FCC Test Report

Report No.:	RFBDQY-WTW-P21070082-1
FCC ID:	YOR-RT6600AX
Test Model:	RT6600ax
Received Date:	Jul. 01, 2021
Test Date:	Oct. 26 ~ Nov. 22, 2021
Issued Date:	Dec. 17, 2021
Applicant:	Synology Incorporated
Address:	9F., No. 1, Yuandong Rd., Banqiao Dist., New Taipei City 220632
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 (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003
Test Location (2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
FCC Registration / Designation Number:	281270 / TW0032

Table of Contents

Release Control Record 4

1 Certificate of Conformity 5

2 Summary of Test Results 6

2.1 Measurement Uncertainty 6
2.2 Modification Record 6

3 General Information 7

3.1 General Description of EUT 7
3.2 Description of Test Modes 9
3.2.1 Test Mode Applicability and Tested Channel Detail 10
3.3 Duty Cycle of Test Signal 12
3.4 Description of Support Units 14
3.4.1 Configuration of System under Test 14
3.5 General Description of Applied Standards and References 14

4 Test Types and Results 15

4.1 Radiated Emission and Bandedge Measurement 15
4.1.1 Limits of Radiated Emission and Bandedge Measurement 15
4.1.2 Test Instruments 16
4.1.3 Test Procedures 17
4.1.4 Deviation from Test Standard 18
4.1.5 Test Setup 18
4.1.6 EUT Operating Conditions 19
4.1.7 Test Results 20
4.2 Conducted Emission Measurement 42
4.2.1 Limits of Conducted Emission Measurement 42
4.2.2 Test Instruments 42
4.2.3 Test Procedures 43
4.2.4 Deviation from Test Standard 43
4.2.5 Test Setup 43
4.2.6 EUT Operating Conditions 43
4.2.7 Test Results 44
4.3 Transmit Power Measurement 48
4.3.1 Limits of Transmit Power Measurement 48
4.3.2 Test Setup 48
4.3.3 Test Instruments 48
4.3.4 Test Procedure 48
4.3.5 Deviation from Test Standard 48
4.3.6 EUT Operating Conditions 48
4.3.7 Test Result 49
4.4 Occupied Bandwidth Measurement 58
4.4.1 Test Setup 58
4.4.2 Test Instruments 58
4.4.3 Test Procedure 58
4.4.4 Test Result 59
4.5 Peak Power Spectral Density Measurement 66
4.5.1 Limits of Peak Power Spectral Density Measurement 66
4.5.2 Test Setup 66
4.5.3 Test Instruments 66
4.5.4 Test Procedures 66
4.5.5 Deviation from Test Standard 67
4.5.6 EUT Operating Conditions 67
4.5.7 Test Results 68
4.6 Frequency Stability 73
4.6.1 Limits of Frequency Stability Measurement 73

4.6.2 Test Setup 73
4.6.3 Test Instruments 73
4.6.4 Test Procedure 73
4.6.5 Deviation from Test Standard 74
4.6.6 EUT Operating Condition 74
4.6.7 Test Results 74
4.7 6dB Bandwidth Measurement 76
4.7.1 Limits of 6dB Bandwidth Measurement 76
4.7.2 Test Setup 76
4.7.3 Test Instruments 76
4.7.4 Test Procedure 76
4.7.5 Deviation from Test Standard 76
4.7.6 EUT Operating Condition 76
4.7.7 Test Results 77

5 Pictures of Test Arrangements 79

Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band) 80

Annex B - Band Edge Measurement 83

Appendix – Information of the Testing Laboratories 89

Release Control Record

Issue No.	Description	Date Issued
RFBDQY-WTW-P21070082-1	Original release	Dec. 17, 2021

1 Certificate of Conformity

Product:	802.11ax Wireless Router
Brand:	Synology
Test Model:	RT6600ax
Sample Status:	Engineering sample
Applicant:	Synology Incorporated
Test Date:	Oct. 26 ~ Nov. 22, 2021
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Dec. 17, 2021

Celine Chou / Senior Specialist

Approved by : Jeremy Lin , **Date:** Dec. 17, 2021

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(9)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -8.11dB at 0.46200MHz.
15.407(b) (1/2/3/4(i/ii)/9)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

Note:

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11ax Wireless Router
Brand	Synology
Test Model	RT6600ax
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 600Mbps 802.11ac: up to 1733.3Mbps 802.11ax: up to 2400.0Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 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 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1
Output Power	CDD Mode: 5180 ~ 5240MHz: 992.095mW 5745 ~ 5825MHz: 944.436mW Beamforming Mode: 5180 ~ 5240MHz: 366.891mW 5745 ~ 5825MHz: 236.142mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Adapter
Cable Supplied	0.93m non-shielded RJ45 cable without core

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Band	Modulation Mode	Beamforming Mode	TX Function
5GHz Band 1	802.11a	Not Support	2TX
	802.11n (HT20)	Support	2TX
	802.11n (HT40)	Support	2TX
	802.11ac (VHT20)	Support	2TX
	802.11ac (VHT40)	Support	2TX
	802.11ac (VHT80)	Support	2TX
	802.11ax (HE20)	Support	2TX
	802.11ax (HE40)	Support	2TX
	802.11ax (HE80)	Support	2TX
5GHz Band 4	802.11a	Not Support	4TX
	802.11n (HT20)	Support	4TX
	802.11n (HT40)	Support	4TX
	802.11ac (VHT20)	Support	4TX
	802.11ac (VHT40)	Support	4TX
	802.11ac (VHT80)	Support	4TX
	802.11ax (HE20)	Support	4TX
	802.11ax (HE40)	Support	4TX
	802.11ax (HE80)	Support	4TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40/VHT80/VHV160 on 802.11ac mode and HE20/HE40/HE80/HE160 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

* CDD mode is the worst case for final tests after pretesting CDD mode and Beamforming Mode mode except output power test.

2. There are three radios for the EUT.

Radio	Brand	Model	Function	TX/RX Function
1	Qualcomm	QCN5022	2412 ~ 2462MHz	2x2
2	Qualcomm	QCN5052	5180 ~ 5240MHz	2x2
3	Qualcomm	QCN9024	5745 ~ 5825MHz	4x4

3. The EUT consumes power from the following adapter.

Adapter	
Brand	CWT
Model	2AEJ042FC
Input Power	100-240Vac, 50-60Hz, 1.3A
Output Power	12Vdc, 3.5A, 42.0W
Power Line	1.5m cable without core attached on adapter

4. The antenna information is listed as below.

No.	Brand	Model	Type	Connector	Gain (dBi)			
					2412-2462 MHz	5180-5320 MHz	5500-5825 MHz	5845-5885 MHz
1	LYNwave	ALX21X-221031-00	Dipole	ipex(MHF)	2.00	3.00	-	-
2	LYNwave	ALX21X-221032-00	Dipole	ipex(MHF)	2.00	3.00	-	-
3	LYNwave	ALX21X-221033-00	Dipole	ipex(MHF)	-	-	3.00	3.30
4	LYNwave	ALX21X-221034-00	Dipole	ipex(MHF)	-	-	3.00	3.30
5	LYNwave	ALX21X-221035-00	Dipole	ipex(MHF)	-	-	3.00	3.30
6	LYNwave	ALX21X-221036-00	Dipole	ipex(MHF)	-	-	3.00	3.30

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

3.2 Description of Test Modes

For 5180 ~ 5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

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

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

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

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

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)	TX Functon
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	2TX
	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
	802.11ax (HE80)		42	42	OFDMA	MCS0	
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	4TX
	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0	
	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0	
	802.11ax (HE80)		155	155	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)	TX Functon
-	802.11a	5180-5240	36 to 48	48	OFDM	6.0	2TX
-	802.11ax (HE40)	5745-5825	151 to 159	159	OFDMA	MCS0	4TX

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)	TX Functon
-	802.11a	5180-5240	36 to 48	48	OFDM	6.0	2TX
-	802.11ax (HE40)	5745-5825	151 to 159	159	OFDMA	MCS0	4TX

Bandwidth, Power Spectral Density and Frequency Stability 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)	TX Functon
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	2TX
	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
	802.11ax (HE80)		42	42	OFDMA	MCS0	
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	4TX
	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0	
	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0	
	802.11ax (HE80)		155	155	OFDMA	MCS0	

Conducted Output Power 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)	TX Functon
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	2TX
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT80)		42	42	OFDM	29.3	
	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
	802.11ax (HE80)		42	42	OFDMA	MCS0	
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	4TX
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT80)		155	155	OFDM	29.3	
	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0	
	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0	
	802.11ax (HE80)		155	155	OFDMA	MCS0	

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	23 deg. C, 68% RH	120Vac, 60Hz	Raymond Lee
RE<1G	23 deg. C, 68% RH	120Vac, 60Hz	Raymond Lee
PLC	21 deg. C, 68% RH	120Vac, 60Hz	Tim Chen
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Alan Wu

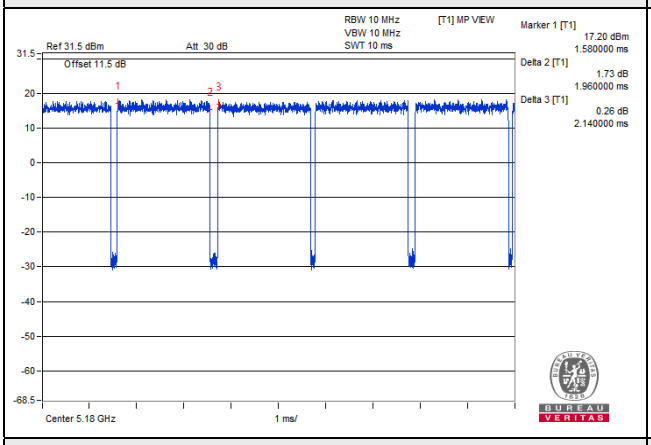
3.3 Duty Cycle of Test Signal

2TX

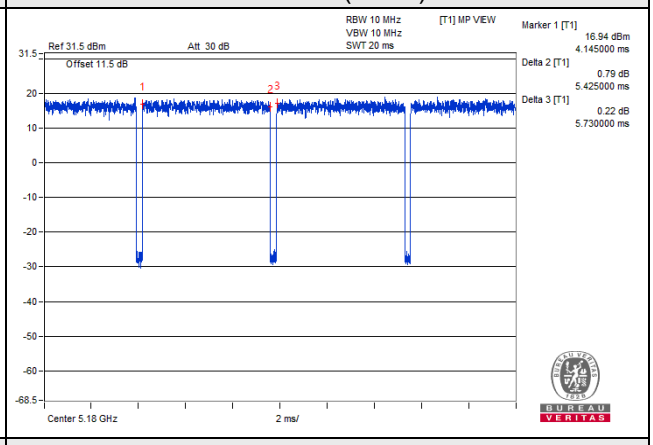
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 1.960/2.140 = 0.916, Duty factor = 10 * log (1/0.916) = 0.38
802.11ax (HE20): Duty cycle = 5.425/5.730 = 0.947, Duty factor = 10 * log (1/0.947) = 0.24
802.11ax (HE40): Duty cycle = 5.405/5.730 = 0.943, Duty factor = 10 * log (1/0.943) = 0.25
802.11ax (HE80): Duty cycle = 5.415/5.805 = 0.933, Duty factor = 10 * log (1/0.933) = 0.30

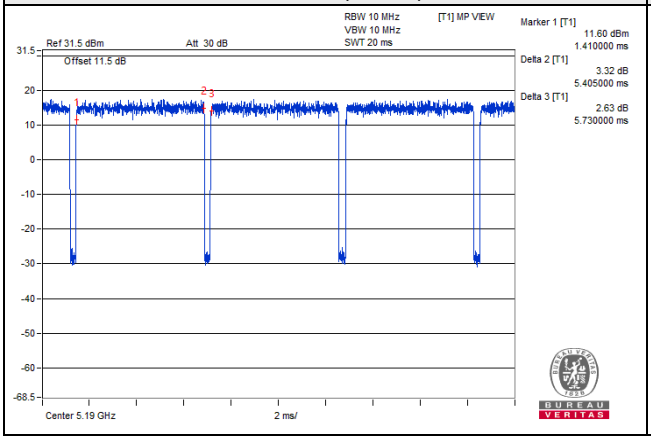
802.11a



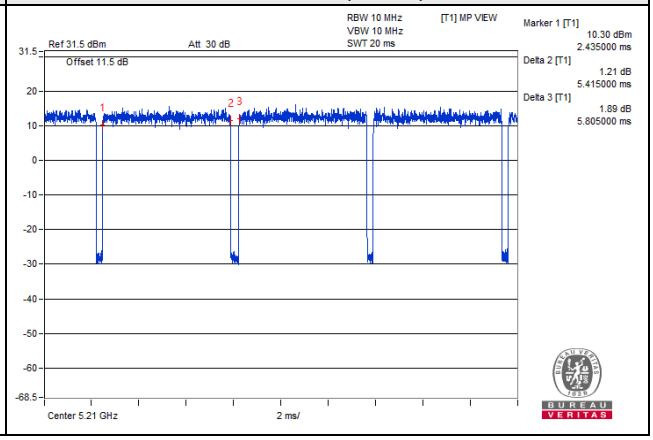
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

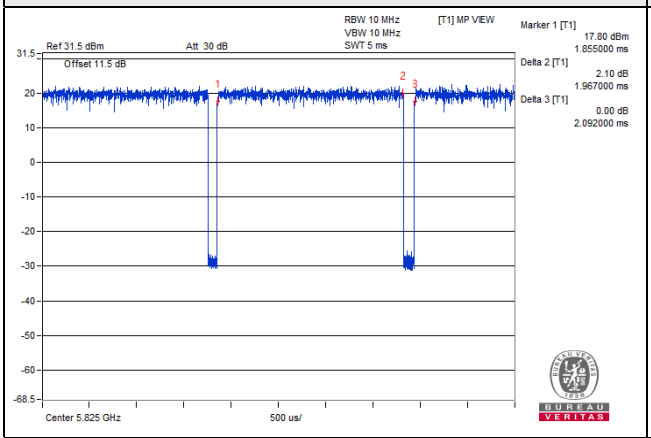


4TX

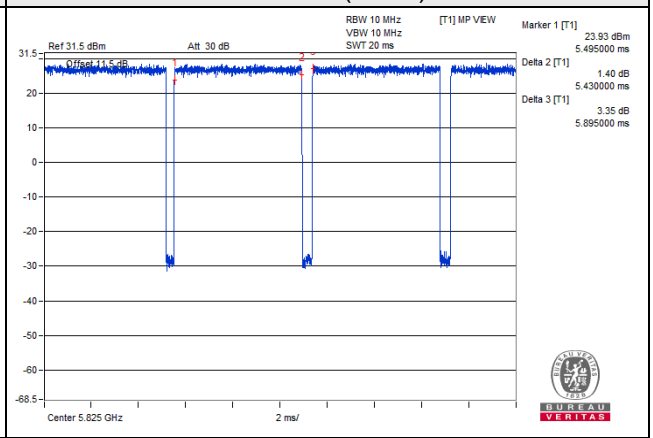
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 1.967/2.092 = 0.940, Duty factor = 10 * log (1/0.940) = 0.27
802.11ax (HE20): Duty cycle = 5.430/5.895 = 0.921, Duty factor = 10 * log (1/0.921) = 0.36
802.11ax (HE40): Duty cycle = 5.430/5.853 = 0.928, Duty factor = 10 * log (1/0.928) = 0.33
802.11ax (HE80): Duty cycle = 5.395/5.875 = 0.918, Duty factor = 10 * log (1/0.918) = 0.37

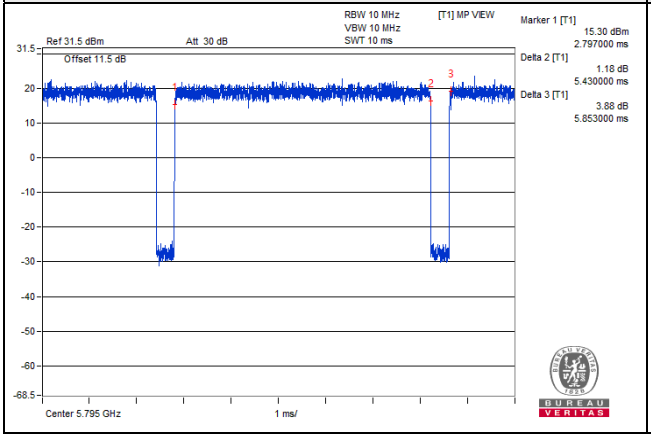
802.11a



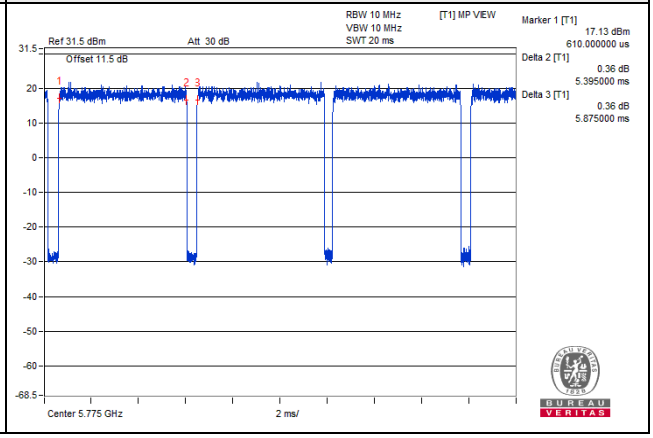
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



3.4 Description of Support Units

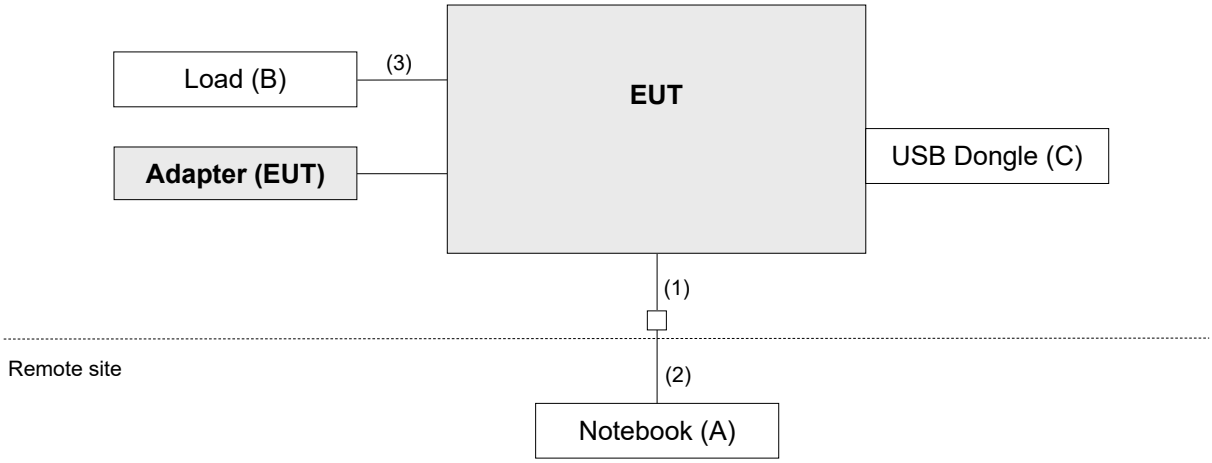
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5430	2RL3YW1	FCC DoC Approved	-
B.	Load	NA	NA	NA	FCC DoC Approved	-
C.	USB Dongle	D-Link	DWM-157	RD0S1F9000417	NA	-

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

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN Cable	1	0.93	N	0	Accessory of EUT
2.	LAN Cable	1	6	N	0	RJ45, Cat5e
3.	LAN Cable	4	1.5	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	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 21, 2020	Dec. 20, 2021
BILOG Antenna SCHWARZBECK	VULB9168	1214	Nov. 04, 2020	Nov. 03, 2021
			Oct. 28, 2021	Oct. 27, 2022
HORN Antenna RF SPIN	DRH18-E	210104A18E	Jan. 08, 2021	Jan. 07, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-1049	Dec. 09, 2020	Dec. 08, 2021
Preamplifier EMCI	EMC330N	980798	Jan. 12, 2021	Jan. 11, 2022
Preamplifier EMCI	EMC118A45SE	980809	Jan. 12, 2021	Jan. 11, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC104-SM-SM-(9000+2000+1000)	201244+ 201232+ 210103	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMCCFD400-NM-NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC101G-KM-KM-(5000+3000+2000)	201261+201258+201249	Jan. 12, 2021	Jan. 11, 2022
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
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 WM Chamber 9.

