Partial FCC Test Report

Report No.:	RF200319C13-2
FCC ID:	QYL9260NG
Test Model:	9260NGW
Received Date:	Mar. 19, 2020
Test Date:	Mar. 26 ~ Apr. 17, 2020
Issued Date:	Apr. 29, 2020
Applicant:	Getac Technology Corporation
Address:	5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City 11568, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location (1):	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
Test Location (2):	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan
FCC Registration / Designation Number:	427177 / TW0011

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF200319C13-2	Original Release	Apr. 29, 2020

1 Certificate of Conformity

Product:	WLAN and BT, 2x2 PCIe M.2 2230 adapter card
Brand:	Getac
Test Model:	9260NGW
Sample Status:	Mass product
Applicant:	Getac Technology Corporation
Test Date:	Mar. 26 ~ Apr. 17, 2020
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) 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 :  , **Date:** Apr. 29, 2020

Gina Liu / Specialist

Approved by :  , **Date:** Apr. 29, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -4.18 dB at 0.16567 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.93 dB at 2483.5 MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note
15.247(a)(2)	6 dB Bandwidth	N/A	Refer to Note
---	Occupied Bandwidth Measurement	N/A	Refer to Note
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note
15.203	Antenna Requirement	N/A	Refer to Note

Note:

1. Only test item of Conducted Power, Radiated Emissions test and Conducted Emission tests were performed for this report. For other test data, please refer to Intel Report No.: 170524-01.TR04 for module (Brand: Intel, Model: 9260NGW).
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	**Frequency**	**Expanded Uncertainty (k=2) (±)**
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WLAN and BT, 2x2 PCIe M.2 2230 adapter card
Brand	Getac
Test Model	9260NGW
Status of EUT	Mass product
Power Supply Rating	19 Vdc (adapter) 7.4 Vdc (Li-ion battery)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 300.0 Mbps
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power (Measured Max. Peak)	284.446 mW
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT is authorized for use in specific End-product. Please refer to below table for more details.

Product	Brand	Model
Tablet	Getac	T800

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

Modulation Mode	Tx Function
802.11b	1TX
802.11g	1TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX

3. The antenna information is listed.

Ant. Type	Manufacturer	Parts Number	Frequency (MHz)					
			2400	2402	2442	2450	2484	2500
PIFA	GETAC	WLAN Main Antenna: 421122100003	2.40 dBi	2.43 dBi	2.40 dBi	2.34 dBi	3.16 dBi	3.11 dBi
		WLAN Aux. Antenna: 421122100001	-0.97 dBi	-0.97 dBi	-0.04 dBi	-0.08 dBi	1.17 dBi	0.87 dBi

Ant. Type	Manufacturer	Parts Number	Frequency (MHz)							
			5150	5250	5350	5470	5600	5725	5785	5850
PIFA	GETAC	WLAN Main Antenna: 421122100003	3.01 dBi	1.82 dBi	3.05 dBi	2.92 dBi	3.33 dBi	3.84 dBi	3.73 dBi	3.60 dBi
		WLAN Aux. Antenna: 421122100001	2.98 dBi	2.00 dBi	3.71 dBi	3.56 dBi	4.27 dBi	4.27 dBi	4.37 dBi	4.36 dBi

4. The following accessories were for the End-product.

Product	Brand	Model	Description
Adapter	Chicony	A12-065N2A	I/P: 100-240 Vac, 50-60 Hz, 1.7 A O/P: 19 Vdc, 3.42 A, 65W
Battery	Getac	BP2S2P2100S	7.4 Vdc, 4200 mAh, 32 WAh
WLAN Module	Getac	9260NGW	--
LCD Panel	INNOLUX	HE080IA-06B	--
Photo Camera	FOXLINK	FO20FF-505H	--
Video Camera	FOXLINK	FO80AF-506H	--
CPU	Intel	Z8750	1.6GHz, burst up to 2.40 GHz - 2MB Cache
SSD	Sandisk	SDIN8CE4-128G	128G

5. 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

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	Power	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **Power:** Maximum Output Power Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
NOTE: "-"means no effect.

