

FCC Test Report (Co-Located)

Report No.: RFBAPP-WTW-P23030958-4

FCC ID: PD5-NWA1100

Test Model: NWA1100

Received Date: 2023/3/31

Test Date: 2023/7/27 ~ 2023/7/28

Issued Date: 2024/1/5

Applicant: Delta Electronics, Inc.

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

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



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Release Control Record

Issue No.	Description	Date Issued
RFBAPP-WTW-P23030958-4	Original release	2024/1/5

1 Certificate of Conformity

Product: Indoor Wireless AP

Brand: Nile Global

Test Model: NWA1100

Sample Status: Engineering sample

Applicant: Delta Electronics, Inc.

Test Date: 2023/7/27 ~ 2023/7/28

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)

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 :

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Date:

2024/1/5

Gina Liu / Specialist

Approved by :

Jeremy Lin

Date:

2024/1/5

Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247) 47 CFR FCC Part 15, Subpart E (Section 15.407)		
FCC Clause	Test Item	Result	Remarks
15.205 / 15.209 / 15.247(d) 15.407(b) (1/4(i)/6/9/10)	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -0.9dB at 2486.80MHz.

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:

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Indoor Wireless AP
Brand	Nile Global
Test Model	NWA1100
Sample Status	Engineering sample
Power Supply Rating	100-240V, 50/60Hz 54 Vdc (From POE)

WLAN 2.4G & 5G:

Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in VHT & ac mode 1024QAM for OFDMA in 11ax mode only
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	2.4GHz Band: 802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to 600Mbps VHT20/40: up to 800Mbps 802.11ax: up to 1147.1Mbps 5.0GHz Band: 802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): 6.5 to 600Mbps (MCS0 to MCS31) 802.11ac (VHT20/40/80): up to 1773.2Mbps (MCS0 to MCS9, NSS=1 to 4) 802.11ax (HE20/40/80): up to 2400Mbps (MCS0 to MCS11, NSS=1 to 4)
Operating Frequency	2.4GHz Band: 2.412 ~ 2.462 GHz 5.0GHz Band: 5.18 ~ 5.24 GHz, 5.26 ~ 5.32 GHz, 5.5 ~ 5.72 GHz, 5.745 ~ 5.825 GHz

Number of Channel	2.4GHz Band: 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 For Radio 3 802.11b, 802.11g, 802.11n (HT20), VHT20: 11 802.11n (HT40), VHT40: 7 5.0GHz Band: For Radio 2: 5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 5260 ~ 5320 MHz 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):2 802.11ac (VHT80), 802.11ax (HE80):1 5500 ~ 5720 MHz 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):12 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):6 802.11ac (VHT80), 802.11ax (HE80):3 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 For Radio 3: 5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260 ~ 5320 MHz 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500 ~ 5720 MHz 802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
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6E:

Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11ax: up to 4803.9Mbps
Operating Frequency	5955 ~ 6415MHz, 6435 ~ 6525MHz, 6535 ~ 6865MHz, 6875 ~ 7115MHz
Number of Channel	802.11a/ax (HE20): 59 802.11ax (HE40): 29 802.11ax (HE80): 14 802.11ax (HE160): 7

Note:

1. The EUT uses following accessories.

POE (Support unit)		
Brand	Model	Specification
NETGEAR	GS305Pv2	DC Output : 54V,1.25A

2. There are four modules for the EUT.

Function	Radio
WLAN 2.4G (TX/RX)	1
WLAN 5G (TX/RX)	2
WLAN 2.4G & 5G & 6G (TX/RX)	3
BT LE	4
WLAN 6G (TX/RX)	5

3. Simultaneously transmission condition.

Condition	Technology		
1	WLAN 2.4G (Radio 1)	WLAN 5G (Radio 2)	WLAN 6G (Radio 5)
2	WLAN 2.4G (Radio 3)	WLAN 5G (Radio 3)	WLAN 6G (Radio 3)

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

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

2.4GHz Band:

2.4 GHz Band				
Radio	Modulation Mode	Beamforming Mode	TX & RX Configuration	
1	802.11b	Not Support	4TX	4RX
	802.11g	Not Support	4TX	4RX
	802.11n (HT20)	Support	4TX	4RX
	802.11n (HT40)	Support	4TX	4RX
	VHT20	Support	4TX	4RX
	VHT40	Support	4TX	4RX
	802.11ax (HE20)	Support	4TX	4RX
	802.11ax (HE40)	Support	4TX	4RX
3	802.11b	Not Support	2TX	2RX
	802.11g	Not Support	2TX	2RX
	802.11n (HT20)	Not Support	2TX	2RX
	802.11n (HT40)	Not Support	2TX	2RX
	VHT20	Not Support	2TX	2RX
	VHT40	Not Support	2TX	2RX

Note:

1. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
2. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz) and VHT mode for 20 MHz (40 MHz), therefore the manufacturer will control the power for 802.11n/VHT mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.

