Variant FCC Test Report

Report No.:	RF170818C25C
FCC ID:	XOJ-WA2000
Test Model:	WA2000C, WA2000U, WA2000M
Received Date:	Jul. 23, 2018
Test Date:	Sep. 01, 2018 ~ Sep. 06, 2018
Issued Date:	Oct. 17, 2018
Applicant:	Tibbo Technology Inc.
Address:	9F-3, No.31, Lane 169, Kang-Ning St., Hsi-Chih, New Taipei City, Taiwan 22180
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location (1):	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan, R.O.C.
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C
FCC Registration / Designation Number:	427177 / TW0011

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF170818C25C	Original Release	Oct. 17, 2018

1 Certificate of Conformity

Product:	WA2000
Brand:	Tibbo Technology Inc.
Test Model:	WA2000C, WA2000U, WA2000M
Sample Status:	Production Unit
Applicant:	Tibbo Technology Inc.
Test Date:	Sep. 01, 2018 ~ Sep. 06, 2018
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2013

This report is issued as a supplementary report to BV CPS report no.: RF170818C25-1. This report shall be used by combining with its original report.

Prepared by :  , **Date:** Oct. 17, 2018

Gina Liu / Specialist

Approved by :  , **Date:** Oct. 17, 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	N/A	Refer to Note
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.01 dB at 2483.52 MHz and 2483.64 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 radiated emission tests and conducted Power had been 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**	**Expended Uncertainty (k=2) (±)**
Radiated Emissions up to 1 GHz	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	WA2000
Brand	Tibbo Technology Inc.
Test Model	WA2000C, WA2000U, WA2000M
Status of EUT	Production Unit
Power Supply Rating	3.3 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 150.0 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	267.30 mW
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

1. This report is issued as a supplementary report to BV CPS report no.: RF170818C25-1. The difference compared with original report is adding new antennas and changing applicant, product name, brand name, model name. Therefore, only conducted power and radiated emission tests had been performed for this report.
2. The EUT contains 3 samples listed as below.

Sample	Model	Description
C	WA2000C	Chip antenna onboard
B	WA2000U	with U.FL Connector
A	WA2000M	with MHF4 connector

3. The antenna information is listed as below.

	Antenna Type	Brand	Model	Antenna Gain (dBi)			Connecter Type
				BT	WLAN 2.4 GHz	WLAN 5 GHz	
1	PCB	Johanson Technology	2450AD14A5500	1.0	1.0	4.0	none (like solder)
2	Monopole	WIFI-Link Technologies Co Ltd	WLD1	6.0	6.0	5.0	R-SMA
3	Monopole	WIFI-Link Technologies Co Ltd	WLD1	6.0	6.0	5.0	R-SMA

4. 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	APCM	
A	√	√	-	√	Sample A
B	√	√	-	√	Sample B
C	√	√	-	√	Sample C

Where **RE≥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 0 and 90 degree for antenna. The worst case was found when positioned on **90 degree**.
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)
A, B, C	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)
A	802.11n (HT20)	1 to 11	11	OFDM	BPSK	6.5
B	802.11b	1 to 11	1	DSSS	DBPSK	1.0
C	802.11n (HT40)	3 to 9	3	OFDM	BPSK	13.5

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)
A, B, C	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	3.3 Vdc	Harry Hsueh, Karl Lee
RE<1G	25 deg. C, 65 % RH	3.3 Vdc	Harry Hsueh
APCM	25 deg. C, 65 % RH	3.3 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.

