

## FCC Test Report

**Report No.:** RFBCKT-WTW-P22010886-1

**FCC ID:** HFSQTAD53N

**Test Model:** QTAD53

**Received Date:** Feb. 10, 2022

**Test Date:** Feb. 22 ~ Mar. 08, 2022

**Issued Date:** Mar. 30, 2022

**Applicant:** Quanta Computer Inc.

**Address:** NO.188, Wenhua 2nd Rd., Guishan Dist., Taoyuan City 33377,  
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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

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33383, TAIWAN

**FCC Registration /** 788550 / TW0003  
**Designation Number:**



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### Release Control Record

Issue No.	Description	Date Issued
RFBCKT-WTW-P22010886-1	Original release	Mar. 30, 2022

## 1 Certificate of Conformity

**Product:** 5G Hotspot

**Brand:** T-Mobile

**Test Model:** QTAD53

**Sample Status:** Engineering sample

**Applicant:** Quanta Computer Inc.

**Test Date:** Feb. 22 ~ Mar. 08, 2022

**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 :** \_\_\_\_\_

  
Polly Chien / Specialist

**Date:** \_\_\_\_\_

Mar. 30, 2022

**Approved by :** \_\_\_\_\_

  
Jeremy Lin / Project Engineer

**Date:** \_\_\_\_\_

Mar. 30, 2022

## 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 -17.15dB at 0.23800MHz.
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 -0.21dB at 5725.00MHz.
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 MUR not a standard connector.

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.
- For U-NII-1, U-NII-2A and U-NII-2C 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.

### 2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	5G Hotspot
Brand	T-Mobile
Test Model	QTAD53
Sample Status	Engineering sample
Power Supply Rating	5Vdc / 9Vdc / 12Vdc (Adapter) 3.85Vdc (Battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2402.0 Mbps
Operating Frequency	5180 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 8 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2 5500 ~ 5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 8 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 3 802.11ac (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	5180 ~ 5240MHz: 140.093mW 5260 ~ 5320MHz: 137.968mW 5500 ~ 5700MHz: 156.529mW 5745 ~ 5825MHz: 133.515mW
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Cable Supplied	Refer to Note as below

Note:

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

Modulation Mode	TX Function
802.11a	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	2TX
802.11ax (HE20)	2TX
802.11ax (HE40)	2TX
802.11ax (HE80)	2TX

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

2. The following antennas were provided to the EUT.

Ant. Type	Brand	Connector	Band	Freq. Range	Ant 0 Gain (dBi)	Ant 1 Gain (dBi)
PIFA	T-mobile	MUR	2.4GHz/BT	2400-2500MHz	-0.949234	0.371887
			5.2&5.3GHz	5150-5350MHz	1.09367	1.72142
			5.6GHz	5470-5725MHz	3.4947	2.48417
			5.8GHz	5725-5850MHz	2.75287	1.02439

\*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. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter 1	TEN PAO INTERNATIONAL LTD.	S018BYU1200150	I/P: 100-240Vac, 50/60Hz, 600mA O/P: 5Vdc/9Vdc/12Vdc=3A/2A/1.5A
Adapter 2	Aohai Technology Co., Ltd	A138A-120150U-US2	I/P: 100-240V~50/60Hz, 0.5A O/P: 5Vdc, 2.5A/9Vdc, 2A/12Vdc, 1.5A
USB cable 1	Electronics Taiwai Ltd.	DDEMU110079	0.95m shielded USB cable without core
USB cable 2	IMEX INC	60-6382-520-FA	0.97m shielded USB cable without core
Battery	VEKEN	141033	3.85Vdc, 6460mAh, 24.87Wh

\* After pre-tested, adapter 2 and USB cable 1 were the worst case and chosen for final test.

4. There are two sources for EUT's memory. Only the supplier is different and the rest of the specifications are the same.

Sample	Item	Brand	Model
A	Memory - Main	Nanya Technology Corporation	NM4888KSPAXAI-3E
B	Memory - Second	Jeju Semiconductor Corp.	JSFDDQ5QHAFGD-405

\* After pre-tested, sample A was the worse and chosen for final test.

5. The EUT doesn't operate in 5600 ~ 5650MHz via software controls.



### 3.2 Description of Test Modes

#### For 5180 ~ 5320MHz:

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

Channel	Frequency	Channel	Frequency
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

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

Channel	Frequency	Channel	Frequency
42	5210MHz	58	5290MHz

#### For 5500 ~ 5700MHz:

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	134	5670 MHz
110	5550 MHz		

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

Channel	Frequency
106	5530 MHz

For 5745 ~ 5825MHz:

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

Channel	Frequency	Channel	Frequency
149	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 $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE $\geq$ 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 **Y-plane**.
2. Radiated emission (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)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	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	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	MCS0
	802.11ax (HE40)		54 to 62	54, 62	OFDMA	MCS0
	802.11ax (HE80)		58	58	OFDMA	MCS0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11ax (HE20)		100 to 140	100, 116, 140	OFDMA	MCS0
	802.11ax (HE40)		102 to 134	102, 110, 134	OFDMA	MCS0
	802.11ax (HE80)		106	106	OFDMA	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	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)
-	802.11ax (HE40)	102 to 134	110	110	OFDMA	MCS0

**Power Line Conducted Emission Test:**

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11ax (HE40)	102 to 134	110	110	OFDMA	MCS0

**Transmit 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)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	7.2
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	15.0
	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	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	7.2
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	15.0
	802.11ac (VHT80)		58	58	OFDM	29.3
	802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	MCS0
	802.11ax (HE40)		54 to 62	54, 62	OFDMA	MCS0
	802.11ax (HE80)		58	58	OFDMA	MCS0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	7.2
	802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	15.0
	802.11ac (VHT80)		106	106	OFDM	29.3
	802.11ax (HE20)		100 to 140	100, 116, 140	OFDMA	MCS0
	802.11ax (HE40)		102 to 134	102, 110, 134	OFDMA	MCS0
	802.11ax (HE80)		106	106	OFDMA	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	7.2
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	15.0
	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

**Peak Power Spectral Density, Bandwidth 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)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	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	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ax (HE20)		52 to 64	52, 60, 64	OFDMA	MCS0
	802.11ax (HE40)		54 to 62	54, 62	OFDMA	MCS0
	802.11ax (HE80)		58	58	OFDMA	MCS0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11ax (HE20)		100 to 140	100, 116, 140	OFDMA	MCS0
	802.11ax (HE40)		102 to 134	102, 110, 134	OFDMA	MCS0
	802.11ax (HE80)		106	106	OFDMA	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	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 $\geq$ 1G	22 deg. C, 66% RH	120Vac, 60Hz	Greg Lin
RE<1G	23 deg. C, 70% RH	120Vac, 60Hz	Rex Wang
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Greg Lin
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ivan Tseng

### 3.3 Duty Cycle of Test Signal

Duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

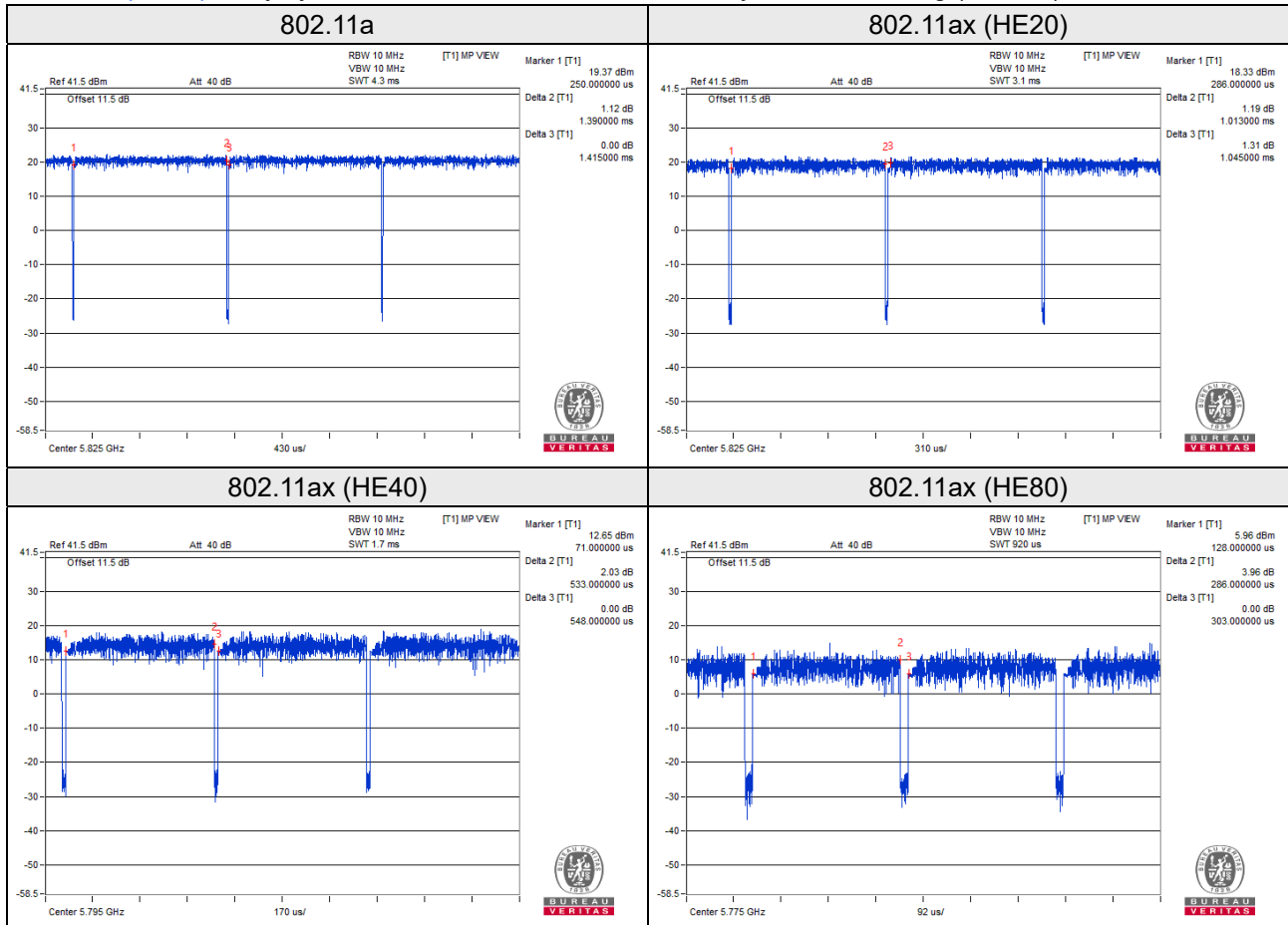
Duty cycle of test signal is  $< 98\%$ , duty factor is required.

802.11a: Duty cycle =  $1.390\text{ms}/1.415\text{ms} = 0.982$

802.11ax (HE20): Duty cycle =  $1.013\text{ms}/1.045\text{ms} = 0.969$ , Duty factor =  $10 * \log(1/0.969) = 0.14$

802.11ax (HE40): Duty cycle =  $0.533\text{ms}/0.548\text{ms} = 0.973$ , Duty factor =  $10 * \log(1/0.973) = 0.12$

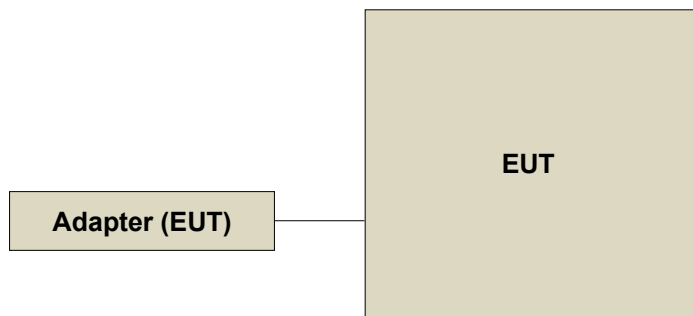
802.11ax (HE80): Duty cycle =  $0.286\text{ms}/0.303\text{ms} = 0.944$ , Duty factor =  $10 * \log(1/0.944) = 0.25$



### 3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

#### 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	<input checked="" type="checkbox"/> 15.407(b)(4)(i)	PK: -27 (dBm/MHz) <sup>*1</sup> PK: 10 (dBm/MHz) <sup>*2</sup> PK: 15.6 (dBm/MHz) <sup>*3</sup> PK: 27 (dBm/MHz) <sup>*4</sup>	PK: 68.2(dBµV/m) <sup>*1</sup> PK: 105.2 (dBµV/m) <sup>*2</sup> PK: 110.8(dBµV/m) <sup>*3</sup> PK: 122.2 (dBµV/m) <sup>*4</sup>
<sup>*1</sup> beyond 75 MHz or more above of the band edge.		<sup>*2</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.	
<sup>*3</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.		<sup>*4</sup> 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:

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



#### 4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 10, 2021	Jun. 09, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Oct. 26, 2021	Oct. 25, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 05, 2021	Jun. 04, 2022
Preamplifier Agilent (Above 1GHz)	8449B	3008A01962	Oct. 05, 2021	Oct. 04, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 15, 2022	Jan. 14, 2023
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795 /4)	Jan. 15, 2022	Jan. 14, 2023
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 05, 2021	Jun. 04, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Wideband Power Sensor KEYSIGHT	N1923A	MY58020002	Jan. 17, 2022	Jan. 16, 2023
PXA Signal Analyzer KEYSIGHT	N9030B	MY57140938	Mar. 09, 2021	Mar. 08, 2022
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2021	Sep. 03, 2022

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Chamber 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:

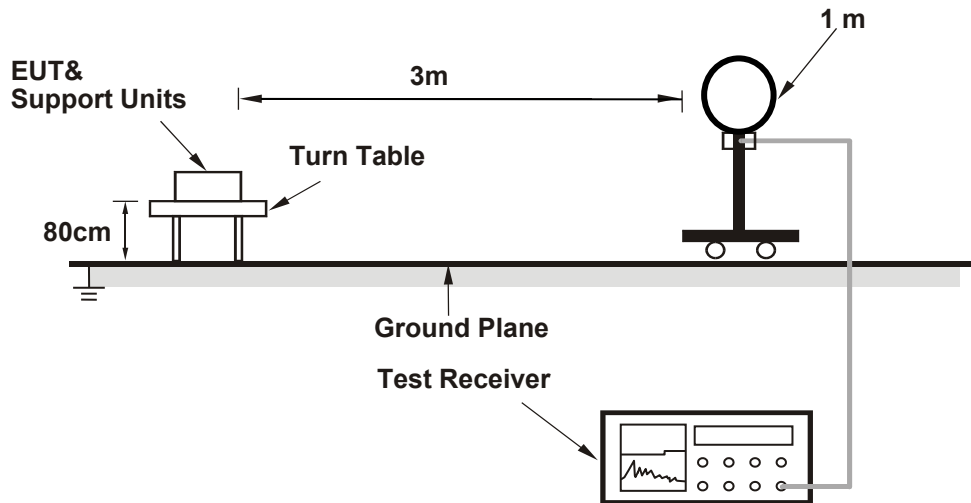
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz. (802.11a: RBW = 1MHz, VBW = 10Hz; 802.11ax (HE20): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE40): RBW = 1MHz, VBW = 3kHz; 802.11ax (HE80): RBW = 1MHz, VBW = 10kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

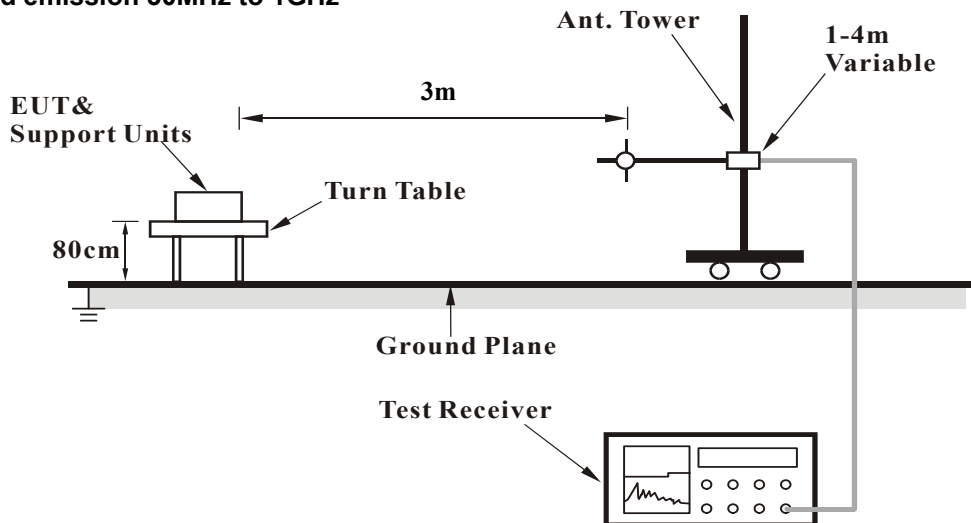
No deviation.

#### 4.1.5 Test Setup

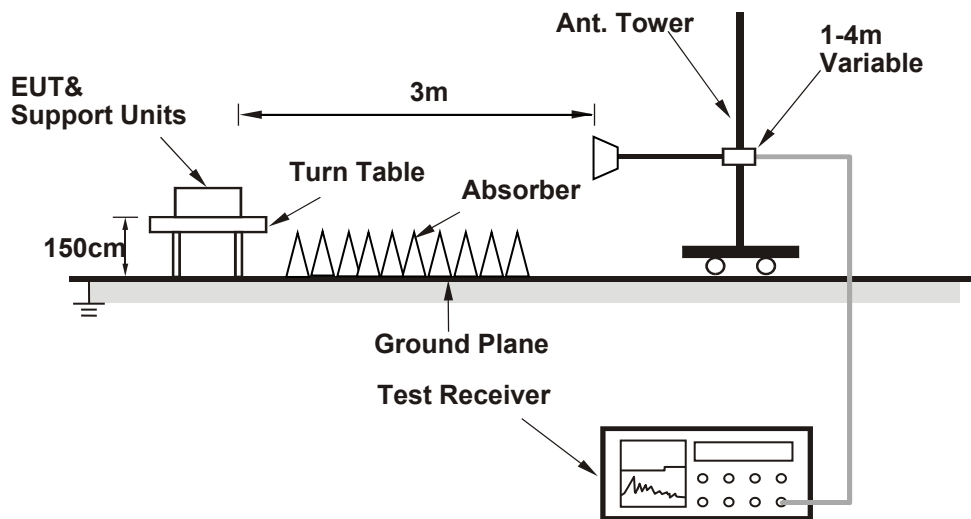
##### For Radiated emission below 30MHz



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

#### 4.1.7 Test Results

Above 1GHz data:

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

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	63.34 PK	74.00	-10.66	1.26 H	215	57.12	6.22
2	5150.00	47.69 AV	54.00	-6.31	1.26 H	215	41.47	6.22
3	*5180.00	105.42 PK			1.26 H	215	64.83	40.59
4	*5180.00	95.33 AV			1.26 H	215	54.74	40.59
5	#10360.00	59.73 PK	68.20	-8.47	1.67 H	237	42.34	17.39

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	72.67 PK	74.00	-1.33	2.68 V	110	66.45	6.22
2	5150.00	53.16 AV	54.00	-0.84	2.68 V	110	46.94	6.22
3	*5180.00	112.10 PK			2.68 V	110	71.51	40.59
4	*5180.00	101.91 AV			2.68 V	110	61.32	40.59
5	#10360.00	61.53 PK	68.20	-6.67	1.92 V	203	44.14	17.39

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	*5200.00	106.53 PK			1.34 H	221	65.97	40.56
2	*5200.00	96.40 AV			1.34 H	221	55.84	40.56
3	#10400.00	60.17 PK	68.20	-8.03	1.73 H	238	42.63	17.54

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	112.18 PK			2.59 V	114	71.62	40.56
2	*5200.00	102.04 AV			2.59 V	114	61.48	40.56
3	#10400.00	61.91 PK	68.20	-6.29	1.97 V	205	44.37	17.54

**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	105.78 PK			1.32 H	219	65.31	40.47
2	*5240.00	95.63 AV			1.32 H	219	55.16	40.47
3	5350.00	55.64 PK	74.00	-18.36	1.32 H	219	49.87	5.77
4	5350.00	43.45 AV	54.00	-10.55	1.32 H	219	37.68	5.77
5	#10480.00	60.54 PK	68.20	-7.66	1.72 H	246	42.87	17.67

**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	111.73 PK			2.70 V	125	71.26	40.47
2	*5240.00	101.59 AV			2.70 V	125	61.12	40.47
3	5350.00	56.01 PK	74.00	-17.99	2.70 V	125	50.24	5.77
4	5350.00	43.84 AV	54.00	-10.16	2.70 V	125	38.07	5.77
5	#10480.00	62.06 PK	68.20	-6.14	1.92 V	198	44.39	17.67

**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 52 : 5260 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	55.64 PK	74.00	-18.36	1.21 H	210	50.06	5.58
2	5150.00	43.33 AV	54.00	-10.67	1.21 H	210	37.75	5.58
3	*5260.00	106.37 PK			1.21 H	210	66.48	39.89
4	*5260.00	96.20 AV			1.21 H	210	56.31	39.89
5	#10520.00	60.13 PK	68.20	-8.07	1.62 H	235	42.53	17.60

**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	56.92 PK	74.00	-17.08	2.72 V	107	51.34	5.58
2	5150.00	44.03 AV	54.00	-9.97	2.72 V	107	38.45	5.58
3	*5260.00	112.32 PK			2.72 V	107	72.43	39.89
4	*5260.00	102.13 AV			2.72 V	107	62.24	39.89
5	#10520.00	62.08 PK	68.20	-6.12	1.97 V	213	44.48	17.60