5.0GHz Band:

5 GHz Band				
Module	Modulation Mode	Beamforming Mode	TX & RX Configuration	
Radio 2	802.11a	Not Support	4TX	4RX
	802.11n (HT20)	Support	4TX	4RX
	802.11n (HT40)	Support	4TX	4RX
	802.11ac (VHT20)	Support	4TX	4RX
	802.11ac (VHT40)	Support	4TX	4RX
	802.11ac (VHT80)	Support	4TX	4RX
	802.11ax (HE20)	Support	4TX	4RX
	802.11ax (HE40)	Support	4TX	4RX
	802.11ax (HE80)	Support	4TX	4RX
Radio 3	802.11a	Not Support	2TX	2RX
	802.11n (HT20)	Not Support	2TX	2RX
	802.11n (HT40)	Not Support	2TX	2RX
	802.11ac (VHT20)	Not Support	2TX	2RX
	802.11ac (VHT40)	Not Support	2TX	2RX
	802.11ac (VHT80)	Not Support	2TX	2RX

Note:

1. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
2. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz), therefore the manufacturer will control the power for 802.11n/ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.

6E:

6 GHZ BAND				
Module	Modulation Mode	Beamforming Mode	TX & RX Configuration	
Radio 5	802.11a	Not Support	4TX	4RX
	802.11ax (HE20)	Support	4TX	4RX
	802.11ax (HE40)	Support	4TX	4RX
	802.11ax (HE80)	Support	4TX	4RX
	802.11ax (HE160)	Support	4TX	4RX
Radio 3	802.11a	Not Support	2TX	2RX
	802.11ax (HE20)	Not Support	2TX	2RX
	802.11ax (HE40)	Not Support	2TX	2RX
	802.11ax (HE80)	Not Support	2TX	2RX
	802.11ax (HE160)	Not Support	2TX	2RX

Note:

- The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

5. The antenna information is listed as below.

5. The antenna information is listed as below.

Antenna Connector		Ipex(MHF)					
Antenna No.		Antenna Type	Gain (dBi)				
			2.4~2.4835GHz	5.15~5.25GHz	5.25~5.35GHz	5.47~5.725GHz	5.725~5.85GHz
Radio 1	2G1	dipole	6.9	-	-	-	-
	2G2		6.9	-	-	-	-
	2G3		7.7	-	-	-	-
	2G4		6.4	-	-	-	-
Radio 2	5G1		-	6.7	6.7	7.2	6.6
	5G2		-	6.7	6.7	6.7	7.1
	5G3		-	7.2	7.2	7.6	7.1
	5G4		-	6.6	6.6	7.3	7.0
Radio 3	TB1	PIFA	5.1	7.2	7.2	5.9	5.9
	TB2		4.7	5.6	5.6	5.9	6.8
Radio 4	BLE		5.9	-	-	-	-

Antenna Connector		Ipex(MHF)				
Antenna No.		Antenna Type	Gain (dBi)			
			5.920~6.425GHz	6.425~6.525GHz	6.525~6.875GHz	6.875~7.125GHz
Radio 5	6G1	dipole	6.4	6.6	6.6	5.5
	6G2		7.5	7.0	7.0	6.9
	6G3		5.8	4.9	4.9	5.2
	6G4		5.8	4.7	4.7	5.0
Radio 3	TB1	PIFA	5.8	6.8	6.8	6.2
	TB2		6.3	5.5	5.5	5.3

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

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

3.2 Description of Test Modes

WLAN:

For 2.4GHz

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 5180~5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

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

Channel	Frequency
42	5210 MHz

For 5260 ~ 5320 MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

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

Channel	Frequency
58	5290 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		

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

6E:

For 5925 ~ 6425MHz (U-NII-5 band)

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

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	5955 MHz	5	5975 MHz	9	5995 MHz	13	6015 MHz
17	6035 MHz	21	6055 MHz	25	6075 MHz	29	6095 MHz
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

12 channels are provided for 802.11ax (HE40):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
3	5965 MHz	11	6005 MHz	19	6045 MHz	27	6085 MHz
35	6125 MHz	43	6165 MHz	51	6205 MHz	59	6245 MHz
67	6285 MHz	75	6325 MHz	83	6365 MHz	91	6405 MHz

6 channel is provided for 802.11ax (HE80):

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
7	5985 MHz	23	6065 MHz	39	6145 MHz	55	6225 MHz
71	6305 MHz	87	6385 MHz				

3 channels are provided for 802.11ax (HE160):

Channel	Frequency	Channel	Frequency	Channel	Frequency
15	6025 MHz	47	6185 MHz	79	6345 MHz

For 6425 ~ 6525MHz (U-NII-6 band)

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

2 channel are 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 ~ 6875MHz (U-NII-7 band)

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 ~ 7125MHz (U-NII-8 band):

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 channel is 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 this's straddle channel.