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. (802.11a: RBW = 1MHz, VBW = 1kHz; 802.11ax (HE20): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE40): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE80): RBW = 1MHz, VBW = 1kHz)

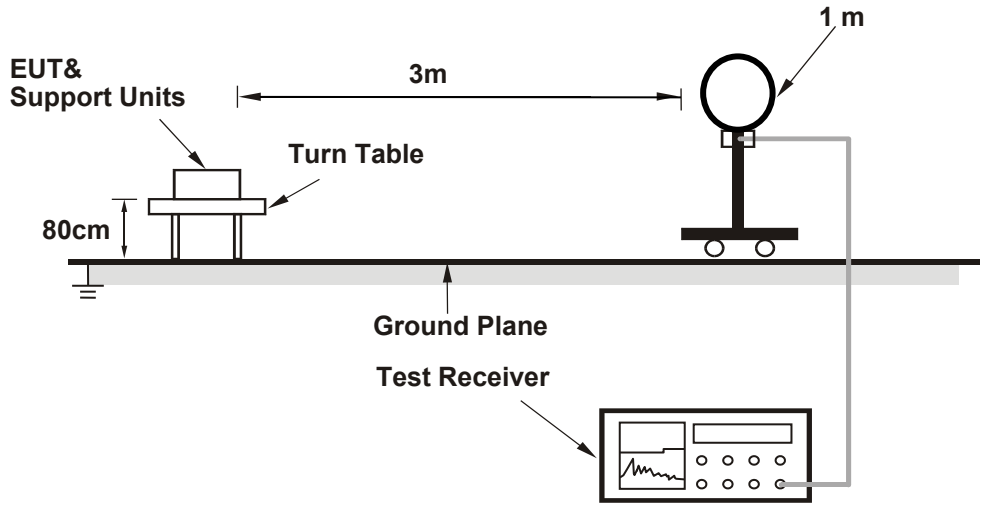
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

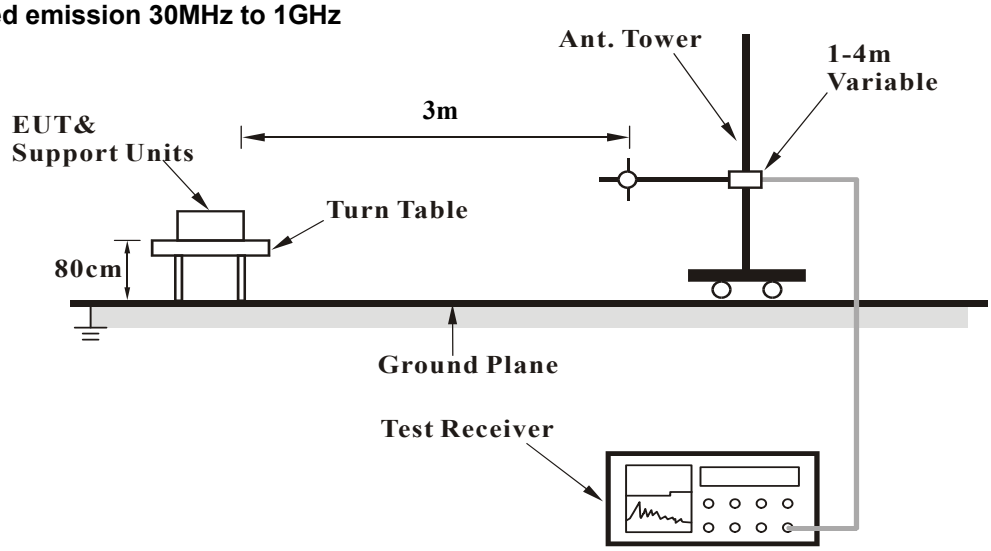
No deviation.

4.1.5 Test Setup

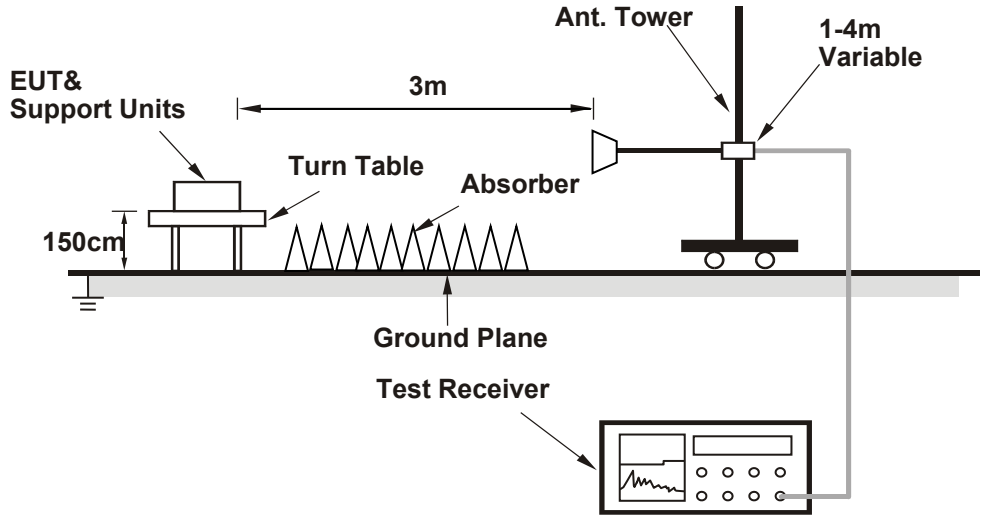
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating 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.

4.1.7 Test Results

Above 1GHz data:

2TX

RF Mode	TX 802.11a	Channel	CH 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.8 PK	74.0	-14.2	1.96 H	259	56.2	3.6
2	5150.00	48.9 AV	54.0	-5.1	1.96 H	259	45.3	3.6
3	*5180.00	112.7 PK			1.96 H	259	72.8	39.9
4	*5180.00	103.7 AV			1.96 H	259	63.8	39.9
5	#10360.00	57.7 PK	68.2	-10.5	1.45 H	90	48.3	9.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.5 PK	74.0	-12.5	2.37 V	225	57.9	3.6
2	5150.00	53.0 AV	54.0	-1.0	2.37 V	225	49.4	3.6
3	*5180.00	121.8 PK			2.37 V	225	81.9	39.9
4	*5180.00	112.3 AV			2.37 V	225	72.4	39.9
5	#10360.00	57.8 PK	68.2	-10.4	1.32 V	70	48.4	9.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.4 PK	74.0	-13.6	1.97 H	257	56.8	3.6
2	5150.00	49.6 AV	54.0	-4.4	1.97 H	257	46.0	3.6
3	*5200.00	114.8 PK			1.97 H	257	74.9	39.9
4	*5200.00	105.8 AV			1.97 H	257	65.9	39.9
5	#10400.00	58.5 PK	68.2	-9.7	1.49 H	88	48.9	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.6 PK	74.0	-10.4	2.41 V	229	60.0	3.6
2	5150.00	53.5 AV	54.0	-0.5	2.41 V	229	49.9	3.6
3	*5200.00	123.4 PK			2.41 V	229	83.5	39.9
4	*5200.00	114.5 AV			2.41 V	229	74.6	39.9
5	#10400.00	58.2 PK	68.2	-10.0	1.35 V	75	48.6	9.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	118.7 PK			1.88 H	257	78.8	39.9
2	*5240.00	108.8 AV			1.88 H	257	68.9	39.9
3	5350.00	58.2 PK	74.0	-15.8	1.88 H	257	54.7	3.5
4	5350.00	47.3 AV	54.0	-6.7	1.88 H	257	43.8	3.5
5	#10480.00	58.1 PK	68.2	-10.1	1.42 H	96	48.5	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	126.8 PK			2.53 V	103	86.9	39.9
2	*5240.00	116.7 AV			2.53 V	103	76.8	39.9
3	5350.00	59.9 PK	74.0	-14.1	2.53 V	103	56.4	3.5
4	5350.00	47.8 AV	54.0	-6.2	2.53 V	103	44.3	3.5
5	#10480.00	58.3 PK	68.2	-9.9	1.37 V	78	48.7	9.6

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 36：5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.7 PK	74.0	-14.3	1.98 H	260	56.1	3.6
2	5150.00	49.4 AV	54.0	-4.6	1.98 H	260	45.8	3.6
3	*5180.00	112.5 PK			1.98 H	260	72.6	39.9
4	*5180.00	103.2 AV			1.98 H	260	63.3	39.9
5	#10360.00	57.8 PK	68.2	-10.4	1.51 H	93	48.4	9.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.3 PK	74.0	-10.7	2.39 V	222	59.7	3.6
2	5150.00	53.0 AV	54.0	-1.0	2.39 V	222	49.4	3.6
3	*5180.00	122.4 PK			2.39 V	222	82.5	39.9
4	*5180.00	111.5 AV			2.39 V	222	71.6	39.9
5	#10360.00	58.0 PK	68.2	-10.2	1.31 V	68	48.6	9.4

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.2 PK	74.0	-13.8	1.82 H	255	56.6	3.6
2	5150.00	49.7 AV	54.0	-4.3	1.82 H	255	46.1	3.6
3	*5200.00	115.5 PK			1.82 H	255	75.6	39.9
4	*5200.00	104.6 AV			1.82 H	255	64.7	39.9
5	#10400.00	58.3 PK	68.2	-9.9	1.53 H	98	48.7	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	68.4 PK	74.0	-5.6	2.44 V	228	64.8	3.6
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**2.44 V**	**228**	**50.3**	**3.6**
3	*5200.00	123.3 PK			2.44 V	228	83.4	39.9
4	*5200.00	113.3 AV			2.44 V	228	73.4	39.9
5	#10400.00	58.5 PK	68.2	-9.7	1.36 V	79	48.9	9.6

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	117.5 PK			1.90 H	261	77.6	39.9
2	*5240.00	107.3 AV			1.90 H	261	67.4	39.9
3	5350.00	58.0 PK	74.0	-16.0	1.90 H	261	54.5	3.5
4	5350.00	46.8 AV	54.0	-7.2	1.90 H	261	43.3	3.5
5	#10480.00	58.4 PK	68.2	-9.8	1.52 H	97	48.8	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	125.6 PK			2.39 V	82	85.7	39.9
2	*5240.00	115.1 AV			2.39 V	82	75.2	39.9
3	5350.00	59.3 PK	74.0	-14.7	2.39 V	82	55.8	3.5
4	5350.00	48.2 AV	54.0	-5.8	2.39 V	82	44.7	3.5
5	#10480.00	57.9 PK	68.2	-10.3	1.28 V	77	48.3	9.6

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 38：5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.0 PK	74.0	-15.0	1.88 H	256	55.4	3.6
2	5150.00	48.9 AV	54.0	-5.1	1.88 H	256	45.3	3.6
3	*5190.00	107.8 PK			1.88 H	256	67.9	39.9
4	*5190.00	98.8 AV			1.88 H	256	58.9	39.9
5	#10380.00	58.0 PK	68.2	-10.2	1.54 H	100	48.5	9.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.6 PK	74.0	-11.4	2.40 V	227	59.0	3.6
2	5150.00	53.5 AV	54.0	-0.5	2.40 V	227	49.9	3.6
3	*5190.00	117.4 PK			2.40 V	227	77.5	39.9
4	*5190.00	107.3 AV			2.40 V	227	67.4	39.9
5	#10380.00	57.8 PK	68.2	-10.4	1.26 V	69	48.3	9.5

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.2 PK	74.0	-14.8	1.87 H	256	55.6	3.6
2	5150.00	48.7 AV	54.0	-5.3	1.87 H	256	45.1	3.6
3	*5230.00	111.7 PK			1.87 H	256	71.8	39.9
4	*5230.00	101.8 AV			1.87 H	256	61.9	39.9
5	#10460.00	58.2 PK	68.2	-10.0	1.56 H	93	48.6	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.6 PK	74.0	-12.4	2.31 V	228	58.0	3.6
2	5150.00	52.6 AV	54.0	-1.4	2.31 V	228	49.0	3.6
3	*5230.00	118.8 PK			2.31 V	228	78.9	39.9
4	*5230.00	109.3 AV			2.31 V	228	69.4	39.9
5	#10460.00	58.0 PK	68.2	-10.2	1.30 V	80	48.4	9.6

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 42：5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.7 PK	74.0	-15.3	1.79 H	260	55.1	3.6
2	5150.00	48.7 AV	54.0	-5.3	1.79 H	260	45.1	3.6
3	*5210.00	106.2 PK			1.79 H	260	66.3	39.9
4	*5210.00	95.6 AV			1.79 H	260	55.7	39.9
5	5350.00	57.7 PK	74.0	-16.3	1.79 H	260	54.2	3.5
6	5350.00	46.8 AV	54.0	-7.2	1.79 H	260	43.3	3.5
7	#10420.00	58.3 PK	68.2	-9.9	1.55 H	92	48.7	9.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.4 PK	74.0	-10.6	2.34 V	224	59.8	3.6
2	5150.00	53.2 AV	54.0	-0.8	2.34 V	224	49.6	3.6
3	*5210.00	116.0 PK			2.34 V	224	76.1	39.9
4	*5210.00	103.3 AV			2.34 V	224	63.4	39.9
5	5350.00	57.7 PK	74.0	-16.3	2.34 V	224	54.2	3.5
6	5350.00	48.0 AV	54.0	-6.0	2.34 V	224	44.5	3.5
7	#10420.00	58.6 PK	68.2	-9.6	1.39 V	74	49.0	9.6

Remarks:

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

4TX

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5644.00	58.9 PK	68.2	-9.3	3.18 H	311	54.4	4.5
2	*5745.00	113.8 PK			3.18 H	311	72.5	41.3
3	*5745.00	105.2 AV			3.18 H	311	63.9	41.3
4	#5964.00	60.0 PK	68.2	-8.2	3.18 H	311	54.7	5.3
5	11490.00	58.6 PK	74.0	-15.4	1.42 H	68	48.6	10.0
6	11490.00	47.4 AV	54.0	-6.6	1.42 H	68	37.4	10.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.00	59.8 PK	68.2	-8.4	1.93 V	345	55.5	4.3
2	*5745.00	127.2 PK			1.93 V	345	85.9	41.3
3	*5745.00	117.8 AV			1.93 V	345	76.5	41.3
4	#5928.40	60.2 PK	68.2	-8.0	1.93 V	345	54.9	5.3
5	11490.00	58.2 PK	74.0	-15.8	1.30 V	97	48.2	10.0
6	11490.00	47.3 AV	54.0	-6.7	1.30 V	97	37.3	10.0

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5637.60	59.5 PK	68.2	-8.7	3.30 H	312	55.0	4.5
2	*5785.00	116.0 PK			3.30 H	312	74.5	41.5
3	*5785.00	107.3 AV			3.30 H	312	65.8	41.5
4	#5937.20	60.7 PK	68.2	-7.5	3.30 H	312	55.4	5.3
5	11570.00	58.9 PK	74.0	-15.1	1.52 H	69	48.7	10.2
6	11570.00	47.6 AV	54.0	-6.4	1.52 H	69	37.4	10.2
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	#5630.00	60.1 PK	68.2	-8.1	1.74 V	350	55.7	4.4
2	*5785.00	128.0 PK			1.74 V	350	86.5	41.5
3	*5785.00	119.0 AV			1.74 V	350	77.5	41.5
4	#5944.80	60.7 PK	68.2	-7.5	1.74 V	350	55.4	5.3
5	11570.00	58.7 PK	74.0	-15.3	1.32 V	85	48.5	10.2
6	11570.00	47.7 AV	54.0	-6.3	1.32 V	85	37.5	10.2

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5607.60	59.4 PK	68.2	-8.8	3.14 H	312	55.2	4.2
2	*5825.00	113.5 PK			3.14 H	312	71.9	41.6
3	*5825.00	105.2 AV			3.14 H	312	63.6	41.6
4	#5936.00	59.2 PK	68.2	-9.0	3.14 H	312	53.9	5.3
5	11650.00	58.9 PK	74.0	-15.1	1.44 H	63	48.6	10.3
6	11650.00	47.8 AV	54.0	-6.2	1.44 H	63	37.5	10.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5632.00	59.5 PK	68.2	-8.7	1.83 V	345	55.1	4.4
2	*5825.00	127.6 PK			1.83 V	345	86.0	41.6
3	*5825.00	118.6 AV			1.83 V	345	77.0	41.6
4	#5956.80	60.1 PK	68.2	-8.1	1.83 V	345	54.8	5.3
5	11650.00	59.3 PK	74.0	-14.7	1.37 V	90	49.0	10.3
6	11650.00	48.2 AV	54.0	-5.8	1.37 V	90	37.9	10.3

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5640.40	58.4 PK	68.2	-9.8	3.17 H	313	53.9	4.5
2	*5745.00	115.8 PK			3.17 H	313	74.5	41.3
3	*5745.00	106.6 AV			3.17 H	313	65.3	41.3
4	#5950.40	60.7 PK	68.2	-7.5	3.17 H	313	55.4	5.3
5	11490.00	58.9 PK	74.0	-15.1	1.45 H	71	48.9	10.0
6	11490.00	47.4 AV	54.0	-6.6	1.45 H	71	37.4	10.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.80	60.1 PK	68.2	-8.1	1.66 V	345	55.6	4.5
2	*5745.00	127.9 PK			1.66 V	345	86.6	41.3
3	*5745.00	118.5 AV			1.66 V	345	77.2	41.3
4	#5934.40	60.3 PK	68.2	-7.9	1.66 V	345	55.0	5.3
5	11490.00	58.7 PK	74.0	-15.3	1.31 V	92	48.7	10.0
6	11490.00	47.2 AV	54.0	-6.8	1.31 V	92	37.2	10.0

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5619.20	59.9 PK	68.2	-8.3	2.97 H	330	55.6	4.3
2	*5785.00	117.1 PK			2.97 H	330	75.6	41.5
3	*5785.00	107.5 AV			2.97 H	330	66.0	41.5
4	#5939.20	61.1 PK	68.2	-7.1	2.97 H	330	55.8	5.3
5	11570.00	58.5 PK	74.0	-15.5	1.40 H	56	48.3	10.2
6	11570.00	47.6 AV	54.0	-6.4	1.40 H	56	37.4	10.2
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	#5626.40	60.4 PK	68.2	-7.8	1.67 V	347	56.0	4.4
2	*5785.00	128.6 PK			1.67 V	347	87.1	41.5
3	*5785.00	119.5 AV			1.67 V	347	78.0	41.5
4	#5958.40	60.5 PK	68.2	-7.7	1.67 V	347	55.2	5.3
5	11570.00	58.4 PK	74.0	-15.6	1.36 V	99	48.2	10.2
6	11570.00	47.8 AV	54.0	-6.2	1.36 V	99	37.6	10.2

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 165：5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.80	58.7 PK	68.2	-9.5	3.16 H	312	54.2	4.5
2	*5825.00	114.9 PK			3.16 H	312	73.3	41.6
3	*5825.00	105.8 AV			3.16 H	312	64.2	41.6
4	#5942.40	59.3 PK	68.2	-8.9	3.16 H	312	54.0	5.3
5	11650.00	58.7 PK	74.0	-15.3	1.49 H	61	48.4	10.3
6	11650.00	47.5 AV	54.0	-6.5	1.49 H	61	37.2	10.3
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	#5602.40	60.1 PK	68.2	-8.1	1.90 V	339	55.9	4.2
2	*5825.00	128.6 PK			1.90 V	339	87.0	41.6
3	*5825.00	119.1 AV			1.90 V	339	77.5	41.6
4	#5943.20	60.7 PK	68.2	-7.5	1.90 V	339	55.4	5.3
5	11650.00	59.0 PK	74.0	-15.0	1.23 V	82	48.7	10.3
6	11650.00	47.8 AV	54.0	-6.2	1.23 V	82	37.5	10.3

