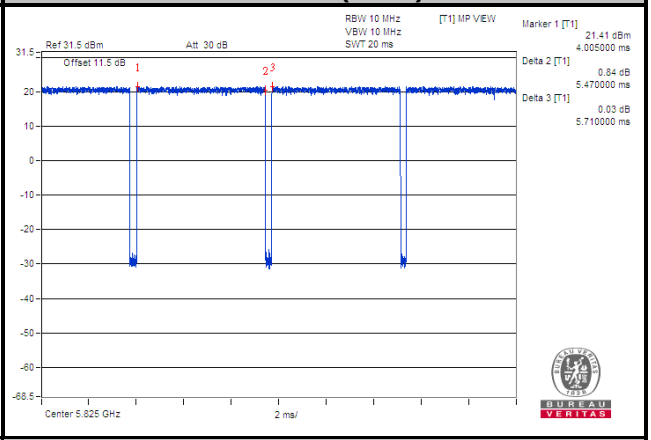
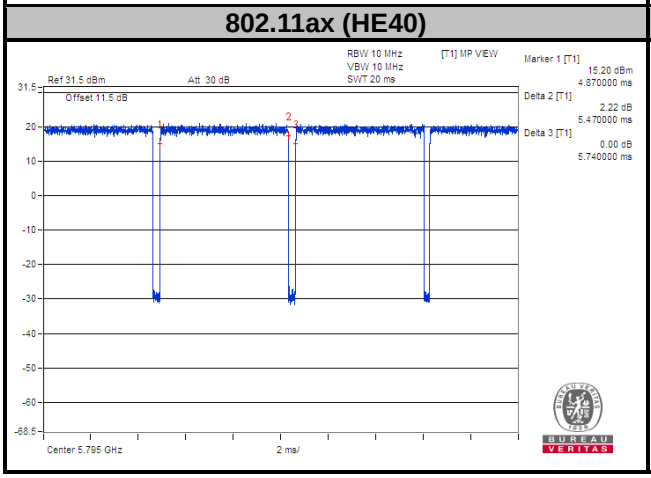
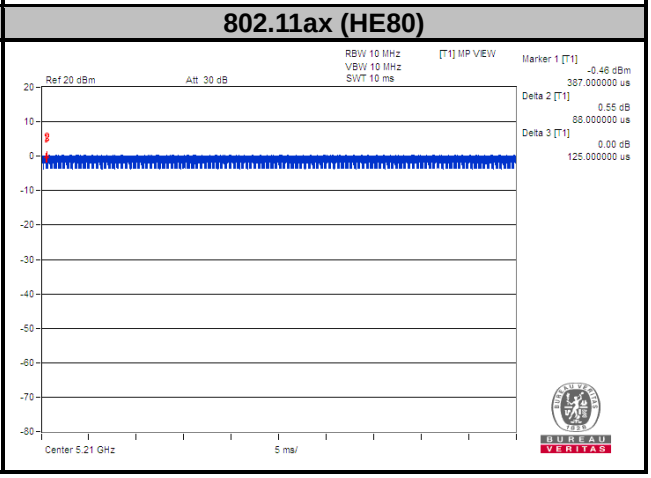
Duty cycle of test signal is < 98 %, duty factor is required.

802.11a: Duty cycle = 1.925/2.093 = 0.92, Duty factor = 10 * log(1/0.92) = 0.36

802.11ax (HT20): Duty cycle = 5.47/5.71 = 0.958, Duty factor = 10 * log(1/0.958) = 0.19

802.11ax (HE40): Duty cycle = 5.47/5.74 = 0.953, Duty factor = 10 * log(1/0.953) = 0.21

802.11ax (HE80): Duty cycle of test signal is 100 %, duty factor is not required.

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.

No.	Product	Brand	Model No.	Serial No.	FCC ID
A	Load	N/A	N/A	N/A	N/A
B	Notebook	DELL	E5420	33MJMQ1	N/A
C	Adapter 1	Amigo	AMS159A-1201000FU	N/A	N/A
D	Adapter 2	Amigo	AMS159A-1201000FV	N/A	N/A

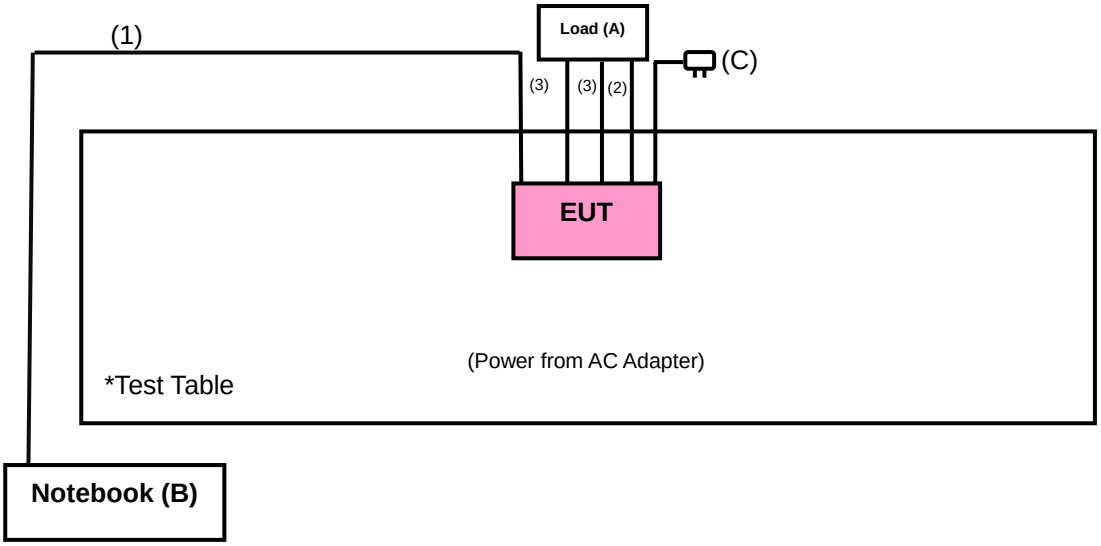
No.	Signal Cable Description of The Above Support Units
1.	LAN Cable: 10m
2.	CAT5E 24AWG CCA BLACK CABLE: 1m
3.	LAN Cable: 1.2m*2

Note:

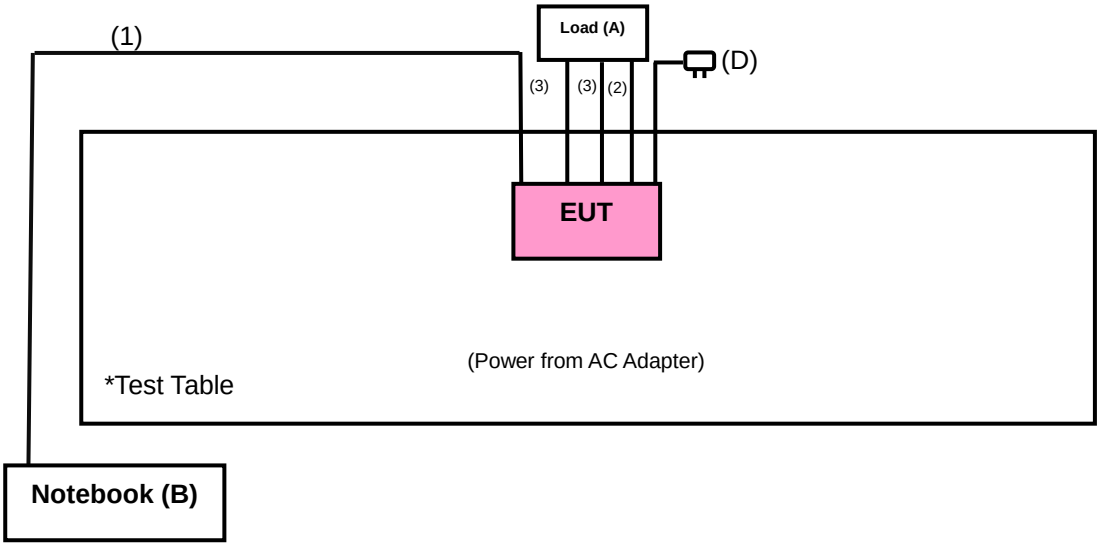
1. All power cords of the above support units are non-shielded (1.8m).
2. Items B acted as communication partners to transfer data.

3.4.1 Configuration of System under Test

Mode A



Mode B



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
*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. 22, 2020	Apr. 21, 2021
			Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 08, 2020	Jun. 07, 2021
			Jun. 05, 2021	Jun. 04, 2022
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 17, 2021	Feb. 16, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 16, 2021	Jan. 15, 2022
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 08, 2020	Jun. 07, 2021
			Jun. 05, 2021	Jun. 04, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	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
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2020	Sep. 03, 2021
Peak Power Analyzer KEYSIGHT	8990B	MY5100048	Jan. 19, 2021	Jan. 18, 2022
Wideband Power Sensor KEYSIGHT	N1923A	MY58020002	Jan. 11, 2021	Jan. 10, 2022
AC Power Source Extech	6905S	1991553	NA	NA
Digital Multimeter Fluke	87-III	70360755	Jul. 10, 2020	Jul. 09, 2021
			Jul. 08, 2021	Jul. 07, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Feb. 03, 2021	Feb. 02, 2022
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 09, 2020	Sep. 08, 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:

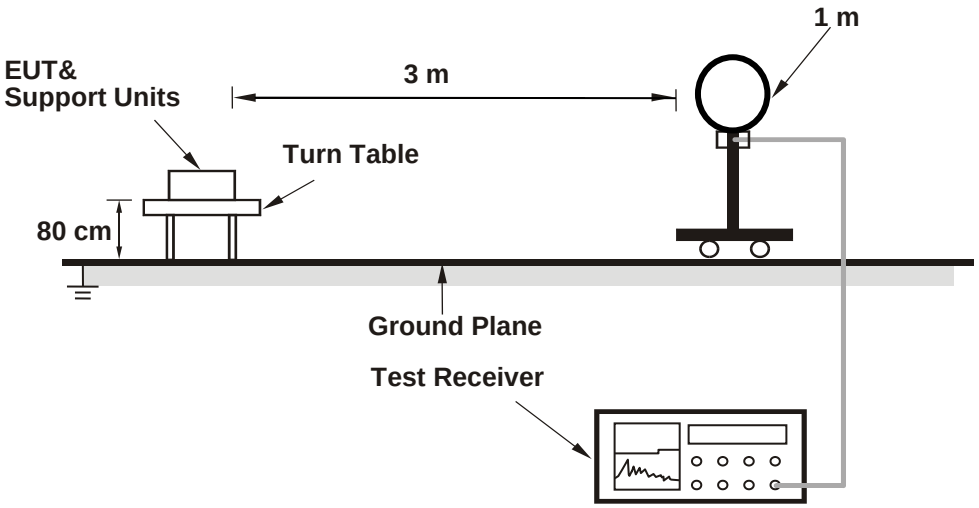
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK)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

4.1.4 Deviation from Test Standard

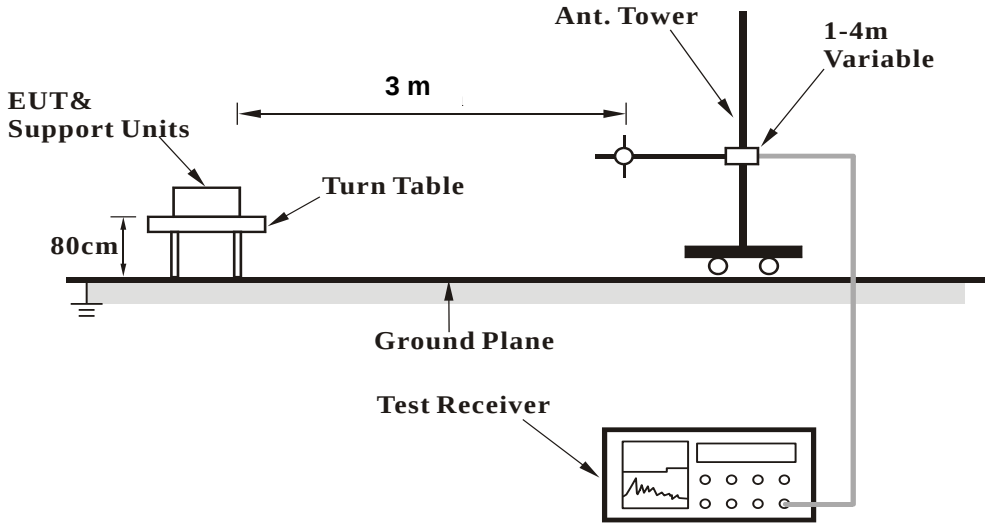
No deviation.

4.1.5 Test Setup

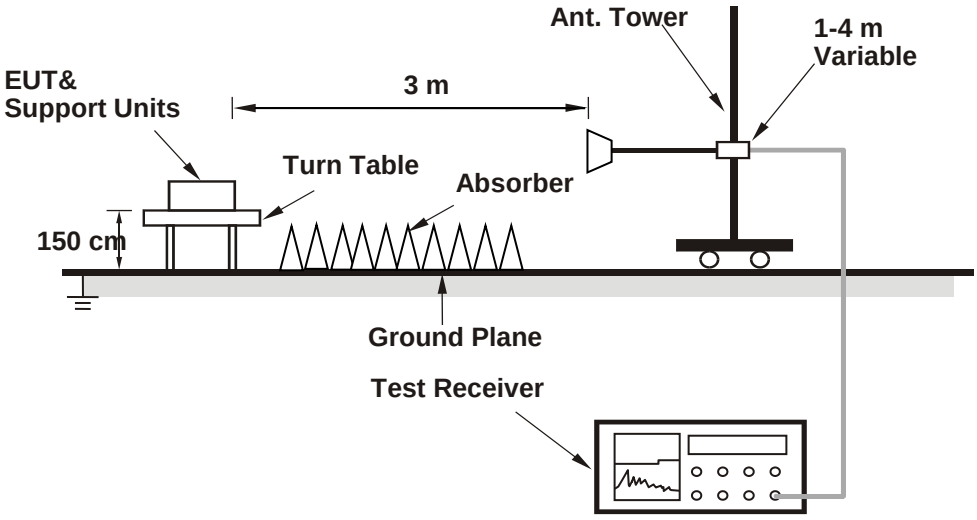
<Radiated Emission below 30 MHz>



<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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	51.8 PK	74.0	-22.2	1.97 H	304	49.7	2.1
2	5150.00	39.7 AV	54.0	-14.3	1.97 H	304	37.6	2.1
3	*5260.00	105.0 PK			1.97 H	304	68.8	36.2
4	*5260.00	95.1 AV			1.97 H	304	58.9	36.2
5	#10520.00	56.4 PK	68.2	-11.8	1.74 H	208	41.4	15.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	52.3 PK	74.0	-21.7	1.48 V	144	50.2	2.1
2	5150.00	40.9 AV	54.0	-13.1	1.48 V	144	38.8	2.1
3	*5260.00	116.8 PK			1.48 V	144	80.6	36.2
4	*5260.00	107.0 AV			1.48 V	144	70.8	36.2
5	#10520.00	56.6 PK	68.2	-11.6	1.63 V	331	41.6	15.0

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	105.1 PK			2.16 H	308	69.1	36.0
2	*5300.00	95.2 AV			2.16 H	308	59.2	36.0
3	10600.00	56.4 PK	74.0	-17.6	1.79 H	224	40.8	15.6
4	10600.00	44.3 AV	54.0	-9.7	1.79 H	224	28.7	15.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	116.9 PK			1.52 V	148	80.9	36.0
2	*5300.00	106.9 AV			1.52 V	148	70.9	36.0
3	10600.00	56.8 PK	74.0	-17.2	1.55 V	326	41.2	15.6
4	10600.00	45.0 AV	54.0	-9.0	1.55 V	326	29.4	15.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	105.4 PK			2.13 H	306	69.2	36.2
2	*5320.00	95.6 AV			2.13 H	306	59.4	36.2
3	5350.00	60.3 PK	74.0	-13.7	2.13 H	306	58.3	2.0
4	5350.00	45.7 AV	54.0	-8.3	2.13 H	306	43.7	2.0
5	10640.00	57.2 PK	74.0	-16.8	1.78 H	226	41.6	15.6
6	10640.00	44.4 AV	54.0	-9.6	1.78 H	226	28.8	15.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	116.7 PK			1.50 V	129	80.5	36.2
2	*5320.00	106.8 AV			1.50 V	129	70.6	36.2
3	5350.00	64.2 PK	74.0	-9.8	1.50 V	129	62.2	2.0
4	**5350.00**	**53.3 AV**	**54.0**	**-0.7**	**1.50 V**	**129**	**51.3**	**2.0**
5	10640.00	58.0 PK	74.0	-16.0	1.58 V	336	42.4	15.6
6	10640.00	45.2 AV	54.0	-8.8	1.58 V	336	29.6	15.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	54.4 PK	74.0	-19.6	2.27 H	302	51.8	2.6
2	5460.00	42.3 AV	54.0	-11.7	2.27 H	302	39.7	2.6
3	#5470.00	55.9 PK	68.2	-12.3	2.27 H	302	53.3	2.6
4	*5500.00	105.9 PK			2.27 H	302	68.9	37.0
5	*5500.00	95.8 AV			2.27 H	302	58.8	37.0
6	11000.00	57.4 PK	74.0	-16.6	1.87 H	238	40.9	16.5
7	11000.00	44.7 AV	54.0	-9.3	1.87 H	238	28.2	16.5
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	5460.00	58.4 PK	74.0	-15.6	1.73 V	134	55.8	2.6
2	5460.00	42.9 AV	54.0	-11.1	1.73 V	134	40.3	2.6
3	#5470.00	63.8 PK	68.2	-4.4	1.73 V	134	61.2	2.6
4	*5500.00	117.5 PK			1.73 V	134	80.5	37.0
5	*5500.00	107.3 AV			1.73 V	134	70.3	37.0
6	11000.00	58.0 PK	74.0	-16.0	2.87 V	256	41.5	16.5
7	11000.00	45.2 AV	54.0	-8.8	2.87 V	256	28.7	16.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	106.2 PK			1.85 H	297	69.2	37.0
2	*5580.00	96.1 AV			1.85 H	297	59.1	37.0
3	11160.00	56.6 PK	74.0	-17.4	1.89 H	227	40.8	15.8
4	11160.00	43.7 AV	54.0	-10.3	1.89 H	227	27.9	15.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	117.7 PK			1.79 V	128	80.7	37.0
2	*5580.00	107.7 AV			1.79 V	128	70.7	37.0
3	11160.00	57.8 PK	74.0	-16.2	2.92 V	265	42.0	15.8
4	11160.00	44.9 AV	54.0	-9.1	2.92 V	265	29.1	15.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	106.0 PK			1.97 H	301	68.8	37.2
2	*5700.00	95.8 AV			1.97 H	301	58.6	37.2
3	#5725.00	60.7 PK	68.2	-7.5	1.97 H	301	57.7	3.0
4	11400.00	58.3 PK	74.0	-15.7	1.74 H	236	41.8	16.5
5	11400.00	45.1 AV	54.0	-8.9	1.74 H	236	28.6	16.5
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	*5700.00	117.2 PK			1.75 V	243	80.0	37.2
2	*5700.00	107.3 AV			1.75 V	243	70.1	37.2
3	#5725.00	67.4 PK	68.2	-0.8	1.75 V	243	64.4	3.0
4	11400.00	59.2 PK	74.0	-14.8	2.93 V	257	42.7	16.5
5	11400.00	45.9 AV	54.0	-8.1	2.93 V	257	29.4	16.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5470.00	52.4 PK	68.2	-15.8	1.97 H	294	49.8	2.6
2	*5720.00	117.0 PK			1.97 H	294	79.7	37.3
3	*5720.00	107.0 AV			1.97 H	294	69.7	37.3
4	#5850.00	53.7 PK	68.2	-14.5	1.97 H	294	50.2	3.5
5	11440.00	58.2 PK	74.0	-15.8	1.87 H	236	41.9	16.3
6	11440.00	44.9 AV	54.0	-9.1	1.87 H	236	28.6	16.3
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	#5470.00	53.1 PK	68.2	-15.1	1.74 V	244	50.5	2.6
2	*5720.00	118.2 PK			1.74 V	244	80.9	37.3
3	*5720.00	108.4 AV			1.74 V	244	71.1	37.3
4	#5850.00	54.4 PK	68.2	-13.8	1.74 V	244	50.9	3.5
5	11440.00	58.7 PK	74.0	-15.3	1.76 V	334	42.4	16.3
6	11440.00	46.0 AV	54.0	-8.0	1.76 V	334	29.7	16.3