**Remarks:**

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



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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	106.30 PK			1.32 H	217	66.72	39.58
2	*5300.00	96.12 AV			1.32 H	217	56.54	39.58
3	10600.00	60.56 PK	74.00	-13.44	1.71 H	243	42.58	17.98
4	10600.00	48.15 AV	54.00	-5.85	1.71 H	243	30.17	17.98

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	112.16 PK			2.68 V	114	72.58	39.58
2	*5300.00	101.95 AV			2.68 V	114	62.37	39.58
3	10600.00	62.65 PK	74.00	-11.35	1.86 V	207	44.67	17.98
4	10600.00	49.10 AV	54.00	-4.90	1.86 V	207	31.12	17.98

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	105.02 PK			1.29 H	208	65.43	39.59
2	*5320.00	94.80 AV			1.29 H	208	55.21	39.59
3	5350.00	65.69 PK	74.00	-8.31	1.29 H	208	60.43	5.26
4	5350.00	49.11 AV	54.00	-4.89	1.29 H	208	43.85	5.26
5	10640.00	60.24 PK	74.00	-13.76	1.62 H	233	42.37	17.87
6	10640.00	48.03 AV	54.00	-5.97	1.62 H	233	30.16	17.87

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	111.33 PK			2.79 V	107	71.74	39.59
2	*5320.00	101.12 AV			2.79 V	107	61.53	39.59
3	5350.00	70.89 PK	74.00	-3.11	2.79 V	107	65.63	5.26
4	5350.00	53.38 AV	54.00	-0.62	2.79 V	107	48.12	5.26
5	10640.00	62.05 PK	74.00	-11.95	1.89 V	201	44.18	17.87
6	10640.00	48.63 AV	54.00	-5.37	1.89 V	201	30.76	17.87

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	60.72 PK	74.00	-13.28	1.24 H	215	54.51	6.21
2	5460.00	45.23 AV	54.00	-8.77	1.24 H	215	39.02	6.21
3	#5470.00	64.96 PK	68.20	-3.24	1.24 H	215	58.75	6.21
4	*5500.00	103.95 PK			1.24 H	215	63.46	40.49
5	*5500.00	93.73 AV			1.24 H	215	53.24	40.49
6	11000.00	61.17 PK	74.00	-12.83	1.66 H	232	42.32	18.85
7	11000.00	48.99 AV	54.00	-5.01	1.66 H	232	30.14	18.85

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.33 PK	74.00	-11.67	2.76 V	116	56.12	6.21
2	5460.00	45.64 AV	54.00	-8.36	2.76 V	116	39.43	6.21
3	#5470.00	67.53 PK	68.20	-0.67	2.76 V	116	61.32	6.21
4	*5500.00	109.73 PK			2.76 V	116	69.24	40.49
5	*5500.00	99.55 AV			2.76 V	116	59.06	40.49
6	11000.00	62.72 PK	74.00	-11.28	1.91 V	203	43.87	18.85
7	11000.00	49.27 AV	54.00	-4.73	1.91 V	203	30.42	18.85

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	106.84 PK			1.22 H	216	66.56	40.28
2	*5580.00	96.62 AV			1.22 H	216	56.34	40.28
3	11160.00	60.50 PK	74.00	-13.50	1.77 H	228	42.43	18.07
4	11160.00	48.28 AV	54.00	-5.72	1.77 H	228	30.21	18.07

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	112.79 PK			2.73 V	110	72.51	40.28
2	*5580.00	102.51 AV			2.73 V	110	62.23	40.28
3	11160.00	62.35 PK	74.00	-11.65	1.82 V	216	44.28	18.07
4	11160.00	49.14 AV	54.00	-4.86	1.82 V	216	31.07	18.07

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	104.35 PK			1.61 H	217	63.72	40.63
2	*5700.00	94.15 AV			1.61 H	217	53.52	40.63
3	#5725.00	65.37 PK	68.20	-2.83	1.61 H	217	58.92	6.45
4	11400.00	61.07 PK	74.00	-12.93	1.73 H	249	42.29	18.78
5	11400.00	48.86 AV	54.00	-5.14	1.73 H	249	30.08	18.78

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	110.17 PK			2.81 V	106	69.54	40.63
2	*5700.00	100.02 AV			2.81 V	106	59.39	40.63
<b>3</b>	<b>#5725.00</b>	<b>67.99 PK</b>	<b>68.20</b>	<b>-0.21</b>	<b>2.81 V</b>	<b>106</b>	<b>61.54</b>	<b>6.45</b>
4	11400.00	62.75 PK	74.00	-11.25	1.87 V	201	43.97	18.78
5	11400.00	49.40 AV	54.00	-4.60	1.87 V	201	30.62	18.78

Remarks:

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5606.00	57.57 PK	68.20	-10.63	1.24 H	219	51.59	5.98
2	*5745.00	106.67 PK			1.24 H	219	65.83	40.84
3	*5745.00	96.46 AV			1.24 H	219	55.62	40.84
4	#5983.60	58.56 PK	68.20	-9.64	1.24 H	219	51.64	6.92
5	11490.00	61.92 PK	74.00	-12.08	1.77 H	238	43.32	18.60
6	11490.00	48.72 AV	54.00	-5.28	1.77 H	238	30.12	18.60

**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	#5619.20	57.35 PK	68.20	-10.85	2.83 V	107	51.36	5.99
2	*5745.00	112.63 PK			2.83 V	107	71.79	40.84
3	*5745.00	102.40 AV			2.83 V	107	61.56	40.84
4	#5943.60	59.02 PK	68.20	-9.18	2.83 V	107	52.10	6.92
5	11490.00	62.97 PK	74.00	-11.03	1.89 V	212	44.37	18.60
6	11490.00	49.86 AV	54.00	-4.14	1.89 V	212	31.26	18.60

**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	#5632.40	57.84 PK	68.20	-10.36	1.27 H	217	51.83	6.01
2	*5785.00	106.62 PK			1.27 H	217	65.58	41.04
3	*5785.00	96.40 AV			1.27 H	217	55.36	41.04
4	#5965.60	59.04 PK	68.20	-9.16	1.27 H	217	52.13	6.91
5	11570.00	61.66 PK	74.00	-12.34	1.69 H	228	43.27	18.39
6	11570.00	48.67 AV	54.00	-5.33	1.69 H	228	30.28	18.39

**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	#5629.60	56.95 PK	68.20	-11.25	2.89 V	108	50.94	6.01
2	*5785.00	112.50 PK			2.89 V	108	71.46	41.04
3	*5785.00	102.27 AV			2.89 V	108	61.23	41.04
4	#5975.20	58.78 PK	68.20	-9.42	2.89 V	108	51.86	6.92
5	11570.00	62.63 PK	74.00	-11.37	1.97 V	208	44.24	18.39
6	11570.00	49.51 AV	54.00	-4.49	1.97 V	208	31.12	18.39

**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	#5627.60	57.44 PK	68.20	-10.76	1.24 H	219	51.44	6.00
2	*5825.00	107.00 PK			1.24 H	219	65.82	41.18
3	*5825.00	96.81 AV			1.24 H	219	55.63	41.18
4	#5992.80	58.71 PK	68.20	-9.49	1.24 H	219	51.77	6.94
5	11650.00	61.48 PK	74.00	-12.52	1.73 H	206	43.27	18.21
6	11650.00	48.37 AV	54.00	-5.63	1.73 H	206	30.16	18.21

**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	57.58 PK	68.20	-10.62	2.87 V	112	51.54	6.04
2	*5825.00	113.02 PK			2.87 V	112	71.84	41.18
3	*5825.00	102.85 AV			2.87 V	112	61.67	41.18
4	#5943.20	59.33 PK	68.20	-8.87	2.87 V	112	52.40	6.93
5	11650.00	62.39 PK	74.00	-11.61	1.83 V	201	44.18	18.21
6	11650.00	48.88 AV	54.00	-5.12	1.83 V	201	30.67	18.21

**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	69.45 PK	74.00	-4.55	1.41 H	129	63.87	5.58
2	5150.00	52.60 AV	54.00	-1.40	1.41 H	129	47.02	5.58
3	*5180.00	110.93 PK			1.41 H	129	70.90	40.03
4	*5180.00	98.83 AV			1.41 H	129	58.80	40.03
5	#10360.00	58.40 PK	68.20	-9.80	1.97 H	226	40.83	17.57

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.40 PK	74.00	-7.60	3.87 V	6	60.82	5.58
2	5150.00	51.16 AV	54.00	-2.84	3.87 V	6	45.58	5.58
3	*5180.00	109.67 PK			3.87 V	6	69.64	40.03
4	*5180.00	97.83 AV			3.87 V	6	57.80	40.03
5	#10360.00	57.80 PK	68.20	-10.40	1.57 V	204	40.23	17.57

**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	*5200.00	112.84 PK			1.44 H	134	72.79	40.05
2	*5200.00	100.12 AV			1.44 H	134	60.07	40.05
3	#10400.00	58.39 PK	68.20	-9.81	1.97 H	233	40.93	17.46

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	111.72 PK			3.84 V	9	71.67	40.05
2	*5200.00	99.01 AV			3.84 V	9	58.96	40.05
3	#10400.00	57.78 PK	68.20	-10.42	1.58 V	206	40.32	17.46

**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	112.00 PK			1.42 H	121	72.02	39.98
2	*5240.00	99.59 AV			1.42 H	121	59.61	39.98
3	5350.00	56.15 PK	74.00	-17.85	1.42 H	121	50.89	5.26
4	5350.00	43.13 AV	54.00	-10.87	1.42 H	121	37.87	5.26
5	#10480.00	58.35 PK	68.20	-9.85	1.87 H	223	40.87	17.48

**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	110.85 PK			3.82 V	9	70.87	39.98
2	*5240.00	98.32 AV			3.82 V	9	58.34	39.98
3	5350.00	55.53 PK	74.00	-18.47	3.82 V	9	50.27	5.26
4	5350.00	42.10 AV	54.00	-11.90	3.82 V	9	36.84	5.26
5	#10480.00	57.76 PK	68.20	-10.44	1.57 V	196	40.28	17.48

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	55.87 PK	74.00	-18.13	1.15 H	124	50.29	5.58
2	5150.00	43.40 AV	54.00	-10.60	1.15 H	124	37.82	5.58
3	*5260.00	112.03 PK			1.15 H	124	72.14	39.89
4	*5260.00	99.48 AV			1.15 H	124	59.59	39.89
5	#10520.00	58.48 PK	68.20	-9.72	1.92 H	221	40.88	17.60

**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	55.45 PK	74.00	-18.55	3.81 V	11	49.87	5.58
2	5150.00	42.32 AV	54.00	-11.68	3.81 V	11	36.74	5.58
3	*5260.00	110.83 PK			3.81 V	11	70.94	39.89
4	*5260.00	98.26 AV			3.81 V	11	58.37	39.89
5	#10520.00	57.94 PK	68.20	-10.26	1.57 V	208	40.34	17.60

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	112.44 PK			1.37 H	122	72.86	39.58
2	*5300.00	99.85 AV			1.37 H	122	60.27	39.58
3	10600.00	58.91 PK	74.00	-15.09	1.98 H	235	40.93	17.98
4	10600.00	46.15 AV	54.00	-7.85	1.98 H	235	28.17	17.98

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	111.30 PK			3.76 V	14	71.72	39.58
2	*5300.00	98.71 AV			3.76 V	14	59.13	39.58
3	10600.00	58.35 PK	74.00	-15.65	1.67 V	214	40.37	17.98
4	10600.00	45.50 AV	54.00	-8.50	1.67 V	214	27.52	17.98

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	109.52 PK			1.52 H	126	69.93	39.59
2	*5320.00	96.98 AV			1.52 H	126	57.39	39.59
3	5350.00	67.25 PK	74.00	-6.75	1.52 H	126	61.99	5.26
4	5350.00	52.48 AV	54.00	-1.52	1.52 H	126	47.22	5.26
5	10640.00	58.69 PK	74.00	-15.31	1.91 H	226	40.82	17.87
6	10640.00	45.98 AV	54.00	-8.02	1.91 H	226	28.11	17.87

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	108.42 PK			3.80 V	7	68.83	39.59
2	*5320.00	95.80 AV			3.80 V	7	56.21	39.59
3	5350.00	66.13 PK	74.00	-7.87	3.80 V	7	60.87	5.26
4	5350.00	51.60 AV	54.00	-2.40	3.80 V	7	46.34	5.26
5	10640.00	58.13 PK	74.00	-15.87	1.52 V	212	40.26	17.87
6	10640.00	45.35 AV	54.00	-8.65	1.52 V	212	27.48	17.87

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	58.42 PK	74.00	-15.58	1.68 H	146	52.21	6.21
2	5460.00	46.37 AV	54.00	-7.63	1.68 H	146	40.16	6.21
3	#5470.00	67.32 PK	68.20	-0.88	1.68 H	146	61.11	6.21
4	*5500.00	108.65 PK			1.68 H	146	68.16	40.49
5	*5500.00	94.92 AV			1.68 H	146	54.43	40.49
6	11000.00	59.57 PK	74.00	-14.43	2.07 H	246	40.72	18.85
7	11000.00	46.81 AV	54.00	-7.19	2.07 H	246	27.96	18.85

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	57.45 PK	74.00	-16.55	3.74 V	18	51.24	6.21
2	5460.00	45.88 AV	54.00	-8.12	3.74 V	18	39.67	6.21
3	#5470.00	65.53 PK	68.20	-2.67	3.74 V	18	59.32	6.21
4	*5500.00	108.43 PK			3.74 V	18	67.94	40.49
5	*5500.00	93.66 AV			3.74 V	18	53.17	40.49
6	11000.00	59.06 PK	74.00	-14.94	1.59 V	207	40.21	18.85
7	11000.00	46.27 AV	54.00	-7.73	1.59 V	207	27.42	18.85

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	113.36 PK			1.57 H	338	73.08	40.28
2	*5580.00	100.65 AV			1.57 H	338	60.37	40.28
3	11160.00	59.04 PK	74.00	-14.96	1.97 H	146	40.97	18.07
4	11160.00	46.22 AV	54.00	-7.78	1.97 H	146	28.15	18.07

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	112.12 PK			3.73 V	22	71.84	40.28
2	*5580.00	99.44 AV			3.73 V	22	59.16	40.28
3	11160.00	58.41 PK	74.00	-15.59	1.73 V	217	40.34	18.07
4	11160.00	45.64 AV	54.00	-8.36	1.73 V	217	27.57	18.07

**Remarks:**

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



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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	107.09 PK			2.05 H	149	66.46	40.63
2	*5700.00	94.64 AV			2.05 H	149	54.01	40.63
3	#5725.00	66.94 PK	68.20	-1.26	2.05 H	149	60.49	6.45
4	11400.00	59.45 PK	74.00	-14.55	1.97 H	218	40.67	18.78
5	11400.00	46.64 AV	54.00	-7.36	1.97 H	218	27.86	18.78

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	105.94 PK			3.76 V	5	65.31	40.63
2	*5700.00	93.47 AV			3.76 V	5	52.84	40.63
3	#5725.00	65.38 PK	68.20	-2.82	3.76 V	5	58.93	6.45
4	11400.00	58.96 PK	74.00	-15.04	1.52 V	212	40.18	18.78
5	11400.00	46.16 AV	54.00	-7.84	1.52 V	212	27.38	18.78

**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	#5626.40	55.41 PK	68.20	-12.79	2.64 H	143	49.41	6.00
2	*5745.00	113.56 PK			2.64 H	143	72.72	40.84
3	*5745.00	100.92 AV			2.64 H	143	60.08	40.84
4	#5937.60	56.89 PK	68.20	-11.31	2.64 H	143	49.93	6.96
5	11490.00	59.42 PK	74.00	-14.58	2.03 H	242	40.82	18.60
6	11490.00	46.74 AV	54.00	-7.26	2.03 H	242	28.14	18.60

**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	#5631.20	54.83 PK	68.20	-13.37	3.68 V	18	48.82	6.01
2	*5745.00	112.21 PK			3.68 V	18	71.37	40.84
3	*5745.00	99.80 AV			3.68 V	18	58.96	40.84
4	#5931.60	55.35 PK	68.20	-12.85	3.68 V	18	48.37	6.98
5	11490.00	58.84 PK	74.00	-15.16	1.77 V	219	40.24	18.60
6	11490.00	46.08 AV	54.00	-7.92	1.77 V	219	27.48	18.60

**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	#5648.00	55.43 PK	68.20	-12.77	2.81 H	143	49.39	6.04
2	*5785.00	113.28 PK			2.81 H	143	72.24	41.04
3	*5785.00	100.67 AV			2.81 H	143	59.63	41.04
4	#5960.40	56.92 PK	68.20	-11.28	2.81 H	143	50.01	6.91
5	11570.00	59.20 PK	74.00	-14.80	2.05 H	226	40.81	18.39
6	11570.00	46.51 AV	54.00	-7.49	2.05 H	226	28.12	18.39

**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	#5644.40	54.08 PK	68.20	-14.12	3.76 V	11	48.06	6.02
2	*5785.00	112.00 PK			3.76 V	11	70.96	41.04
3	*5785.00	99.56 AV			3.76 V	11	58.52	41.04
4	#5959.20	55.10 PK	68.20	-13.10	3.76 V	11	48.19	6.91
5	11570.00	58.62 PK	74.00	-15.38	1.52 V	197	40.23	18.39
6	11570.00	45.91 AV	54.00	-8.09	1.52 V	197	27.52	18.39

**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	#5646.40	55.62 PK	68.20	-12.58	2.50 H	142	49.58	6.04
2	*5825.00	113.15 PK			2.50 H	142	71.97	41.18
3	*5825.00	100.43 AV			2.50 H	142	59.25	41.18
4	#5937.60	57.25 PK	68.20	-10.95	2.50 H	142	50.29	6.96
5	11650.00	59.05 PK	74.00	-14.95	2.07 H	225	40.84	18.21
6	11650.00	46.36 AV	54.00	-7.64	2.07 H	225	28.15	18.21

**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	#5640.00	54.77 PK	68.20	-13.43	3.76 V	20	48.75	6.02
2	*5825.00	112.02 PK			3.76 V	20	70.84	41.18
3	*5825.00	99.30 AV			3.76 V	20	58.12	41.18
4	#5996.40	56.69 PK	68.20	-11.51	3.76 V	20	49.74	6.95
5	11650.00	58.44 PK	74.00	-15.56	1.57 V	202	40.23	18.21
6	11650.00	45.70 AV	54.00	-8.30	1.57 V	202	27.49	18.21

**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	66.36 PK	74.00	-7.64	1.14 H	125	60.78	5.58
2	5150.00	51.19 AV	54.00	-2.81	1.14 H	125	45.61	5.58
3	*5190.00	105.88 PK			1.14 H	125	65.85	40.03
4	*5190.00	93.56 AV			1.14 H	125	53.53	40.03
5	#10380.00	58.29 PK	68.20	-9.91	1.98 H	231	40.78	17.51

**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	65.93 PK	74.00	-8.07	3.76 V	13	60.35	5.58
2	5150.00	50.45 AV	54.00	-3.55	3.76 V	13	44.87	5.58
3	*5190.00	104.75 PK			3.76 V	13	64.72	40.03
4	*5190.00	92.49 AV			3.76 V	13	52.46	40.03
5	#10380.00	57.73 PK	68.20	-10.47	1.62 V	201	40.22	17.51

**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	*5230.00	109.96 PK			1.31 H	125	69.97	39.99
2	*5230.00	97.42 AV			1.31 H	125	57.43	39.99
3	5350.00	57.00 PK	74.00	-17.00	1.31 H	125	51.74	5.26
4	5350.00	45.60 AV	54.00	-8.40	1.31 H	125	40.34	5.26
5	#10460.00	58.23 PK	68.20	-9.97	2.03 H	227	40.75	17.48

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	108.78 PK			3.82 V	8	68.79	39.99
2	*5230.00	96.26 AV			3.82 V	8	56.27	39.99
3	5350.00	55.72 PK	74.00	-18.28	3.82 V	8	50.46	5.26
4	5350.00	44.53 AV	54.00	-9.47	3.82 V	8	39.27	5.26
5	#10460.00	57.67 PK	68.20	-10.53	1.62 V	208	40.19	17.48

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	55.85 PK	74.00	-18.15	1.36 H	125	50.27	5.58
2	5150.00	43.94 AV	54.00	-10.06	1.36 H	125	38.36	5.58
3	*5270.00	109.31 PK			1.36 H	125	69.49	39.82
4	*5270.00	97.19 AV			1.36 H	125	57.37	39.82
5	#10540.00	58.45 PK	68.20	-9.75	1.91 H	237	40.76	17.69

**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	55.42 PK	74.00	-18.58	3.85 V	12	49.84	5.58
2	5150.00	43.10 AV	54.00	-10.90	3.85 V	12	37.52	5.58
3	*5270.00	108.17 PK			3.85 V	12	68.35	39.82
4	*5270.00	95.96 AV			3.85 V	12	56.14	39.82
5	#10540.00	57.87 PK	68.20	-10.33	1.66 V	208	40.18	17.69

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	105.04 PK			1.54 H	127	65.46	39.58
2	*5310.00	92.89 AV			1.54 H	127	53.31	39.58
3	5350.00	68.33 PK	74.00	-5.67	1.54 H	127	63.07	5.26
4	5350.00	53.57 AV	54.00	-0.43	1.54 H	127	48.31	5.26
5	10620.00	58.67 PK	74.00	-15.33	1.95 H	233	40.74	17.93
6	10620.00	46.00 AV	54.00	-8.00	1.95 H	233	28.07	17.93

