FCC Test Report

Report No.:	RFBBQZ-WTW-P21031069A
FCC ID:	PY321100530
Test Model:	RBR760 and RBS760 (refer to item 3.1 for more details)
Received Date:	Aug. 13, 2021
Test Date:	Aug. 24 ~ Oct. 15, 2021
Issued Date:	Jan. 17, 2022

Applicant and Manufacturer:	NETGEAR, INC.
Address:	350 East Plumeria Drive, San Jose, CA 95134, USA

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
RFBBQZ-WTW-P21031069A	Original release	Jan. 17, 2022

1 Certificate of Conformity

Product: Orbi Router / Orbi Satellite

Brand: NETGEAR

Test Model: RBR760 and RBS760 (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: NETGEAR, INC.

Test Date: Aug. 24 ~ Oct. 15, 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 : Pettie Chen , **Date:** Jan. 17, 2022

Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** Jan. 17, 2022

Jeremy Lin / Senior 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)(8)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.49dB at 0.32187MHz.
15.407(b) (1/2/3/4(i/ii)/8)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5468.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	N/A	Not Applicable
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Orbi Router / Orbi Satellite
Brand	NETGEAR
Test Model	RBR760 and RBS760
Model Difference	Refer to note
Sample Status	Engineering sample
Power Supply Rating	12Vdc from Adapter
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 1733.4Mbps 802.11ax: up to 2402Mbps
Operating Frequency	5250 ~ 5320MHz, 5500 ~ 5720MHz
Number of Channel	5250 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 802.11ac (VHT160), 802.11ax (HE160): 1 5500 ~ 5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 12 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 6 802.11ac (VHT80), 802.11ax (HE80): 3 802.11ac (VHT160), 802.11ax (HE160): 1
Output Power	CDD Mode: 5250 ~ 5320MHz: 227.005mW 5500 ~ 5720MHz: 212.502mW Beamforming Mode: 5250 ~ 5320MHz: 227.005mW 5500 ~ 5720MHz: 212.502mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter
Cable Supplied	1.95m non-shielded RJ45 cable without core

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RFBBQZ-WTW-P21031069) are adding 5.25GHz to 5.32GHz and 5.50GHz to 5.72GHz by software and adding SAW filter.

2. The models are listed as below.

Brand	Product Name	Model	Difference
NETGEAR	Orbi Router	RBR760	Master mode Ethernet port* 4 eMMC flash 4GB NAND Flash 512MB 1GB DDR3 (4Gb DDR3*2)
	Orbi Satellite	RBS760	Master mode and Client mode Ethernet port* 2 NAND Flash 256MB 512MB DDR3 (2Gb DDR3*2)

3. The EUT has three different pin-to-pin FEM in 2.4G & 5G module, after pretest the mode 1 was the worst case for final test.

Mode	Description
1	1st 2.4G + 1st 5G FEM
2	2nd 2.4G + 2nd 5G FEM
3	3rd 2.4G + 3rd 5G FEM

4. The EUT has two different solutions for filter, and the Option A was the worst case for final test.

Option	Model	Description
A	RBR760, RBS760	without SAW filter
B	RBR760, RBS760	with SAW filter

*The detail information please refer to "Internal Photo"
*The saw filter is a passive component on receiver circuit and it will not impact transmit behavior.

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

Modulation Mode	Beamforming Mode	TX Function
802.11a	Not Support	2TX
802.11n (HT20)	Not Support	2TX
802.11n (HT40)	Not Support	2TX
802.11ac (VHT20)	Support	2TX
802.11ac (VHT40)	Support	2TX
802.11ac (VHT80)	Support	2TX
802.11ac (VHT160)	Support	2TX
802.11ax (HE20)	Support	2TX
802.11ax (HE40)	Support	2TX
802.11ax (HE80)	Support	2TX
802.11ax (HE160)	Support	2TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11ac mode and HE20/HE40/HE80 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)
* For 802.11n and 802.11ac/ax, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

6. The EUT uses following adapters.

Adapter 1	
Brand	Netgear
Model	ADS-40FPA-12 12030EPCU-L ADS-40FPA-12 12030EPC-L
P/N	332-11584-01
Input Power	100-120Vac ~50/60MHz Max. 1A
Output Power	12Vdc/2.5A
Power line	1.8m cable without core

Adapter 2	
Brand	Netgear
Model	2ABL030F 1
P/N	332-10948-01
Input Power	100-120Vac ~50/60MHz Max. 1A
Output Power	12Vdc/2.5A
Power line	1.82m cable without core

*After pre-testing, adapter 1 was the worst for final tests.

7. The antenna information is listed as below.

Radio	No.	Type	Connector	Gain (dBi)					
				2400-2483.5 MHz	5150-5250 MHz	5250-5350 MHz	5470-5725 MHz	5725-5850 MHz	5845-5885 MHz
Low Band Radio	0	Dipole	IPEX	3.80	2.64	2.64	-	-	
	1	Dipole	IPEX	3.51	2.98	2.85	-	-	
High Band Radio	2	Dipole	IPEX	-	-	-	3.39	3.48	3.48
	3	Dipole	IPEX	-	-	-	3.41	3.37	3.15

* 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.

8. WLAN 2.4GHz & 5250 ~ 5320 MHz & 5500 ~ 5720 MHz technology can transmit at same time.

3.2 Description of Test Modes

For 5250 ~ 5320MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

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

Channel	Frequency
58	5290MHz

1 channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
50	5250MHz

For 5500 ~ 5720MHz:

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

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

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

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

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

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

1 channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
114	5570MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter 1
B	-	√	√	-	Power from adapter 2

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note: "-": Means no effect.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5250-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	MCS0
	802.11ax (HE40)		54 to 62	54, 62	OFDMA	MCS0
	802.11ax (HE80)		58	58	OFDMA	MCS0
	802.11ax (HE160)		50	50	OFDMA	MCS0
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11ax (HE20)		100 to 144	100, 116, 140, 144	OFDMA	MCS0
	802.11ax (HE40)		102 to 142	102, 110, 134, 142	OFDMA	MCS0
	802.11ax (HE80)		106 to 138	106, 122, 138	OFDMA	MCS0
	802.11ax (HE160)		114	114	OFDMA	MCS0

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11ax (HE40)	5250-5320	54 to 62	54	OFDMA	MCS0
	802.11ax (HE40)	5500-5720	102 to 142		OFDMA	MCS0

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11ax (HE40)	5250-5320	54 to 62	54	OFDMA	MCS0
	802.11ax (HE40)	5500-5720	102 to 142		OFDMA	MCS0

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5250-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
	802.11ac (VHT160)		50	50	OFDM	MCS0
	802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	MCS0
	802.11ax (HE40)		54 to 62	54, 62	OFDMA	MCS0
	802.11ax (HE80)		58	58	OFDMA	MCS0
	802.11ax (HE160)		50	50	OFDMA	MCS0
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3
	802.11ac (VHT160)		114	114	OFDM	MCS0
	802.11ax (HE20)		100 to 144	100, 116, 140, 144	OFDMA	MCS0
	802.11ax (HE40)		102 to 142	102, 110, 134, 142	OFDMA	MCS0
	802.11ax (HE80)		106 to 138	106, 122, 138	OFDMA	MCS0
	802.11ax (HE160)		114	114	OFDMA	MCS0

* 802.11n, 802.11ac modes are for conducted output power measuremenst only. For other test items, only test 802.11a, 802.11ax modes.

Test Condition:

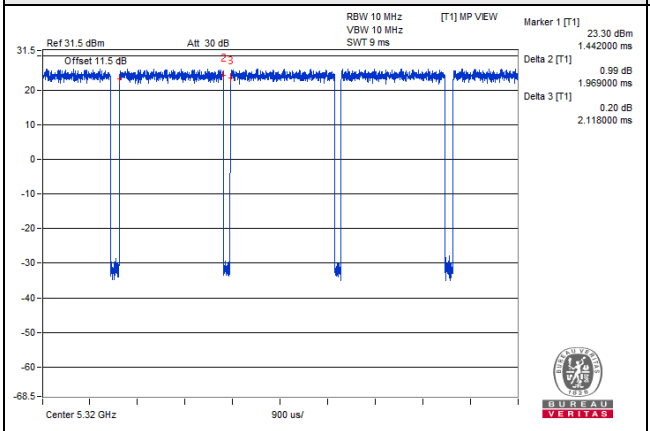
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 70% RH	120Vac, 60Hz	Hans Wu
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
PLC	25 deg. C, 69% RH	120Vac, 60Hz	Luis Lee
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Chris Lin

3.3 Duty Cycle of Test Signal

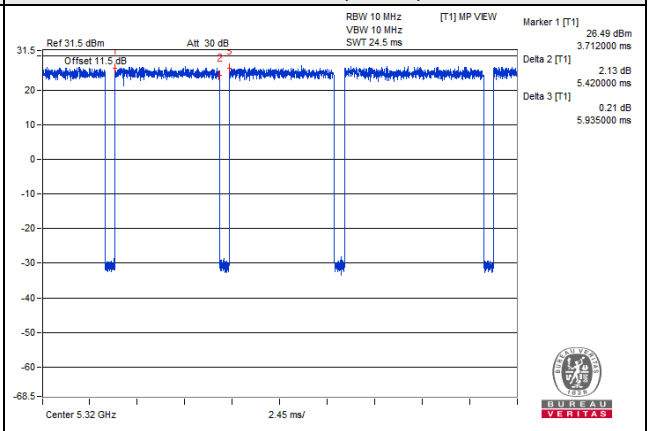
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 1.969/2.118 = 0.93, Duty factor = 10 * log (1/0.93) = 0.32
802.11ax (HE20): Duty cycle = 5.42/5.935 = 0.913, Duty factor = 10 * log (1/0.913) = 0.39
802.11ax (HE40): Duty cycle = 5.387/5.975 = 0.902, Duty factor = 10 * log (1/0.902) = 0.45
802.11ax (HE80): Duty cycle = 5.421/5.974 = 0.907, Duty factor = 10 * log (1/0.907) = 0.42
802.11ax (HE160) (Ch 50): Duty cycle = 5.402/6.037 = 0.895, Duty factor = 10 * log (1/0.895) = 0.48
802.11ax (HE160) (Ch 114): Duty cycle = 5.382/6.03 = 0.893, Duty factor = 10 * log (1/0.893) = 0.49

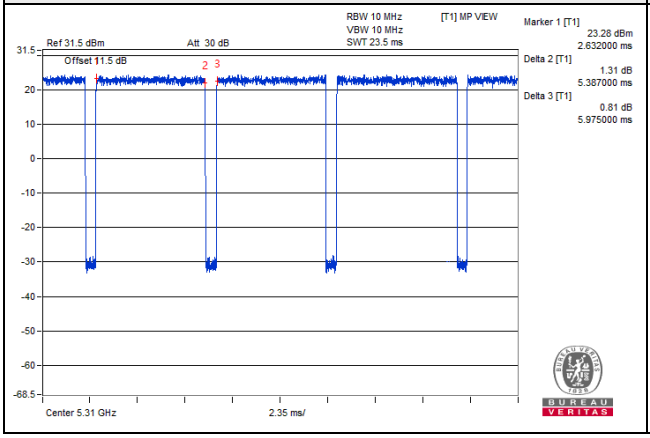
802.11a



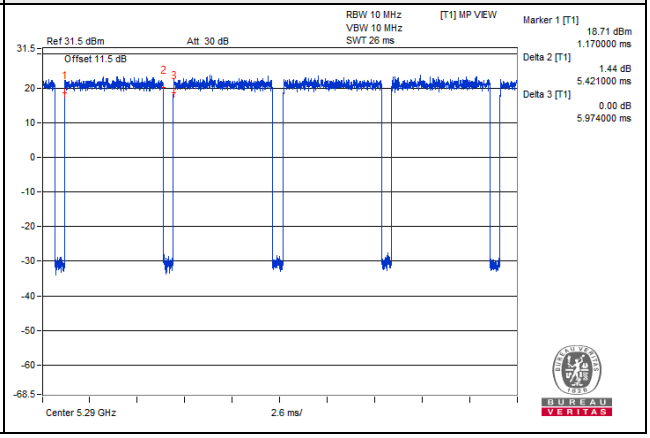
802.11ax (HE20)

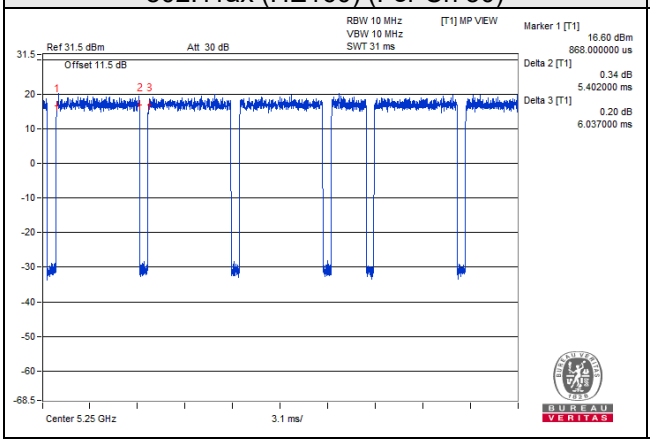
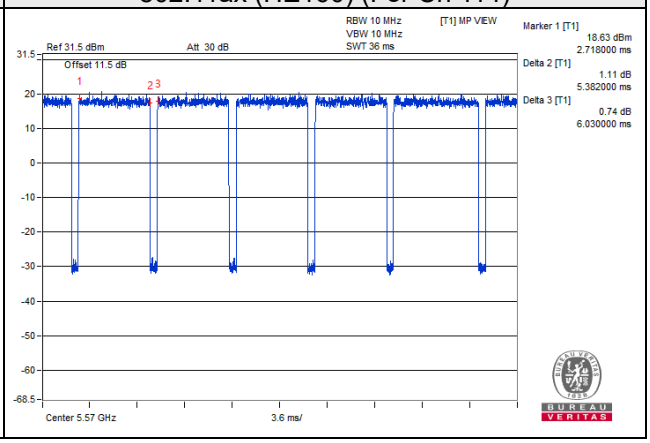


802.11ax (HE40)



802.11ax (HE80)



802.11ax (HE160) (For Ch 50)	802.11ax (HE160) (For Ch 114)
	

3.4 Description of Support Units

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

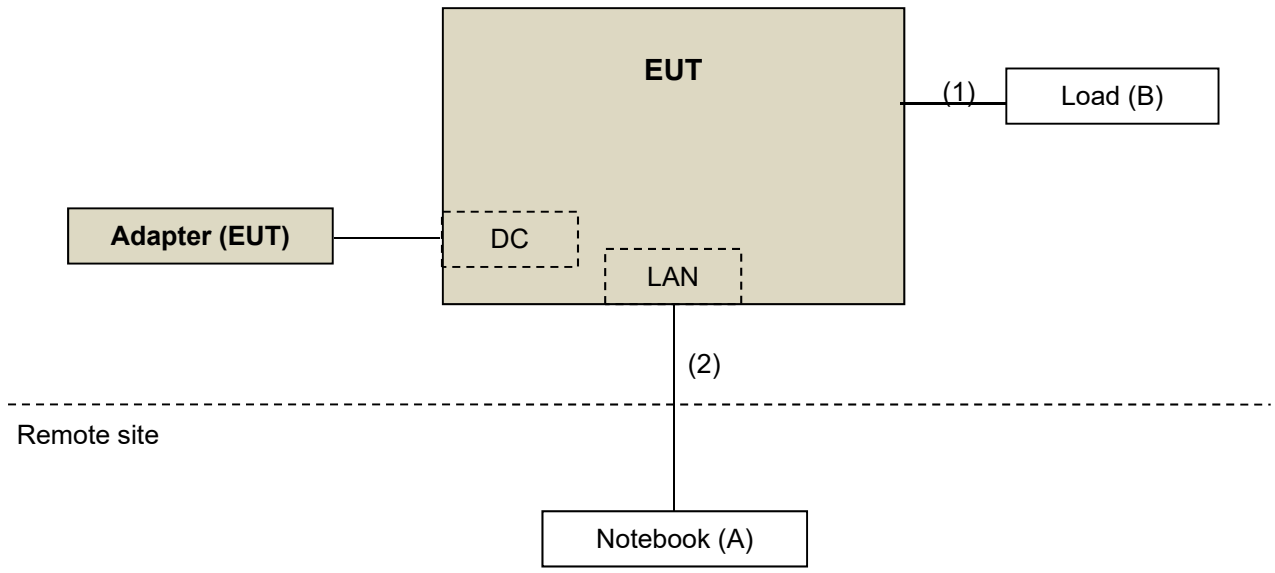
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5520	8Y4DMQ1	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-

Note:

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

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	1.5	N	0	RJ45, Cat5e
2.	LAN cable	1	6	N	0	RJ45, Cat5e

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

Limits of unwanted emission out of the restricted bands

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

*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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Dec. 31, 2020	Dec. 30, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 2021
			Sep. 15, 2021	Sep. 14, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Nov. 03, 2020	Nov. 02, 2021
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Jun. 05, 2021	Jun. 04, 2022
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jun. 05, 2021	Jun. 04, 2022
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH4-01	Jul. 24, 2021	Jul. 23, 2022
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	Jul. 24, 2021	Jul. 23, 2022
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	Jul. 24, 2021	Jul. 23, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Jun. 05, 2021	Jun. 04, 2022
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Jun. 05, 2021	Jun. 04, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2020	Sep. 03, 2021
			Sep. 04, 2021	Sep. 03, 2022
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	Jan. 19, 2021	Jan. 18, 2022
Wideband Power Sensor KEYSIGHT	N1923A	MY58020002	Jan. 11, 2021	Jan. 10, 2022

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 4.

4.1.3 Test Procedures

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

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

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

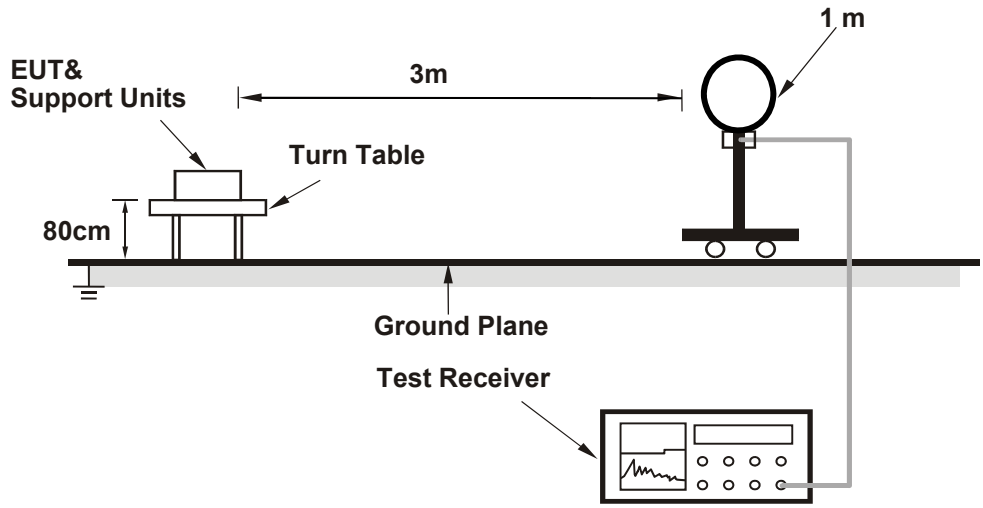
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz. (RBW = 1MHz, VBW = 1kHz)
   All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

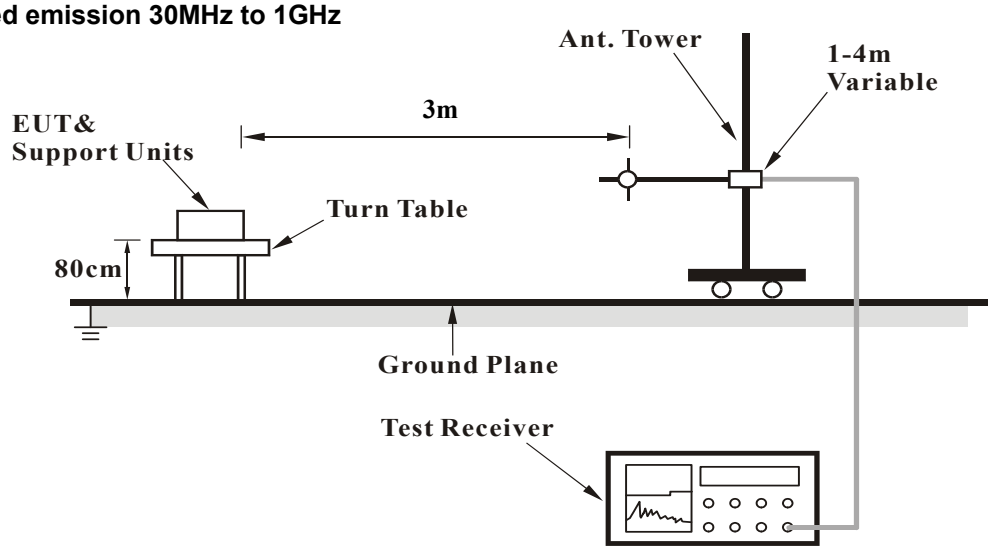
No deviation.

4.1.5 Test Setup

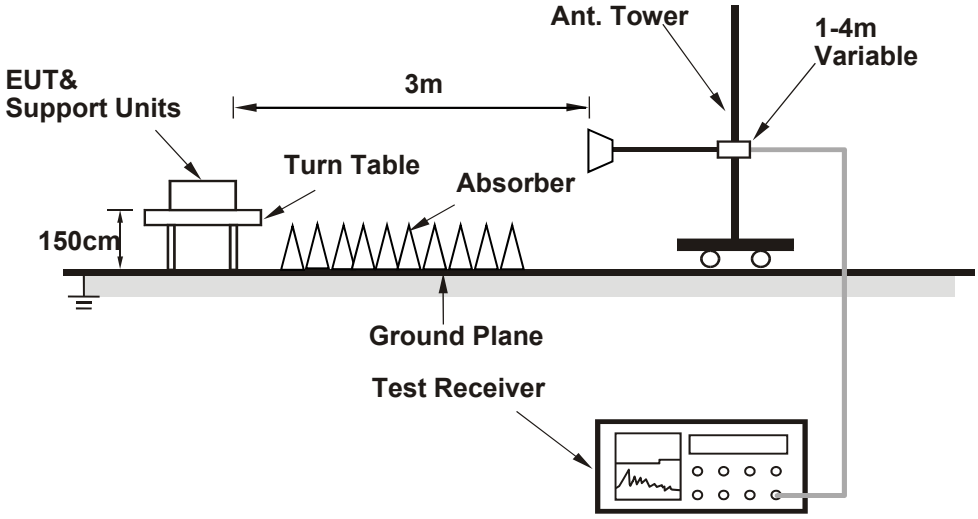
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz data:

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.4 PK	74.0	-13.6	1.71 H	303	47.4	13.0
2	5150.00	47.7 AV	54.0	-6.3	1.71 H	303	34.7	13.0
3	*5260.00	110.6 PK			1.71 H	303	68.1	42.5
4	*5260.00	102.1 AV			1.71 H	303	59.6	42.5
5	#10520.00	61.8 PK	68.2	-6.4	2.24 H	86	38.9	22.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.7 PK	74.0	-13.3	1.64 V	166	47.7	13.0
2	5150.00	49.0 AV	54.0	-5.0	1.64 V	166	36.0	13.0
3	*5260.00	119.8 PK			1.64 V	166	77.3	42.5
4	*5260.00	110.6 AV			1.64 V	166	68.1	42.5
5	#10520.00	62.4 PK	68.2	-5.8	1.77 V	269	39.5	22.9

Remarks:

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

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	110.3 PK			1.81 H	299	67.7	42.6
2	*5300.00	101.3 AV			1.81 H	299	58.7	42.6
3	10600.00	61.8 PK	74.0	-12.2	2.28 H	97	38.6	23.2
4	10600.00	50.5 AV	54.0	-3.5	2.28 H	97	27.3	23.2
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	*5300.00	120.2 PK			1.85 V	166	77.6	42.6
2	*5300.00	111.3 AV			1.85 V	166	68.7	42.6
3	10600.00	62.9 PK	74.0	-11.1	1.82 V	255	39.7	23.2
4	10600.00	50.6 AV	54.0	-3.4	1.82 V	255	27.4	23.2

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.

