

Variant FCC Test Report

Report No.: RF151207C04A-2

FCC ID: QYL8260NG

Test Model: 8260NGW

Received Date: Sep. 07, 2018

Test Date: Oct. 01, 2018 ~ Oct. 04, 2018

Issued Date: Oct. 30, 2018

Applicant: Getac Technology Corporation.

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

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



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Release Control Record

Issue No.	Description	Date Issued
RF151207C04A-2	Original Release	Oct. 30, 2018

1 Certificate of Conformity

Product: Wireless module

Brand: Intel

Test Model: 8260NGW

Sample Status: Engineering Sample

Applicant: Getac Technology Corporation.

Test Date: Oct. 01, 2018 ~ Oct. 04, 2018

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 : Gina Liu, **Date:** Oct. 30, 2018
Gina Liu / Specialist

Approved by : Dylan Chiou, **Date:** Oct. 30, 2018
Dylan Chiou / 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 -20.42 dB at 1.22096 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.33 dB at 2487.64 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: Only Conducted Emission, Conducted Power and Radiated Emissions tests were performed for the addendum. Refer to original report for other test data.

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) ($\pm$)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless module
Brand	Intel
Test Model	8260NGW
Status of EUT	Engineering Sample
Power Supply Rating	5.0 Vdc (host equipment)
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	340.408 mW
Antenna Type	Main Antenna: PIFA antenna with 2.06 dBi gain Aux. Antenna: PIFA antenna with -0.14 dBi gain
Antenna Connector	I-pex
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is issued as a supplementary report to BV CPS report no. RF151207C04-1. The difference compared with original report is adding new WLAN antenna, PCMCIA card slot, new SSD and new adapter. Therefore, only Conducted Emission, Conducted Power and Radiated Emissions tests were verified and recorded in this report.
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 EUT is authorized for use in specific End-product.

Product	Brand	Model	Description
NB & Tablet	Getac	V110	N/A

4. The End-product contains following accessory devices. (New brand is marked in gray.)

Product	Brand	Model	Description
Adapter 1	Chicony	A12-065N2A	I/P: 100-240Vac, 50/60Hz, 1.7A O/P: 19Vdc, 3.42A 1.7 m shielded with 1 core
Adapter 2	N/A	ADM-9019M	I/P: 100-240Vac, 50/60Hz, 1.5A O/P: 19Vdc, 4.74A 1.75 m shielded without core
Battery	Getac Technology Corp.	BP3S1P2100-S	11.1Vdc, 2100mAh
WLAN/BT Module	Intel	8260NGW	--
Digitizer	KYE	T116 EMR Digitizer	--
LTE Module	Sierra	EM7355	Function: WWAN SW: SWI9X15C_01.05.11.08 HW: 1.1
OS	N/A	N/A	Win10 64bit

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 $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz **RE<1G**: Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-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

Antenna Port Conducted 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 $\geq$ 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
APCM	25 deg. C, 65 % RH	5 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.

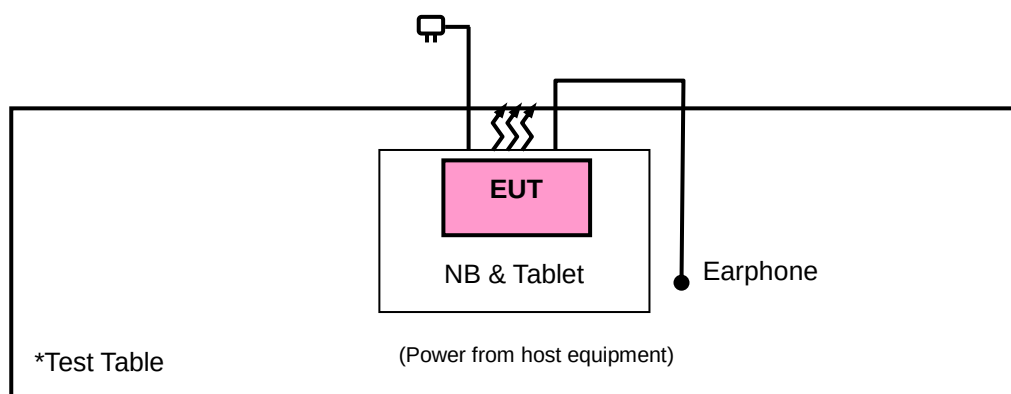
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	NB & Tablet	Getac	V110	N/A	N/A
2.	Earphone	N/A	N/A	N/A	N/A

No.	Signal Cable Description Of The Above Support Units
1.	N/A
2.	N/A

Note:

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

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 15.247 Meas Guidance v05

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2013

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

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
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 12, 2017	Nov. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	148	Dec. 13, 2017	Dec. 12, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Loop Antenna	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 30, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Power Meter Anritsu	ML2495A	1012010	Sep. 05, 2018	Sep. 04, 2019
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2018	Sep. 03, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8 000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	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 Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC7450F-10.