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)

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	51.8 PK	74.0	-22.2	2.26 H	317	49.7	2.1
2	5150.00	40.3 AV	54.0	-13.7	2.26 H	317	38.2	2.1
3	*5260.00	103.9 PK			2.26 H	317	67.7	36.2
4	*5260.00	94.8 AV			2.26 H	317	58.6	36.2
5	#10520.00	56.6 PK	68.2	-11.6	1.53 H	208	41.6	15.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	52.4 PK	74.0	-21.6	1.37 V	169	50.3	2.1
2	5150.00	40.7 AV	54.0	-13.3	1.37 V	169	38.6	2.1
3	*5260.00	115.4 PK			1.37 V	169	79.2	36.2
4	*5260.00	106.4 AV			1.37 V	169	70.2	36.2
5	#10520.00	57.7 PK	68.2	-10.5	1.69 V	337	42.7	15.0

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	103.6 PK			2.14 H	336	67.6	36.0
2	*5300.00	94.5 AV			2.14 H	336	58.5	36.0
3	10600.00	57.0 PK	74.0	-17.0	1.73 H	214	41.4	15.6
4	10600.00	44.3 AV	54.0	-9.7	1.73 H	214	28.7	15.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	115.4 PK			1.47 V	156	79.4	36.0
2	*5300.00	106.4 AV			1.47 V	156	70.4	36.0
3	10600.00	57.6 PK	74.0	-16.4	1.88 V	258	42.0	15.6
4	10600.00	44.6 AV	54.0	-9.4	1.88 V	258	29.0	15.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	102.8 PK			2.11 H	323	66.6	36.2
2	*5320.00	93.7 AV			2.11 H	323	57.5	36.2
3	5350.00	61.8 PK	74.0	-12.2	2.11 H	323	59.8	2.0
4	5350.00	44.6 AV	54.0	-9.4	2.11 H	323	42.6	2.0
5	10640.00	57.0 PK	74.0	-17.0	1.57 H	203	41.4	15.6
6	10640.00	44.1 AV	54.0	-9.9	1.57 H	203	28.5	15.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	114.3 PK			1.56 V	143	78.1	36.2
2	*5320.00	105.3 AV			1.56 V	143	69.1	36.2
3	5350.00	69.6 PK	74.0	-4.4	1.56 V	143	67.6	2.0
4	5350.00	53.1 AV	54.0	-0.9	1.56 V	143	51.1	2.0
5	10640.00	58.0 PK	74.0	-16.0	1.57 V	330	42.4	15.6
6	10640.00	44.7 AV	54.0	-9.3	1.57 V	330	29.1	15.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	53.4 PK	74.0	-20.6	2.02 H	297	50.8	2.6
2	5460.00	42.2 AV	54.0	-11.8	2.02 H	297	39.6	2.6
3	#5470.00	55.9 PK	68.2	-12.3	2.02 H	297	53.3	2.6
4	*5500.00	104.7 PK			2.02 H	297	67.7	37.0
5	*5500.00	94.6 AV			2.02 H	297	57.6	37.0
6	11000.00	57.4 PK	74.0	-16.6	1.93 H	238	40.9	16.5
7	11000.00	43.9 AV	54.0	-10.1	1.93 H	238	27.4	16.5
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	5460.00	57.9 PK	74.0	-16.1	1.70 V	205	55.3	2.6
2	5460.00	43.7 AV	54.0	-10.3	1.70 V	205	41.1	2.6
3	#5470.00	67.2 PK	68.2	-1.0	1.70 V	205	64.6	2.6
4	*5500.00	116.1 PK			1.70 V	205	79.1	37.0
5	*5500.00	106.0 AV			1.70 V	205	69.0	37.0
6	11000.00	58.1 PK	74.0	-15.9	2.87 V	256	41.6	16.5
7	11000.00	45.0 AV	54.0	-9.0	2.87 V	256	28.5	16.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	105.0 PK			1.84 H	314	68.0	37.0
2	*5580.00	94.9 AV			1.84 H	314	57.9	37.0
3	11160.00	56.5 PK	74.0	-17.5	1.86 H	227	40.7	15.8
4	11160.00	43.5 AV	54.0	-10.5	1.86 H	227	27.7	15.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	116.7 PK			1.68 V	134	79.7	37.0
2	*5580.00	106.7 AV			1.68 V	134	69.7	37.0
3	11160.00	57.1 PK	74.0	-16.9	3.04 V	276	41.3	15.8
4	11160.00	44.0 AV	54.0	-10.0	3.04 V	276	28.2	15.8

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	100.9 PK			1.91 H	304	63.7	37.2
2	*5700.00	91.1 AV			1.91 H	304	53.9	37.2
3	#5725.00	60.7 PK	68.2	-7.5	1.91 H	304	57.7	3.0
4	11400.00	57.3 PK	74.0	-16.7	1.86 H	224	40.8	16.5
5	11400.00	43.9 AV	54.0	-10.1	1.86 H	224	27.4	16.5
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	*5700.00	111.5 PK			1.86 V	207	74.3	37.2
2	*5700.00	102.7 AV			1.86 V	207	65.5	37.2
3	#5725.00	67.3 PK	68.2	-0.9	1.86 V	207	64.3	3.0
4	11400.00	58.8 PK	74.0	-15.2	2.87 V	264	42.3	16.5
5	11400.00	45.0 AV	54.0	-9.0	2.87 V	264	28.5	16.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5470.00	52.2 PK	68.2	-16.0	1.93 H	304	49.6	2.6
2	*5720.00	106.1 PK			1.93 H	304	68.8	37.3
3	*5720.00	96.5 AV			1.93 H	304	59.2	37.3
4	#5850.00	53.8 PK	68.2	-14.4	1.93 H	304	50.3	3.5
5	11440.00	58.0 PK	74.0	-16.0	1.73 H	227	41.7	16.3
6	11440.00	44.8 AV	54.0	-9.2	1.73 H	227	28.5	16.3
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	#5470.00	53.0 PK	68.2	-15.2	1.68 V	236	50.4	2.6
2	*5720.00	117.5 PK			1.68 V	236	80.2	37.3
3	*5720.00	107.8 AV			1.68 V	236	70.5	37.3
4	#5850.00	54.3 PK	68.2	-13.9	1.68 V	236	50.8	3.5
5	11440.00	59.1 PK	74.0	-14.9	1.82 V	331	42.8	16.3
6	11440.00	46.5 AV	54.0	-7.5	1.82 V	331	30.2	16.3

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)

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	52.4 PK	74.0	-21.6	2.24 H	303	50.3	2.1
2	5150.00	40.7 AV	54.0	-13.3	2.24 H	303	38.6	2.1
3	*5270.00	101.0 PK			2.24 H	303	64.8	36.2
4	*5270.00	92.0 AV			2.24 H	303	55.8	36.2
5	#10540.00	56.5 PK	68.2	-11.7	1.57 H	202	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	5150.00	53.0 PK	74.0	-21.0	1.52 V	128	50.9	2.1
2	5150.00	41.4 AV	54.0	-12.6	1.52 V	128	39.3	2.1
3	*5270.00	114.8 PK			1.52 V	128	78.6	36.2
4	*5270.00	103.7 AV			1.52 V	128	67.5	36.2
5	#10540.00	57.0 PK	68.2	-11.2	1.55 V	326	41.8	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.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	97.3 PK			2.11 H	307	61.2	36.1
2	*5310.00	87.2 AV			2.11 H	307	51.1	36.1
3	5350.00	61.0 PK	74.0	-13.0	2.11 H	307	59.0	2.0
4	5350.00	44.6 AV	54.0	-9.4	2.11 H	307	42.6	2.0
5	10620.00	56.8 PK	74.0	-17.2	1.70 H	223	41.2	15.6
6	10620.00	43.9 AV	54.0	-10.1	1.70 H	223	28.3	15.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	108.9 PK			1.52 V	132	72.8	36.1
2	*5310.00	98.7 AV			1.52 V	132	62.6	36.1
3	5350.00	71.2 PK	74.0	-2.8	1.52 V	132	69.2	2.0
4	5350.00	52.9 AV	54.0	-1.1	1.52 V	132	50.9	2.0
5	10620.00	57.3 PK	74.0	-16.7	1.71 V	318	41.7	15.6
6	10620.00	44.5 AV	54.0	-9.5	1.71 V	318	28.9	15.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.0 PK	74.0	-16.0	1.93 H	312	55.4	2.6
2	5460.00	42.9 AV	54.0	-11.1	1.93 H	312	40.3	2.6
3	#5470.00	60.9 PK	68.2	-7.3	1.93 H	312	58.3	2.6
4	*5510.00	97.6 PK			1.93 H	312	60.6	37.0
5	*5510.00	87.5 AV			1.93 H	312	50.5	37.0
6	11020.00	57.1 PK	74.0	-16.9	1.76 H	247	40.7	16.4
7	11020.00	43.9 AV	54.0	-10.1	1.76 H	247	27.5	16.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	63.4 PK	74.0	-10.6	1.73 V	239	60.8	2.6
2	5460.00	46.3 AV	54.0	-7.7	1.73 V	239	43.7	2.6
3	#5470.00	67.3 PK	68.2	-0.9	1.73 V	239	64.7	2.6
4	*5510.00	108.9 PK			1.73 V	239	71.9	37.0
5	*5510.00	98.9 AV			1.73 V	239	61.9	37.0
6	11020.00	58.0 PK	74.0	-16.0	2.97 V	258	41.6	16.4
7	11020.00	44.7 AV	54.0	-9.3	2.97 V	258	28.3	16.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	104.7 PK			2.06 H	312	67.7	37.0
2	*5550.00	94.8 AV			2.06 H	312	57.8	37.0
3	11100.00	56.5 PK	74.0	-17.5	1.82 H	225	40.8	15.7
4	11100.00	43.1 AV	54.0	-10.9	1.82 H	225	27.4	15.7
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	*5550.00	116.3 PK			1.92 V	224	79.3	37.0
2	*5550.00	106.4 AV			1.92 V	224	69.4	37.0
3	11100.00	57.4 PK	74.0	-16.6	2.95 V	273	41.7	15.7
4	11100.00	44.2 AV	54.0	-9.8	2.95 V	273	28.5	15.7

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.

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	99.7 PK			1.89 H	306	62.6	37.1
2	*5670.00	89.5 AV			1.89 H	306	52.4	37.1
3	#5725.00	60.3 PK	68.2	-7.9	1.89 H	306	57.3	3.0
4	11340.00	57.2 PK	74.0	-16.8	1.76 H	245	40.8	16.4
5	11340.00	43.8 AV	54.0	-10.2	1.76 H	245	27.4	16.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	111.5 PK			1.75 V	246	74.4	37.1
2	*5670.00	100.9 AV			1.75 V	246	63.8	37.1
3	#5725.00	67.2 PK	68.2	-1.0	1.75 V	246	64.2	3.0
4	11340.00	58.1 PK	74.0	-15.9	2.86 V	271	41.7	16.4
5	11340.00	45.1 AV	54.0	-8.9	2.86 V	271	28.7	16.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5470.00	52.9 PK	68.2	-15.3	2.06 H	314	50.3	2.6
2	*5710.00	103.5 PK			2.06 H	314	66.3	37.2
3	*5710.00	93.8 AV			2.06 H	314	56.6	37.2
4	#5850.00	54.7 PK	68.2	-13.5	2.06 H	314	51.2	3.5
5	11420.00	57.9 PK	74.0	-16.1	1.87 H	226	41.5	16.4
6	11420.00	44.7 AV	54.0	-9.3	1.87 H	226	28.3	16.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5470.00	53.4 PK	68.2	-14.8	1.74 V	217	50.8	2.6
2	*5710.00	114.7 PK			1.74 V	217	77.5	37.2
3	*5710.00	105.0 AV			1.74 V	217	67.8	37.2
4	#5850.00	56.9 PK	68.2	-11.3	1.74 V	217	53.4	3.5
5	11420.00	58.7 PK	74.0	-15.3	1.88 V	339	42.3	16.4
6	11420.00	46.0 AV	54.0	-8.0	1.88 V	339	29.6	16.4

Remarks:

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

802.11ax (HE80)

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	51.9 PK	74.0	-22.1	2.03 H	311	49.8	2.1
2	5150.00	39.8 AV	54.0	-14.2	2.03 H	311	37.7	2.1
3	*5290.00	95.1 PK			2.03 H	311	59.0	36.1
4	*5290.00	85.2 AV			2.03 H	311	49.1	36.1
5	5350.00	59.4 PK	74.0	-14.6	2.03 H	311	57.4	2.0
6	5350.00	43.3 AV	54.0	-10.7	2.03 H	311	41.3	2.0
7	#10580.00	56.2 PK	68.2	-12.0	1.76 H	224	40.8	15.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	53.9 PK	74.0	-20.1	1.43 V	126	51.8	2.1
2	5150.00	41.5 AV	54.0	-12.5	1.43 V	126	39.4	2.1
3	*5290.00	106.3 PK			1.43 V	126	70.2	36.1
4	*5290.00	96.4 AV			1.43 V	126	60.3	36.1
5	5350.00	67.6 PK	74.0	-6.4	1.43 V	126	65.6	2.0
6	5350.00	52.9 AV	54.0	-1.1	1.43 V	126	50.9	2.0
7	#10580.00	56.8 PK	68.2	-11.4	1.56 V	318	41.4	15.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	56.2 PK	74.0	-17.8	1.86 H	311	53.6	2.6
2	5460.00	43.6 AV	54.0	-10.4	1.86 H	311	41.0	2.6
3	#5470.00	58.4 PK	68.2	-9.8	1.86 H	311	55.8	2.6
4	*5530.00	94.5 PK			1.86 H	311	57.5	37.0
5	*5530.00	84.6 AV			1.86 H	311	47.6	37.0
6	#5725.00	52.8 PK	68.2	-15.4	1.86 H	311	49.8	3.0
7	11060.00	56.7 PK	74.0	-17.3	1.73 H	221	40.6	16.1
8	11060.00	43.3 AV	54.0	-10.7	1.73 H	221	27.2	16.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	66.2 PK	74.0	-7.8	1.72 V	222	63.6	2.6
2	5460.00	51.8 AV	54.0	-2.2	1.72 V	222	49.2	2.6
3	#5470.00	67.1 PK	68.2	-1.1	1.72 V	222	64.5	2.6
4	*5530.00	104.9 PK			1.72 V	222	67.9	37.0
5	*5530.00	95.1 AV			1.72 V	222	58.1	37.0
6	#5725.00	56.4 PK	68.2	-11.8	1.72 V	222	53.4	3.0
7	11060.00	57.3 PK	74.0	-16.7	2.93 V	257	41.2	16.1
8	11060.00	44.3 AV	54.0	-9.7	2.93 V	257	28.2	16.1

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 122：5610 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	52.4 PK	74.0	-21.6	2.02 H	310	49.8	2.6
2	5460.00	39.8 AV	54.0	-14.2	2.02 H	310	37.2	2.6
3	#5470.00	54.2 PK	68.2	-14.0	2.02 H	310	51.6	2.6
4	*5610.00	94.4 PK			2.02 H	310	57.4	37.0
5	*5610.00	84.6 AV			2.02 H	310	47.6	37.0
6	#5725.00	58.8 PK	68.2	-9.4	2.02 H	310	55.8	3.0
7	11220.00	56.6 PK	74.0	-17.4	1.76 H	221	40.9	15.7
8	11220.00	43.2 AV	54.0	-10.8	1.76 H	221	27.5	15.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.8 PK	74.0	-15.2	1.52 V	193	56.2	2.6
2	5460.00	43.8 AV	54.0	-10.2	1.52 V	193	41.2	2.6
3	#5470.00	60.4 PK	68.2	-7.8	1.52 V	193	57.8	2.6
4	*5610.00	112.5 PK			1.52 V	193	75.5	37.0
5	*5610.00	102.3 AV			1.52 V	193	65.3	37.0
6	**#5725.00**	**67.5 PK**	**68.2**	**-0.7**	**1.52 V**	**193**	**64.5**	**3.0**
7	11220.00	57.2 PK	74.0	-16.8	2.87 V	273	41.5	15.7
8	11220.00	44.0 AV	54.0	-10.0	2.87 V	273	28.3	15.7

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5470.00	53.2 PK	68.2	-15.0	1.99 H	301	50.6	2.6
2	*5690.00	99.9 PK			1.99 H	301	62.7	37.2
3	*5690.00	90.3 AV			1.99 H	301	53.1	37.2
4	#5850.00	61.7 PK	68.2	-6.5	1.99 H	301	58.2	3.5
5	11380.00	57.7 PK	74.0	-16.3	1.77 H	225	41.2	16.5
6	11380.00	44.5 AV	54.0	-9.5	1.77 H	225	28.0	16.5
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	#5470.00	54.5 PK	68.2	-13.7	1.81 V	249	51.9	2.6
2	*5690.00	111.2 PK			1.77 V	240	74.0	37.2
3	*5690.00	101.9 AV			1.77 V	240	64.7	37.2
4	#5850.00	67.2 PK	68.2	-1.0	1.74 V	246	63.7	3.5
5	11380.00	58.7 PK	74.0	-15.3	1.79 V	336	42.2	16.5
6	11380.00	45.8 AV	54.0	-8.2	1.79 V	336	29.3	16.5

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.

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

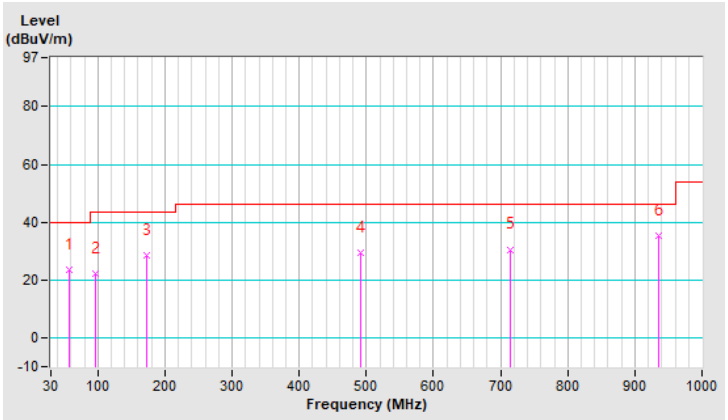
Mode A

RF Mode	TX 802.11a	Channel	CH 64：5320 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	58.13	23.6 QP	40.0	-16.4	1.25 H	244	32.9	-9.3
2	96.93	22.2 QP	43.5	-21.3	1.00 H	109	36.3	-14.1
3	173.56	28.6 QP	43.5	-14.9	1.25 H	276	37.8	-9.2
4	490.75	29.3 QP	46.0	-16.7	1.50 H	165	31.8	-2.5
5	713.85	30.6 QP	46.0	-15.4	1.00 H	80	29.1	1.5
6	935.98	35.2 QP	46.0	-10.8	1.00 H	250	28.9	6.3

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.

