

# TEST REPORT

## CERTIFICATE OF CONFORMITY

**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
47 CFR FCC Part 15, Subpart E (Section 15.407)

**Report No.:** RFBEIH-WTW-P22120764-7

**FCC ID:** P27IP6442B

**Product:** WiFi 6E Router

**Brand:** Charter Spectrum

**Model No.:** SAX2V1R

**Received Date:** 2023/2/20

**Test Date:** 2023/4/18

**Issued Date:** 2023/4/25

**Applicant:** Sercomm Corporation

**Address:** 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**

**Approved by:** Jeremy Lin, **Date:** 2023/4/25  
Jeremy Lin / Project Engineer

This test report consists of 35 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Celine Chou / Senior Specialist



This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

## Table of Contents

<b>Release Control Record</b> .....	<b>3</b>
<b>1 Certificate</b> .....	<b>4</b>
<b>2 Summary of Test Results</b> .....	<b>5</b>
2.1 Measurement Uncertainty .....	5
2.2 Supplementary Information .....	5
<b>3 General Information</b> .....	<b>6</b>
3.1 General Description of EUT .....	6
3.2 Antenna Description of EUT .....	8
3.3 Channel List .....	10
3.4 Test Mode Applicability and Tested Channel Detail .....	15
3.5 Test Program Used and Operation Descriptions .....	16
3.6 Connection Diagram of EUT and Peripheral Devices .....	16
3.7 Configuration of Peripheral Devices and Cable Connections .....	16
<b>4 Test Instruments</b> .....	<b>17</b>
4.1 Unwanted Emissions below 1 GHz .....	17
4.2 Unwanted Emissions above 1 GHz .....	18
<b>5 Limits of Test Items</b> .....	<b>19</b>
5.1 Unwanted Emissions below 1 GHz .....	19
5.2 Unwanted Emissions above 1 GHz .....	19
<b>6 Test Arrangements</b> .....	<b>22</b>
6.1 Unwanted Emissions below 1 GHz .....	22
6.1.1 Test Setup .....	22
6.1.2 Test Procedure .....	23
6.2 Unwanted Emissions above 1 GHz .....	24
6.2.1 Test Setup .....	24
6.2.2 Test Procedure .....	24
<b>7 Test Results of Test Item</b> .....	<b>25</b>
7.1 Unwanted Emissions below 1 GHz .....	25
7.2 Unwanted Emissions above 1 GHz .....	29
<b>8 Pictures of Test Arrangements</b> .....	<b>34</b>
<b>9 Information of the Testing Laboratories</b> .....	<b>35</b>



## Release Control Record

Issue No.	Description	Date Issued
RFBEIH-WTW-P22120764-7	Original release.	2023/4/25

## 1 Certificate

**Product:** WiFi 6E Router

**Brand:** Charter Spectrum

**Test Model:** SAX2V1R

**Sample Status:** Engineering sample

**Applicant:** Sercomm Corporation

**Test Date:** 2023/4/18

**Standard:** 47 CFR FCC Part 15, Subpart C (Section 15.247)  
47 CFR FCC Part 15, Subpart E (Section 15.407)

**Measurement procedure:** 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.

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.205 / 15.209 / 15.247(d) 15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -6.1 dB at 685.45 MHz
15.205 / 15.209 / 15.247(d) 15.407(b) (1/10) 15.407(b) (2/10) 15.407(b) (3/10) 15.407(b) (4(i)/10) 15.407(b)(5) 15.407(b)(6) 15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -1.8 dB at 5640.50 MHz

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

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

Parameter	Specification	Uncertainty (±)
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.02 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	1.01 dB
	18 GHz ~ 40 GHz	1.15 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

### 2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	WiFi 6E Router
Brand	Charter Spectrum
Test Model	SAX2V1R
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from Adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT mode 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	Up to 4803.9 Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz 5.180 GHz ~ 5.250 GHz 5.260 GHz ~ 5.320 GHz 5.500 GHz ~ 5.720 GHz 5.745 GHz ~ 5.825 GHz 5.845 GHz ~ 5.885 GHz 6.115 GHz ~ 6.415 GHz 6.435 GHz ~ 6.525 GHz 6.525 GHz ~ 6.875 GHz 6.875 GHz ~ 7.115 GHz
Number of Channel	2.412 GHz ~ 2.462 GHz: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20):11 802.11n (HT40), VHT40, 802.11ax (HE40):7 5.180 GHz ~ 5.825 GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):25 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):12 802.11ac (VHT80), 802.11ax (HE80):6 802.11ac (VHT160), 802.11ax (HE160):2 5.845 GHz ~ 5.885 GHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):3 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):2 802.11ac (VHT80), 802.11ax (HE80):1 802.11ac (VHT160), 802.11ax (HE160):1 6.115 GHz ~ 7.115 GHz 802.11a, 802.11ax (HE20):51 802.11ax (HE40):25 802.11ax (HE80):12 802.11ax (HE160):6