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:

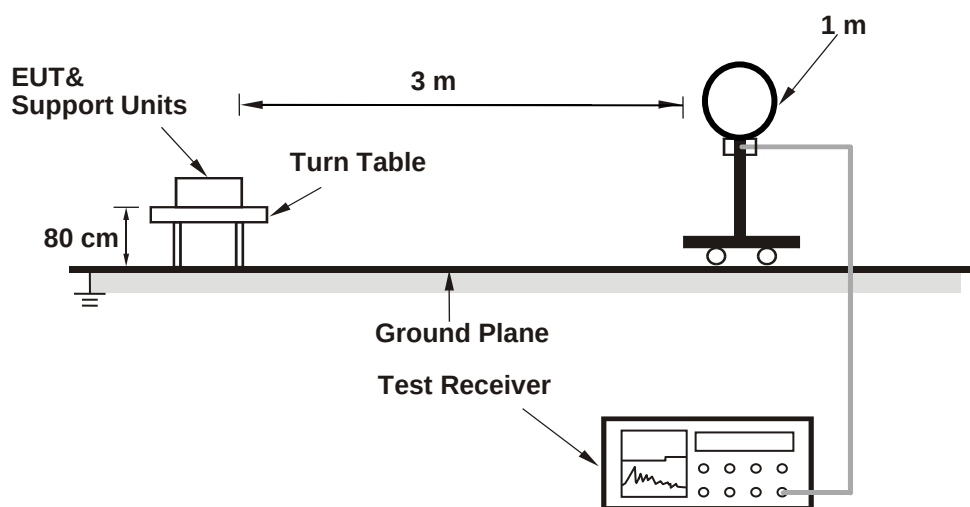
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.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

4.1.4 Deviation from Test Standard

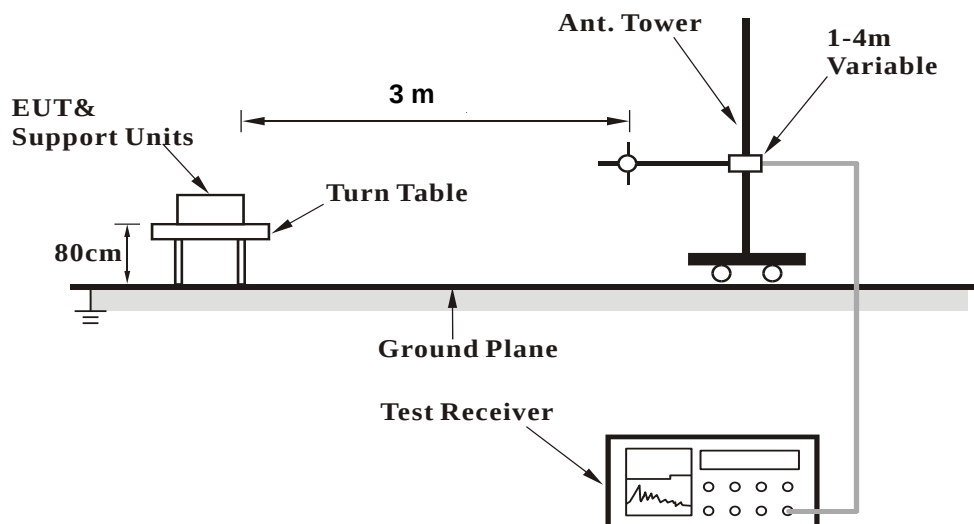
No deviation.