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	103.96 PK			3.82 V	5	64.38	39.58
2	*5310.00	91.84 AV			3.82 V	5	52.26	39.58
3	5350.00	66.79 PK	74.00	-7.21	3.82 V	5	61.53	5.26
4	5350.00	51.98 AV	54.00	-2.02	3.82 V	5	46.72	5.26
5	10620.00	58.11 PK	74.00	-15.89	1.62 V	207	40.18	17.93
6	10620.00	45.40 AV	54.00	-8.60	1.62 V	207	27.47	17.93

**Remarks:**

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



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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	64.02 PK	74.00	-9.98	2.53 H	162	57.81	6.21
2	5460.00	47.95 AV	54.00	-6.05	2.53 H	162	41.74	6.21
3	#5470.00	67.75 PK	68.20	-0.45	2.53 H	162	61.54	6.21
4	*5510.00	104.45 PK			2.53 H	162	63.97	40.48
5	*5510.00	92.32 AV			2.53 H	162	51.84	40.48
6	11020.00	59.27 PK	74.00	-14.73	2.02 H	229	40.62	18.65
7	11020.00	46.48 AV	54.00	-7.52	2.02 H	229	27.83	18.65

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.94 PK	74.00	-11.06	3.83 V	8	56.73	6.21
2	5460.00	47.03 AV	54.00	-6.97	3.83 V	8	40.82	6.21
3	#5470.00	66.53 PK	68.20	-1.67	3.83 V	8	60.32	6.21
4	*5510.00	103.21 PK			3.83 V	8	62.73	40.48
5	*5510.00	91.00 AV			3.83 V	8	50.52	40.48
6	11020.00	58.77 PK	74.00	-15.23	1.61 V	207	40.12	18.65
7	11020.00	45.91 AV	54.00	-8.09	1.61 V	207	27.26	18.65

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	110.24 PK			2.64 H	152	69.84	40.40
2	*5550.00	98.16 AV			2.64 H	152	57.76	40.40
3	11100.00	58.58 PK	74.00	-15.42	1.97 H	230	40.72	17.86
4	11100.00	46.26 AV	54.00	-7.74	1.97 H	230	28.40	17.86

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	109.01 PK			3.67 V	23	68.61	40.40
2	*5550.00	96.92 AV			3.67 V	23	56.52	40.40
3	11100.00	58.03 PK	74.00	-15.97	1.57 V	204	40.17	17.86
4	11100.00	45.24 AV	54.00	-8.76	1.57 V	204	27.38	17.86

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	108.55 PK			2.80 H	165	68.12	40.43
2	*5670.00	96.50 AV			2.80 H	165	56.07	40.43
3	#5725.00	67.28 PK	68.20	-0.92	2.80 H	165	60.83	6.45
4	11340.00	59.59 PK	74.00	-14.41	1.96 H	227	40.67	18.92
5	11340.00	46.95 AV	54.00	-7.05	1.96 H	227	28.03	18.92

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	107.34 PK			3.73 V	13	66.91	40.43
2	*5670.00	95.26 AV			3.73 V	13	54.83	40.43
3	#5725.00	65.84 PK	68.20	-2.36	3.73 V	13	59.39	6.45
4	11340.00	59.00 PK	74.00	-15.00	1.52 V	204	40.08	18.92
5	11340.00	46.05 AV	54.00	-7.95	1.52 V	204	27.13	18.92

**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	#5650.40	57.41 PK	68.50	-11.09	2.61 H	202	51.38	6.03
2	*5755.00	109.95 PK			2.61 H	202	69.07	40.88
3	*5755.00	97.82 AV			2.61 H	202	56.94	40.88
4	#5948.40	56.91 PK	68.20	-11.29	2.61 H	202	50.01	6.90
5	11510.00	59.29 PK	74.00	-14.71	2.04 H	221	40.74	18.55
6	11510.00	47.15 AV	54.00	-6.85	2.04 H	221	28.60	18.55

**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	#5646.00	56.43 PK	68.20	-11.77	3.81 V	14	50.39	6.04
2	*5755.00	108.82 PK			3.81 V	14	67.94	40.88
3	*5755.00	96.60 AV			3.81 V	14	55.72	40.88
4	#5948.00	55.74 PK	68.20	-12.46	3.81 V	14	48.84	6.90
5	11510.00	58.73 PK	74.00	-15.27	1.61 V	201	40.18	18.55
6	11510.00	46.06 AV	54.00	-7.94	1.61 V	201	27.51	18.55

**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	#5617.60	55.26 PK	68.20	-12.94	2.70 H	204	49.27	5.99
2	*5795.00	110.62 PK			2.70 H	204	69.52	41.10
3	*5795.00	98.43 AV			2.70 H	204	57.33	41.10
4	#5958.00	56.29 PK	68.20	-11.91	2.70 H	204	49.39	6.90
5	11590.00	59.02 PK	74.00	-14.98	1.96 H	232	40.67	18.35
6	11590.00	46.31 AV	54.00	-7.69	1.96 H	232	27.96	18.35

**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	#5600.00	55.82 PK	68.20	-12.38	3.79 V	18	49.86	5.96
2	*5795.00	109.37 PK			3.79 V	18	68.27	41.10
3	*5795.00	97.28 AV			3.79 V	18	56.18	41.10
4	#5935.60	56.39 PK	68.20	-11.81	3.79 V	18	49.42	6.97
5	11590.00	58.47 PK	74.00	-15.53	1.73 V	208	40.12	18.35
6	11590.00	45.56 AV	54.00	-8.44	1.73 V	208	27.21	18.35

**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	64.85 PK	74.00	-9.15	1.14 H	123	59.27	5.58
2	5150.00	53.50 AV	54.00	-0.50	1.14 H	123	47.92	5.58
3	*5210.00	100.96 PK			1.14 H	123	60.92	40.04
4	*5210.00	89.25 AV			1.14 H	123	49.21	40.04
5	#10420.00	58.17 PK	68.20	-10.03	1.92 H	226	40.69	17.48

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	64.44 PK	74.00	-9.56	3.89 V	7	58.86	5.58
2	5150.00	52.44 AV	54.00	-1.56	3.89 V	7	46.86	5.58
3	*5210.00	99.77 PK			3.89 V	7	59.73	40.04
4	*5210.00	88.10 AV			3.89 V	7	48.06	40.04
5	#10420.00	57.65 PK	68.20	-10.55	1.54 V	192	40.17	17.48

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5290.00	100.43 PK			1.38 H	127	60.78	39.65
2	*5290.00	90.28 AV			1.38 H	127	50.63	39.65
3	5350.00	65.18 PK	74.00	-8.82	1.38 H	127	59.92	5.26
4	5350.00	51.82 AV	54.00	-2.18	1.38 H	127	46.56	5.26
5	#10580.00	58.59 PK	68.20	-9.61	2.04 H	226	40.72	17.87

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5290.00	99.39 PK			3.78 V	7	59.74	39.65
2	*5290.00	89.17 AV			3.78 V	7	49.52	39.65
3	5350.00	64.30 PK	74.00	-9.70	3.78 V	7	59.04	5.26
4	5350.00	51.10 AV	54.00	-2.90	3.78 V	7	45.84	5.26
5	#10580.00	58.02 PK	68.20	-10.18	1.62 V	203	40.15	17.87

**Remarks:**

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

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

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	64.53 PK	74.00	-9.47	2.74 H	316	58.32	6.21
2	5460.00	53.29 AV	54.00	-0.71	2.74 H	316	47.08	6.21
3	#5470.00	66.44 PK	68.20	-1.76	2.74 H	316	60.23	6.21
4	*5530.00	98.84 PK			2.74 H	316	58.41	40.43
5	*5530.00	87.75 AV			2.74 H	316	47.32	40.43
6	11060.00	58.83 PK	74.00	-15.17	2.07 H	228	40.57	18.26
7	11060.00	45.99 AV	54.00	-8.01	2.07 H	228	27.73	18.26

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.92 PK	74.00	-11.08	3.71 V	18	56.71	6.21
2	5460.00	52.07 AV	54.00	-1.93	3.71 V	18	45.86	6.21
3	#5470.00	65.35 PK	68.20	-2.85	3.71 V	18	59.14	6.21
4	*5530.00	97.39 PK			3.71 V	18	56.96	40.43
5	*5530.00	86.37 AV			3.71 V	18	45.94	40.43
6	11060.00	58.34 PK	74.00	-15.66	1.63 V	215	40.08	18.26
7	11060.00	45.32 AV	54.00	-8.68	1.63 V	215	27.06	18.26

**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	#5645.20	60.81 PK	68.20	-7.39	2.75 H	204	54.78	6.03
2	*5775.00	103.82 PK			2.75 H	204	62.83	40.99
3	*5775.00	92.74 AV			2.75 H	204	51.75	40.99
4	#5971.20	58.13 PK	68.20	-10.07	2.75 H	204	51.21	6.92
5	11550.00	59.09 PK	74.00	-14.91	2.05 H	239	40.64	18.45
6	11550.00	46.30 AV	54.00	-7.70	2.05 H	239	27.85	18.45

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	#5642.00	58.13 PK	68.20	-10.07	3.71 V	14	52.11	6.02
2	*5775.00	102.83 PK			3.71 V	14	61.84	40.99
3	*5775.00	91.61 AV			3.71 V	14	50.62	40.99
4	#5959.60	55.95 PK	68.20	-12.25	3.71 V	14	49.04	6.91
5	11550.00	58.54 PK	74.00	-15.46	1.79 V	212	40.09	18.45
6	11550.00	45.49 AV	54.00	-8.51	1.79 V	212	27.04	18.45

Remarks:

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

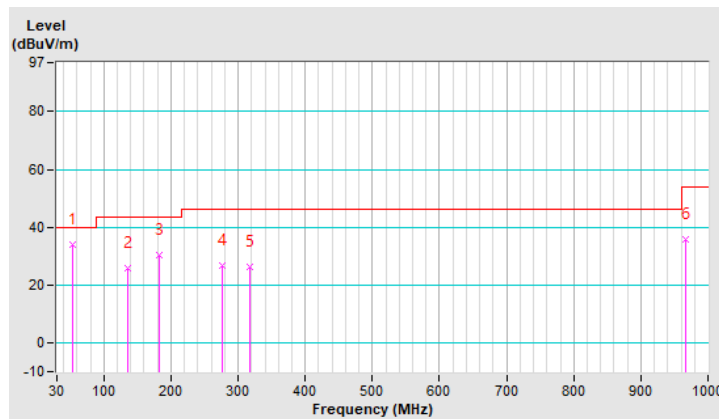
Below 1GHz Worst-Case Data:

RF Mode	TX 802.11ax (HE40)	Channel	CH 110 : 5550 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.25	34.01 QP	40.00	-5.99	1.00 H	144	43.23	-9.22
2	135.73	25.79 QP	43.50	-17.71	1.49 H	77	35.42	-9.63
3	183.26	30.53 QP	43.50	-12.97	1.00 H	138	41.09	-10.56
4	276.38	26.63 QP	46.00	-19.37	1.25 H	165	34.24	-7.61
5	317.12	26.36 QP	46.00	-19.64	1.49 H	136	32.79	-6.43
6	966.05	35.62 QP	54.00	-18.38	1.49 H	81	29.26	6.36

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.

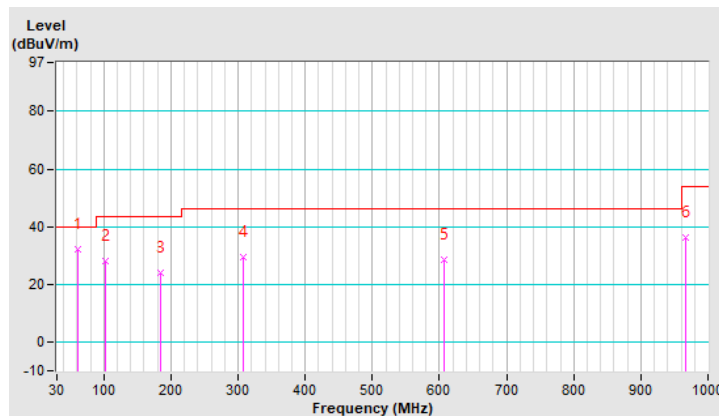


RF Mode	TX 802.11ax (HE40)	Channel	CH 110 : 5550 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	62.01	32.25 QP	40.00	-7.75	1.25 V	96	42.08	-9.83
2	102.75	27.92 QP	43.50	-15.58	1.49 V	102	41.16	-13.24
3	184.23	23.94 QP	43.50	-19.56	1.00 V	89	34.63	-10.69
4	307.42	29.32 QP	46.00	-16.68	2.00 V	172	35.94	-6.62
5	606.18	28.68 QP	46.00	-17.32	1.49 V	198	28.92	-0.24
6	967.02	36.12 QP	54.00	-17.88	1.49 V	67	29.81	6.31

Remarks:

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



## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 03, 2021	Dec. 02, 2022
RF signal cable Woken	5D-FB	Cable-cond1-01	Jan. 15, 2022	Jan. 14, 2023
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 25, 2021	Feb. 24, 2022
V-LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Sep. 07, 2021	Sep. 06, 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 1 (Conduction 1).

3. The VCCI Site Registration No. is C-12047.

4. Tested date: Feb. 24, 2022

### 4.2.3 Test Procedures

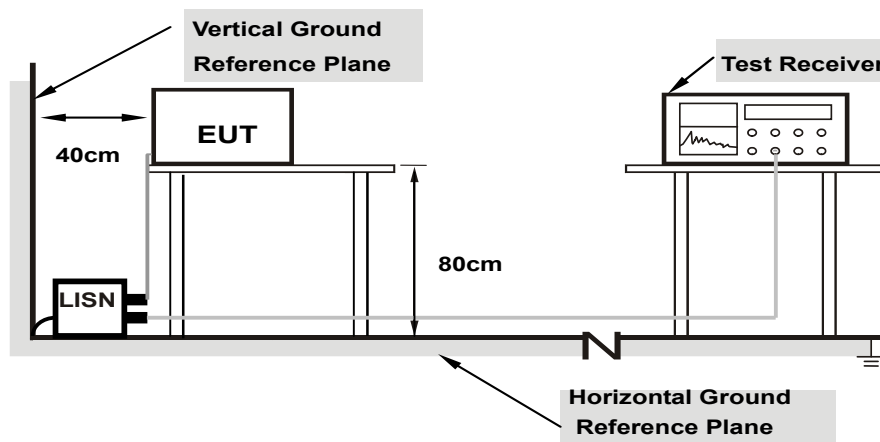
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

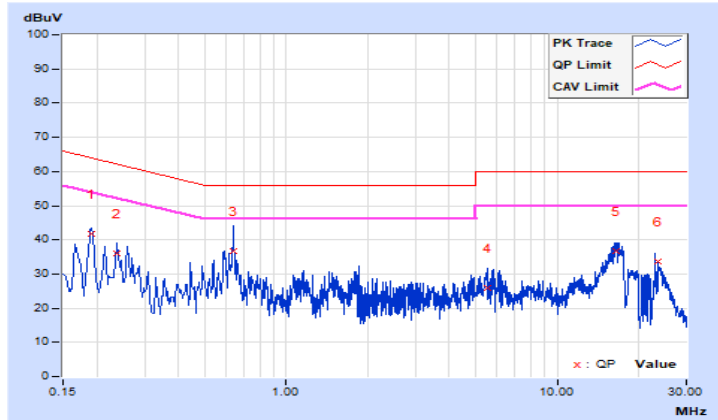
802.11ax (HE40)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19000	9.79	31.84	23.65	41.63	33.44	64.04	54.04	-22.41	-20.60
2	0.23800	9.81	26.08	23.43	35.89	33.24	62.17	52.17	-26.28	-18.93
3	0.63800	9.89	26.95	11.96	36.84	21.85	56.00	46.00	-19.16	-24.15
4	5.50200	10.04	16.03	8.47	26.07	18.51	60.00	50.00	-33.93	-31.49
5	16.60200	10.13	26.67	19.05	36.80	29.18	60.00	50.00	-23.20	-20.82
6	23.59000	10.12	23.47	20.34	33.59	30.46	60.00	50.00	-26.41	-19.54

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.

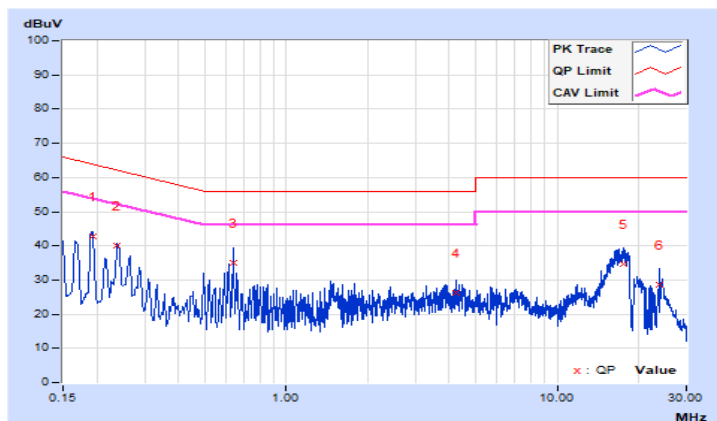


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.19265	9.85	33.01	24.71	42.86	34.56	63.92
<b>2</b>	<b>0.23800</b>	<b>9.88</b>	<b>30.03</b>	<b>25.14</b>	<b>39.91</b>	<b>35.02</b>	<b>62.17</b>	<b>52.17</b>	<b>-22.26</b>	<b>-17.15</b>
3	0.63800	9.96	25.19	11.57	35.15	21.53	56.00	46.00	-20.85	-24.47
4	4.24200	10.09	16.12	8.22	26.21	18.31	56.00	46.00	-29.79	-27.69
5	17.69400	10.28	24.32	15.92	34.60	26.20	60.00	50.00	-25.40	-23.80
6	23.82600	10.31	18.18	15.20	28.49	25.51	60.00	50.00	-31.51	-24.49

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 $\leq$ 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  $N_{ANT} \leq 4$ ;

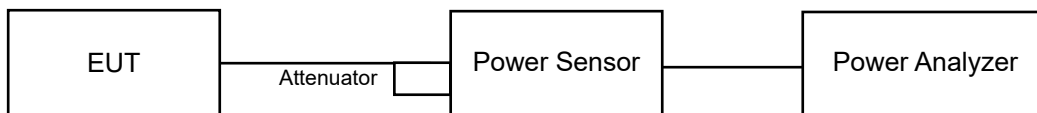
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

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

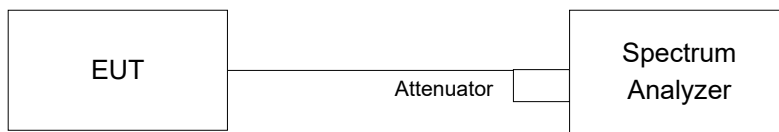
For power measurements on all other devices: Array Gain =  $10 \log(N_{ANT}/N_{SS})$  dB.

#### 4.3.2 Test Setup

For Power Output



For 26dB Bandwidth



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.



#### 4.3.4 Test Procedure

##### For Average Power Measurement

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

##### For 26dB Bandwidth

- a. Set RBW = approximately 1% of the emission bandwidth.
- b. Set the VBW > RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
- f. For channel aggregation (channel 138, 142, 144) measurement refer to KDB 789033 D02 Section III. CHANNEL AGGREGATION.