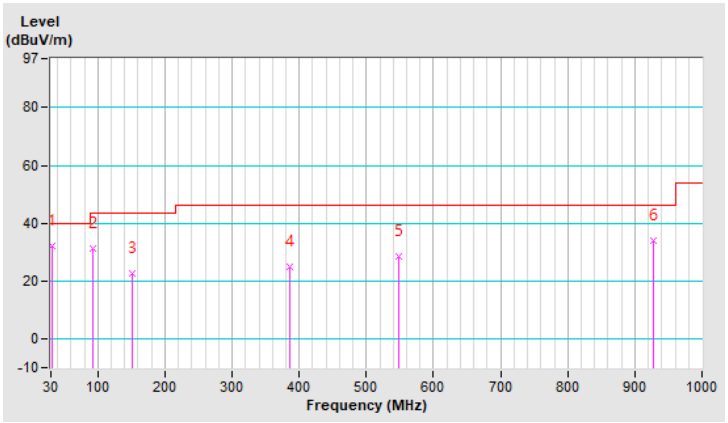


RF Mode	TX 802.11a	Channel	CH 64：5320 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.94	32.1 QP	40.0	-7.9	1.00 V	69	42.3	-10.2
2	92.08	31.2 QP	43.5	-12.3	1.00 V	84	45.6	-14.4
3	152.22	22.6 QP	43.5	-20.9	1.00 V	10	31.3	-8.7
4	385.99	24.8 QP	46.0	-21.2	1.00 V	111	29.7	-4.9
5	547.98	28.4 QP	46.0	-17.6	1.00 V	16	29.9	-1.5
6	928.22	34.1 QP	46.0	-11.9	1.00 V	167	27.8	6.3

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.



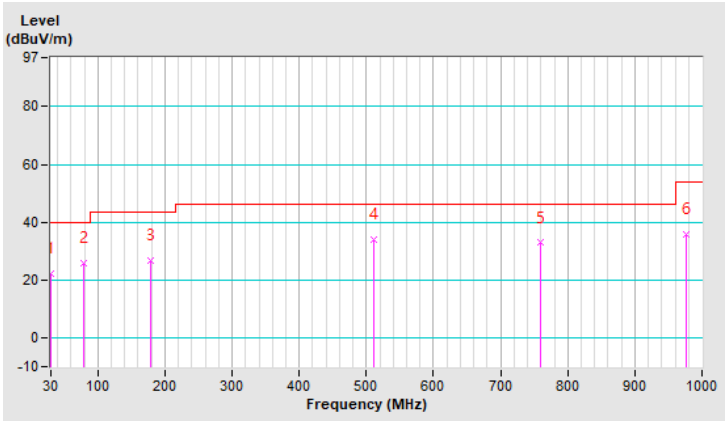
Mode B

RF Mode	TX 802.11a	Channel	CH 64：5320 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	22.0 QP	40.0	-18.0	1.50 H	12	32.2	-10.2
2	78.50	25.7 QP	40.0	-14.3	1.25 H	349	38.8	-13.1
3	178.41	26.6 QP	43.5	-16.9	1.00 H	68	36.4	-9.8
4	510.15	33.9 QP	46.0	-12.1	1.25 H	165	35.9	-2.0
5	760.41	32.8 QP	46.0	-13.2	1.00 H	157	30.0	2.8
6	976.72	35.9 QP	54.0	-18.1	1.00 H	248	29.3	6.6

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.

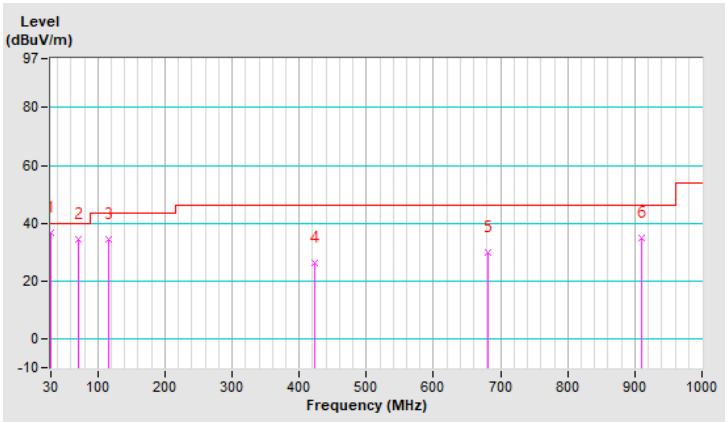


RF Mode	TX 802.11a	Channel	CH 64：5320 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**30.00**	**36.9 QP**	**40.0**	**-3.1**	**1.25 V**	**359**	**47.1**	**-10.2**
2	70.74	34.6 QP	40.0	-5.4	1.00 V	84	45.6	-11.0
3	115.36	34.5 QP	43.5	-9.0	1.50 V	84	46.0	-11.5
4	423.82	26.3 QP	46.0	-19.7	1.25 V	336	30.3	-4.0
5	680.87	30.0 QP	46.0	-16.0	1.00 V	28	29.0	1.0
6	909.79	34.8 QP	46.0	-11.2	1.25 V	228	28.9	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.



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	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 28, 2021	Jan. 27, 2022
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_Cond_ V7.3.7.4	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 2 (Conduction 2).
3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

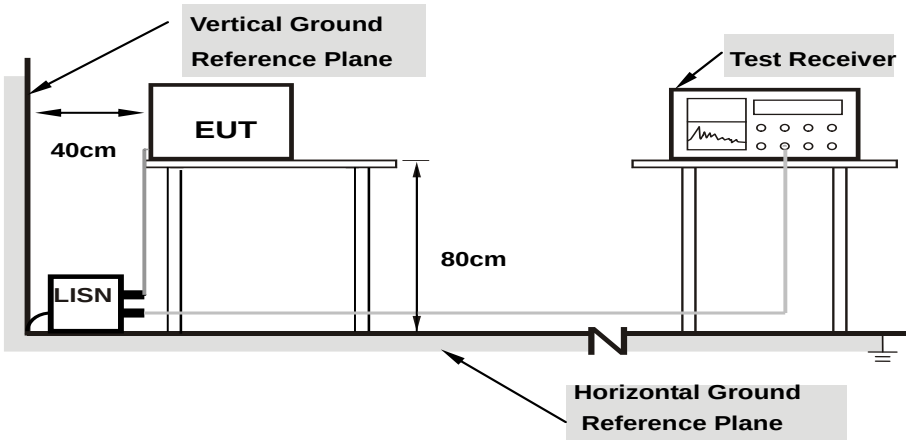
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

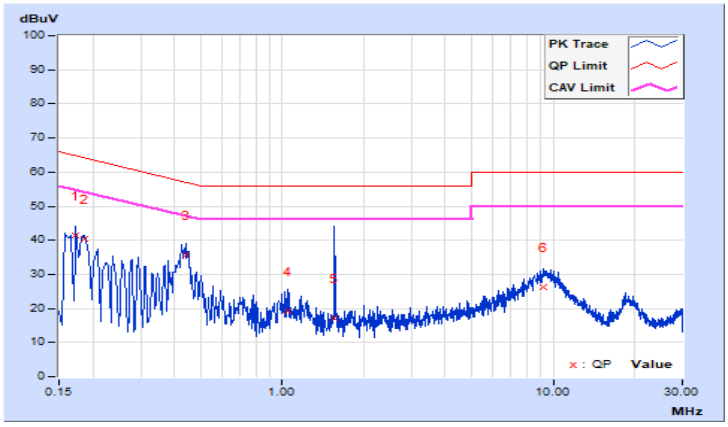
Mode A

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	Han Wu	**Test Date**	2021/6/22

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	0.17346	10.10	31.16	17.46	41.26	27.56	64.79	54.79	-23.53	-27.23
2	0.18508	10.11	30.26	17.41	40.37	27.52	64.25	54.25	-23.88	-26.73
3	0.44325	10.19	25.36	13.62	35.55	23.81	57.00	47.00	-21.45	-23.19
4	1.05321	10.26	9.09	2.14	19.35	12.40	56.00	46.00	-36.65	-33.60
5	1.56151	10.28	7.06	4.84	17.34	15.12	56.00	46.00	-38.66	-30.88
6	9.21338	10.47	15.64	3.34	26.11	13.81	60.00	50.00	-33.89	-36.19

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

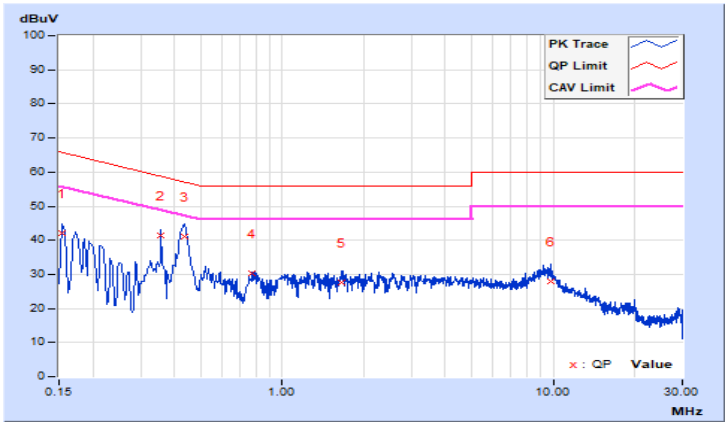


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Han Wu	**Test Date**	2021/6/22

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15391	10.10	32.07	19.30	42.17	29.40	65.79	55.79	-23.62	-26.39
2	0.35723	10.18	31.29	14.78	41.47	24.96	58.79	48.79	-17.32	-23.83
3	**0.43350**	**10.20**	**30.85**	**26.20**	**41.05**	**36.40**	**57.19**	**47.19**	**-16.14**	**-10.79**
4	0.77560	10.25	19.89	5.82	30.14	16.07	56.00	46.00	-25.86	-29.93
5	1.66622	10.31	17.38	10.98	27.69	21.29	56.00	46.00	-28.31	-24.71
6	9.79988	10.59	17.30	9.64	27.89	20.23	60.00	50.00	-32.11	-29.77

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



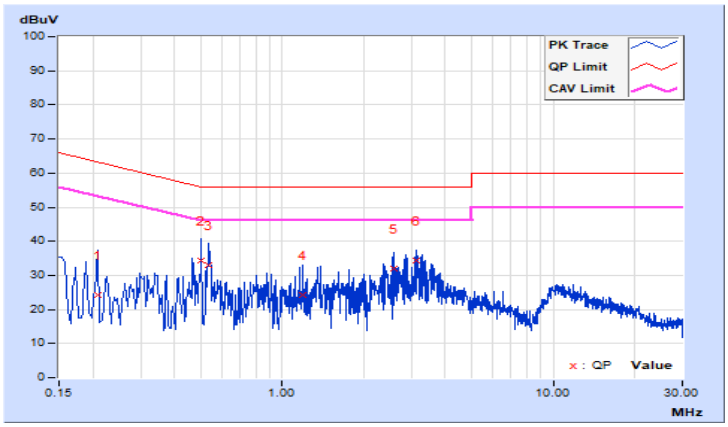
Mode B

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	Han Wu	Test Date	2021/6/25

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	0.20865	10.12	14.03	2.57	24.15	12.69	63.26	53.26	-39.11	-40.57
2	0.50190	10.19	24.08	8.06	34.27	18.25	56.00	46.00	-21.73	-27.75
3	0.53709	10.20	22.72	13.25	32.92	23.45	56.00	46.00	-23.08	-22.55
4	1.19397	10.27	13.92	3.27	24.19	13.54	56.00	46.00	-31.81	-32.46
5	2.58202	10.31	21.70	3.82	32.01	14.13	56.00	46.00	-23.99	-31.87
6	3.13333	10.34	23.98	6.11	34.32	16.45	56.00	46.00	-21.68	-29.55

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

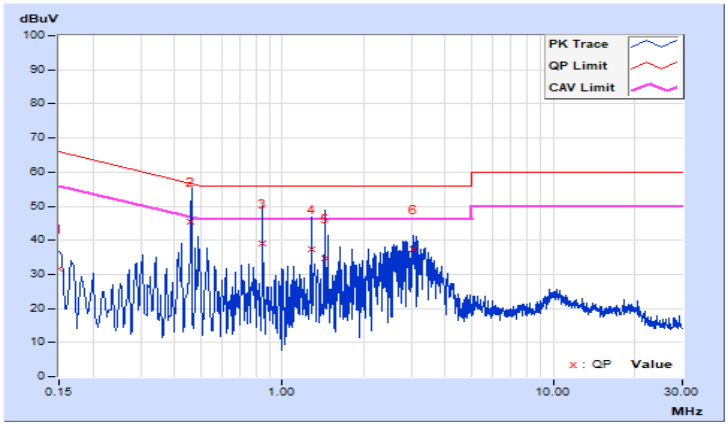


Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Han Wu	**Test Date**	2021/6/25

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	10.10	21.40	16.68	31.50	26.78	66.00	56.00	-34.50	-29.22
2	0.46135	10.21	35.24	13.06	45.45	23.27	56.67	46.67	-11.22	-23.40
3	0.84598	10.26	28.86	1.50	39.12	11.76	56.00	46.00	-16.88	-34.24
4	1.27999	10.29	27.22	8.46	37.51	18.75	56.00	46.00	-18.49	-27.25
5	1.43639	10.30	24.29	5.18	34.59	15.48	56.00	46.00	-21.41	-30.52
6	3.04340	10.38	27.03	9.06	37.41	19.44	56.00	46.00	-18.59	-26.56

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 $N_{ANT} \leq 4$;

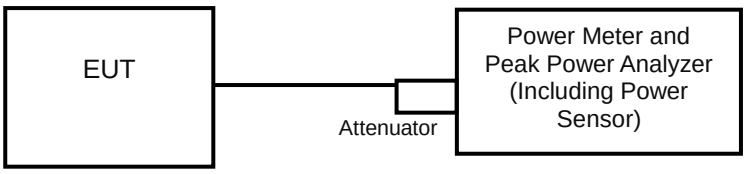
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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.

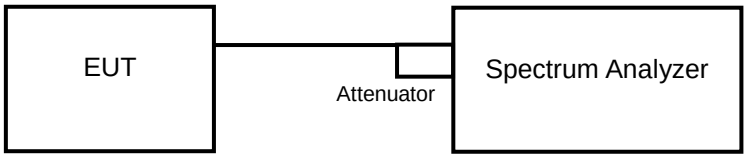
4.3.2 Test Setup

<Power Output Measurement>

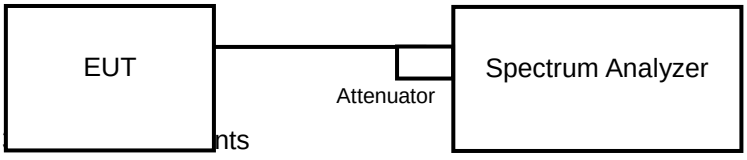


or

For straddle channel measurement:



<26 dB Bandwidth>



4.3. nts

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

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

For straddle channel power measurement refers to FCC KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 section II Measurement Procedures section E. 2.:

Method SA-1:

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW =1MHz.
3. Set the VBW ≥ 3 x RBW.
4. Number of points in sweep ≥ 2 Span / RBW.
5. Sweep time = auto.
6. If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.
7. Detector = RMS.
8. Trace average at least 100 traces in power averaging mode
9. Compute power by integrating the spectrum across the 26 dB EBW of the signal.

26 dB Bandwidth

a. Set RBW = approximately 1 % of the emission bandwidth.
b. Set the VBW ≥ 3 x 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:

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				
52	5260	17.62	16.48	102.273	20.10	24	Pass
60	5300	17.78	16.68	106.538	20.28	24	Pass
64	5320	17.76	16.63	105.729	20.24	24	Pass
100	5500	17.96	16.41	106.269	20.26	24	Pass
116	5580	17.63	16.82	106.027	20.25	24	Pass
140	5700	17.99	16.72	109.94	20.41	24	Pass
144	5720 (U-NII-2C)	17.45	16.05	95.862	19.82	22.91	Pass
144	5720 (U-NII-3)	11.01	9.56	21.655	13.3	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (22.22) = 24.47 dBm > 24 dBm.
2. 11 dBm + 10log (22.55) = 24.53 dBm > 24 dBm.
3. 11 dBm + 10log (22.14) = 24.45 dBm > 24 dBm.
4. 11 dBm + 10log (22.01) = 24.43 dBm > 24 dBm.
5. 11 dBm + 10log (21.40) = 24.30 dBm > 24 dBm.
6. 11 dBm + 10log (22.05) = 24.43 dBm > 24 dBm.
7. 11 dBm + 10log (15.80) = 22.99 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (22.42) = 24.51 dBm > 24 dBm.
2. 11 dBm + 10log (23.21) = 24.66 dBm > 24 dBm.
3. 11 dBm + 10log (22.23) = 24.47 dBm > 24 dBm.
4. 11 dBm + 10log (21.65) = 24.35 dBm > 24 dBm.
5. 11 dBm + 10log (22.22) = 24.47 dBm > 24 dBm.
6. 11 dBm + 10log (22.57) = 24.54 dBm > 24 dBm.
7. 11 dBm + 10log (15.53) = 22.91 dBm < 24 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				
52	5260	18.16	17.09	116.632	20.67	24	Pass
60	5300	18.52	17.52	127.615	21.06	24	Pass
64	5320	18.61	17.75	132.177	21.21	24	Pass
100	5500	18.31	16.77	115.298	20.62	24	Pass
116	5580	18.38	17.57	126.013	21.00	24	Pass
140	5700	16.47	15.94	83.625	19.22	24	Pass
144	5720 (U-NII-2C)	17.94	16.60	107.939	20.33	23.18	Pass
144	5720 (U-NII-3)	11.56	10.38	25.236	14.02	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (24.36) = 24.87 dBm > 24 dBm.
2. 11 dBm + 10log (22.93) = 24.60 dBm > 24 dBm.
3. 11 dBm + 10log (26.83) = 25.29 dBm > 24 dBm.
4. 11 dBm + 10log (28.96) = 25.62 dBm > 24 dBm.
5. 11 dBm + 10log (25.22) = 25.02 dBm > 24 dBm.
6. 11 dBm + 10log (23.65) = 24.74 dBm > 24 dBm.
7. 11 dBm + 10log (18.64) = 23.70 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (26.62) = 25.25 dBm > 24 dBm.
2. 11 dBm + 10log (25.43) = 25.05 dBm > 24 dBm.
3. 11 dBm + 10log (24.40) = 24.87 dBm > 24 dBm.
4. 11 dBm + 10log (23.28) = 24.67 dBm > 24 dBm.
5. 11 dBm + 10log (28.78) = 25.59 dBm > 24 dBm.
6. 11 dBm + 10log (21.13) = 24.25 dBm > 24 dBm.
7. 11 dBm + 10log (16.52) = 23.18 dBm < 24 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				
54	5270	21.27	20.04	234.893	23.71	24	Pass
62	5310	16.91	16.12	90.017	19.54	24	Pass
102	5510	16.04	14.89	71.011	18.51	24	Pass
110	5550	20.73	19.75	212.71	23.28	24	Pass
134	5670	18.02	17.04	113.969	20.57	24	Pass
142	5710 (U-NII-2C)	20.77	19.01	199.015	22.99	24	Pass
142	5710 (U-NII-3)	9.68	9.32	17.84	12.51	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (82.38) = 30.16 dBm > 24 dBm.
2. 11 dBm + 10log (44.58) = 27.49 dBm > 24 dBm.
3. 11 dBm + 10log (45.20) = 27.55 dBm > 24 dBm.
4. 11 dBm + 10log (78.18) = 29.93 dBm > 24 dBm.
5. 11 dBm + 10log (48.65) = 27.87 dBm > 24 dBm.
6. 11 dBm + 10log (54.34) = 28.35 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (77.41) = 29.89 dBm > 24 dBm.
2. 11 dBm + 10log (44.86) = 27.52 dBm > 24 dBm.
3. 11 dBm + 10log (45.40) = 27.57 dBm > 24 dBm.
4. 11 dBm + 10log (77.99) = 29.92 dBm > 24 dBm.
5. 11 dBm + 10log (45.66) = 27.60 dBm > 24 dBm.
6. 11 dBm + 10log (54.28) = 28.35 dBm > 24 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				
58	5290	15.59	14.92	67.27	18.28	24	Pass
106	5530	15.24	14.17	59.541	17.75	24	Pass
122	5610	18.04	16.93	112.997	20.53	24	Pass
138	5690 (U-NII-2C)	21.08	19.72	221.989	23.46	24	Pass
138	5690 (U-NII-3)	6.13	6.01	8.092	9.08	30	Pass

Note:

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

Chain 0

1. 11 dBm + 10log (80.93) = 30.08 dBm > 24 dBm.
2. 11 dBm + 10log (80.95) = 30.08 dBm > 24 dBm.
3. 11 dBm + 10log (180.45) = 33.56 dBm > 24 dBm.
4. 11 dBm + 10log (133.47) = 32.25 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (81.09) = 30.09 dBm > 24 dBm.
2. 11 dBm + 10log (81.31) = 30.10 dBm > 24 dBm.
3. 11 dBm + 10log (158.03) = 32.99 dBm > 24 dBm.
4. 11 dBm + 10log (129.21) = 32.11 dBm > 24 dBm.