Radiated Emission Test (Above 1 GHz):

☒ 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	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1 GHz):

☒ 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	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	11	DSSS	DBPSK	1.0

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	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	11	DSSS	DBPSK	1.0

Maximum Output Power Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Harry Hsueh
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	7.4 Vdc	Gavin Wu

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.	Tablet	Getac	T800	N/A	N/A	Provided by Client

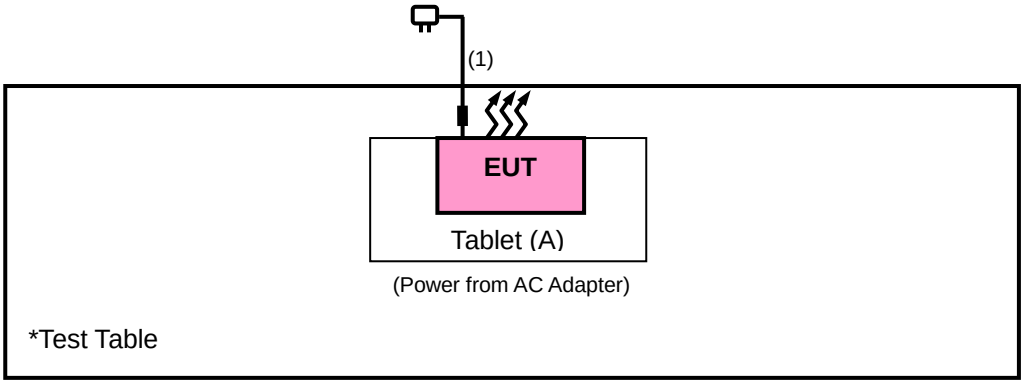
Note:

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

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Adapter Cable	1	1.75	Y	1	Accessory of the EUT

Note: The core(s) is(are) originally attached to the cable(s).

3.3.1 Configuration of System under Test



3.4 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 C (15.247)
ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 Meas Guidance v05r02
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. Other emissions shall be at least 20 dB below the highest level of the desired power:

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 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.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer ROHDE & SCHWARZ	FSU-26	101645	Jul. 04, 2019	Jul. 03, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
			Apr. 16, 2020	Apr. 15, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 08, 2019	Oct. 07, 2020
Spectrum Analyzer KEYSIGHT	N9030B	MY57140953	Jul. 03, 2019	Jul. 02, 2020
Vector signal generator Agilent	E4438C	MY47271120	Nov. 11, 2019	Nov. 10, 2020
Signal Generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-631	Nov. 12, 2019	Nov. 11, 2020
HORN Antenna Schwarzbeck	3117	00155510	Nov. 24, 2019	Nov. 23, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 15, 2019	Jul. 14, 2020
Preamplifier Agilent	310N	187246	Jun. 18, 2019	Jun. 17, 2020
Preamplifier Agilent	83017A	MY39501373	Jun. 18, 2019	Jun. 17, 2020
RF signal cable HUBER+SUHNER	5D-FB	Cable-RF1-01(RFC-SMS-100-SMS-120+MY13379/4)	Jun. 18, 2019	Jun. 17, 2020
RF signal cable HUBER+SUHNER	8D-FB	Cable-RF1-02(RFC-SMS-100-NMS-120+ 8120_5140_2911)	Jun. 18, 2019	Jun. 17, 2020
Software ADT	8.130425b	NA	NA	NA
Antenna Tower ADT	7-TR/POL	NA	NA	NA
Turn Table	TT100.	NA	NA	NA
Controller ADT	SC100	NA	NA	NA
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020

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 HsinTien RF Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.

4.1.3 Test Procedures

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 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 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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:

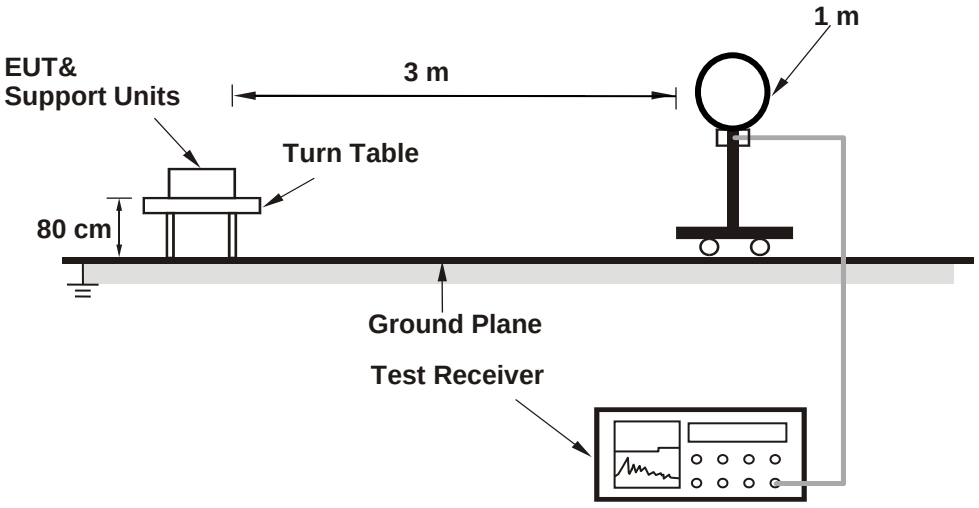
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (11b: RBW = 1 MHz, VBW =10 Hz ; 11g: RBW = 1 MHz, VBW = 1 kHz ;
   11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