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	109.6 PK			1.92 H	299	66.9	42.7
2	*5320.00	100.6 AV			1.92 H	299	57.9	42.7
3	5350.00	58.2 PK	74.0	-15.8	1.92 H	299	45.1	13.1
4	5350.00	47.7 AV	54.0	-6.3	1.92 H	299	34.6	13.1
5	10640.00	62.2 PK	74.0	-11.8	2.35 H	100	38.8	23.4
6	10640.00	50.5 AV	54.0	-3.5	2.35 H	100	27.1	23.4
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	*5320.00	119.7 PK			1.45 V	166	77.0	42.7
2	*5320.00	110.5 AV			1.45 V	166	67.8	42.7
3	5350.00	59.1 PK	74.0	-14.9	1.45 V	166	46.0	13.1
4	5350.00	49.4 AV	54.0	-4.6	1.45 V	166	36.3	13.1
5	10640.00	63.0 PK	74.0	-11.0	1.78 V	261	39.6	23.4
6	10640.00	50.6 AV	54.0	-3.4	1.78 V	261	27.2	23.4

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.

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	59.4 PK	74.0	-14.6	2.93 H	187	45.9	13.5
2	5460.00	49.1 AV	54.0	-4.9	2.93 H	187	35.6	13.5
3	#5470.00	64.9 PK	68.2	-3.3	2.93 H	187	51.3	13.6
4	*5500.00	116.2 PK			2.93 H	187	73.0	43.2
5	*5500.00	107.6 AV			2.93 H	187	64.4	43.2
6	11000.00	62.9 PK	74.0	-11.1	2.77 H	159	38.6	24.3
7	11000.00	51.7 AV	54.0	-2.3	2.77 H	159	27.4	24.3
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	5460.00	60.2 PK	74.0	-13.8	1.45 V	269	46.7	13.5
2	5460.00	48.3 AV	54.0	-5.7	1.45 V	269	34.8	13.5
3	#5470.00	61.0 PK	68.2	-7.2	1.45 V	269	47.4	13.6
4	*5500.00	118.2 PK			1.45 V	269	75.0	43.2
5	*5500.00	110.0 AV			1.45 V	269	66.8	43.2
6	11000.00	63.4 PK	74.0	-10.6	1.84 V	62	39.1	24.3
7	11000.00	52.2 AV	54.0	-1.8	1.84 V	62	27.9	24.3

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 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	116.1 PK			2.84 H	189	73.0	43.1
2	*5580.00	107.1 AV			2.84 H	189	64.0	43.1
3	11160.00	63.3 PK	74.0	-10.7	2.93 H	165	38.9	24.4
4	11160.00	52.3 AV	54.0	-1.7	2.93 H	165	27.9	24.4
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	*5580.00	118.7 PK			1.25 V	93	75.6	43.1
2	*5580.00	109.8 AV			1.25 V	93	66.7	43.1
3	11160.00	63.4 PK	74.0	-10.6	1.85 V	49	39.0	24.4
4	11160.00	51.9 AV	54.0	-2.1	1.85 V	49	27.5	24.4

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.

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	116.6 PK			2.59 H	183	73.2	43.4
2	*5700.00	107.4 AV			2.59 H	183	64.0	43.4
3	#5725.00	60.7 PK	68.2	-7.5	2.59 H	183	46.9	13.8
4	11400.00	63.8 PK	74.0	-10.2	2.91 H	160	38.6	25.2
5	11400.00	52.7 AV	54.0	-1.3	2.91 H	160	27.5	25.2
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	*5700.00	120.9 PK			1.59 V	91	77.5	43.4
2	*5700.00	112.1 AV			1.59 V	91	68.7	43.4
3	#5725.00	61.5 PK	68.2	-6.7	1.59 V	91	47.7	13.8
4	11400.00	64.5 PK	74.0	-9.5	1.62 V	55	39.3	25.2
5	11400.00	53.2 AV	54.0	-0.8	1.62 V	55	28.0	25.2

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 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	*5720.00	115.8 PK			2.74 H	187	72.3	43.5
2	*5720.00	107.1 AV			2.74 H	187	63.6	43.5
3	#5850.00	60.9 PK	68.2	-7.3	2.74 H	187	46.6	14.3
4	11440.00	63.9 PK	74.0	-10.1	2.64 H	152	38.8	25.1
5	11440.00	52.7 AV	54.0	-1.3	2.64 H	152	27.6	25.1
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	*5720.00	121.7 PK			1.51 V	92	78.2	43.5
2	*5720.00	113.0 AV			1.51 V	92	69.5	43.5
3	#5850.00	61.3 PK	68.2	-6.9	1.51 V	92	47.0	14.3
4	11440.00	64.5 PK	74.0	-9.5	1.74 V	63	39.4	25.1
5	11440.00	52.7 AV	54.0	-1.3	1.74 V	63	27.6	25.1

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 (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	59.0 PK	74.0	-15.0	1.71 H	307	46.0	13.0
2	5150.00	47.7 AV	54.0	-6.3	1.71 H	307	34.7	13.0
3	*5260.00	113.1 PK			1.71 H	307	70.6	42.5
4	*5260.00	101.1 AV			1.71 H	307	58.6	42.5
5	#10520.00	61.6 PK	68.2	-6.6	2.11 H	89	38.7	22.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.8 PK	74.0	-14.2	1.45 V	163	46.8	13.0
2	5150.00	48.1 AV	54.0	-5.9	1.45 V	163	35.1	13.0
3	*5260.00	120.7 PK			1.45 V	163	78.2	42.5
4	*5260.00	110.6 AV			1.45 V	163	68.1	42.5
5	#10520.00	62.5 PK	68.2	-5.7	1.84 V	267	39.6	22.9

Remarks:

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

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	110.7 PK			1.79 H	299	68.1	42.6
2	*5300.00	100.7 AV			1.79 H	299	58.1	42.6
3	10600.00	62.3 PK	74.0	-11.7	2.15 H	80	39.1	23.2
4	10600.00	51.0 AV	54.0	-3.0	2.15 H	80	27.8	23.2
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	*5300.00	121.0 PK			1.80 V	166	78.4	42.6
2	*5300.00	110.2 AV			1.80 V	166	67.6	42.6
3	10600.00	63.0 PK	74.0	-11.0	1.83 V	254	39.8	23.2
4	10600.00	50.3 AV	54.0	-3.7	1.83 V	254	27.1	23.2

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.

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	111.1 PK			1.90 H	295	68.4	42.7
2	*5320.00	99.9 AV			1.90 H	295	57.2	42.7
3	5350.00	59.4 PK	74.0	-14.6	1.90 H	295	46.3	13.1
4	5350.00	47.9 AV	54.0	-6.1	1.90 H	295	34.8	13.1
5	10640.00	62.9 PK	74.0	-11.1	2.14 H	86	39.5	23.4
6	10640.00	51.2 AV	54.0	-2.8	2.14 H	86	27.8	23.4
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	*5320.00	120.3 PK			1.76 V	202	77.6	42.7
2	*5320.00	110.3 AV			1.76 V	202	67.6	42.7
3	5350.00	59.4 PK	74.0	-14.6	1.76 V	202	46.3	13.1
4	5350.00	49.6 AV	54.0	-4.4	1.76 V	202	36.5	13.1
5	10640.00	62.9 PK	74.0	-11.1	1.73 V	248	39.5	23.4
6	10640.00	50.3 AV	54.0	-3.7	1.73 V	248	26.9	23.4

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.

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	59.3 PK	74.0	-14.7	2.69 H	195	45.8	13.5
2	5460.00	48.8 AV	54.0	-5.2	2.69 H	195	35.3	13.5
3	#5470.00	65.0 PK	68.2	-3.2	2.69 H	195	51.4	13.6
4	*5500.00	117.5 PK			2.69 H	195	74.3	43.2
5	*5500.00	106.0 AV			2.69 H	195	62.8	43.2
6	11000.00	62.7 PK	74.0	-11.3	2.88 H	176	38.4	24.3
7	11000.00	51.8 AV	54.0	-2.2	2.88 H	176	27.5	24.3
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	5460.00	60.0 PK	74.0	-14.0	1.39 V	91	46.5	13.5
2	5460.00	48.4 AV	54.0	-5.6	1.39 V	91	34.9	13.5
3	#5470.00	62.2 PK	68.2	-6.0	1.39 V	91	48.6	13.6
4	*5500.00	120.4 PK			1.39 V	91	77.2	43.2
5	*5500.00	109.2 AV			1.39 V	91	66.0	43.2
6	11000.00	63.0 PK	74.0	-11.0	1.85 V	62	38.7	24.3
7	11000.00	51.6 AV	54.0	-2.4	1.85 V	62	27.3	24.3

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 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	118.1 PK			2.84 H	192	75.0	43.1
2	*5580.00	105.7 AV			2.84 H	192	62.6	43.1
3	11160.00	63.3 PK	74.0	-10.7	2.83 H	174	38.9	24.4
4	11160.00	51.7 AV	54.0	-2.3	2.83 H	174	27.3	24.4
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	*5580.00	119.1 PK			1.60 V	93	76.0	43.1
2	*5580.00	108.9 AV			1.60 V	93	65.8	43.1
3	11160.00	63.2 PK	74.0	-10.8	1.77 V	46	38.8	24.4
4	11160.00	52.0 AV	54.0	-2.0	1.77 V	46	27.6	24.4

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.

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	118.2 PK			2.63 H	189	74.8	43.4
2	*5700.00	106.0 AV			2.63 H	189	62.6	43.4
3	#5725.00	61.1 PK	68.2	-7.1	2.63 H	189	47.3	13.8
4	11400.00	63.9 PK	74.0	-10.1	2.88 H	153	38.7	25.2
5	11400.00	52.8 AV	54.0	-1.2	2.88 H	153	27.6	25.2
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	*5700.00	122.6 PK			1.57 V	94	79.2	43.4
2	*5700.00	111.5 AV			1.57 V	94	68.1	43.4
3	#5725.00	63.5 PK	68.2	-4.7	1.57 V	94	49.7	13.8
4	11400.00	64.5 PK	74.0	-9.5	1.84 V	42	39.3	25.2
5	11400.00	53.3 AV	54.0	-0.7	1.84 V	42	28.1	25.2

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 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	*5720.00	115.7 PK			2.68 H	190	72.2	43.5
2	*5720.00	105.9 AV			2.68 H	190	62.4	43.5
3	#5850.00	60.6 PK	68.2	-7.6	2.68 H	190	46.3	14.3
4	11440.00	63.8 PK	74.0	-10.2	2.83 H	156	38.7	25.1
5	11440.00	52.5 AV	54.0	-1.5	2.83 H	156	27.4	25.1
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	*5720.00	122.3 PK			1.50 V	91	78.8	43.5
2	*5720.00	111.8 AV			1.50 V	91	68.3	43.5
3	#5850.00	60.9 PK	68.2	-7.3	1.50 V	91	46.6	14.3
4	11440.00	64.1 PK	74.0	-9.9	1.85 V	43	39.0	25.1
5	11440.00	52.5 AV	54.0	-1.5	1.85 V	43	27.4	25.1

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 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	59.0 PK	74.0	-15.0	1.89 H	297	46.0	13.0
2	5150.00	47.9 AV	54.0	-6.1	1.89 H	297	34.9	13.0
3	*5270.00	111.6 PK			1.89 H	297	69.1	42.5
4	*5270.00	100.1 AV			1.89 H	297	57.6	42.5
5	#10540.00	62.1 PK	68.2	-6.1	2.16 H	74	39.2	22.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.3 PK	74.0	-14.7	1.95 V	201	46.3	13.0
2	5150.00	47.9 AV	54.0	-6.1	1.95 V	201	34.9	13.0
3	*5270.00	120.2 PK			1.95 V	201	77.7	42.5
4	*5270.00	110.1 AV			1.95 V	201	67.6	42.5
5	#10540.00	62.4 PK	68.2	-5.8	1.77 V	269	39.5	22.9

Remarks:

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

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	109.7 PK			1.89 H	300	67.1	42.6
2	*5310.00	99.8 AV			1.89 H	300	57.2	42.6
3	5350.00	60.5 PK	74.0	-13.5	1.89 H	300	47.4	13.1
4	5350.00	48.1 AV	54.0	-5.9	1.89 H	300	35.0	13.1
5	10620.00	61.9 PK	74.0	-12.1	2.24 H	88	38.6	23.3
6	10620.00	51.1 AV	54.0	-2.9	2.24 H	88	27.8	23.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	120.1 PK			1.89 V	164	77.5	42.6
2	*5310.00	109.3 AV			1.89 V	164	66.7	42.6
3	5350.00	63.6 PK	74.0	-10.4	1.89 V	164	50.5	13.1
4	5350.00	53.7 AV	54.0	-0.3	1.89 V	164	40.6	13.1
5	10620.00	62.6 PK	74.0	-11.4	1.85 V	264	39.3	23.3
6	10620.00	50.3 AV	54.0	-3.7	1.85 V	264	27.0	23.3

Remarks:

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

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	59.1 PK	74.0	-14.9	2.91 H	190	45.6	13.5
2	5460.00	48.5 AV	54.0	-5.5	2.91 H	190	35.0	13.5
3	#5470.00	64.6 PK	68.2	-3.6	2.91 H	190	51.0	13.6
4	*5510.00	115.0 PK			2.91 H	190	71.8	43.2
5	*5510.00	104.6 AV			2.91 H	190	61.4	43.2
6	11020.00	62.9 PK	74.0	-11.1	2.73 H	144	38.6	24.3
7	11020.00	51.5 AV	54.0	-2.5	2.73 H	144	27.2	24.3
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	5460.00	61.8 PK	74.0	-12.2	1.54 V	94	48.3	13.5
2	5460.00	50.9 AV	54.0	-3.1	1.54 V	94	37.4	13.5
3	#5466.00	67.8 PK	68.2	-0.4	1.54 V	94	54.3	13.5
4	*5510.00	116.4 PK			1.54 V	94	73.2	43.2
5	*5510.00	106.4 AV			1.54 V	94	63.2	43.2
6	11020.00	62.9 PK	74.0	-11.1	1.78 V	51	38.6	24.3
7	11020.00	51.5 AV	54.0	-2.5	1.78 V	51	27.2	24.3

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 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	115.5 PK			2.97 H	191	72.4	43.1
2	*5550.00	104.3 AV			2.97 H	191	61.2	43.1
3	11100.00	62.9 PK	74.0	-11.1	2.99 H	153	38.6	24.3
4	11100.00	51.6 AV	54.0	-2.4	2.99 H	153	27.3	24.3
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	*5550.00	117.5 PK			1.49 V	89	74.4	43.1
2	*5550.00	107.7 AV			1.49 V	89	64.6	43.1
3	11100.00	63.2 PK	74.0	-10.8	1.88 V	43	38.9	24.3
4	11100.00	51.6 AV	54.0	-2.4	1.88 V	43	27.3	24.3

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 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	113.6 PK			2.87 H	191	70.3	43.3
2	*5670.00	103.5 AV			2.87 H	191	60.2	43.3
3	#5725.00	60.8 PK	68.2	-7.4	2.87 H	191	47.0	13.8
4	11340.00	63.5 PK	74.0	-10.5	2.76 H	143	38.6	24.9
5	11340.00	52.4 AV	54.0	-1.6	2.76 H	143	27.5	24.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	118.0 PK			1.50 V	86	74.7	43.3
2	*5670.00	108.0 AV			1.50 V	86	64.7	43.3
3	#5725.00	61.0 PK	68.2	-7.2	1.50 V	86	47.2	13.8
4	11340.00	64.0 PK	74.0	-10.0	1.86 V	31	39.1	24.9
5	11340.00	52.6 AV	54.0	-1.4	1.86 V	31	27.7	24.9

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 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	*5710.00	113.4 PK			2.62 H	192	70.0	43.4
2	*5710.00	104.6 AV			2.62 H	192	61.2	43.4
3	#5850.00	60.0 PK	68.2	-8.2	2.62 H	192	45.7	14.3
4	11420.00	63.8 PK	74.0	-10.2	2.88 H	154	38.6	25.2
5	11420.00	52.6 AV	54.0	-1.4	2.88 H	154	27.4	25.2
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	*5710.00	118.7 PK			1.46 V	92	75.3	43.4
2	*5710.00	108.9 AV			1.46 V	92	65.5	43.4
3	#5850.00	61.2 PK	68.2	-7.0	1.46 V	92	46.9	14.3
4	11420.00	64.0 PK	74.0	-10.0	1.68 V	45	38.8	25.2
5	11420.00	52.8 AV	54.0	-1.2	1.68 V	45	27.6	25.2

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 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	*5290.00	107.0 PK			1.88 H	302	64.4	42.6
2	*5290.00	97.0 AV			1.88 H	302	54.4	42.6
3	5350.00	58.6 PK	74.0	-15.4	1.88 H	302	45.5	13.1
4	5350.00	47.8 AV	54.0	-6.2	1.88 H	302	34.7	13.1
5	#10580.00	61.4 PK	68.2	-6.8	2.17 H	92	38.3	23.1
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	*5290.00	115.6 PK			1.80 V	199	73.0	42.6
2	*5290.00	106.5 AV			1.80 V	199	63.9	42.6
3	5350.00	63.8 PK	74.0	-10.2	1.80 V	199	50.7	13.1
4	5350.00	53.8 AV	54.0	-0.2	1.80 V	199	40.7	13.1
5	#10580.00	62.2 PK	68.2	-6.0	1.86 V	260	39.1	23.1

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 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	61.3 PK	74.0	-12.7	2.85 H	189	47.8	13.5
2	5460.00	49.7 AV	54.0	-4.3	2.85 H	189	36.2	13.5
3	#5470.00	63.7 PK	68.2	-4.5	2.85 H	189	50.1	13.6
4	*5530.00	110.5 PK			2.85 H	189	67.4	43.1
5	*5530.00	101.8 AV			2.85 H	189	58.7	43.1
6	11060.00	62.9 PK	74.0	-11.1	2.96 H	172	38.6	24.3
7	11060.00	51.6 AV	54.0	-2.4	2.96 H	172	27.3	24.3
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	5460.00	63.2 PK	74.0	-10.8	1.56 V	96	49.7	13.5
2	5460.00	51.8 AV	54.0	-2.2	1.56 V	96	38.3	13.5
3	**#5468.00**	**68.1 PK**	**68.2**	**-0.1**	**1.56 V**	**96**	**54.5**	**13.6**
4	*5530.00	114.3 PK			1.56 V	96	71.2	43.1
5	*5530.00	103.9 AV			1.56 V	96	60.8	43.1
6	11060.00	63.0 PK	74.0	-11.0	1.93 V	52	38.7	24.3
7	11060.00	51.6 AV	54.0	-2.4	1.93 V	52	27.3	24.3

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 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	*5610.00	111.2 PK			2.82 H	189	68.0	43.2
2	*5610.00	101.7 AV			2.82 H	189	58.5	43.2
3	#5725.00	60.2 PK	68.2	-8.0	2.82 H	189	46.4	13.8
4	11220.00	63.0 PK	74.0	-11.0	2.84 H	137	38.6	24.4
5	11220.00	51.7 AV	54.0	-2.3	2.84 H	137	27.3	24.4
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	*5610.00	114.4 PK			1.45 V	86	71.2	43.2
2	*5610.00	105.0 AV			1.45 V	86	61.8	43.2
3	#5725.00	61.4 PK	68.2	-6.8	1.46 V	88	47.6	13.8
4	11220.00	63.4 PK	74.0	-10.6	1.78 V	42	39.0	24.4
5	11220.00	51.9 AV	54.0	-2.1	1.78 V	42	27.5	24.4

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 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	*5690.00	111.0 PK			2.58 H	192	67.7	43.3
2	*5690.00	102.0 AV			2.58 H	192	58.7	43.3
3	#5850.00	61.1 PK	68.2	-7.1	2.58 H	192	46.8	14.3
4	11380.00	63.8 PK	74.0	-10.2	2.79 H	164	38.7	25.1
5	11380.00	52.5 AV	54.0	-1.5	2.79 H	164	27.4	25.1
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	*5690.00	116.1 PK			1.46 V	88	72.8	43.3
2	*5690.00	105.9 AV			1.46 V	88	62.6	43.3
3	#5850.00	60.0 PK	68.2	-8.2	1.46 V	88	45.7	14.3
4	11380.00	64.3 PK	74.0	-9.7	1.92 V	37	39.2	25.1
5	11380.00	53.0 AV	54.0	-1.0	1.92 V	37	27.9	25.1

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 (HE160)	Channel	CH 50：5250 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	58.9 PK	74.0	-15.1	1.56 H	307	45.9	13.0
2	5150.00	48.0 AV	54.0	-6.0	1.56 H	307	35.0	13.0
3	*5250.00	100.1 PK			1.56 H	307	57.7	42.4
4	*5250.00	90.5 AV			1.56 H	307	48.1	42.4
5	5350.00	58.5 PK	74.0	-15.5	1.56 H	307	45.4	13.1
6	5350.00	48.1 AV	54.0	-5.9	1.56 H	307	35.0	13.1
7	#10500.00	61.8 PK	68.2	-6.4	2.16 H	74	38.9	22.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.1 PK	74.0	-9.9	1.86 V	168	51.1	13.0
2	5150.00	53.6 AV	54.0	-0.4	1.86 V	168	40.6	13.0
3	*5250.00	108.2 PK			1.86 V	168	65.8	42.4
4	*5250.00	99.3 AV			1.86 V	168	56.9	42.4
5	5350.00	60.0 PK	74.0	-14.0	1.86 V	168	46.9	13.1
6	5350.00	49.5 AV	54.0	-4.5	1.86 V	168	36.4	13.1
7	#10500.00	62.6 PK	68.2	-5.6	1.84 V	273	39.7	22.9