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to			Description
	RE $\geq$ 1G	RE $<$ 1G	CB	
-	√	√	√	-

Where **RE $\geq$ 1G:** Radiated Emission above 1GHz **RE $<$ 1G:** Radiated Emission below 1GHz

CB: Conducted Out of Band Emission Measurement

Note: The antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-axis**.

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	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	Radio 1: 802.11b + Radio 2: 802.11ax (HE40) + Radio 5: 802.11ax (HE160)	2412-2462	1 to 11	1+159+47	DSSS
		5745-5825	151 to 159		OFDMA
		5955-6415	15 to 79		OFDMA
-	Radio 3: 802.11g + Radio 3: 802.11a + Radio 3: 802.11 ax (HE160)	2412-2462	1 to 11	6+149+175	OFDM
		5745-5825	149 to 157		OFDM
		6665-6825	143 to 175		OFDMA

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	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	Radio 1: 802.11b + Radio 2: 802.11ax (HE40) + Radio 5: 802.11ax (HE160)	2412-2462	1 to 11	1+159+47	DSSS
		5745-5825	151 to 159		OFDMA
		5955-6415	15 to 79		OFDMA
-	Radio 3: 802.11g + Radio 3: 802.11a + Radio 3: 802.11 ax (HE160)	2412-2462	1 to 11	6+149+175	OFDM
		5745-5825	149 to 157		OFDM
		6665-6825	143 to 175		OFDMA

Conducted Out of Band Emission Measurement:

- ☒ 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	Freq. Range (MHz)	Available Channel	Tested Channel	Modulation Technology
-	Radio 3: 802.11g + Radio 3: 802.11a + Radio 3: 802.11 ax (HE160)	2412-2462	1 to 11	6+149+175	OFDM
		5745-5825	149 to 157		OFDM
		6665-6825	143 to 175		OFDMA

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE$\geq$1G	20.2 deg. C, 76.8% RH	120Vac, 60Hz	Rex Wang
RE$<$1G	21 deg. C, 77% RH	120Vac, 60Hz	Rex Wang
CB	23 deg. C, 72% RH	120Vac, 60Hz	Frank Liu

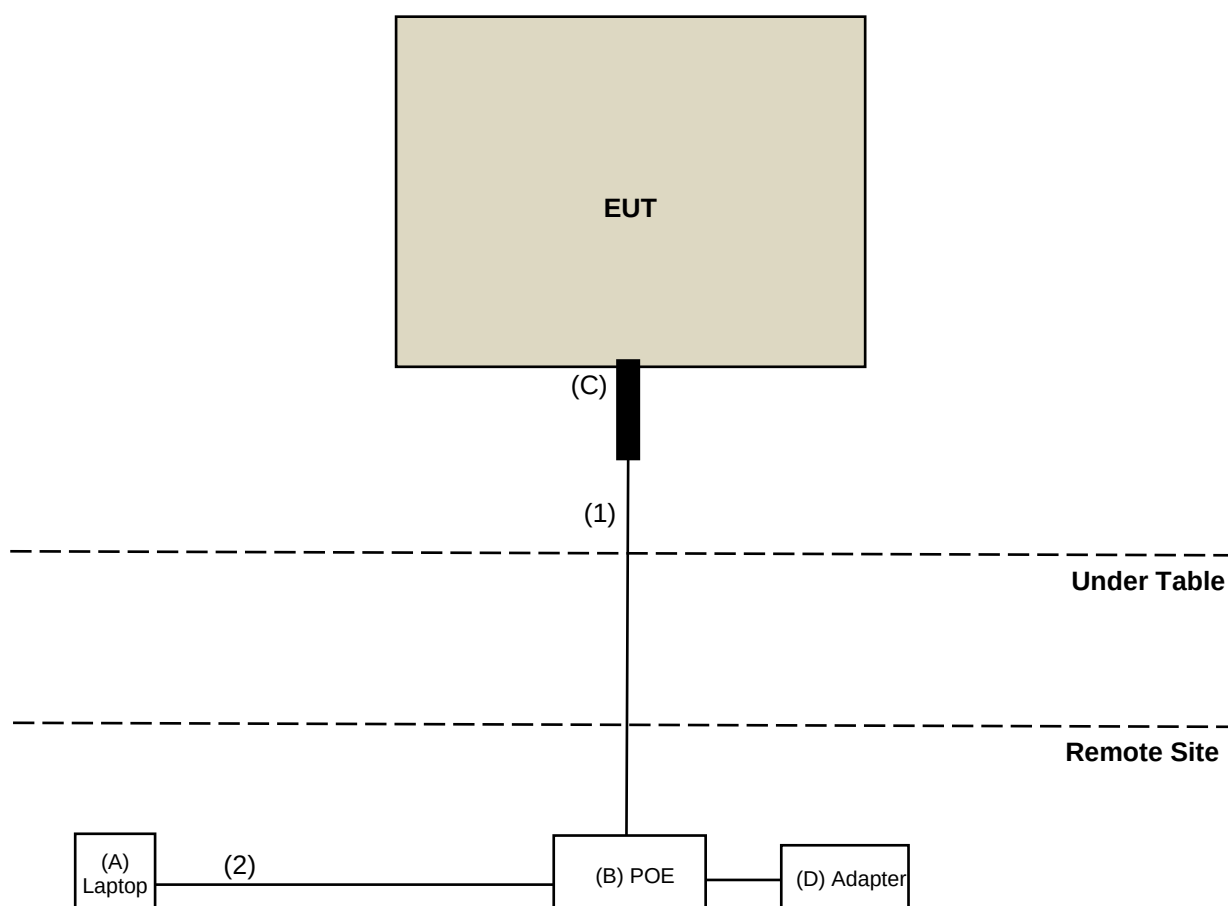
3.3 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Lenovo	L470	PF0XEHC5	N/A	Provided by Lab
B	POE	NETGEAR	N/A	N/A	N/A	Supplied by applicant
C	LAN port extension	N/A	N/A	N/A	N/A	Supplied by applicant
D	Adapter	N/A	N/A	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	6.0	N	0	Provided by Lab
2	RJ-45 Cable	1	1.5	N	0	Provided by Lab