Remarks:

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

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5607.20	59.8 PK	68.2	-8.4	3.03 H	330	55.6	4.2
2	#5650.00	59.2 PK	68.2	-9.0	3.03 H	330	54.7	4.5
3	*5755.00	113.9 PK			3.03 H	330	72.6	41.3
4	*5755.00	103.7 AV			3.03 H	330	62.4	41.3
5	#5933.60	61.4 PK	68.2	-6.8	3.03 H	330	56.1	5.3
6	11510.00	58.6 PK	74.0	-15.4	1.46 H	69	48.5	10.1
7	11510.00	47.5 AV	54.0	-6.5	1.46 H	69	37.4	10.1
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	#5648.80	62.0 PK	68.2	-6.2	1.76 V	348	57.5	4.5
2	#5650.00	64.3 PK	68.2	-3.9	1.76 V	348	59.8	4.5
3	*5755.00	125.4 PK			1.76 V	348	84.1	41.3
4	*5755.00	115.9 AV			1.76 V	348	74.6	41.3
5	#5931.20	59.5 PK	68.2	-8.7	1.76 V	348	54.2	5.3
6	11510.00	58.3 PK	74.0	-15.7	1.22 V	84	48.2	10.1
7	11510.00	47.4 AV	54.0	-6.6	1.22 V	84	37.3	10.1

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 159：5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5628.00	58.4 PK	68.2	-9.8	3.23 H	331	54.0	4.4
2	*5795.00	115.4 PK			3.23 H	331	73.8	41.6
3	*5795.00	106.2 AV			3.23 H	331	64.6	41.6
4	#5925.00	60.2 PK	68.2	-8.0	3.23 H	331	54.9	5.3
5	#5932.40	60.0 PK	68.2	-8.2	3.23 H	331	54.7	5.3
6	11590.00	58.8 PK	74.0	-15.2	1.53 H	76	48.5	10.3
7	11590.00	47.9 AV	54.0	-6.1	1.53 H	76	37.6	10.3
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	#5649.60	60.5 PK	68.2	-7.7	1.76 V	346	56.0	4.5
2	*5795.00	125.6 PK			1.76 V	346	84.0	41.6
3	*5795.00	116.2 AV			1.76 V	346	74.6	41.6
4	#5925.00	61.1 PK	68.2	-7.1	1.76 V	346	55.8	5.3
5	#5929.20	61.8 PK	68.2	-6.4	1.76 V	346	56.5	5.3
6	11590.00	59.1 PK	74.0	-14.9	1.35 V	94	48.8	10.3
7	11590.00	48.0 AV	54.0	-6.0	1.35 V	94	37.7	10.3

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 155：5775 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5626.00	60.1 PK	68.2	-8.1	3.21 H	330	55.7	4.4
2	#5650.00	61.2 PK	68.2	-7.0	3.21 H	330	56.7	4.5
3	*5775.00	109.7 PK			3.21 H	330	68.2	41.5
4	*5775.00	100.5 AV			3.21 H	330	59.0	41.5
5	#5925.00	59.8 PK	68.2	-8.4	3.21 H	330	54.5	5.3
6	#5931.60	61.2 PK	68.2	-7.0	3.21 H	330	55.9	5.3
7	11550.00	59.1 PK	74.0	-14.9	1.41 H	68	48.9	10.2
8	11550.00	47.9 AV	54.0	-6.1	1.41 H	68	37.7	10.2
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	#5648.80	67.4 PK	68.2	-0.8	1.90 V	347	62.9	4.5
2	#5650.00	65.9 PK	68.2	-2.3	1.90 V	347	61.4	4.5
3	*5775.00	119.5 PK			1.90 V	347	78.0	41.5
4	*5775.00	110.3 AV			1.90 V	347	68.8	41.5
5	#5925.00	60.6 PK	68.2	-7.6	1.90 V	347	55.3	5.3
6	#5926.40	61.2 PK	68.2	-7.0	1.90 V	347	55.9	5.3
7	11550.00	59.0 PK	74.0	-15.0	1.39 V	90	48.8	10.2
8	11550.00	47.8 AV	54.0	-6.2	1.39 V	90	37.6	10.2

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.

Below 1GHz Worst-Case Data:

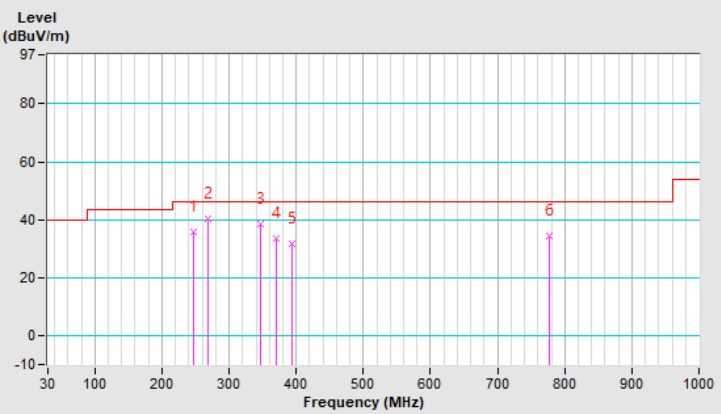
2TX

RF Mode	TX 802.11a	Channel	CH 48：5240 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	247.28	35.7 QP	46.0	-10.3	1.00 H	258	55.4	-19.7
2	267.65	40.3 QP	46.0	-5.7	1.99 H	152	59.3	-19.0
3	347.19	38.5 QP	46.0	-7.5	1.00 H	18	55.2	-16.7
4	369.50	33.7 QP	46.0	-12.3	1.00 H	250	49.7	-16.0
5	394.72	31.8 QP	46.0	-14.2	1.00 H	198	47.3	-15.5
6	777.87	34.4 QP	46.0	-11.6	1.00 H	359	42.4	-8.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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.

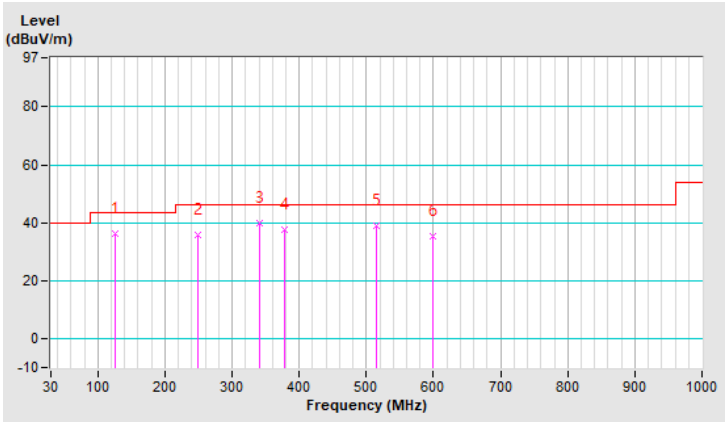


RF Mode	TX 802.11ax (HE20)	Channel	CH 48：5240 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.06	36.3 QP	43.5	-7.2	1.01 V	141	56.4	-20.1
2	248.25	35.6 QP	46.0	-10.4	2.00 V	79	55.2	-19.6
3	341.37	39.8 QP	46.0	-6.2	1.51 V	174	56.6	-16.8
4	378.23	37.6 QP	46.0	-8.4	1.51 V	194	53.4	-15.8
5	515.97	38.8 QP	46.0	-7.2	1.01 V	2	51.6	-12.8
6	598.42	35.2 QP	46.0	-10.8	1.01 V	118	45.8	-10.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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.



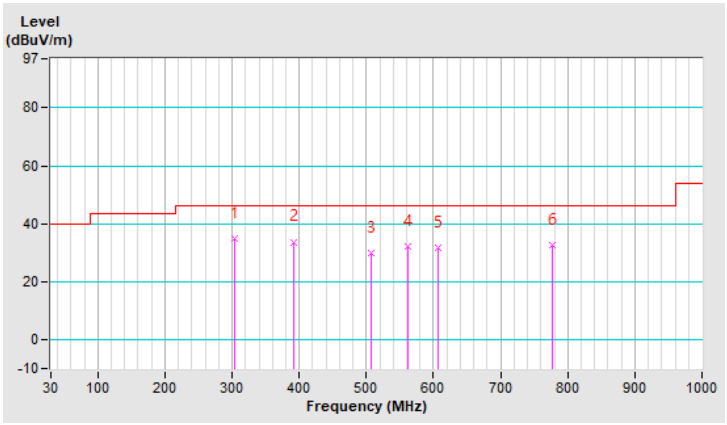
4TX

RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	303.54	34.8 QP	46.0	-11.2	1.01 H	143	52.5	-17.7
2	390.84	33.8 QP	46.0	-12.2	1.01 H	217	49.4	-15.6
3	507.24	29.7 QP	46.0	-16.3	2.00 H	92	42.7	-13.0
4	561.56	32.2 QP	46.0	-13.8	1.50 H	291	44.1	-11.9
5	606.18	31.6 QP	46.0	-14.4	1.50 H	283	42.1	-10.5
6	777.87	32.5 QP	46.0	-13.5	1.50 H	339	40.5	-8.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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.

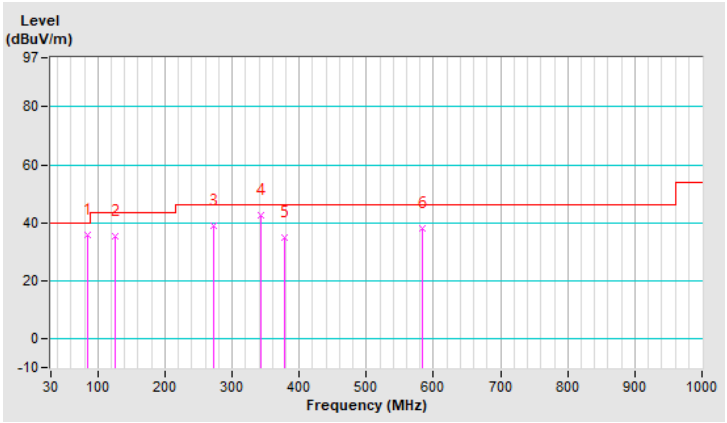


RF Mode	TX 802.11ax (HE40)	Channel	CH 159：5795 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	85.29	35.6 QP	40.0	-4.4	1.01 V	74	59.5	-23.9
2	125.06	35.2 QP	43.5	-8.3	1.01 V	143	55.3	-20.1
3	271.53	39.0 QP	46.0	-7.0	1.51 V	92	57.8	-18.8
4	342.34	42.4 QP	46.0	-3.6	1.51 V	30	59.2	-16.8
5	377.26	34.7 QP	46.0	-11.3	1.51 V	2	50.5	-15.8
6	582.90	38.2 QP	46.0	-7.8	1.51 V	195	49.3	-11.1

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.



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	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2021	Sep. 03, 2022
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 28, 2021	Jan. 27, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Sep. 17, 2021	Sep. 16, 2022
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

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

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

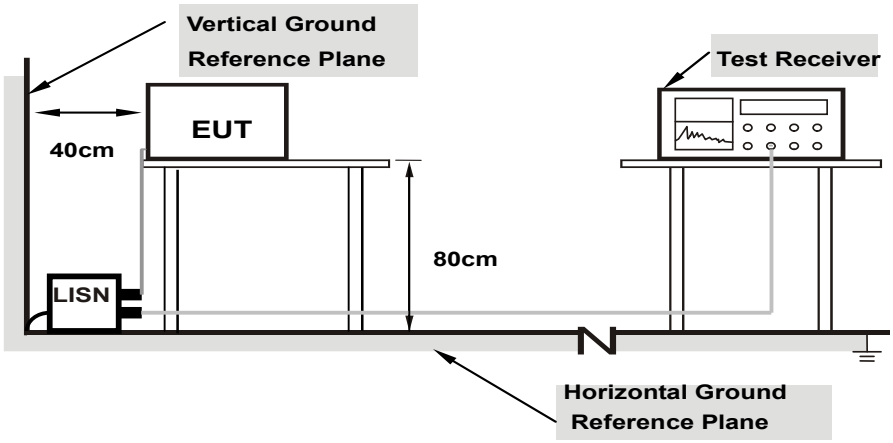
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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:

2TX

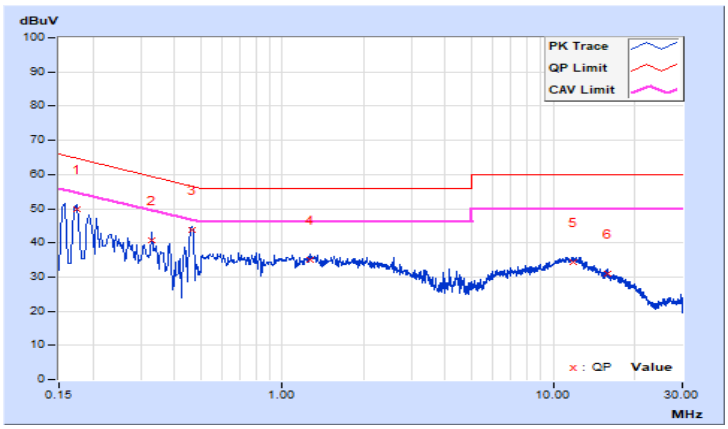
802.11a

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17384	10.12	39.77	19.49	49.89	29.61	64.77	54.77	-14.88	-25.16
2	0.33000	10.14	30.70	20.20	40.84	30.34	59.45	49.45	-18.61	-19.11
3	0.46200	10.14	33.75	28.36	43.89	38.50	56.66	46.66	-12.77	-8.16
4	1.27000	10.18	24.76	15.83	34.94	26.01	56.00	46.00	-21.06	-19.99
5	11.82200	10.35	24.05	16.86	34.40	27.21	60.00	50.00	-25.60	-22.79
6	15.81400	10.40	20.53	10.64	30.93	21.04	60.00	50.00	-29.07	-28.96

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.

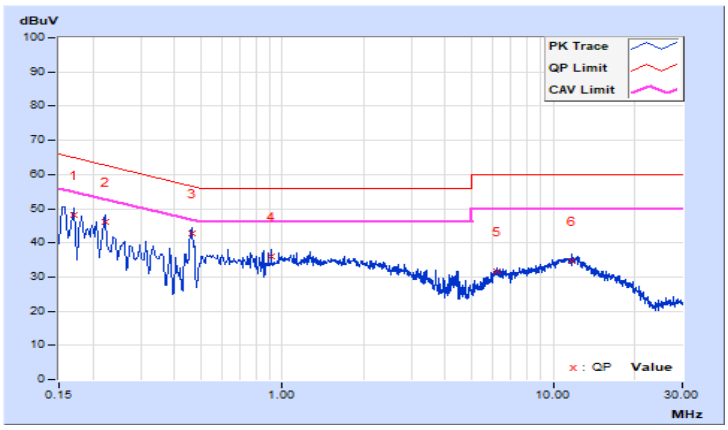


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17000	10.12	38.17	22.55	48.29	32.67	64.96	54.96	-16.67	-22.29
2	0.22200	10.13	36.13	21.97	46.26	32.10	62.74	52.74	-16.48	-20.64
3	0.46200	10.15	32.68	28.26	42.83	38.41	56.66	46.66	-13.83	-8.25
4	0.91000	10.18	25.73	15.20	35.91	25.38	56.00	46.00	-20.09	-20.62
5	6.17400	10.33	21.29	10.22	31.62	20.55	60.00	50.00	-28.38	-29.45
6	11.74200	10.46	24.26	16.69	34.72	27.15	60.00	50.00	-25.28	-22.85

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.



4TX

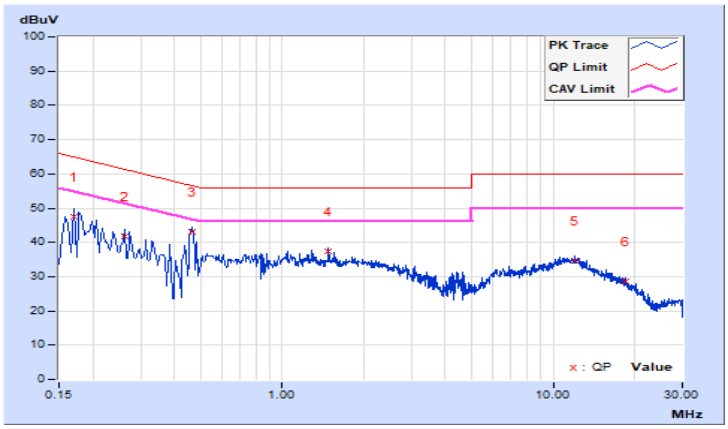
802.11ax (HE40)

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17000	10.12	37.30	21.99	47.42	32.11	64.96	54.96	-17.54	-22.85
2	0.26200	10.13	31.52	18.00	41.65	28.13	61.37	51.37	-19.72	-23.24
3	**0.46200**	**10.14**	**32.81**	**28.41**	**42.95**	**38.55**	**56.66**	**46.66**	**-13.71**	**-8.11**
4	1.48600	10.19	27.04	16.80	37.23	26.99	56.00	46.00	-18.77	-19.01
5	12.01000	10.35	24.27	17.07	34.62	27.42	60.00	50.00	-25.38	-22.58
6	18.51000	10.45	18.15	8.24	28.60	18.69	60.00	50.00	-31.40	-31.31

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.