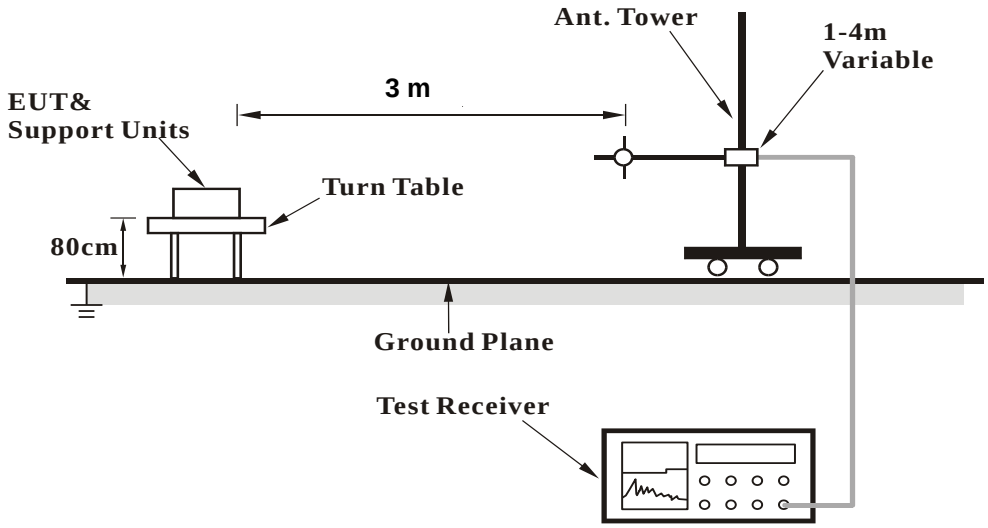
No deviation.

4.1.5 Test Set Up

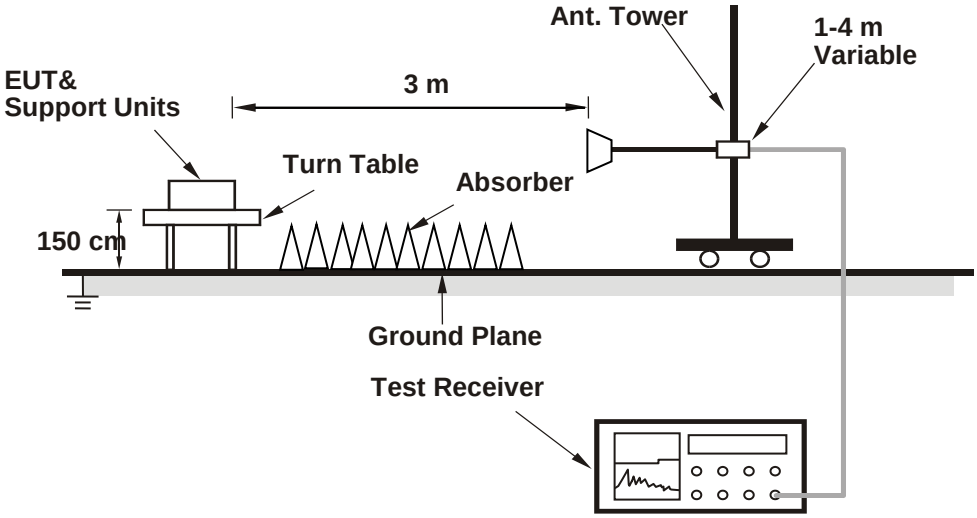
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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 1 GHz Data：