Output Power	5.180 GHz ~ 5.250 GHz : 710.546 mW (28.52 dBm) 5.260 GHz ~ 5.320 GHz : 207.587 mW (23.17 dBm) 5.500 GHz ~ 5.720 GHz : 204.109 mW (23.1 dBm) 5.745 GHz ~ 5.825 GHz : 810.227 mW (29.09 dBm) 5.845 GHz ~ 5.885 GHz : EIRP: 2123.244 mW (33.27 dBm) 6.115 GHz ~ 6.415 GHz : EIRP: 180.717 mW (22.57 dBm) 6.435 GHz ~ 6.525 GHz : EIRP: 176.198 mW (22.46 dBm) 6.525 GHz ~ 6.865 GHz : EIRP: 179.061 mW (22.53 dBm) 6.875 GHz ~ 7.115 GHz : EIRP: 178.649 mW (22.52 dBm)
--------------	--

Note:

1. The EUT uses following accessories.

Item	Brand	Model	Specification
Adapter 1	Netbit	NBS36J120300VU	AC Input : 100-120V, 50/60Hz, 1.0A DC Output : 12.0V, 3.0A DC Output Cable : non-shielded, 1.8m
Adapter 2	Delta	ADH-36L WB	AC Input : 100-120V, 50/60Hz, 1.0A DC Output : 12.0V, 3.0A DC Output Cable : non-shielded, 1.8m
Adapter 3	Challenger	PS-2.5-12-3WT3	AC Input : 100-120V, 50/60Hz, 1.0A DC Output : 12.0V, 3.0A DC Output Cable : non-shielded, 1.8m
LAN cable	-	-	1.0m, non shielded, without core

\* For unwanted emissions, after pre-tested, Adapter 1 was the worst case final test.

2. There are Bluetooth, Thread and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.

\* WLAN 2.4 GHz & WLAN 5 GHz & WLAN 6 GHz technology can transmit at same time.

\* WLAN 2.4 GHz & WLAN 5.9 GHz & WLAN 6 GHz technology can transmit at same time.

\* WLAN & Bluetooth & Thread technology cannot transmit at same time.

3. The EUT has two groups for test as below:

Group 1	Group 2
2.5G_A0, 2.5G_A2, 5.6G_A2-1, 5.6G_A3-1	2.5G_A1, 2.5G_A3, 5.6G_A2-2, 5.6G_A3-2
6G_A0-1, 6G_A1-1, 5.6G_A2-1, 5.6G_A3-1	6G_A0-2, 6G_A1-2, 5.6G_A2-2, 5.6G_A3-2

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Antenna Description of EUT

1. The antenna information is listed as below.

For 2.4G

Antenna No.	Gain (dBi)	Antenna Type	Connector Type
2.5G_A0	5.8	PCB	ipex(MHF)
2.5G_A1	3.7		
2.5G_A2	4.8		
2.5G_A3	5.0		

For 5G

Antenna No.	Gain (dBi)	Antenna Type	Connector Type
2.5G_A0	6.7	PCB	ipex(MHF)
2.5G_A1	6		
2.5G_A2	5.4		
2.5G_A3	5.3		
5.6G_A2-1	5.1		
5.6G_A2-2	4.9		
5.6G_A3-1	5.5		
5.6G_A3-2	4.3		

For 5.9G

Antenna No.	Gain (dBi)	Antenna Type	Connector Type
2.5G_A0	6	PCB	ipex(MHF)
2.5G_A1	4.6		
2.5G_A2	5.1		
2.5G_A3	5.9		
5.6G_A2-1	5.0		
5.6G_A2-2	4.0		
5.6G_A3-1	5.2		
5.6G_A3-2	4.2		

For 6G

Antenna No.	Gain (dBi)	Antenna Type	Connector Type
5.6G_A2-1	4.7	PCB	ipex(MHF)
5.6G_A2-2	5.3		
5.6G_A3-1	5.5		
5.6G_A3-2	4		
6G_A0-1	6.3		
6G_A0-2	4.7		
6G_A1-1	5.9		
6G_A1-2	6.4		

\* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.



2. The EUT incorporates a MIMO function:

For 2.4G

Modulation Mode	CDD Mode	Beamforming Mode	Tx & Rx Configuration	
802.11b	Support	Not Support	4TX	4RX
802.11g	Support	Not Support	4TX	4RX
802.11n (HT20)	Support	Support	4TX	4RX
802.11n (HT40)	Support	Support	4TX	4RX
VHT20	Support	Support	4TX	4RX
VHT40	Support	Support	4TX	4RX
802.11ax (HE20)	Support	Support	4TX	4RX
802.11ax (HE40)	Support	Support	4TX	4RX

Note: For 802.11ax, the EUT not support Partial RU.

For 5G

Modulation Mode	CDD Mode	Beamforming Mode	Tx & Rx Configuration	
802.11a	Support	Not Support	4TX	4RX
802.11n (HT20)	Support	Support	4TX	4RX
802.11n (HT40)	Support	Support	4TX	4RX
802.11ac (VHT20)	Support	Support	4TX	4RX
802.11ac (VHT40)	Support	Support	4TX	4RX
802.11ac (VHT80)	Support	Support	4TX	4RX
802.11ac (VHT160)	Support	Support	4TX	4RX
802.11ax (HE20)	Support	Support	4TX	4RX
802.11ax (HE40)	Support	Support	4TX	4RX
802.11ax (HE80)	Support	Support	4TX	4RX
802.11ax (HE160)	Support	Support	4TX	4RX

Note: For 802.11ax, the EUT not support Partial RU.