Beamforming Mode

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				
52	5260	15.15	14.08	58.32	17.66	21.69	Pass
60	5300	15.51	14.51	63.812	18.05	21.69	Pass
64	5320	15.60	14.74	66.093	18.20	21.69	Pass
100	5500	15.30	13.76	57.653	17.61	21.69	Pass
116	5580	15.37	14.56	63.011	17.99	21.69	Pass
140	5700	13.46	12.93	41.816	16.21	21.69	Pass
144	5720 (U-NII-2C)	14.93	13.59	53.973	17.32	20.87	Pass
144	5720 (U-NII-3)	8.55	7.37	12.619	11.01	27.69	Pass

Note:

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

5260 ~ 5700MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 24-(8.31-6) = 21.69 dBm.

5720 (U-NII-2C)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 23.18-(8.31-6) = 20.87 dBm.

5720 (U-NII-3)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 dBm.

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

Chain 0

1. 11 dBm + 10log (24.36) = 24.87 dBm > 24 dBm.
2. 11 dBm + 10log (22.93) = 24.60 dBm > 24 dBm.
3. 11 dBm + 10log (26.83) = 25.29 dBm > 24 dBm.
4. 11 dBm + 10log (28.96) = 25.62 dBm > 24 dBm.
5. 11 dBm + 10log (25.22) = 25.02 dBm > 24 dBm.
6. 11 dBm + 10log (23.65) = 24.74 dBm > 24 dBm.
7. 11 dBm + 10log (18.64) = 23.70 dBm < 24 dBm.

Chain 1

1. 11 dBm + 10log (26.62) = 25.25 dBm > 24 dBm.
2. 11 dBm + 10log (25.43) = 25.05 dBm > 24 dBm.
3. 11 dBm + 10log (24.40) = 24.87 dBm > 24 dBm.
4. 11 dBm + 10log (23.28) = 24.67 dBm > 24 dBm.
5. 11 dBm + 10log (28.78) = 25.59 dBm > 24 dBm.
6. 11 dBm + 10log (21.13) = 24.25 dBm > 24 dBm.
7. 11 dBm + 10log (16.52) = 23.18 dBm < 24 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				
54	5270	18.26	17.03	117.455	20.70	21.69	Pass
62	5310	13.90	13.11	45.012	16.53	21.69	Pass
102	5510	13.03	11.88	35.508	15.50	21.69	Pass
110	5550	17.72	16.74	106.362	20.27	21.69	Pass
134	5670	15.01	14.03	56.989	17.56	21.69	Pass
142	5710 (U-NII-2C)	17.76	16.00	99.514	19.98	21.69	Pass
142	5710 (U-NII-3)	6.67	6.31	8.921	9.50	27.69	Pass

Note:

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

5270 ~ 5710 (U-NII-2C)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 24-(8.31-6) = 21.69 dBm.

5710 (U-NII-3)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 dBm.

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

Chain 0

1. 11 dBm + 10log (82.38) = 30.16 dBm > 24 dBm.
2. 11 dBm + 10log (44.58) = 27.49 dBm > 24 dBm.
3. 11 dBm + 10log (45.20) = 27.55 dBm > 24 dBm.
4. 11 dBm + 10log (78.18) = 29.93 dBm > 24 dBm.
5. 11 dBm + 10log (48.65) = 27.87 dBm > 24 dBm.
6. 11 dBm + 10log (54.34) = 28.35 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (77.41) = 29.89 dBm > 24 dBm.
2. 11 dBm + 10log (44.86) = 27.52 dBm > 24 dBm.
3. 11 dBm + 10log (45.40) = 27.57 dBm > 24 dBm.
4. 11 dBm + 10log (77.99) = 29.92 dBm > 24 dBm.
5. 11 dBm + 10log (45.66) = 27.60 dBm > 24 dBm.
6. 11 dBm + 10log (54.28) = 28.35 dBm > 24 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				
58	5290	12.58	11.91	33.637	15.27	21.69	Pass
106	5530	12.23	11.16	29.773	14.74	21.69	Pass
122	5610	15.03	13.92	56.502	17.52	21.69	Pass
138	5690 (U-NII-2C)	18.07	16.71	111.002	20.45	21.69	Pass
138	5690 (U-NII-3)	3.12	3.00	4.046	6.07	27.69	Pass

Note:

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

5290 ~ 5690 (U-NII-2C)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 24-(8.31-6) = 21.69 dBm.

5690 (U-NII-3)MHz Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 dBm.

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

Chain 0

1. 11 dBm + 10log (80.93) = 30.08 dBm > 24 dBm.
2. 11 dBm + 10log (80.95) = 30.08 dBm > 24 dBm.
3. 11 dBm + 10log (180.45) = 33.56 dBm > 24 dBm.
4. 11 dBm + 10log (133.47) = 32.25 dBm > 24 dBm.

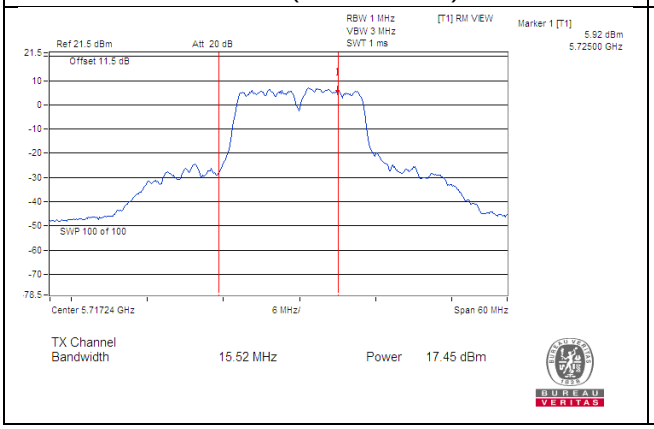
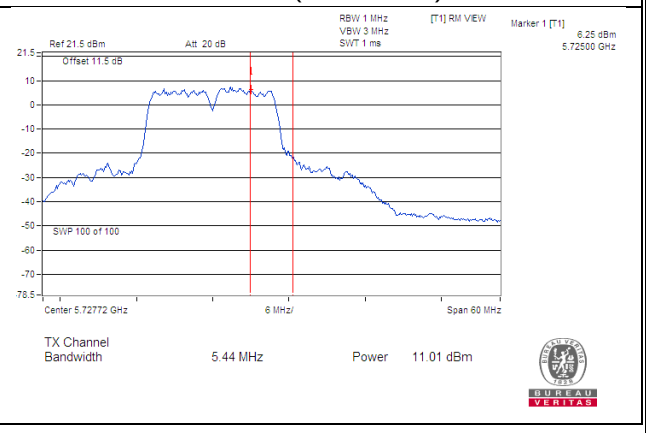
Chain 1

1. 11 dBm + 10log (81.09) = 30.09 dBm > 24 dBm.
2. 11 dBm + 10log (81.31) = 30.10 dBm > 24 dBm.
3. 11 dBm + 10log (158.03) = 32.99 dBm > 24 dBm.
4. 11 dBm + 10log (129.21) = 32.11 dBm > 24 dBm.

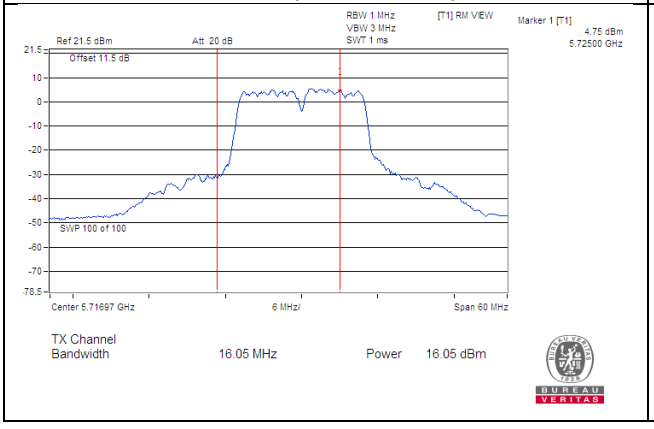
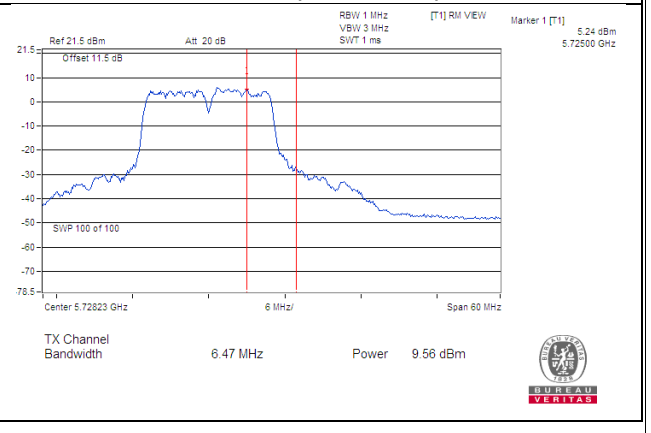
Straddle channel power plots:

802.11a

Chain 0

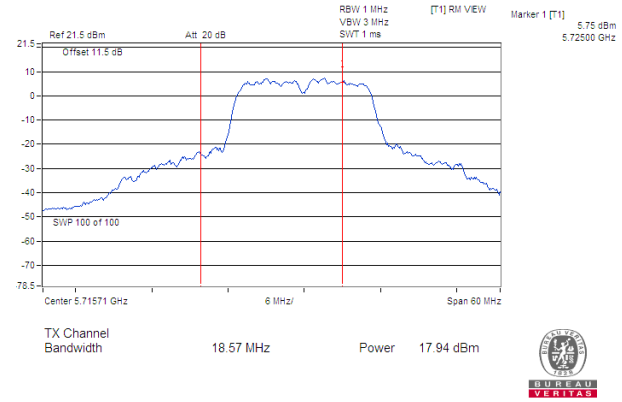
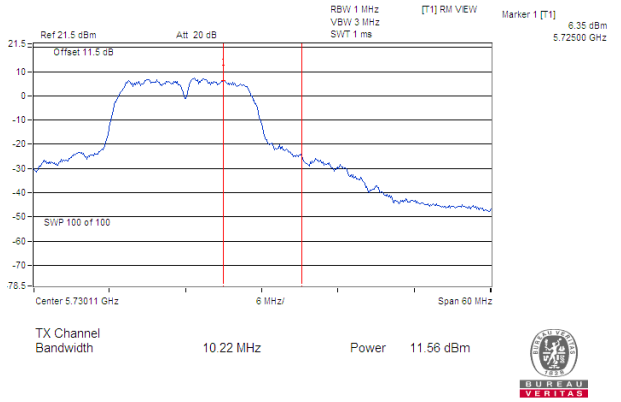
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	

Chain 1

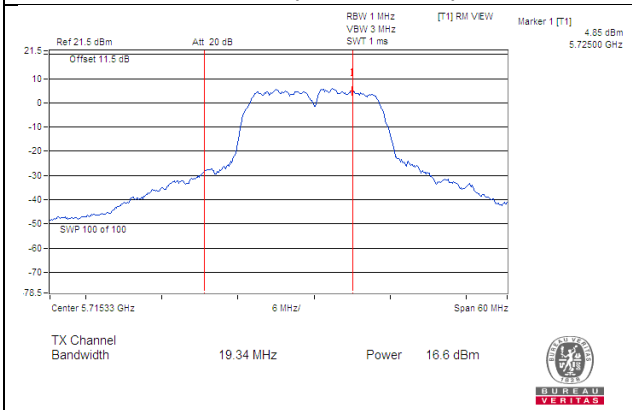
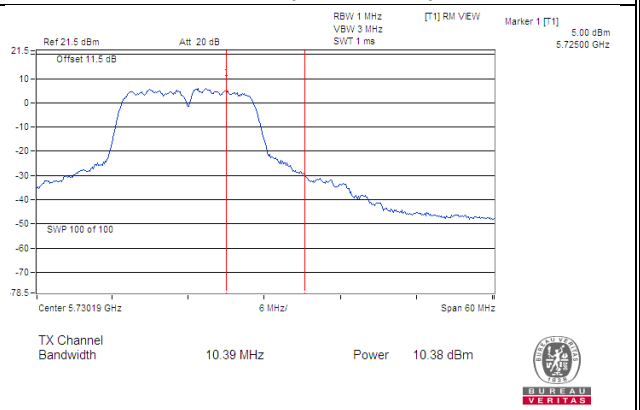
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	

802.11ax (HE20)

Chain 0

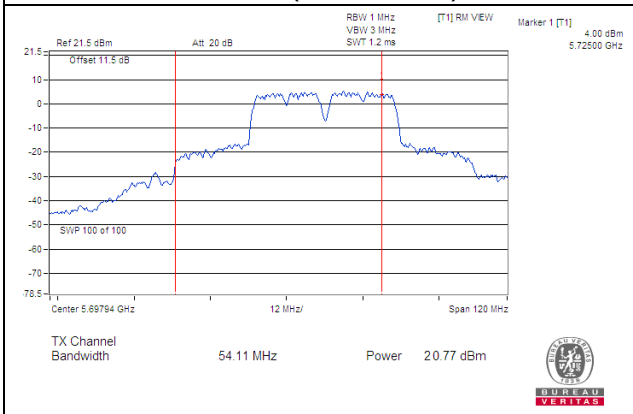
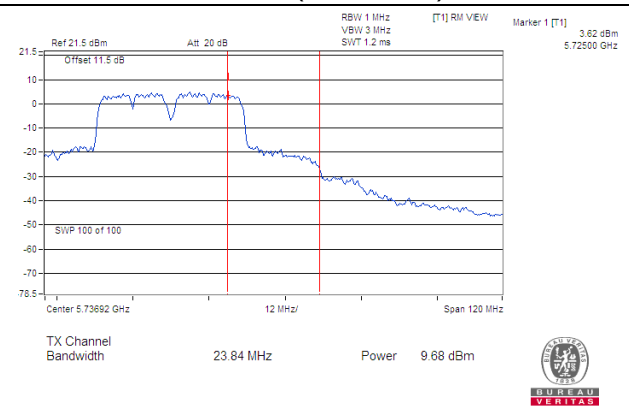
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	
TX Channel Bandwidth 18.57 MHz Power 17.94 dBm	TX Channel Bandwidth 10.22 MHz Power 11.56 dBm

Chain 1

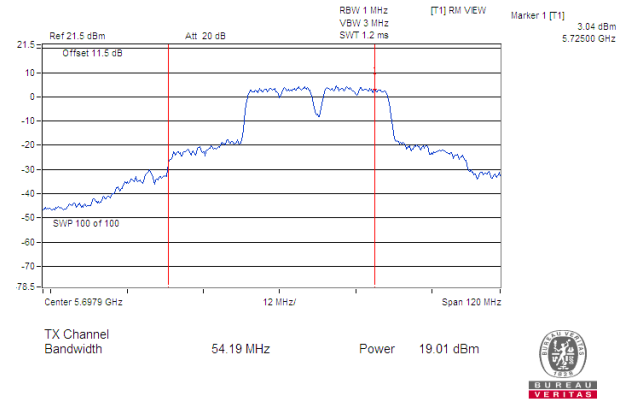
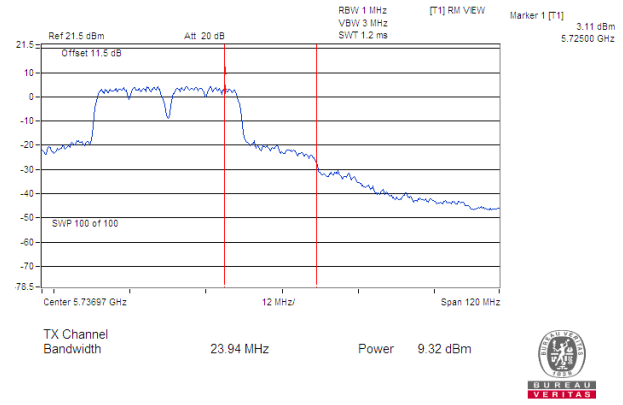
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	
TX Channel Bandwidth 19.34 MHz Power 16.6 dBm	TX Channel Bandwidth 10.39 MHz Power 10.38 dBm

802.11ax (HE40)

Chain 0

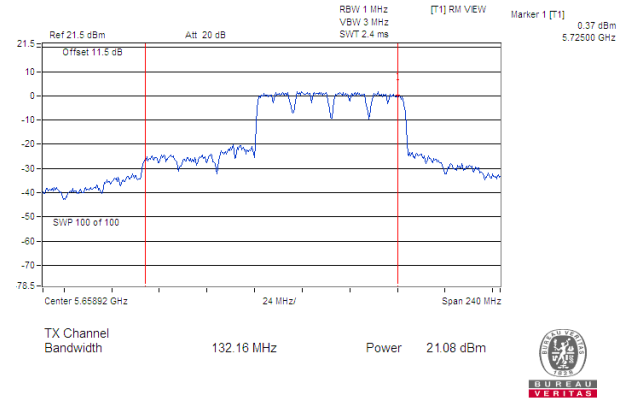
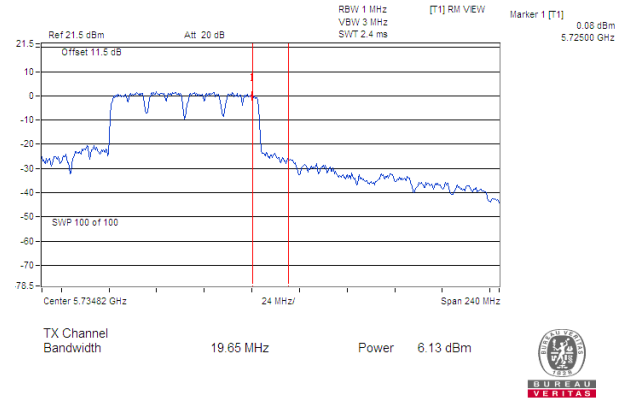
CH 142 (For U-NII-2C)	CH 142 (For U-NII-3)
	