4.1.5 Test Set Up

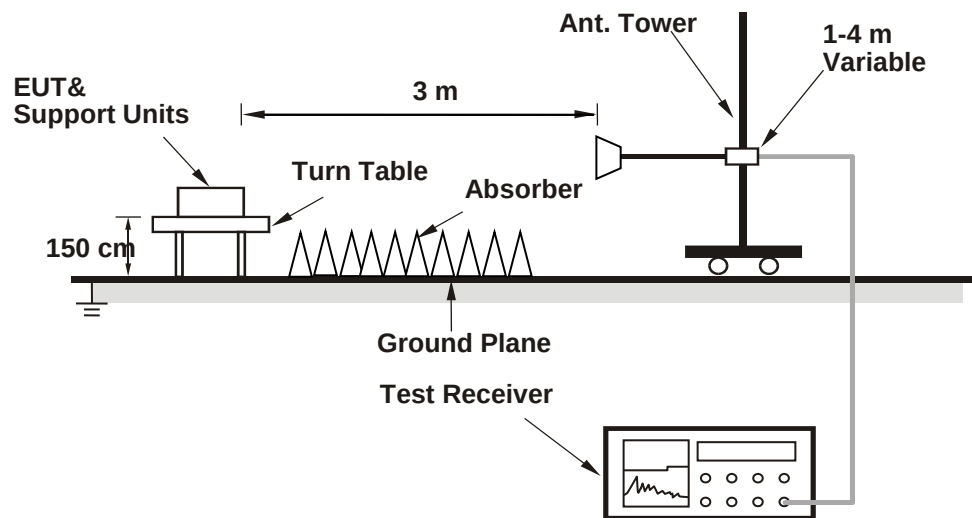
<Radiated Emission below 30 MHz>



<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

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

4.1.7 Test Results

Above 1 GHz Data :