For 6G

Modulation Mode	CDD Mode	Beamforming Mode	Tx & Rx Configuration	
802.11a	Support	Not Support	4TX	4RX
802.11ax (HE20)	Support	Not Support	4TX	4RX
802.11ax (HE40)	Support	Not Support	4TX	4RX
802.11ax (HE80)	Support	Not Support	4TX	4RX
802.11ax (HE160)	Support	Not Support	4TX	4RX

Note: For 802.11ax, the EUT not support Partial RU.

### 3.3 Channel List

#### FOR 2412 ~ 2462 MHz

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

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

Channel	Frequency	Channel	Frequency
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

### FOR 5180 ~ 5320 MHz

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

Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz

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

Channel	Frequency
50	5250 MHz

### FOR 5500 ~ 5720 MHz

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

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

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

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

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

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

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

Channel	Frequency
114	5570 MHz

### FOR 5745 ~ 5825 MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

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

Channel	Frequency
155	5775 MHz

### FOR 5845 ~ 5885 MHz

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

Channel	Frequency	Channel	Frequency	Channel	Frequency
*169	5845 MHz	173	5865 MHz	177	5885 MHz

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

Channel	Frequency	Channel	Frequency
*167	5835 MHz	175	5875 MHz

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

Channel	Frequency
*171	5855 MHz

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

Channel	Frequency
*163	5815 MHz

Note: \* U-NII-3 & -4 span channels.

### FOR 6155 ~ 6415 MHz:

16 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
33	6115 MHz	37	6135 MHz	41	6155 MHz	45	6175 MHz
49	6195 MHz	53	6215 MHz	57	6235 MHz	61	6255 MHz
65	6275 MHz	69	6295 MHz	73	6315 MHz	77	6335 MHz
81	6355 MHz	85	6375 MHz	89	6395 MHz	93	6415 MHz

8 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
35	6125 MHz	43	6165 MHz	51	6205 MHz	59	6245 MHz
67	6285 MHz	75	6325 MHz	83	6365 MHz	91	6405 MHz

4 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
39	6145 MHz	55	6225 MHz	71	6305 MHz	87	6385 MHz

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
47	6185 MHz	79	6345 MHz

### FOR 6435 ~ 6525 MHz:

5 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
97	6435 MHz	101	6455 MHz	105	6475 MHz	109	6495 MHz
113	6515 MHz						

3 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency
99	6445 MHz	107	6485 MHz	*115	6525 MHz

1 channel is provided for 802.11ax (HE80):

Channel	Frequency
103	6465 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
*111	6505 MHz

### FOR 6525 ~ 6865 MHz:

17 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
117	6535 MHz	121	6555 MHz	125	6575 MHz	129	6595 MHz
133	6615 MHz	137	6635 MHz	141	6655 MHz	145	6675 MHz
149	6695 MHz	153	6715 MHz	157	6735 MHz	161	6755 MHz
165	6775 MHz	169	6795 MHz	173	6815 MHz	177	6835 MHz
181	6855 MHz						

8 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
123	6565 MHz	131	6605 MHz	139	6645 MHz	147	6685 MHz
155	6725 MHz	163	6765 MHz	171	6805 MHz	179	6845 MHz

5 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
*119	6545 MHz	135	6625 MHz	151	6705 MHz	167	6785 MHz
*183	6865 MHz						

2 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency
143	6665 MHz	175	*6825 MHz

### FOR 6875 ~ 7115 MHz:

13 channels are provided for 802.11a, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
185	6875 MHz	189	6895 MHz	193	6915 MHz	197	6935 MHz
201	6955 MHz	205	6975 MHz	209	6995 MHz	213	7015 MHz
217	7035 MHz	221	7055 MHz	225	7075 MHz	229	7095 MHz
233	7115 MHz						

6 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
187	6885 MHz	195	6925 MHz	203	6965 MHz	211	7005 MHz
219	7045 MHz	227	7085 MHz				

2 channels are provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
199	6945 MHz	215	7025 MHz

1 channel is provided for 802.11ax (HE160):

Channel	Frequency
207	6985 MHz

Note: \* mean these are straddle channels.

### 3.4 Test Mode Applicability and Tested Channel Detail

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

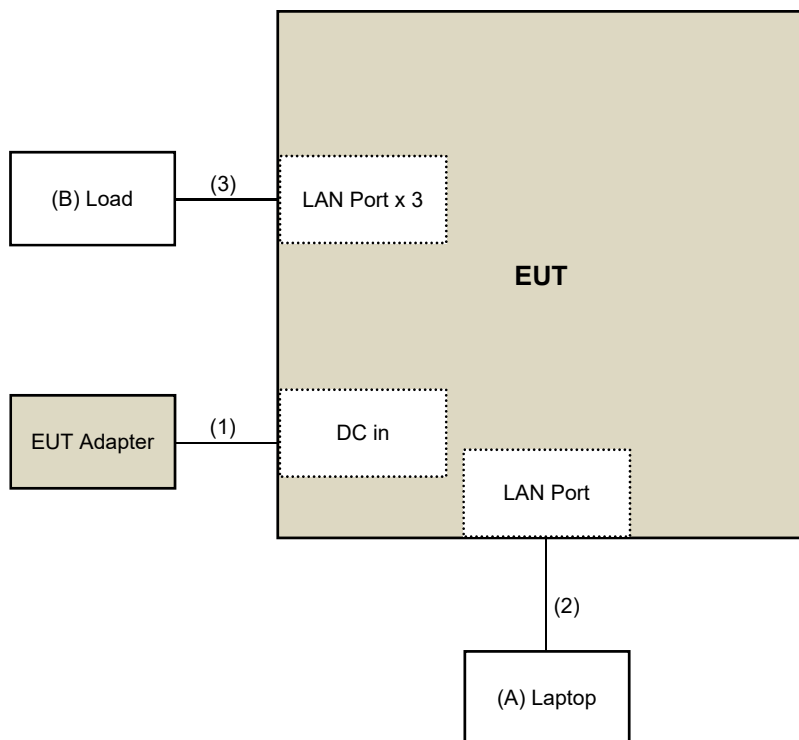
Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
Unwanted Emissions below 1 GHz	A	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	CDD	6 + 159 + 47	BPSK	6Mb/s + MCS0
	A	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	CDD	6 + 171 + 47	BPSK	6Mb/s + MCS0
Unwanted Emissions above 1 GHz	A	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	CDD	6 + 159 + 47	BPSK	6Mb/s + MCS0
	A	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	CDD	6 + 171 + 47	BPSK	6Mb/s + MCS0
EUT Configure Mode:	A	EUT + Antenna Group 1				