#### 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:  
802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	61.235	17.87	24.00	Pass
40	5200	85.507	19.32	24.00	Pass
48	5240	84.333	19.26	24.00	Pass
52	5260	82.035	19.14	24.00	Pass
60	5300	83.368	19.21	24.00	Pass
64	5320	82.035	19.14	24.00	Pass
100	5500	67.920	18.32	24.00	Pass
116	5580	85.704	19.33	24.00	Pass
140	5700	48.084	16.82	24.00	Pass
149	5745	81.658	19.12	30.00	Pass
157	5785	82.035	19.14	30.00	Pass
165	5825	83.560	19.22	30.00	Pass

Note:

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

1.  $11\text{dBm} + 10\log(42.95) = 27.32 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(42.49) = 27.28 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(42.08) = 27.24 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(40.77) = 27.10 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(40.25) = 27.04 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log(20.96) = 24.21 > 24\text{dBm}$

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.25	15.94	92.353	19.65	24.00	Pass
40	5200	18.32	16.74	115.127	20.61	24.00	Pass
48	5240	18.29	16.33	110.406	20.43	24.00	Pass
52	5260	18.37	16.46	112.966	20.53	24.00	Pass
60	5300	18.47	16.25	112.477	20.51	24.00	Pass
64	5320	18.77	16.45	119.493	20.77	24.00	Pass
100	5500	14.33	12.84	46.333	16.66	24.00	Pass
116	5580	18.34	17.94	130.464	21.15	24.00	Pass
140	5700	12.86	14.59	48.094	16.82	24.00	Pass
149	5745	17.84	18.42	130.316	21.15	30.00	Pass
157	5785	17.95	18.31	130.138	21.14	30.00	Pass
165	5825	18.05	18.17	129.441	21.12	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(51.23) = 28.09 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(50.74) = 28.05 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(49.37) = 27.93 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(20.83) = 24.18 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(38.57) = 26.86 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log(20.86) = 24.19 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(36.17) = 26.58 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(41.36) = 27.16 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(39.97) = 27.01 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(20.88) = 24.19 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(44.22) = 27.45 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log(22.84) = 24.58 > 24\text{dBm}$

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.25	13.58	49.411	16.94	24.00	Pass
46	5230	18.78	17.93	137.596	21.39	24.00	Pass
54	5270	18.72	17.89	135.991	21.34	24.00	Pass
62	5310	15.65	13.68	60.063	17.79	24.00	Pass
102	5510	13.52	13.36	44.168	16.45	24.00	Pass
110	5550	18.93	18.75	153.152	21.85	24.00	Pass
134	5670	16.58	16.55	90.684	19.58	24.00	Pass
151	5755	17.46	17.95	118.092	20.72	30.00	Pass
159	5795	17.52	17.71	115.514	20.63	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(96.09) = 30.82 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(54.79) = 28.38 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(41.99) = 27.23 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(91.78) = 30.62 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(66.88) = 29.25 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(84.37) = 30.26 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(41.94) = 27.22 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(41.83) = 27.21 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(81.81) = 30.12 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(67.17) = 29.27 > 24\text{dBm}$

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.59	12.15	34.561	15.39	24.00	Pass
58	5290	14.36	13.79	51.223	17.09	24.00	Pass
106	5530	8.66	8.65	14.673	11.67	24.00	Pass
155	5775	15.10	16.16	73.664	18.67	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(87.66) = 30.42 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(81.65) = 30.11 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(87.21) = 30.40 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(81.78) = 30.12 > 24\text{dBm}$

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.44	16.00	95.273	19.79	24.00	Pass
40	5200	18.40	16.83	117.378	20.70	24.00	Pass
48	5240	18.41	16.43	113.297	20.54	24.00	Pass
52	5260	18.54	16.52	116.324	20.66	24.00	Pass
60	5300	18.55	16.34	114.667	20.59	24.00	Pass
64	5320	18.80	16.52	120.732	20.82	24.00	Pass
100	5500	14.39	12.95	47.203	16.74	24.00	Pass
116	5580	18.40	18.01	132.424	21.22	24.00	Pass
140	5700	12.98	14.64	48.968	16.90	24.00	Pass
149	5745	17.94	18.53	<b>133.515</b>	21.26	30.00	Pass
157	5785	18.00	18.41	132.438	21.22	30.00	Pass
165	5825	18.11	18.24	131.395	21.19	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(51.23) = 28.09 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(50.74) = 28.05 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(49.37) = 27.93 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(20.83) = 24.18 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(38.57) = 26.86 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log(20.86) = 24.19 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(36.17) = 26.58 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(41.36) = 27.16 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(39.97) = 27.01 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(20.88) = 24.19 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(44.22) = 27.45 > 24\text{dBm}$
6.  $11\text{dBm} + 10\log(22.84) = 24.58 > 24\text{dBm}$

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	14.32	13.69	50.428	17.03	24.00	Pass
46	5230	18.84	18.03	<b>140.093</b>	21.46	24.00	Pass
54	5270	18.76	17.98	<b>137.968</b>	21.40	24.00	Pass
62	5310	15.73	13.70	60.853	17.84	24.00	Pass
102	5510	13.59	13.44	44.936	16.53	24.00	Pass
110	5550	19.01	18.86	<b>156.529</b>	21.95	24.00	Pass
134	5670	16.68	16.60	92.267	19.65	24.00	Pass
151	5755	17.52	18.02	119.881	20.79	30.00	Pass
159	5795	17.54	17.76	116.458	20.66	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(96.09) = 30.82 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(54.79) = 28.38 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(41.99) = 27.23 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(91.78) = 30.62 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(66.88) = 29.25 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(84.37) = 30.26 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(41.94) = 27.22 > 24\text{dBm}$
3.  $11\text{dBm} + 10\log(41.83) = 27.21 > 24\text{dBm}$
4.  $11\text{dBm} + 10\log(81.81) = 30.12 > 24\text{dBm}$
5.  $11\text{dBm} + 10\log(67.17) = 29.27 > 24\text{dBm}$

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.65	12.21	35.042	15.45	24.00	Pass
58	5290	14.42	13.85	51.936	17.15	24.00	Pass
106	5530	8.76	8.71	14.946	11.75	24.00	Pass
155	5775	15.15	16.25	74.904	18.75	30.00	Pass

Note:

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

Chain 0

1.  $11\text{dBm} + 10\log(87.66) = 30.42 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(81.65) = 30.11 > 24\text{dBm}$

Chain 1

1.  $11\text{dBm} + 10\log(87.21) = 30.40 > 24\text{dBm}$
2.  $11\text{dBm} + 10\log(81.78) = 30.12 > 24\text{dBm}$



26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
52	5260	42.95
60	5300	42.49
64	5320	42.08
100	5500	40.77
116	5580	40.25
140	5700	20.96

802.11ax (HE20)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	51.23	36.17
60	5300	50.74	41.36
64	5320	49.37	39.97
100	5500	20.83	20.88
116	5580	38.57	44.22
140	5700	20.86	22.84

802.11ax (HE40)

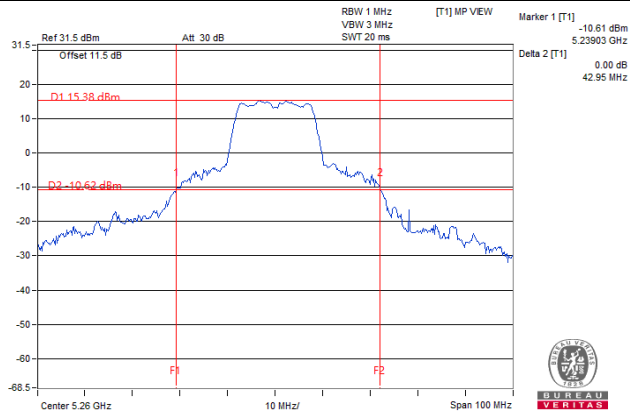
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	96.09	84.37
62	5310	54.79	41.94
102	5510	41.99	41.83
110	5550	91.78	81.81
134	5670	66.88	67.17

802.11ax (HE80)

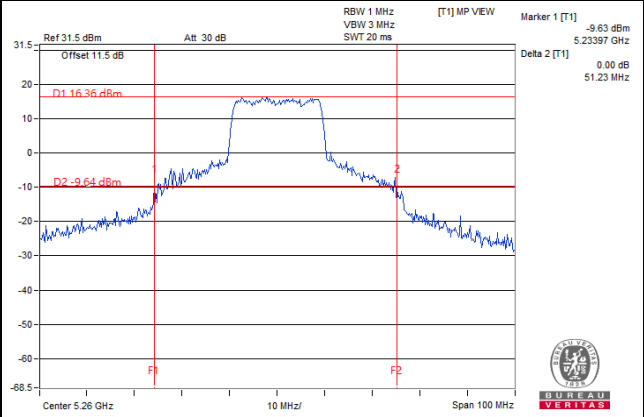
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	87.66	87.21
106	5530	81.65	81.78

### Spectrum Plot of Worst Value

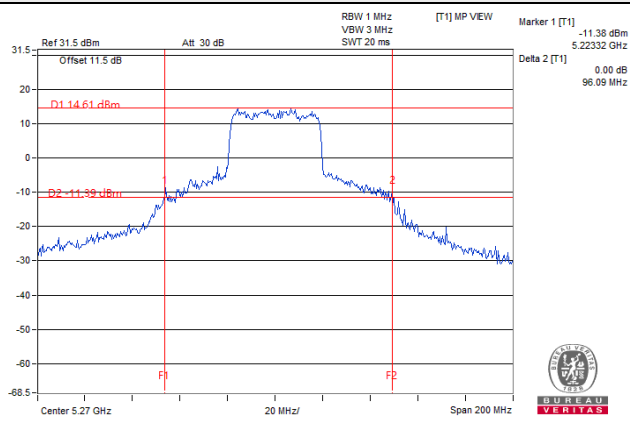
#### 802.11a



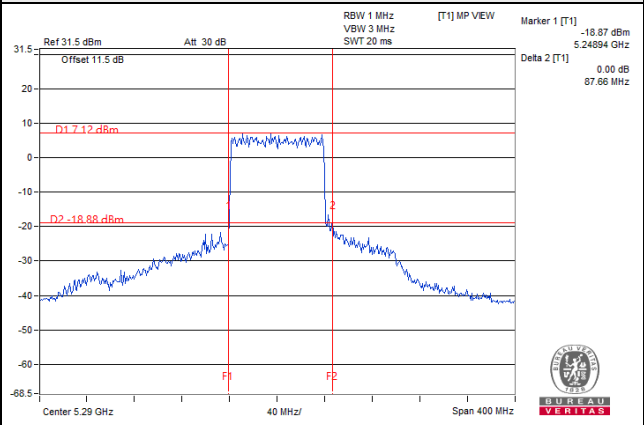
#### 802.11ax (HE20)



#### 802.11ax (HE40)



#### 802.11ax (HE80)



### EUT Maximum Conducted Power

#### 802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	83.368	19.21
5470~5725	85.704	19.33

#### 802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	119.493	20.77
5470~5725	130.464	21.15

#### 802.11ac (VHT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	135.991	21.34
5470~5725	153.152	21.85

#### 802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	51.223	17.09
5470~5725	14.673	11.67

802.11ax (HE20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	120.732	20.82
5470~5725	132.424	21.22

802.11ax (HE40)

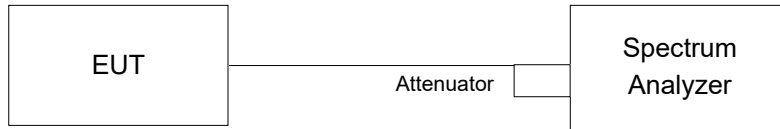
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	137.968	21.40
5470~5725	156.529	21.95

802.11ax (HE80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	51.936	17.15
5470~5725	14.946	11.75

## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Setup



### 4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

#### 4.4.4 Test Result

##### 802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.28
40	5200	20.88
48	5240	20.88
52	5260	18.24
60	5300	18.00
64	5320	18.00
100	5500	17.04
116	5580	17.04
140	5700	16.80
149	5745	17.40
157	5785	19.08
165	5825	20.16

##### 802.11ax (HE20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	18.84
40	5200	19.32	18.96
48	5240	19.44	18.96
52	5260	19.32	19.08
60	5300	19.44	19.08
64	5320	19.32	18.96
100	5500	18.84	18.84
116	5580	18.96	19.08
140	5700	18.84	18.84
149	5745	19.08	21.96
157	5785	19.08	23.64
165	5825	19.32	19.56

802.11ax (HE40)

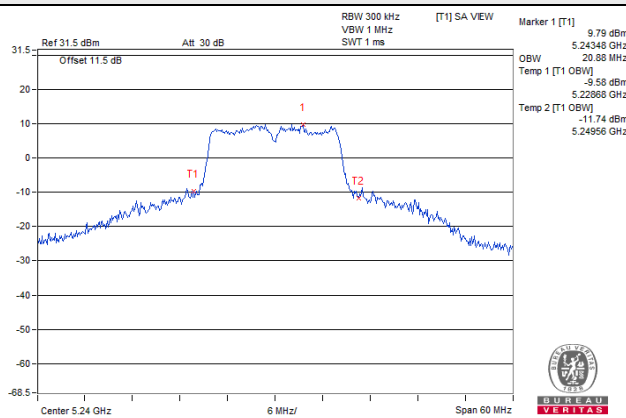
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.80	37.68
46	5230	38.76	38.28
54	5270	38.88	38.52
62	5310	37.92	37.68
102	5510	37.68	37.92
110	5550	38.52	38.28
134	5670	38.04	37.92
151	5755	38.04	38.16
159	5795	38.16	38.16

802.11ax (HE80)

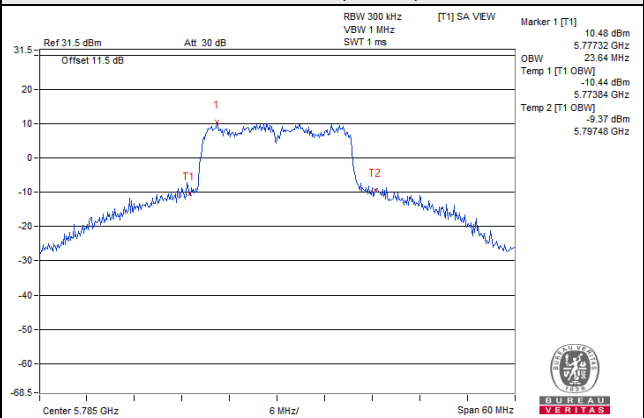
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.76	77.76
58	5290	77.76	77.76
106	5530	77.76	77.76
155	5775	78.00	78.00

### Spectrum Plot of Worst Value

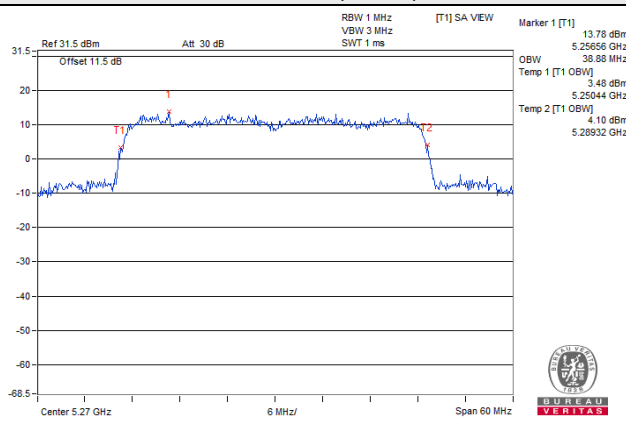
#### 802.11a



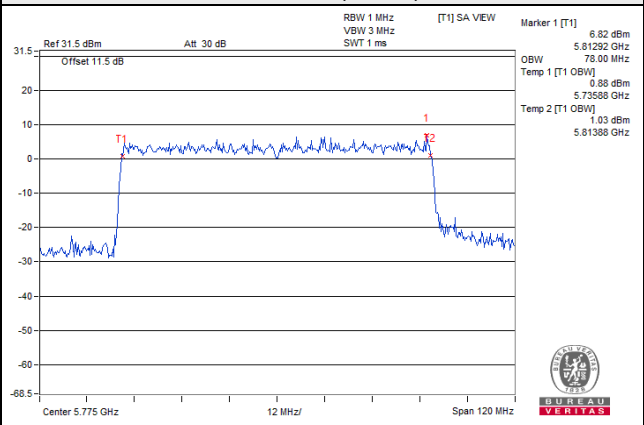
#### 802.11ax (HE20)