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	46.05	41.55	4.5	54	-7.95	183	2	Average
2390	61.14	56.64	4.5	74	-12.86	183	2	Peak
2412	98.97	94.42	4.55			183	2	Average
2412	102.48	97.93	4.55			183	2	Peak
4824	42.12	31.83	10.29	54	-11.88	120	176	Average
4824	48.46	38.17	10.29	74	-25.54	120	176	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	42.22	37.72	4.5	54	-11.78	364	358	Average
2390	53.37	48.87	4.5	74	-20.63	364	358	Peak
2412	92.49	87.94	4.55			364	358	Average
2412	96.01	91.46	4.55			364	358	Peak
4824	42.07	31.78	10.29	54	-11.93	130	115	Average
4824	48.36	38.07	10.29	74	-25.64	130	115	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	45.47	40.97	4.5	54	-8.53	183	2	Average
2390	53.84	49.34	4.5	74	-20.16	183	2	Peak
2437	102.36	97.77	4.59			183	2	Average
2437	104.61	100.02	4.59			183	2	Peak
2483.5	45.12	40.46	4.66	54	-8.88	183	2	Average
2483.5	54.47	49.81	4.66	74	-19.53	183	2	Peak
4874	42.44	32.23	10.21	54	-11.56	113	167	Average
4874	48.7	38.49	10.21	74	-25.3	113	167	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.32	36.82	4.5	54	-12.68	364	358	Average
2390	51.21	46.71	4.5	74	-22.79	364	358	Peak
2437	94.66	90.07	4.59			364	358	Average
2437	98.35	93.76	4.59			364	358	Peak
2483.5	41.9	37.24	4.66	54	-12.1	364	358	Average
2483.5	52.25	47.59	4.66	74	-21.75	364	358	Peak
4874	42.73	32.52	10.21	54	-11.27	152	149	Average
4874	49.02	38.81	10.21	74	-24.98	152	149	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	101.98	97.36	4.62			240	2	Average
2462	105.49	100.87	4.62			240	2	Peak
2483.5	50.07	45.41	4.66	54	-3.93	240	2	Average
2483.5	64.58	59.92	4.66	74	-9.42	240	2	Peak
4924	42.12	31.87	10.25	54	-11.88	163	218	Average
4924	48.82	38.57	10.25	74	-25.18	163	218	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	99.53	94.91	4.62			350	354	Average
2462	102.83	98.21	4.62			350	354	Peak
2483.5	48.32	43.66	4.66	54	-5.68	350	354	Average
2483.5	62.95	58.29	4.66	74	-11.05	350	354	Peak
4924	42.64	32.39	10.25	54	-11.36	104	137	Average
4924	48.92	38.67	10.25	74	-25.08	104	137	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	48.01	43.51	4.5	54	-5.99	183	2	Average
2390	59.13	54.63	4.5	74	-14.87	183	2	Peak
2412	96.97	92.42	4.55			183	2	Average
2412	104.34	99.79	4.55			183	2	Peak
4824	41.64	31.35	10.29	54	-12.36	104	262	Average
4824	47.86	37.57	10.29	74	-26.14	104	262	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	43.34	38.84	4.5	54	-10.66	364	358	Average
2390	54.11	49.61	4.5	74	-19.89	364	358	Peak
2412	90.74	86.19	4.55			364	358	Average
2412	98.19	93.64	4.55			364	358	Peak
4824	41.59	31.3	10.29	54	-12.41	175	121	Average
4824	47.88	37.59	10.29	74	-26.12	175	121	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	45.55	41.05	4.5	54	-8.45	183	2	Average
2390	56.82	52.32	4.5	74	-17.18	183	2	Peak
2437	97.7	93.11	4.59			183	2	Average
2437	106.02	101.43	4.59			183	2	Peak
2483.5	48.81	44.15	4.66	54	-5.19	183	2	Average
2483.508	61.77	57.11	4.66	74	-12.23	183	2	Peak
4874	40.46	30.25	10.21	54	-13.54	126	131	Average
4874	46.65	36.44	10.21	74	-27.35	126	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	42.62	38.12	4.5	54	-11.38	364	358	Average
2390	53.19	48.69	4.5	74	-20.81	364	358	Peak
2437	95.51	90.92	4.59			364	358	Average
2437	103.31	98.72	4.59			364	358	Peak
2483.5	44.52	39.86	4.66	54	-9.48	364	358	Average
2483.5	57.61	52.95	4.66	74	-16.39	364	358	Peak
4874	42.01	31.8	10.21	54	-11.99	180	342	Average
4874	48.23	38.02	10.21	74	-25.77	180	342	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	94.57	89.95	4.62			240	2	Average
2462	102.68	98.06	4.62			240	2	Peak
2483.5	44.92	40.26	4.66	54	-9.08	240	2	Average
2483.5	57.75	53.09	4.66	74	-16.25	240	2	Peak
4924	41.6	31.35	10.25	54	-12.4	146	354	Average
4924	47.83	37.58	10.25	74	-26.17	146	354	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	92.29	87.67	4.62			350	354	Average
2462	100.5	95.88	4.62			350	354	Peak
2483.5	44.08	39.42	4.66	54	-9.92	350	354	Average
2483.5	55.5	50.84	4.66	74	-18.5	350	354	Peak
4924	41.47	31.22	10.25	54	-12.53	130	57	Average
4924	47.65	37.4	10.25	74	-26.35	130	57	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.82	37.32	4.5	54	-12.18	240	340	Average
2390	51.71	47.21	4.5	74	-22.29	240	340	Peak
2412	94.56	90.01	4.55			240	340	Average
2412	101.47	96.92	4.55			240	340	Peak
4824	41.31	31.02	10.29	54	-12.69	159	161	Average
4824	47.89	37.6	10.29	74	-26.11	159	161	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.32	36.82	4.5	54	-12.68	325	114	Average