Remarks:

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

RF Mode	TX 802.11ax (HE160)	Channel	CH 114：5570 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	64.5 PK	68.2	-3.7	3.17 H	190	50.9	13.6
2	*5570.00	106.8 PK			3.17 H	190	63.7	43.1
3	*5570.00	98.3 AV			3.17 H	190	55.2	43.1
4	#5725.00	61.3 PK	68.2	-6.9	3.17 H	190	47.5	13.8
5	11140.00	62.7 PK	74.0	-11.3	2.65 H	174	38.3	24.4
6	11140.00	51.5 AV	54.0	-2.5	2.65 H	174	27.1	24.4
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	#5466.00	68.0 PK	68.2	-0.2	1.39 V	92	54.5	13.5
2	*5570.00	110.7 PK			1.39 V	92	67.6	43.1
3	*5570.00	100.7 AV			1.39 V	92	57.6	43.1
4	#5725.00	62.9 PK	68.2	-5.3	1.39 V	92	49.1	13.8
5	11140.00	63.0 PK	74.0	-11.0	1.75 V	44	38.6	24.4
6	11140.00	51.7 AV	54.0	-2.3	1.75 V	44	27.3	24.4

Remarks:

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

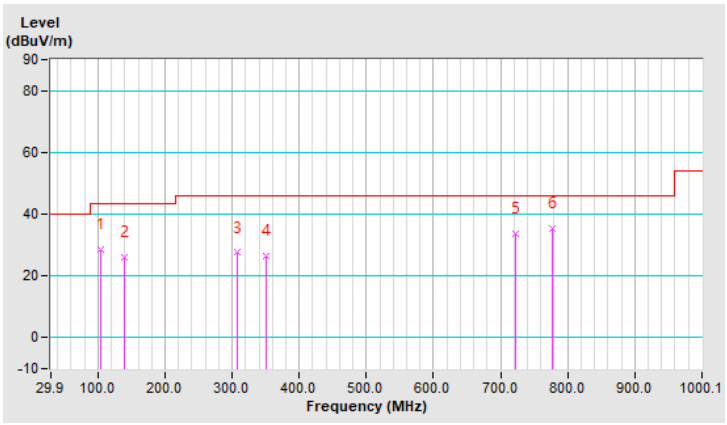
Below 1GHz Worst-Case Data:

RF Mode	TX 802.11ax (HE40)	Channel	CH 54：5270 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	104.61	28.7 QP	43.5	-14.8	1.00 H	293	41.5	-12.8
2	138.56	26.1 QP	43.5	-17.4	1.00 H	352	35.6	-9.5
3	308.35	27.5 QP	46.0	-18.5	1.00 H	309	35.0	-7.5
4	350.07	26.3 QP	46.0	-19.7	1.50 H	163	33.1	-6.8
5	721.65	33.6 QP	46.0	-12.4	1.00 H	64	33.3	0.3
6	776.95	35.2 QP	46.0	-10.8	1.00 H	178	33.1	2.1

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. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

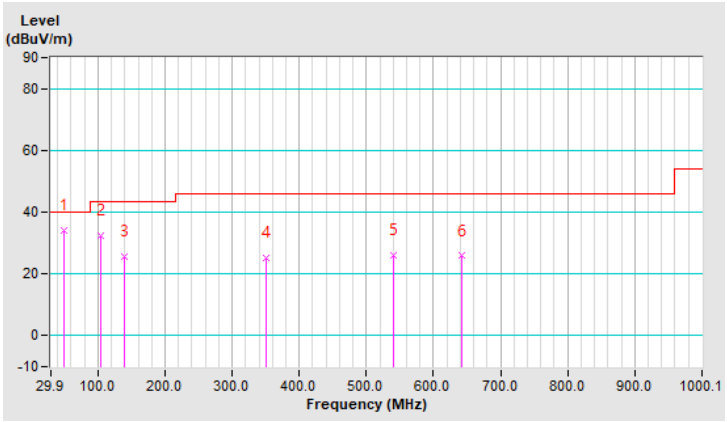


RF Mode	TX 802.11ax (HE40)	Channel	CH 54：5270 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	50.27	33.9 QP	40.0	-6.1	1.00 V	226	42.7	-8.8
2	103.64	32.3 QP	43.5	-11.2	1.00 V	357	45.3	-13.0
3	138.56	25.4 QP	43.5	-18.1	1.00 V	246	34.9	-9.5
4	350.07	25.1 QP	46.0	-20.9	1.49 V	168	31.9	-6.8
5	541.20	26.2 QP	46.0	-19.8	1.49 V	156	29.8	-3.6
6	643.07	25.8 QP	46.0	-20.2	1.00 V	4	27.0	-1.2

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. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

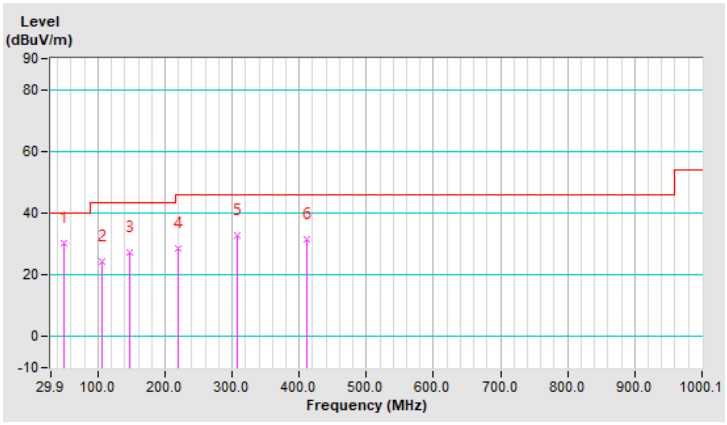


RF Mode	TX 802.11ax (HE40)	Channel	CH 54：5270 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	50.27	30.3 QP	40.0	-9.7	1.00 H	256	39.1	-8.8
2	105.58	24.2 QP	43.5	-19.3	1.00 H	174	36.9	-12.7
3	146.32	27.5 QP	43.5	-16.0	1.50 H	24	36.5	-9.0
4	220.06	28.7 QP	46.0	-17.3	1.00 H	236	40.4	-11.7
5	307.38	32.9 QP	46.0	-13.1	1.00 H	177	40.5	-7.6
6	412.16	31.5 QP	46.0	-14.5	2.00 H	92	37.3	-5.8

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. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

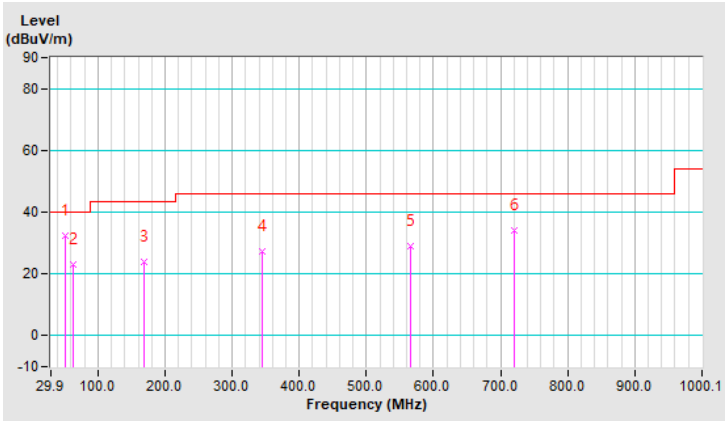


RF Mode	TX 802.11ax (HE40)	Channel	CH 54：5270 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	51.24	32.5 QP	40.0	-7.5	1.00 V	109	41.3	-8.8
2	62.89	23.0 QP	40.0	-17.0	1.50 V	228	32.6	-9.6
3	168.64	23.9 QP	43.5	-19.6	1.50 V	341	33.1	-9.2
4	345.21	27.2 QP	46.0	-18.8	1.50 V	240	34.1	-6.9
5	565.45	28.8 QP	46.0	-17.2	1.00 V	193	32.0	-3.2
6	719.71	34.2 QP	46.0	-11.8	2.00 V	85	33.9	0.3

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. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 04, 2020	Dec. 03, 2021
RF signal cable Woken	5D-FB	Cable-cond1-01	Jan. 16, 2021	Jan. 15, 2022
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 25, 2021	Feb. 24, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100220	Dec. 01, 2020	Nov. 30, 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 1(Conduction 1).
3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

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

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

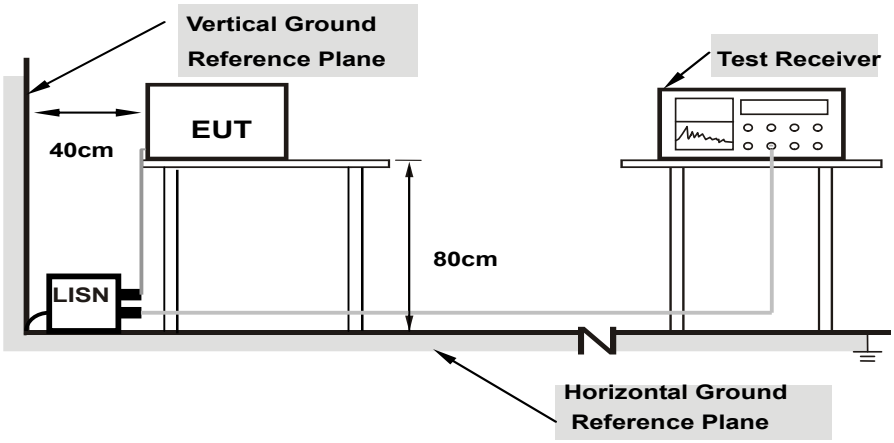
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

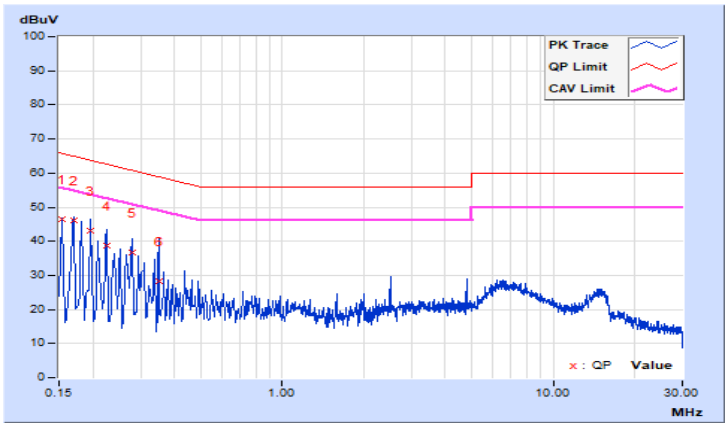
Worst-case data:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.71	36.65	21.38	46.36	31.09	65.79	55.79	-19.43	-24.70
2	0.16955	9.71	36.29	21.04	46.00	30.75	64.98	54.98	-18.98	-24.23
3	0.19692	9.71	33.36	16.74	43.07	26.45	63.74	53.74	-20.67	-27.29
4	0.22429	9.71	29.13	13.16	38.84	22.87	62.66	52.66	-23.82	-29.79
5	0.27903	9.72	26.95	12.42	36.67	22.14	60.84	50.84	-24.17	-28.70
6	0.34941	9.72	18.46	6.34	28.18	16.06	58.98	48.98	-30.80	-32.92

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

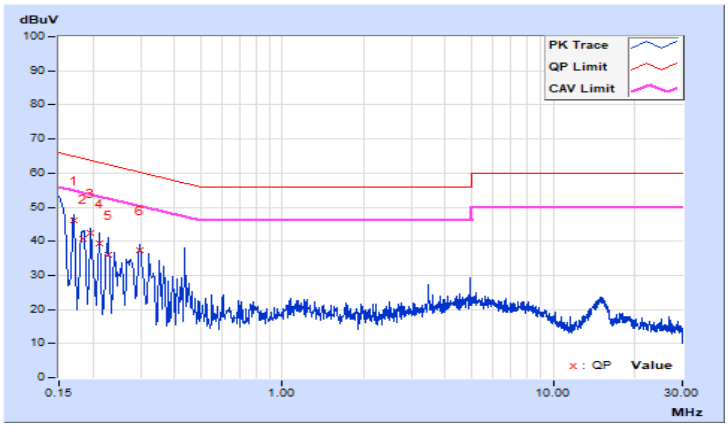


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16955	9.77	36.50	21.19	46.27	30.96	64.98	54.98	-18.71	-24.02
2	0.18363	9.77	30.86	16.67	40.63	26.44	64.32	54.32	-23.69	-27.88
3	0.19692	9.77	32.59	16.80	42.36	26.57	63.74	53.74	-21.38	-27.17
4	0.21256	9.77	29.64	13.50	39.41	23.27	63.10	53.10	-23.69	-29.83
5	0.22791	9.77	26.33	8.46	36.10	18.23	62.53	52.53	-26.43	-34.30
6	0.29858	9.78	27.66	19.79	37.44	29.57	60.28	50.28	-22.84	-20.71

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

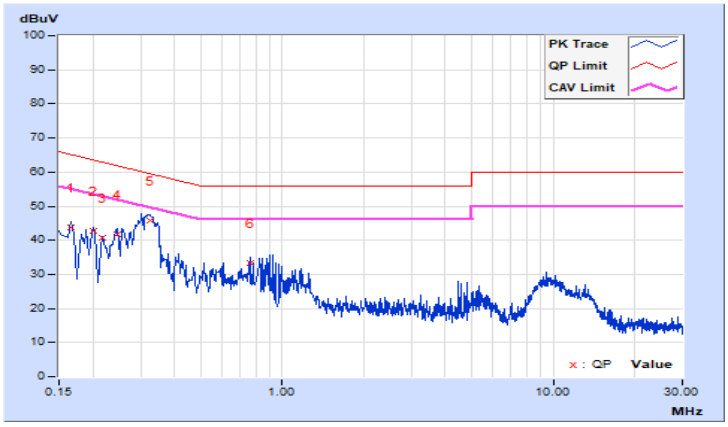


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16564	9.71	33.91	23.36	43.62	33.07	65.18	55.18	-21.56	-22.11
2	0.20083	9.71	33.00	23.88	42.71	33.59	63.58	53.58	-20.87	-19.99
3	0.21621	9.71	31.17	17.86	40.88	27.57	62.96	52.96	-22.08	-25.39
4	0.24601	9.71	32.10	21.08	41.81	30.79	61.89	51.89	-20.08	-21.10
5	0.32595	9.72	36.16	26.18	45.88	35.90	59.55	49.55	-13.67	-13.65
6	0.75984	9.75	23.49	16.22	33.24	25.97	56.00	46.00	-22.76	-20.03

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

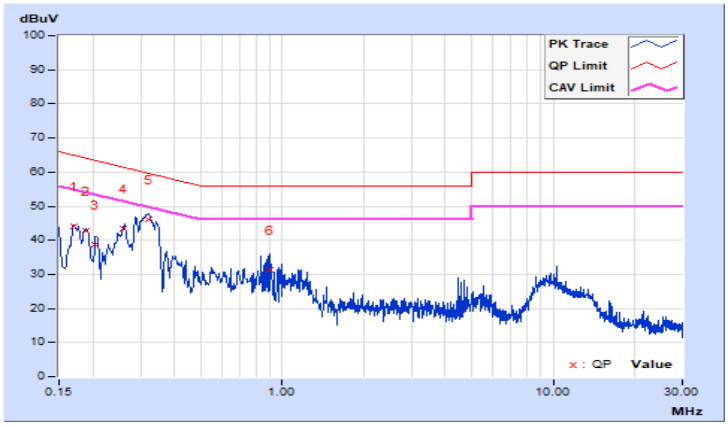


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16955	9.77	34.21	23.08	43.98	32.85	64.98	54.98	-21.00	-22.13
2	0.18754	9.77	32.97	24.35	42.74	34.12	64.14	54.14	-21.40	-20.02
3	0.20474	9.77	29.11	21.65	38.88	31.42	63.42	53.42	-24.54	-22.00
4	0.26001	9.78	33.57	26.85	43.35	36.63	61.43	51.43	-18.08	-14.80
5	**0.32187**	**9.78**	**36.48**	**28.39**	**46.26**	**38.17**	**59.66**	**49.66**	**-13.40**	**-11.49**
6	0.90463	9.82	21.50	9.57	31.32	19.39	56.00	46.00	-24.68	-26.61

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3			1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

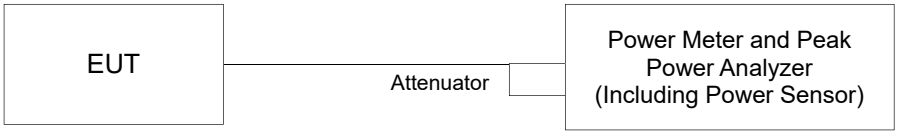
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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

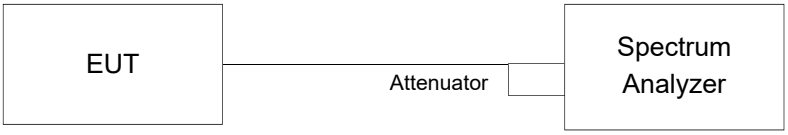
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

For Power Output



For 26dB Bandwidth and power output of ransmission above 5.725 GHz where the EBW crosses 5.725 GHz



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For 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 and set the detector to average. Duty factor is not added to measured value.

For transmission above 5.725 GHz where the EBW crosses 5.725 GHz
For channel aggregation (channel 138, 142, 144) measurement refer to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 Section II E 2 b) method SA-1.

For 26dB Bandwidth

a. Set RBW = approximately 1% of the emission bandwidth.

b. Set the VBW > RBW.

c. Detector = Peak.

d. Trace mode = max hold.

e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

CDD Mode

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.31	20.10	209.728	23.22	23.78	Pass
60	5300	20.44	20.18	214.894	23.32	23.81	Pass
64	5320	20.24	20.12	208.483	23.19	23.78	Pass
100	5500	20.39	20.13	212.434	23.27	23.78	Pass
116	5580	20.29	20.13	209.944	23.22	23.79	Pass
140	5700	20.21	20.18	209.186	23.21	23.77	Pass
144	5720 For U-NII-2C	18.04	18.03	136.839	21.36	22.63	Pass
144	5720 For U-NII-3	9.88	9.86	20.879	13.20	30.00	Pass

Note:

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

Chain 0

1. 11dBm + 10log (19.13) = 23.81 < 24dBm
2. 11dBm + 10log (19.12) = 23.81 < 24dBm
3. 11dBm + 10log (19.01) = 23.78 < 24dBm
4. 11dBm + 10log (19.02) = 23.79 < 24dBm
5. 11dBm + 10log (19.21) = 23.83 < 24dBm
6. 11dBm + 10log (19.04) = 23.79 < 24dBm
7. 11dBm + 10log (5725.00 - 5709.99) = 22.76 < 24dBm

Chain 1

1. 11dBm + 10log (18.97) = 23.78 < 24dBm
2. 11dBm + 10log (19.12) = 23.81 < 24dBm
3. 11dBm + 10log (19.01) = 23.78 < 24dBm
4. 11dBm + 10log (18.99) = 23.78 < 24dBm
5. 11dBm + 10log (19.02) = 23.79 < 24dBm
6. 11dBm + 10log (18.93) = 23.77 < 24dBm
7. 11dBm + 10log (5725.00 - 5710.44) = 22.63 < 24dBm

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.24	20.10	208.011	23.18	24	Pass
60	5300	20.11	20.07	204.190	23.10	24	Pass
64	5320	20.05	20.10	203.487	23.09	24	Pass
100	5500	20.28	20.08	208.519	23.19	24	Pass
116	5580	19.96	20.23	204.522	23.11	24	Pass
140	5700	20.70	19.67	210.173	23.23	24	Pass
144	5720 For U-NII-2C	17.42	17.45	121.326	20.84	22.87	Pass
144	5720 For U-NII-3	10.31	10.34	23.602	13.73	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (21.16) = 24.25 > 24dBm
2. 11dBm + 10log (20.98) = 24.21 > 24dBm
3. 11dBm + 10log (20.97) = 24.21 > 24dBm
4. 11dBm + 10log (20.73) = 24.16 > 24dBm
5. 11dBm + 10log (20.82) = 24.18 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.61) = 22.87 < 24dBm

Chain 1
1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.89) = 24.19 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.65) = 24.14 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.50) = 22.90 < 24dBm

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.54	20.50	225.442	23.53	24	Pass
62	5310	20.27	20.50	218.616	23.40	24	Pass
102	5510	20.28	20.08	208.519	23.19	24	Pass
110	5550	20.31	20.09	209.493	23.21	24	Pass
134	5670	20.29	20.05	208.063	23.18	24	Pass
142	5710 For U-NII-2C	18.29	18.31	149.976	21.76	24	Pass
142	5710 For U-NII-3	6.51	6.52	9.943	9.98	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (41.37) = 27.16 > 24dBm
2. 11dBm + 10log (41.61) = 27.19 > 24dBm
3. 11dBm + 10log (41.33) = 27.16 > 24dBm
4. 11dBm + 10log (41.42) = 27.17 > 24dBm
5. 11dBm + 10log (41.47) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.39) = 26.51 > 24dBm

Chain 1
1. 11dBm + 10log (41.39) = 27.16 > 24dBm
2. 11dBm + 10log (41.25) = 27.15 > 24dBm
3. 11dBm + 10log (41.42) = 27.17 > 24dBm
4. 11dBm + 10log (41.50) = 27.18 > 24dBm
5. 11dBm + 10log (41.45) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.27) = 26.53 > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	20.30	20.47	218.581	23.40	24	Pass
106	5530	20.32	20.07	209.271	23.21	24	Pass
122	5610	20.23	19.94	204.067	23.10	24	Pass
138	5690 For U-NII-2C	18.02	18.06	140.353	21.47	24	Pass
138	5690 For U-NII-3	2.60	2.63	4.025	6.05	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (81.96) = 30.13 > 24dBm
2. 11dBm + 10log (81.90) = 30.13 > 24dBm
3. 11dBm + 10log (82.36) = 30.15 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.35) = 29.78 > 24dBm

Chain 1
1. 11dBm + 10log (81.73) = 30.12 > 24dBm
2. 11dBm + 10log (82.21) = 30.14 > 24dBm
3. 11dBm + 10log (82.59) = 30.16 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.18) = 29.79 > 24dBm

802.11ac (VHT160)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (For U-NII-1)	14.17	14.59	61.349	17.88	30	Pass
50	5250 (For U-NII-2A)	14.81	15.48	73.297	18.65	24	Pass
114	5570	20.26	20.10	208.499	23.19	24	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.21) = 30.20 > 24dBm

Chain 1
1. 11dBm + 10log (82.95) = 30.18 > 24dBm
2. 11dBm + 10log (83.09) = 30.19 > 24dBm