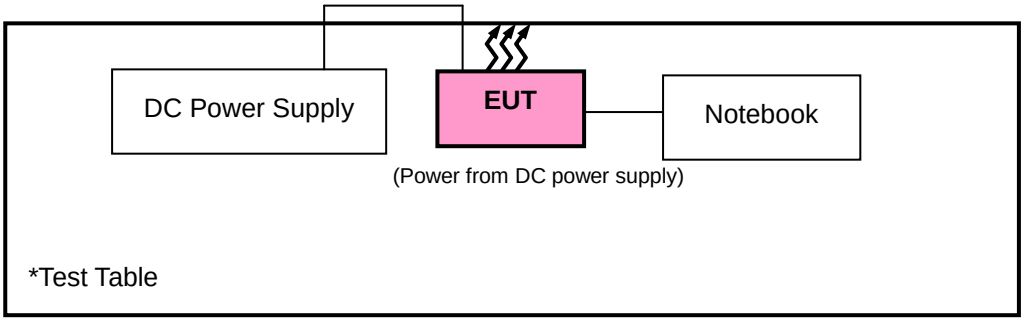
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Notebook	DELL	Inspiron 14R	8LRKKW1	N/A
2.	DC power supply	Keysight	U8002A	MY56330015	N/A

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
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 Technologies	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Dec. 14, 2017	Dec. 13, 2018
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 01, 2017	Nov. 30, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 19, 2018	Jun. 18, 2019
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	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 HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC7450I-1.

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:

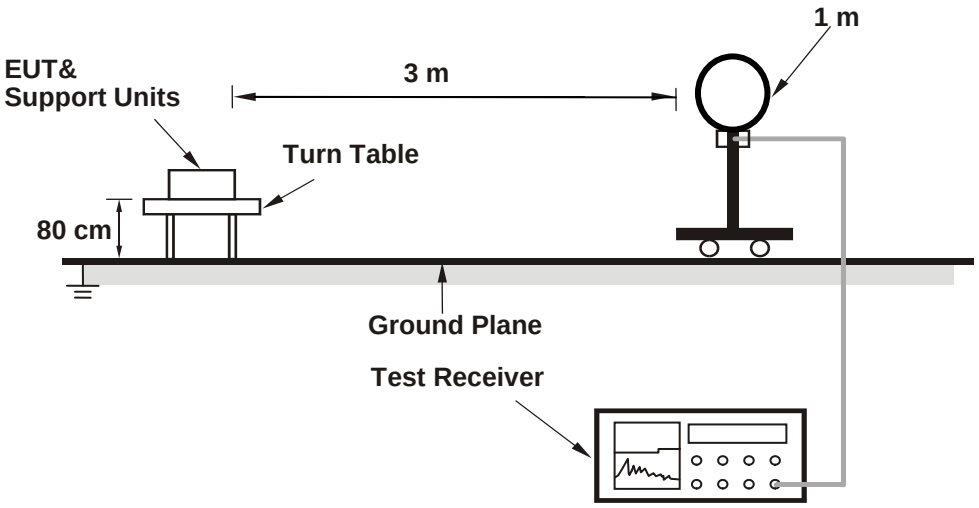
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 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

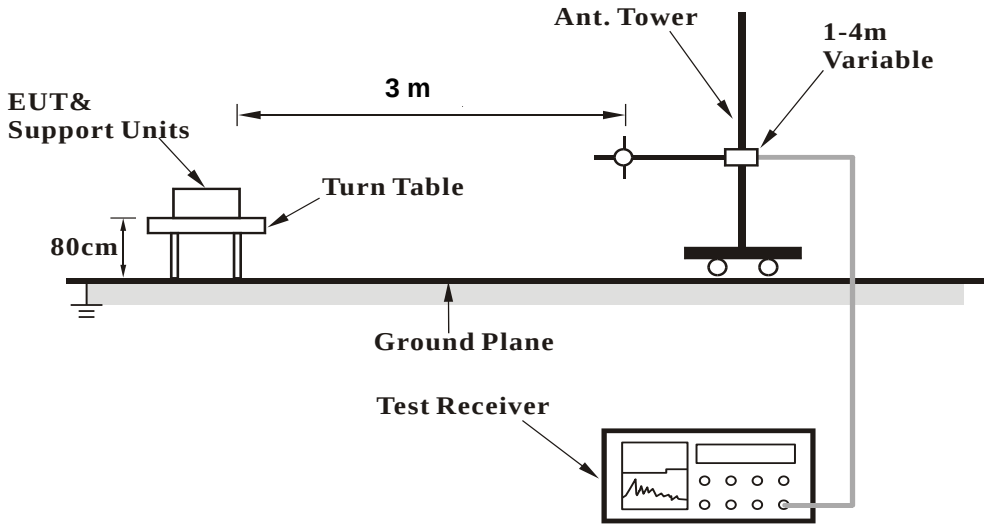
No deviation.