2390	51.73	47.23	4.5	74	-22.27	325	114	Peak
2412	88.45	83.9	4.55			325	114	Average
2412	95.35	90.8	4.55			325	114	Peak
4824	41.47	31.18	10.29	54	-12.53	138	164	Average
4824	47.67	37.38	10.29	74	-26.33	138	164	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2412 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.37	36.87	4.5	54	-12.63	240	340	Average
2390	51.35	46.85	4.5	74	-22.65	240	340	Peak
2437	97.11	92.52	4.59			240	340	Average
2437	104.68	100.09	4.59			240	340	Peak
2483.5	41.02	36.36	4.66	54	-12.98	240	340	Average
2483.5	52.61	47.95	4.66	74	-21.39	240	340	Peak
4874	42.2	31.99	10.21	54	-11.8	104	92	Average
4874	48.41	38.2	10.21	74	-25.59	104	92	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.25	36.75	4.5	54	-12.75	325	114	Average
2390	51.69	47.19	4.5	74	-22.31	325	114	Peak
2437	90.12	85.53	4.59			325	114	Average
2437	98.47	93.88	4.59			325	114	Peak
2483.5	41.78	37.12	4.66	54	-12.22	325	114	Average
2483.5	52.32	47.66	4.66	74	-21.68	325	114	Peak
4874	42.16	31.95	10.21	54	-11.84	124	312	Average
4874	48.48	38.27	10.21	74	-25.52	124	312	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	94.18	89.56	4.62			233	340	Average
2462	101.45	96.83	4.62			233	340	Peak
2483.5	42.77	38.11	4.66	54	-11.23	233	340	Average
2483.5	52.89	48.23	4.66	74	-21.11	233	340	Peak
4924	42.33	32.08	10.25	54	-11.67	156	175	Average
4924	48.51	38.26	10.25	74	-25.49	156	175	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2462	88	83.38	4.62			325	114	Average
2462	94.74	90.12	4.62			325	114	Peak
2483.5	41.9	37.24	4.66	54	-12.1	325	114	Average
2483.5	51.54	46.88	4.66	74	-22.46	325	114	Peak
4924	41.37	31.12	10.25	54	-12.63	148	210	Average
4924	47.77	37.52	10.25	74	-26.23	148	210	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2462 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	43.98	39.48	4.5	54	-10.02	240	340	Average
2390	53.63	49.13	4.5	74	-20.37	240	340	Peak
2422	92.13	87.57	4.56			240	340	Average
2422	100.7	96.14	4.56			240	340	Peak
2483.5	42.04	37.38	4.66	54	-11.96	240	340	Average
2483.5	52.83	48.17	4.66	74	-21.17	240	340	Peak
4844	41.65	31.42	10.23	54	-12.35	138	107	Average
4844	47.99	37.76	10.23	74	-26.01	138	107	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	42.11	37.61	4.5	54	-11.89	325	114	Average
2390	52.02	47.52	4.5	74	-21.98	325	114	Peak
2422	85.15	80.59	4.56			325	114	Average
2422	93.61	89.05	4.56			325	114	Peak
2483.5	42.21	37.55	4.66	54	-11.79	325	114	Average
2483.5	52.33	47.67	4.66	74	-21.67	325	114	Peak
4844	42.18	31.95	10.23	54	-11.82	125	173	Average
4844	48.44	38.21	10.23	74	-25.56	125	173	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2422 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	46.12	41.62	4.5	54	-7.88	240	340	Average
2390	56.92	52.42	4.5	74	-17.08	240	340	Peak
2437	95.76	91.17	4.59			240	340	Average
2437	103.46	98.87	4.59			240	340	Peak
2483.5	45.25	40.59	4.66	54	-8.75	240	340	Average
2483.5	56.23	51.57	4.66	74	-17.77	240	340	Peak
4874	42.75	32.54	10.21	54	-11.25	195	131	Average
4874	49.15	38.94	10.21	74	-24.85	195	131	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	42.43	37.93	4.5	54	-11.57	325	114	Average
2390	51.33	46.83	4.5	74	-22.67	325	114	Peak
2437	89	84.41	4.59			325	114	Average
2437	96.22	91.63	4.59			325	114	Peak
2483.5	43.03	38.37	4.66	54	-10.97	325	114	Average
2483.5	52.46	47.8	4.66	74	-21.54	325	114	Peak
4874	42.08	31.87	10.21	54	-11.92	183	112	Average
4874	48.29	38.08	10.21	74	-25.71	183	112	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2437 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.82	37.32	4.5	54	-12.18	233	340	Average
2390	51.71	47.21	4.5	74	-22.29	233	340	Peak
2452	93.38	88.78	4.6			233	340	Average
2452	101.27	96.67	4.6			233	340	Peak
2483.5	46.23	41.57	4.66	54	-7.77	233	340	Average
2483.5	56.73	52.07	4.66	74	-17.27	233	340	Peak
4904	42.03	31.89	10.14	54	-11.97	195	246	Average
4904	48.18	38.04	10.14	74	-25.82	195	246	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
2390	41.15	36.65	4.5	54	-12.85	325	114	Average
2390	51.62	47.12	4.5	74	-22.38	325	114	Peak
2452	87.34	82.74	4.6			325	114	Average
2452	93.25	88.65	4.6			325	114	Peak
2483.5	43.53	38.87	4.66	54	-10.47	325	114	Average
2483.5	52.35	47.69	4.66	74	-21.65	325	114	Peak
4904	41.54	31.4	10.14	54	-12.46	165	38	Average
4904	47.61	37.47	10.14	74	-26.39	165	38	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value
2. 2452 MHz: Fundamental frequency.
3. The emission levels of other frequencies were very low against the limit.