<SISO>

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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.32	47.03	53.1	54	-6.97	27.08	4.35	37.5	138	27	Average
2385.32	67.49	73.56	74	-6.51	27.08	4.35	37.5	138	27	Peak
2412	102.52	108.43			27.23	4.38	37.52	138	27	Average
2412	106.64	112.55			27.23	4.38	37.52	138	27	Peak
4824	35.77	50.68	54	-18.23	31.17	6.81	52.89	101	341	Average
4824	44.33	59.24	74	-29.67	31.17	6.81	52.89	101	341	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2385.6	46.64	52.63	54	-7.36	27.16	4.35	37.5	100	60	Average
2385.6	67.04	73.03	74	-6.96	27.16	4.35	37.5	100	60	Peak
2412	101.44	107.35			27.23	4.38	37.52	100	60	Average
2412	106.01	111.92			27.23	4.38	37.52	100	60	Peak
4824	34.65	49.56	54	-19.35	31.17	6.81	52.89	148	113	Average
4824	43.82	58.73	74	-30.18	31.17	6.81	52.89	148	113	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.58	40.48	46.46	54	-13.52	27.16	4.36	37.5	154	27	Average
2386.58	50.75	56.73	74	-23.25	27.16	4.36	37.5	154	27	Peak
2437	104.06	109.74			27.38	4.4	37.46	154	27	Average
2437	108.41	114.09			27.38	4.4	37.46	154	27	Peak
2487.28	43.32	48.68	54	-10.68	27.53	4.43	37.32	154	27	Average
2487.28	53.29	58.65	74	-20.71	27.53	4.43	37.32	154	27	Peak
4874	36.41	51.16	54	-17.59	31.25	6.86	52.86	115	16	Average
4874	44.59	59.34	74	-29.41	31.25	6.86	52.86	115	16	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2361.38	39.21	45.36	54	-14.79	27.01	4.33	37.49	100	59	Average
2361.38	50.84	56.99	74	-23.16	27.01	4.33	37.49	100	59	Peak
2437	103.88	109.56			27.38	4.4	37.46	100	59	Average
2437	108.64	114.32			27.38	4.4	37.46	100	59	Peak
2483.68	40.97	46.33	54	-13.03	27.53	4.43	37.32	100	59	Average
2483.68	53.48	58.84	74	-20.52	27.53	4.43	37.32	100	59	Peak
4874	36.09	50.84	54	-17.91	31.25	6.86	52.86	148	331	Average
4874	44.44	59.19	74	-29.56	31.25	6.86	52.86	148	331	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	103.67	109.19			27.46	4.41	37.39	234	50	Average
2462	108.28	113.8			27.46	4.41	37.39	234	50	Peak
2487.64	48.77	54.05	54	-5.23	27.61	4.43	37.32	234	50	Average
2487.64	70.67	75.95	74	-3.33	27.61	4.43	37.32	234	50	Peak
4924	36.34	51	54	-17.66	31.34	6.89	52.89	126	284	Average
4924	44.37	59.03	74	-29.63	31.34	6.89	52.89	126	284	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	102.74	108.26			27.46	4.41	37.39	180	58	Average
2462	107.07	112.59			27.46	4.41	37.39	180	58	Peak
2488.76	45.48	50.76	54	-8.52	27.61	4.43	37.32	180	58	Average
2488.76	69.42	74.7	74	-4.58	27.61	4.43	37.32	180	58	Peak
4924	35.02	49.68	54	-18.98	31.34	6.89	52.89	166	164	Average
4924	43.1	57.76	74	-30.9	31.34	6.89	52.89	166	164	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	50.12	56.1	54	-3.88	27.16	4.36	37.5	139	27	Average
2389.66	66	71.98	74	-8	27.16	4.36	37.5	139	27	Peak
2412	100.51	106.42			27.23	4.38	37.52	139	27	Average
2412	109.83	115.74			27.23	4.38	37.52	139	27	Peak
4824	33.55	48.46	54	-20.45	31.17	6.81	52.89	152	201	Average
4824	42.3	57.21	74	-31.7	31.17	6.81	52.89	152	201	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	49.95	55.95	54	-4.05	27.16	4.36	37.52	100	61	Average
2389.8	64.76	70.76	74	-9.24	27.16	4.36	37.52	100	61	Peak
2412	100.01	105.92			27.23	4.38	37.52	100	61	Average
2412	109.67	115.58			27.23	4.38	37.52	100	61	Peak
4824	33.68	48.59	54	-20.32	31.17	6.81	52.89	162	233	Average
4824	43.11	58.02	74	-30.89	31.17	6.81	52.89	162	233	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.24	44.65	50.63	54	-9.35	27.16	4.36	37.5	138	25	Average
2389.24	60.05	66.03	74	-13.95	27.16	4.36	37.5	138	25	Peak
2437	99.39	105.07			27.38	4.4	37.46	138	25	Average
2437	109.24	114.92			27.38	4.4	37.46	138	25	Peak
2483.56	43.17	48.53	54	-10.83	27.53	4.43	37.32	138	25	Average
2483.56	56.87	62.23	74	-17.13	27.53	4.43	37.32	138	25	Peak
4874	33.51	48.26	54	-20.49	31.25	6.86	52.86	130	62	Average
4874	44.22	58.97	74	-29.78	31.25	6.86	52.86	130	62	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	43.99	49.97	54	-10.01	27.16	4.36	37.5	100	61	Average
2389.66	61.7	67.68	74	-12.3	27.16	4.36	37.5	100	61	Peak
2437	99.09	104.77			27.38	4.4	37.46	100	61	Average
2437	108.35	114.03			27.38	4.4	37.46	100	61	Peak
2483.6	42.98	48.34	54	-11.02	27.53	4.43	37.32	100	61	Average
2483.6	58.54	63.9	74	-15.46	27.53	4.43	37.32	100	61	Peak
4874	33.77	48.52	54	-20.23	31.25	6.86	52.86	148	203	Average
4874	43.69	58.44	74	-30.31	31.25	6.86	52.86	148	203	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.52	105.04			27.46	4.41	37.39	230	50	Average
2462	109.11	114.63			27.46	4.41	37.39	230	50	Peak
2483.6	45.27	50.63	54	-8.73	27.53	4.43	37.32	230	50	Average
2483.6	63	68.36	74	-11	27.53	4.43	37.32	230	50	Peak
4924	33.97	48.63	54	-20.03	31.34	6.89	52.89	128	304	Average
4924	42.69	57.35	74	-31.31	31.34	6.89	52.89	128	314	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.17	103.69			27.46	4.41	37.39	112	58	Average
2462	107.87	113.39			27.46	4.41	37.39	112	58	Peak
2483.52	45.8	51.16	54	-8.2	27.53	4.43	37.32	112	58	Average
2483.52	62.84	68.2	74	-11.16	27.53	4.43	37.32	112	58	Peak
4924	33.53	48.19	54	-20.47	31.34	6.89	52.89	132	101	Average
4924	43.46	58.12	74	-30.54	31.34	6.89	52.89	132	101	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