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specification of the EUT declared by the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

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 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 987594 D02 U-NII 6 GHz EMC Measurement v01v01

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.
4. Other emissions shall be at least 30 dB below the highest level of the desired power for WLAN 2.4G.

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2(dBμV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2(dBμV/m) ^{*1} PK: 105.2 (dBμV/m) ^{*2} PK: 110.8(dBμV/m) ^{*3} PK: 122.2 (dBμV/m) ^{*4}
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
5925 MHz > F > 7125 MHz	15.407(b)(6)(10)		Peak: -7 (dBm/MHz)	88.2 (dBuV/m)
			Average: -27 (dBm/MHz)	68.2 (dBuV/m)
^{*1} beyond 75 MHz or more above of the band edge. ^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. ^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. ^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.				

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

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

4.1.2 Test Instruments

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1169	2022/11/13	2023/11/12
	BBHA 9170	9170-480	2022/11/13	2023/11/12
		BBHA9170243	2022/11/13	2023/11/12
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2022/10/20	2023/10/19
Loop Antenna Electro-Metrics	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	64095	2022/10/7	2023/10/6
MXE EMI Receiver Keysight	N9038A	MY55420137	2023/5/3	2024/5/2
Notch Filter Micro-Tronics	BRM17690	004	2023/1/11	2024/1/10
	BRM50716	060	2023/1/11	2024/1/10
Preamplifier Agilent	8449B	3008A02367	2023/2/15	2024/2/14
Preamplifier EMCI	EMC 184045	980116	2022/10/1	2023/9/30
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
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
Preamplifier Agilent	8447D	2944A10638	2023/5/7	2024/5/6
Preamplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2023/1/7	2024/1/6
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2023/5/7	2024/5/6
Signal & Spectrum Analyzer R&S	FSW43	101867	2022/12/30	2023/12/29
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

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 HY - 966 chamber 4.
3. Tested Date: 2023/7/27-2023/7/28

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:

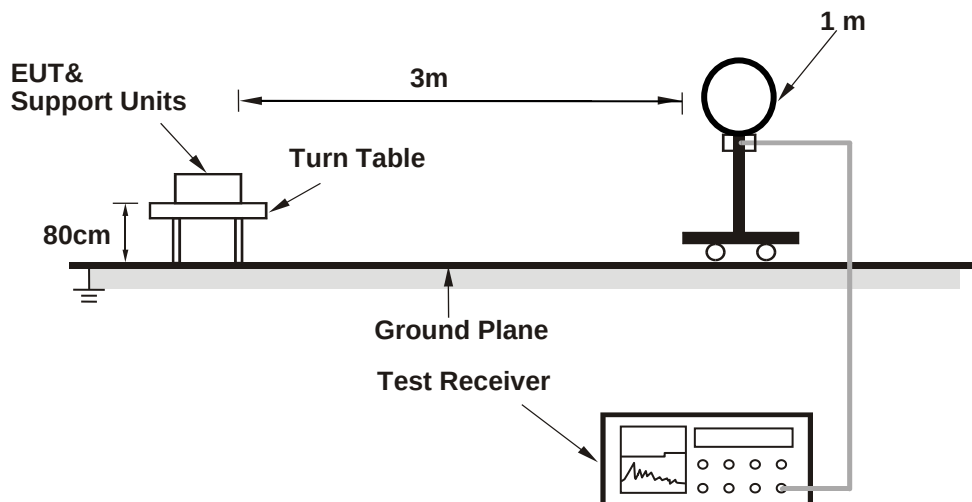
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