4.1.5 Test Set Up

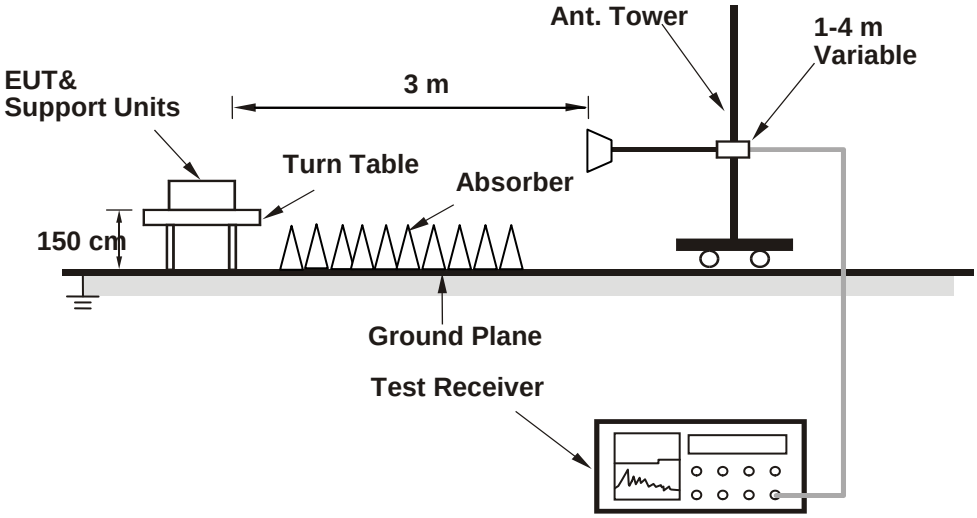
<Radiated Emission below 30 MHz>



<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：

Mode A

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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**
2383.8	41.27	39.58	54	-12.73	31.78	5.4	35.49	136	251	Average
2383.8	52	50.31	74	-22	31.78	5.4	35.49	136	251	Peak
2412	97.37	95.6			31.81	5.43	35.47	136	251	Average
2412	100.04	98.27			31.81	5.43	35.47	136	251	Peak
4824	38.86	30.73	54	-15.14	33.97	8.26	34.1	143	112	Average
4824	48.42	40.29	74	-25.58	33.97	8.26	34.1	143	112	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**
2389.83	46.22	44.49	54	-7.78	31.8	5.4	35.47	157	180	Average
2389.83	55.01	53.28	74	-18.99	31.8	5.4	35.47	157	180	Peak
2412	107.37	105.6			31.81	5.43	35.47	157	180	Average
2412	110.47	108.7			31.81	5.43	35.47	157	180	Peak
4824	48.61	40.48	54	-5.39	33.97	8.26	34.1	105	142	Average
4824	52.74	44.61	74	-21.26	33.97	8.26	34.1	105	142	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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**
2388.39	41.04	39.33	54	-12.96	31.8	5.4	35.49	136	251	Average
2388.39	52.09	50.38	74	-21.91	31.8	5.4	35.49	136	251	Peak
2437	98.55	96.7			31.85	5.46	35.46	136	251	Average
2437	101.88	100.03			31.85	5.46	35.46	136	251	Peak
2495.84	41.41	39.39	54	-12.59	31.9	5.53	35.41	136	251	Average
2495.84	52.98	50.96	74	-21.02	31.9	5.53	35.41	136	251	Peak
4874	37.23	29.04	54	-16.77	33.98	8.27	34.06	138	157	Average
4874	46.86	38.67	74	-27.14	33.98	8.27	34.06	138	157	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**
2388.21	45.91	44.2	54	-8.09	31.8	5.4	35.49	157	180	Average
2388.21	55.47	53.76	74	-18.53	31.8	5.4	35.49	157	180	Peak
2437	108.57	106.72			31.85	5.46	35.46	157	180	Average
2437	111.53	109.68			31.85	5.46	35.46	157	180	Peak
2485.92	45.91	43.92	54	-8.09	31.88	5.53	35.42	157	180	Average
2485.92	55.67	53.68	74	-18.33	31.88	5.53	35.42	157	180	Peak
4874	51.12	42.93	54	-2.88	33.98	8.27	34.06	101	130	Average
4874	55.93	47.74	74	-18.07	33.98	8.27	34.06	101	130	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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	98.58	96.65			31.87	5.5	35.44	136	251	Average