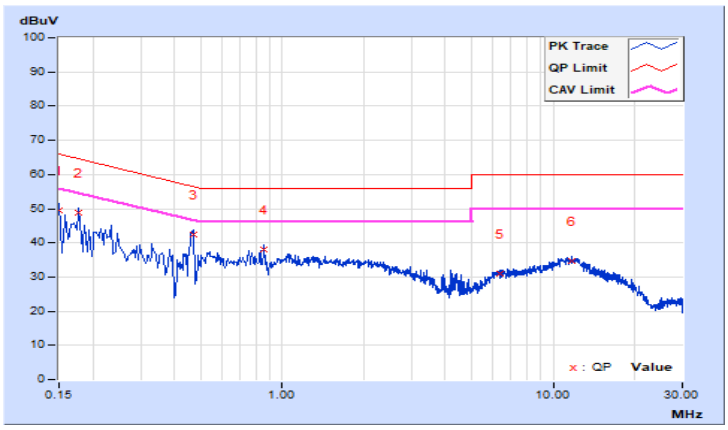


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.12	39.52	20.57	49.64	30.69	66.00	56.00	-16.36	-25.31
2	0.17800	10.13	38.61	19.62	48.74	29.75	64.58	54.58	-15.84	-24.83
3	0.47000	10.15	32.44	23.67	42.59	33.82	56.51	46.51	-13.92	-12.69
4	0.85800	10.17	27.85	12.65	38.02	22.82	56.00	46.00	-17.98	-23.18
5	6.39800	10.34	20.76	10.29	31.10	20.63	60.00	50.00	-28.90	-29.37
6	11.76600	10.46	24.09	16.55	34.55	27.01	60.00	50.00	-25.45	-22.99

Remarks:

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



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)

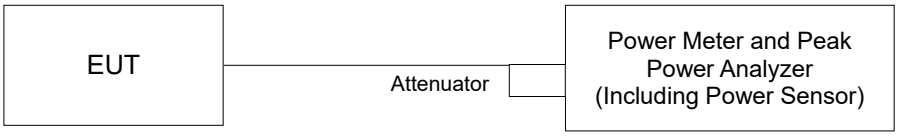
*B is the 26 dB emission bandwidth in megahertz

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



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

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

2TX

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.47	22.36	348.791	25.43	30.00	Pass
40	5200	24.93	24.88	618.781	27.92	30.00	Pass
48	5240	26.91	27.00	**992.095**	29.97	30.00	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.18	21.98	322.957	25.09	30.00	Pass
40	5200	24.25	24.00	517.261	27.14	30.00	Pass
48	5240	25.61	25.47	716.286	28.55	30.00	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.55	20.52	226.221	23.55	30.00	Pass
46	5230	23.14	22.98	404.672	26.07	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.20	22.01	324.813	25.12	30.00	Pass
40	5200	24.28	24.02	520.265	27.16	30.00	Pass
48	5240	25.64	25.53	723.710	28.60	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.58	20.54	227.528	23.57	30.00	Pass
46	5230	23.16	23.00	406.540	26.09	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	20.14	20.00	203.276	23.08	30.00	Pass

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.22	22.04	326.681	25.14	30.00	Pass
40	5200	24.31	24.08	525.633	27.21	30.00	Pass
48	5240	25.67	25.62	733.732	28.66	30.00	Pass

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.61	20.57	229.105	23.60	30.00	Pass
46	5230	23.18	23.03	408.879	26.12	30.00	Pass

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	20.16	20.03	204.446	23.11	30.00	Pass

4TX

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	22.45	23.01	23.47	23.71	833.073	29.21	30.00	Pass
157	5785	22.47	23.17	23.46	23.61	835.530	29.22	30.00	Pass
165	5825	22.39	23.24	23.34	23.66	832.291	29.20	30.00	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.02	23.26	23.40	23.68	864.405	29.37	30.00	Pass
157	5785	23.07	23.20	23.58	23.35	856.004	29.32	30.00	Pass
165	5825	23.02	23.13	23.52	23.42	850.728	29.30	30.00	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	24.08	23.50	23.96	22.96	926.313	29.67	30.00	Pass
159	5795	24.00	23.70	23.78	23.18	932.362	29.70	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.04	23.27	23.42	23.71	868.446	29.39	30.00	Pass
157	5785	23.10	23.22	23.60	23.38	860.926	29.35	30.00	Pass
165	5825	23.04	23.15	23.56	23.44	855.697	29.32	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	24.11	23.52	23.98	23.00	932.098	29.69	30.00	Pass
159	5795	24.04	23.72	23.81	23.20	938.384	29.72	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	20.74	20.57	20.31	20.45	450.918	26.54	30.00	Pass

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.07	23.31	23.45	23.75	875.504	29.42	30.00	Pass
157	5785	23.12	23.25	23.63	23.41	866.420	29.38	30.00	Pass
165	5825	23.06	23.17	23.58	23.46	859.647	29.34	30.00	Pass

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	24.14	23.55	24.01	23.02	938.097	29.72	30.00	Pass
159	5795	24.08	23.75	23.83	23.22	**944.436**	29.75	30.00	Pass

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	20.76	20.61	20.35	20.48	454.283	26.57	30.00	Pass

Beamforming Mode

2TX

802.11n (HT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.17	18.97	161.490	22.08	29.99	Pass
40	5200	21.24	20.99	258.648	24.13	29.99	Pass
48	5240	22.60	22.46	358.168	25.54	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11n (HT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.54	17.51	113.118	20.54	29.99	Pass
46	5230	20.13	19.97	202.350	23.06	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.19	19.00	162.418	22.11	29.99	Pass
40	5200	21.27	21.01	260.150	24.15	29.99	Pass
48	5240	22.63	22.52	361.880	25.59	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.57	17.53	113.772	20.56	29.99	Pass
46	5230	20.15	19.99	203.284	23.08	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	17.13	16.99	101.645	20.07	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.21	19.03	163.352	22.13	29.99	Pass
40	5200	21.30	21.07	262.834	24.20	29.99	Pass
48	5240	22.66	22.61	**366.891**	25.65	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	17.60	17.56	114.560	20.59	29.99	Pass
46	5230	20.17	20.02	204.454	23.11	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	17.15	17.02	102.230	20.10	29.99	Pass

Note: Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power limit shall be reduced to 30 - (6.01 - 6) = 29.99dBi.

4TX

802.11n (HT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	17.00	17.24	17.38	17.66	216.131	23.35	26.98	Pass
157	5785	17.05	17.18	17.56	17.33	214.031	23.30	26.98	Pass
165	5825	17.00	17.11	17.50	17.40	212.711	23.28	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11n (HT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	18.06	17.48	17.94	16.94	231.61	23.65	26.98	Pass
159	5795	17.98	17.68	17.76	17.16	233.123	23.68	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	17.02	17.25	17.40	17.69	217.142	23.37	26.98	Pass
157	5785	17.08	17.20	17.58	17.36	215.261	23.33	26.98	Pass
165	5825	17.02	17.13	17.54	17.42	213.954	23.30	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	18.09	17.50	17.96	16.98	233.057	23.67	26.98	Pass
159	5795	18.02	17.70	17.79	17.18	234.628	23.70	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	14.72	14.55	14.29	14.43	112.745	20.52	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	17.05	17.29	17.43	17.73	218.906	23.40	26.98	Pass
157	5785	17.10	17.23	17.61	17.39	216.635	23.36	26.98	Pass
165	5825	17.04	17.15	17.56	17.44	214.941	23.32	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	18.12	17.53	17.99	17.00	234.557	23.70	26.98	Pass
159	5795	18.06	17.73	17.81	17.20	**236.142**	23.73	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

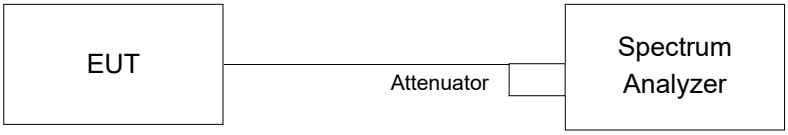
802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	14.74	14.59	14.33	14.46	113.587	20.55	26.98	Pass

Note: Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.

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

2TX

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.68	16.56
40	5200	16.56	16.56
48	5240	18.96	17.76

802.11ax (HE20)

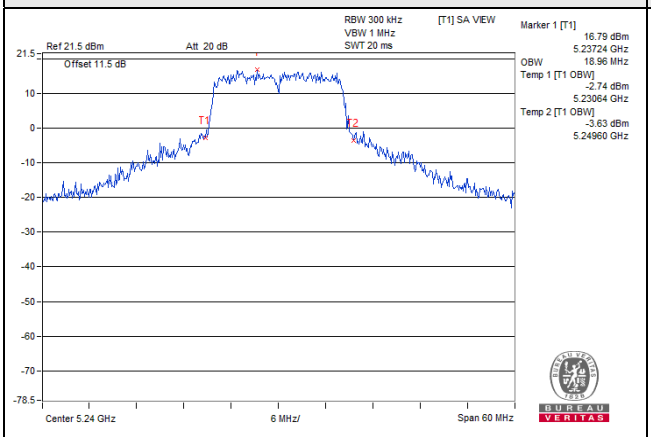
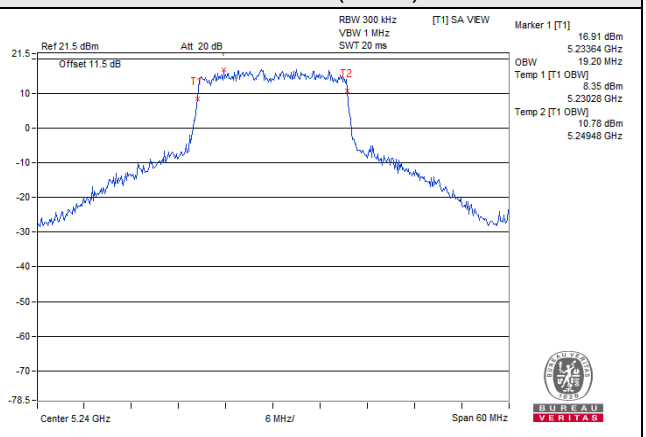
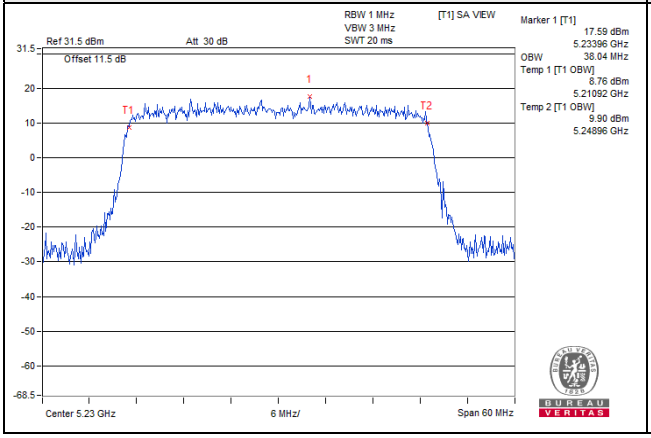
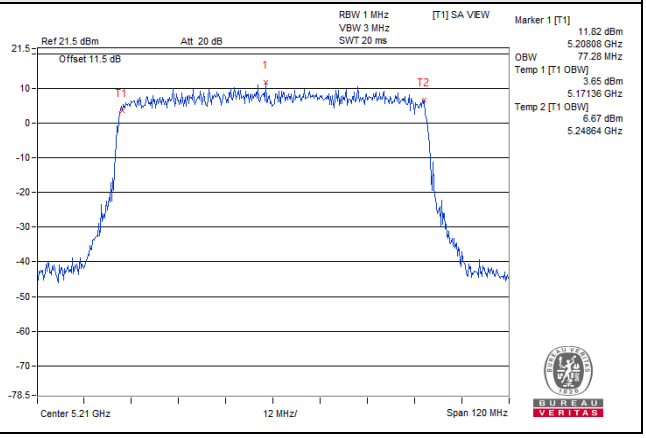
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	18.96
40	5200	18.96	18.96
48	5240	19.20	19.08

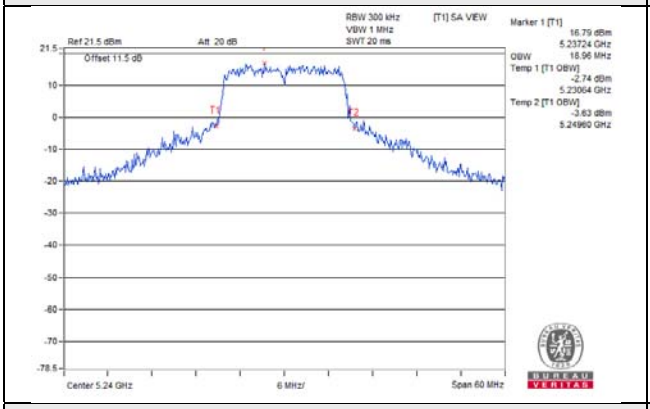
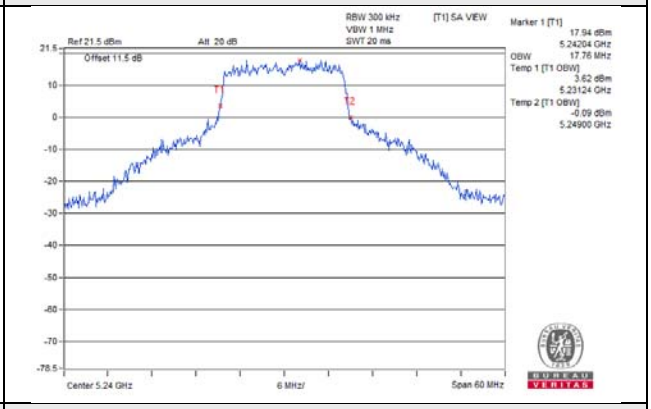
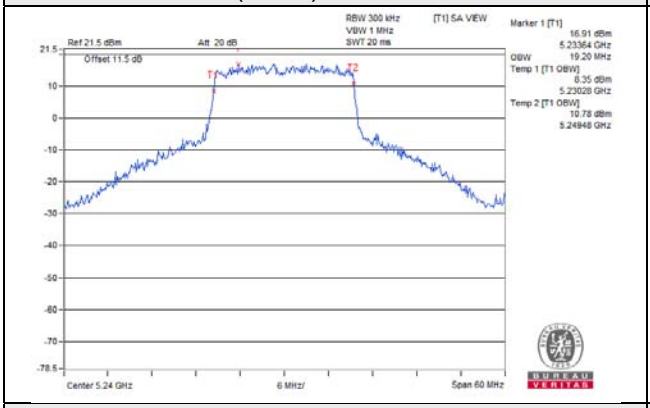
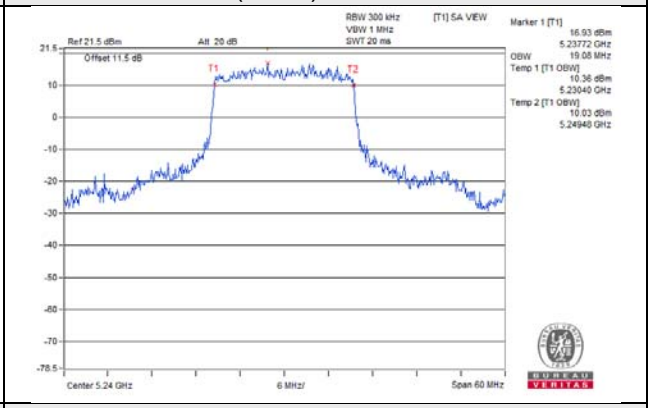
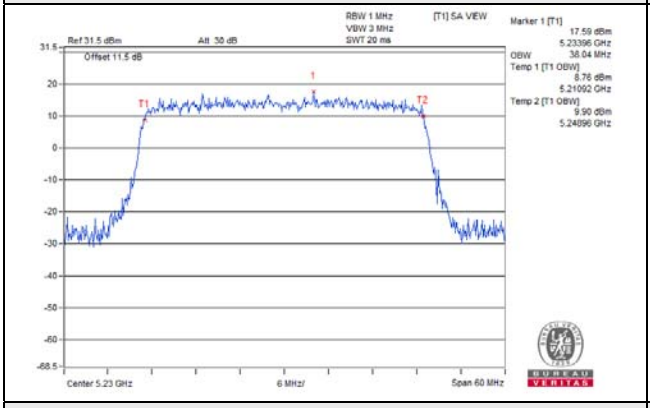
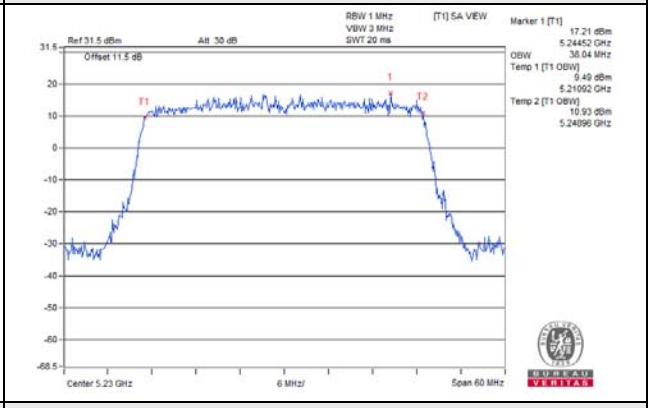
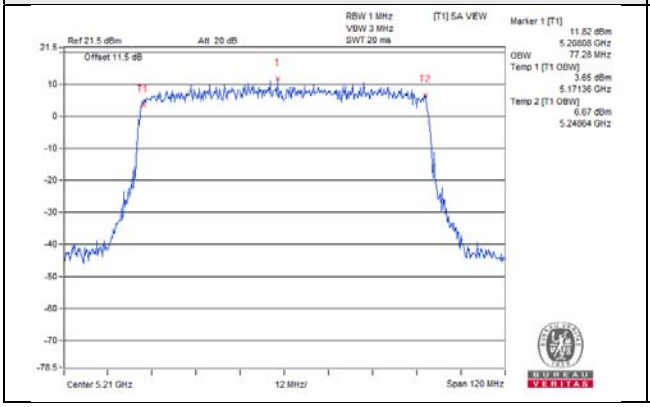
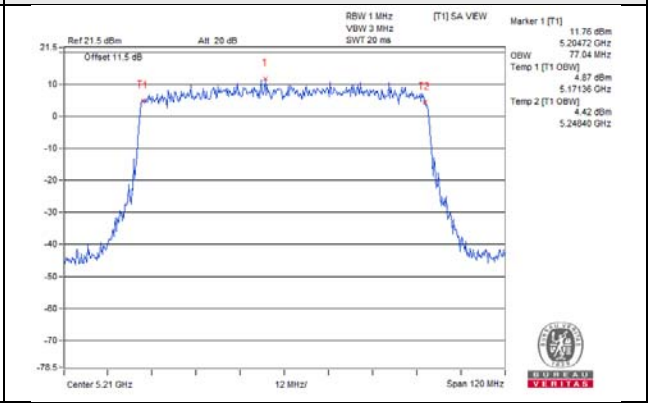
802.11ax (HE40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	38.04	38.04
46	5230	38.04	38.04

802.11ax (HE80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.28	77.04

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

Spectrum Plot for near By DFS Band	
802.11a / Chain 0 / CH 48	802.11a / Chain 1 / CH 48
	
802.11ax (HE20) / Chain 0 / CH 48	802.11ax (HE20) / Chain 1 / CH 48
	
802.11ax (HE40) / Chain 0 / CH 46	802.11ax (HE40) / Chain 1 / CH 46
	
802.11ax (HE80) / Chain 0 / CH 42	802.11ax (HE80) / Chain 1 / CH 42
	

4TX

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.92	17.04	16.80	16.92
157	5785	20.04	17.16	18.12	17.40
165	5825	16.80	16.68	16.68	16.68

802.11ax (HE20)

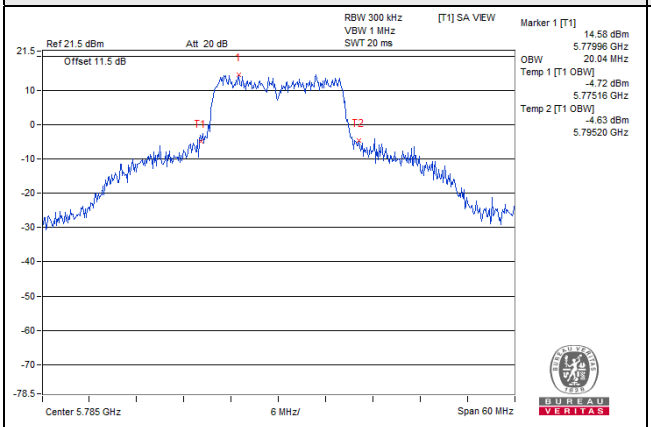
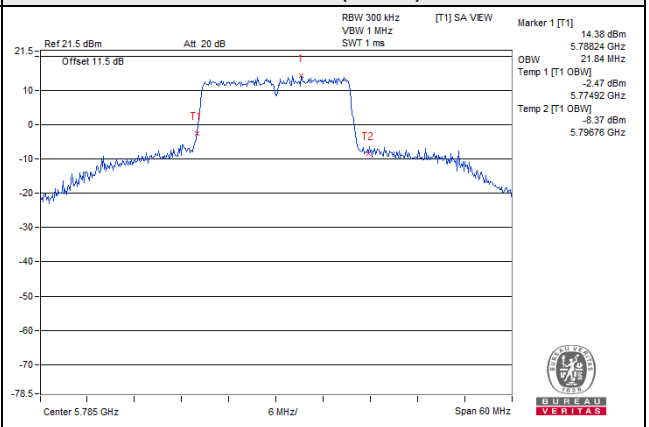
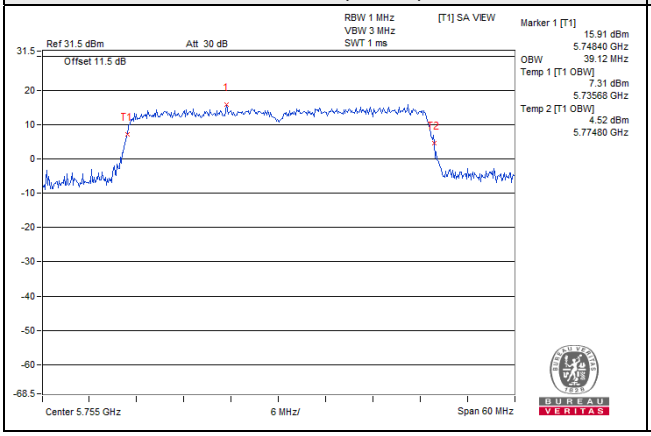
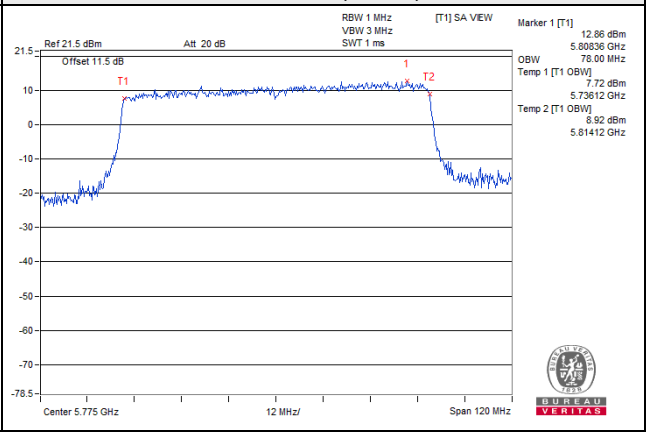
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	19.56	20.88	19.80	21.48
157	5785	20.00	19.68	20.18	21.84
165	5825	19.20	19.20	19.08	19.20