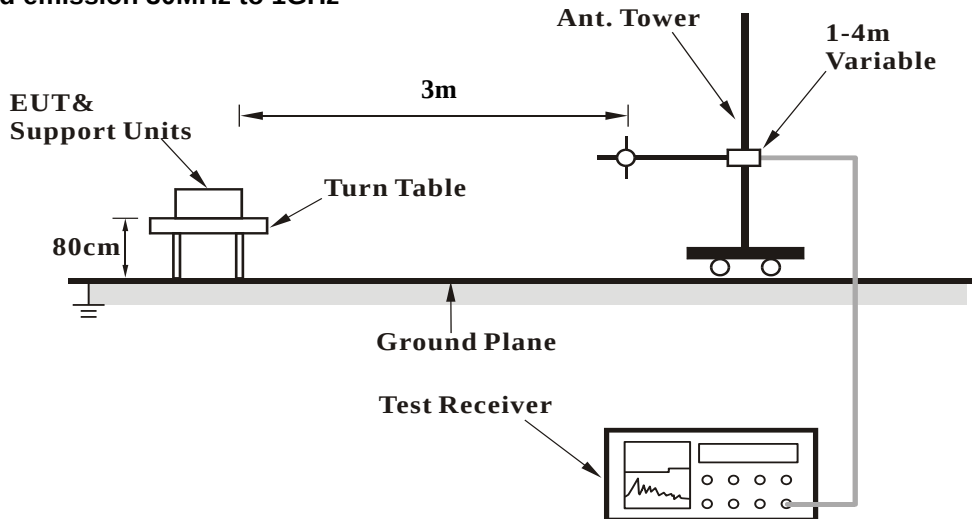
No deviation.

4.1.5 Test Setup

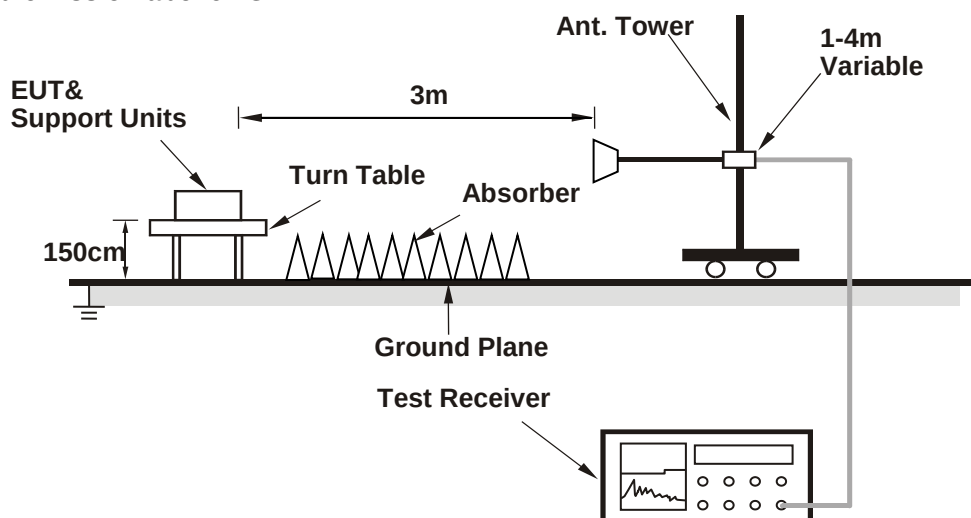
For Radiated emission below 30MHz



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

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

4.1.7 Test Results

Above 1GHz Data:

Radio 1: 802.11b + Radio 2: 802.11ax (HE40) + Radio 5: 802.11ax (HE160)

CHANNEL	CH 1 + CH 159 + CH 47	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	59.0 PK	74.0	-15.0	2.20 H	24	25.3	33.7
2	2390.00	46.5 AV	54.0	-7.5	2.20 H	24	12.8	33.7
3	*2412.00	125.1 PK			2.20 H	24	91.4	33.7
4	*2412.00	123.7 AV			2.20 H	24	90.0	33.7
5	4824.00	50.9 PK	74.0	-23.1	1.95 H	10	40.6	10.3
6	4824.00	37.5 AV	54.0	-16.5	1.95 H	10	27.2	10.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.8 PK	74.0	-15.2	1.33 V	42	25.1	33.7
2	2390.00	45.7 AV	54.0	-8.3	1.33 V	42	12.0	33.7
3	*2412.00	116.5 PK			1.33 V	42	82.8	33.7
4	*2412.00	115.1 AV			1.33 V	42	81.4	33.7
5	4824.00	50.7 PK	74.0	-23.3	1.55 V	66	40.4	10.3
6	4824.00	37.2 AV	54.0	-16.8	1.55 V	66	26.9	10.3

Remarks:

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

CHANNEL	CH 1 + CH 159 + CH 47	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	122.4 PK			2.45 H	4	80.2	42.2
2	*5795.00	109.4 AV			2.45 H	4	67.2	42.2
3	11590.00	63.1 PK	74.0	-10.9	2.67 H	344	36.0	27.1
4	11590.00	49.9 AV	54.0	-4.1	2.67 H	344	22.8	27.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	127.6 PK			2.55 V	346	85.4	42.2
2	*5795.00	114.2 AV			2.55 V	346	72.0	42.2
3	11590.00	63.3 PK	74.0	-10.7	2.24 V	288	36.2	27.1
4	11590.00	50.1 AV	54.0	-3.9	2.24 V	288	23.0	27.1