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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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	44.9	50.9	54	-9.1	27.16	4.36	37.52	176	27	Average
2389.94	58.16	64.16	74	-15.84	27.16	4.36	37.52	176	27	Peak
2412	96.91	102.82			27.23	4.38	37.52	176	27	Average
2412	106.77	112.68			27.23	4.38	37.52	176	27	Peak
4824	33.45	48.36	54	-20.55	31.17	6.81	52.89	153	255	Average
4824	43.16	58.07	74	-30.84	31.17	6.81	52.89	153	255	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.66	44.53	50.51	54	-9.47	27.16	4.36	37.5	166	62	Average
2389.66	56.56	62.54	74	-17.44	27.16	4.36	37.5	166	62	Peak
2412	96.42	102.33			27.23	4.38	37.52	166	62	Average
2412	106.87	112.78			27.23	4.38	37.52	166	62	Peak
4824	33.35	48.26	54	-20.65	31.17	6.81	52.89	119	341	Average
4824	43.68	58.59	74	-30.32	31.17	6.81	52.89	119	341	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	38.82	44.82	54	-15.18	27.16	4.36	37.52	105	49	Average
2389.8	51.58	57.58	74	-22.42	27.16	4.36	37.52	105	49	Peak
2437	100.89	106.57			27.38	4.4	37.46	105	49	Average
2437	110.43	116.11			27.38	4.4	37.46	105	49	Peak
2483.72	43.52	48.88	54	-10.48	27.53	4.43	37.32	105	49	Average
2483.72	56.49	61.85	74	-17.51	27.53	4.43	37.32	105	49	Peak
4874	34.01	48.76	54	-19.99	31.25	6.86	52.86	146	154	Average
4874	44.03	58.78	74	-29.97	31.25	6.86	52.86	146	154	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	39.83	45.83	54	-14.17	27.16	4.36	37.52	164	59	Average
2389.8	52.41	58.41	74	-21.59	27.16	4.36	37.52	164	59	Peak
2437	101.03	106.71			27.38	4.4	37.46	164	59	Average
2437	110.97	116.65			27.38	4.4	37.46	164	59	Peak
2483.6	41.36	46.72	54	-12.64	27.53	4.43	37.32	164	59	Average
2483.6	55.36	60.72	74	-18.64	27.53	4.43	37.32	164	59	Peak
4874	33.65	48.4	54	-20.35	31.25	6.86	52.86	150	209	Average
4874	43.3	58.05	74	-30.7	31.25	6.86	52.86	150	209	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	100.77	106.29			27.46	4.41	37.39	102	50	Average
2462	111.73	117.25			27.46	4.41	37.39	102	50	Peak
2483.52	49.93	55.29	54	-4.07	27.53	4.43	37.32	102	50	Average
2483.52	62.38	67.74	74	-11.62	27.53	4.43	37.32	102	50	Peak
4924	33.84	48.5	54	-20.16	31.34	6.89	52.89	155	237	Average
4924	44.13	58.79	74	-29.87	31.34	6.89	52.89	155	237	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.47	104.99			27.46	4.41	37.39	125	60	Average
2462	109.53	115.05			27.46	4.41	37.39	125	60	Peak
2483.64	48.06	53.42	54	-5.94	27.53	4.43	37.32	125	60	Average
2483.64	61.39	66.75	74	-12.61	27.53	4.43	37.32	125	60	Peak
4924	33.97	48.63	54	-20.03	31.34	6.89	52.89	137	163	Average
4924	43.2	57.86	74	-30.8	31.34	6.89	52.89	137	163	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.1	45.08	51.06	54	-8.92	27.16	4.36	37.5	238	30	Average
2389.1	56.81	62.79	74	-17.19	27.16	4.36	37.5	238	30	Peak
2422	93.29	99.05			27.31	4.39	37.46	238	30	Average
2422	103.42	109.18			27.31	4.39	37.46	238	30	Peak
2493.56	38.7	43.9	54	-15.3	27.61	4.44	37.25	238	30	Average
2493.56	50.32	55.52	74	-23.68	27.61	4.44	37.25	238	30	Peak
4844	33.64	48.49	54	-20.36	31.2	6.83	52.88	164	281	Average
4844	43.81	58.66	74	-30.19	31.2	6.83	52.88	164	281	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.4	44.32	50.3	54	-9.68	27.16	4.36	37.5	167	60	Average
2388.4	56.36	62.34	74	-17.64	27.16	4.36	37.5	167	60	Peak
2422	95.99	101.75			27.31	4.39	37.46	167	60	Average
2422	103.9	109.66			27.31	4.39	37.46	167	60	Peak
2483.96	38.66	44.02	54	-15.34	27.53	4.43	37.32	167	60	Average
2483.96	50.28	55.64	74	-23.72	27.53	4.43	37.32	167	60	Peak
4844	33.83	48.68	54	-20.17	31.2	6.83	52.88	137	311	Average
4844	44.66	59.51	74	-29.34	31.2	6.83	52.88	137	311	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.8	39.3	45.3	54	-14.7	27.16	4.36	37.52	102	52	Average
2389.8	51.77	57.77	74	-22.23	27.16	4.36	37.52	102	52	Peak
2437	95.18	63.4			27.38	4.4	0	102	52	Average
2437	105.78	74			27.38	4.4	0	102	52	Peak
2483.56	43.71	49.07	54	-10.29	27.53	4.43	37.32	102	52	Average
2483.56	56.42	61.78	74	-17.58	27.53	4.43	37.32	102	52	Peak
4874	33.9	48.65	54	-20.1	31.25	6.86	52.86	175	213	Average
4874	44.24	58.99	74	-29.76	31.25	6.86	52.86	175	213	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	40.74	46.74	54	-13.26	27.16	4.36	37.52	166	59	Average
2389.94	53.13	59.13	74	-20.87	27.16	4.36	37.52	166	59	Peak
2437	95.58	101.26			27.38	4.4	37.46	166	59	Average
2437	105.29	110.97			27.38	4.4	37.46	166	59	Peak
2483.56	41.7	47.06	54	-12.3	27.53	4.43	37.32	166	59	Average
2483.56	54.11	59.47	74	-19.89	27.53	4.43	37.32	166	59	Peak
4874	33.8	48.55	54	-20.2	31.25	6.86	52.86	107	300	Average
4874	45.04	59.79	74	-28.96	31.25	6.86	52.86	107	300	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- 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	Thomas Wei

Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.1	37	42.98	54	-17	27.16	4.36	37.5	100	50	Average
2389.1	48.87	54.85	74	-25.13	27.16	4.36	37.5	100	50	Peak
2452	95.79	101.39			27.38	4.41	37.39	100	50	Average
2452	106.4	112			27.38	4.41	37.39	100	50	Peak
2484.08	49.65	55.01	54	-4.35	27.53	4.43	37.32	100	50	Average
2484.08	62.27	67.63	74	-11.73	27.53	4.43	37.32	100	50	Peak
4904	33.72	48.38	54	-20.28	31.31	6.88	52.85	117	132	Average
4904	43.32	57.98	74	-30.68	31.31	6.88	52.85	117	132	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.12	37.35	43.33	54	-16.65	27.16	4.36	37.5	225	56	Average
2388.12	49.5	55.48	74	-24.5	27.16	4.36	37.5	225	56	Peak
2452	93.29	98.89			27.38	4.41	37.39	225	56	Average
2452	103.82	109.42			27.38	4.41	37.39	225	56	Peak
2484	48.66	54.02	54	-5.34	27.53	4.43	37.32	225	56	Average
2484	62.93	68.29	74	-11.07	27.53	4.43	37.32	225	56	Peak
4904	34.06	48.72	54	-19.94	31.31	6.88	52.85	162	339	Average
4904	44.3	58.96	74	-29.7	31.31	6.88	52.85	162	339	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2452 MHz: Fundamental frequency.
- 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.

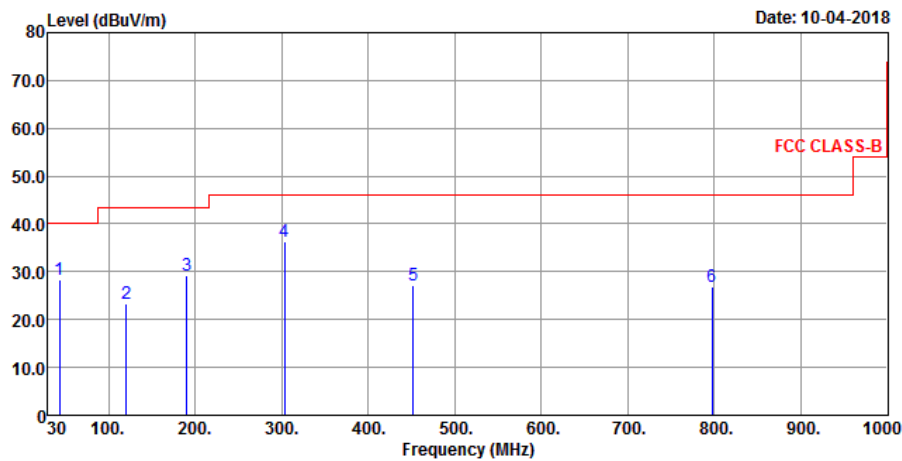
30 MHz ~ 1 GHz Worst-Case Data:

<SISO>

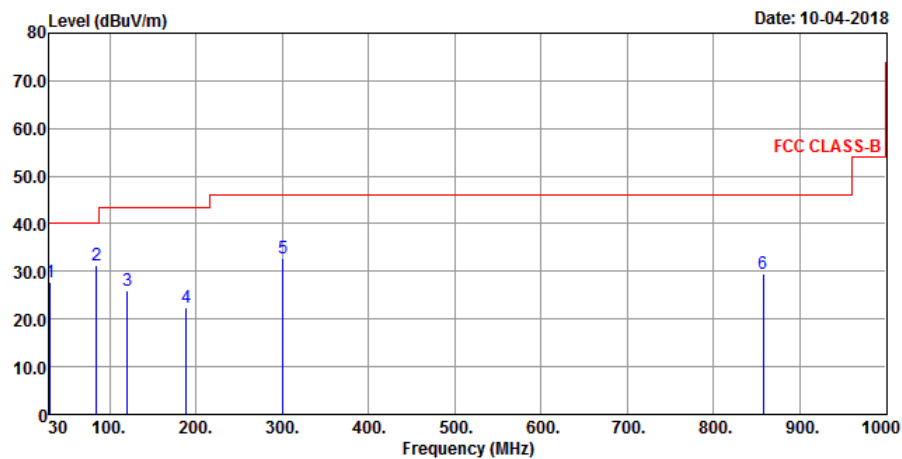
802.11b

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

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	28.46	45.48	40	-11.54	13.59	0.5	31.11	156	113	Peak
120.21	23.24	43.28	43.5	-20.26	11.02	0.84	31.9	171	156	Peak
190.05	29.19	49.64	43.5	-14.31	10.05	1.17	31.67	198	177	Peak
303.54	36.41	53.59	46	-9.59	13.03	1.67	31.88	246	225	Peak
451.95	27.17	40.49	46	-18.83	16.37	2.29	31.98	268	284	Peak
797.27	26.96	32.53	46	-19.04	22.19	3.66	31.42	316	340	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
30.97	27.86	46.39	40	-12.14	12.14	0.45	31.12	322	324	Peak
84.32	31.43	54.23	40	-8.57	8.2	0.69	31.69	275	294	Peak
120.21	26.02	46.06	43.5	-17.48	11.02	0.84	31.9	253	238	Peak
189.08	22.35	42.75	43.5	-21.15	10.12	1.17	31.69	201	175	Peak
300.63	32.91	50.15	46	-13.09	12.96	1.65	31.85	172	123	Peak
857.41	29.61	34.67	46	-16.39	22.96	3.87	31.89	142	103	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value.
- 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	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

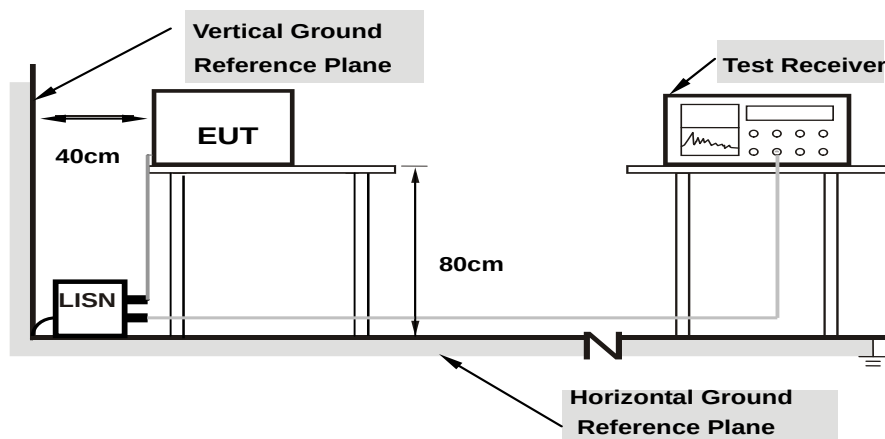
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance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