9 kHz ~ 30 MHz Data:

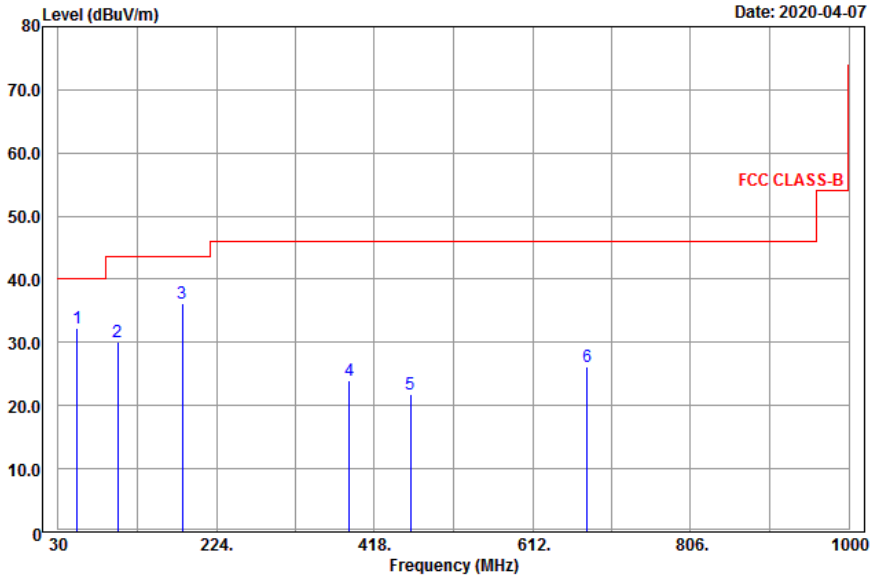
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