Chain 1

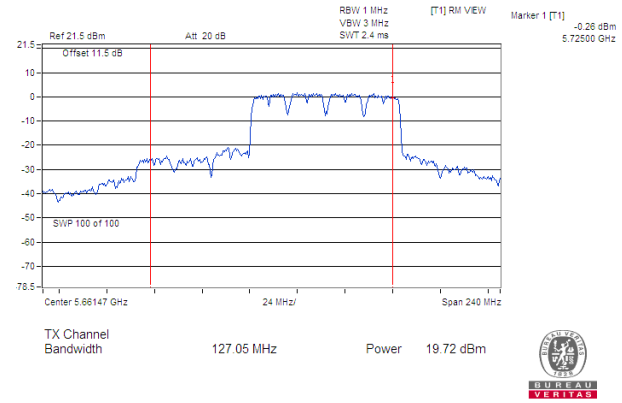
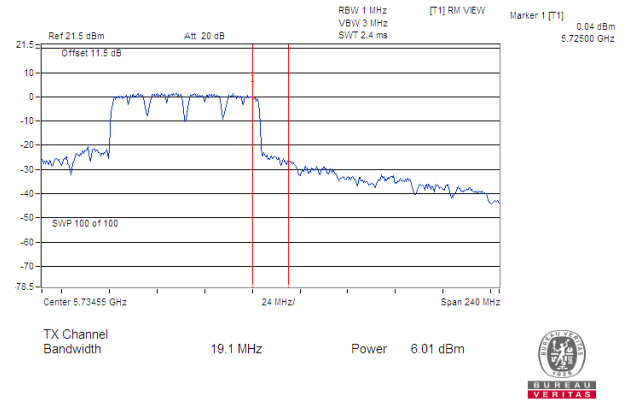
CH 142 (For U-NII-2C)	CH 142 (For U-NII-3)
	

802.11ax (HE80)

Chain 0

CH 138 (For U-NII-2C)	CH 138 (For U-NII-3)
	

Chain 1

CH 138 (For U-NII-2C)	CH 138 (For U-NII-3)
	

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	22.22	22.42
60	5300	22.55	23.21
64	5320	22.14	22.23
100	5500	22.01	21.65
116	5580	21.40	22.22
140	5700	22.05	22.57
144	5720 (U-NII-2C)	15.80	15.53
144	5720 (U-NII-3)	6.41	5.53

802.11ax (HE20)

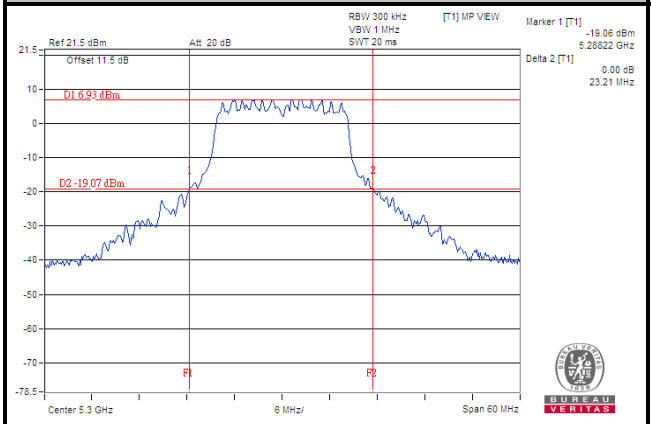
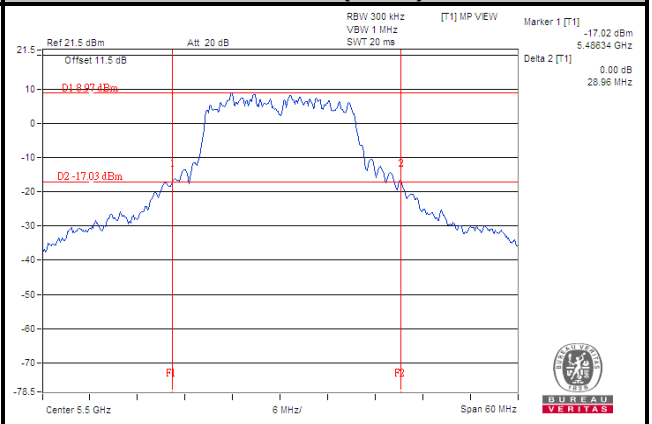
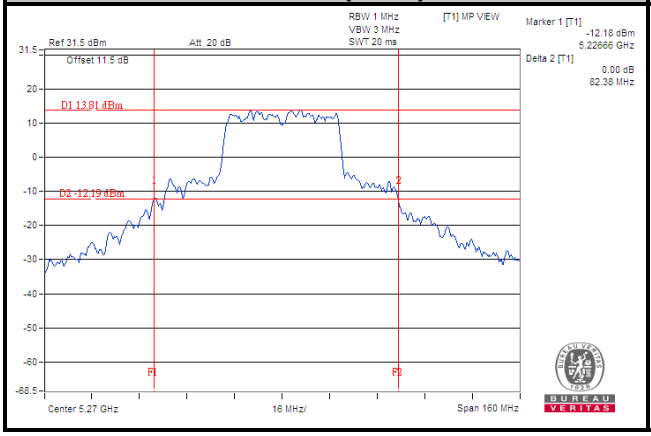
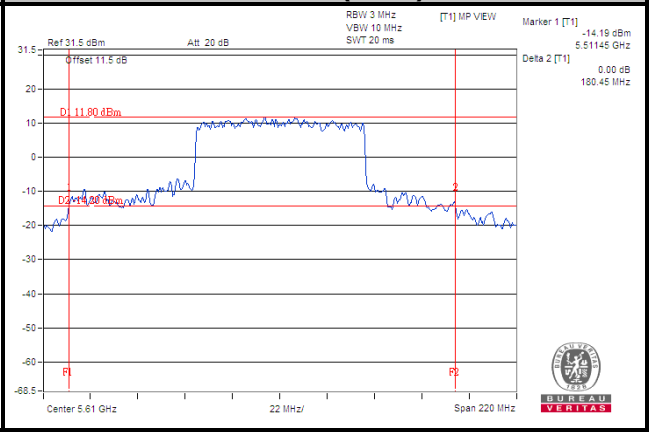
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	24.36	26.62
60	5300	22.93	25.43
64	5320	26.83	24.40
100	5500	28.96	23.28
116	5580	25.22	28.78
140	5700	23.65	21.13
144	5720 (U-NII-2C)	18.64	16.52
144	5720 (U-NII-3)	9.43	7.50

802.11ax (HE40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	82.38	77.41
62	5310	44.58	44.86
102	5510	45.20	45.40
110	5550	78.18	77.99
134	5670	48.65	45.66
142	5710 (U-NII-2C)	54.34	54.28
142	5710 (U-NII-3)	24.09	24.01

802.11ax (HE80)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	80.93	81.09
106	5530	80.95	81.31
122	5610	180.45	158.03
138	5690 (U-NII-2C)	133.47	129.21
138	5690 (U-NII-3)	31.26	23.05

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

EUT HIGHEST AND LOWEST CONDUCTED POWER

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	106.538	20.28
5470~5725	109.94	20.41

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ax (HE20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	132.177	21.21
5470~5725	126.013	21.00

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ax (HE40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	234.893	23.71
5470~5725	212.71	23.28

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ax (HE80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	67.27	18.28
5470~5725	221.989	23.46

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

Beamforming Mode

802.11ax (HE20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	66.093	18.20
5470~5725	63.011	17.99

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ax (HE40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	117.455	20.70
5470~5725	106.362	20.27

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

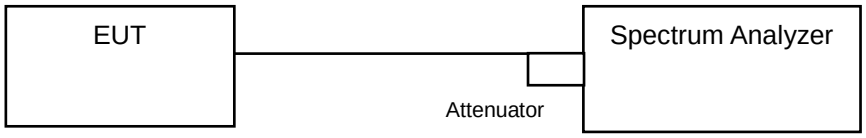
802.11ax (HE80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	33.637	15.27
5470~5725	111.002	20.45

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

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
52	5260	16.80	16.80
60	5300	16.80	16.80
64	5320	16.68	16.68
100	5500	16.68	16.56
116	5580	16.68	16.56
140	5700	16.80	16.80
144	5720 (U-NII-2C)	13.52	13.40
144	5720 (U-NII-3)	3.28	3.16

802.11ax (HE20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.20	19.20
60	5300	19.08	19.20
64	5320	19.20	19.08
100	5500	19.44	19.08
116	5580	19.20	19.32
140	5700	19.32	18.84
144	5720 (U-NII-2C)	14.60	14.60
144	5720 (U-NII-3)	4.72	4.48

802.11ax (HE40)

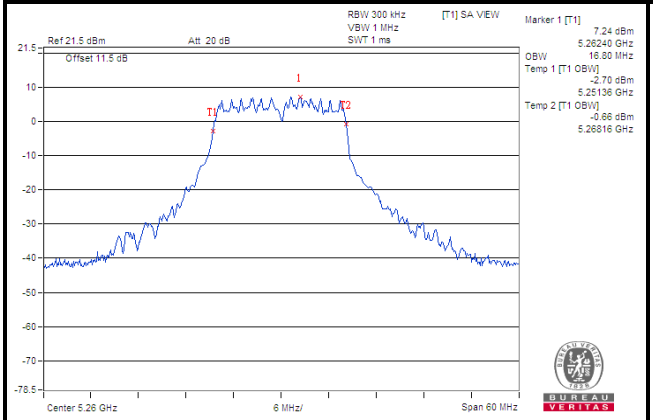
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	44.40	40.08
62	5310	38.40	38.40
102	5510	38.40	38.40
110	5550	46.32	44.64
134	5670	38.64	38.40
142	5710 (U-NII-2C)	35.40	35.16
142	5710 (U-NII-3)	5.16	4.92

802.11ax (HE80)

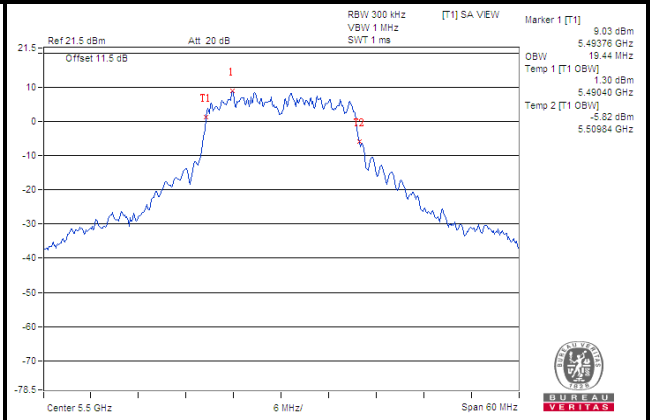
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	76.80	77.28
106	5530	77.28	77.28
122	5610	87.36	78.24
138	5690 (U-NII-2C)	77.24	74.36
138	5690 (U-NII-3)	3.88	3.88

Spectrum Plot of Worst Value

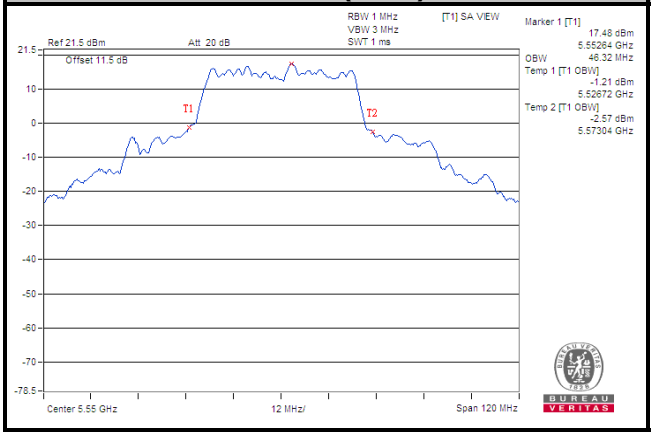
802.11a



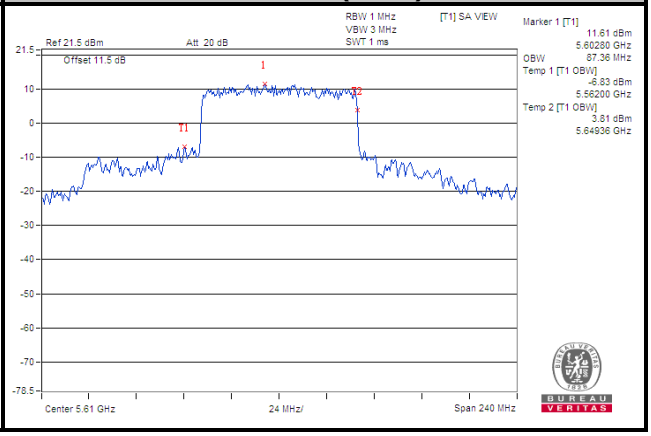
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

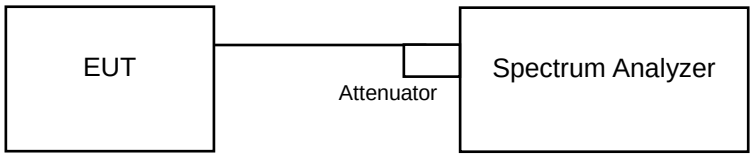


4.5 Peak Power Spectral Density Measurement

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

Using method SA-2 Duty cycle ≥98%

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.

Using method SA-2 Duty cycle <98%

6. Set span to encompass the entire emission bandwidth (EBW) of the signal.
7. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
8. Sweep time = auto, trigger set to “free run”.
9. Trace average at least 100 traces in power averaging mode.
10. 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-2A, U-NII-2C Band

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				
52	5260	5.22	4.61	0.36	8.30	8.69	Pass
60	5300	5.15	4.73	0.36	8.32	8.69	Pass
64	5320	5.29	4.69	0.36	8.37	8.69	Pass
100	5500	5.12	5.02	0.36	8.44	8.69	Pass
116	5580	5.11	4.97	0.36	8.41	8.69	Pass
140	5700	5.10	4.87	0.36	8.36	8.69	Pass
144	5720 (U-NII-2C)	5.11	5.05	0.36	8.45	8.69	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-2A, U-NII-2C Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 11-(8.31-6) = 8.69 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				
52	5260	5.30	5.03	0.19	8.36	8.69	Pass
60	5300	5.38	5.03	0.19	8.41	8.69	Pass
64	5320	5.29	5.09	0.19	8.39	8.69	Pass
100	5500	5.40	5.06	0.19	8.43	8.69	Pass
116	5580	5.27	5.06	0.19	8.36	8.69	Pass
140	5700	3.84	4.08	0.19	7.16	8.69	Pass
144	5720 (U-NII-2C)	5.40	5.19	0.19	8.49	8.69	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-2A, U-NII-2C Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 11-(8.31-6) = 8.69 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				
54	5270	5.45	5.09	0.21	8.49	8.69	Pass
62	5310	1.00	0.51	0.21	3.98	8.69	Pass
102	5510	0.14	-0.84	0.21	2.90	8.69	Pass
110	5550	5.32	5.07	0.21	8.42	8.69	Pass
134	5670	2.33	1.59	0.21	5.20	8.69	Pass
142	5710 (U-NII-2C)	5.34	5.06	0.21	8.42	8.69	Pass

Note:

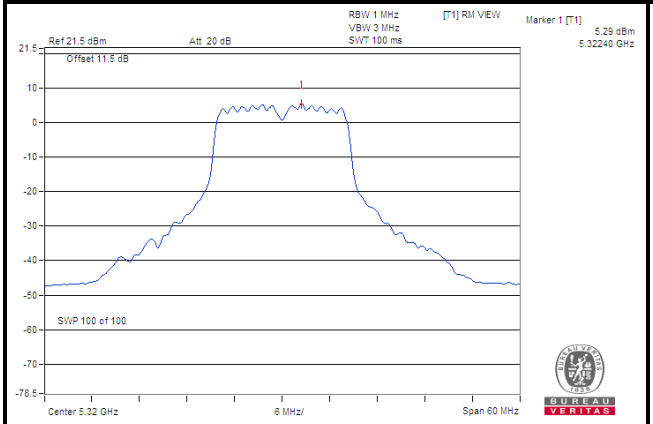
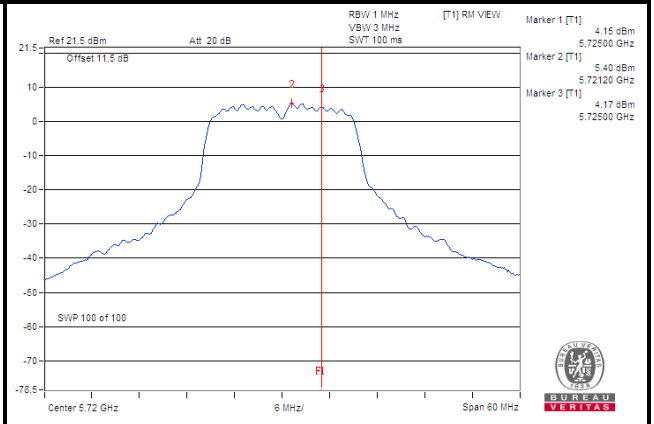
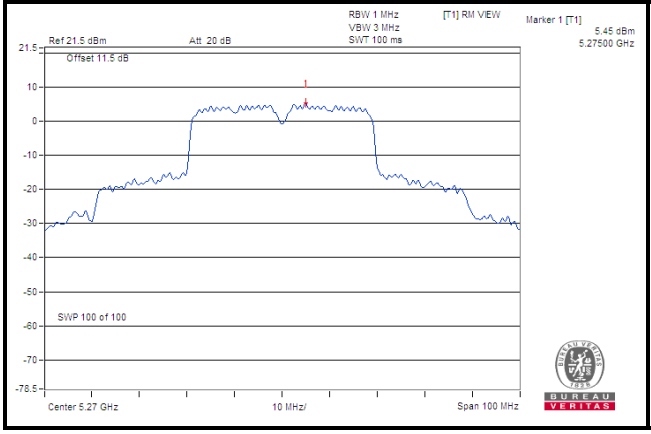
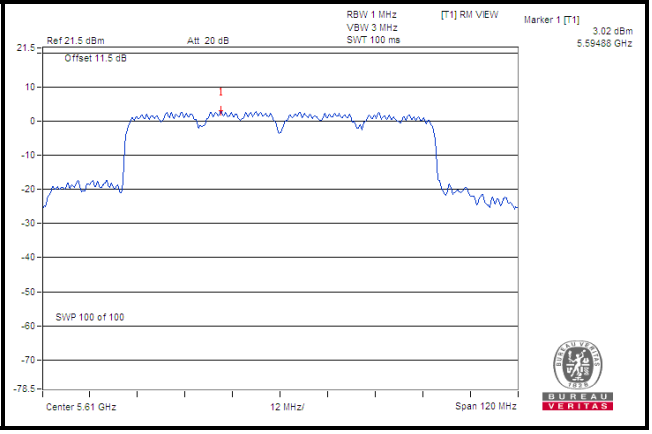
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-2A, U-NII-2C Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 11-(8.31-6) = 8.69 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Channel	Frequency (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
58	5290	-3.02	-2.99	0.01	8.69	Pass
106	5530	-3.78	-3.74	-0.75	8.69	Pass
122	5610	3.02	2.49	5.77	8.69	Pass
138	5690 (U-NII-2C)	2.72	2.23	5.49	8.69	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-2A, U-NII-2C Band:**
   Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 11-(8.31-6) = 8.69 dBm.