#### 802.11ax (HE40)

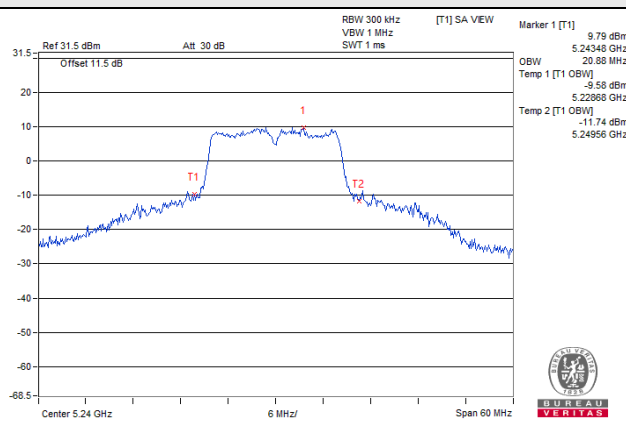


#### 802.11ax (HE80)

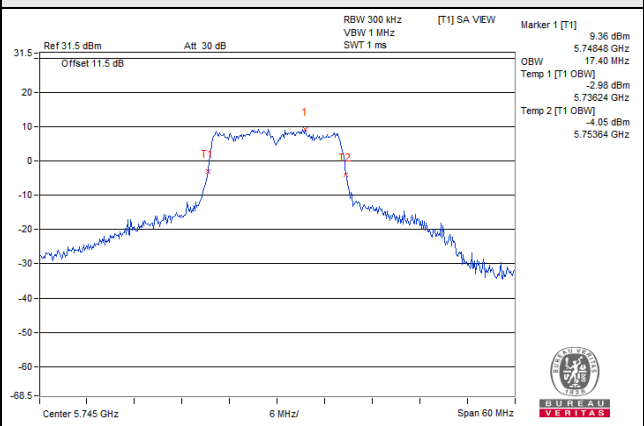


### Spectrum Plot for near By DFS Band

#### 802.11a / CH 48



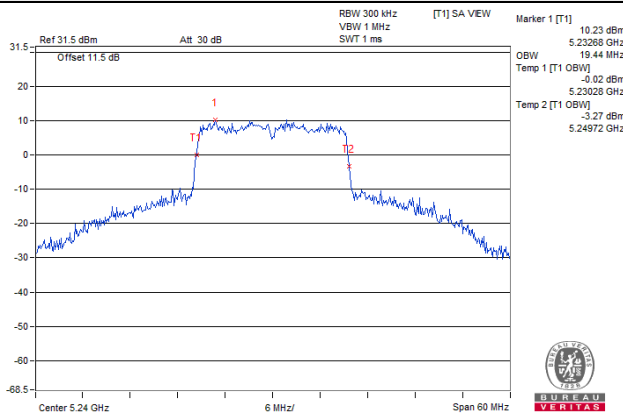
#### 802.11a / CH 149



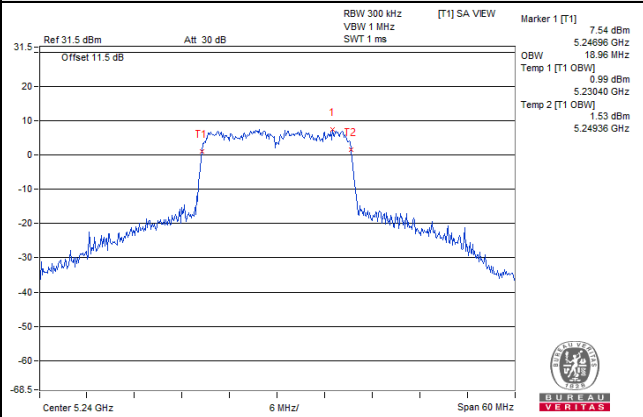


### Spectrum Plot for near By DFS Band

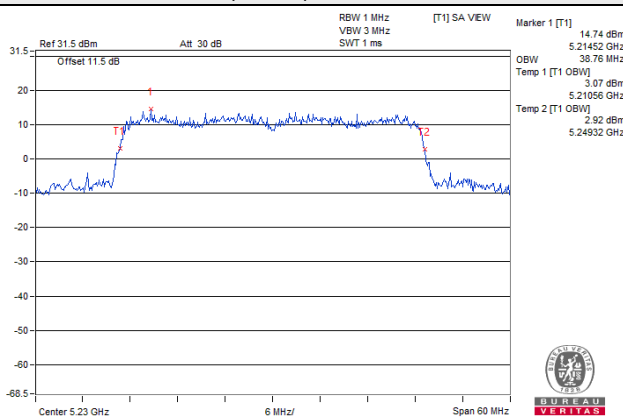
#### 802.11ax (HE20) / Chain 0 / CH 48



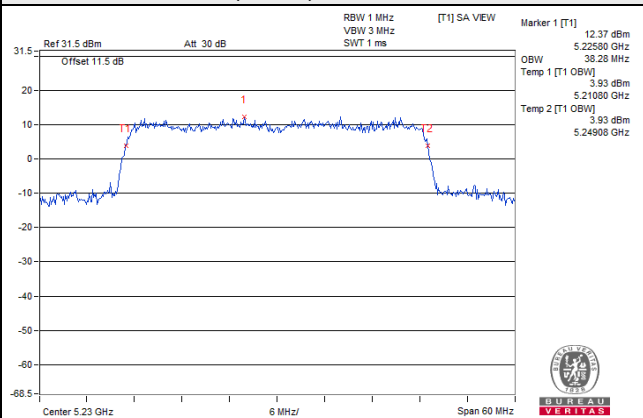
#### 802.11ax (HE20) / Chain 1 / CH 48



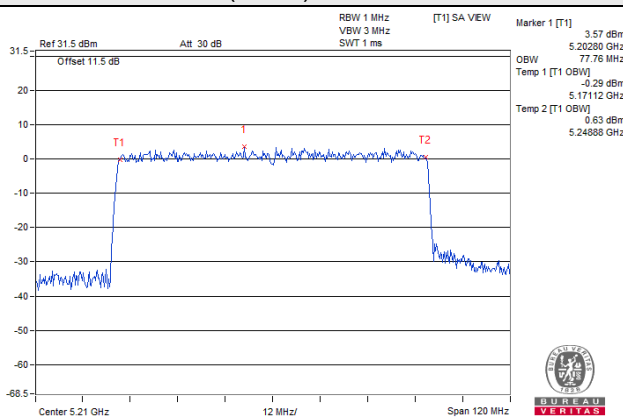
#### 802.11ax (HE40) / Chain 0 / CH 46



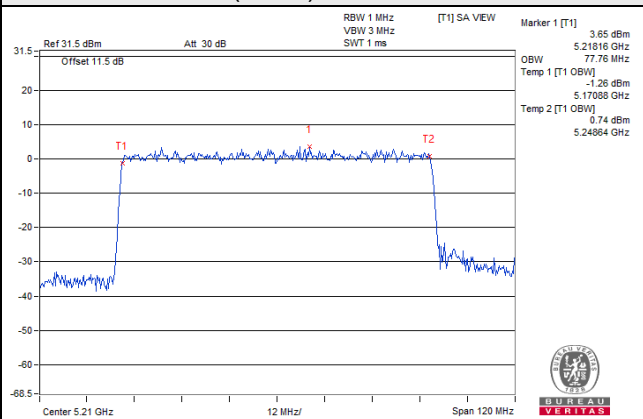
#### 802.11ax (HE40) / Chain 1 / CH 46



#### 802.11ax (HE80) / Chain 0 / CH 42

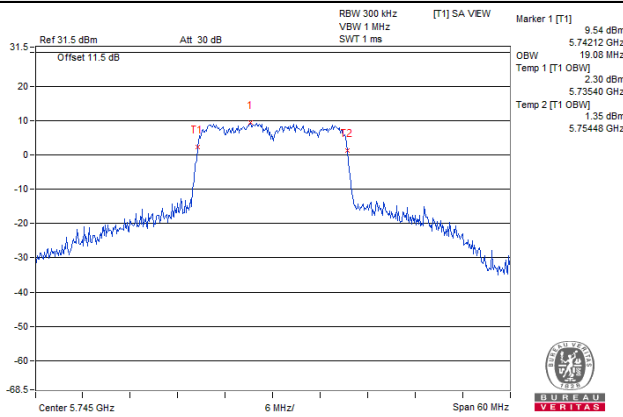


#### 802.11ax (HE80) / Chain 1 / CH 42

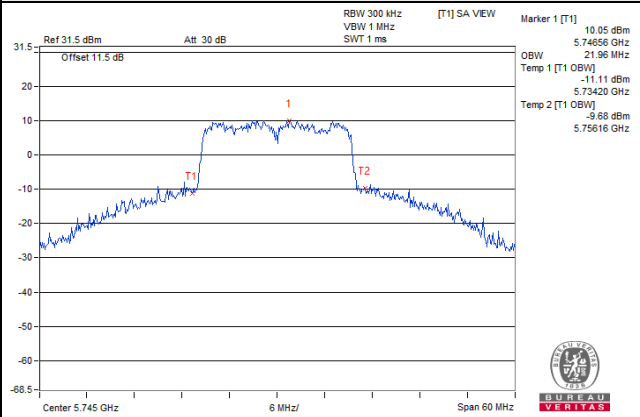


### Spectrum Plot for near By DFS Band

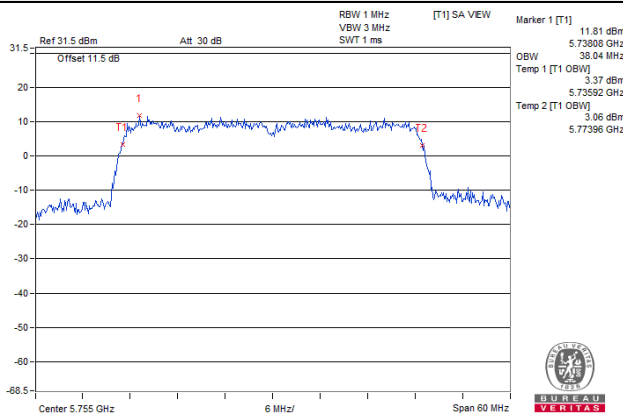
#### 802.11ax (HE20) / Chain 0 / CH 149



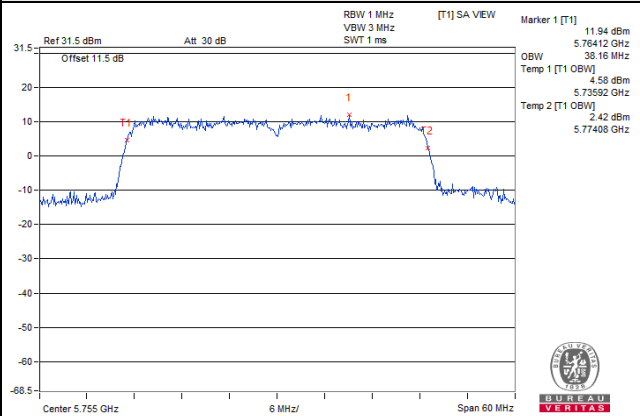
#### 802.11ax (HE20) / Chain 1 / CH 149



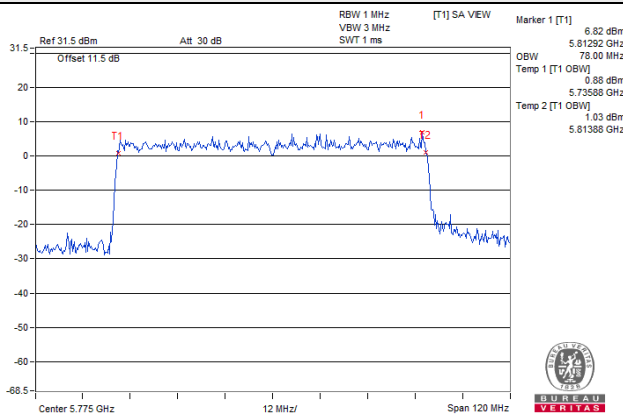
#### 802.11ax (HE40) / Chain 0 / CH 151



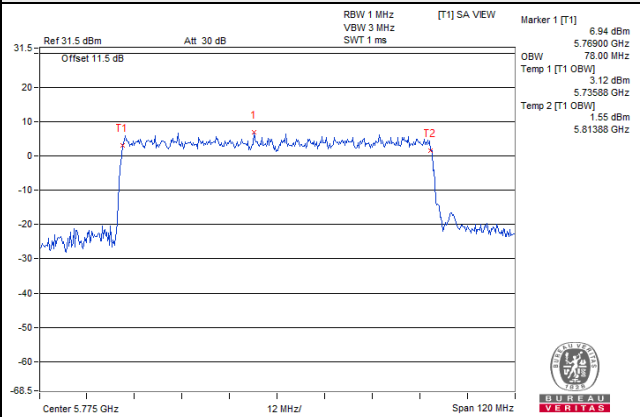
#### 802.11ax (HE40) / Chain 1 / CH 151



#### 802.11ax (HE80) / Chain 0 / CH 155



#### 802.11ax (HE80) / Chain 1 / CH 155

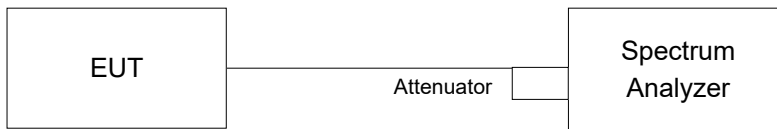


## 4.5 Peak Power Spectral Density Measurement

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

Duty cycle of test signal is  $\geq 98\%$

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz, Set VBW  $\geq 3$  MHz, Detector = RMS.
- 3) Set Channel power measure = 1MHz.
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value.

Duty cycle of test signal is  $< 98\%$

Using method SA-2

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

**For U-NII-3 band:**

Duty cycle  $\geq$  98%

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

Duty cycle  $<$ 98%

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

#### **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

For U-NII-1, U-NII-2A and U-NII-2C band:

##### 802.11a

Chan.	Freq. (MHz)	PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
36	5180	4.77	11	Pass
40	5200	6.27	11	Pass
48	5240	6.25	11	Pass
52	5260	6.11	11	Pass
60	5300	6.17	11	Pass
64	5320	6.06	11	Pass
100	5500	5.30	11	Pass
116	5580	6.29	11	Pass
140	5700	3.74	11	Pass

##### 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	4.42	2.92	0.14	6.88	11.00	Pass
40	5200	5.36	3.80	0.14	7.80	11.00	Pass
48	5240	5.25	3.35	0.14	7.55	11.00	Pass
52	5260	5.54	3.53	0.14	7.80	11.00	Pass
60	5300	5.34	3.31	0.14	7.59	11.00	Pass
64	5320	5.72	3.48	0.14	7.89	11.00	Pass
100	5500	1.35	-0.05	0.14	3.86	10.99	Pass
116	5580	5.29	4.88	0.14	8.24	10.99	Pass
140	5700	-0.09	1.59	0.14	3.98	10.99	Pass

Note:

- 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.
- 5180~5240MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42 \text{dBi} < 6 \text{dBi}$ , so the limit is not reduced.  
 5260~5320MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42 \text{dBi} < 6 \text{dBi}$ , so the limit is not reduced.  
 5500~5700MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 6.01 \text{dBi} > 6 \text{dBi}$ , so the limit shall be reduced to  $11 - (6.01 - 6) = 10.99 \text{dBm}$ .
- 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	-1.73	-2.36	0.12	1.10	11.00	Pass
46	5230	2.79	1.94	0.12	5.52	11.00	Pass
54	5270	2.73	1.93	0.12	5.48	11.00	Pass
62	5310	-0.37	-2.35	0.12	1.88	11.00	Pass
102	5510	-2.47	-2.52	0.12	0.64	10.99	Pass
110	5550	2.90	2.75	0.12	5.96	10.99	Pass
134	5670	0.69	0.51	0.12	3.73	10.99	Pass

Note:

- 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.
- 5180~5240MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42\text{dBi} < 6\text{dBi}$ , so the limit is not reduced.  
 5260~5320MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42\text{dBi} < 6\text{dBi}$ , so the limit is not reduced.  
 5500~5700MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 6.01\text{dBi} > 6\text{dBi}$ , so the limit shall be reduced to  $11 - (6.01 - 6) = 10.99\text{dBm}$ .
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

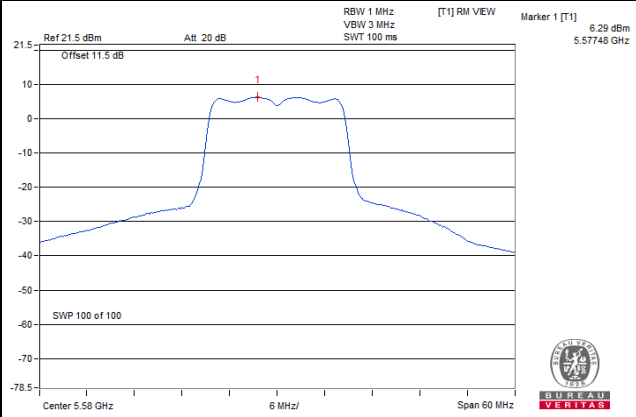
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-6.44	-6.76	0.25	-3.34	11.00	Pass
58	5290	-4.57	-5.13	0.25	-1.58	11.00	Pass
106	5530	-10.33	-10.43	0.25	-7.12	10.99	Pass

Note:

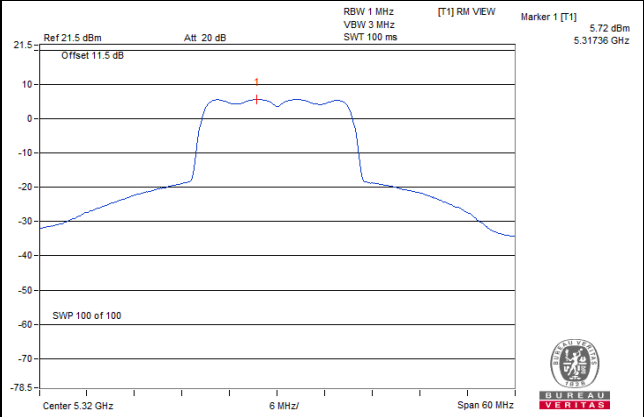
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- 5180~5240MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42\text{dBi} < 6\text{dBi}$ , so the limit is not reduced.  
 5260~5320MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.42\text{dBi} < 6\text{dBi}$ , so the limit is not reduced.  
 5500~5700MHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 6.01\text{dBi} > 6\text{dBi}$ , so the limit shall be reduced to  $11 - (6.01 - 6) = 10.99\text{dBm}$ .
- Refer to section 3.3 for duty cycle spectrum plot.

### Spectrum Plot of Worst Value

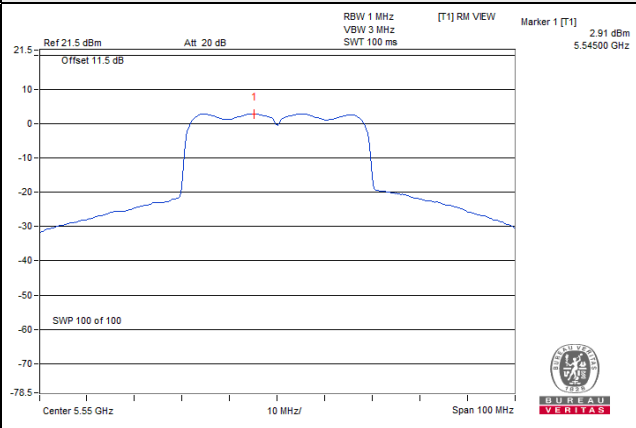
**802.11a / CH 116**



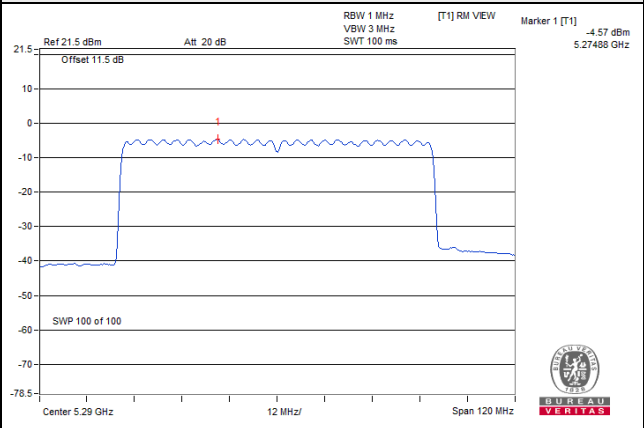
**802.11ax (HE20) / Chain 0 / CH 64**



**802.11ax (HE40) / Chain 0 / CH 110**



**802.11ax (HE80) / Chain 0 / 58**



For U-NII-3 band:

802.11a

Chan.	Freq. (MHz)	PSD		Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		(dBm/300kHz)	(dBm/500kHz)			
149	5745	1.71	3.93	-5.20	30.00	Pass
157	5785	1.91	4.13	-5.53	30.00	Pass
165	5825	2.09	4.31	-5.85	30.00	Pass

802.11ax (HE20)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	0.39	2.61	3.01	0.14	5.76	30.00	Pass
	157	5785	0.46	2.68	3.01	0.14	5.83	30.00	Pass
	165	5825	0.48	2.70	3.01	0.14	5.85	30.00	Pass
1	149	5745	0.99	3.21	3.01	0.14	6.36	30.00	Pass
	157	5785	0.83	3.05	3.01	0.14	6.20	30.00	Pass
	165	5825	0.58	2.80	3.01	0.14	5.95	30.00	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add  $10 \log (N_{ANT})$  dB.
- Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.94 \text{ dBi} < 6 \text{ dBi}$ , so the limit is not reduced.
- 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=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-3.88	-1.66	3.01	0.12	1.47	30.00	Pass
	159	5795	-3.85	-1.63	3.01	0.12	1.50	30.00	Pass
1	151	5755	-3.45	-1.23	3.01	0.12	1.90	30.00	Pass
	159	5795	-3.72	-1.50	3.01	0.12	1.63	30.00	Pass

Note:

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add  $10 \log (N_{ANT})$  dB.
- Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.94 \text{ dBi} < 6 \text{ dBi}$ , so the limit is not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

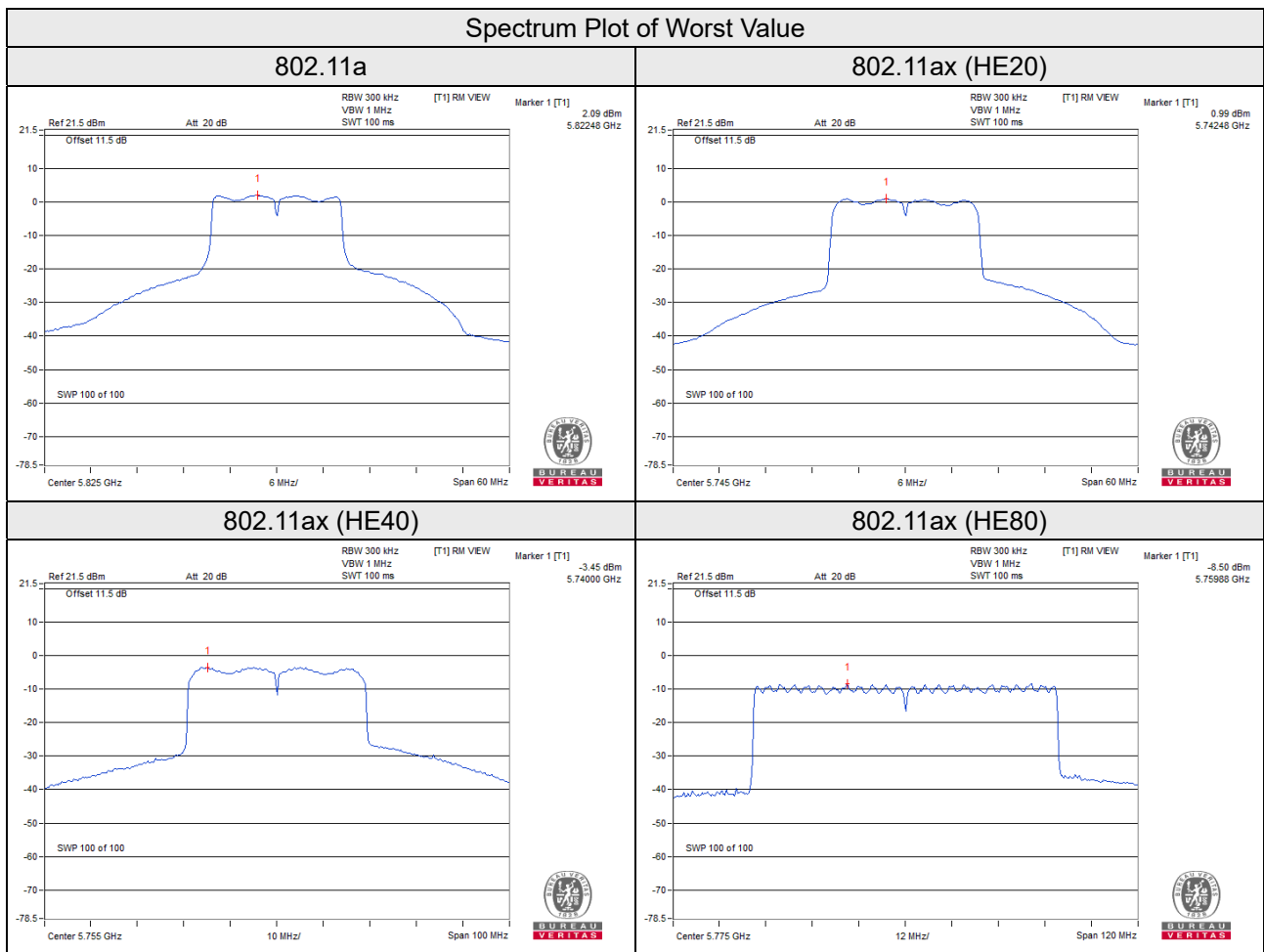


### 802.11ax (HE80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-9.14	-6.92	3.01	0.25	-3.66	30.00	Pass
1	155	5775	-8.50	-6.28	3.01	0.25	-3.02	30.00	Pass

**Note:**

- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N<sub>ANT</sub>) dB.
- Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 4.94 \text{ dBi} < 6 \text{ dBi}$ , so the limit is not reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

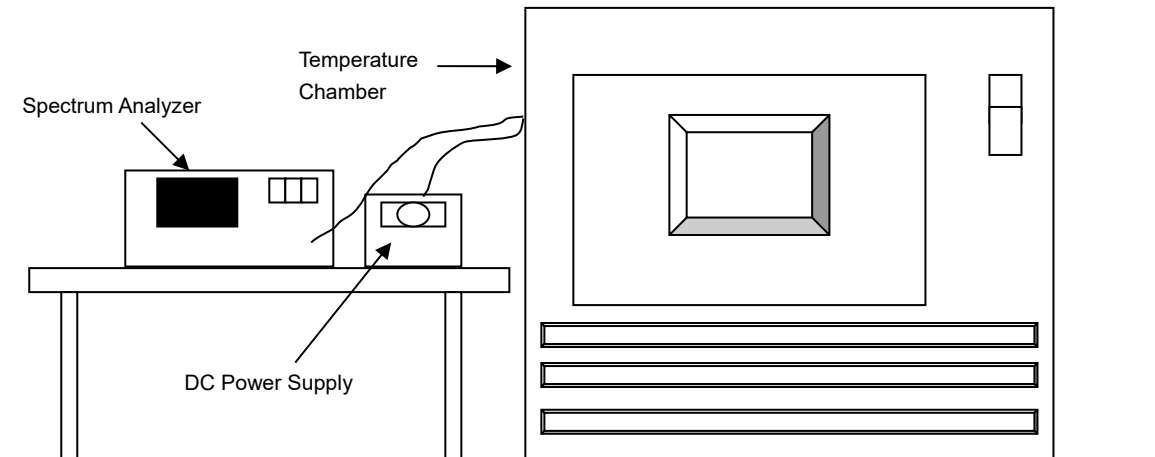


## 4.6 Frequency Stability

### 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	100269	Jun. 07, 2021	Jun. 06, 2022
Standard Temperature And Humidity Chamber TERCHY	MHU-225AU	920842	Jun. 15, 2021	Jun. 14, 2022
Three-phase coupling / decoupling network TESEQ	CDN 3063	4006	Mar. 10, 2021	Mar. 09, 2022
DC Power Supply Topward	6306A	727263	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. Tested date: Mar. 08, 2022

#### 4.6.4 Test Procedure

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

#### 4.6.5 Deviation from Test Standard

No deviation.