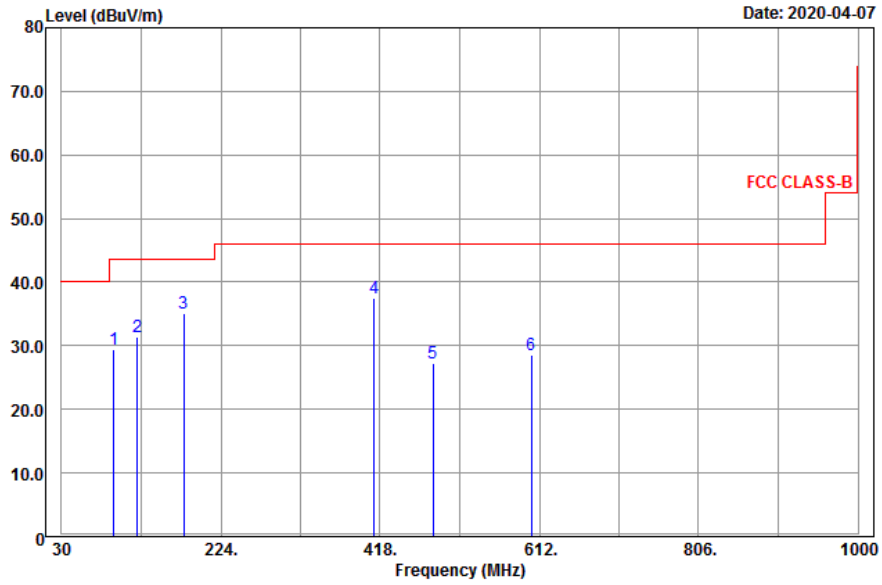
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
53.49	32.19	47.55	-15.36	40	-7.81	163	214	Peak
102.9	29.99	47.14	-17.15	43.5	-13.51	169	165	Peak
182.55	36.28	55.73	-19.45	43.5	-7.22	105	199	Peak
386.8	23.9	38.04	-14.14	46	-22.1	142	157	Peak
462.4	21.88	34.97	-13.09	46	-24.12	165	198	Peak
678.7	26.1	35.63	-9.53	46	-19.9	104	157	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	**Emission Level (dBuV/m)**	**Read Level (dBuV)**	**Factor (dB/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (cm)**	**Table Angle (Degree)**	**Remark**
93.72	29.46	47.54	-18.08	43.5	-14.04	140	201	Peak
122.34	31.41	51.06	-19.65	43.5	-12.09	132	168	Peak
178.77	35.17	54.94	-19.77	43.5	-8.33	157	195	Peak
410.6	37.44	51.19	-13.75	46	-8.56	112	154	Peak
482.7	27.22	39.87	-12.65	46	-18.78	154	195	Peak
602.4	28.48	39.01	-10.53	46	-17.52	126	132	Peak

Remarks:

1. Emission Level = Read Level + Factor
   Margin value = Emission level – Limit value.
2. The emission levels of other frequencies were very low against the limit.

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 0.50 MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Feb. 17, 2020	Feb. 16, 2021
RF signal cable Woken	5D-FB	Cable-cond2-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 20, 2020	Jan. 19, 2021
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 13, 2019	Aug. 12, 2020
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

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

4.2.3 Test Procedures

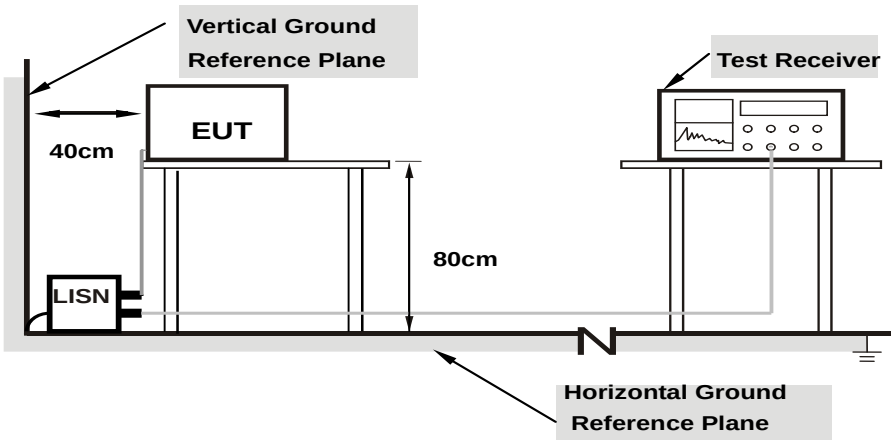
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

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

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

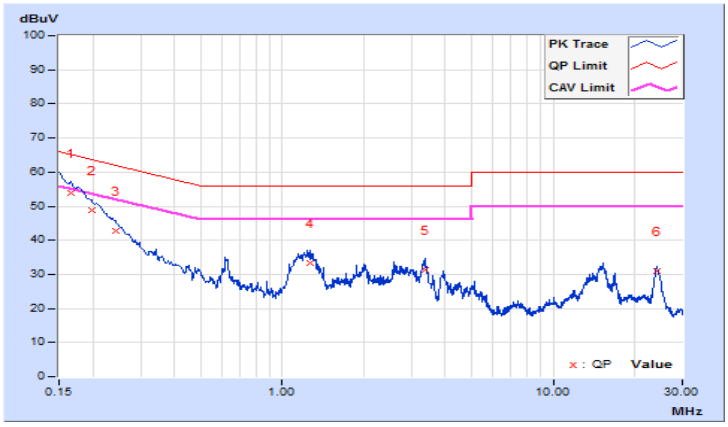
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2020/3/26