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	144	5720 (U-NII-3)	-1.09	1.13	3.01	0.36	4.5	27.69	Pass
1	144	5720 (U-NII-3)	-0.93	1.29	3.01	0.36	4.66	27.69	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 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	144	5720 (U-NII-3)	-2.42	-0.2	3.01	0.19	3	27.69	Pass
1	144	5720 (U-NII-3)	-2.27	-0.05	3.01	0.19	3.15	27.69	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 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	142	5710 (U-NII-3)	-3.71	-1.49	3.01	0.21	1.73	27.69	Pass
1	142	5710 (U-NII-3)	-3.94	-1.72	3.01	0.21	1.5	27.69	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

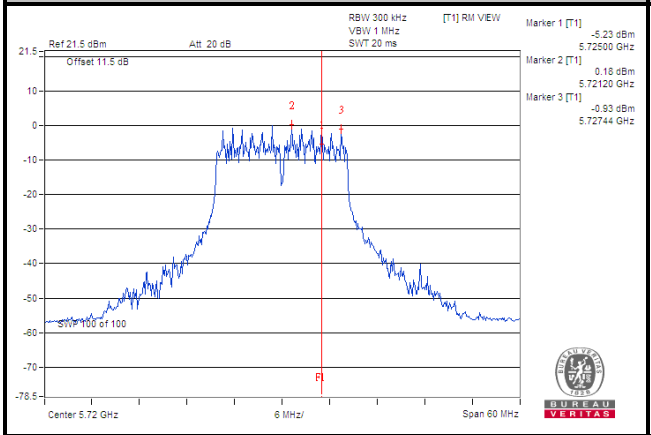
TX Chain	Channel	Frequency (MHz)	PSD		10 log (N=2) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300 kHz)	(dBm/500 kHz)				
0	138	5690 (U-NII-3)	-8.01	-5.79	3.01	-2.78	27.69	Pass
1	138	5690 (U-NII-3)	-8.22	-6	3.01	-2.99	27.69	Pass

Note:

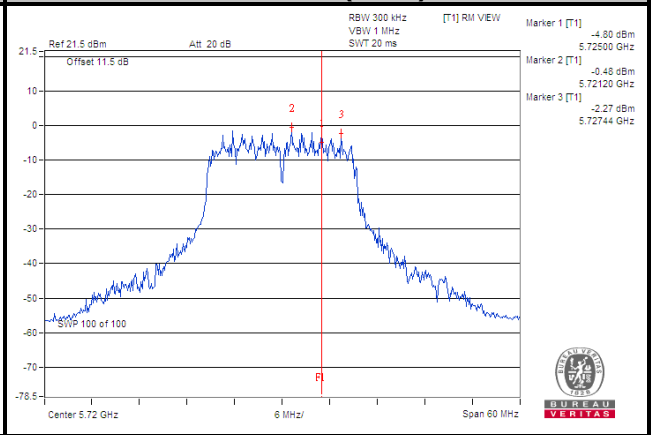
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.
2. Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 8.31$ dBi , so the power density limit shall be reduced to 30-(8.31-6) = 27.69 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

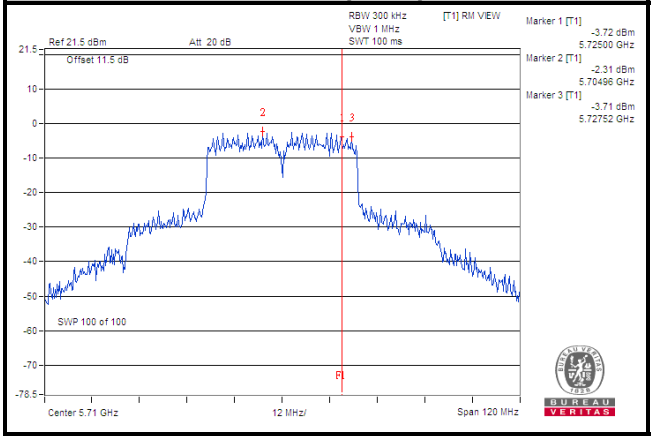
802.11a



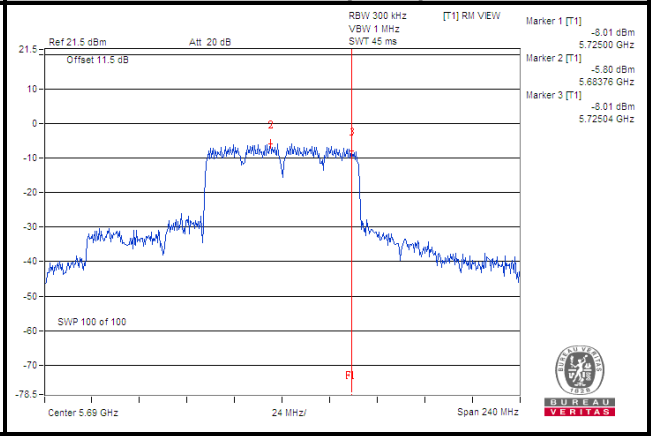
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

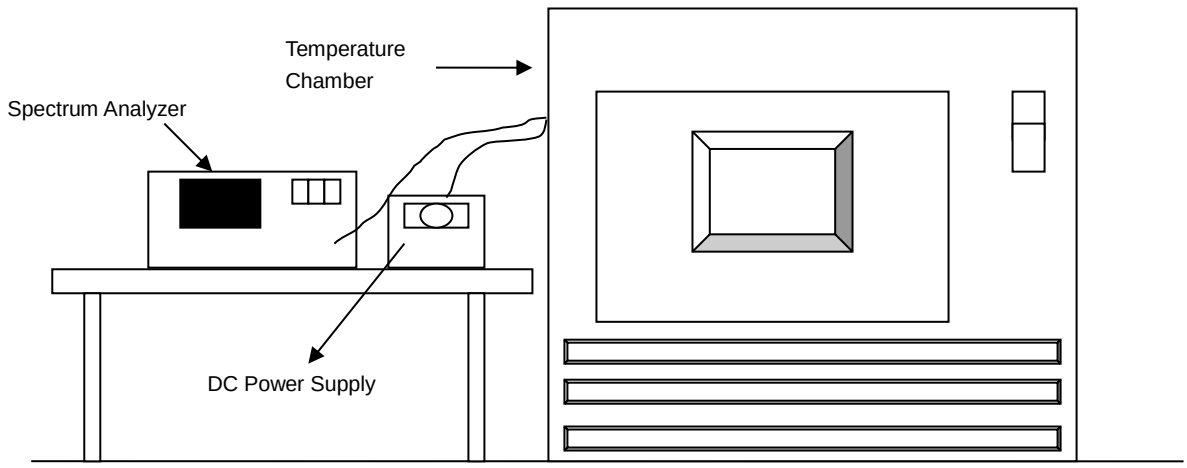


4.6 Frequency Stability

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260 MHz									
Temp. (℃)	Power Supply (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	5260.0187	PASS	5260.0188	PASS	5260.0171	PASS	5260.0197	PASS
30	120	5260.0049	PASS	5259.9998	PASS	5260.0028	PASS	5260.004	PASS
20	120	5260.0023	PASS	5260.0007	PASS	5260.0009	PASS	5260.0042	PASS
10	120	5259.9886	PASS	5259.9907	PASS	5259.9885	PASS	5259.9898	PASS
0	120	5260.0087	PASS	5260.0091	PASS	5260.0094	PASS	5260.0129	PASS

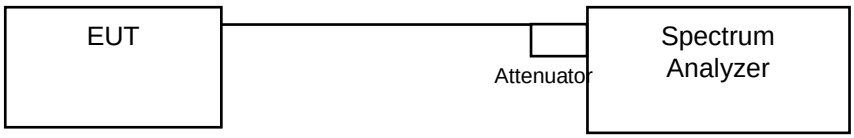
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5260.0018	PASS	5260.0013	PASS	5260.0009	PASS	5260.0035	PASS
	120	5260.0023	PASS	5260.0007	PASS	5260.0009	PASS	5260.0042	PASS
	102	5260.0022	PASS	5260.0014	PASS	5260.0008	PASS	5260.0035	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		
144	5720 (U-NII-3)	2.76	2.76	0.5	Pass

802.11ax (HE20)

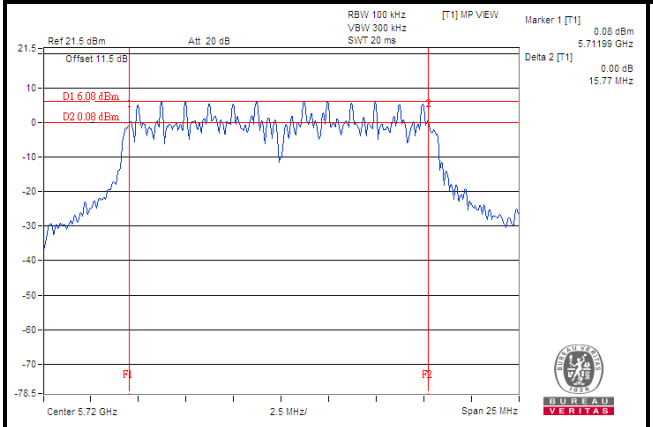
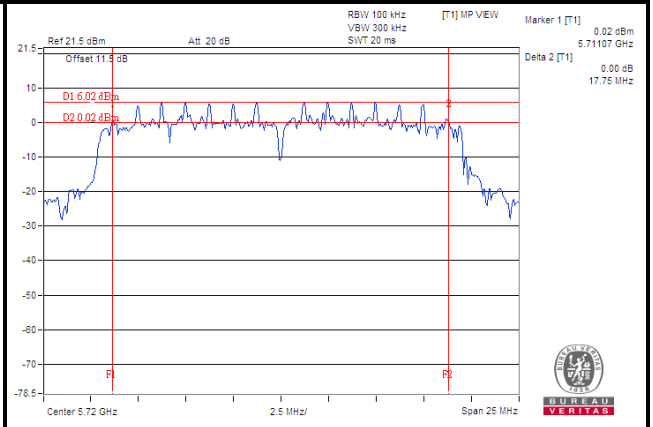
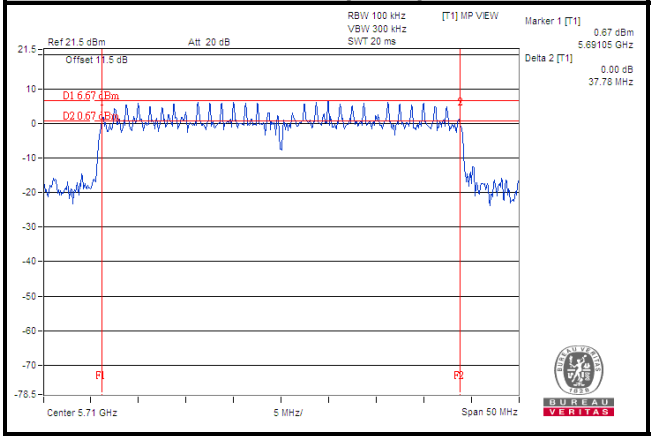
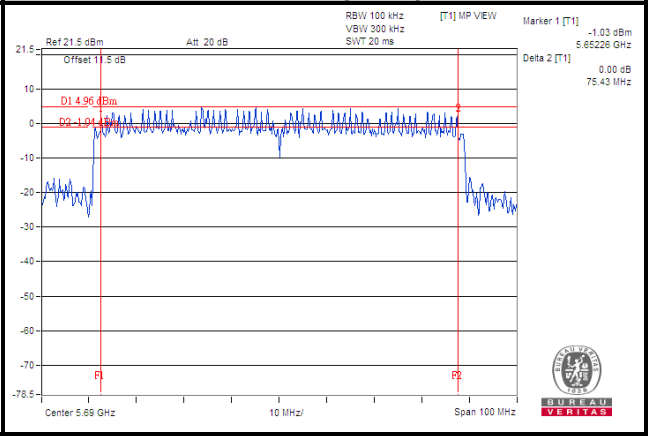
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 (U-NII-3)	3.82	3.82	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 (U-NII-3)	3.83	3.83	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 (U-NII-3)	2.69	2.75	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

Note:
For Ch144 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
For Ch142 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz
For Ch138 (UNII-3 Band): The 6 dB bandwidth above 5725 MHz = Marker 1 + Delta 2 – 5725 MHz

5 Pictures of Test Arrangements

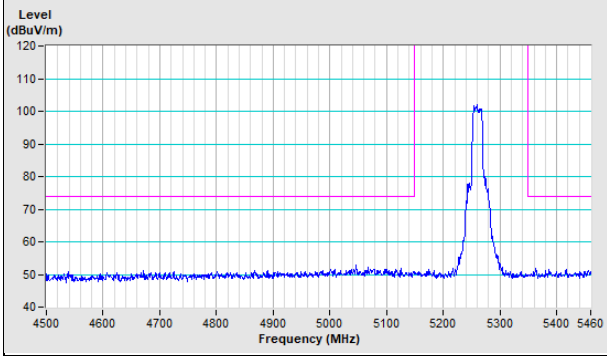
Please refer to the attached file (Test Setup Photo).

Annex A- Band Edge Measurement

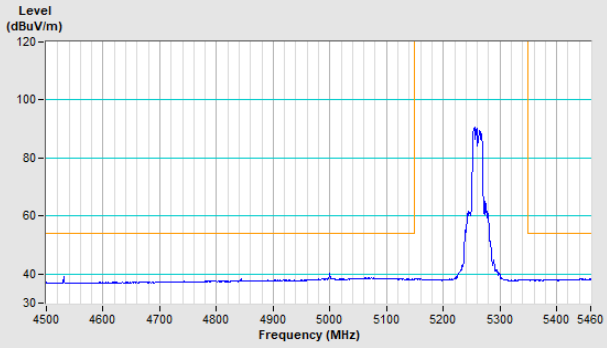
802.11a

802.11a Channel 52

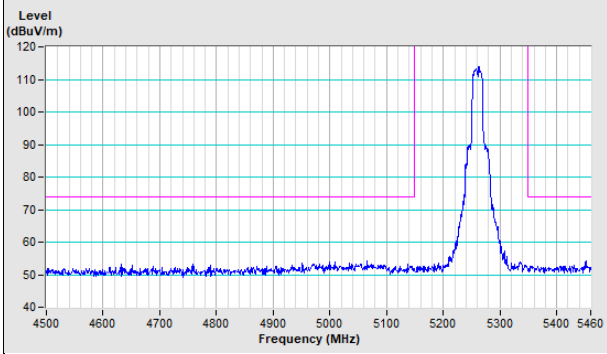
Horizontal (Peak)



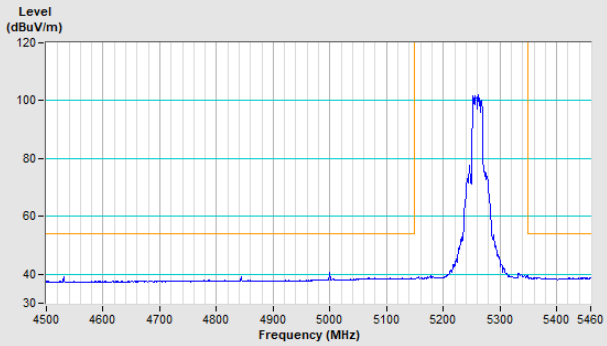
Horizontal (Average)



Vertical (Peak)

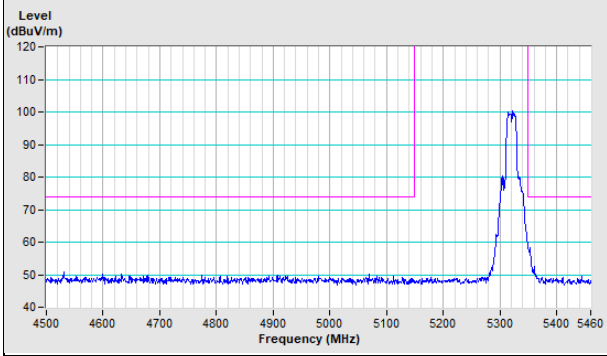


Vertical (Average)

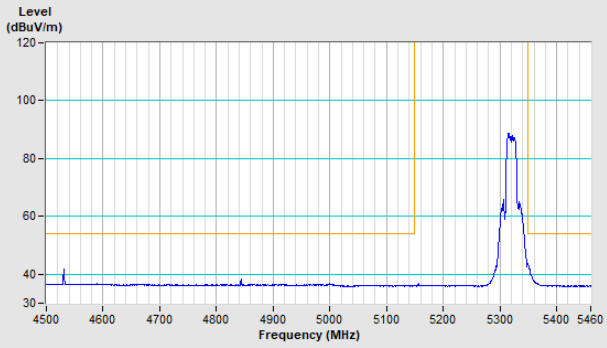


802.11a Channel 64

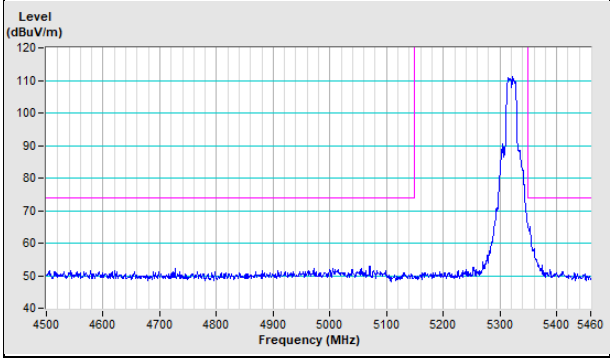
Horizontal (Peak)



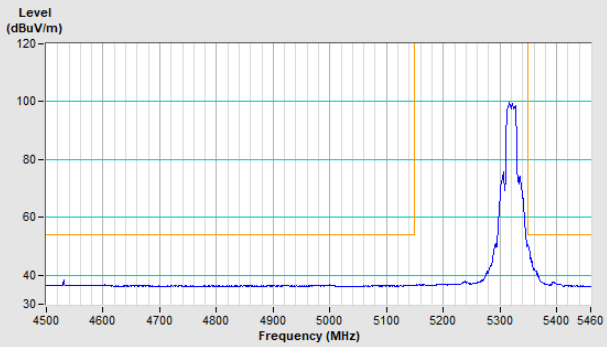
Horizontal (Average)



Vertical (Peak)

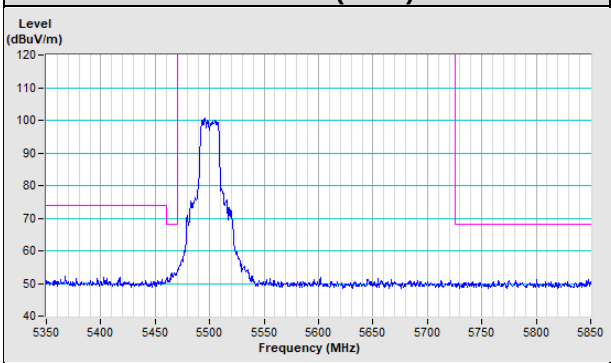


Vertical (Average)