#### 4.6.6 EUT Operating Condition

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

#### 4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
55	3.85	5179.9860	Pass	5179.9852	Pass	5179.9851	Pass	5179.9859	Pass
50	3.85	5180.0032	Pass	5179.9993	Pass	5180.0019	Pass	5180.0006	Pass
40	3.85	5180.0039	Pass	5179.9994	Pass	5179.9998	Pass	5180.0027	Pass
30	3.85	5179.9808	Pass	5179.9788	Pass	5179.9789	Pass	5179.9828	Pass
20	3.85	5179.9791	Pass	5179.9757	Pass	5179.9760	Pass	5179.9774	Pass
10	3.85	5179.9847	Pass	5179.9850	Pass	5179.9873	Pass	5179.9859	Pass
0	3.85	5179.9879	Pass	5179.9863	Pass	5179.9854	Pass	5179.9859	Pass
-10	3.85	5180.0269	Pass	5180.0226	Pass	5180.0229	Pass	5180.0258	Pass
-20	3.85	5179.9914	Pass	5179.9948	Pass	5179.9952	Pass	5179.9915	Pass

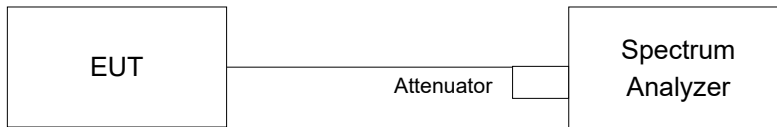
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vdc)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	4.43	5179.9797	Pass	5179.9797	Pass	5179.9823	Pass	5179.9818	Pass
	3.85	5179.9791	Pass	5179.9757	Pass	5179.9760	Pass	5179.9774	Pass
	3.27	5179.9844	Pass	5179.9825	Pass	5179.9861	Pass	5179.9827	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

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

### 4.7.5 Deviation from Test Standard

No deviation.

### 4.7.6 EUT Operating Condition

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

#### 4.7.7 Test Results

##### 802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.39	0.5	Pass
157	5785	16.41	0.5	Pass
165	5825	16.40	0.5	Pass

##### 802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	18.41	18.28	0.5	Pass
157	5785	18.47	18.24	0.5	Pass
165	5825	18.45	18.34	0.5	Pass

##### 802.11ax (HE40)

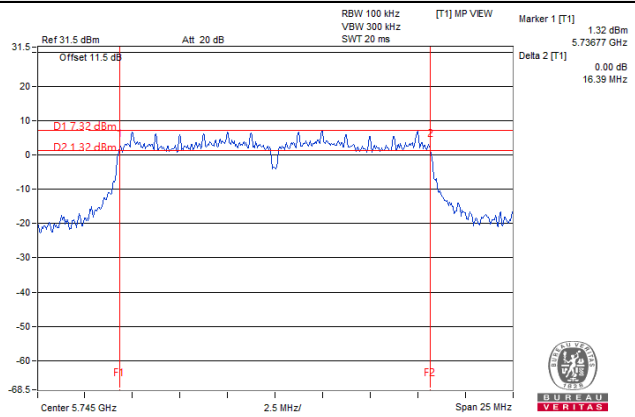
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	37.11	37.08	0.5	Pass
159	5795	36.80	36.90	0.5	Pass

##### 802.11ax (HE80)

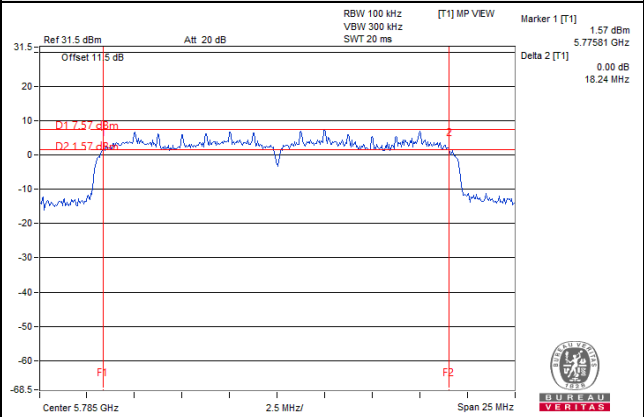
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	78.23	78.30	0.5	Pass

### Spectrum Plot of Worst Value

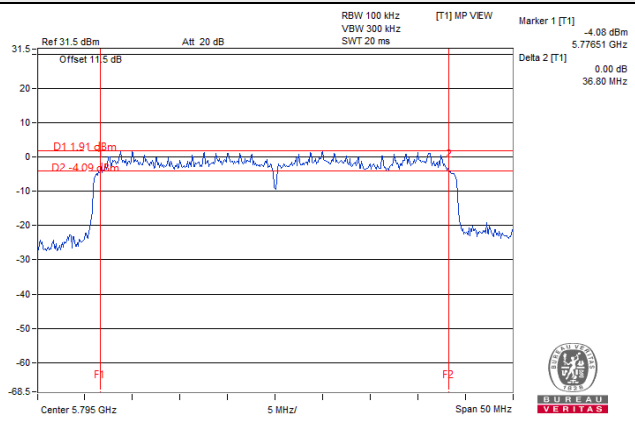
#### 802.11a



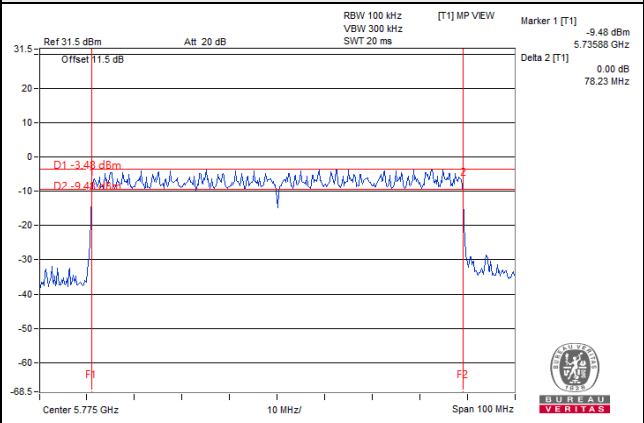
#### 802.11ax (HE20)



#### 802.11ax (HE40)

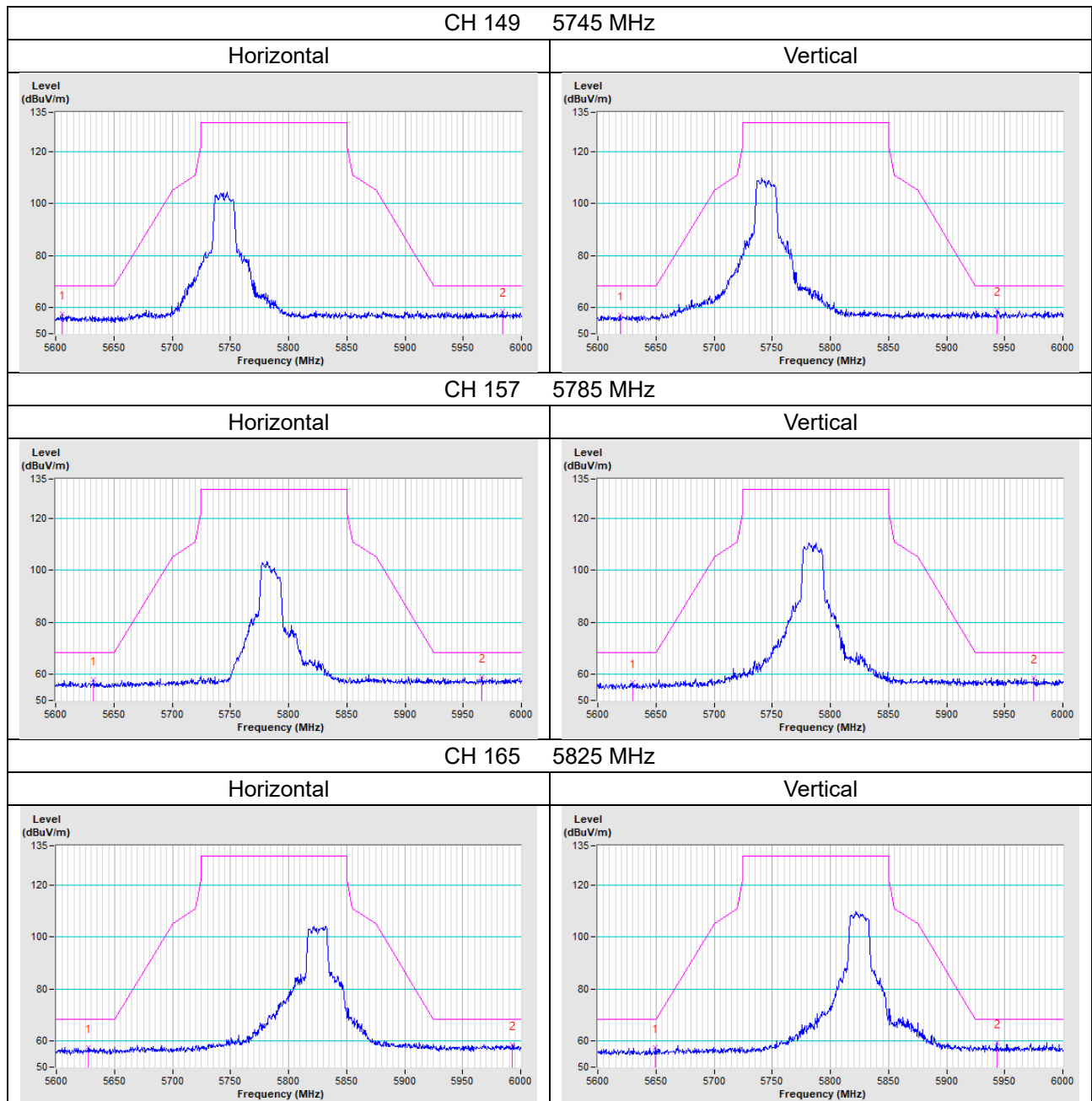


#### 802.11ax (HE80)



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

802.11a

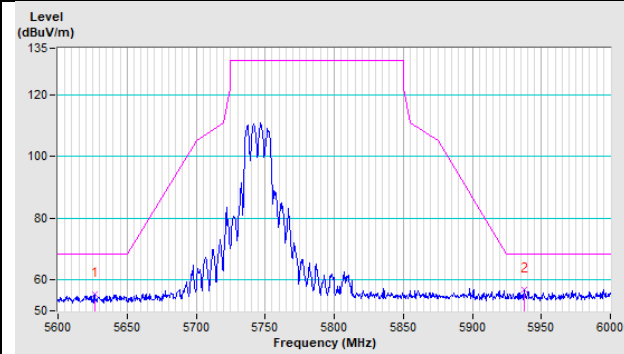




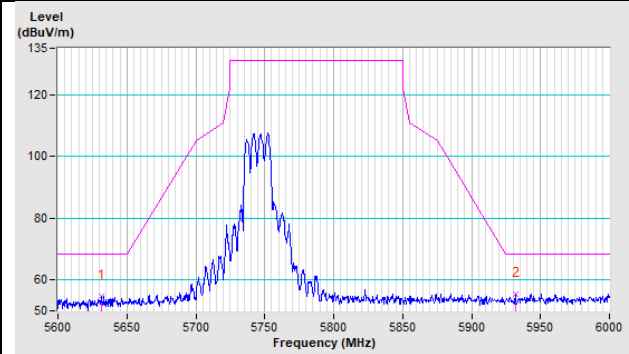
802.11ax (HE20)

CH 149 5745 MHz

Horizontal

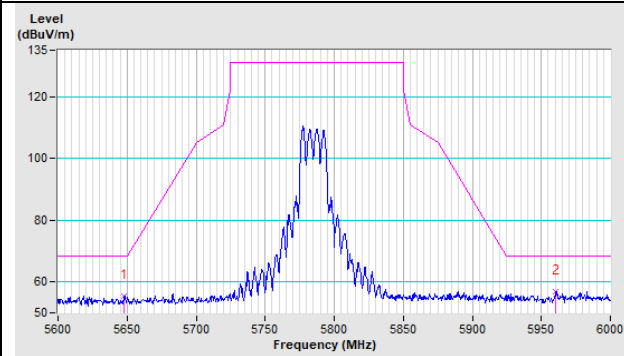


Vertical

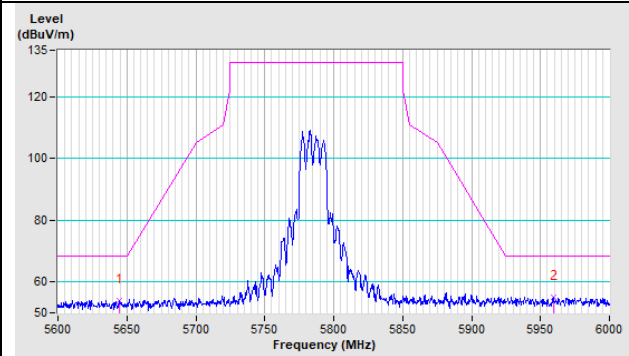


CH 157 5785 MHz

Horizontal

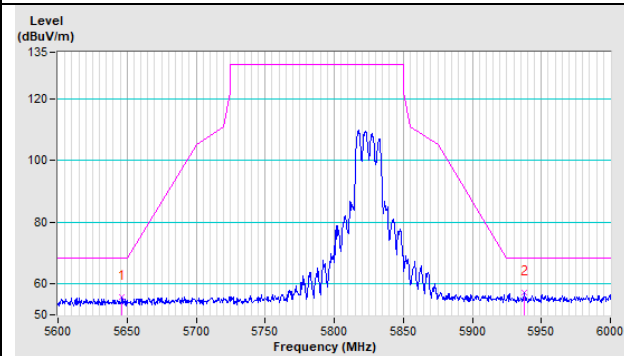


Vertical

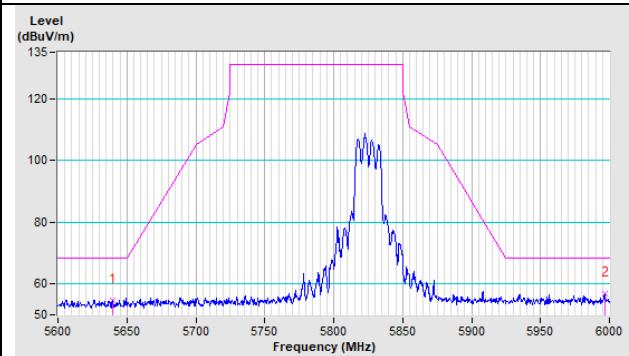


CH 165 5825 MHz

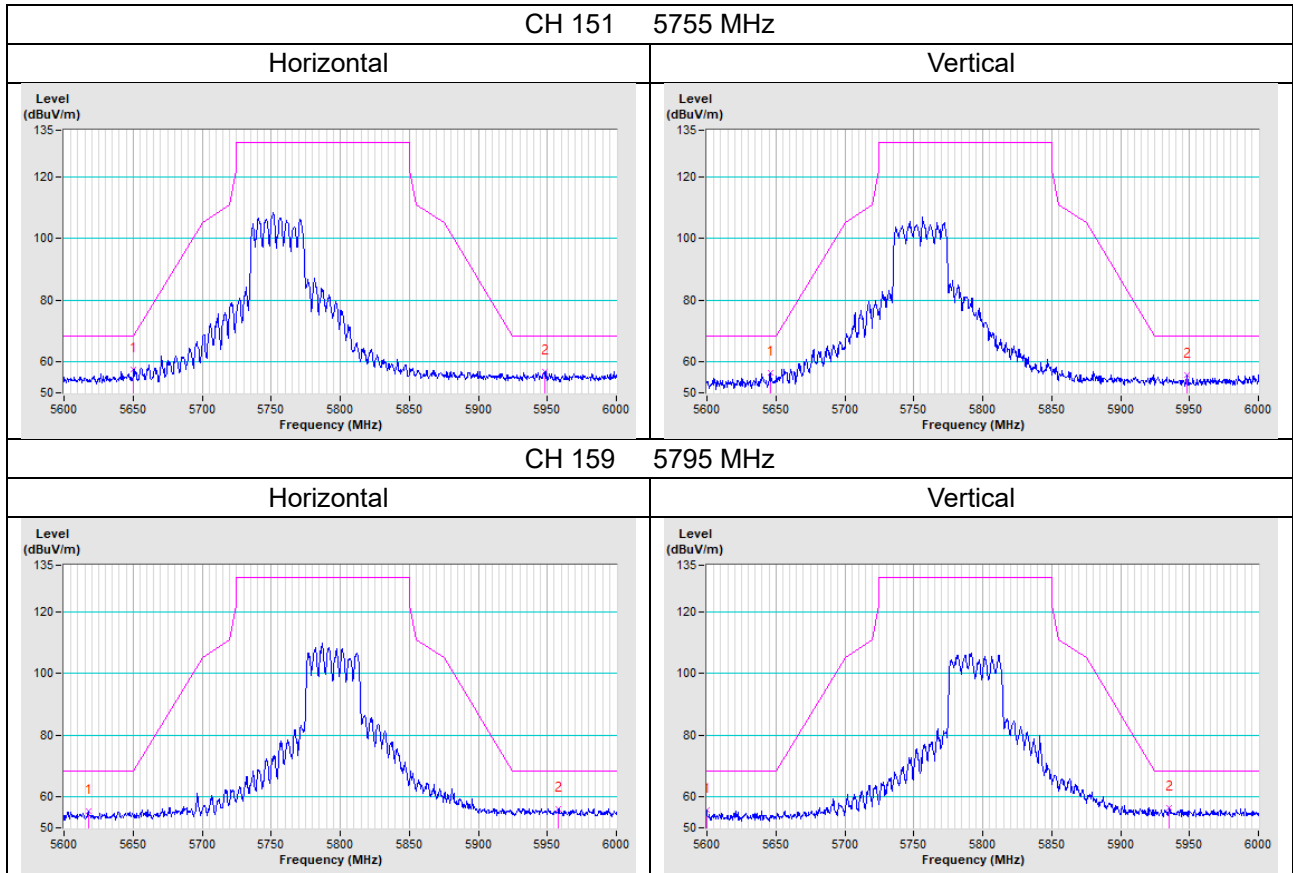
Horizontal



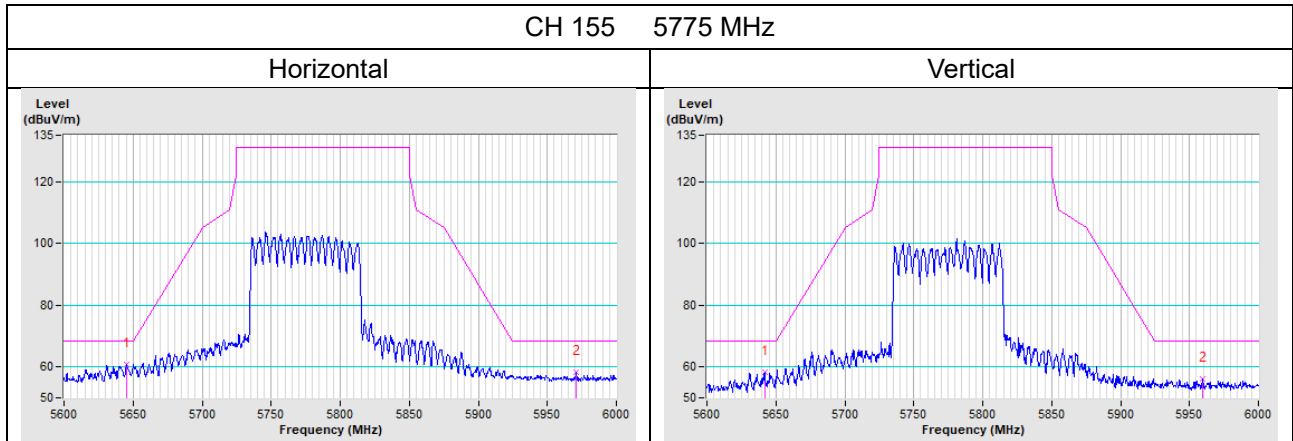
Vertical



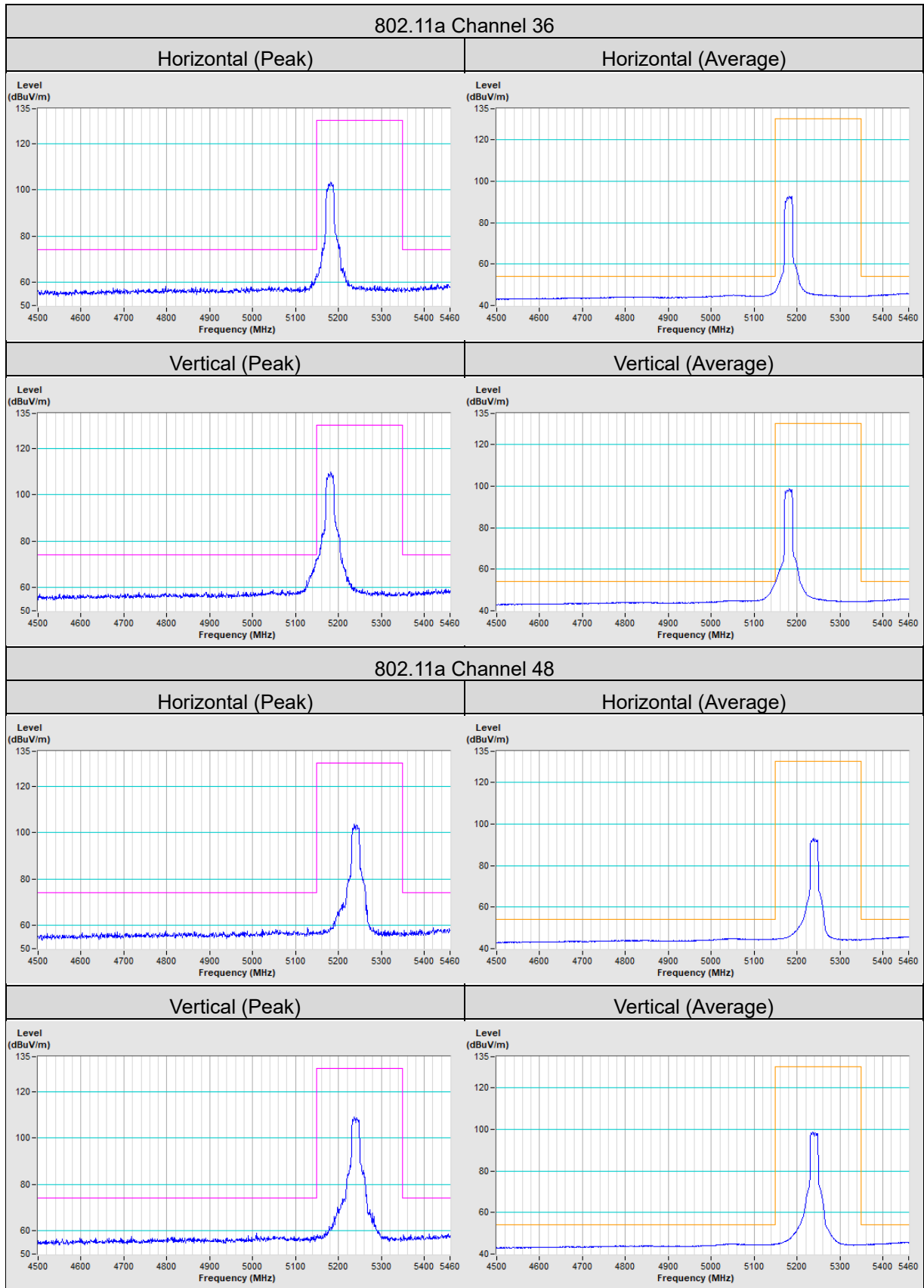
802.11ax (HE40)