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.28	20.16	210.412	23.23	24	Pass
60	5300	20.21	20.13	207.993	23.18	24	Pass
64	5320	20.13	20.18	207.270	23.17	24	Pass
100	5500	20.32	20.13	210.685	23.24	24	Pass
116	5580	20.05	20.31	208.557	23.19	24	Pass
140	5700	20.43	20.09	**212.502**	23.27	24	Pass
144	5720 For U-NII-2C	17.46	17.49	122.449	20.88	22.87	Pass
144	5720 For U-NII-3	10.35	10.36	23.766	13.76	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (21.16) = 24.25 > 24dBm
2. 11dBm + 10log (20.98) = 24.21 > 24dBm
3. 11dBm + 10log (20.97) = 24.21 > 24dBm
4. 11dBm + 10log (20.73) = 24.16 > 24dBm
5. 11dBm + 10log (20.82) = 24.18 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.61) = 22.87 < 24dBm

Chain 1
1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.89) = 24.19 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.65) = 24.14 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.50) = 22.90 < 24dBm

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.57	20.53	**227.005**	23.56	24	Pass
62	5310	20.33	20.58	222.183	23.47	24	Pass
102	5510	20.33	20.15	211.409	23.25	24	Pass
110	5550	20.34	20.18	212.375	23.27	24	Pass
134	5670	20.31	20.11	209.964	23.22	24	Pass
142	5710 For U-NII-2C	18.32	18.35	151.190	21.80	24	Pass
142	5710 For U-NII-3	6.57	6.59	10.093	10.04	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (41.37) = 27.16 > 24dBm
2. 11dBm + 10log (41.61) = 27.19 > 24dBm
3. 11dBm + 10log (41.33) = 27.16 > 24dBm
4. 11dBm + 10log (41.42) = 27.17 > 24dBm
5. 11dBm + 10log (41.47) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.39) = 26.51 > 24dBm

Chain 1
1. 11dBm + 10log (41.39) = 27.16 > 24dBm
2. 11dBm + 10log (41.25) = 27.15 > 24dBm
3. 11dBm + 10log (41.42) = 27.17 > 24dBm
4. 11dBm + 10log (41.50) = 27.18 > 24dBm
5. 11dBm + 10log (41.45) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.27) = 26.53 > 24dBm

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	20.37	20.48	220.579	23.44	24	Pass
106	5530	20.37	20.11	211.458	23.25	24	Pass
122	5610	20.30	20.03	207.845	23.18	24	Pass
138	5690 For U-NII-2C	18.09	18.10	142.140	21.53	24	Pass
138	5690 For U-NII-3	2.64	2.67	4.062	6.09	30	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (81.96) = 30.13 > 24dBm
2. 11dBm + 10log (81.90) = 30.13 > 24dBm
3. 11dBm + 10log (82.36) = 30.15 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.35) = 29.78 > 24dBm

Chain 1
1. 11dBm + 10log (81.73) = 30.12 > 24dBm
2. 11dBm + 10log (82.21) = 30.14 > 24dBm
3. 11dBm + 10log (82.59) = 30.16 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.18) = 29.79 > 24dBm

802.11ax (HE160)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (For U-NII-1)	14.28	14.76	63.543	18.03	30	Pass
50	5250 (For U-NII-2A)	14.92	15.37	73.365	18.65	24	Pass
114	5570	20.35	20.16	212.146	23.27	24	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.21) = 30.20 > 24dBm

Chain 1
1. 11dBm + 10log (82.95) = 30.18 > 24dBm
2. 11dBm + 10log (83.09) = 30.19 > 24dBm

Beamforming Mode

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.24	20.10	208.011	23.18	24.00	Pass
60	5300	20.11	20.07	204.190	23.10	24.00	Pass
64	5320	20.05	20.10	203.487	23.09	24.00	Pass
100	5500	20.28	20.08	208.519	23.19	23.59	Pass
116	5580	19.96	20.23	204.522	23.11	23.59	Pass
140	5700	20.70	19.67	210.173	23.23	23.59	Pass
144	5720 For U-NII-2C	17.42	17.45	121.326	20.84	22.46	Pass
144	5720 For U-NII-3	10.31	10.34	23.602	13.73	29.56	Pass

Note:

1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5720MHz (For U-NII-2C): Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 22.87 - (6.41 - 6) = 22.46dBm.
4. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (21.16) = 24.25 > 24dBm
2. 11dBm + 10log (20.98) = 24.21 > 24dBm
3. 11dBm + 10log (20.97) = 24.21 > 24dBm
4. 11dBm + 10log (20.73) = 24.16 > 24dBm
5. 11dBm + 10log (20.82) = 24.18 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.61) = 22.87 < 24dBm

Chain 1

1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.89) = 24.19 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.65) = 24.14 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.50) = 22.90 < 24dBm

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.54	20.50	225.442	23.53	24.00	Pass
62	5310	20.27	20.50	218.616	23.40	24.00	Pass
102	5510	20.28	20.08	208.519	23.19	23.59	Pass
110	5550	20.31	20.09	209.493	23.21	23.59	Pass
134	5670	20.29	20.05	208.063	23.18	23.59	Pass
142	5710 For U-NII-2C	18.29	18.31	149.976	21.76	23.59	Pass
142	5710 For U-NII-3	6.51	6.52	9.943	9.98	29.56	Pass

Note:
1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (41.37) = 27.16 > 24dBm
2. 11dBm + 10log (41.61) = 27.19 > 24dBm
3. 11dBm + 10log (41.33) = 27.16 > 24dBm
4. 11dBm + 10log (41.42) = 27.17 > 24dBm
5. 11dBm + 10log (41.47) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.39) = 26.51 > 24dBm

Chain 1

1. 11dBm + 10log (41.39) = 27.16 > 24dBm
2. 11dBm + 10log (41.25) = 27.15 > 24dBm
3. 11dBm + 10log (41.42) = 27.17 > 24dBm
4. 11dBm + 10log (41.50) = 27.18 > 24dBm
5. 11dBm + 10log (41.45) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.27) = 26.53 > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	20.30	20.47	218.581	23.40	24.00	Pass
106	5530	20.32	20.07	209.271	23.21	23.59	Pass
122	5610	20.23	19.94	204.067	23.10	23.59	Pass
138	5690 For U-NII-2C	18.02	18.06	140.353	21.47	23.59	Pass
138	5690 For U-NII-3	2.60	2.63	4.025	6.05	29.56	Pass

Note:

1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (81.96) = 30.13 > 24dBm
2. 11dBm + 10log (81.90) = 30.13 > 24dBm
3. 11dBm + 10log (82.36) = 30.15 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.35) = 29.78 > 24dBm

Chain 1

1. 11dBm + 10log (81.73) = 30.12 > 24dBm
2. 11dBm + 10log (82.21) = 30.14 > 24dBm
3. 11dBm + 10log (82.59) = 30.16 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.18) = 29.79 > 24dBm

802.11ac (VHT160)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (For U-NII-1)	14.17	14.59	61.349	17.88	30.00	Pass
50	5250 (For U-NII-2A)	14.81	15.48	73.297	18.65	24.00	Pass
114	5570	20.26	20.10	208.499	23.19	23.59	Pass

Note:

1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.

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

Chain 0

1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.21) = 30.20 > 24dBm

Chain 1

1. 11dBm + 10log (82.95) = 30.18 > 24dBm
2. 11dBm + 10log (83.09) = 30.19 > 24dBm

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.28	20.16	210.412	23.23	24.00	Pass
60	5300	20.21	20.13	207.993	23.18	24.00	Pass
64	5320	20.13	20.18	207.270	23.17	24.00	Pass
100	5500	20.32	20.13	210.685	23.24	23.59	Pass
116	5580	20.05	20.31	208.557	23.19	23.59	Pass
140	5700	20.43	20.09	**212.502**	23.27	23.59	Pass
144	5720 For U-NII-2C	17.46	18.32	135.387	21.32	22.46	Pass
144	5720 For U-NII-3	10.35	17.49	73.305	18.65	29.56	Pass

Note:
1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5720MHz (For U-NII-2C): Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 22.87 - (6.41 - 6) = 22.46dBm.
4. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (21.16) = 24.25 > 24dBm
2. 11dBm + 10log (20.98) = 24.21 > 24dBm
3. 11dBm + 10log (20.97) = 24.21 > 24dBm
4. 11dBm + 10log (20.73) = 24.16 > 24dBm
5. 11dBm + 10log (20.82) = 24.18 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.61) = 22.87 < 24dBm

Chain 1

1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.89) = 24.19 > 24dBm
4. 11dBm + 10log (20.58) = 24.13 > 24dBm
5. 11dBm + 10log (20.65) = 24.14 > 24dBm
6. 11dBm + 10log (20.75) = 24.17 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.50) = 22.90 < 24dBm

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.57	20.53	**227.005**	23.56	24.00	Pass
62	5310	20.33	20.58	222.183	23.47	24.00	Pass
102	5510	20.33	20.15	211.409	23.25	23.59	Pass
110	5550	20.34	20.18	212.375	23.27	23.59	Pass
134	5670	20.31	20.11	209.964	23.22	23.59	Pass
142	5710 For U-NII-2C	18.32	18.35	151.190	21.80	23.59	Pass
142	5710 For U-NII-3	6.57	6.59	10.093	10.04	29.56	Pass

Note:
1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (41.37) = 27.16 > 24dBm
2. 11dBm + 10log (41.61) = 27.19 > 24dBm
3. 11dBm + 10log (41.33) = 27.16 > 24dBm
4. 11dBm + 10log (41.42) = 27.17 > 24dBm
5. 11dBm + 10log (41.47) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.39) = 26.51 > 24dBm

Chain 1

1. 11dBm + 10log (41.39) = 27.16 > 24dBm
2. 11dBm + 10log (41.25) = 27.15 > 24dBm
3. 11dBm + 10log (41.42) = 27.17 > 24dBm
4. 11dBm + 10log (41.50) = 27.18 > 24dBm
5. 11dBm + 10log (41.45) = 27.17 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.27) = 26.53 > 24dBm

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	20.37	20.48	220.579	23.44	24.00	Pass
106	5530	20.37	20.11	211.458	23.25	23.59	Pass
122	5610	20.30	20.03	207.845	23.18	23.59	Pass
138	5690 For U-NII-2C	18.09	18.10	142.140	21.53	23.59	Pass
138	5690 For U-NII-3	2.64	2.67	4.062	6.09	29.56	Pass

Note:

1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.
3. 5725-5850MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.

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

Chain 0

1. 11dBm + 10log (81.96) = 30.13 > 24dBm
2. 11dBm + 10log (81.90) = 30.13 > 24dBm
3. 11dBm + 10log (82.36) = 30.15 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.35) = 29.78 > 24dBm

Chain 1

1. 11dBm + 10log (81.73) = 30.12 > 24dBm
2. 11dBm + 10log (82.21) = 30.14 > 24dBm
3. 11dBm + 10log (82.59) = 30.16 > 24dBm
4. 11dBm + 10log (5725.00 - 5649.18) = 29.79 > 24dBm

802.11ax (HE160)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (For U-NII-1)	14.28	14.76	63.543	18.03	30.00	Pass
50	5250 (For U-NII-2A)	14.92	15.37	73.365	18.65	24.00	Pass
114	5570	20.35	20.16	212.146	23.27	23.59	Pass

Note:

1. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
2. 5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power limit shall be reduced to 24 - (6.41 - 6) = 23.59dBm.

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

Chain 0

1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.21) = 30.20 > 24dBm

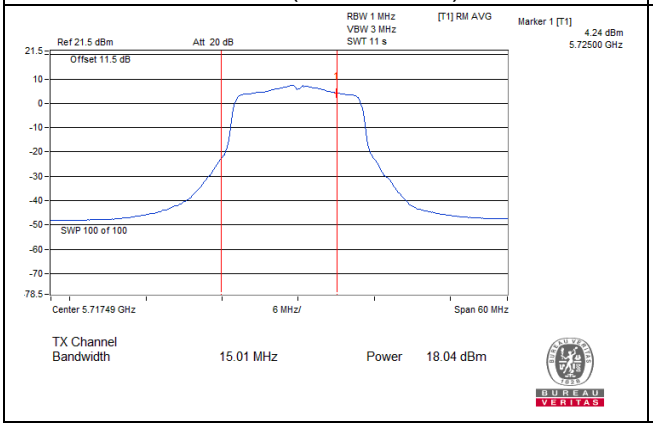
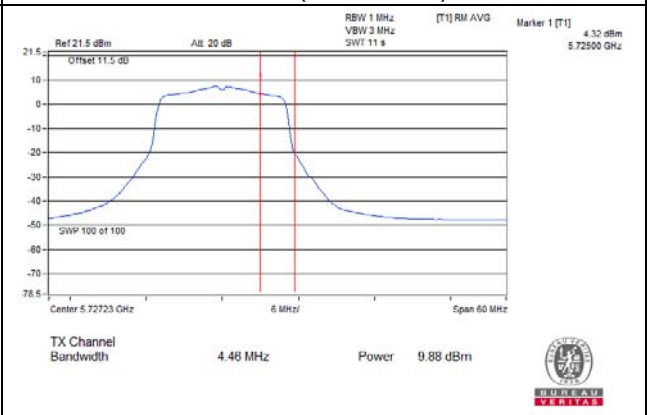
Chain 1

1. 11dBm + 10log (82.95) = 30.18 > 24dBm
2. 11dBm + 10log (83.09) = 30.19 > 24dBm

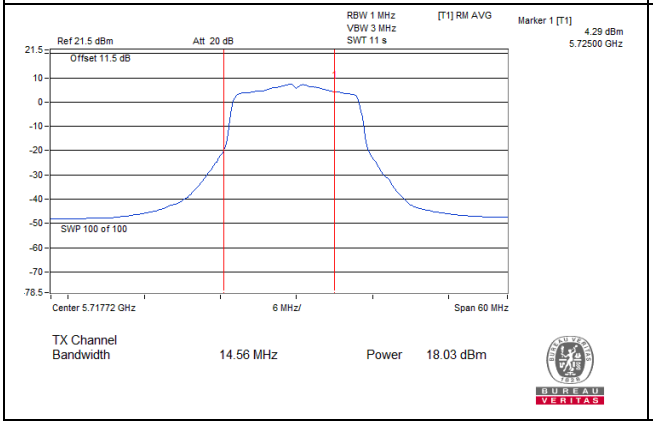
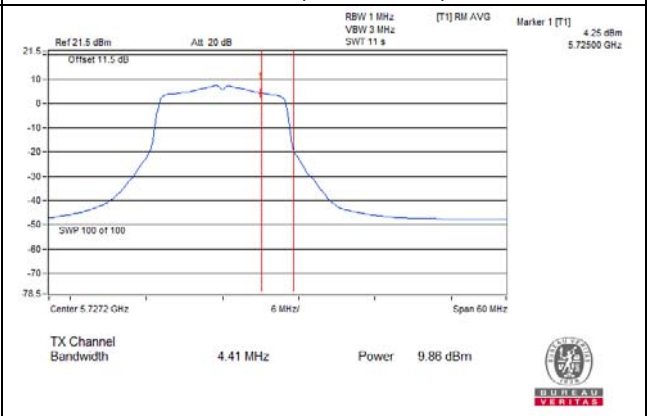
Straddle channel power plots:

802.11a

Chain 0

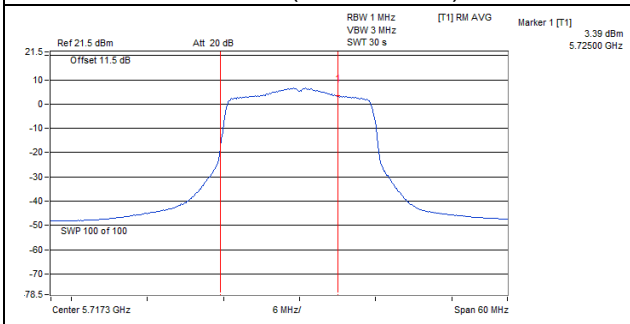
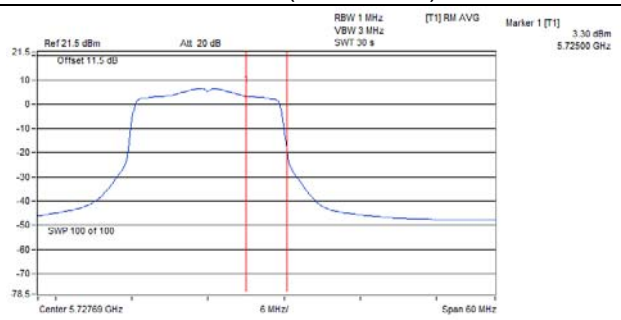
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	

Chain 1

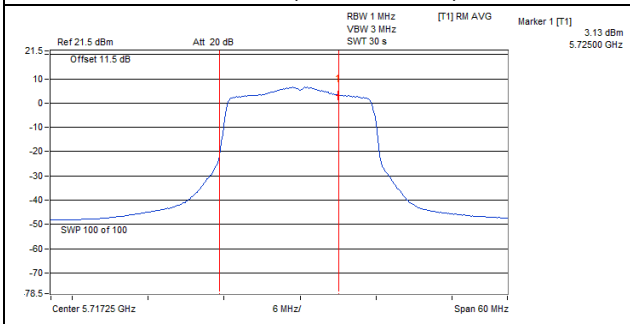
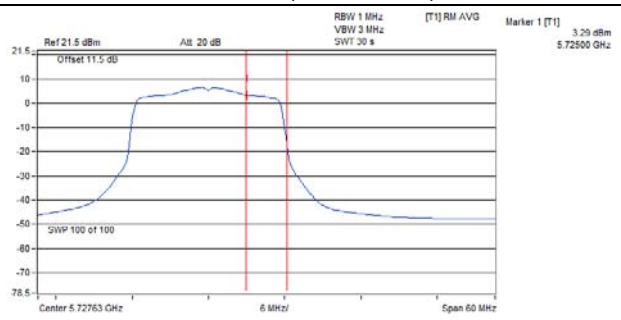
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
	

802.11ax (HE20)

Chain 0

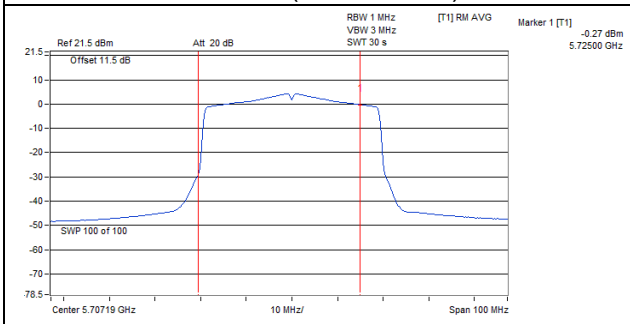
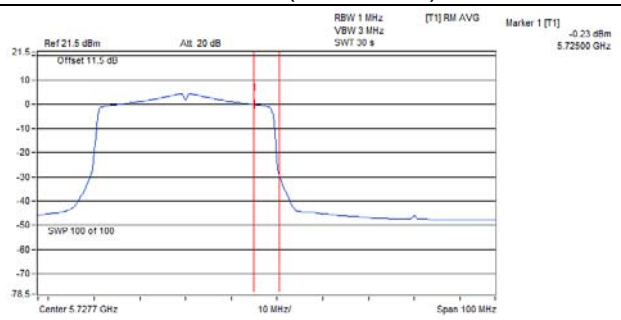
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
 TX Channel Bandwidth 15.39 MHz Power 17.46 dBm	 TX Channel Bandwidth 5.38 MHz Power 10.35 dBm

Chain 1

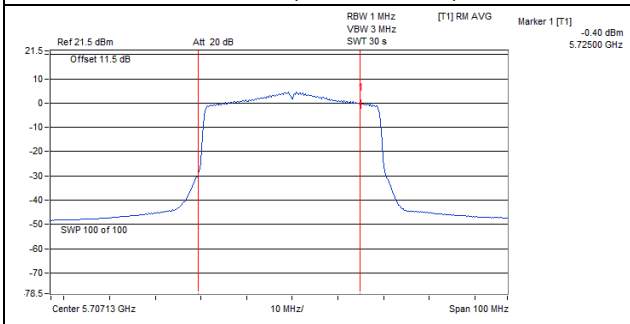
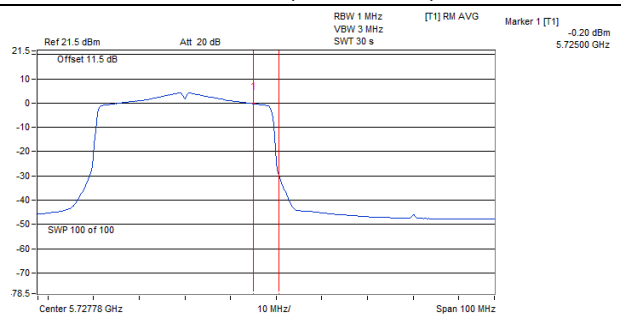
CH 144 (For U-NII-2C)	CH 144 (For U-NII-3)
 TX Channel Bandwidth 15.5 MHz Power 17.49 dBm	 TX Channel Bandwidth 5.26 MHz Power 10.36 dBm

802.11ax (HE40)

Chain 0

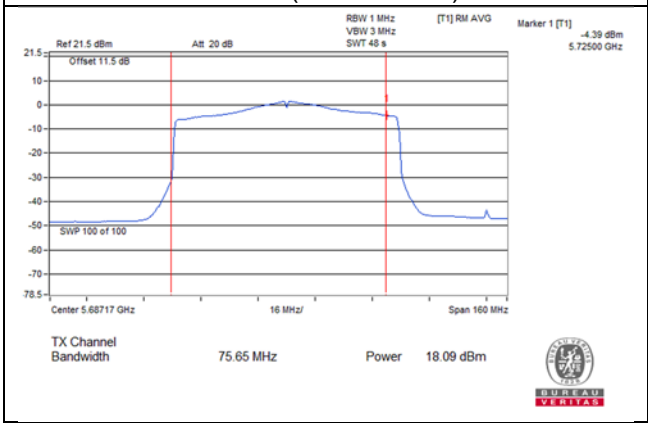
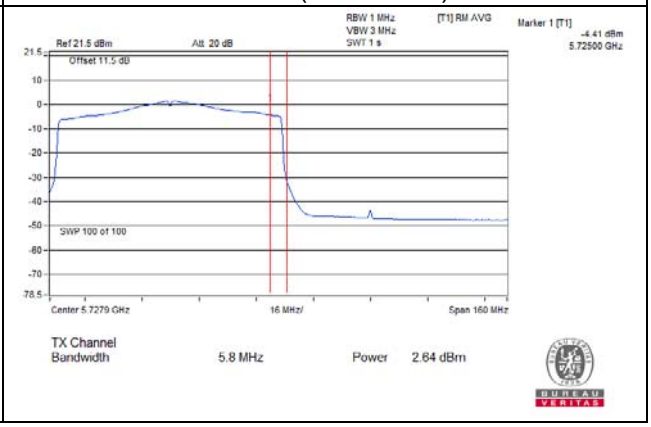
CH 142 (For U-NII-2C)	CH 142 (For U-NII-3)
 TX Channel Bandwidth 35.61 MHz Power 18.32 dBm	 TX Channel Bandwidth 5.41 MHz Power 6.57 dBm