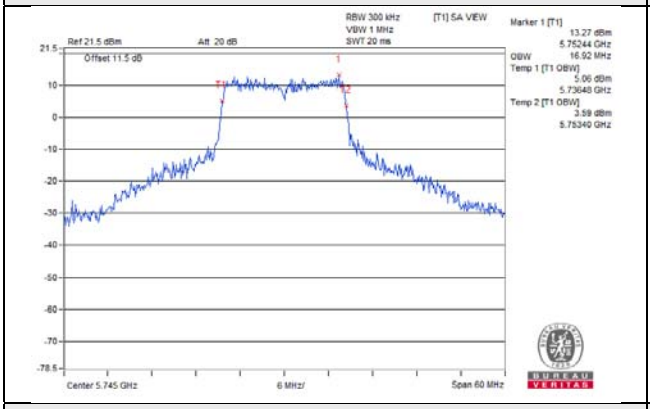
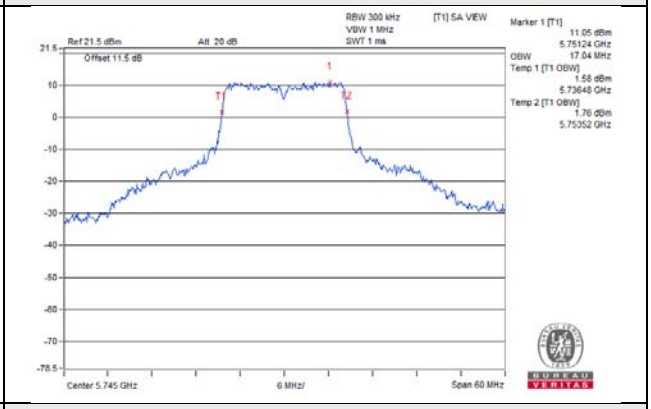
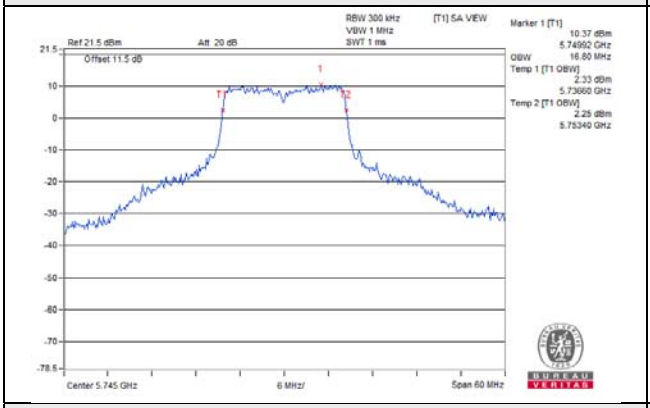
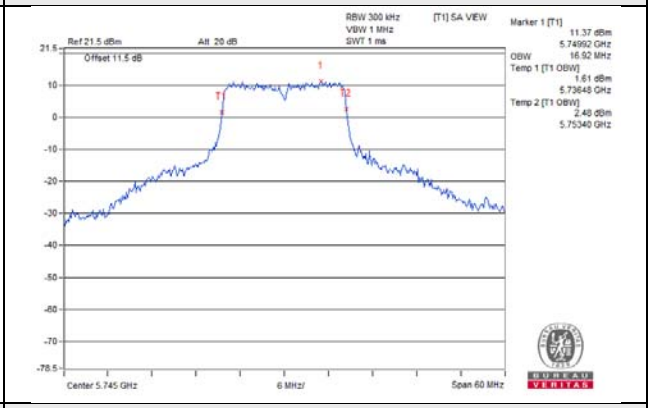
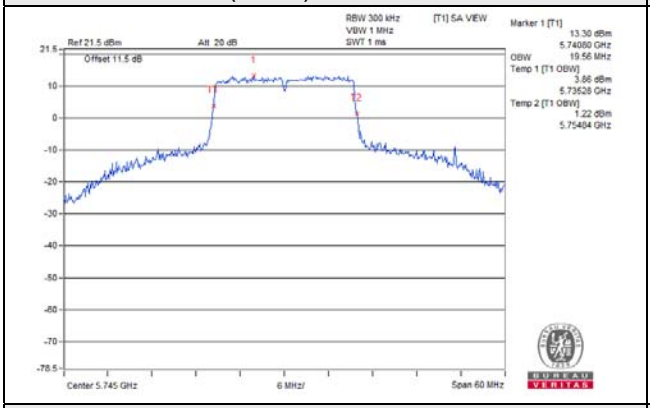
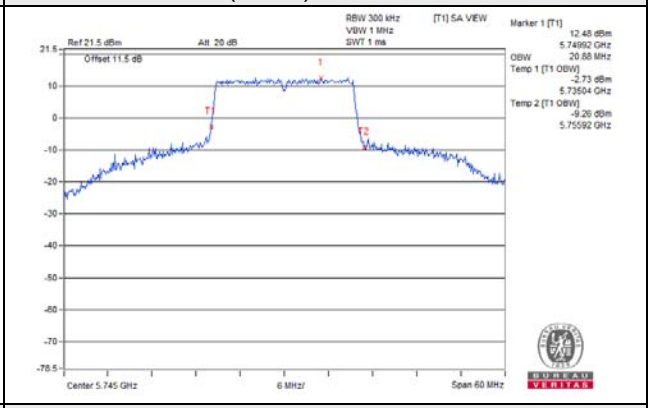
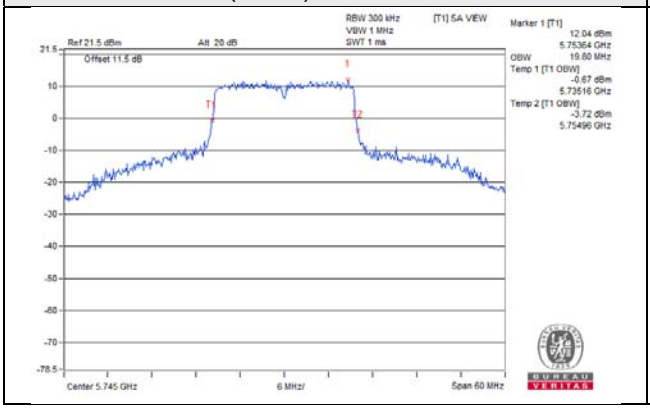
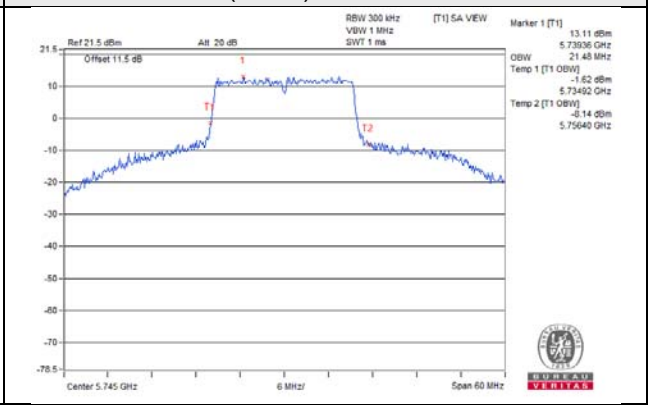
802.11ax (HE40)

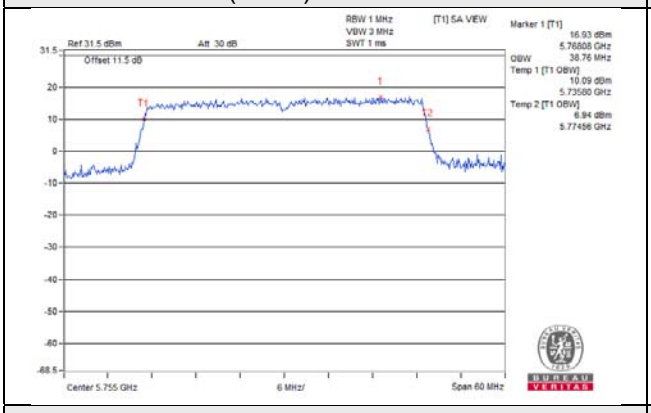
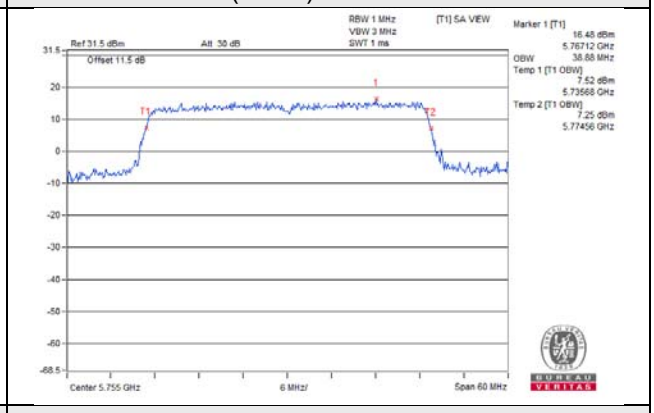
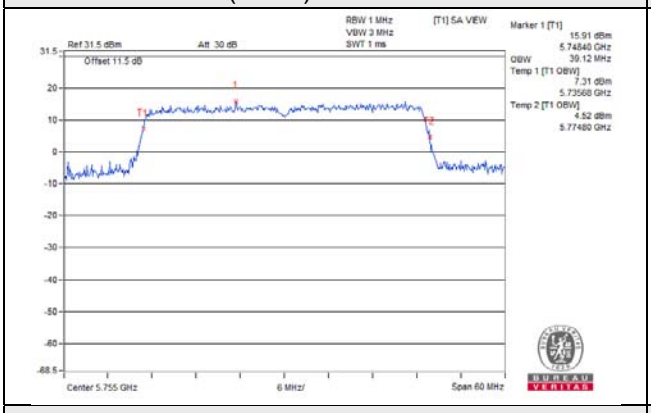
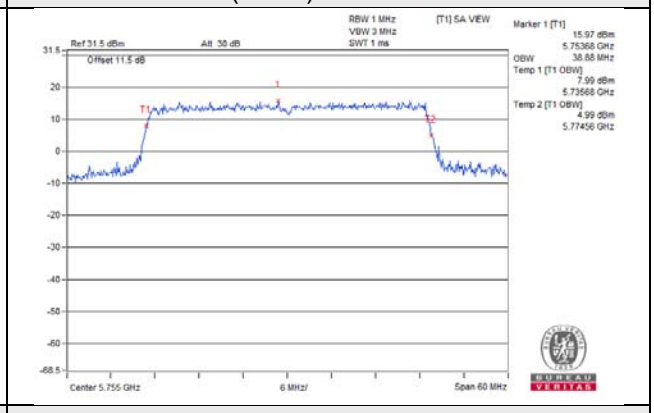
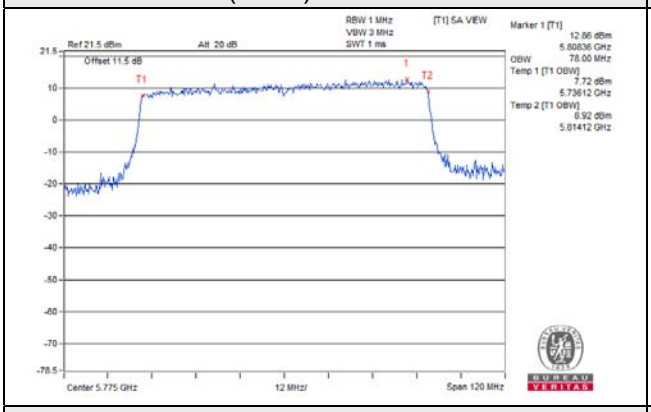
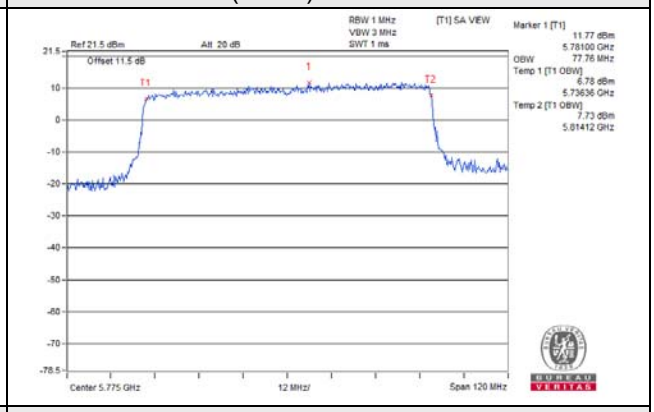
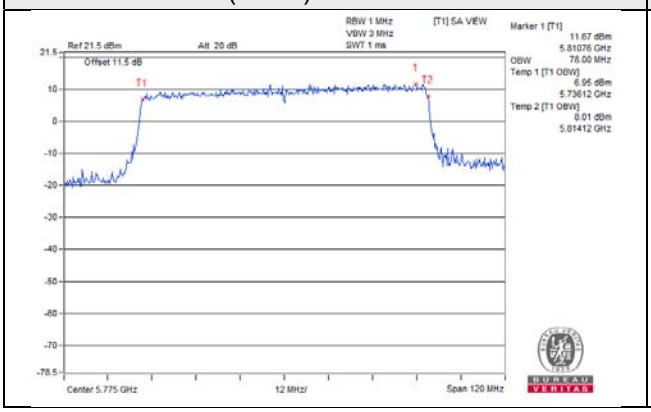
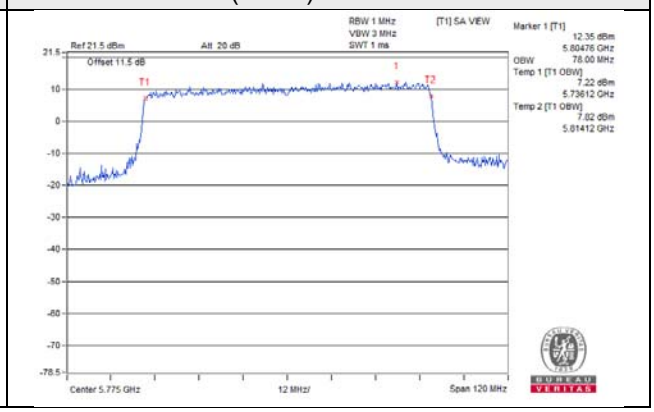
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	38.76	38.88	39.12	38.88
159	5795	39.00	38.88	39.00	39.00

802.11ax (HE80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	78.00	77.76	78.00	78.00

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

Spectrum Plot for near By DFS Band	
802.11a / Chain 0 / CH 149	802.11a / Chain 1 / CH 149
	
802.11a / Chain 2 / CH 149	802.11a / Chain 3 / CH 149
	
802.11ax (HE20) / Chain 0 / CH 149	802.11ax (HE20) / Chain 1 / CH 149
	
802.11ax (HE20) / Chain 2 / CH 149	802.11ax (HE20) / Chain 3 / CH 149
	

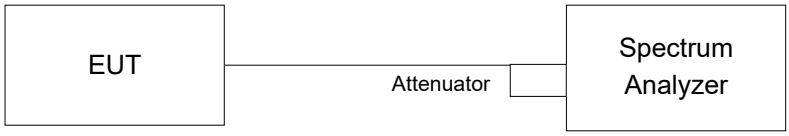
Spectrum Plot for near By DFS Band	
802.11ax (HE40) / Chain 0 / CH 151	802.11ax (HE40) / Chain 1 / CH 151
	
802.11ax (HE40) / Chain 2 / CH 151	802.11ax (HE40) / Chain 3 / CH 151
	
802.11ax (HE80) / Chain 0 / CH 155	802.11ax (HE80) / Chain 1 / CH 155
	
802.11ax (HE80) / Chain 2 / CH 155	802.11ax (HE80) / Chain 3 / CH 155
	

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

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. 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 / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. 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

2TX

For U-NII-1 band:

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				
36	5180	7.62	8.11	0.38	11.26	16.99	Pass
40	5200	10.35	10.69	0.38	13.91	16.99	Pass
48	5240	12.28	12.84	0.38	15.96	16.99	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. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power density limit shall be reduced to 17 - (6.01 - 6) = 16.99dBi.
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				
36	5180	7.44	7.23	0.24	10.59	16.99	Pass
40	5200	9.31	9.61	0.24	12.71	16.99	Pass
48	5240	10.17	10.08	0.24	13.38	16.99	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. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power density limit shall be reduced to 17 - (6.01 - 6) = 16.99dBi.
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				
38	5190	2.72	2.73	0.25	5.99	16.99	Pass
46	5230	5.43	5.20	0.25	8.58	16.99	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. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power density limit shall be reduced to 17 - (6.01 - 6) = 16.99dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

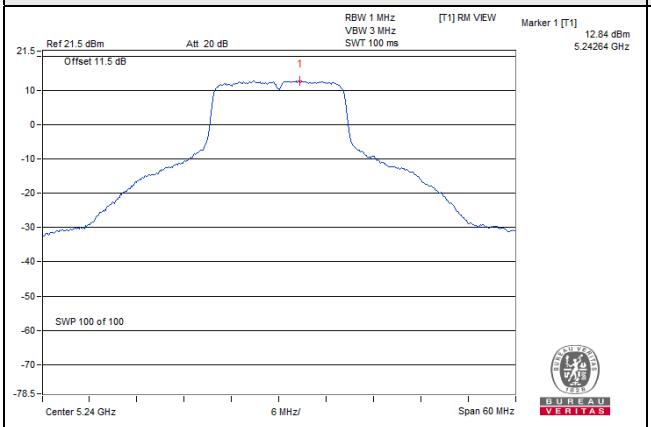
802.11ax (HE80)

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				
42	5210	-0.87	-0.75	0.30	2.50	16.99	Pass

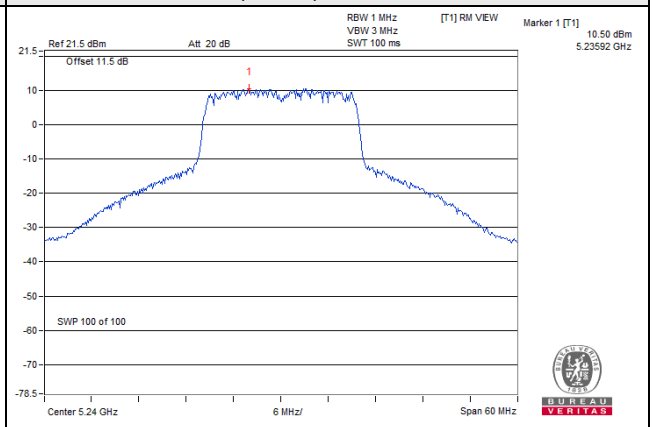
Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 3dBi + 10log(2) = 6.01dBi > 6dBi, so the power density limit shall be reduced to 17 - (6.01 - 6) = 16.99dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