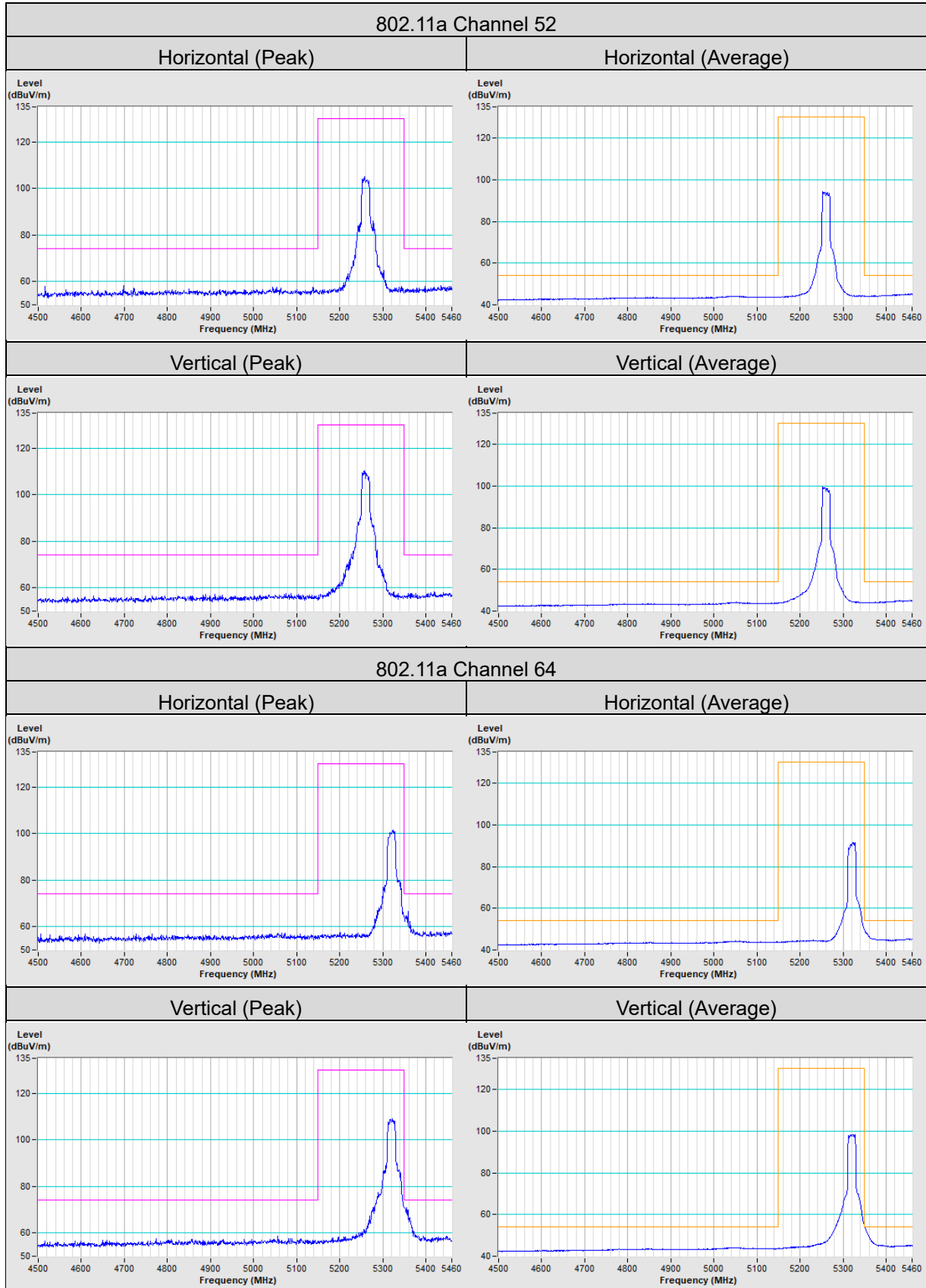


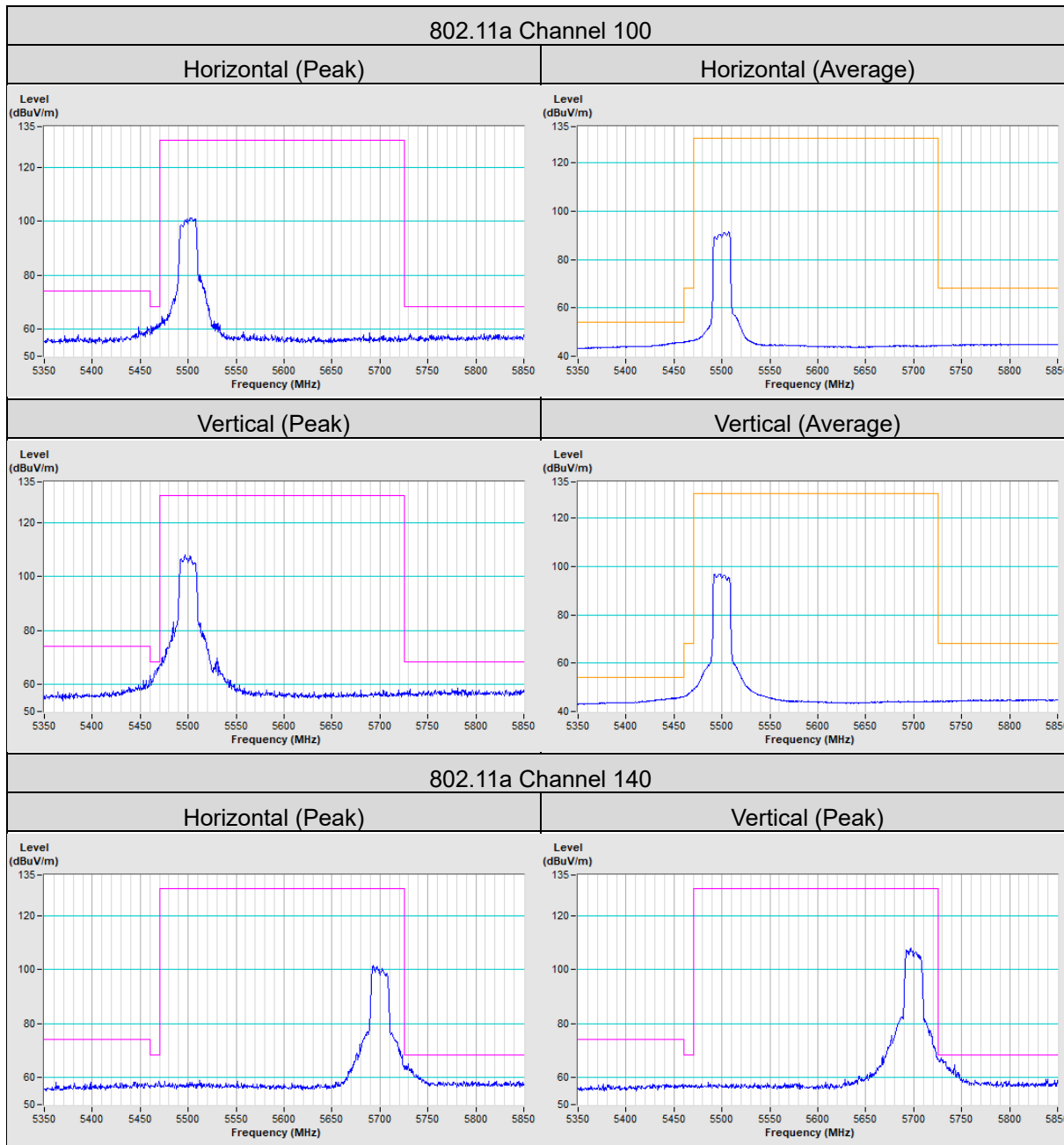
802.11ax (HE80)

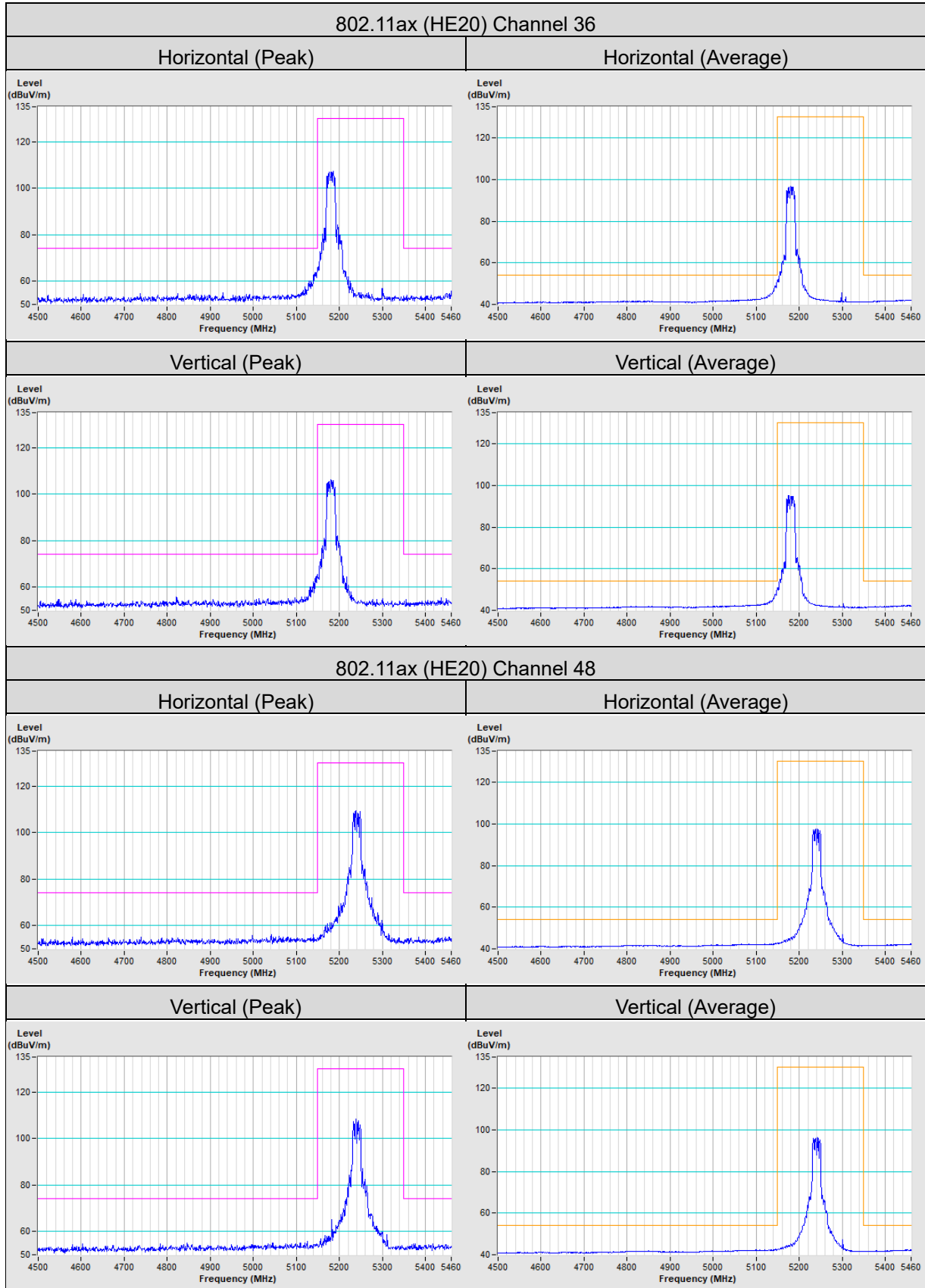


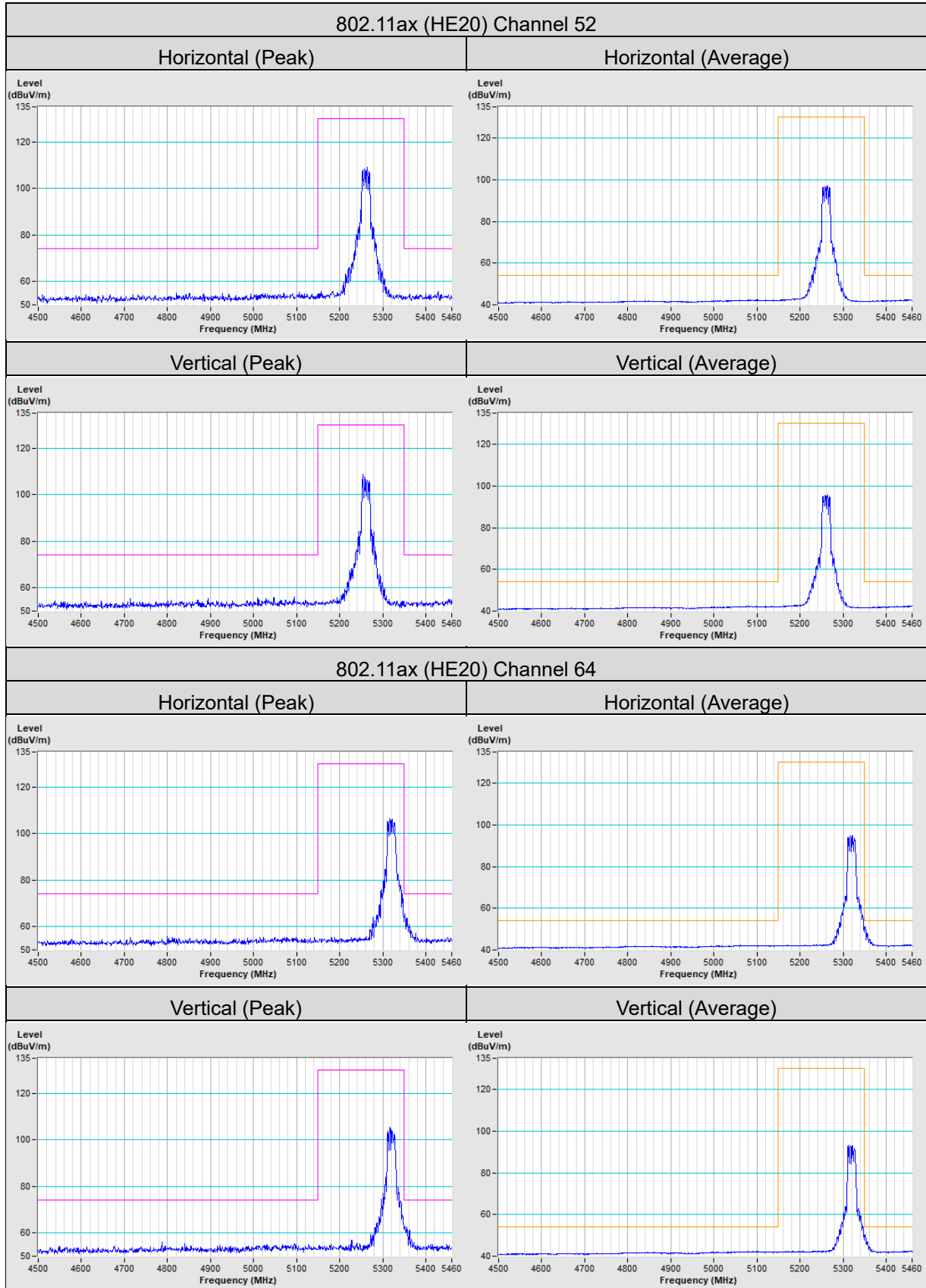
## Annex B- Band Edge Measurement

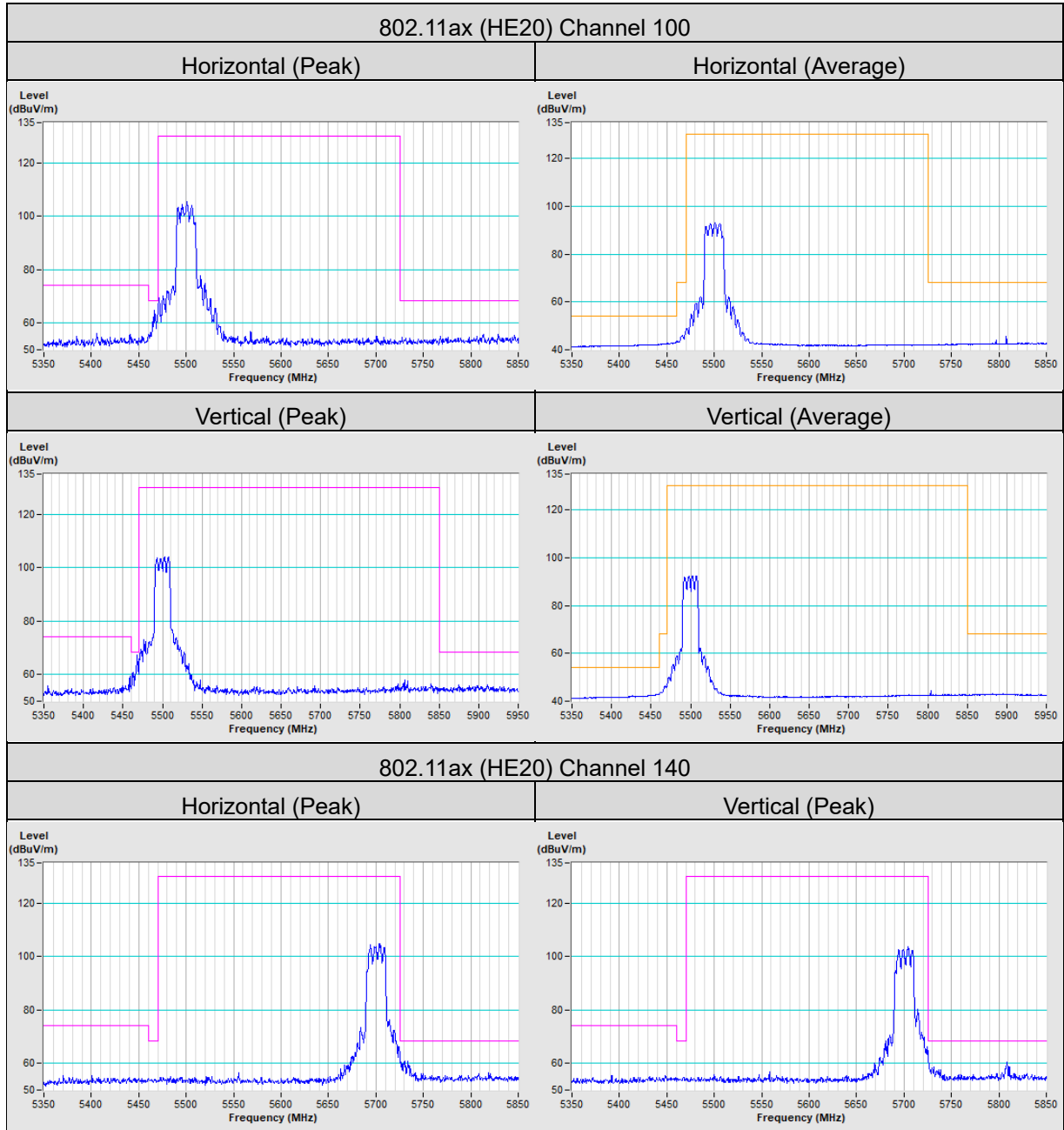








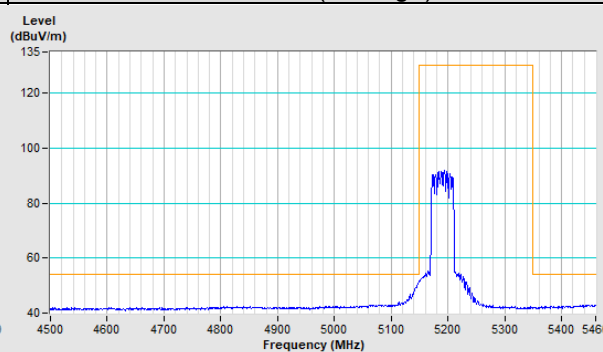
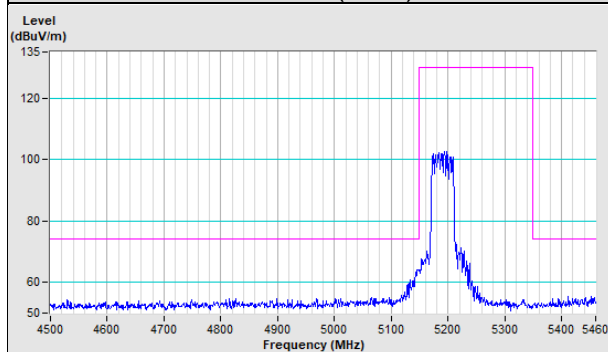