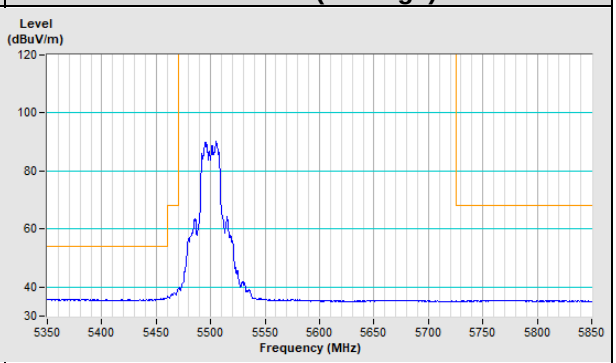


802.11a Channel 100

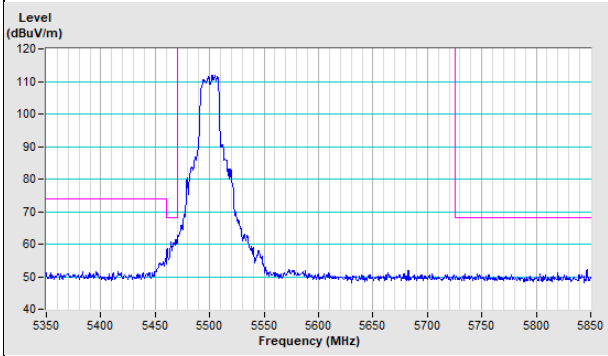
Horizontal (Peak)



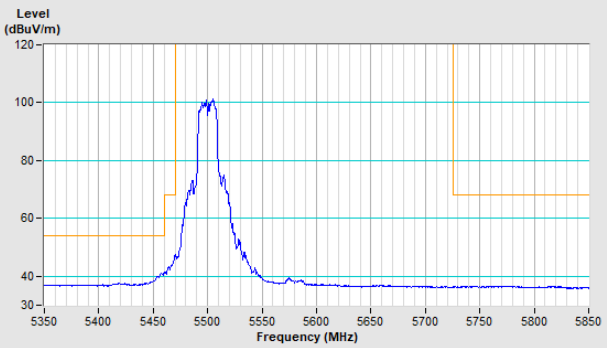
Horizontal (Average)



Vertical (Peak)

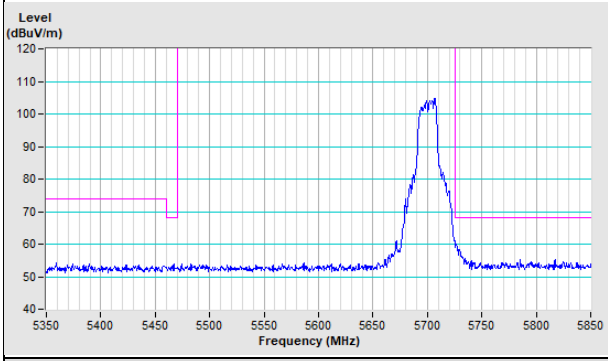


Vertical (Average)

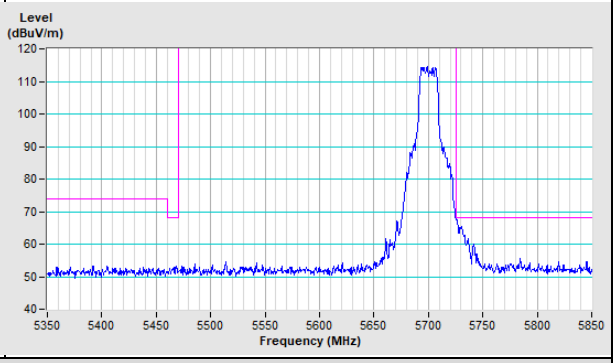


802.11a Channel 140

Horizontal (Peak)

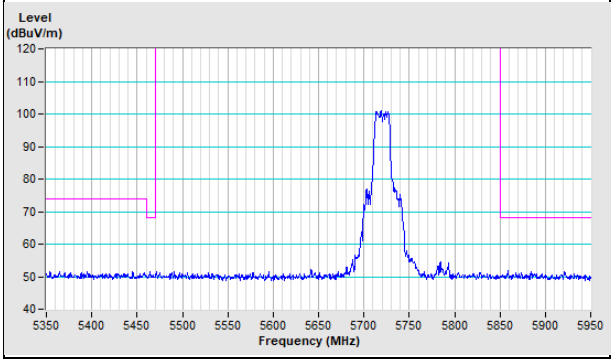


Vertical (Peak)

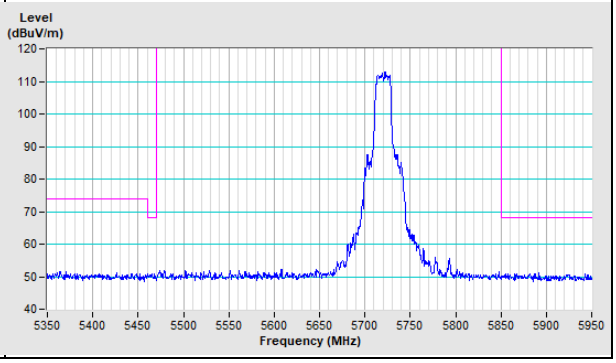


802.11a Channel 144

Horizontal (Peak)



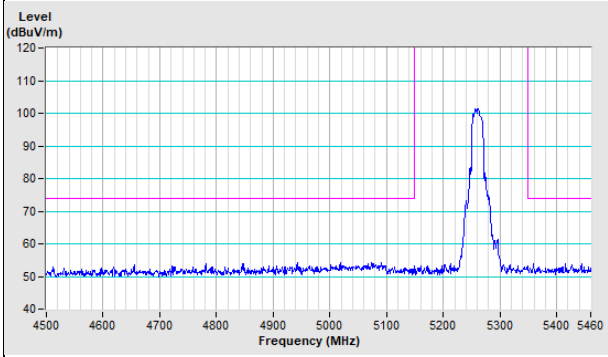
Vertical (Peak)



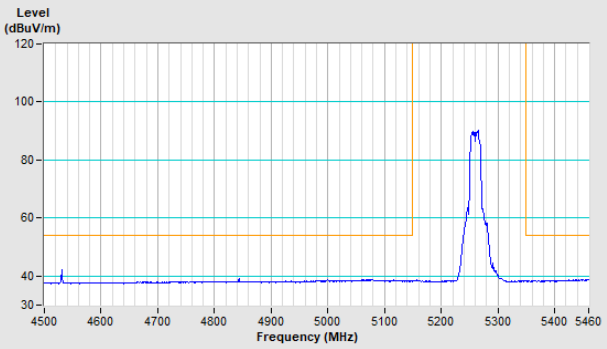
802.11ax (HE20)

802.11ax (HE20) Channel 52

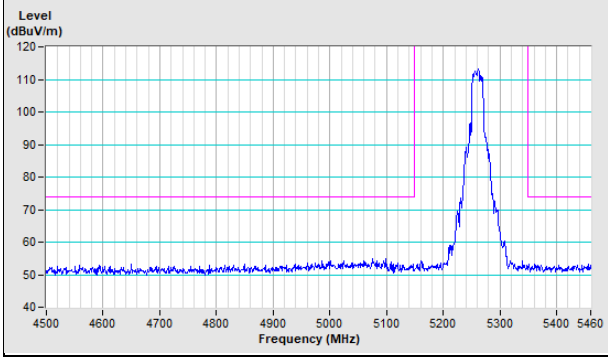
Horizontal (Peak)



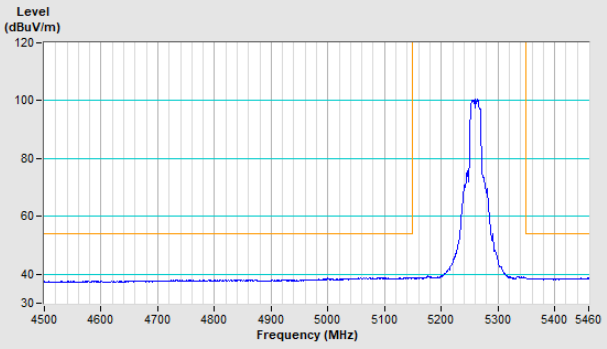
Horizontal (Average)



Vertical (Peak)

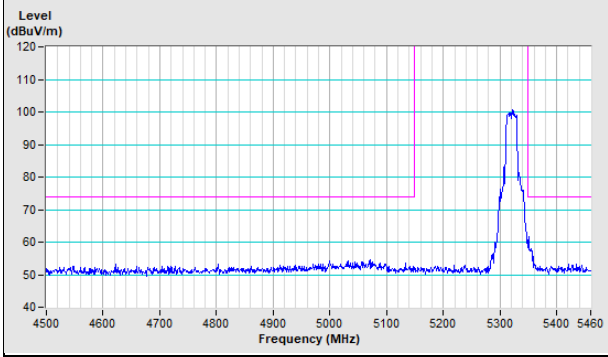


Vertical (Average)

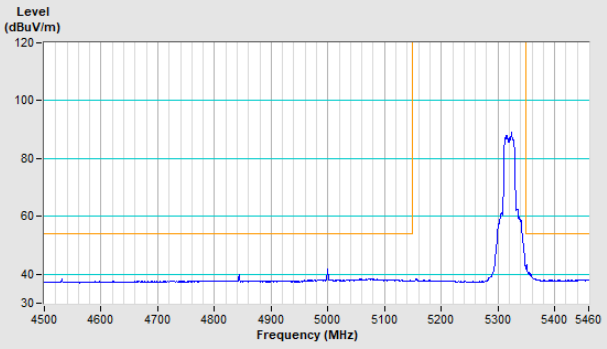


802.11ax (HE20) Channel 64

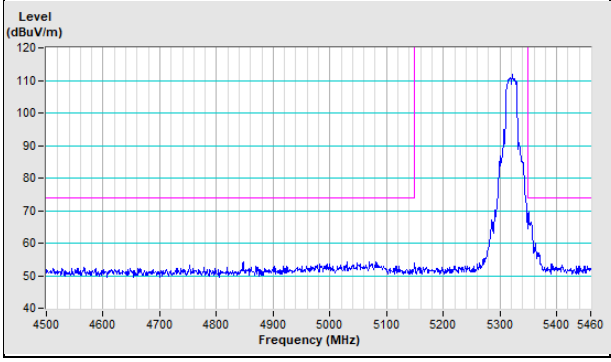
Horizontal (Peak)



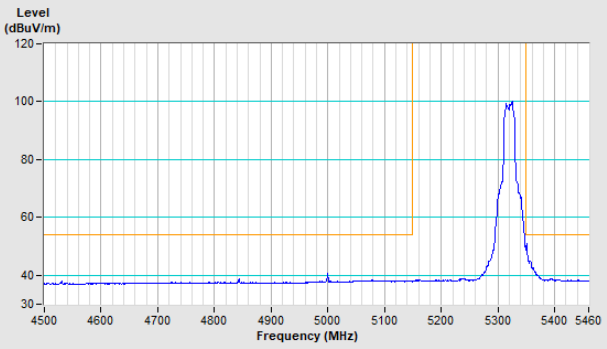
Horizontal (Average)

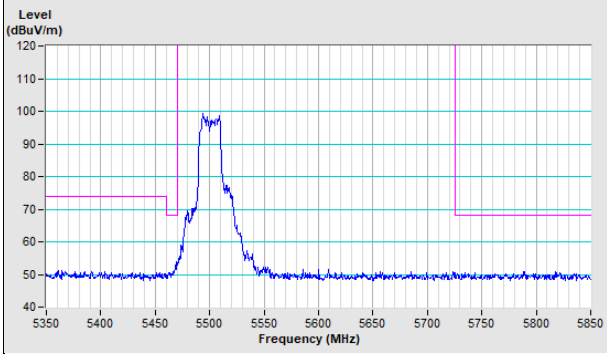
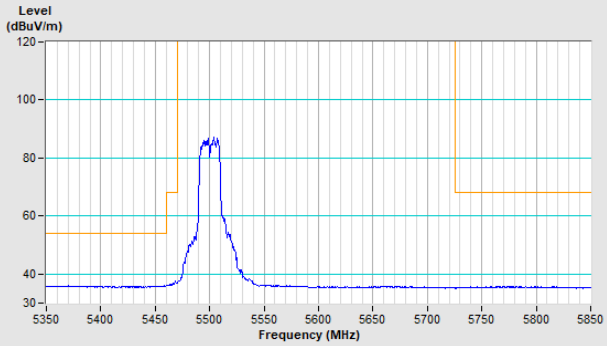
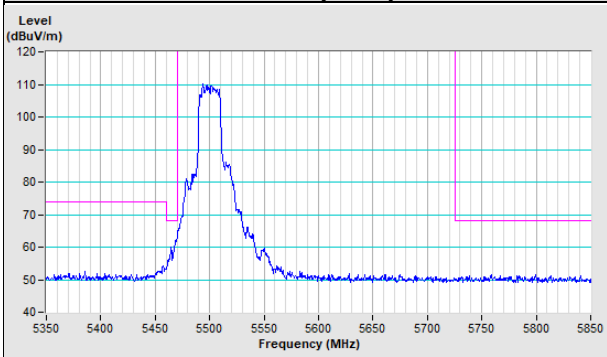
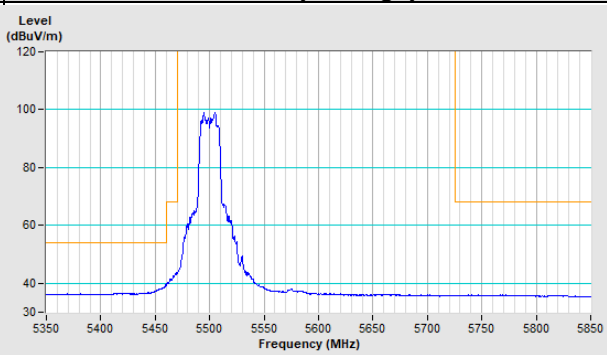
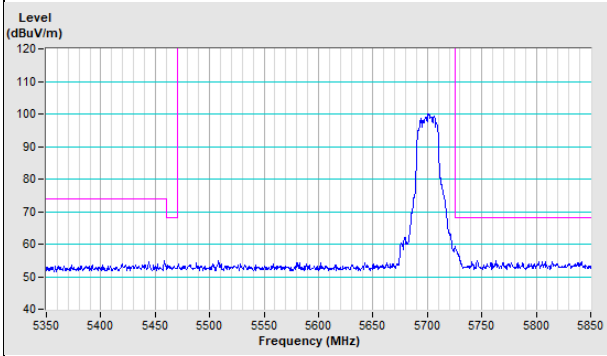
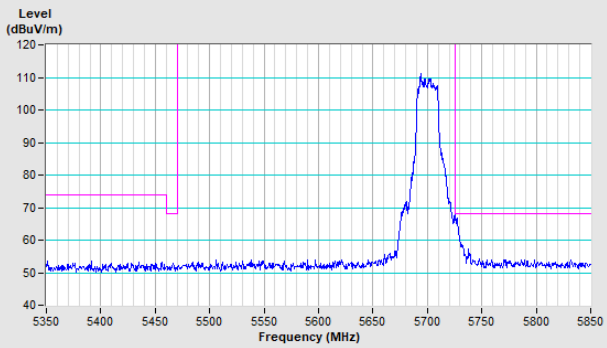
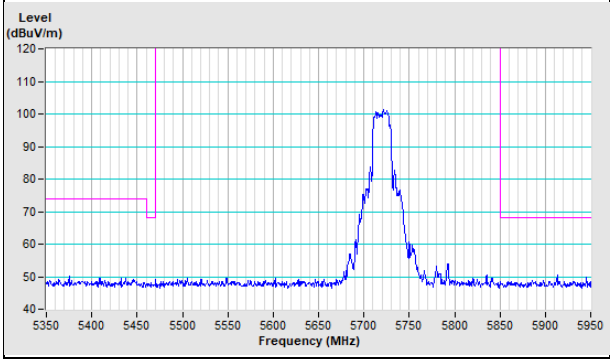
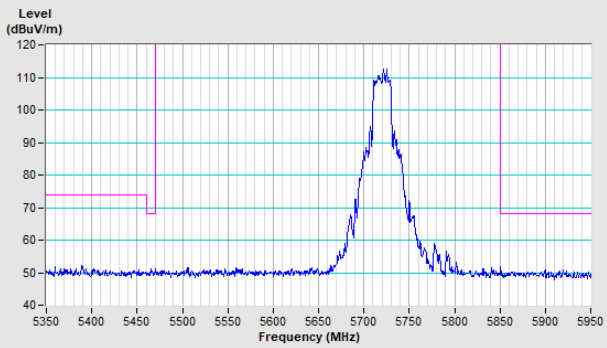


Vertical (Peak)



Vertical (Average)

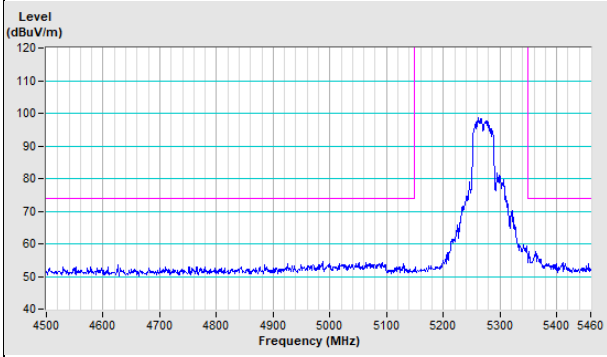


802.11ax (HE20) Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE20) Channel 140	
Horizontal (Peak)	Vertical (Peak)
	
802.11ax (HE20) Channel 144	
Horizontal (Peak)	Vertical (Peak)
	

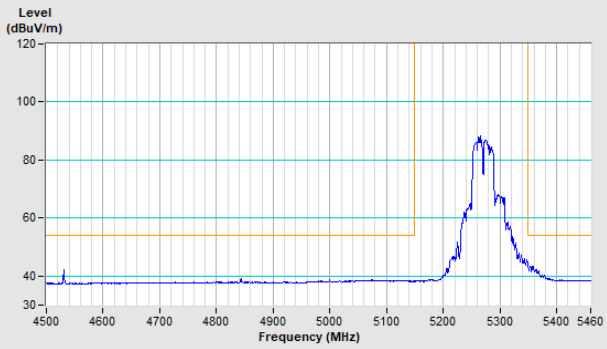
802.11ax (HE40)

802.11ax (HE40) Channel 54

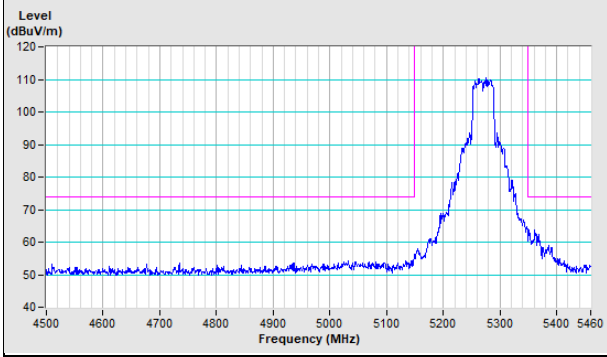
Horizontal (Peak)



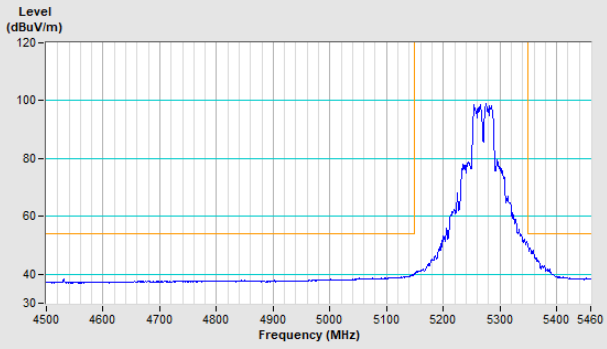
Horizontal (Average)