Note: The EUT is designed to be positioned on **Z-Plane** only.

### 3.5 Test Program Used and Operation Descriptions

Controlling software (accessMTool\_3\_3\_0\_1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

### 3.6 Connection Diagram of EUT and Peripheral Devices



### 3.7 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	80WG	YD01YRC9	N/A	Provided by Lab
B	Load	N/A	N/A	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC cable	1	1.8	N	0	Supplied by applicant
2	LAN Cable	1	1.0	N	0	Accessory of EUT
3	LAN Cable	3	1.5	N	0	Provided by Lab



## 4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.1 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	UNAT_5+	PAD-CH6-01	N/A	N/A
Antenna Tower Controller Max-Full	MF-7802	N/A	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB9168	9168-616	2022/10/26	2023/10/25
Loop Antenna EMCI	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
Preamplifier Agilent	310N	187226	2022/6/14	2023/6/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable ETS-Lindgren	EMC104-SM-SM-10000	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-4	2022/6/14	2023/6/13
	RFC-SMS-100-SMS-24-IN	Cable-CH1-02(RFC-SMS-100-SMS-24)	2022/6/14	2023/6/13
Software BV ADT	ADT_Radiated_V7.6.15.9.5	N/A	N/A	N/A
Test Receiver Agilent	N9038A	MY52260177	2022/9/19	2023/9/18
Turn Table Max-Full	TT-1510	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802	N/A	N/A	N/A

Notes:

1. The test was performed in XD - 966 chamber 6.
2. Tested Date: 2023/4/18

## 4.2 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	UNAT_5+	PAD-CH6-01	N/A	N/A
Antenna Tower Controller Max-Full	MF-7802	N/A	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	8	N/A	N/A
Horn Antenna ETS-Lindgren	3117	00143293	2022/11/13	2023/11/12
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170241	2022/10/20	2023/10/19
Pre-Amplifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
Preamplifier Agilent	83017A	MY39501373	2022/6/14	2023/6/13
RF Coaxial Cable ETS-Lindgren	EMC104-SM-SM-10000	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-4)	2022/6/14	2023/6/13
	RFC-SMS-100-SMS-24-IN	Cable-CH1-02(RFC-SMS-100-SMS-24)	2022/6/14	2023/6/13
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2023/1/7	2024/1/6
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2023/1/7	2024/1/6
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Test Receiver Agilent	N9038A	MY52260177	2022/9/19	2023/9/18
Turn Table Max-Full	TT-1510	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802	N/A	N/A	N/A

### Notes:

1. The test was performed in XD - 966 chamber 6.
2. Tested Date: 2023/4/18

## 5 Limits of Test Items

### 5.1 Unwanted Emissions below 1 GHz

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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

### 5.2 Unwanted Emissions above 1 GHz

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)
Above 960	500	3

Notes:

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

For 5.15-5.850 GHz band limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)

For transmitters operating in the 5.15-5.25 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.25-5.35 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.47-5.725 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(4)(i)	PK: -27 (dBm/MHz) <sup>*1</sup>	PK: 68.2 (dBµV/m) <sup>*1</sup>
	PK: 10 (dBm/MHz) <sup>*2</sup>	PK: 105.2 (dBµV/m) <sup>*2</sup>
	PK: 15.6 (dBm/MHz) <sup>*3</sup>	PK: 110.8 (dBµV/m) <sup>*3</sup>
	PK: 27 (dBm/MHz) <sup>*4</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:

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

For transmitters operating in the 5.850-5.895 GHz band:

- (i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz.
- (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.
- (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

**Note:**

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

For 5.925-7.125 GHz band limits of unwanted emission out of the restricted bands

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3 m
5925 MHz > F > 7125 MHz	Peak: -7 (dBm/MHz)	88.2 (dBuV/m)
	Average: -27 (dBm/MHz)	68.2 (dBuV/m)