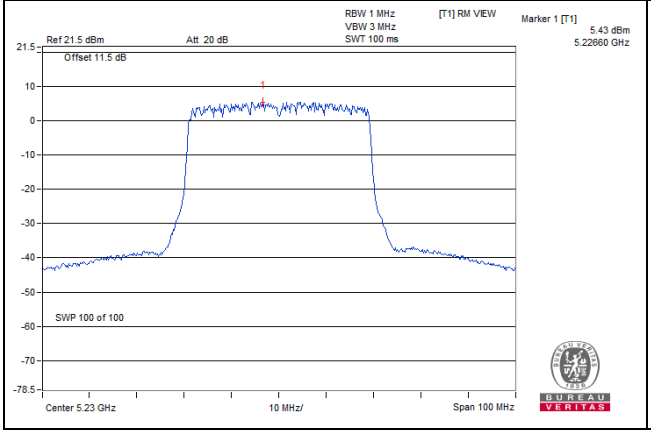
802.11a / Chain 1 / CH 48



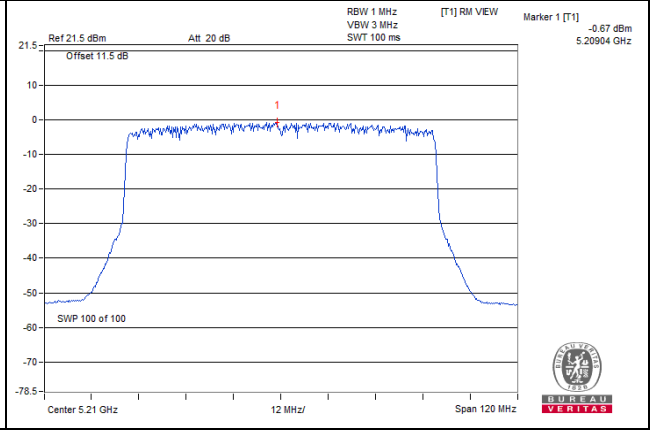
802.11ax (HE20) / Chain 0 / CH 48



802.11ax (HE40) / Chain 0 / CH 46



802.11ax (HE80) / Chain 1 / CH 42



4TX

For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	0.81	3.03	6.02	0.27	9.32	26.98	Pass
	157	5785	1.32	3.54	6.02	0.27	9.83	26.98	Pass
	165	5825	1.38	3.60	6.02	0.27	9.89	26.98	Pass
1	149	5745	0.36	2.58	6.02	0.27	8.87	26.98	Pass
	157	5785	0.61	2.83	6.02	0.27	9.12	26.98	Pass
	165	5825	0.76	2.98	6.02	0.27	9.27	26.98	Pass
2	149	5745	-0.19	2.03	6.02	0.27	8.32	26.98	Pass
	157	5785	1.06	3.28	6.02	0.27	9.57	26.98	Pass
	165	5825	0.84	3.06	6.02	0.27	9.35	26.98	Pass
3	149	5745	0.41	2.63	6.02	0.27	8.92	26.98	Pass
	157	5785	0.39	2.61	6.02	0.27	8.90	26.98	Pass
	165	5825	0.49	2.71	6.02	0.27	9.00	26.98	Pass

Note:

1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power density limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-1.52	0.70	6.02	0.36	7.08	26.98	Pass
	157	5785	-0.25	1.97	6.02	0.36	8.35	26.98	Pass
	165	5825	-0.31	1.91	6.02	0.36	8.29	26.98	Pass
1	149	5745	-1.84	0.38	6.02	0.36	6.76	26.98	Pass
	157	5785	-0.76	1.46	6.02	0.36	7.84	26.98	Pass
	165	5825	-0.68	1.54	6.02	0.36	7.92	26.98	Pass
2	149	5745	-2.06	0.16	6.02	0.36	6.54	26.98	Pass
	157	5785	-1.55	0.67	6.02	0.36	7.05	26.98	Pass
	165	5825	-0.36	1.86	6.02	0.36	8.24	26.98	Pass
3	149	5745	-1.69	0.53	6.02	0.36	6.91	26.98	Pass
	157	5785	-1.37	0.85	6.02	0.36	7.23	26.98	Pass
	165	5825	-1.17	1.05	6.02	0.36	7.43	26.98	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power density limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-4.10	-1.88	6.02	0.33	4.47	26.98	Pass
	159	5795	-3.15	-0.93	6.02	0.33	5.42	26.98	Pass
1	151	5755	-4.98	-2.76	6.02	0.33	3.59	26.98	Pass
	159	5795	-3.50	-1.28	6.02	0.33	5.07	26.98	Pass
2	151	5755	-5.65	-3.43	6.02	0.33	2.92	26.98	Pass
	159	5795	-4.22	-2.00	6.02	0.33	4.35	26.98	Pass
3	151	5755	-4.74	-2.52	6.02	0.33	3.83	26.98	Pass
	159	5795	-3.39	-1.17	6.02	0.33	5.18	26.98	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power density limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

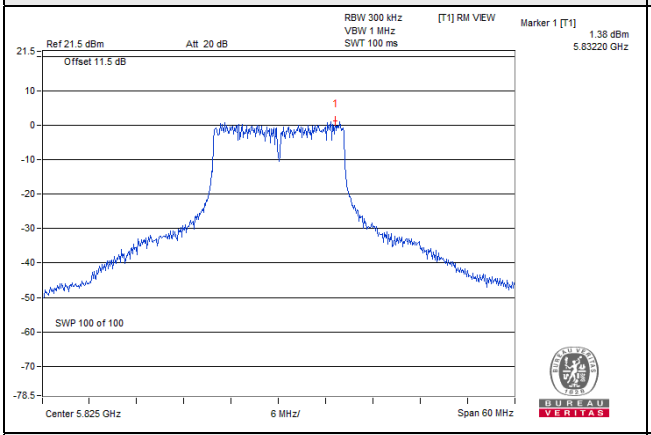
802.11ax (HE80)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138	5690 (For U-NII-3)	-11.70	-9.48	6.02	0.37	-3.09	26.98	Pass
	155	5775	-8.66	-6.44	6.02	0.37	-0.05	26.98	Pass
1	138	5690 (For U-NII-3)	-11.20	-8.98	6.02	0.37	-2.59	26.98	Pass
	155	5775	-9.36	-7.14	6.02	0.37	-0.75	26.98	Pass
2	138	5690 (For U-NII-3)	-10.80	-8.58	6.02	0.37	-2.19	26.98	Pass
	155	5775	-9.28	-7.06	6.02	0.37	-0.67	26.98	Pass
3	138	5690 (For U-NII-3)	-10.97	-8.75	6.02	0.37	-2.36	26.98	Pass
	155	5775	-8.82	-6.60	6.02	0.37	-0.21	26.98	Pass

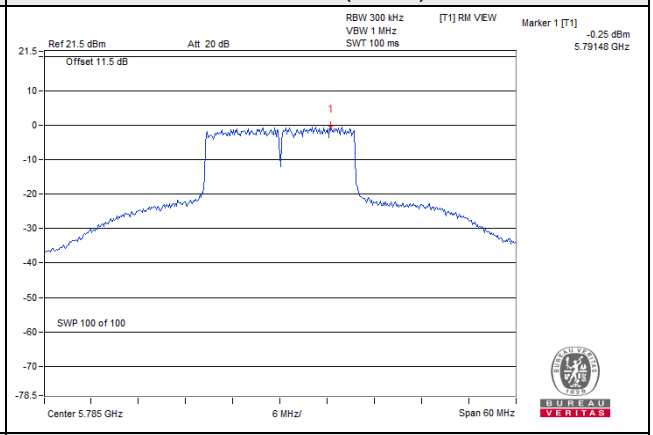
Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure value and add 10 log (N_{ANT}) dB.
2. Directional gain = 3dBi + 10log(4) = 9.02dBi > 6dBi, so the power density limit shall be reduced to 30 - (9.02 - 6) = 26.98dBi.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

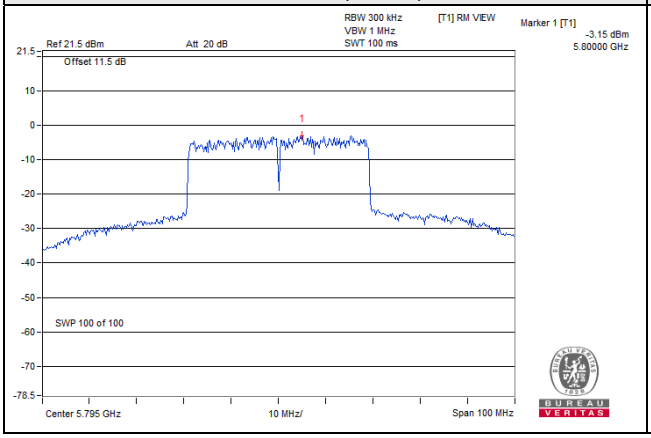
802.11a



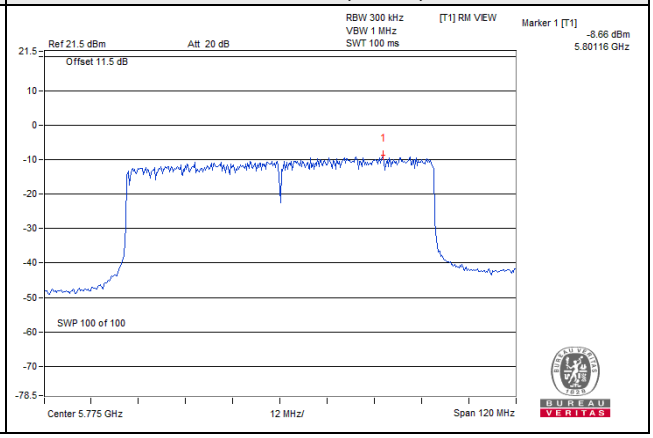
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

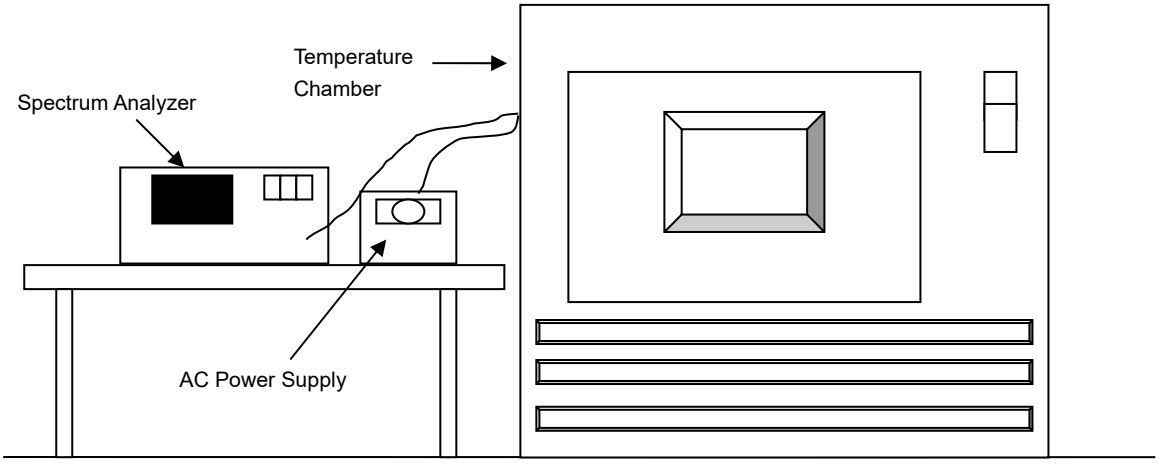


4.6 Frequency Stability

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. 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	70360755	Jul. 08, 2021	Jul. 07, 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

2TX

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
40	120	5179.9937	Pass	5179.9941	Pass	5179.9966	Pass	5179.9969	Pass
30	120	5180.0177	Pass	5180.0181	Pass	5180.0203	Pass	5180.0186	Pass
20	120	5180.0197	Pass	5180.0176	Pass	5180.0194	Pass	5180.0179	Pass
10	120	5180.0093	Pass	5180.011	Pass	5180.0101	Pass	5180.0075	Pass
0	120	5179.9954	Pass	5179.9967	Pass	5179.9996	Pass	5179.9954	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0297	Pass	5180.0287	Pass	5180.0267	Pass	5180.0263	Pass
	120	5180.0197	Pass	5180.0176	Pass	5180.0194	Pass	5180.0179	Pass
	102	5180.018	Pass	5180.02	Pass	5180.0169	Pass	5180.0183	Pass

4TX

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
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	5744.9771	Pass	5744.975	Pass	5744.9728	Pass	5744.974	Pass
30	120	5744.9918	Pass	5744.9944	Pass	5744.9937	Pass	5744.9915	Pass
20	120	5745.0168	Pass	5745.0215	Pass	5745.0215	Pass	5745.0202	Pass
10	120	5744.9944	Pass	5744.9922	Pass	5744.9924	Pass	5744.9904	Pass
0	120	5745.0022	Pass	5745.0033	Pass	5745.0005	Pass	5745.0057	Pass

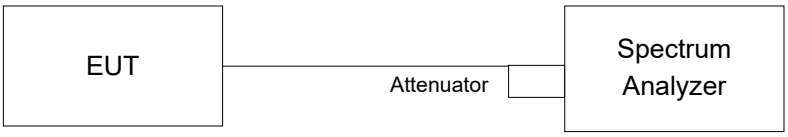
Frequency Stability Versus Voltage									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5745.0235	Pass	5745.024	Pass	5745.0262	Pass	5745.0256	Pass
	120	5745.0168	Pass	5745.0215	Pass	5745.0215	Pass	5745.0202	Pass
	102	5745.0062	Pass	5745.0059	Pass	5745.0062	Pass	5745.0084	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

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

4TX

802.11a

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.38	16.38	16.35	16.38	0.50	Pass
157	5785	16.36	16.40	16.36	16.38	0.50	Pass
165	5825	16.40	16.41	16.41	16.40	0.50	Pass

802.11ax (HE20)

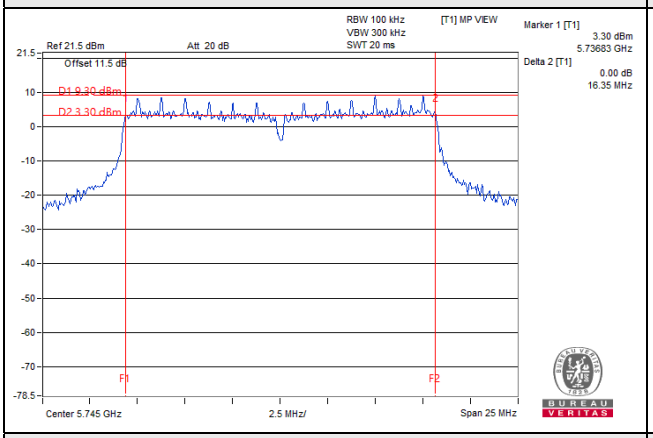
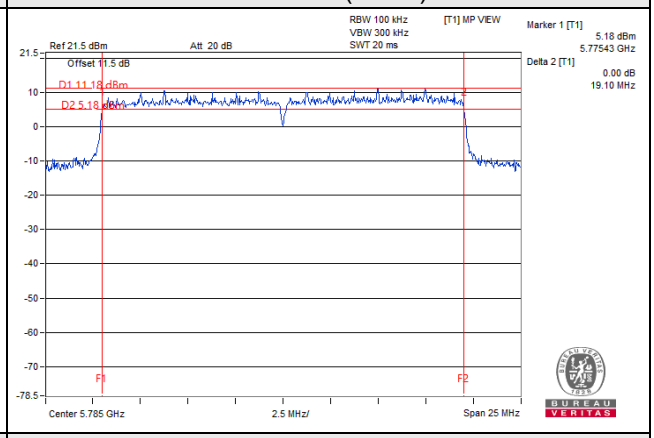
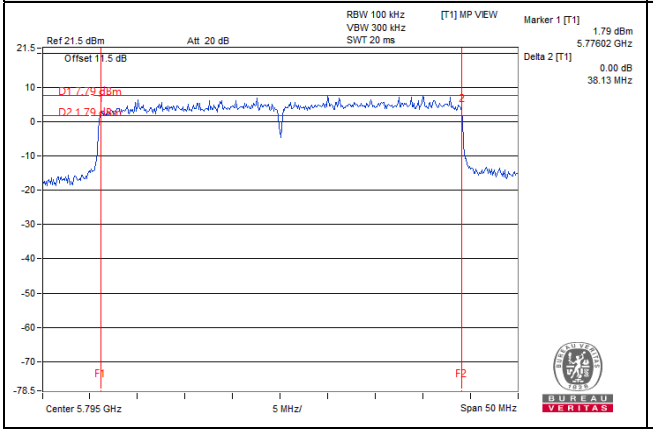
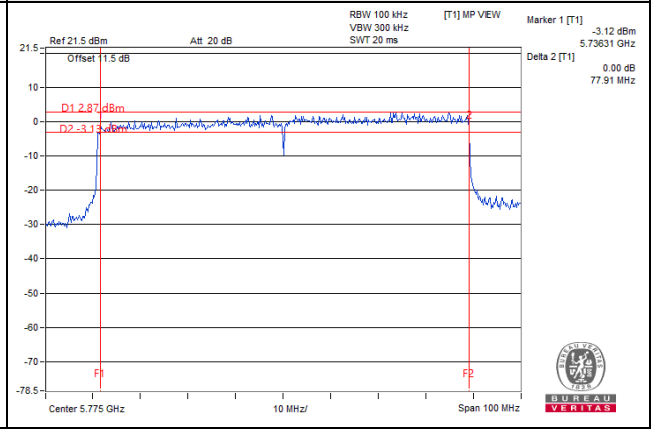
Chan.	Freq. (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	19.12	19.14	19.14	19.13	0.50	Pass
157	5785	19.12	19.11	19.10	19.13	0.50	Pass
165	5825	19.17	19.19	19.14	19.15	0.50	Pass

802.11ax (HE40)

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	38.27	38.23	38.20	38.26	0.50	Pass
159	5795	38.29	38.23	38.13	38.24	0.50	Pass

802.11ax (HE80)

Chan.	Freq. (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	78.30	78.07	78.29	77.91	0.50	Pass