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

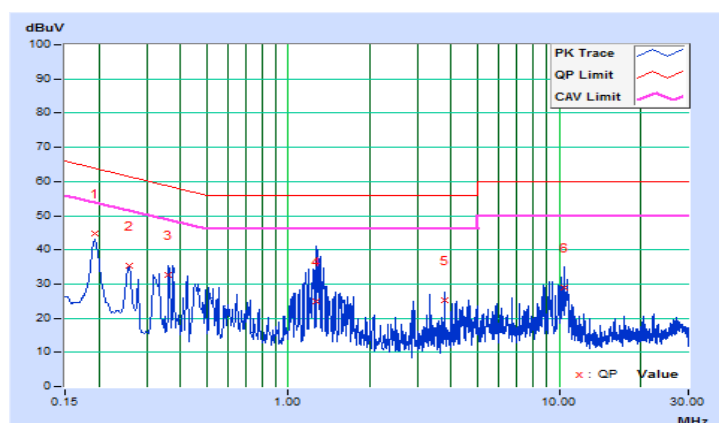
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyoung Wang	Test Date	2018/10/1

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	0.19305	9.67	35.20	15.09	44.87	24.76	63.90	53.90	-19.03	-29.14
2	0.25796	9.67	25.60	10.61	35.27	20.28	61.50	51.50	-26.23	-31.22
3	0.36143	9.66	22.91	2.34	32.57	12.00	58.70	48.70	-26.13	-36.70
4	1.26826	9.66	15.30	1.21	24.96	10.87	56.00	46.00	-31.04	-35.13
5	3.76284	9.72	15.67	1.86	25.39	11.58	56.00	46.00	-30.61	-34.42
6	10.42939	9.85	19.02	1.72	28.87	11.57	60.00	50.00	-31.13	-38.43

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

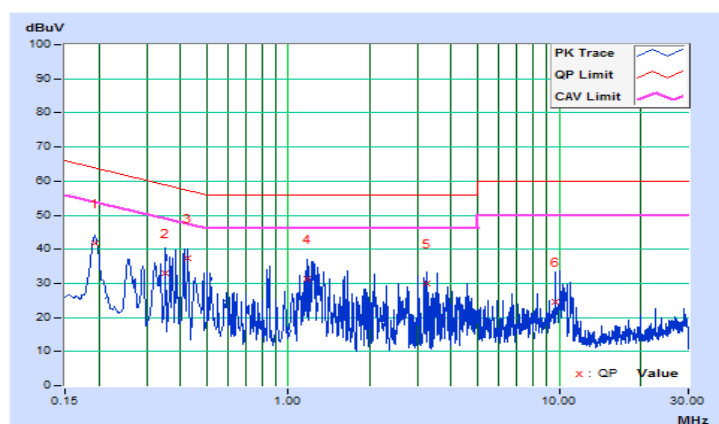


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Jisyong Wang	Test Date	2018/10/1

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	0.19305	9.67	32.06	15.56	41.73	25.23	63.90	53.90	-22.17	-28.67
2	0.35332	9.67	23.44	0.17	33.11	9.84	58.88	48.88	-25.77	-39.04
3	0.42761	9.67	27.66	7.26	37.33	16.93	57.30	47.30	-19.97	-30.37
4	1.17051	9.66	21.58	5.51	31.24	15.17	56.00	46.00	-24.76	-30.83
5	3.24672	9.71	20.17	3.78	29.88	13.49	56.00	46.00	-26.12	-32.51
6	9.65130	9.85	14.72	2.32	24.57	12.17	60.00	50.00	-35.43	-37.83

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,

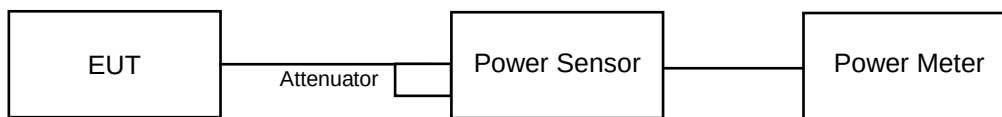
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

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 $NANT \geq 5$.

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.

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

<SISO>

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	120.226	20.80	30	Pass
6	2437	151.705	21.81	30	Pass
11	2462	149.624	21.75	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	194.536	22.89	30	Pass
6	2437	197.242	22.95	30	Pass
11	2462	167.494	22.24	30	Pass

<MIMO>

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	18.11	18.06	128.825	21.10	30	Pass
6	2437	22.36	22.25	340.408	25.32	30	Pass
11	2462	21.28	20.77	253.513	24.04	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	17.43	17.03	105.682	20.24	30	Pass
6	2437	18.67	18.60	146.218	21.65	30	Pass
9	2452	18.60	18.40	141.579	21.51	30	Pass

5 Pictures of Test Arrangements

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

Appendix – Information on 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:

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Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

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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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