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

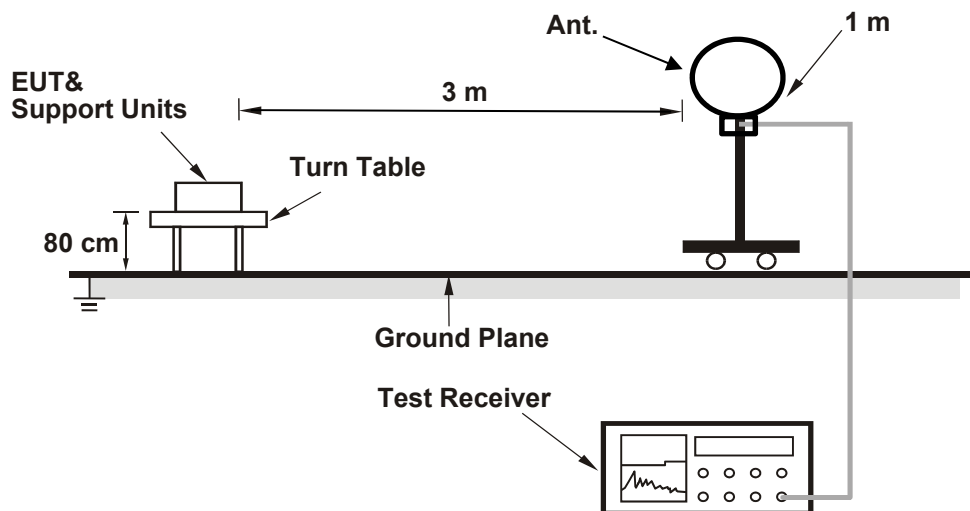
$$E = \frac{1000000 \sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

## 6 Test Arrangements

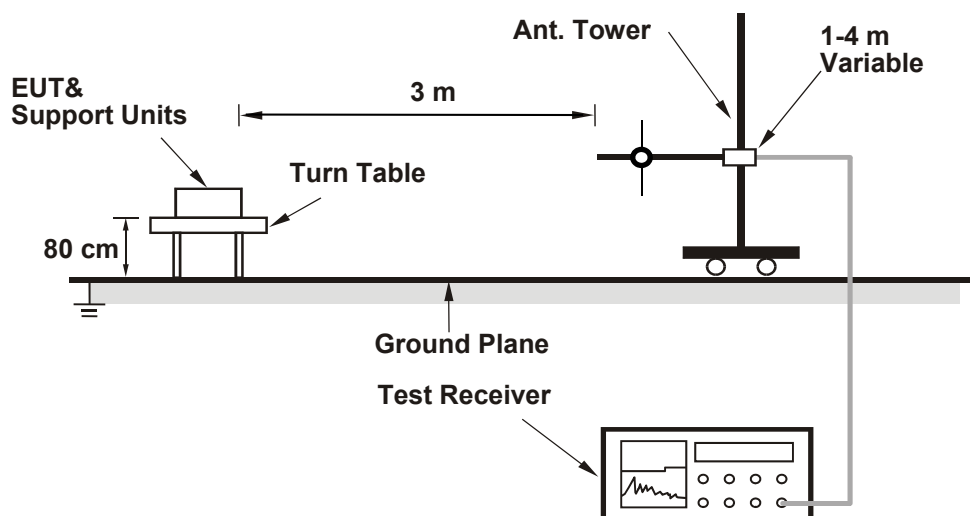
### 6.1 Unwanted Emissions below 1 GHz

#### 6.1.1 Test Setup

##### For Radiated emission below 30 MHz



##### For Radiated emission above 30 MHz



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

## 6.1.2 Test Procedure

### For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

#### Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

### For Radiated emission above 30 MHz

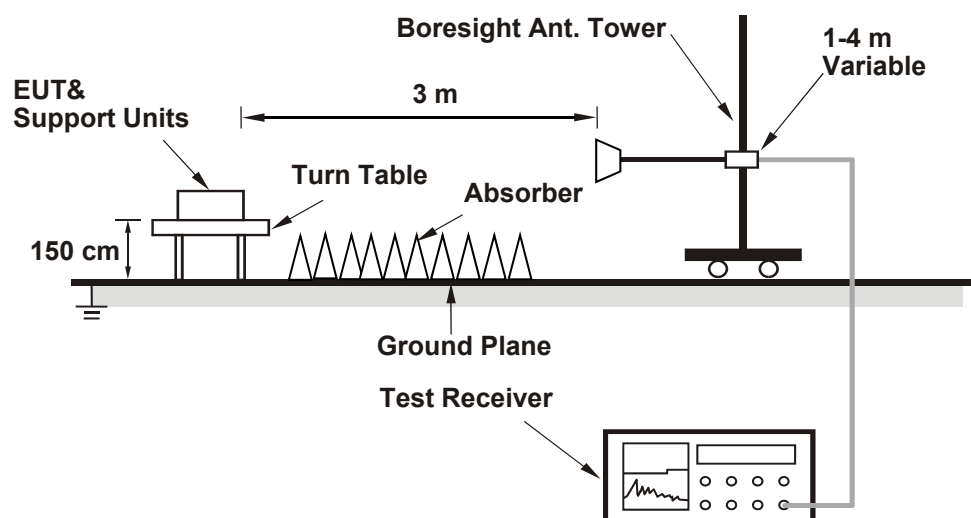
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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.

#### Notes:

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

## 6.2 Unwanted Emissions above 1 GHz

### 6.2.1 Test Setup



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

### 6.2.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to peak and average detects 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.

#### Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or 10 Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.