Remarks:

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

CHANNEL	CH 1 + CH 159 + CH 47	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*6185.00	103.9 PK			2.66 H	20	62.5	41.4
2	*6185.00	92.1 AV			2.66 H	20	50.7	41.4
3	12370.00	54.6 PK	74.0	-19.4	2.90 H	22	38.6	16.0
4	12370.00	41.3 AV	54.0	-12.7	2.90 H	22	25.3	16.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*6185.00	103.5 PK			2.30 V	4	62.1	41.4
2	*6185.00	91.4 AV			2.30 V	4	50.0	41.4
3	12370.00	54.4 PK	74.0	-19.6	1.90 V	24	38.4	16.0
4	12370.00	41.0 AV	54.0	-13.0	1.90 V	24	25.0	16.0

Remarks:

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

Radio 3: 802.11g + Radio 3: 802.11a + Radio 3: 802.11 ax (HE160)

CHANNEL	CH 6 + CH 149 + CH 175	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.60	63.9 PK	74.0	-10.1	3.75 H	62	30.2	33.7
2	2386.60	48.7 AV	54.0	-5.3	3.75 H	62	15.0	33.7
3	*2437.00	115.9 PK			3.75 H	62	82.1	33.8
4	*2437.00	106.8 AV			3.75 H	62	73.0	33.8
5	2486.80	61.6 PK	74.0	-12.4	3.75 H	62	27.8	33.8
6	2486.80	49.2 AV	54.0	-4.8	3.75 H	62	15.4	33.8
7	4874.00	54.0 PK	74.0	-20.0	2.64 H	120	43.5	10.5
8	4874.00	41.2 AV	54.0	-12.8	2.64 H	120	30.7	10.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.60	67.9 PK	74.0	-6.1	2.46 V	40	34.2	33.7
2	2386.60	51.4 AV	54.0	-2.6	2.46 V	40	17.7	33.7
3	*2437.00	120.7 PK			2.46 V	40	86.9	33.8
4	*2437.00	111.0 AV			2.46 V	40	77.2	33.8
5	2486.80	67.1 PK	74.0	-6.9	2.46 V	40	33.3	33.8
6	2486.80	53.1 AV	54.0	-0.9	2.46 V	40	19.3	33.8
7	4874.00	59.9 PK	74.0	-14.1	2.55 V	334	49.4	10.5
8	4874.00	48.5 AV	54.0	-5.5	2.55 V	334	38.0	10.5

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	CH 6 + CH 149 + CH 175	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	117.4 PK			3.62 H	248	75.4	42.0
2	*5745.00	107.0 AV			3.62 H	248	65.0	42.0
3	11490.00	63.4 PK	74.0	-10.6	3.11 H	214	36.2	27.2
4	11490.00	50.1 AV	54.0	-3.9	3.11 H	214	22.9	27.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	120.6 PK			2.77 V	134	78.6	42.0
2	*5745.00	110.4 AV			2.77 V	134	68.4	42.0
3	11490.00	63.6 PK	74.0	-10.4	2.63 V	164	36.4	27.2
4	11490.00	50.3 AV	54.0	-3.7	2.63 V	164	23.1	27.2

Remarks:

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

CHANNEL	CH 6 + CH 149 + CH 175	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*6825.00	103.0 PK			3.87 H	255	59.4	43.6
2	*6825.00	91.2 AV			3.87 H	255	47.6	43.6
3	13650.00	58.8 PK	88.2	-29.4	1.90 H	244	38.5	20.3
4	13650.00	46.0 AV	68.2	-22.2	1.90 H	244	25.7	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*6825.00	108.1 PK			3.26 V	150	64.5	43.6
2	*6825.00	95.9 AV			3.26 V	150	52.3	43.6
3	13650.00	59.0 PK	88.2	-29.2	2.55 V	162	38.7	20.3
4	13650.00	46.2 AV	68.2	-22.0	2.55 V	162	25.9	20.3

Remarks:

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

Below 1GHz data

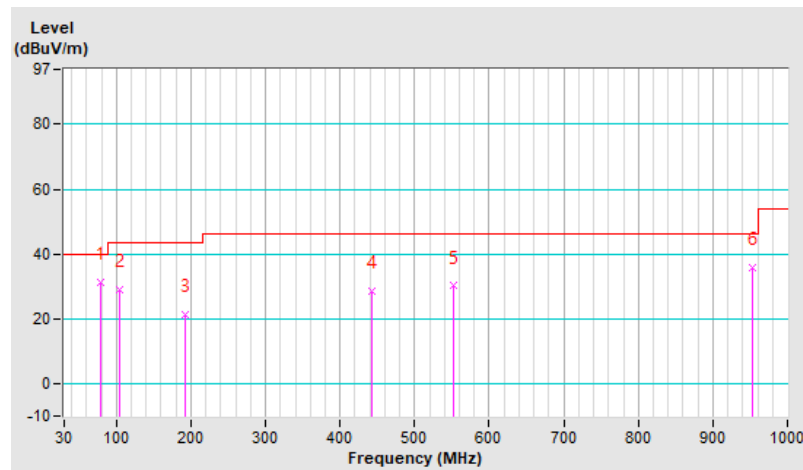
Radio 1: 802.11b + Radio 2: 802.11ax (HE40) + Radio 5: 802.11ax (HE160)