Chain 1

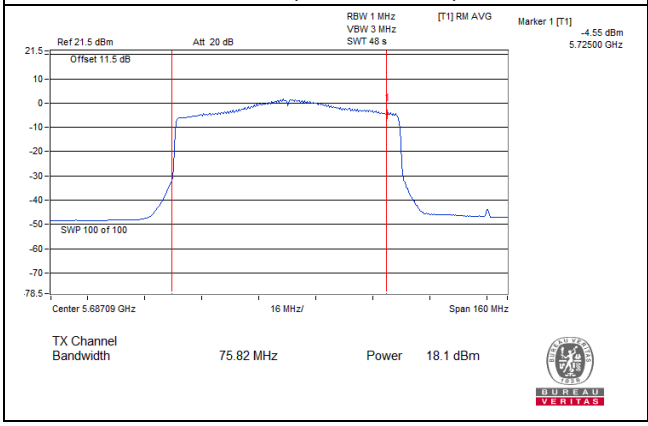
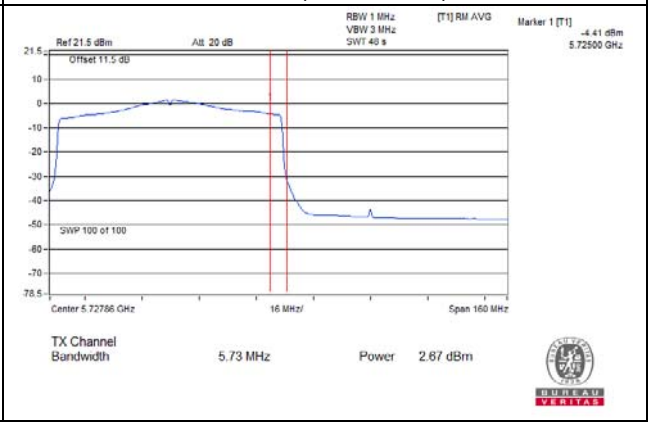
CH 142 (For U-NII-2C)	CH 142 (For U-NII-3)
 TX Channel Bandwidth 35.73 MHz Power 18.35 dBm	 TX Channel Bandwidth 5.56 MHz Power 6.59 dBm

802.11ax (HE80)

Chain 0

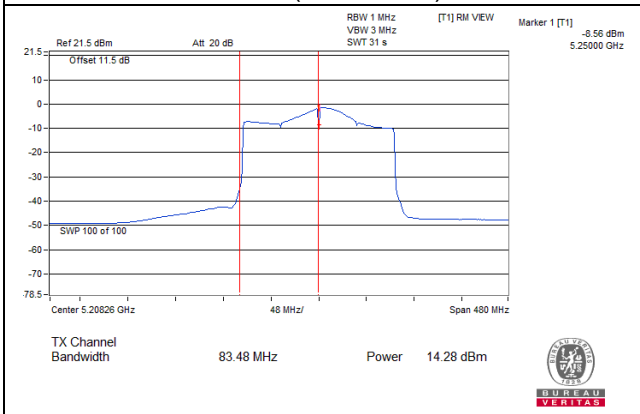
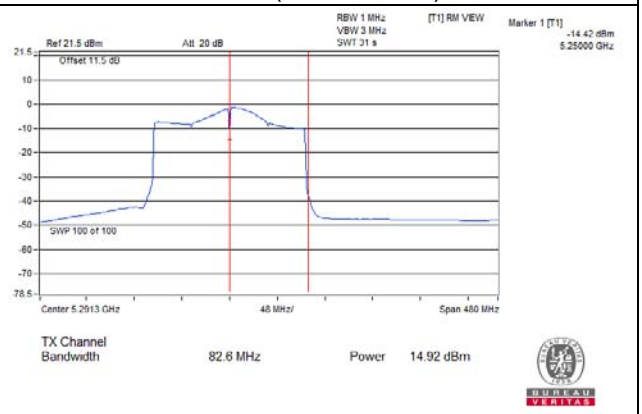
CH 138 (For U-NII-2C)	CH 138 (For U-NII-3)
	

Chain 1

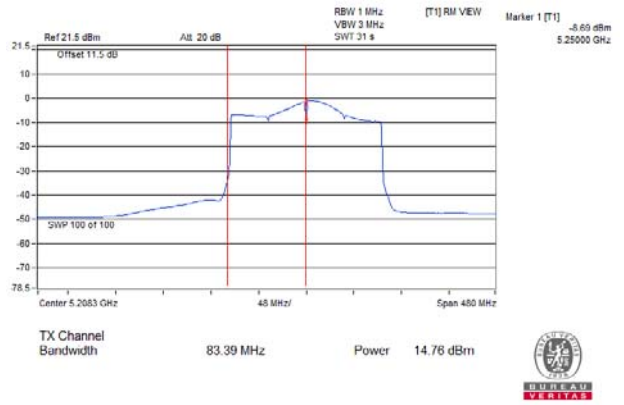
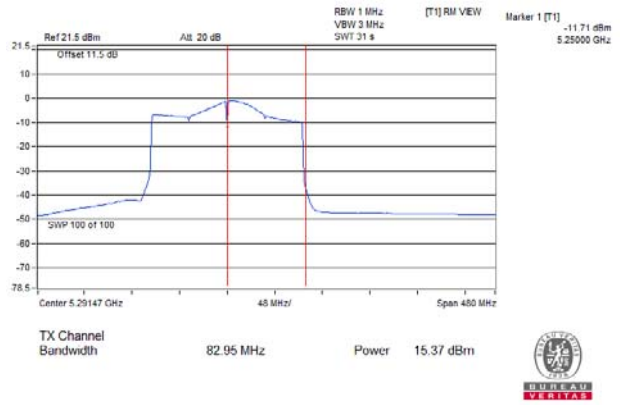
CH 138 (For U-NII-2C)	CH 138 (For U-NII-3)
	

802.11ax (HE160)

Chain 0

CH 50 (For U-NII-1)	CH 50 (For U-NII-2A)
	

Chain 1

CH 50 (For U-NII-1)	CH 50 (For U-NII-2A)
	

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.13	18.97
60	5300	19.12	19.12
64	5320	19.01	19.01
100	5500	19.02	18.99
116	5580	19.21	19.02
140	5700	19.04	18.93
144	5720 (For U-NII-2C)	15.01	14.56

802.11ax (HE20)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	21.16	20.65
60	5300	20.98	20.66
64	5320	20.97	20.89
100	5500	20.73	20.58
116	5580	20.82	20.65
140	5700	20.75	20.75
144	5720 (For U-NII-2C)	15.39	15.50

802.11ax (HE40)

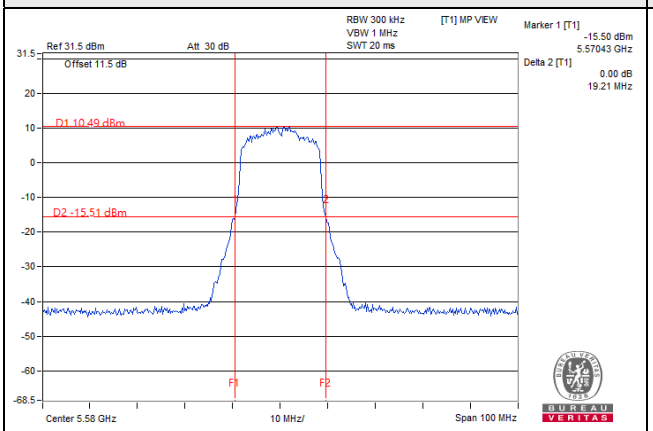
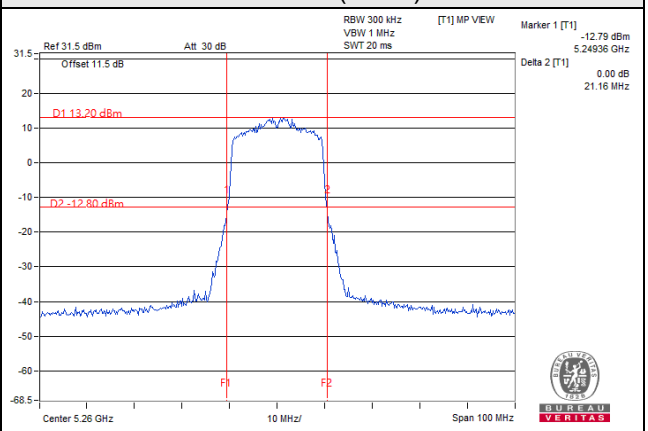
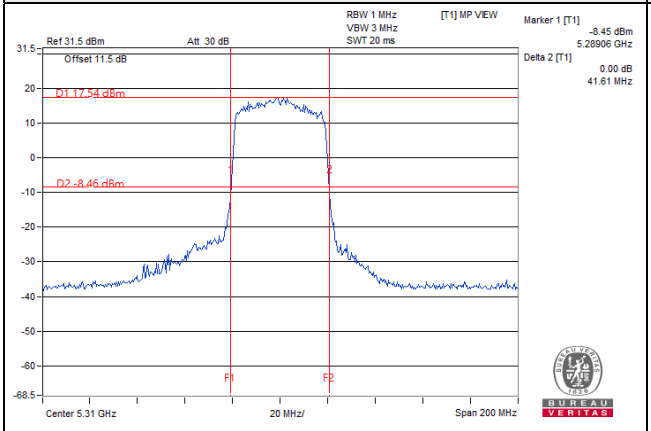
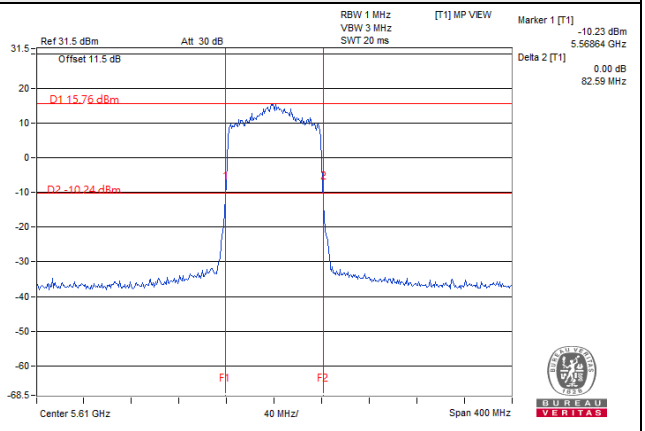
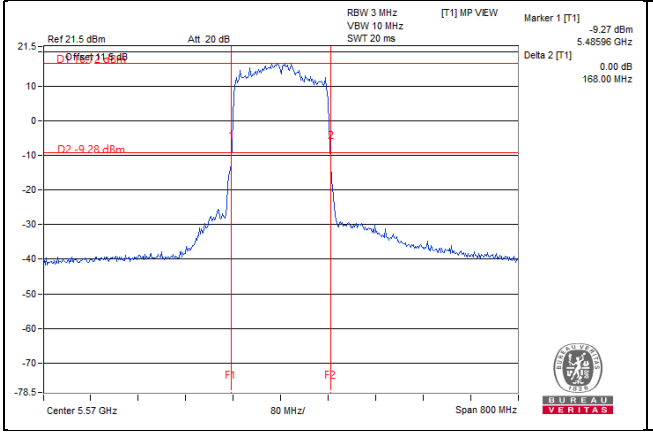
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	41.37	41.39
62	5310	41.61	41.25
102	5510	41.33	41.42
110	5550	41.42	41.50
134	5670	41.47	41.45
142	5710 (For U-NII-2C)	35.61	35.73

802.11ax (HE80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	81.96	81.73
106	5530	81.90	82.21
122	5610	82.36	82.59
138	5690 (For U-NII-2C)	75.65	75.82

802.11ax (HE160)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
50	5250 (For U-NII-2A)	82.60	82.95
114	5570	168.00	167.67

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	
802.11ax (HE160)	
	

EUT Average Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.32	214.894
5470~5725	23.27	212.434

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.18	208.011
5470~5725	23.23	210.173

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.53	225.442
5470~5725	23.21	209.493

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.40	218.581
5470~5725	23.21	209.271

802.11ac (VHT160)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	18.65	73.297
5470~5725	23.19	208.499

802.11ax (HE20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.23	210.412
5470~5725	23.27	212.502

802.11ax (HE40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.56	227.005
5470~5725	23.27	212.375

802.11ax (HE80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.44	220.579
5470~5725	23.25	211.458

802.11ax (HE160)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	18.65	73.365
5470~5725	23.27	212.146

Beamforming Mode

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.18	208.011
5470~5725	23.23	210.173

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.53	225.442
5470~5725	23.21	209.493

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.40	218.581
5470~5725	23.21	209.271

802.11ac (VHT160)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	18.65	73.297
5470~5725	23.19	208.499

802.11ax (HE20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.23	210.412
5470~5725	23.27	212.502

802.11ax (HE40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.56	227.005
5470~5725	23.27	212.375

802.11ax (HE80)

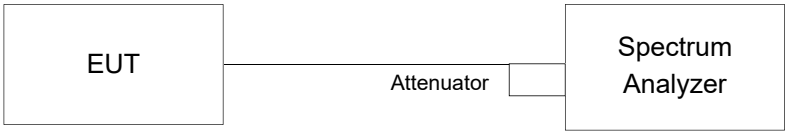
Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.44	220.579
5470~5725	23.25	211.458

802.11ax (HE160)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	18.65	73.365
5470~5725	23.27	212.146

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 sampling. 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 Result

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.20	17.32
60	5300	17.32	17.32
64	5320	17.32	17.32
100	5500	17.20	17.20
116	5580	17.20	17.32
140	5700	17.20	17.20
144	5720 For U-NII-2C	13.16	13.16
144	5720 For U-NII-3	3.04	3.04

802.11ax (HE20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	18.84	18.84
60	5300	18.84	18.84
64	5320	18.72	18.72
100	5500	18.84	18.84
116	5580	18.84	18.84
140	5700	18.84	18.84
144	5720 For U-NII-2C	14.48	14.48
144	5720 For U-NII-3	4.36	4.36

802.11ax (HE40)

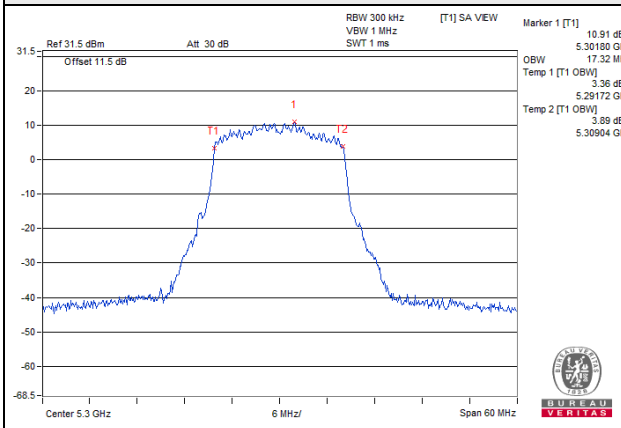
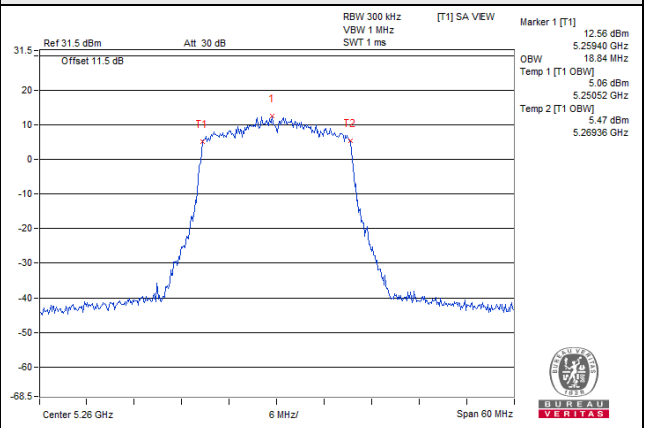
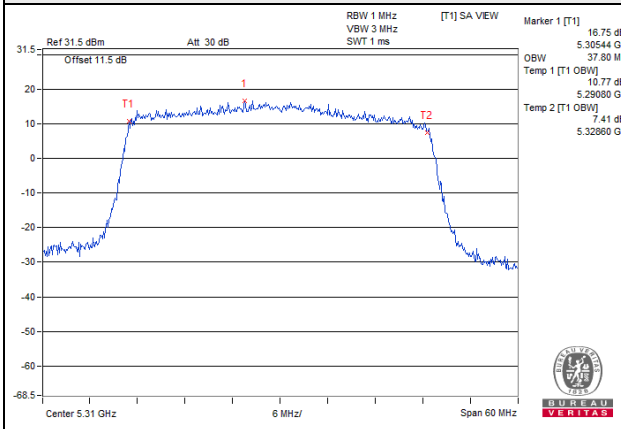
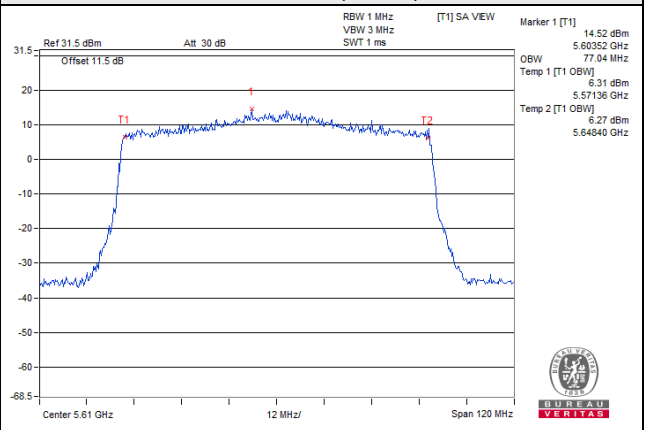
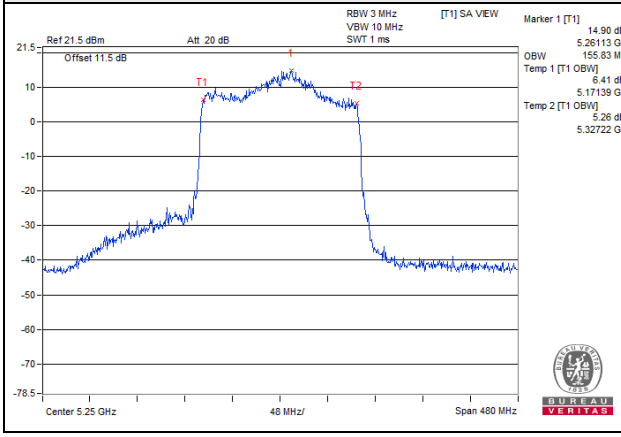
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	37.56	37.56
62	5310	37.56	37.80
102	5510	37.68	37.68
110	5550	37.68	37.68
134	5670	37.56	37.56
142	5710 For U-NII-2C	33.84	33.84
142	5710 For U-NII-3	3.72	3.72

802.11ax (HE80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	76.32	76.32
106	5530	76.80	76.80
122	5610	77.04	76.80
138	5690 For U-NII-2C	73.16	73.16
138	5690 For U-NII-3	3.40	3.16

802.11ax (HE160)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
50	5250 (For U-NII-1)	78.61	78.61
50	5250 (For U-NII-2A)	76.52	77.22
114	5570	77.76	77.76

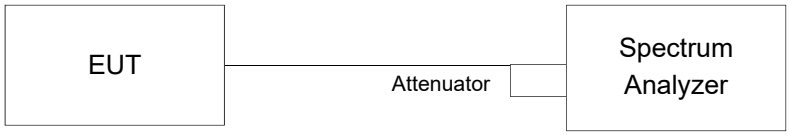
Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	
802.11ax (HE160)	
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1 band:

Using method SA-2

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

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

Duty cycle of test signal is < 98%
Using method SA-2
1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS
3) Set Channel power measure = 1MHz
4) Sweep time = auto, trigger set to “free run”.
5) Trace average at least 100 traces in power averaging mode.
6) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band
Duty cycle <98%

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	7.66	7.37	0.32	10.84	11.00	Pass
60	5300	7.21	7.61	0.32	10.74	11.00	Pass
64	5320	7.39	7.84	0.32	10.95	11.00	Pass
100	5500	7.18	7.05	0.32	10.44	10.59	Pass
116	5580	6.99	7.11	0.32	10.38	10.59	Pass
140	5700	6.97	7.39	0.32	10.51	10.59	Pass
144	5720 For U-NII-2C	7.39	7.03	0.32	10.54	10.59	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. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
   5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power density limit shall be reduced to 11 - (6.41 - 6) = 10.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	6.09	6.92	0.39	9.93	11.00	Pass
60	5300	6.42	7.90	0.39	10.63	11.00	Pass
64	5320	6.00	5.20	0.39	9.02	11.00	Pass
100	5500	6.28	7.67	0.39	10.43	10.59	Pass
116	5580	7.35	6.64	0.39	10.41	10.59	Pass
140	5700	6.38	6.39	0.39	9.79	10.59	Pass
144	5720 For U-NII-2C	7.09	7.24	0.39	10.57	10.59	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. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
   5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power density limit shall be reduced to 11 - (6.41 - 6) = 10.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	5.61	4.75	0.45	8.66	11.00	Pass
62	5310	6.72	5.31	0.45	9.53	11.00	Pass
102	5510	5.83	4.73	0.45	8.77	10.59	Pass
110	5550	5.08	4.73	0.45	8.37	10.59	Pass
134	5670	5.91	5.57	0.45	9.20	10.59	Pass
142	5710 For U-NII-2C	6.76	5.68	0.45	9.71	10.59	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. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
   5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power density limit shall be reduced to 11 - (6.41 - 6) = 10.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	1.12	1.01	0.42	4.50	11.00	Pass
106	5530	0.28	0.73	0.42	3.94	10.59	Pass
122	5610	1.41	0.79	0.42	4.54	10.59	Pass
138	5690 For U-NII-2C	3.45	3.44	0.42	6.88	10.59	Pass