## 7 Test Results of Test Item

### 7.1 Unwanted Emissions below 1 GHz

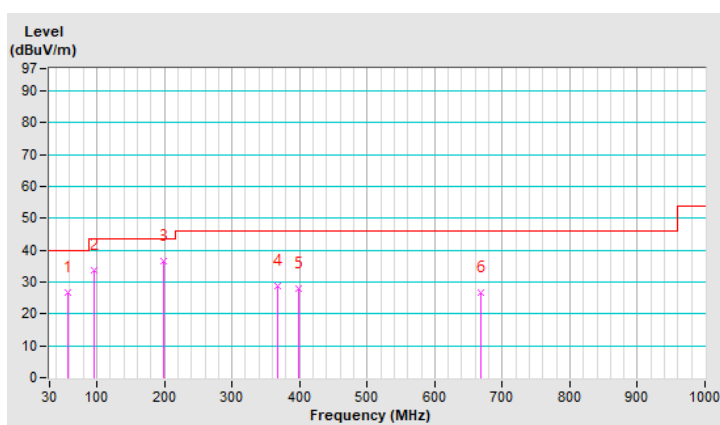
<b>RF Mode</b>	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 159 : 5795 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

#### 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	56.75	26.6 QP	40.0	-13.4	1.95 H	224	44.7	-18.1
2	96.68	33.6 QP	43.5	-9.9	1.16 H	256	56.6	-23.0
3	198.75	36.6 QP	43.5	-6.9	1.65 H	304	57.6	-21.0
4	366.65	28.7 QP	46.0	-17.3	1.95 H	226	44.3	-15.6
5	398.62	27.9 QP	46.0	-18.1	1.88 H	215	42.6	-14.7
6	668.65	26.9 QP	46.0	-19.1	1.75 H	215	36.6	-9.7

#### Remarks:

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

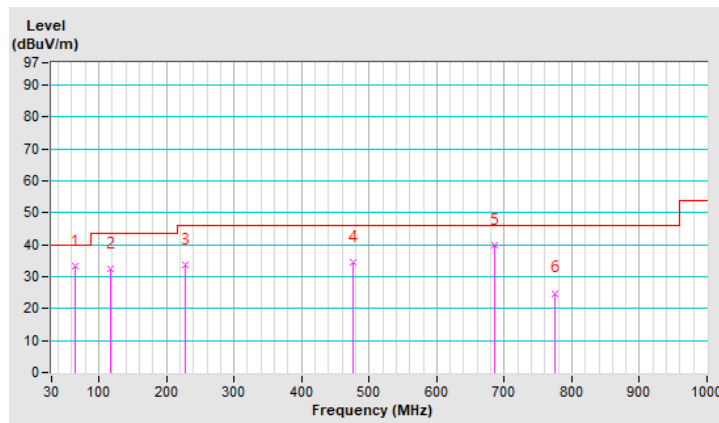


<b>RF Mode</b>	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 159 : 5795 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	65.85	33.1 QP	40.0	-6.9	1.65 V	254	52.3	-19.2
2	116.95	32.5 QP	43.5	-11.0	1.75 V	236	52.5	-20.0
3	228.65	33.8 QP	46.0	-12.2	1.75 V	265	54.2	-20.4
4	475.65	34.6 QP	46.0	-11.4	1.84 V	301	47.6	-13.0
<b>5</b>	<b>685.45</b>	<b>39.9 QP</b>	<b>46.0</b>	<b>-6.1</b>	<b>1.73 V</b>	<b>219</b>	<b>49.3</b>	<b>-9.4</b>
6	774.00	24.9 QP	46.0	-21.1	1.65 V	201	32.7	-7.8

**Remarks:**

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



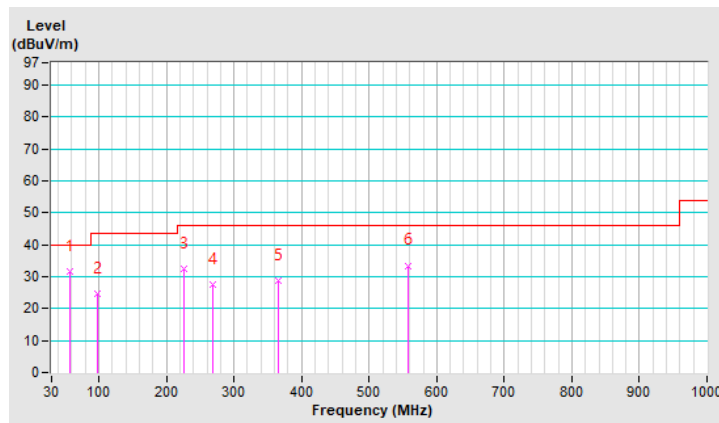
<b>RF Mode</b>	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 171 : 5855 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

**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	57.95	31.5 QP	40.0	-8.5	1.15 H	204	49.8	-18.3
2	97.65	24.6 QP	43.5	-18.9	1.65 H	184	47.3	-22.7
3	226.45	32.5 QP	46.0	-13.5	1.78 H	206	53.1	-20.6
4	268.42	27.6 QP	46.0	-18.4	1.14 H	226	45.8	-18.2
5	365.52	28.6 QP	46.0	-17.4	1.95 H	117	44.2	-15.6
6	558.12	33.5 QP	46.0	-12.5	1.65 H	107	45.2	-11.7