CHANNEL	CH 1 + CH 159 + CH 47	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	79.47	31.2 QP	40.0	-8.8	1.99 H	223	44.9	-13.7
2	104.69	29.0 QP	43.5	-14.5	1.49 H	108	42.1	-13.1
3	191.99	21.1 QP	43.5	-22.4	1.99 H	66	33.1	-12.0
4	443.22	28.5 QP	46.0	-17.5	1.00 H	6	33.5	-5.0
5	551.86	30.1 QP	46.0	-15.9	1.49 H	129	33.5	-3.4
6	952.47	35.7 QP	46.0	-10.3	1.99 H	35	30.6	5.1

Remarks:

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

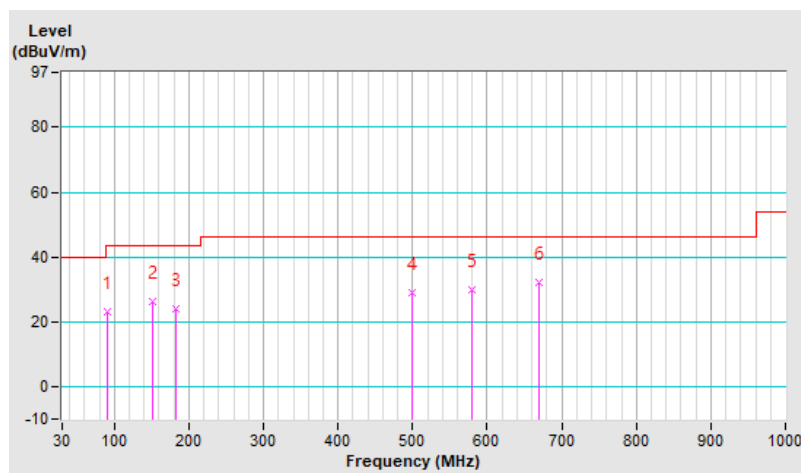


CHANNEL	CH 1 + CH 159 + CH 47	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	90.14	23.0 QP	43.5	-20.5	1.50 V	33	38.0	-15.0
2	151.25	26.2 QP	43.5	-17.3	1.00 V	109	35.3	-9.1
3	183.26	23.9 QP	43.5	-19.6	1.50 V	169	34.8	-10.9
4	498.51	29.1 QP	46.0	-16.9	1.25 V	8	33.4	-4.3
5	579.99	29.9 QP	46.0	-16.1	1.00 V	88	32.5	-2.6
6	669.23	32.0 QP	46.0	-14.0	1.00 V	324	32.8	-0.8

Remarks:

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



Radio 3: 802.11g + Radio 3: 802.11a + Radio 3: 802.11 ax (HE160)

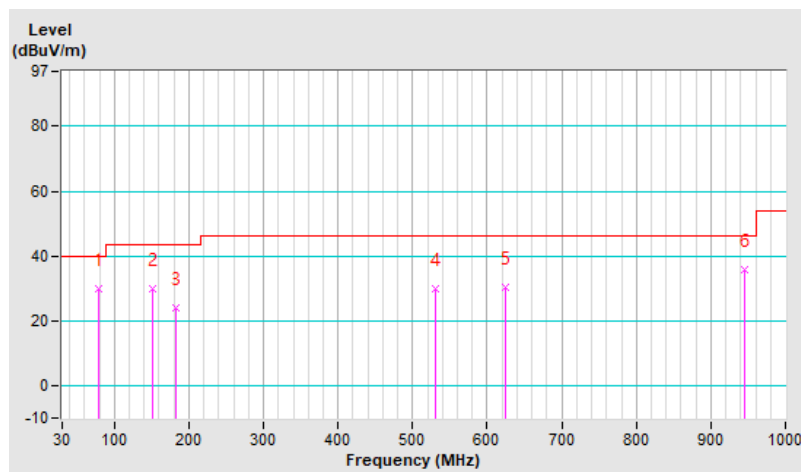
CHANNEL	CH 6 + CH 149 + CH 175	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	79.47	29.8 QP	40.0	-10.2	1.50 H	147	43.5	-13.7
2	151.25	29.7 QP	43.5	-13.8	1.50 H	291	38.8	-9.1
3	183.26	24.0 QP	43.5	-19.5	1.00 H	312	34.9	-10.9
4	531.49	29.9 QP	46.0	-16.1	1.50 H	144	33.7	-3.8
5	623.64	30.4 QP	46.0	-15.6	1.00 H	338	31.8	-1.4
6	945.68	35.8 QP	46.0	-10.2	1.00 H	26	30.9	4.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 20dB below the permissible value to be report.