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.16567**	**10.16**	**43.86**	**40.83**	**54.02**	**50.99**	**65.17**	**55.17**	**-11.15**	**-4.18**
2	0.19721	10.17	38.64	30.79	48.81	40.96	63.73	53.73	-14.92	-12.77
3	0.24225	10.18	32.70	30.38	42.88	40.56	62.02	52.02	-19.14	-11.46
4	1.26150	10.27	23.08	20.30	33.35	30.57	56.00	46.00	-22.65	-15.43
5	3.36100	10.36	21.03	17.60	31.39	27.96	56.00	46.00	-24.61	-18.04
6	24.28350	10.50	20.56	17.11	31.06	27.61	60.00	50.00	-28.94	-22.39

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

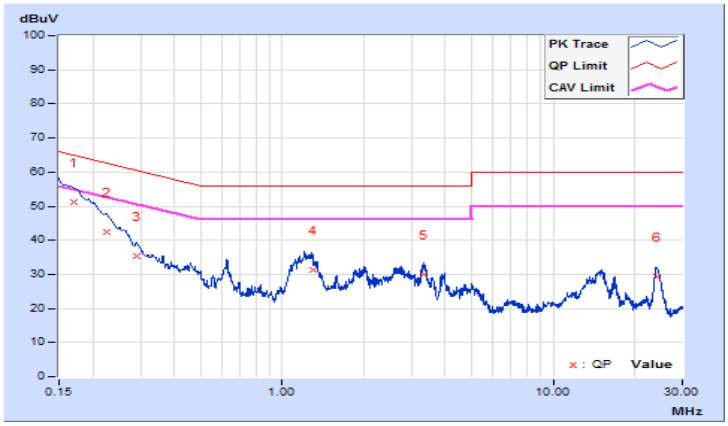


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Jisyong Wang	Test Date	2020/3/26

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17101	10.12	40.99	30.87	51.11	40.99	64.91	54.91	-13.80	-13.92
2	0.22425	10.14	32.44	25.05	42.58	35.19	62.66	52.66	-20.08	-17.47
3	0.28920	10.15	25.05	22.36	35.20	32.51	60.55	50.55	-25.35	-18.04
4	1.29525	10.25	20.91	19.99	31.16	30.24	56.00	46.00	-24.84	-15.76
5	3.34275	10.35	19.56	16.52	29.91	26.87	56.00	46.00	-26.09	-19.13
6	24.09450	10.68	18.53	15.70	29.21	26.38	60.00	50.00	-30.79	-23.62

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 Conducted Output Power Measurement

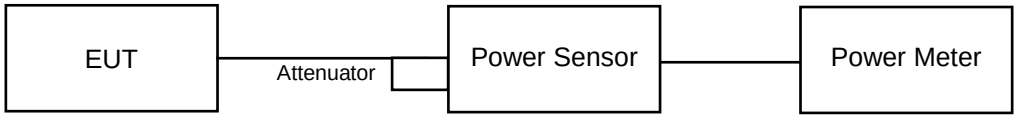
4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)
Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20 MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was 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. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	116.681	20.67	30	Pass
6	2437	172.982	22.38	30	Pass
11	2462	157.398	21.97	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	122.462	20.88	30	Pass
6	2437	222.331	23.47	30	Pass
11	2462	120.781	20.82	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.57	18.73	146.555	21.66	30	Pass
6	2437	21.33	21.72	284.446	24.54	30	Pass
11	2462	18.27	19.09	148.252	21.71	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	15.86	16.40	82.224	19.15	30	Pass
6	2437	18.52	18.81	147.231	21.68	30	Pass
9	2452	16.66	17.49	102.565	20.11	30	Pass

Average Power

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	78.705	18.96	30	Pass
6	2437	111.686	20.48	30	Pass
11	2462	99.312	19.97	30	Pass

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	39.628	15.98	30	Pass
6	2437	99.083	19.96	30	Pass
11	2462	39.355	15.95	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	13.47	13.49	44.566	16.49	30	Pass
6	2437	16.49	16.48	89.125	19.50	30	Pass
11	2462	13.48	13.47	44.566	16.49	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	10.76	11.18	25.061	13.99	30	Pass
6	2437	13.31	13.62	44.463	16.48	30	Pass
9	2452	11.53	12.32	31.261	14.95	30	Pass

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 according to ISO/IEC 17025.

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

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

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

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

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

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

--- END ---