**Remarks:**

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

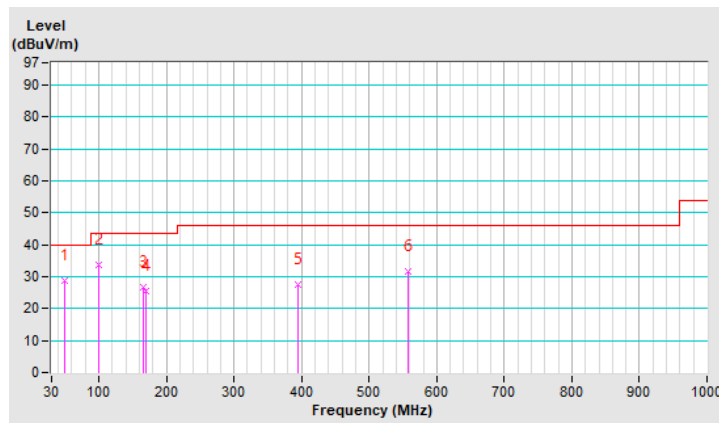


<b>RF Mode</b>	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 171 : 5855 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	30 MHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	48.65	28.6 QP	40.0	-11.4	1.65 V	261	46.3	-17.7
2	99.65	33.7 QP	43.5	-9.8	1.42 V	3	56.0	-22.3
3	165.65	26.6 QP	43.5	-16.9	1.74 V	225	44.4	-17.8
4	169.74	25.6 QP	43.5	-17.9	1.15 V	217	43.7	-18.1
5	395.65	27.6 QP	46.0	-18.4	1.66 V	310	42.4	-14.8
6	557.12	31.6 QP	46.0	-14.4	2.11 V	145	43.4	-11.8

**Remarks:**

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



## 7.2 Unwanted Emissions above 1 GHz

<b>RF Mode</b>	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 159 : 5795 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	*2437.00	122.1 PK			2.35 H	300	84.1	38.0
2	*2437.00	113.8 AV			2.35 H	300	75.8	38.0
3	4874.00	48.7 PK	74.0	-25.3	1.05 H	200	37.2	11.5
4	4874.00	40.0 AV	54.0	-14.0	1.05 H	200	28.5	11.5
5	#5606.41	59.2 PK	68.2	-9.0	1.00 H	242	46.5	12.7
6	*5795.00	115.0 PK			1.00 H	242	71.2	43.8
7	*5795.00	104.6 AV			1.00 H	242	60.8	43.8
8	#5925.00	69.5 PK	88.2	-18.7	2.00 H	241	56.3	13.2
9	#5925.00	56.4 AV	68.2	-11.8	2.00 H	241	43.2	13.2
10	#5960.36	57.5 PK	68.2	-10.7	1.00 H	242	44.3	13.2
11	*6185.00	106.4 PK			2.00 H	241	61.5	44.9
12	*6185.00	97.8 AV			2.00 H	241	52.9	44.9
13	11590.00	58.3 PK	74.0	-15.7	1.15 H	164	39.7	18.6
14	11590.00	47.7 AV	54.0	-6.3	1.15 H	164	29.1	18.6
15	12370.00	59.3 PK	74.0	-14.7	1.73 H	333	39.8	19.5
16	12370.00	50.0 AV	54.0	-4.0	1.73 H	333	30.5	19.5

### Remarks:

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

<b>RF Mode</b>	802.11g + 802.11ax (HE40) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 159 : 5795 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	*2437.00	123.8 PK			2.20 V	10	85.8	38.0
2	*2437.00	114.7 AV			2.20 V	10	76.7	38.0
3	4874.00	48.8 PK	74.0	-25.2	1.64 V	115	37.3	11.5
4	4874.00	40.3 AV	54.0	-13.7	1.64 V	115	28.8	11.5
5	#5648.05	63.9 PK	68.2	-4.3	1.78 V	126	51.1	12.8
6	*5795.00	120.0 PK			1.78 V	126	76.2	43.8
7	*5795.00	111.3 AV			1.78 V	126	67.5	43.8
8	#5925.00	84.3 PK	88.2	-3.9	1.49 V	94	71.1	13.2
9	#5925.00	64.0 AV	68.2	-4.2	1.49 V	94	50.8	13.2
10	#5930.73	60.1 PK	68.2	-8.1	1.78 V	126	46.9	13.2
11	*6185.00	110.2 PK			1.48 V	242	65.3	44.9
12	*6185.00	101.8 AV			1.48 V	242	56.9	44.9
13	11590.00	58.4 PK	74.0	-15.6	1.99 V	309	39.8	18.6
14	11590.00	47.8 AV	54.0	-6.2	1.99 V	309	29.2	18.6
15	12370.00	59.8 PK	74.0	-14.2	1.14 V	208	40.3	19.5
16	12370.00	50.1 AV	54.0	-3.9	1.14 V	208	30.6	19.5