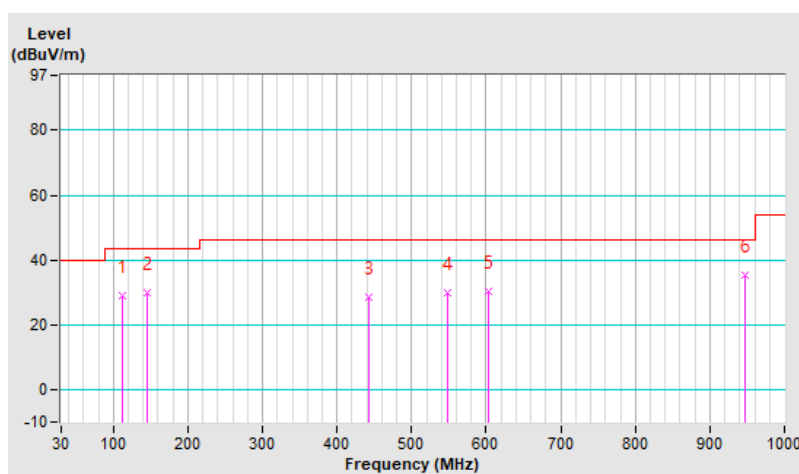


CHANNEL	CH 6 + CH 149 + CH 175	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	111.48	28.9 QP	43.5	-14.6	1.50 V	6	41.3	-12.4
2	144.46	29.8 QP	43.5	-13.7	1.00 V	6	39.3	-9.5
3	443.22	28.7 QP	46.0	-17.3	2.00 V	288	33.7	-5.0
4	547.98	30.1 QP	46.0	-15.9	2.00 V	270	33.6	-3.5
5	602.30	30.3 QP	46.0	-15.7	1.00 V	104	32.3	-2.0
6	947.62	35.3 QP	46.0	-10.7	1.00 V	291	30.4	4.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 20dB below the permissible value to be report.

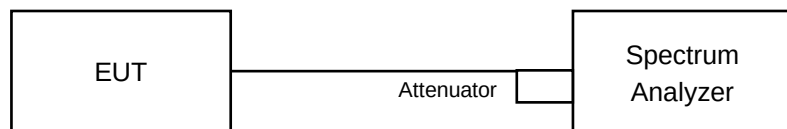


4.2 Conducted Out of Band Emission Measurement

4.2.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

4.2.5 Deviation from Test Standard

No deviation.

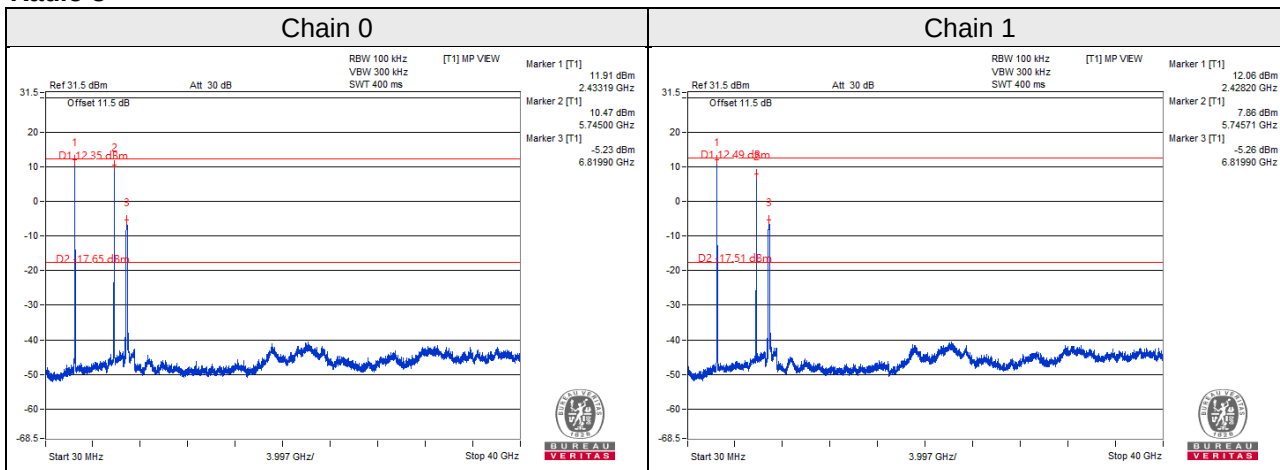
4.2.6 EUT Operating Condition

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

4.2.7 Test Results

The spectrum plots are attached on the following pages. DL1 line indicates the highest level, and DL2 line indicates the 30dB offset below DL1. It shows compliance with the requirement.

Radio 3



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.

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

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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