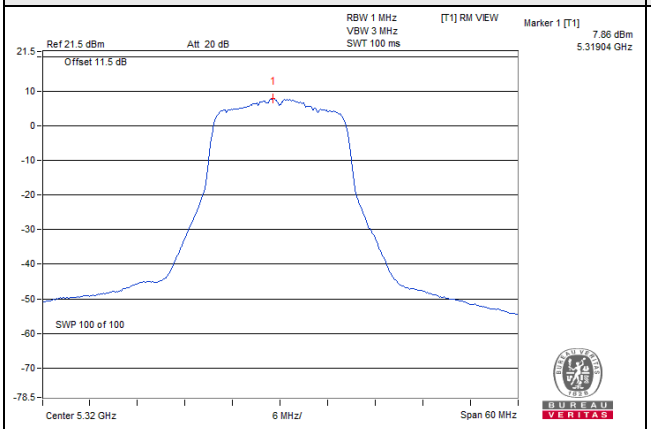
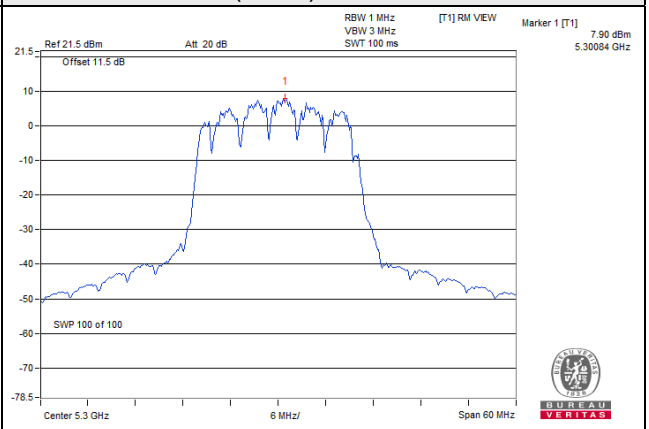
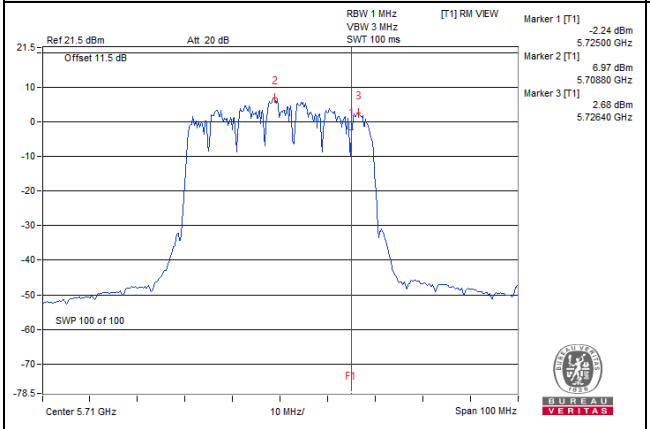
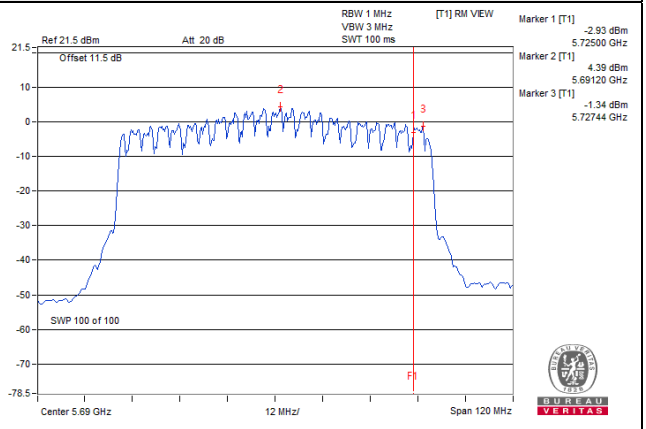
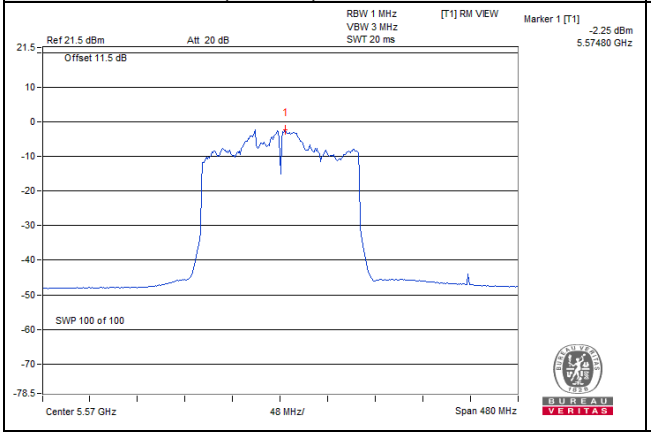
Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
   5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power density limit shall be reduced to 11 - (6.41 - 6) = 10.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE160)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
50	5250 (For U-NII-1)	-4.43	-4.21	0.48	-0.83	17.00	Pass
50	5250 (For U-NII-2A)	-5.45	-5.31	0.48	-1.89	11.00	Pass
114	5570	-2.90	-2.35	0.49	0.88	10.59	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. 5250-5320MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 5.76dBi < 6dBi, so the limit no need to reduce.
   5500-5720MHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.41dBi > 6dBi, so the power density limit shall be reduced to 11 - (6.41 - 6) = 10.59dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 1 / CH 64	802.11ax (HE20) / Chain 1 / CH 60
	
802.11ax (HE40) / Chain 0 / CH 142	802.11ax (HE80) / Chain 0 / CH 138
	
802.11ax (HE160) / Chain 1 / CH 114	
	

For U-NII-3 band:

802.11a

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/ 300kHz)	(dBm/ 500kHz)					
0	144	5720 For U-NII-3	-0.34	1.88	3.01	0.32	5.21	29.56	Pass
1	144	5720 For U-NII-3	-0.17	2.05	3.01	0.32	5.38	29.56	Pass

Note:
1. Method E)2)c) of power density measurement of KDB 662911 is using for calculating total power density. Measure and add 10 log (N_{ANT}) dB, where N_{ANT} is the number of outputs.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power density limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/ 300kHz)	(dBm/ 500kHz)					
0	144	5720 For U-NII-3	-0.99	1.23	3.01	0.39	4.63	29.56	Pass
1	144	5720 For U-NII-3	-1.14	1.08	3.01	0.39	4.48	29.56	Pass

Note:
1. Method E)2)c) of power density measurement of KDB 662911 is using for calculating total power density. Measure and add 10 log (N_{ANT}) dB, where N_{ANT} is the number of outputs.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power density limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/ 300kHz)	(dBm/ 500kHz)					
0	142	5710 For U-NII-3	-3.98	-1.76	3.01	0.45	1.7	29.56	Pass
1	142	5710 For U-NII-3	-2.48	-0.26	3.01	0.45	3.2	29.56	Pass

Note:
1. Method E)2)c) of power density measurement of KDB 662911 is using for calculating total power density. Measure and add 10 log (N_{ANT}) dB, where N_{ANT} is the number of outputs.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power density limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

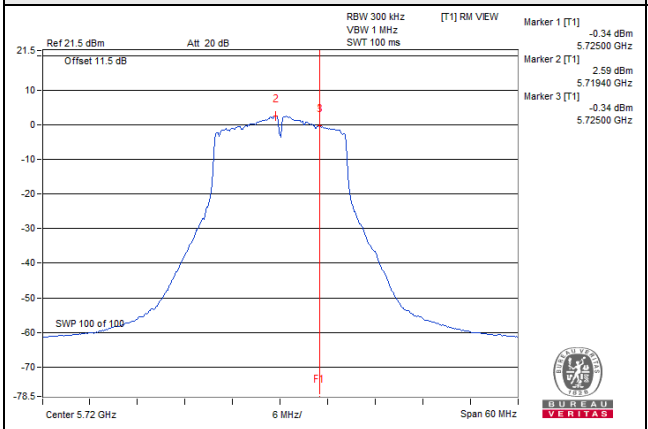
TX chain	Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/ 300kHz)	(dBm/ 500kHz)					
0	138	5690 For U-NII-3	-6.44	-4.22	3.01	0.42	-0.79	29.56	Pass
1	138	5690 For U-NII-3	-6.79	-4.57	3.01	0.42	-1.14	29.56	Pass

Note:

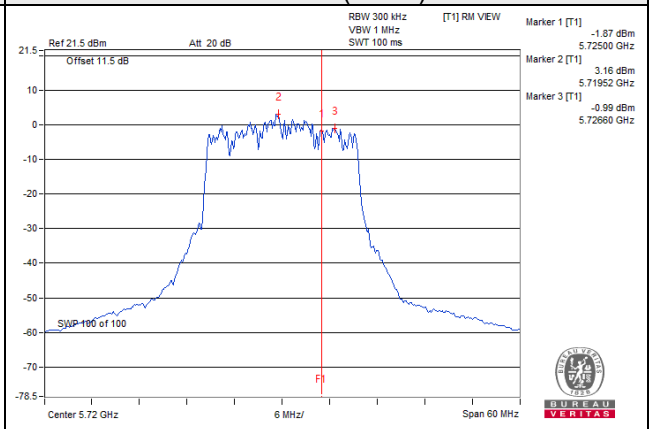
1. Method E)2)c) of power density measurement of KDB 662911 is using for calculating total power density. Measure and add 10 log (N_{ANT}) dB, where N_{ANT} is the number of outputs.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \cdots + 10^{GN/20})^2/2$] = 6.44dBi > 6dBi, so the power density limit shall be reduced to 30 - (6.44 - 6) = 29.56dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

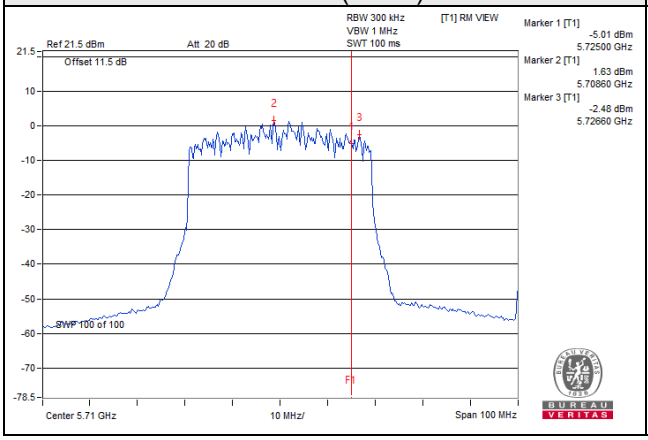
802.11a



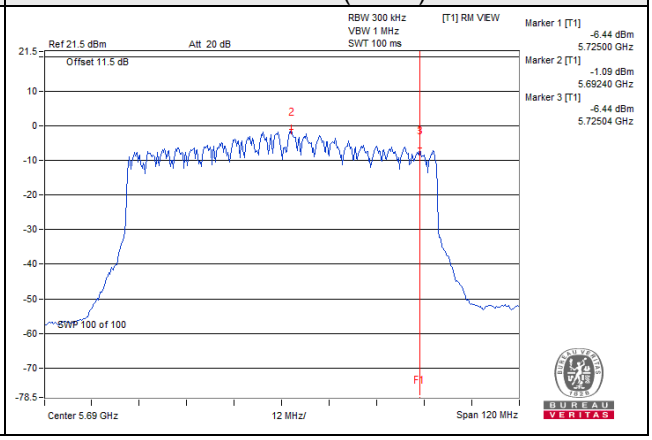
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

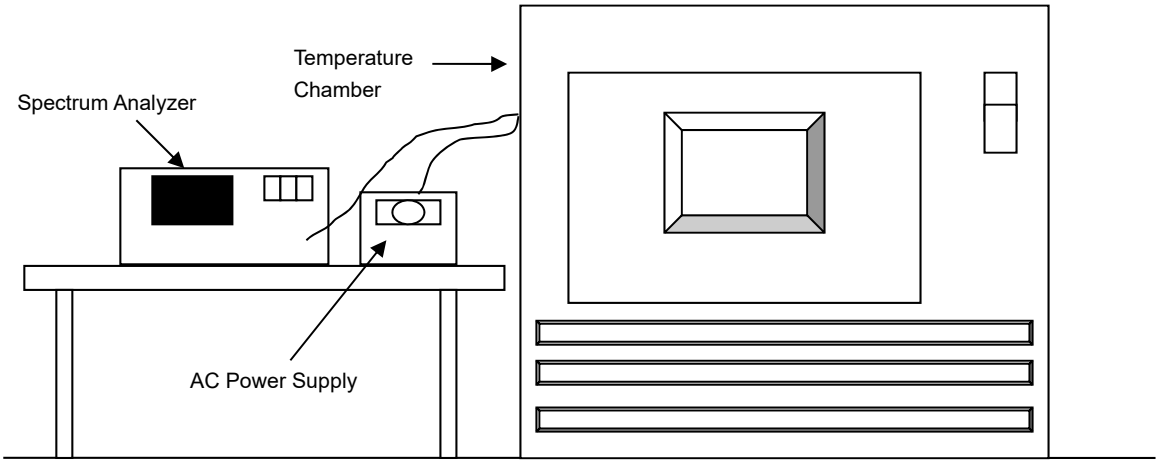


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 2021
			Sep. 15, 2021	Sep. 14, 2022
Standard Temperature And Humidity Chamber TERCHY	HRM-120RF	931022	Dec. 24, 2020	Dec. 23, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 24, 2021	Jun. 23, 2022
AC Power Supply Extech	CFW-105	E000603	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.

4.6.4 Test Procedure

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

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

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

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

e. Repeat step d with every 10 degrees reduction until the lowest temperature achieved.

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: 5260MHz									
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	5259.9822	PASS	5259.9835	PASS	5259.9839	PASS	5259.9844	PASS
30	120	5260.0064	PASS	5260.0045	PASS	5260.0021	PASS	5260.0068	PASS
20	120	5260.0217	PASS	5260.0220	PASS	5260.0246	PASS	5260.0224	PASS
10	120	5260.0171	PASS	5260.0217	PASS	5260.0192	PASS	5260.0216	PASS
0	120	5259.9812	PASS	5259.9796	PASS	5259.9810	PASS	5259.9802	PASS

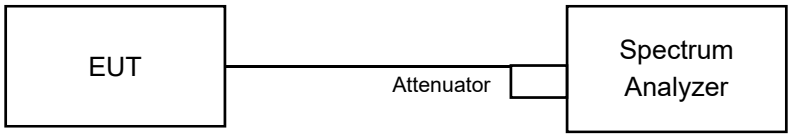
Frequency Stability Versus Voltage									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5260.0221	PASS	5260.0229	PASS	5260.0255	PASS	5260.0232	PASS
	120	5260.0217	PASS	5260.022	PASS	5260.0246	PASS	5260.0224	PASS
	102	5260.0207	PASS	5260.0211	PASS	5260.025	PASS	5260.0219	PASS

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

Measurement Procedure REF

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	2.53	2.53	0.5	Pass

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
144	5720 For U-NII-3	2.54	2.57	0.5	Pass

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

802.11ax (HE40)

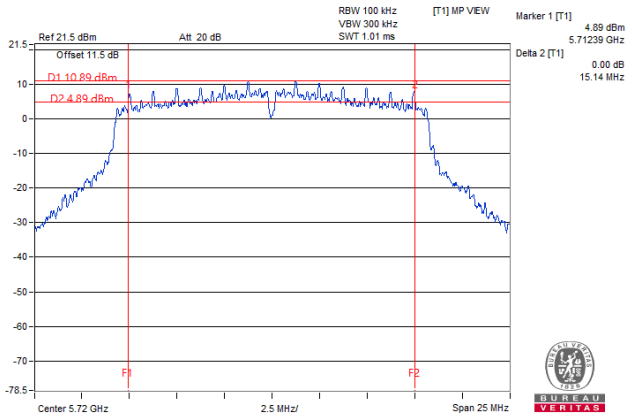
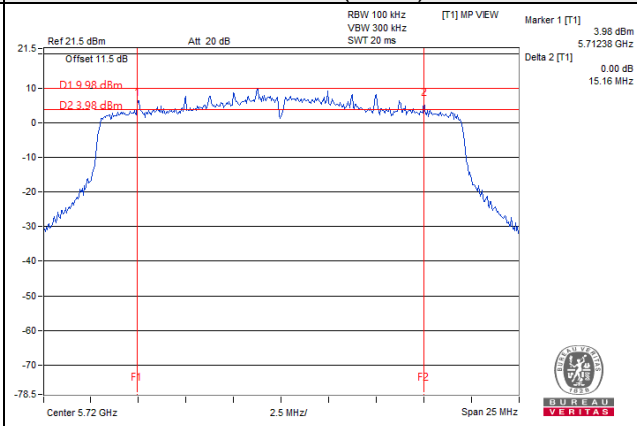
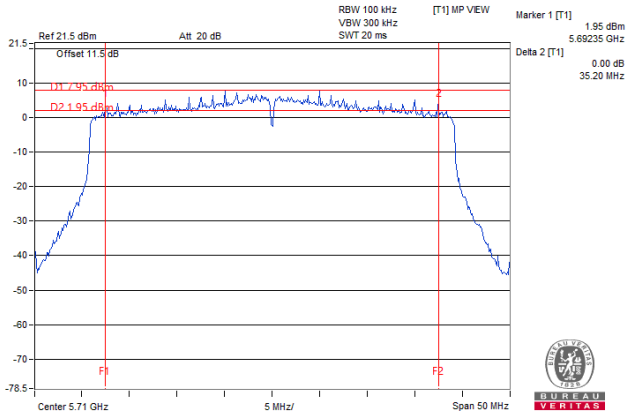
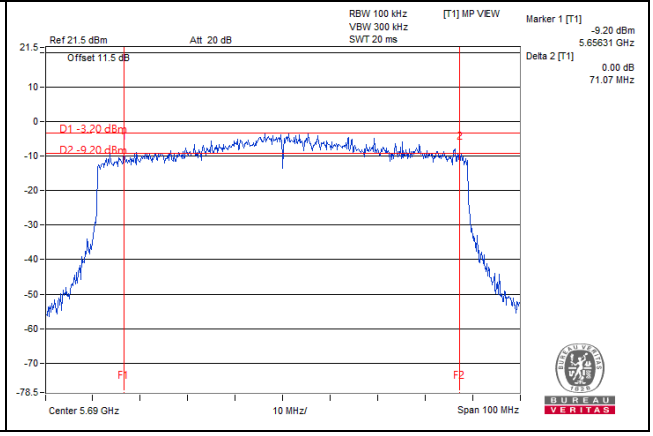
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
142	5710 For U-NII-3	2.55	2.61	0.5	Pass

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
138	5690 For U-NII-3	2.51	2.38	0.5	Pass

For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

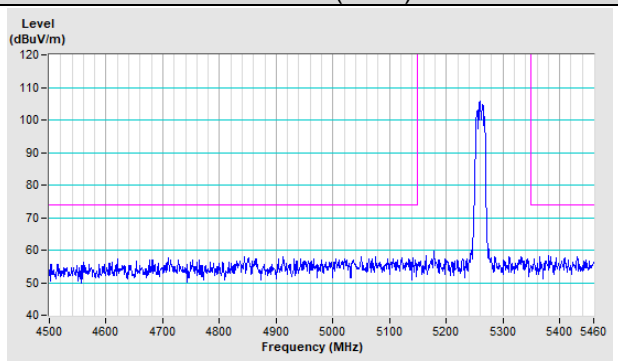
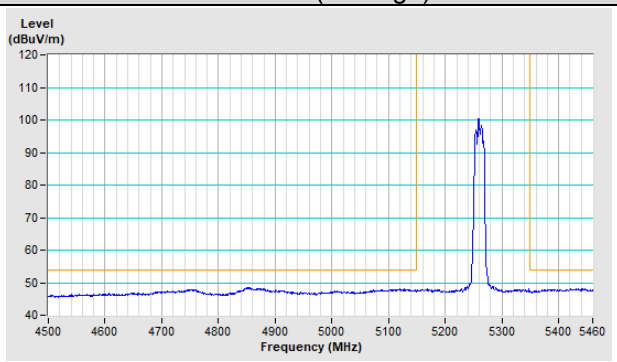
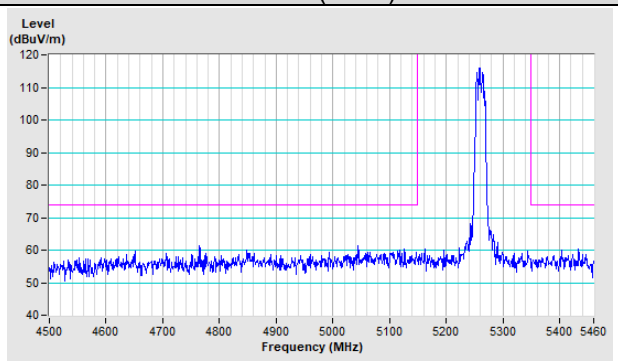
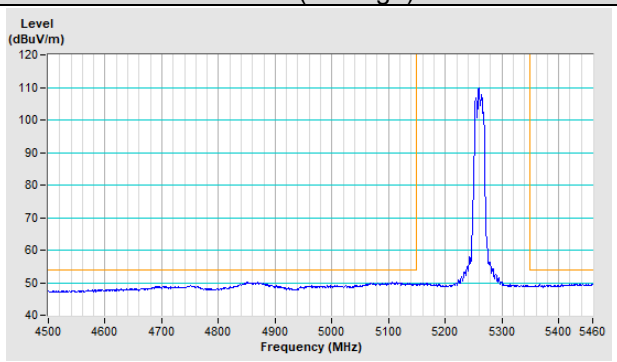
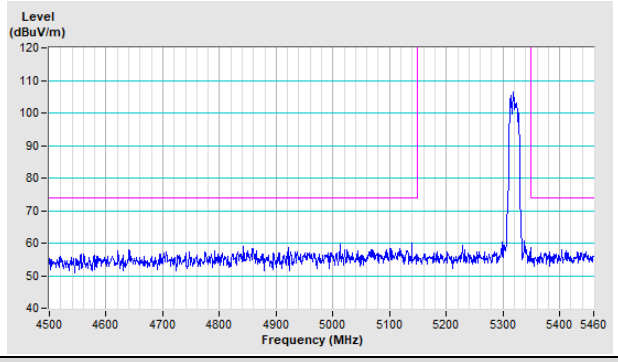
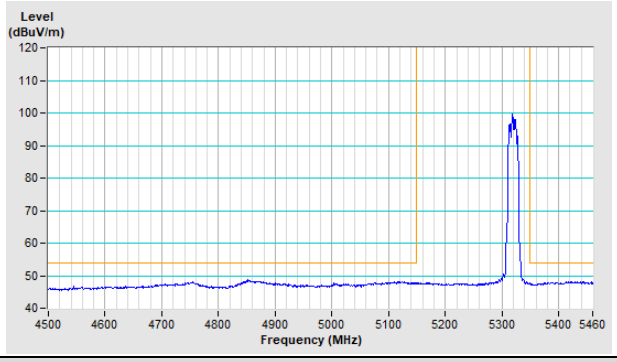
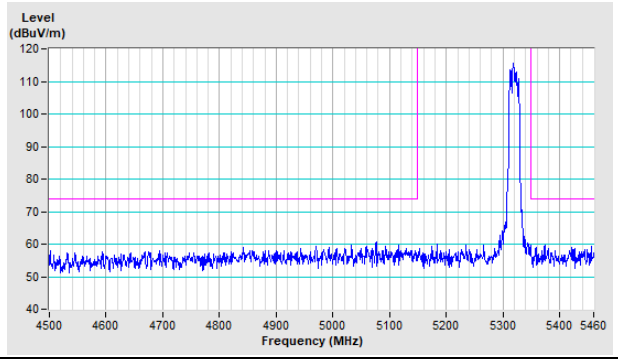
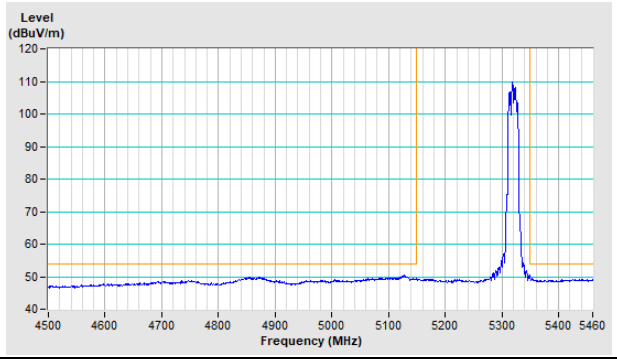
Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