**Remarks:**

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



<b>RF Mode</b>	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 171 : 5855 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	*2437.00	122.0 PK			2.35 H	300	84.0	38.0
2	*2437.00	113.4 AV			2.35 H	300	75.4	38.0
3	4874.00	48.5 PK	74.0	-25.5	1.16 H	329	37.0	11.5
4	4874.00	40.3 AV	54.0	-13.7	1.16 H	329	28.8	11.5
5	#5649.20	59.4 PK	68.2	-8.8	1.00 H	240	46.6	12.8
6	*5855.00	112.5 PK			1.00 H	240	68.4	44.1
7	*5855.00	103.9 AV			1.00 H	240	59.8	44.1
8	#5925.00	69.4 PK	88.2	-18.8	2.00 H	241	56.2	13.2
9	#5925.00	56.3 AV	68.2	-11.9	2.00 H	241	43.1	13.2
10	#5931.00	80.0 PK	88.2	-8.2	1.00 H	240	66.8	13.2
11	*6185.00	106.2 PK			2.00 H	241	61.3	44.9
12	*6185.00	97.7 AV			2.00 H	241	52.8	44.9
13	11710.00	58.4 PK	74.0	-15.6	1.95 H	1	39.3	19.1
14	11710.00	48.1 AV	54.0	-5.9	1.95 H	1	29.0	19.1
15	12370.00	59.2 PK	74.0	-14.8	1.89 H	310	39.7	19.5
16	12370.00	49.8 AV	54.0	-4.2	1.89 H	310	30.3	19.5

**Remarks:**

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



<b>RF Mode</b>	802.11g + 802.11ax (HE80) + 802.11ax (HE160)	<b>Channel</b>	CH 6 : 2437 MHz + CH 171 : 5855 MHz+ CH 47 : 6185 MHz
<b>Frequency Range</b>	1 GHz ~ 40 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	25°C, 62% RH
<b>Tested By</b>	Charles Hsiao		

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	*2437.00	123.6 PK			2.20 V	10	85.6	38.0
2	*2437.00	114.4 AV			2.20 V	10	76.4	38.0
3	4874.00	48.6 PK	74.0	-25.4	1.05 V	200	37.1	11.5
4	4874.00	40.2 AV	54.0	-13.8	1.05 V	200	28.7	11.5
5	<b>#5640.50</b>	<b>66.4 PK</b>	<b>68.2</b>	<b>-1.8</b>	<b>1.85 V</b>	<b>130</b>	<b>53.7</b>	<b>12.7</b>
6	*5855.00	119.0 PK			1.85 V	130	74.9	44.1
7	*5855.00	110.2 AV			1.85 V	130	66.1	44.1
8	#5925.00	84.1 PK	88.2	-4.1	1.49 V	94	70.9	13.2
9	#5925.00	63.7 AV	68.2	-4.5	1.49 V	94	50.5	13.2
10	#5927.88	85.5 PK	88.2	-2.7	1.85 V	130	72.3	13.2
11	*6185.00	109.7 PK			1.48 V	242	64.8	44.9
12	*6185.00	100.4 AV			1.48 V	242	55.5	44.9
13	11710.00	58.5 PK	74.0	-15.5	1.73 V	309	39.4	19.1
14	11710.00	48.4 AV	54.0	-5.6	1.73 V	309	29.3	19.1
15	12370.00	59.7 PK	74.0	-14.3	1.05 V	200	40.2	19.5
16	12370.00	50.0 AV	54.0	-4.0	1.05 V	200	30.5	19.5

**Remarks:**

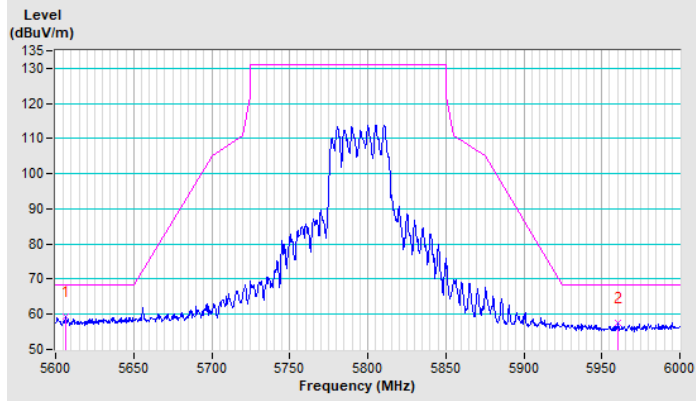
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency,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



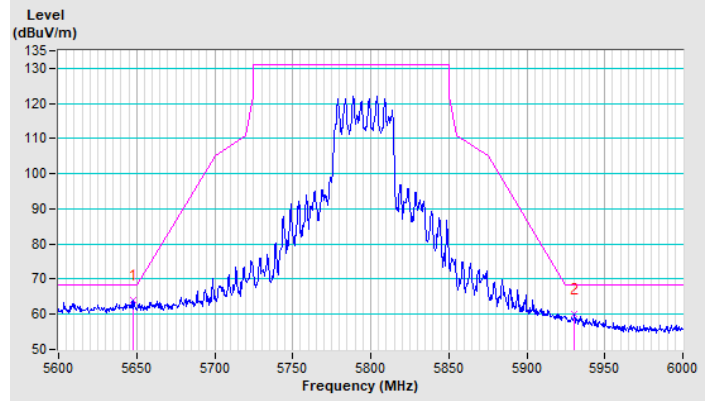
### Plot of Band Edge

#### 802.11ax (HE40) Channel 559

##### Horizontal



##### Vertical



## 8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)



## 9 Information of the Testing Laboratories

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

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

**Lin Kou EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety Lab**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@bureauveritas.com](mailto:service.adt@bureauveritas.com)

**Web Site:** <http://ee.bureauveritas.com.tw>

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

--- END ---