Vertical (Peak)

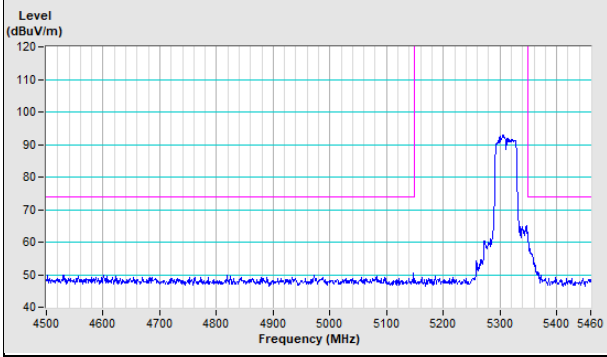


Vertical (Average)

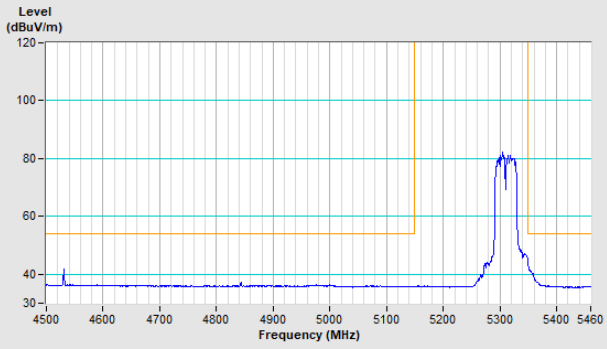


802.11ax (HE40) Channel 62

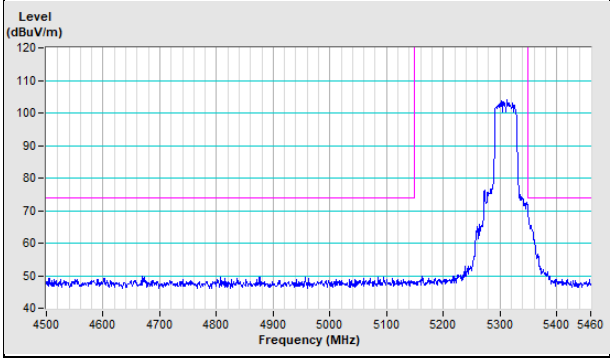
Horizontal (Peak)



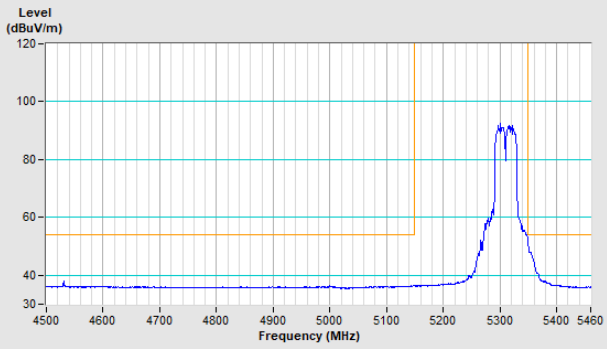
Horizontal (Average)



Vertical (Peak)

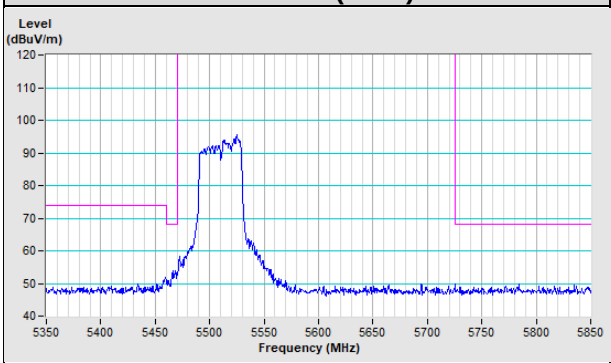


Vertical (Average)

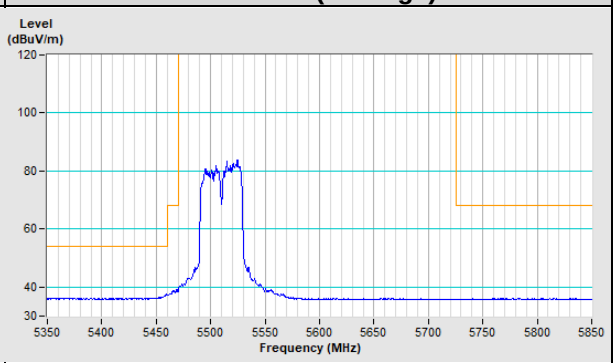


802.11ax (HE40) Channel 102

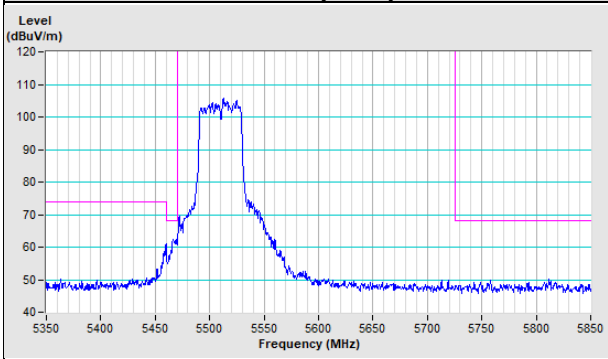
Horizontal (Peak)



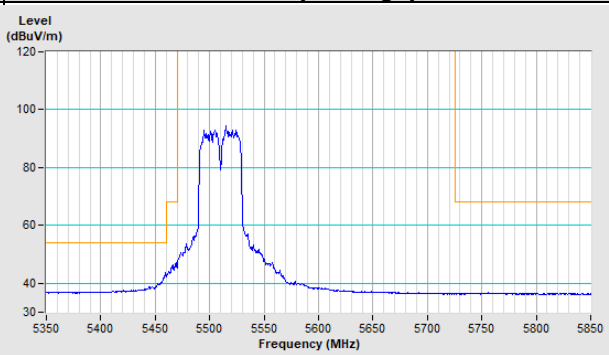
Horizontal (Average)



Vertical (Peak)

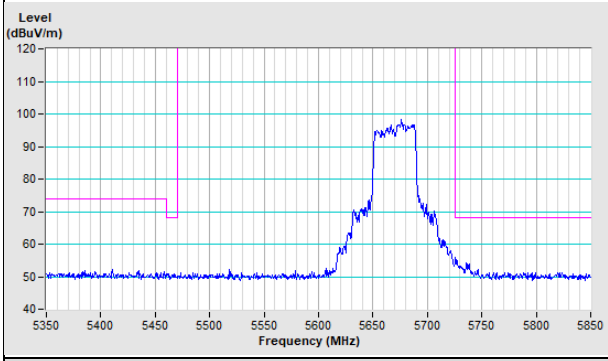


Vertical (Average)

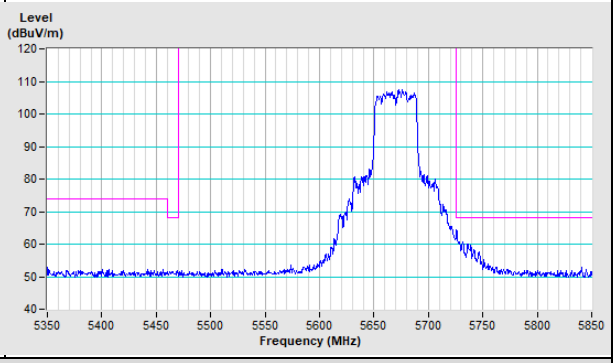


802.11ax (HE40) Channel 134

Horizontal (Peak)

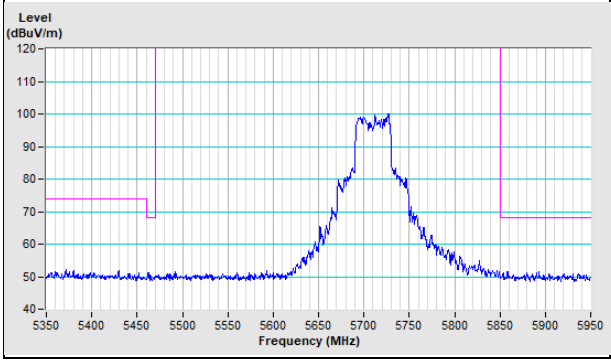


Vertical (Peak)

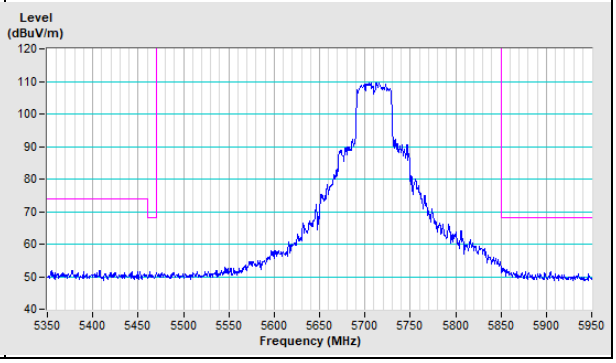


802.11ax (HE40) Channel 142

Horizontal (Peak)



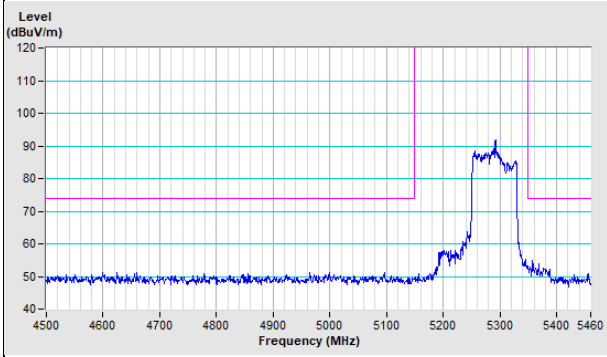
Vertical (Peak)



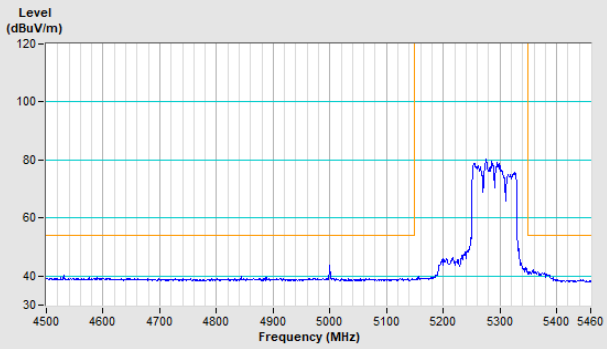
802.11ax (HE80)

802.11ax (HE80) Channel 58

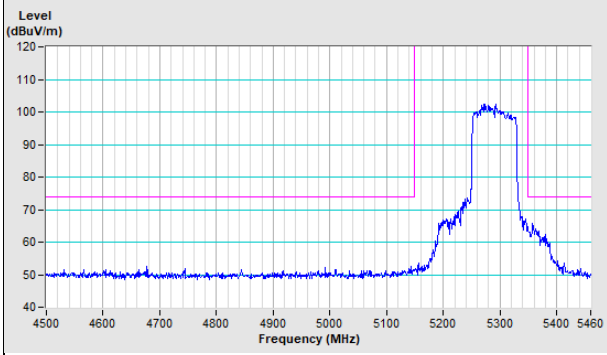
Horizontal (Peak)



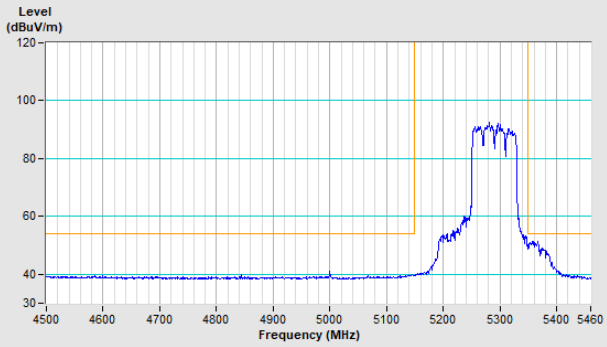
Horizontal (Average)



Vertical (Peak)

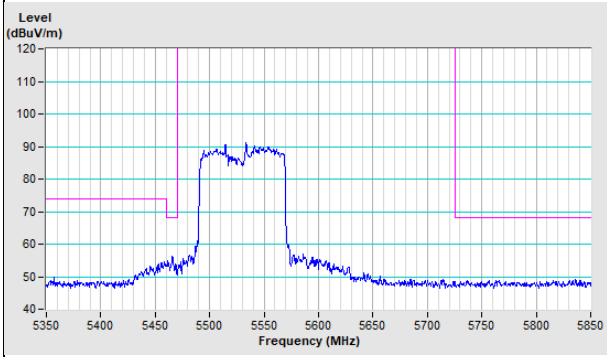


Vertical (Average)

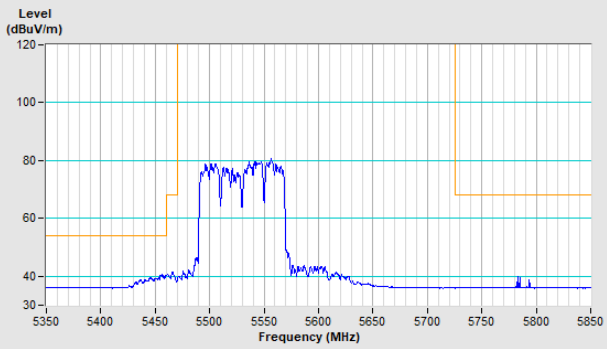


802.11ax (HE80) Channel 106

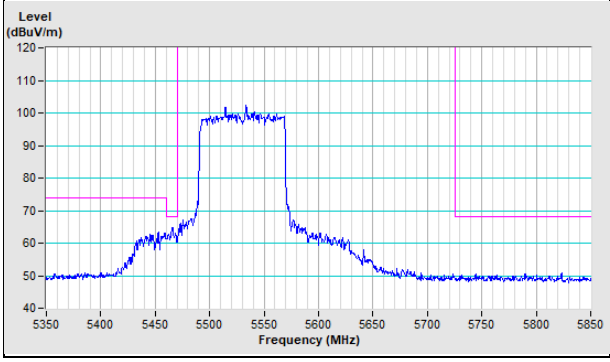
Horizontal (Peak)



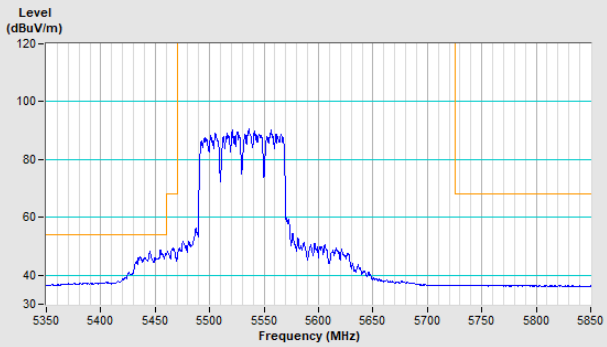
Horizontal (Average)

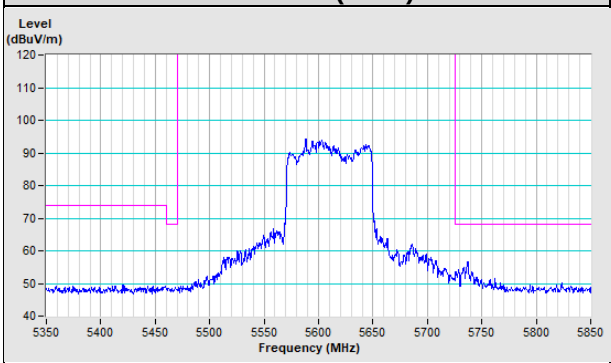
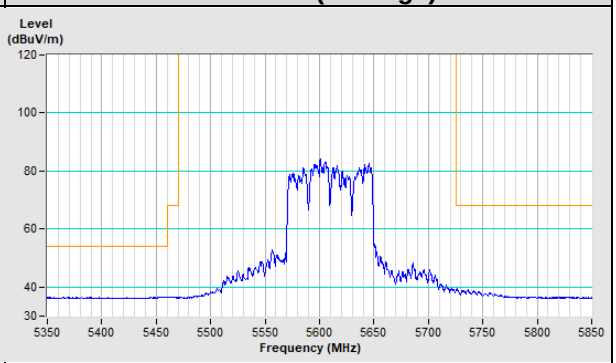
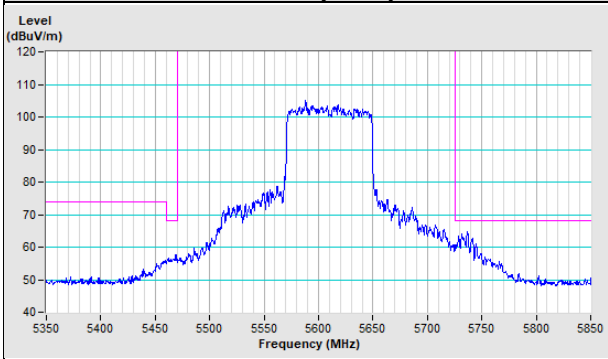
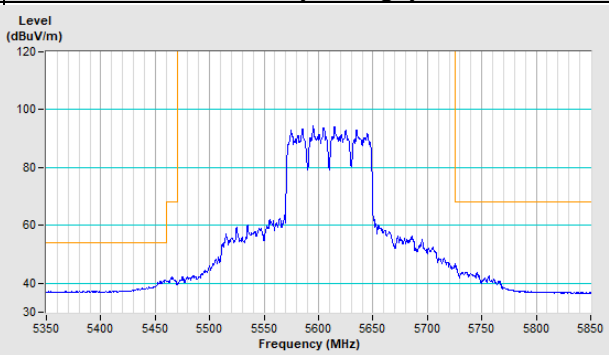
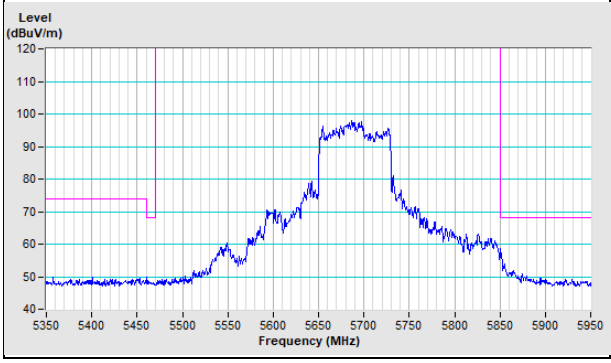
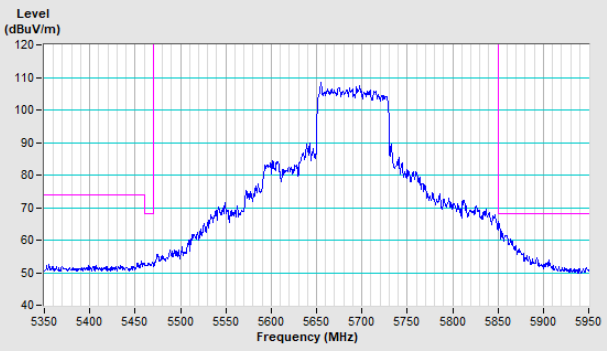


Vertical (Peak)



Vertical (Average)



802.11ax (HE80) Channel 122	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE80) Channel 138	
Horizontal (Peak)	Vertical (Peak)
	

Appendix – Information of the Testing Laboratories

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

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

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Web Site: www.bureauveritas-adt.com

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

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