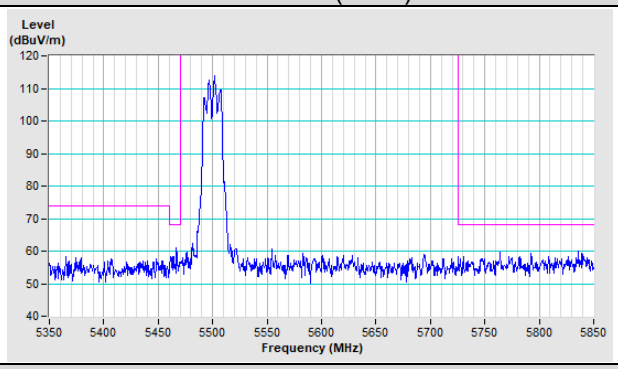
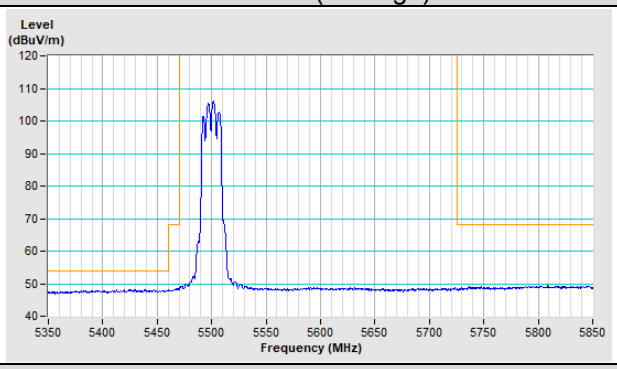
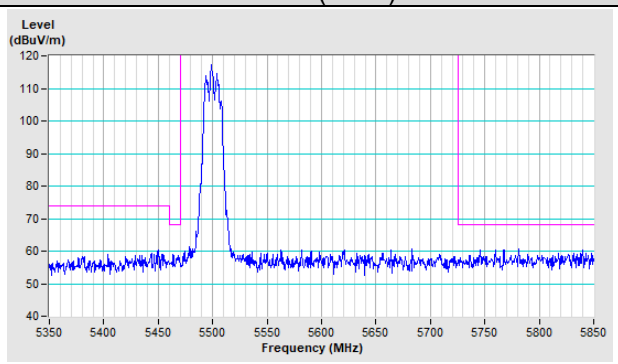
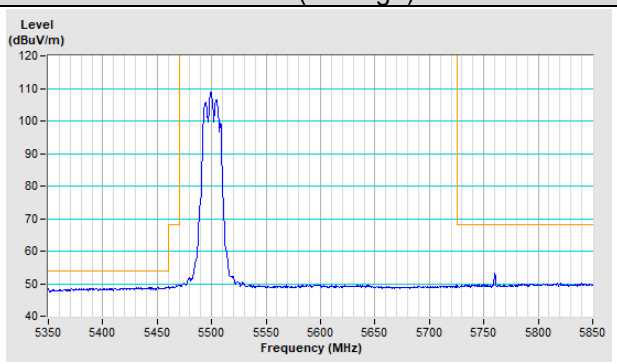
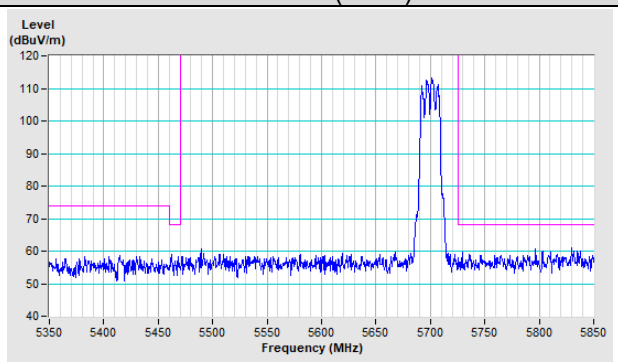
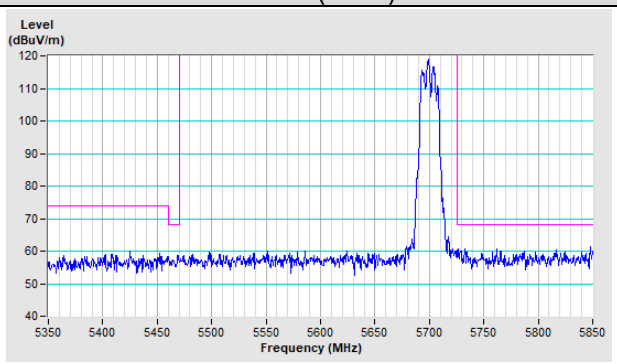
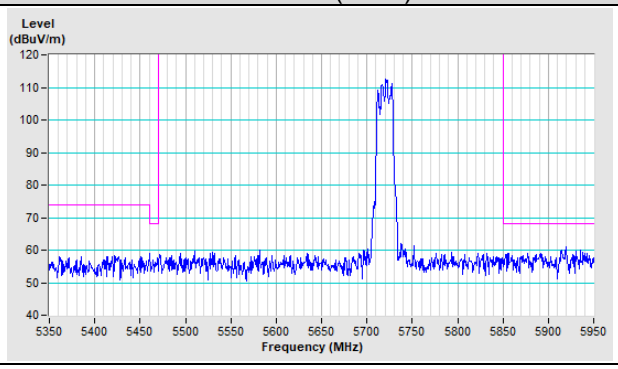
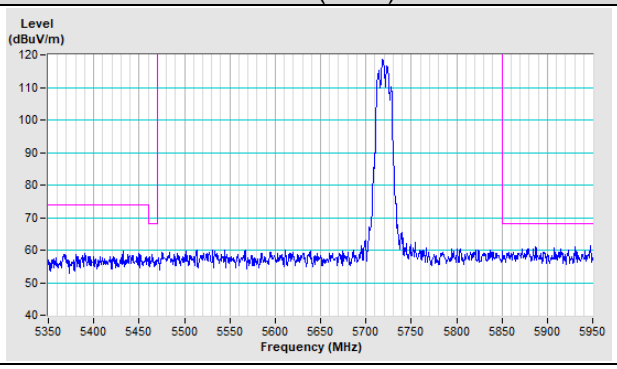
5 Pictures of Test Arrangements

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

Annex A - Band Edge Measurement

802.11a

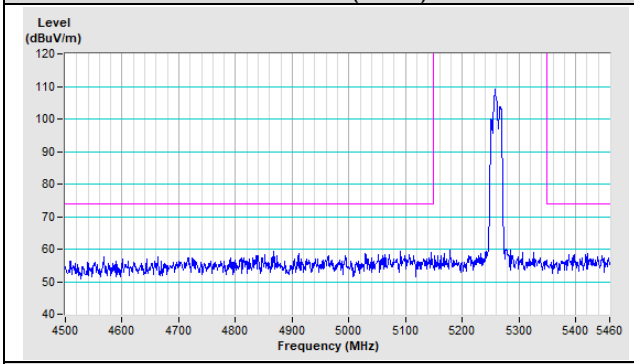
Channel 52	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 64	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 140	
Horizontal (Peak)	Vertical (Peak)
	
Channel 144	
Horizontal (Peak)	Vertical (Peak)
	

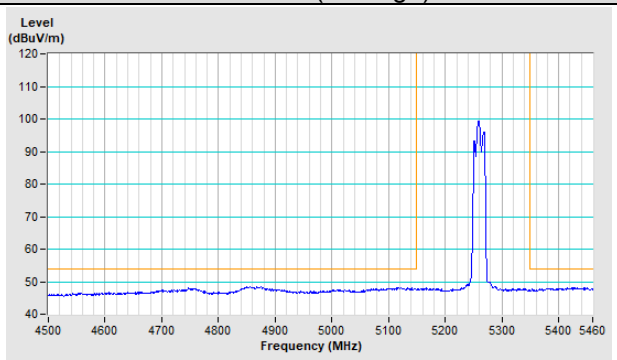
802.11ax (HE20)

Channel 52

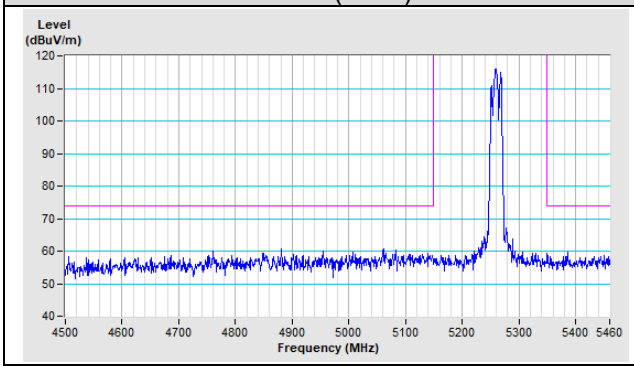
Horizontal (Peak)



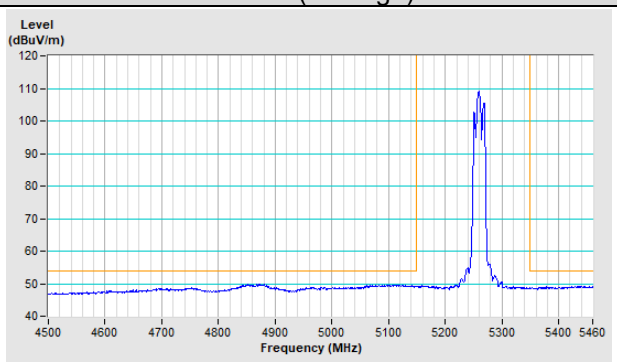
Horizontal (Average)



Vertical (Peak)

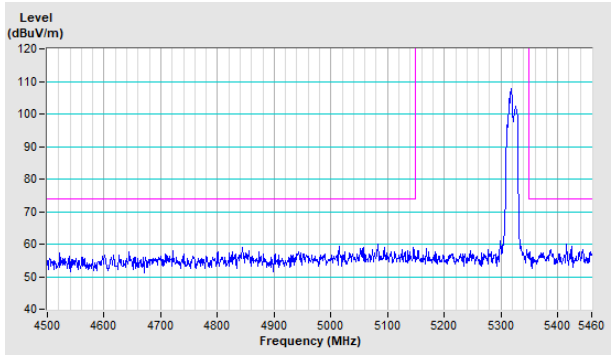


Vertical (Average)

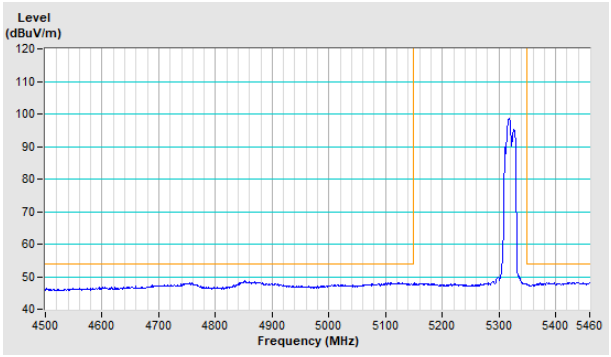


Channel 64

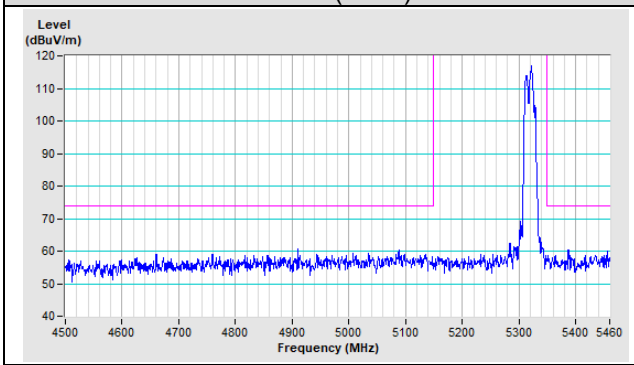
Horizontal (Peak)



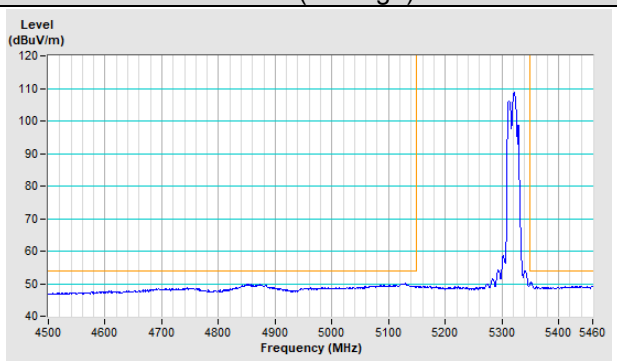
Horizontal (Average)

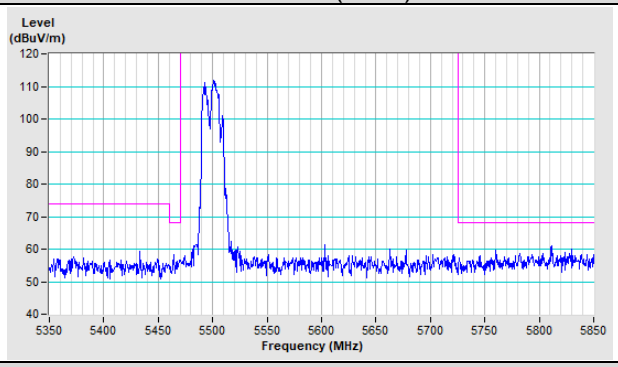
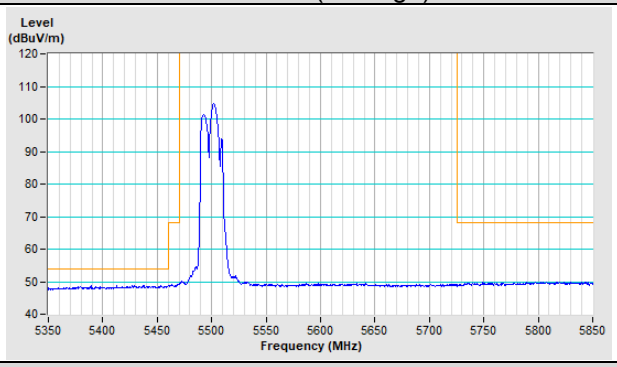
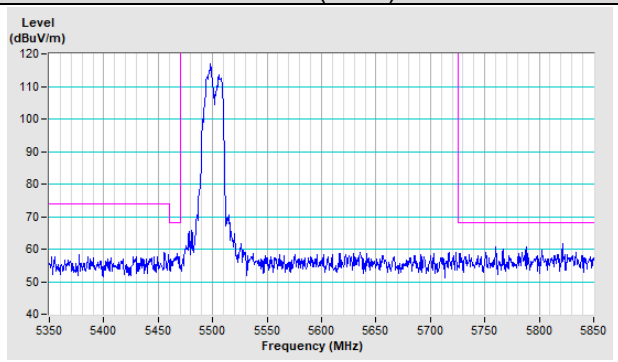
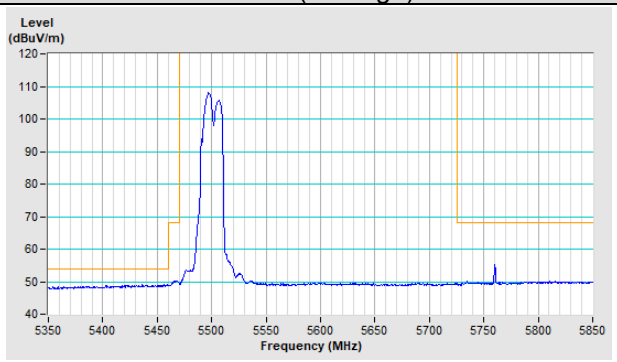
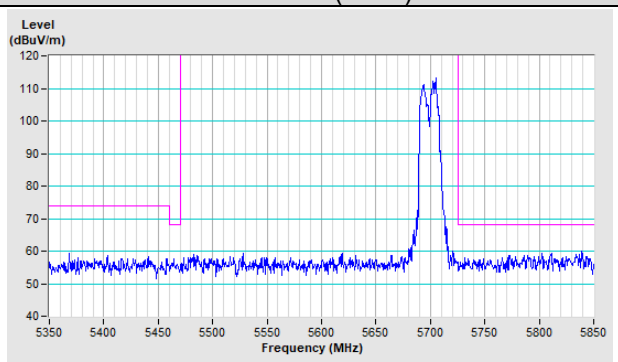
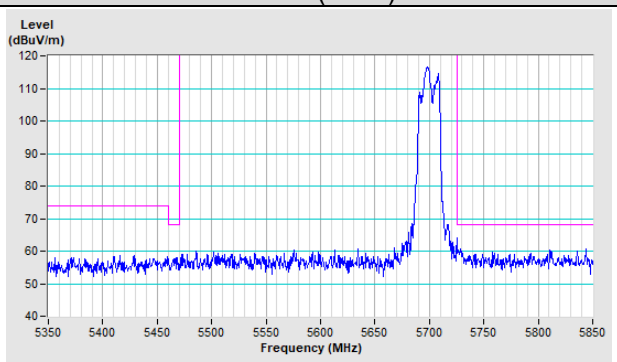
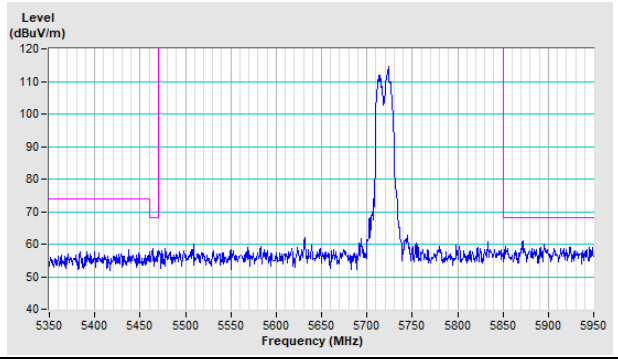
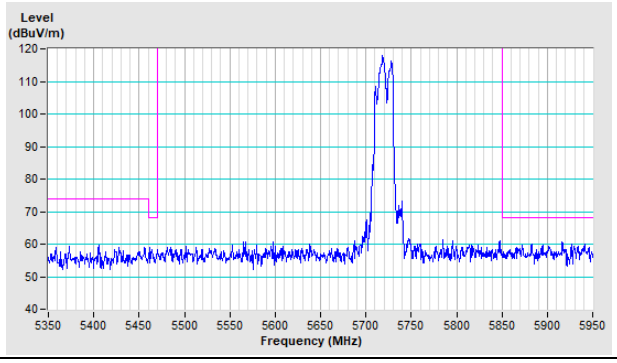


Vertical (Peak)



Vertical (Average)

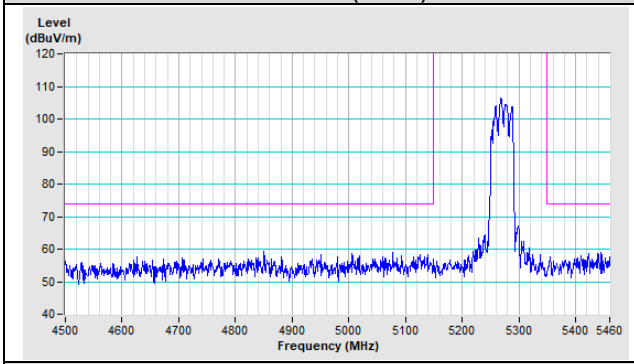


Channel 100	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 140	
Horizontal (Peak)	Vertical (Peak)
	
Channel 144	
Horizontal (Peak)	Vertical (Peak)
	

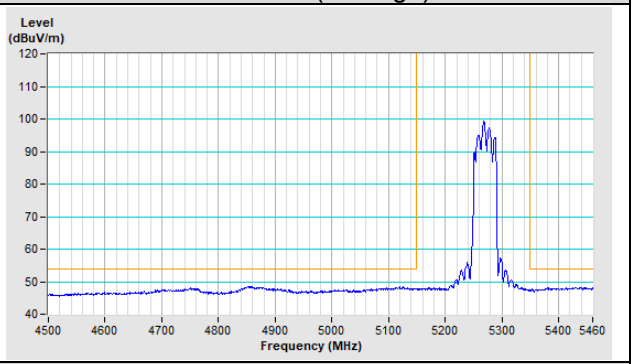
802.11ax (HE40)

Channel 54

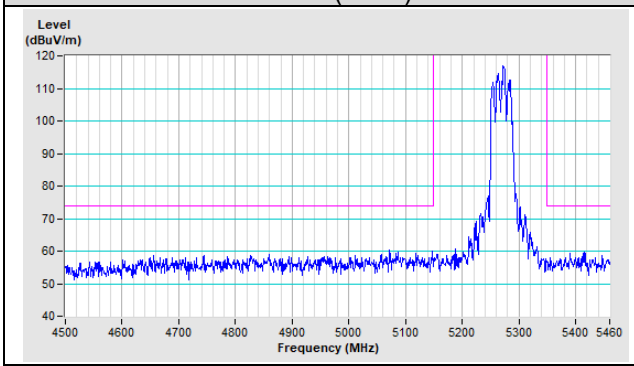
Horizontal (Peak)



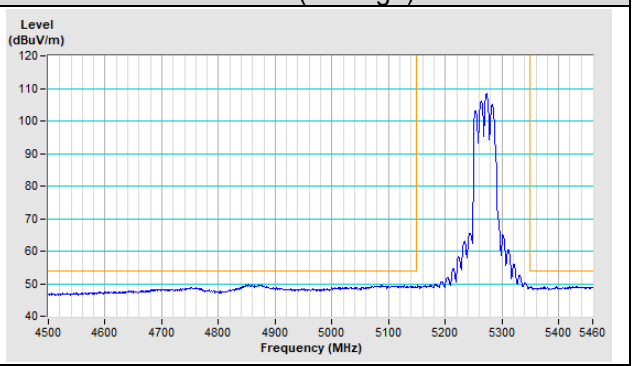
Horizontal (Average)



Vertical (Peak)

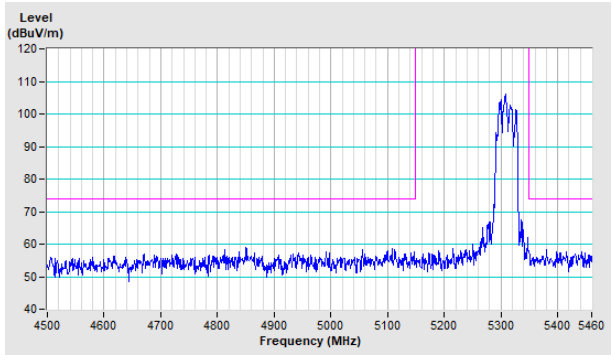


Vertical (Average)