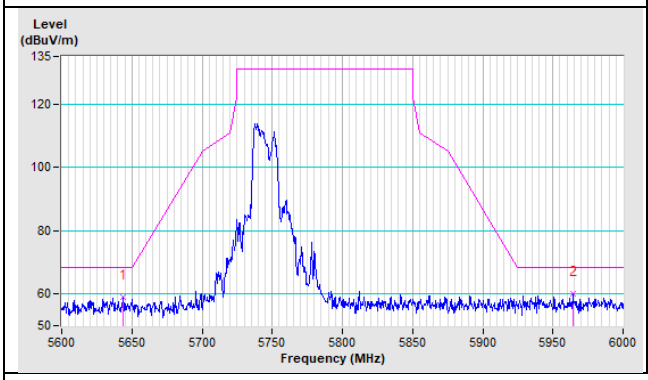
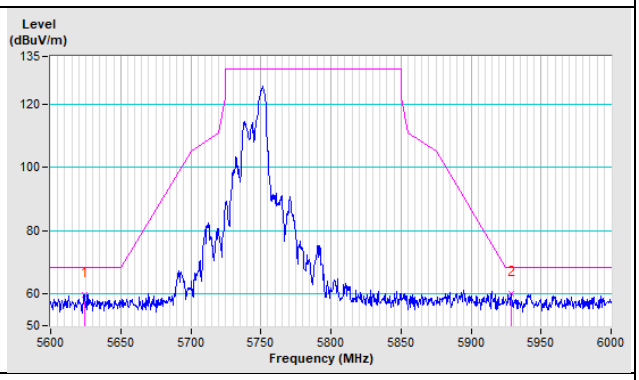
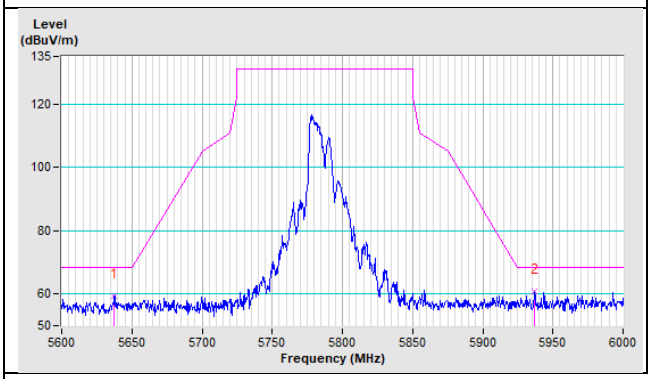
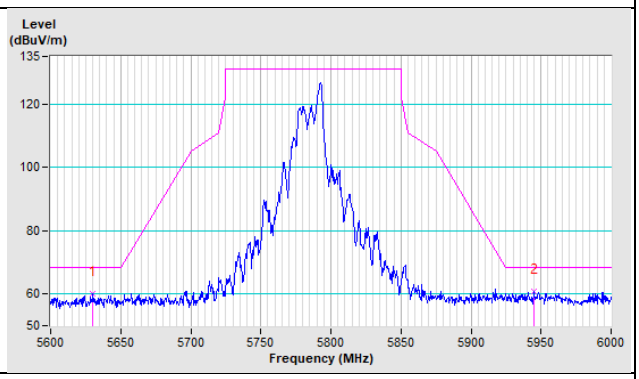
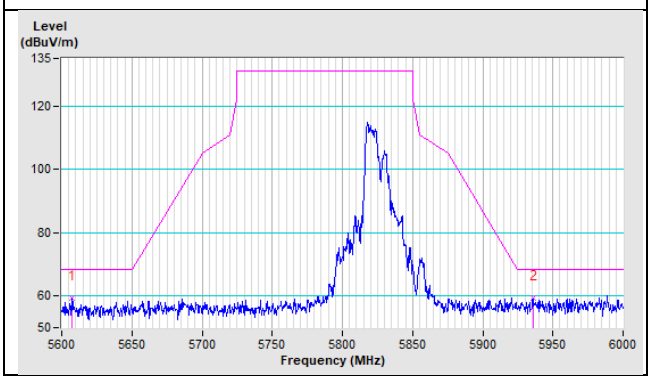
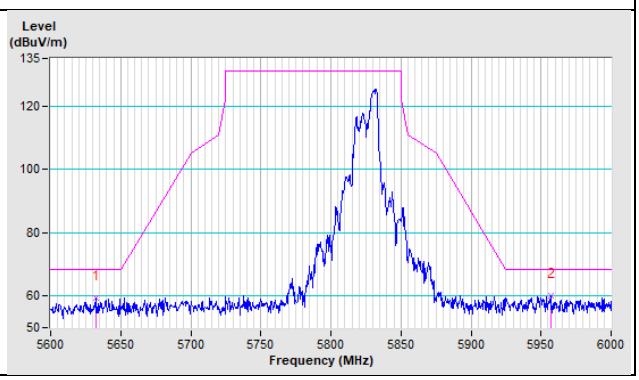
Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

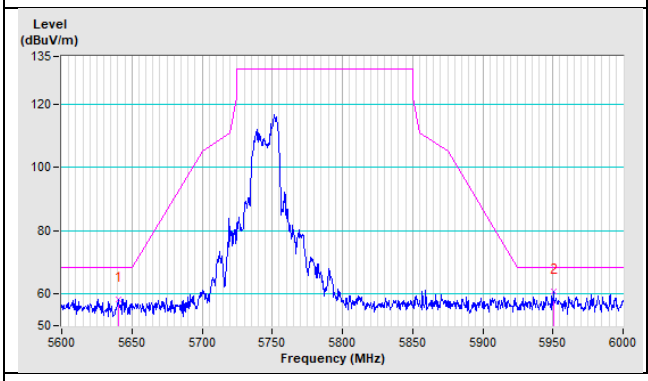
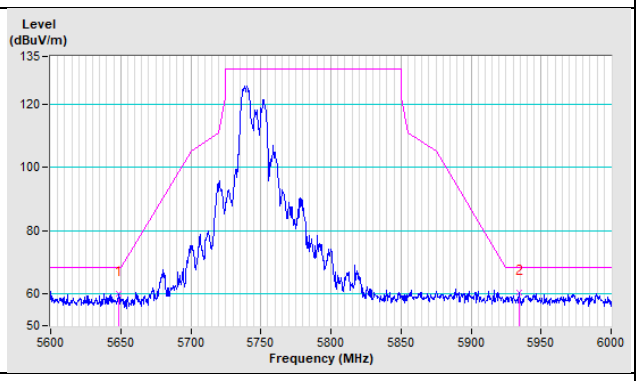
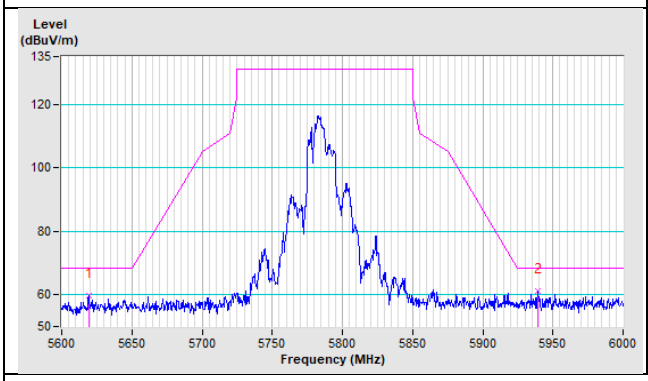
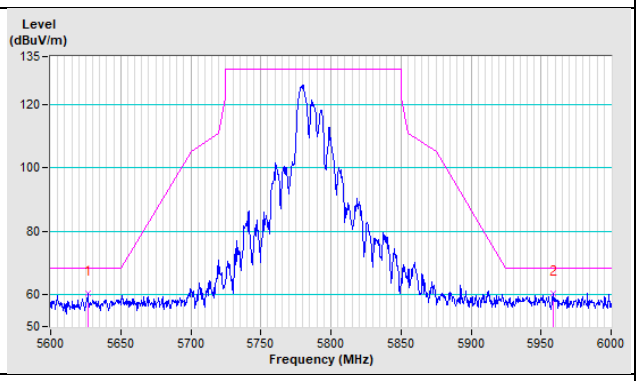
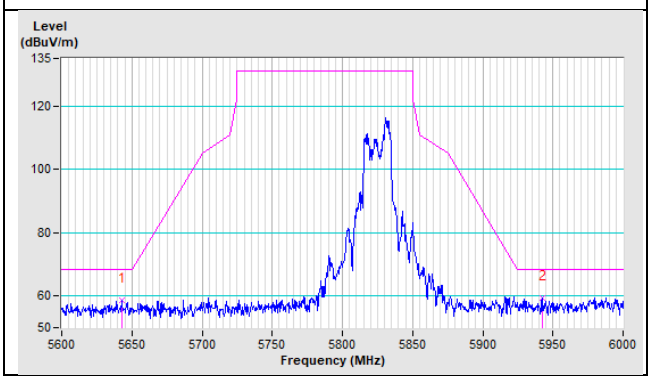
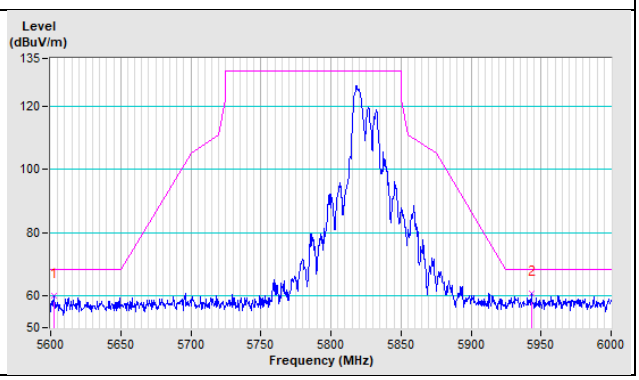
5 Pictures of Test Arrangements

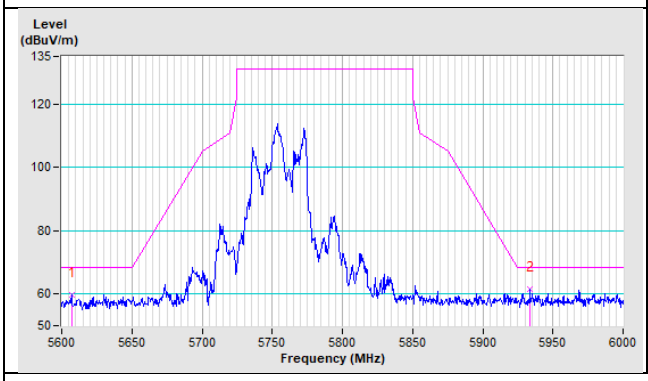
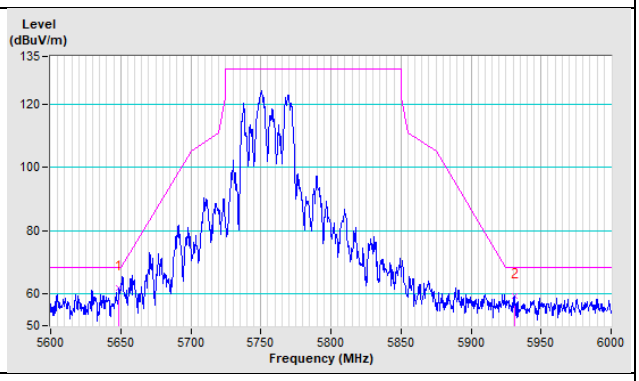
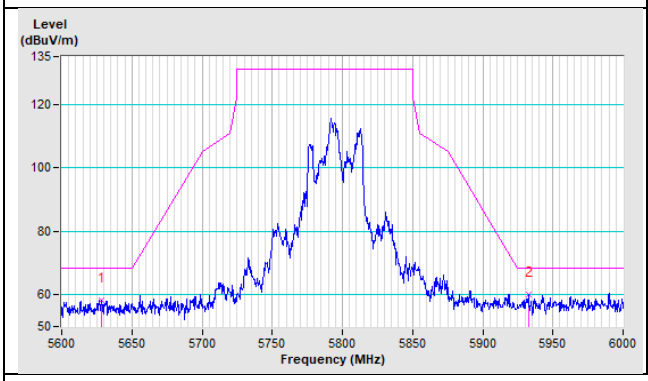
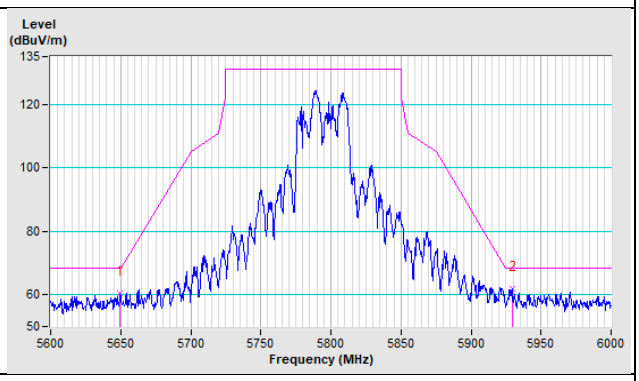
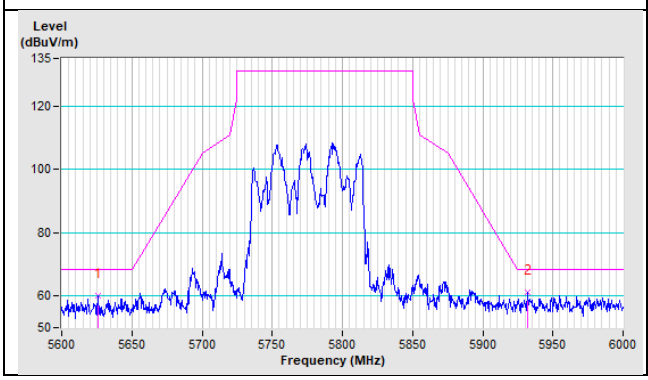
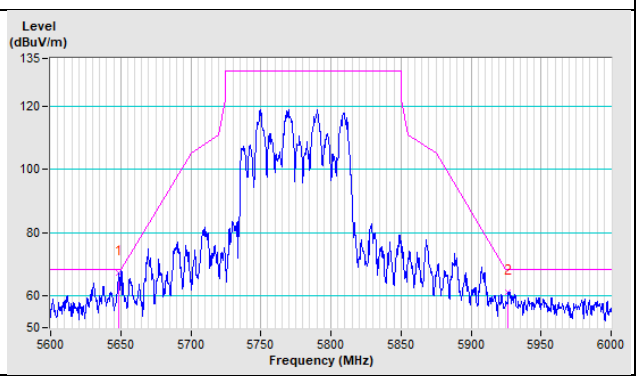
Please refer to the attached file (Test Setup Photo).

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

4TX

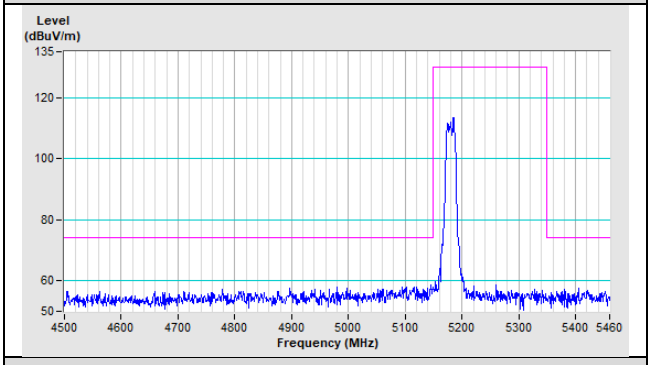
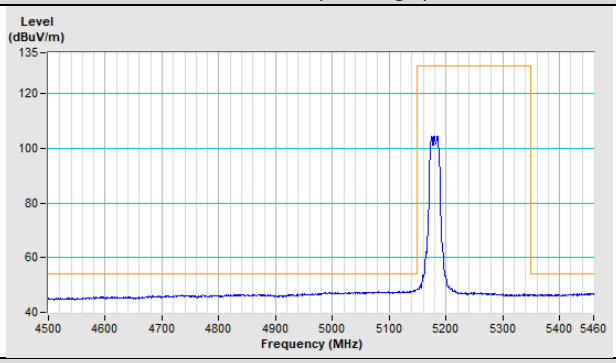
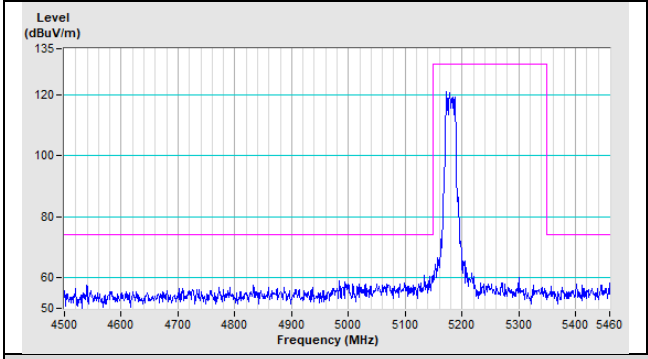
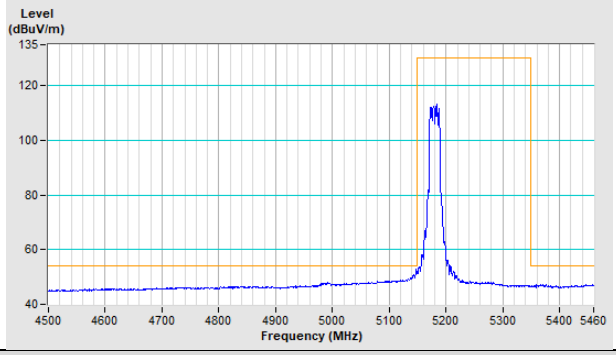
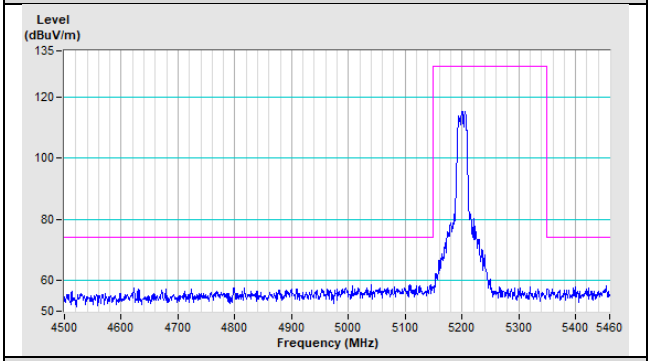
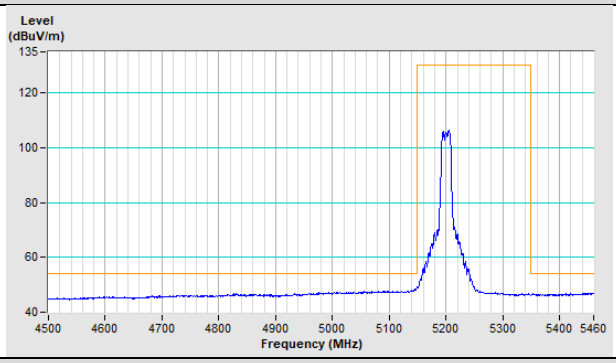
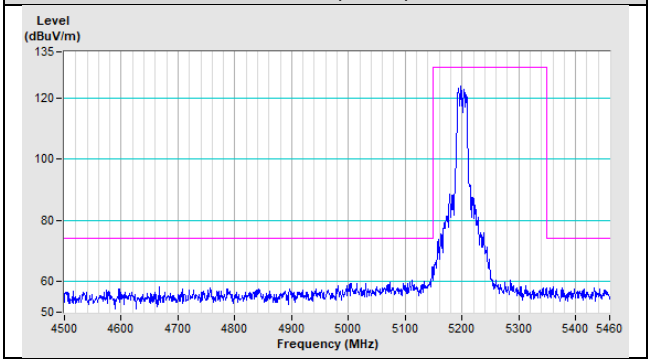
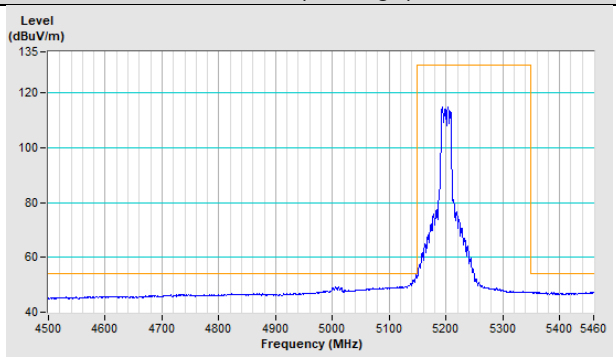
802.11a CH 149：5745 MHz	
Horizontal	Vertical
	
802.11a CH 157：5785 MHz	
Horizontal	Vertical
	
802.11a CH 165：5825 MHz	
Horizontal	Vertical
	

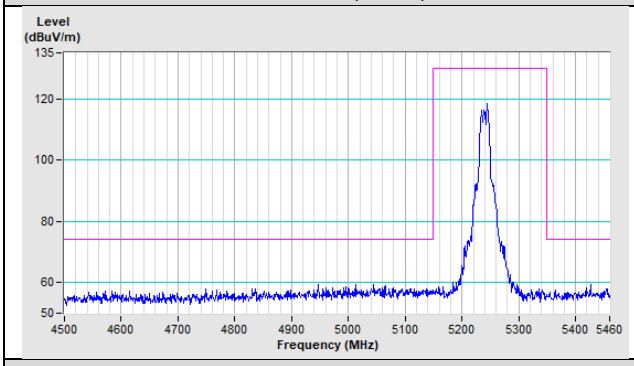
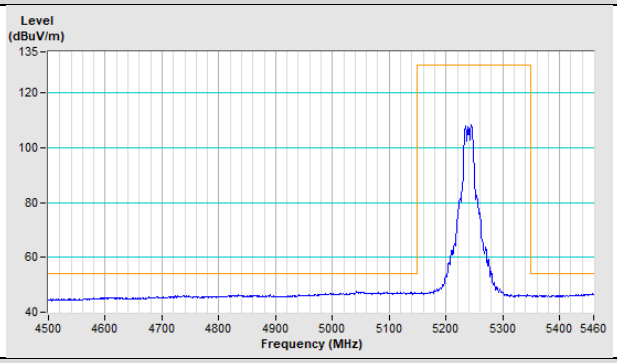
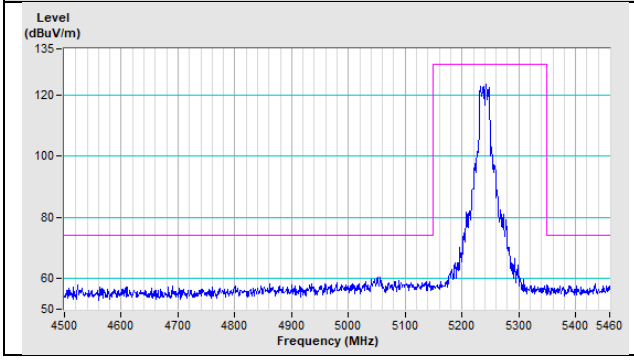
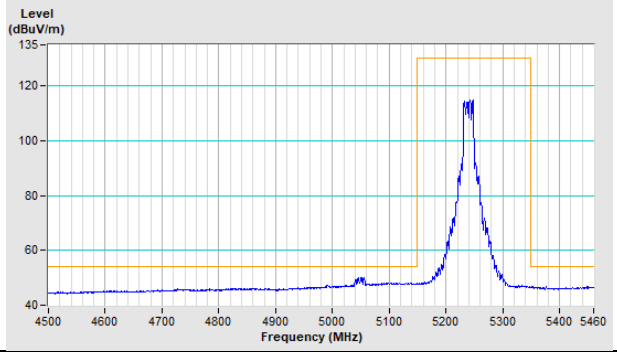
802.11ax (HE20) CH 149：5745 MHz	
Horizontal	Vertical
	