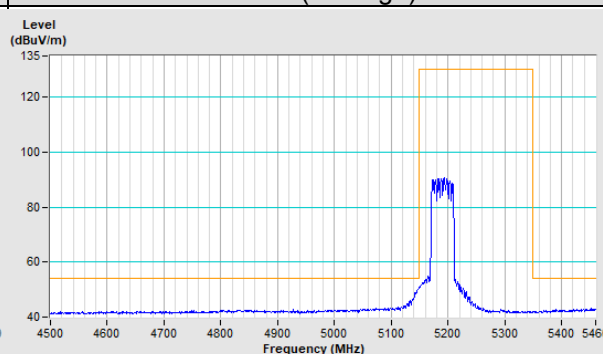
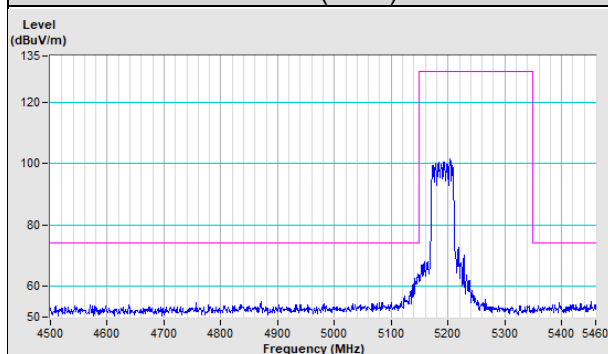


**802.11ax (HE40) Channel 38**

<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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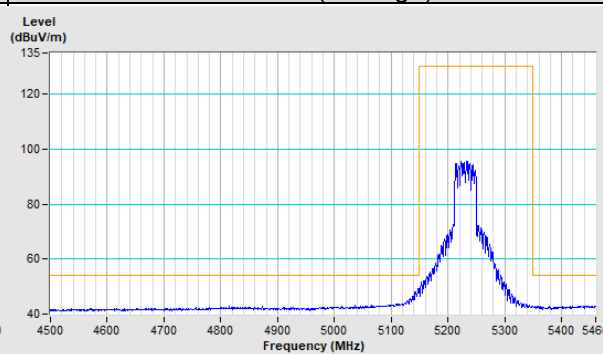
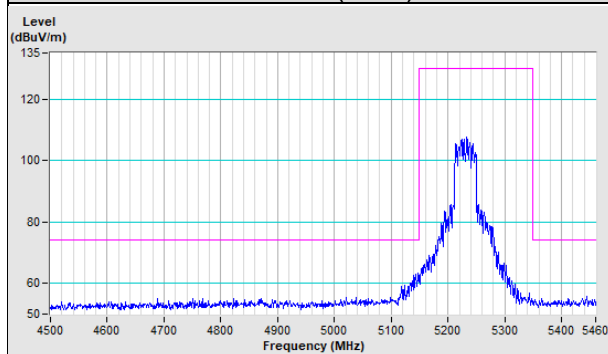


<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
------------------------	---------------------------

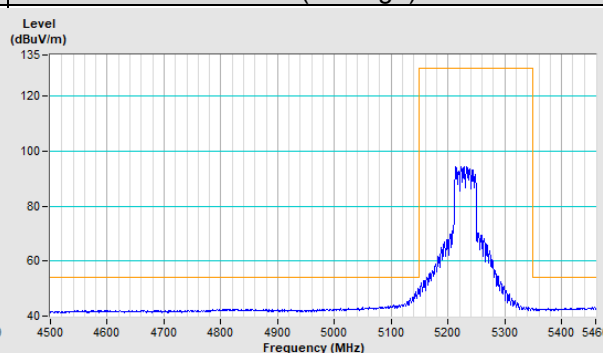
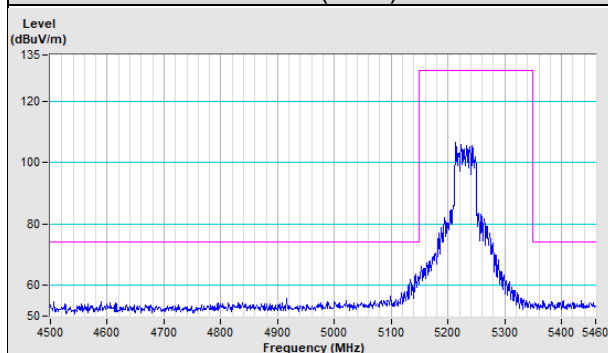


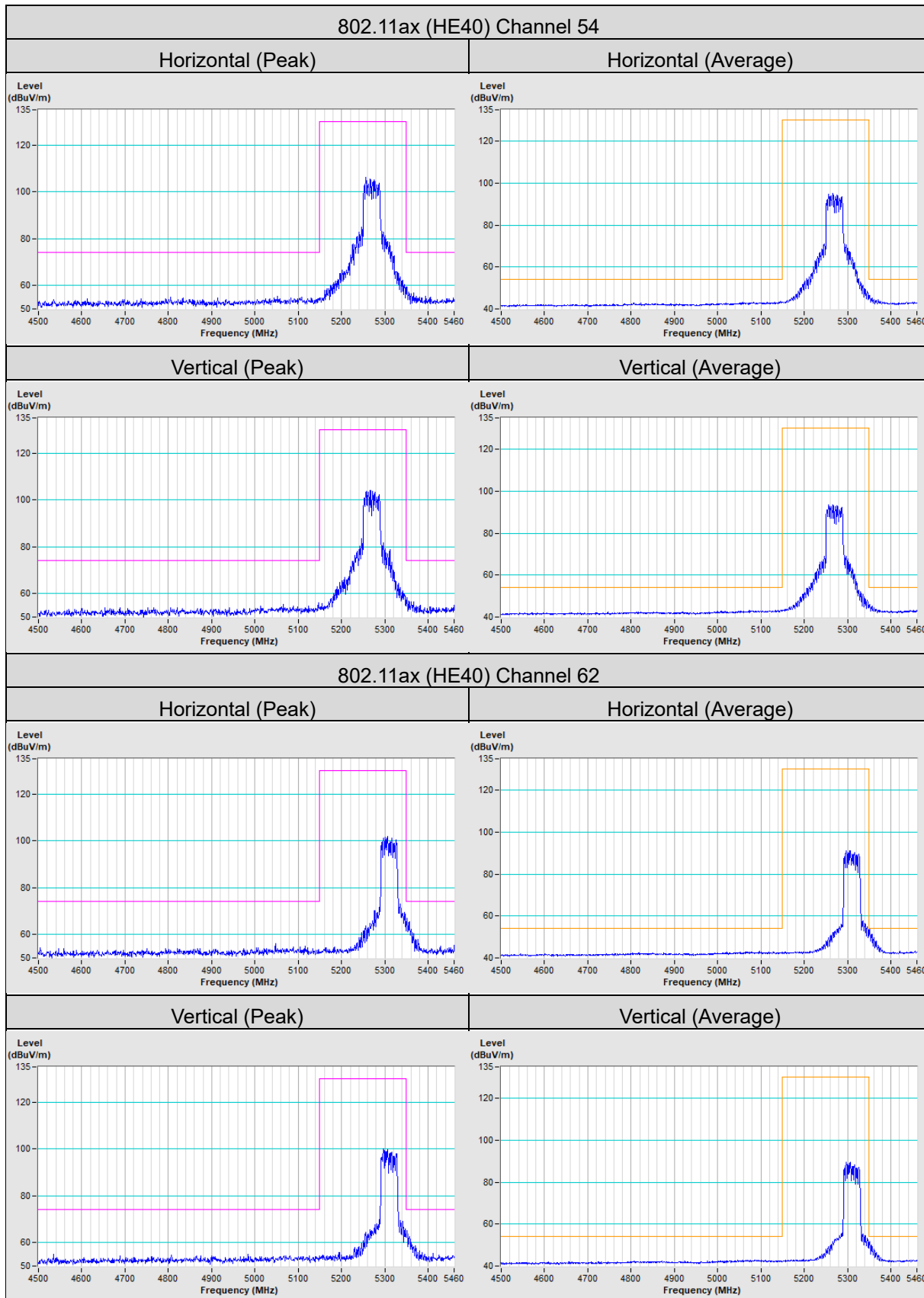
**802.11ax (HE40) Channel 46**

<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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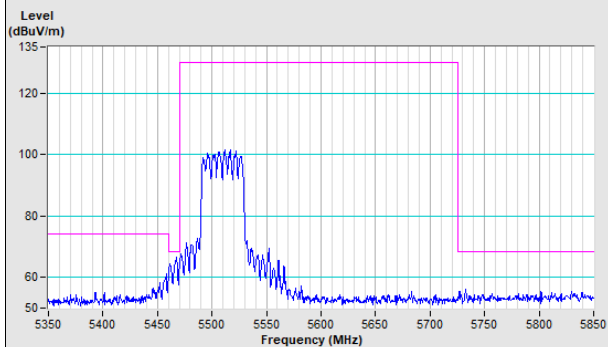
<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
------------------------	---------------------------



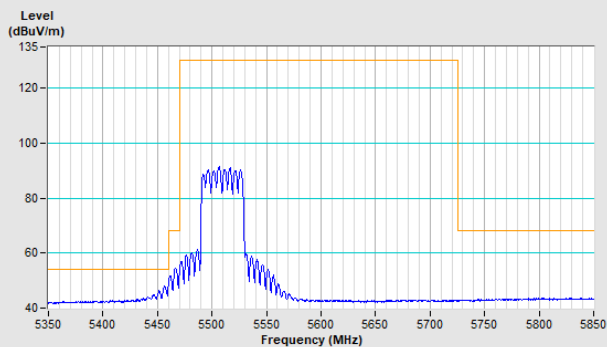


### 802.11ax (HE40) Channel 102

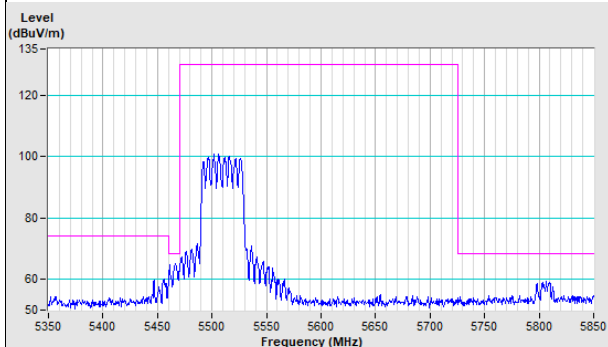
#### Horizontal (Peak)



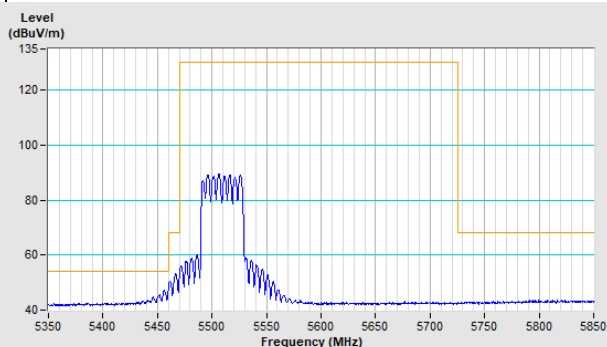
#### Horizontal (Average)



#### Vertical (Peak)

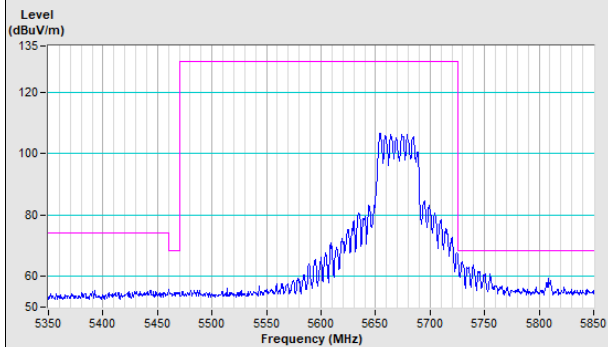


#### Vertical (Average)

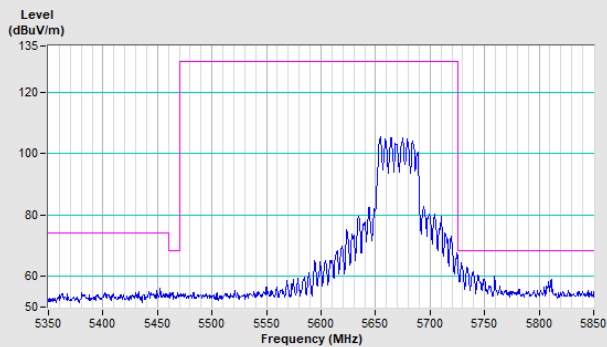


### 802.11ax (HE40) Channel 134

#### Horizontal (Peak)

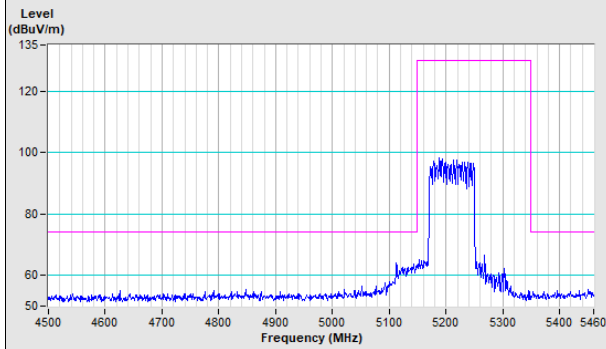


#### Vertical (Peak)

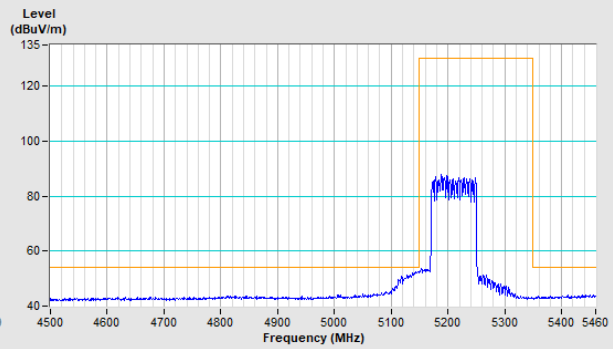


### 802.11ax (HE80) Channel 42

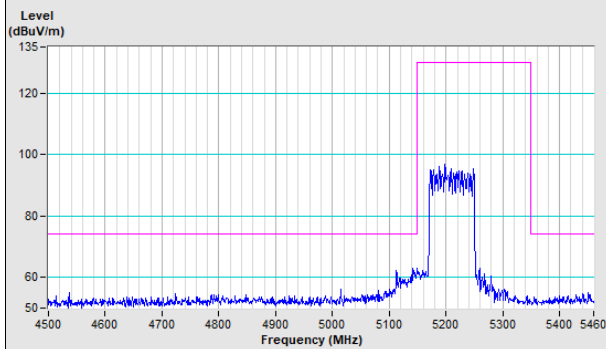
Horizontal (Peak)



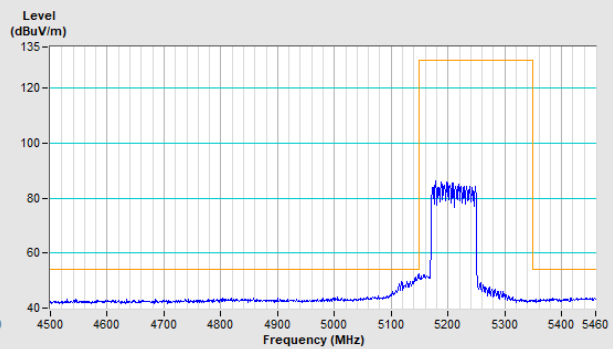
Horizontal (Average)



Vertical (Peak)

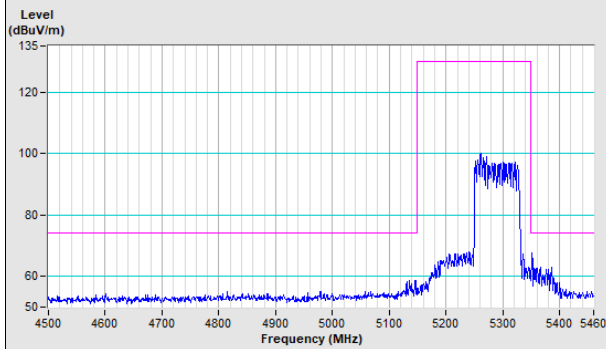


Vertical (Average)

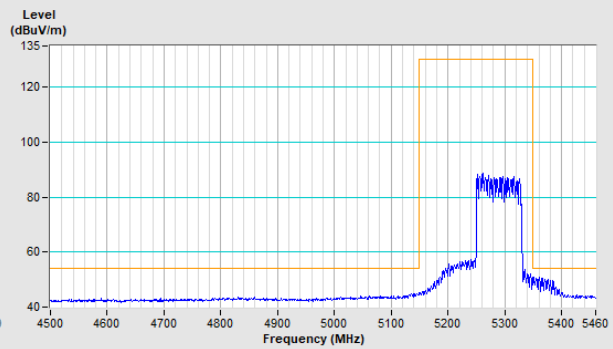


### 802.11ax (HE80) Channel 58

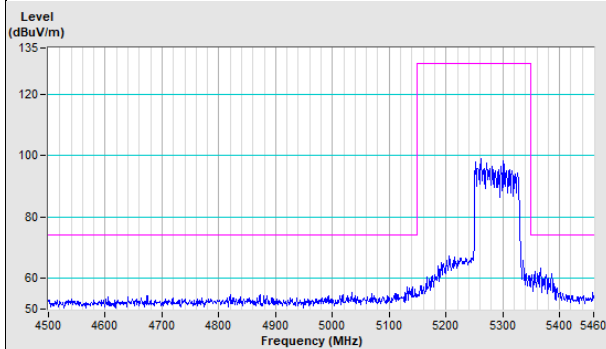
Horizontal (Peak)



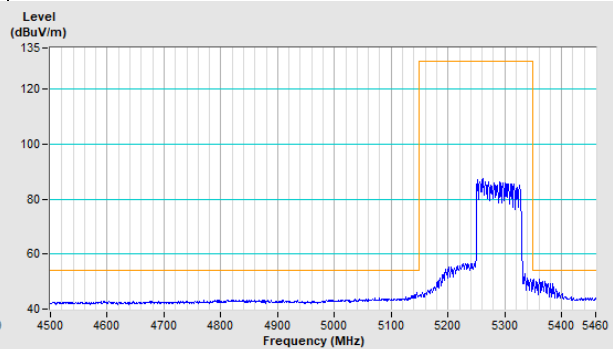
Horizontal (Average)



Vertical (Peak)

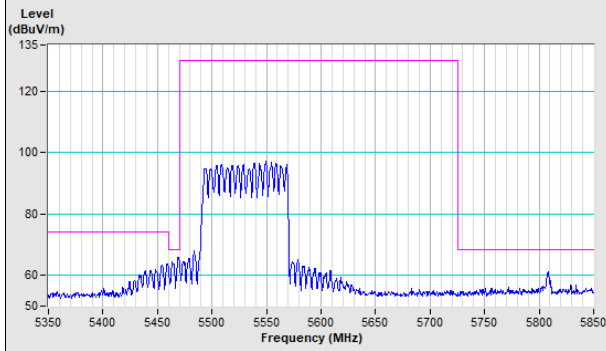


Vertical (Average)

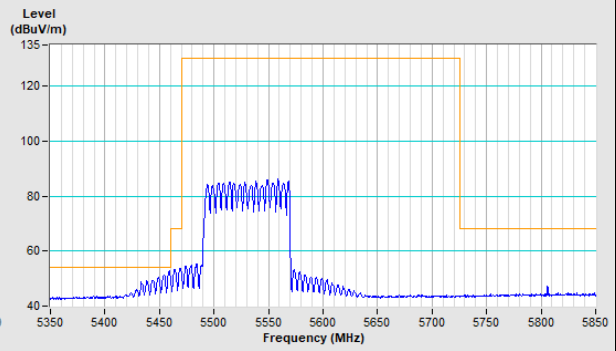


### 802.11ax (HE80) Channel 106

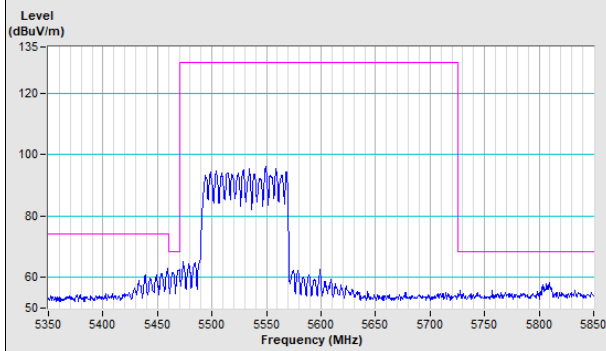
Horizontal (Peak)



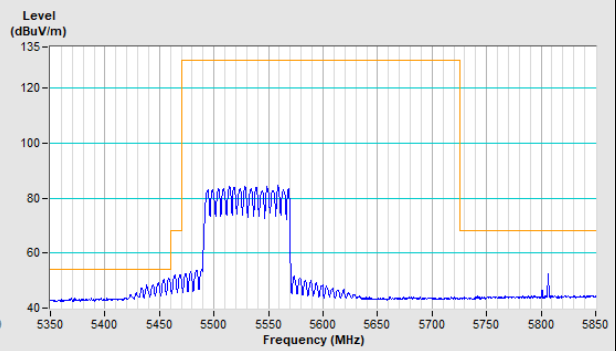
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



## 5 Pictures of Test Arrangements

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

## 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.

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

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