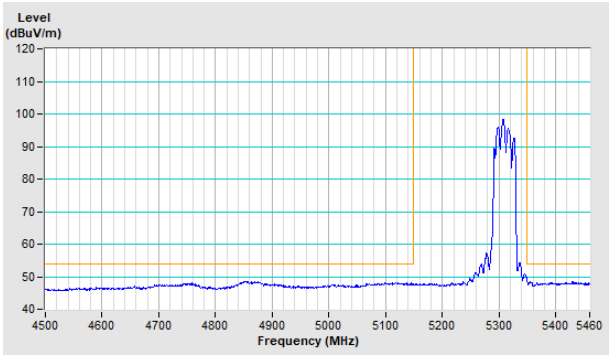


Channel 62

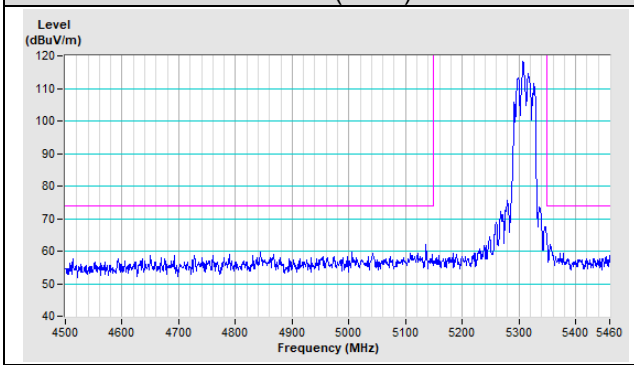
Horizontal (Peak)



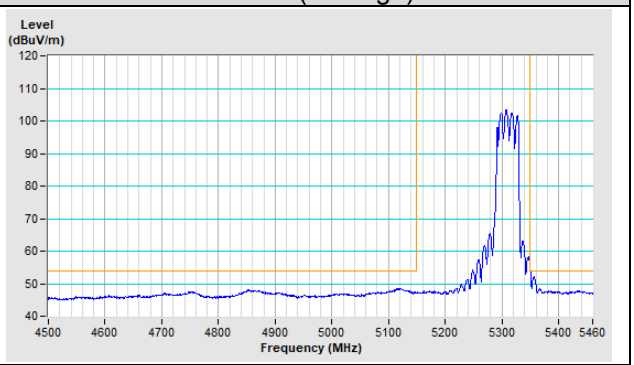
Horizontal (Average)

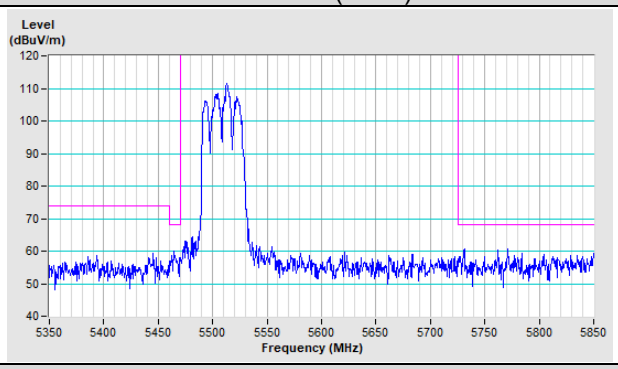
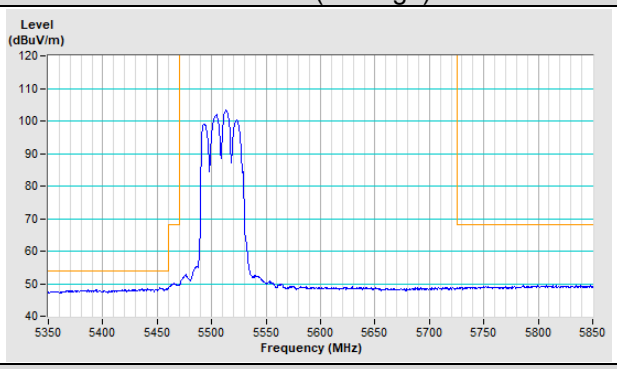
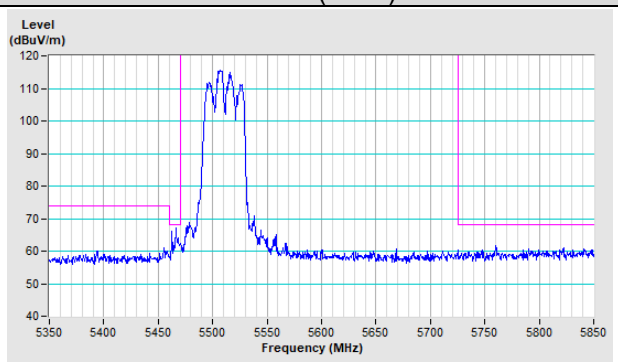
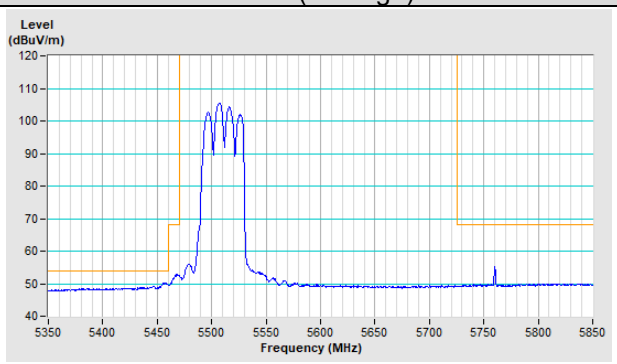
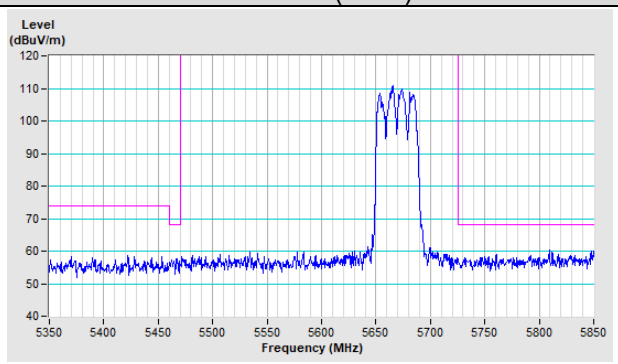
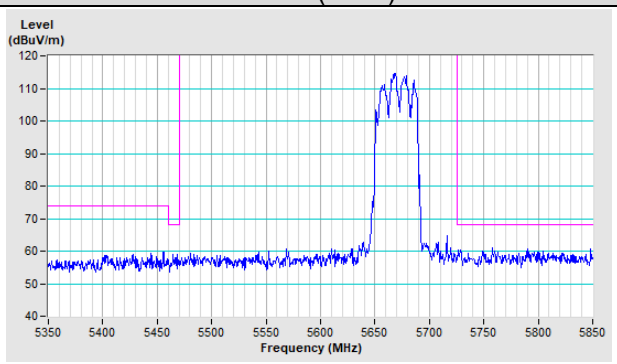
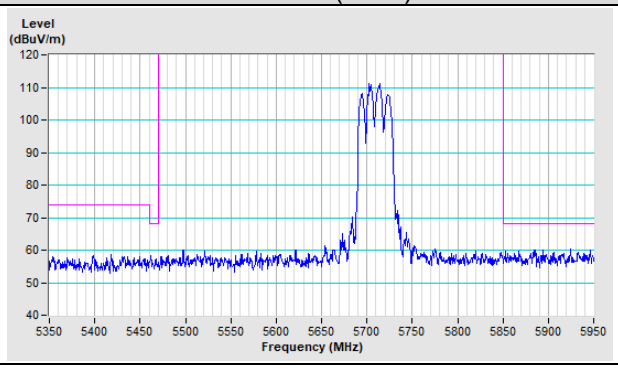
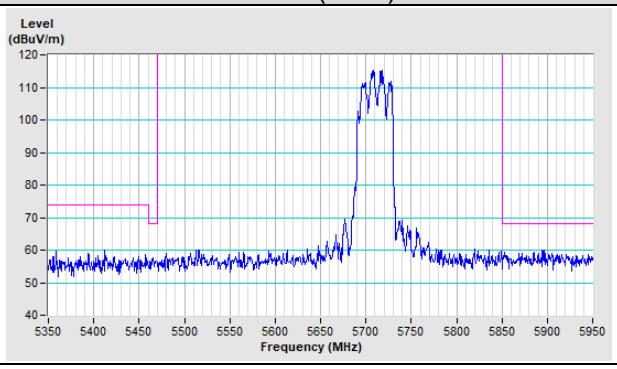


Vertical (Peak)

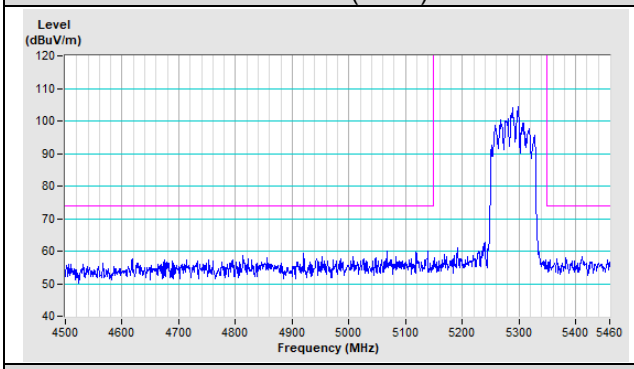
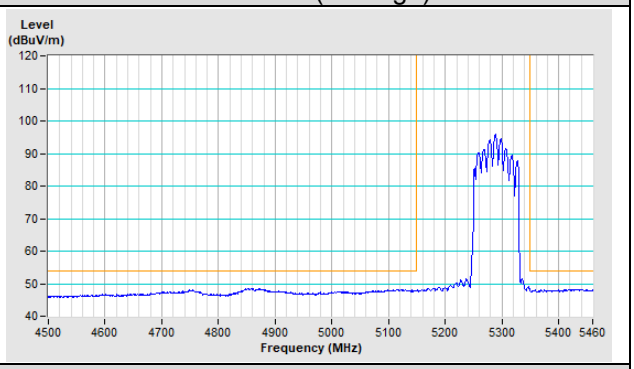
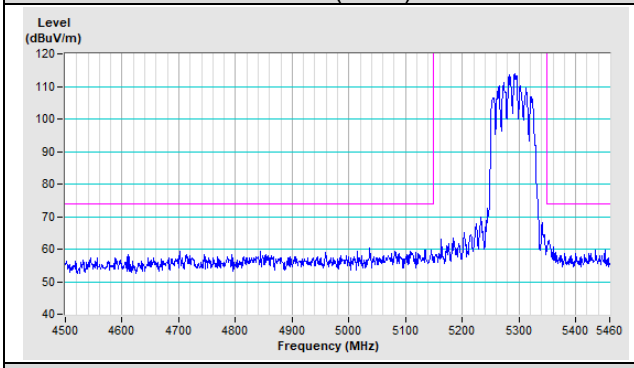
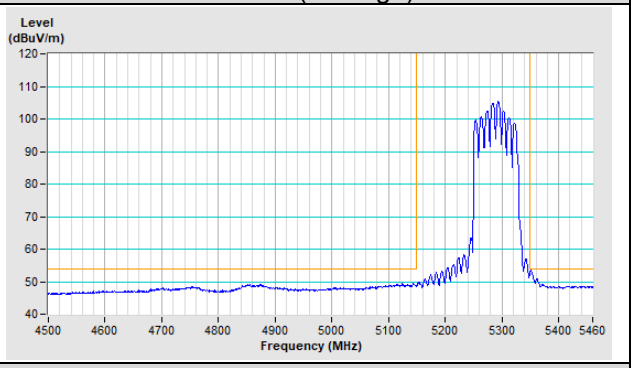
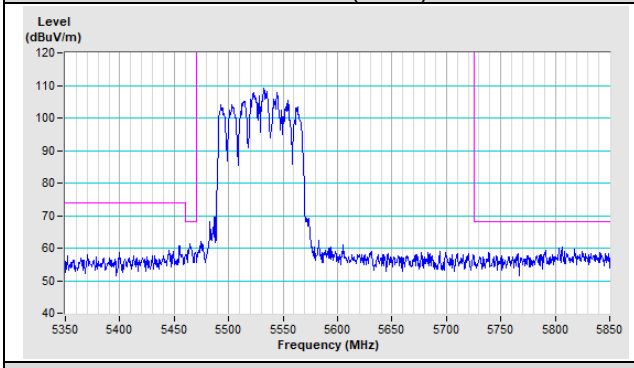
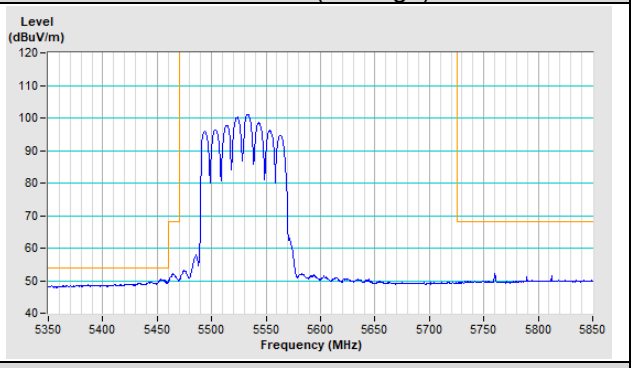
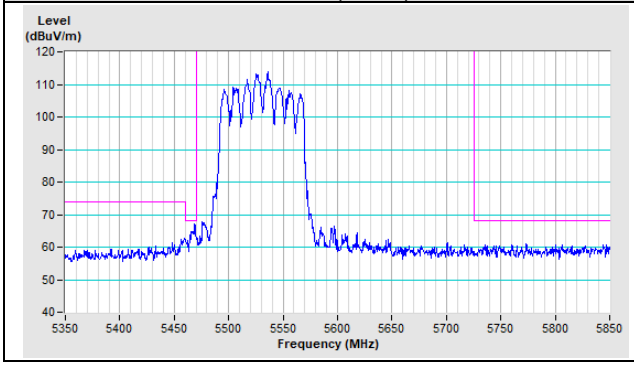
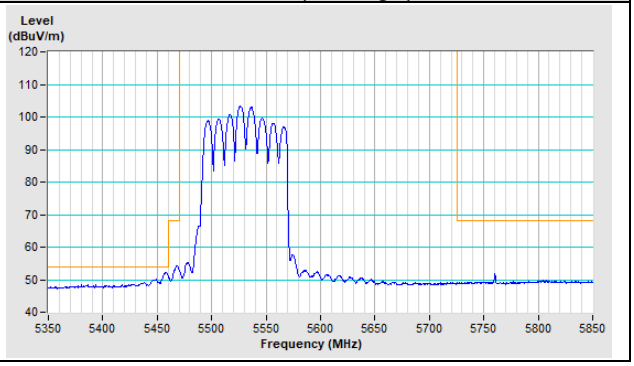


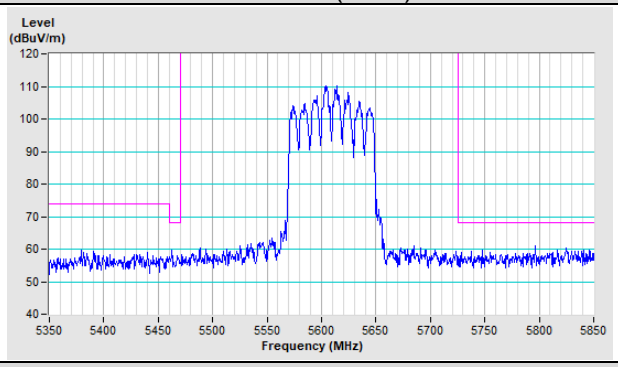
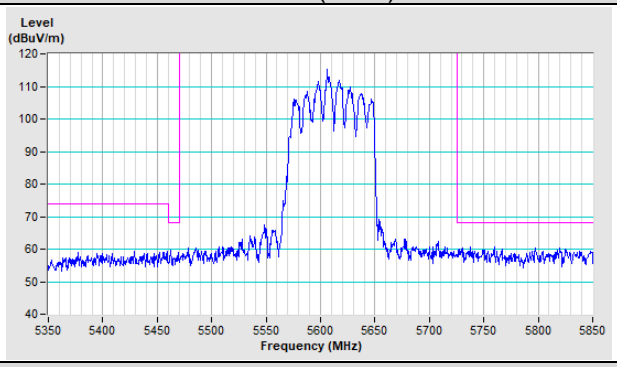
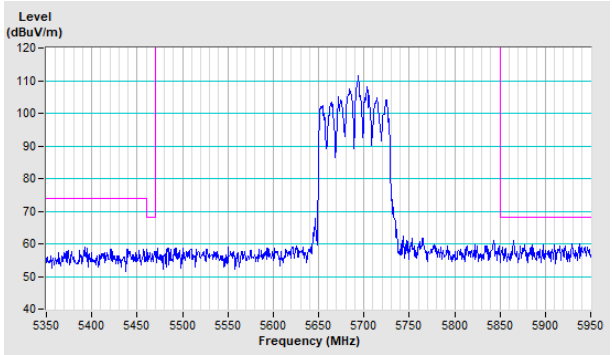
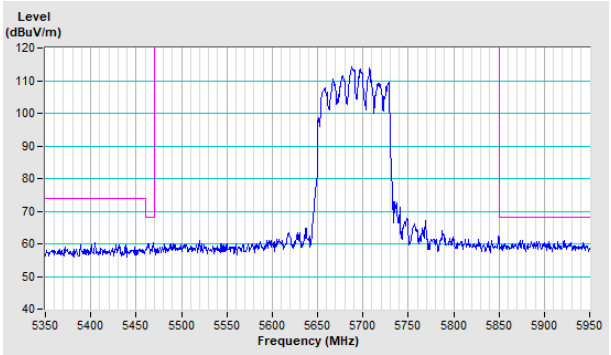
Vertical (Average)



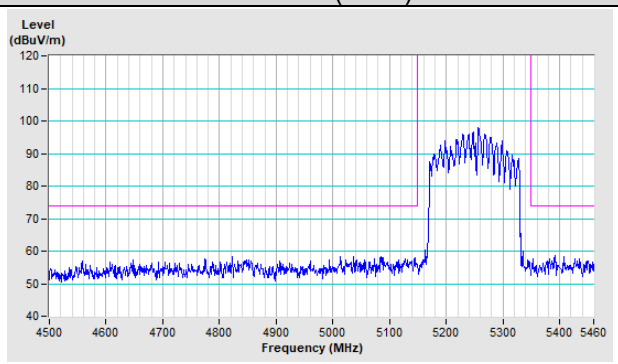
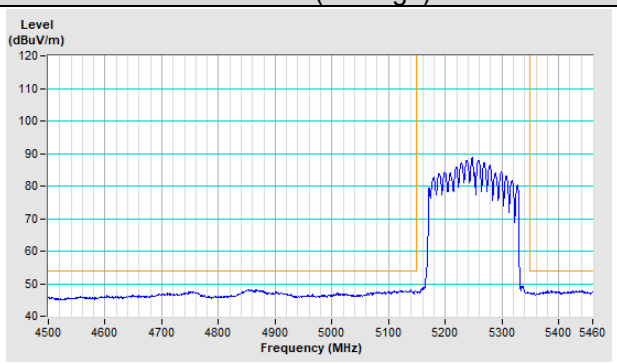
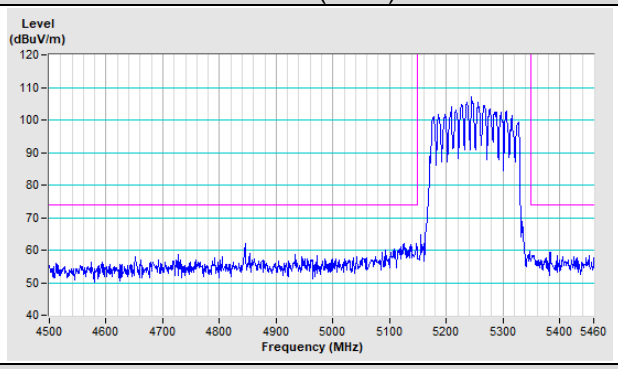
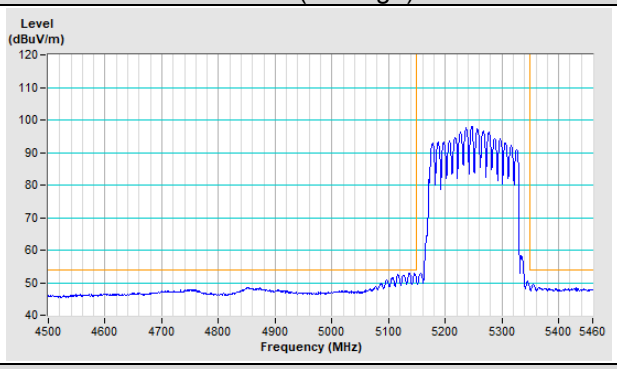
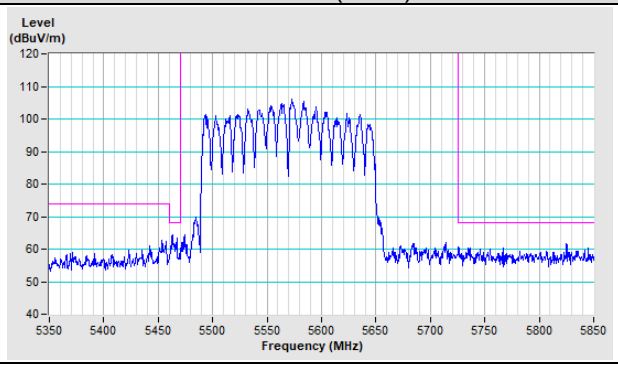
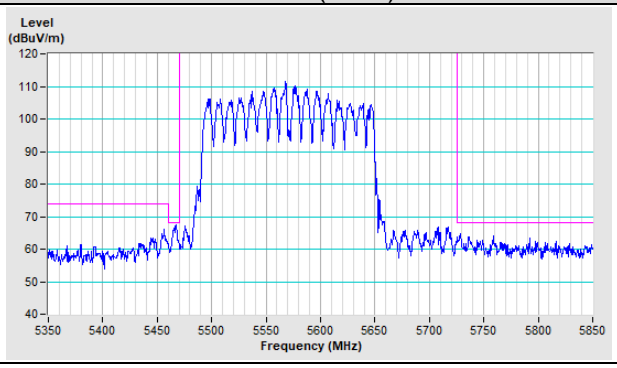
Channel 102	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 134	
Horizontal (Peak)	Vertical (Peak)
	
Channel 142	
Horizontal (Peak)	Vertical (Peak)
	

802.11ax (HE80)

Channel 58	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 106	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 122	
Horizontal (Peak)	Vertical (Peak)
	
Channel 138	
Horizontal (Peak)	Vertical (Peak)
	

802.11ax (HE160)

Channel 50	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 114	
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 and approved according to ISO/IEC 17025.

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

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

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

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

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

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

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