802.11ax (HE20) CH 157：5785 MHz	
Horizontal	Vertical
	
802.11ax (HE20) CH 165：5825 MHz	
Horizontal	Vertical
	

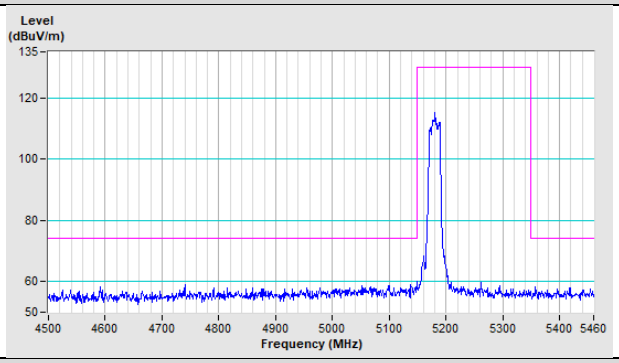
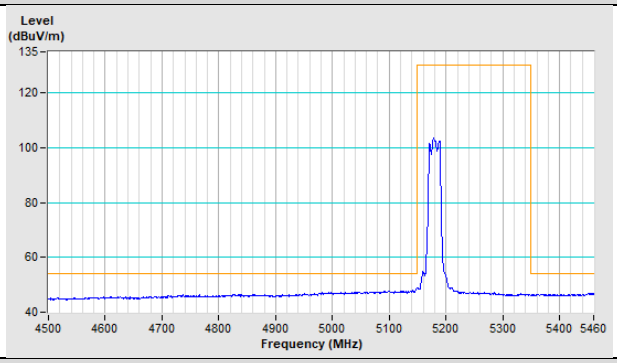
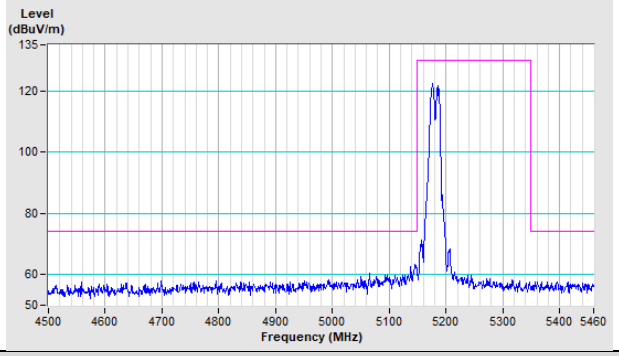
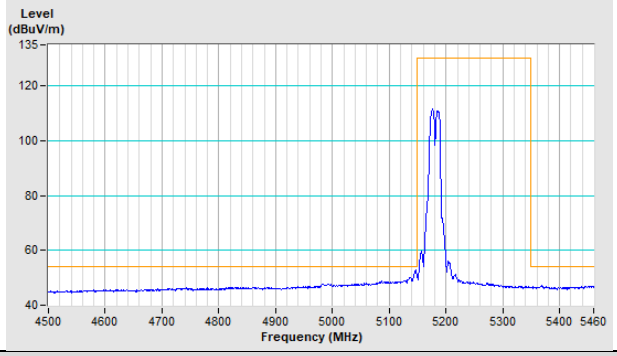
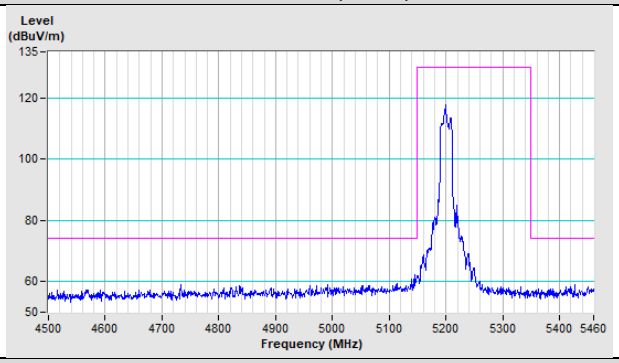
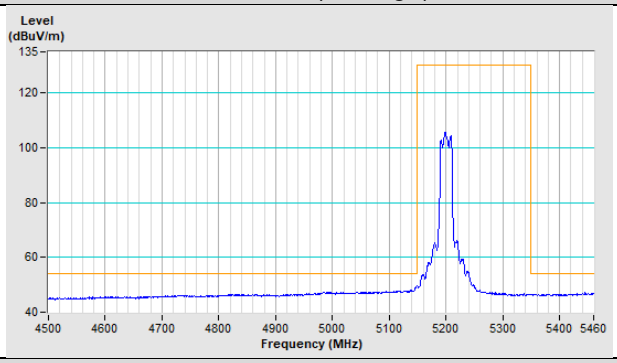
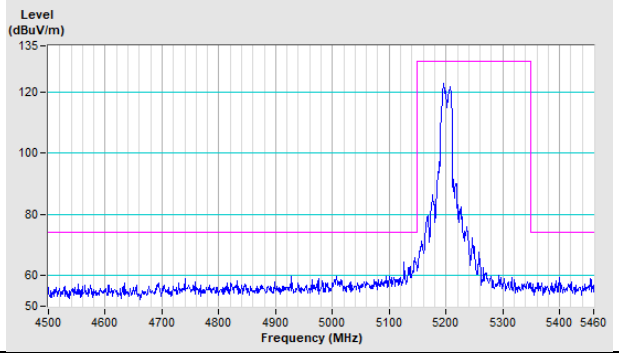
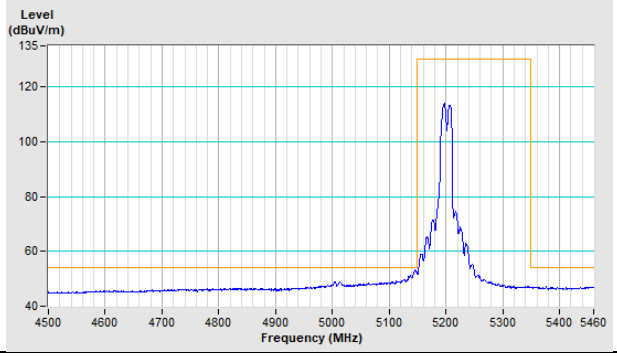
802.11ax (HE40) CH 151：5755 MHz	
Horizontal	Vertical
	
802.11ax (HE40) CH 159：5795 MHz	
Horizontal	Vertical
	
802.11ax (HE80) CH 155：5775 MHz	
Horizontal	Vertical
	

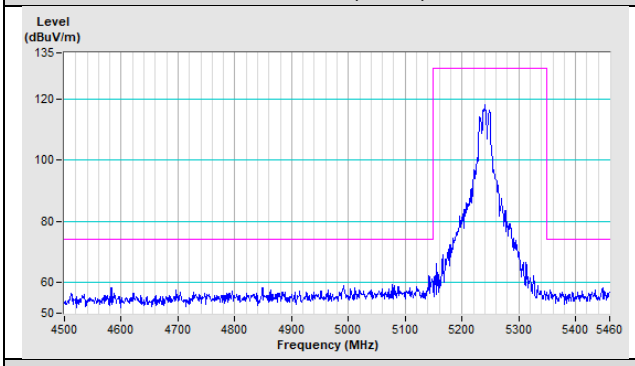
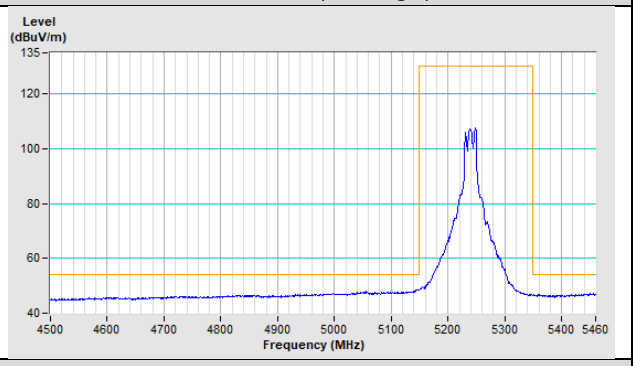
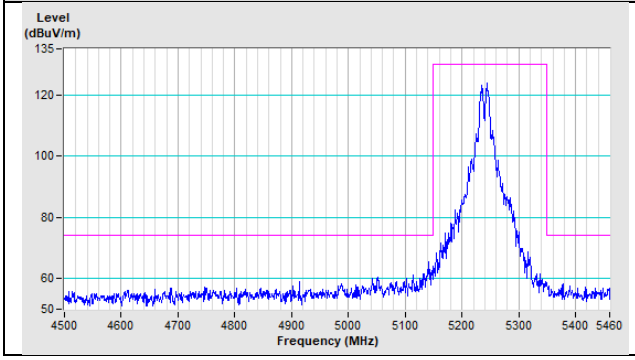
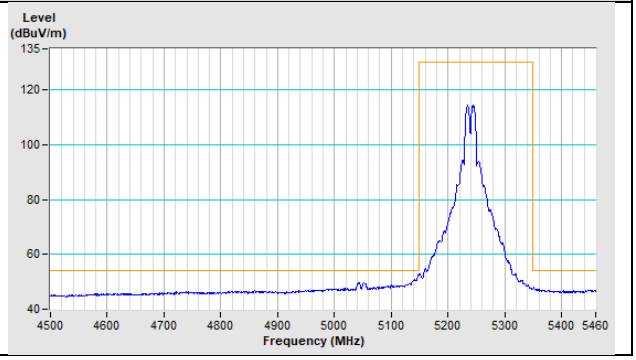
Annex B - Band Edge Measurement

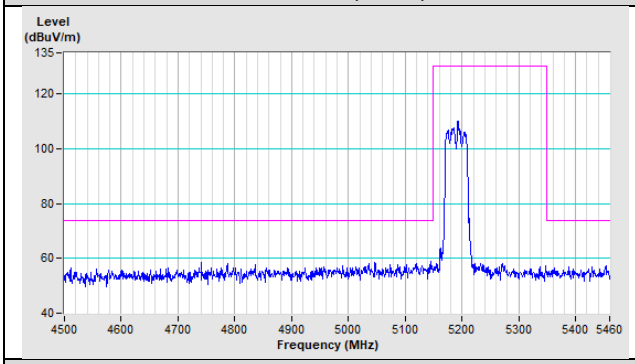
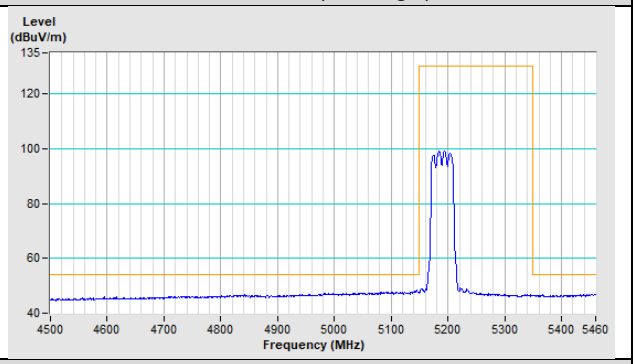
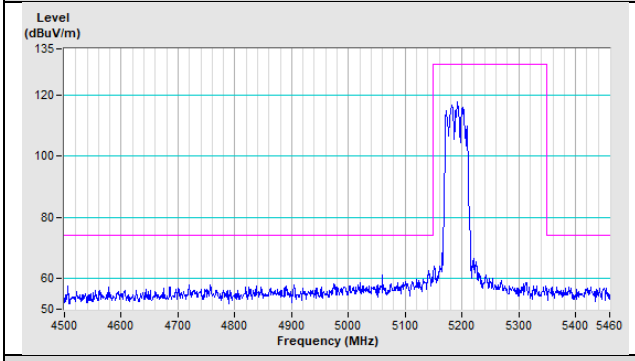
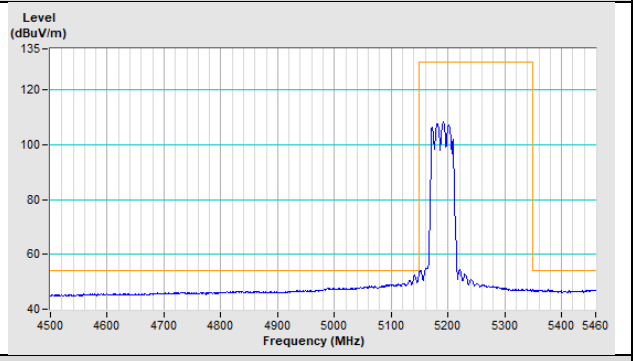
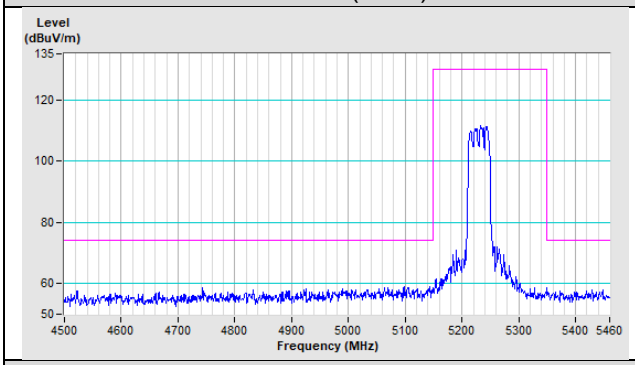
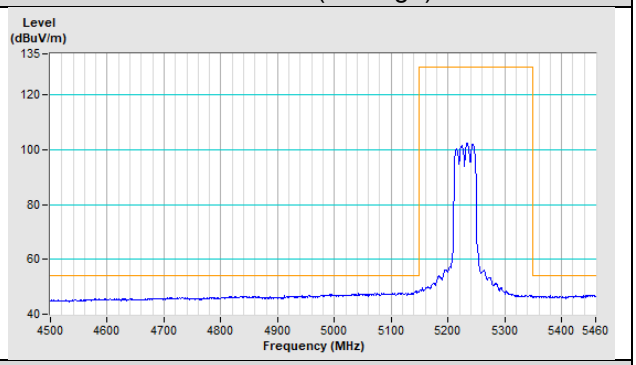
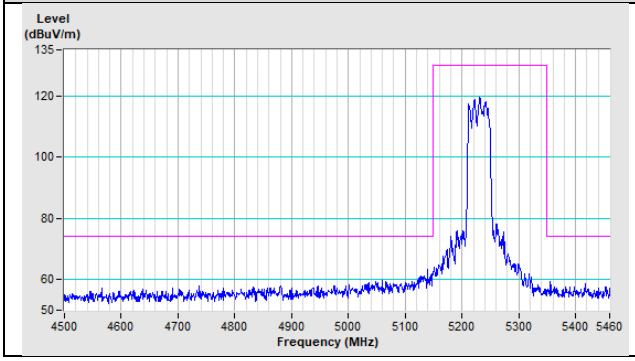
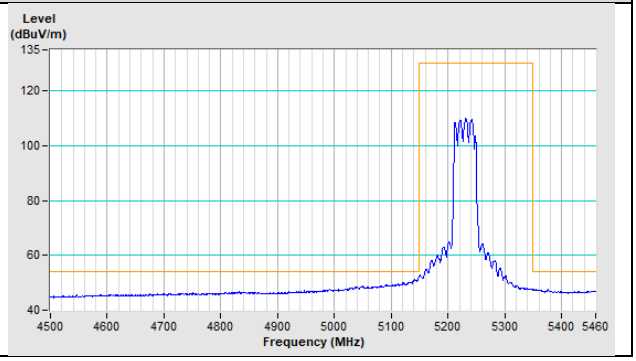
2TX

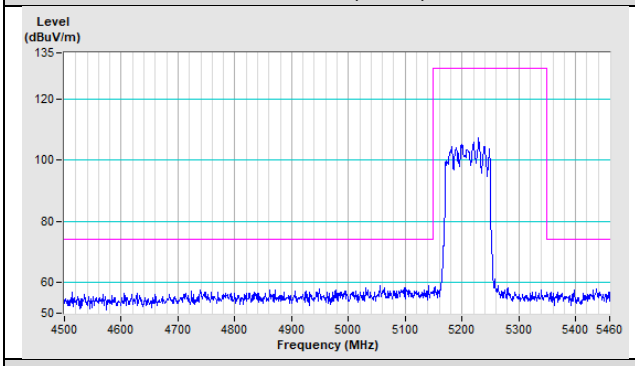
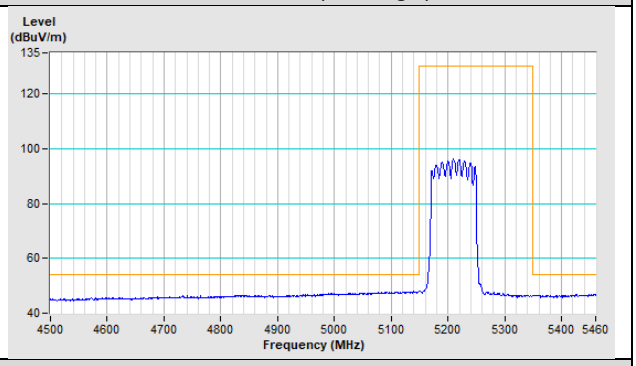
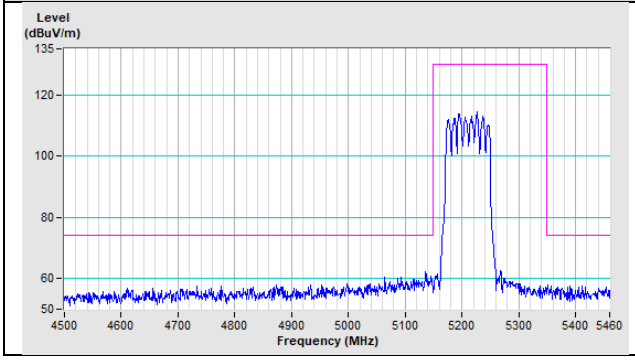
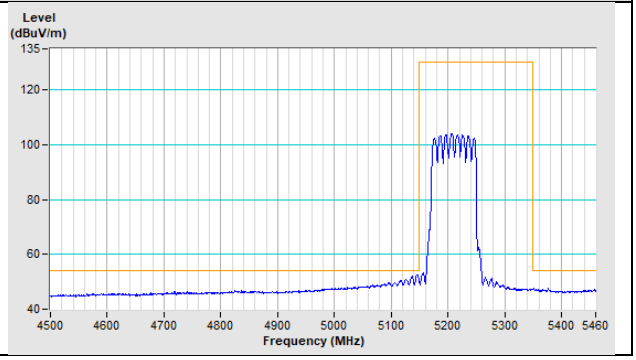
802.11a Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11a Channel 40	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11a Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE20) Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE20) Channel 40	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE20) Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40) Channel 38	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11ax (HE40) Channel 46	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

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

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited 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
Tel: 886-3-3183232
Fax: 886-3-3270892

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

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

--- END ---