2462	101.48	99.55			31.87	5.5	35.44	136	251	Peak
2483.2	41.66	39.7	54	-12.34	31.88	5.5	35.42	136	251	Average
2483.2	52.52	50.56	74	-21.48	31.88	5.5	35.42	136	251	Peak
4924	38.32	30.07	54	-15.68	33.99	8.28	34.02	160	134	Average
4924	47.94	39.69	74	-26.06	33.99	8.28	34.02	160	134	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	107.48	105.55			31.87	5.5	35.44	157	180	Average
2462	110.91	108.98			31.87	5.5	35.44	157	180	Peak
2483.88	49.74	47.78	54	-4.26	31.88	5.5	35.42	157	180	Average
2483.88	56.09	54.13	74	-17.91	31.88	5.5	35.42	157	180	Peak
4924	52.21	43.96	54	-1.79	33.99	8.28	34.02	101	142	Average
4924	54.94	46.69	74	-19.06	33.99	8.28	34.02	101	142	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	44.92	43.19	54	-9.08	31.8	5.4	35.47	120	128	Average
2389.92	57.79	56.06	74	-16.21	31.8	5.4	35.47	120	128	Peak
2412	95.12	93.35			31.81	5.43	35.47	120	128	Average
2412	103.51	101.74			31.81	5.43	35.47	120	128	Peak
4824	40.35	32.22	54	-13.65	33.97	8.26	34.1	118	244	Average
4824	46.72	38.59	74	-27.28	33.97	8.26	34.1	118	244	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**
2389.92	52.42	50.69	54	-1.58	31.8	5.4	35.47	123	139	Average
2389.92	67.19	65.46	74	-6.81	31.8	5.4	35.47	123	139	Peak
2412	102.67	100.9			31.81	5.43	35.47	123	139	Average
2412	109.8	108.03			31.81	5.43	35.47	123	139	Peak
4824	40.29	32.16	54	-13.71	33.97	8.26	34.1	124	106	Average
4824	47.06	38.93	74	-26.94	33.97	8.26	34.1	124	106	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2388.48	41.73	40.02	54	-12.27	31.8	5.4	35.49	145	129	Average
2388.48	51.99	50.28	74	-22.01	31.8	5.4	35.49	145	129	Peak
2437	95.67	93.82			31.85	5.46	35.46	145	129	Average
2437	104.04	102.19			31.85	5.46	35.46	145	129	Peak
2484.92	42.15	40.16	54	-11.85	31.88	5.53	35.42	145	129	Average
2484.92	54	52.01	74	-20	31.88	5.53	35.42	145	129	Peak
4874	40.49	32.3	54	-13.51	33.98	8.27	34.06	157	175	Average
4874	47.25	39.06	74	-26.75	33.98	8.27	34.06	157	175	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**
2389.83	44.95	43.22	54	-9.05	31.8	5.4	35.47	144	250	Average
2389.83	56.42	54.69	74	-17.58	31.8	5.4	35.47	144	250	Peak
2437	103.84	101.99			31.85	5.46	35.46	144	250	Average
2437	112.45	110.6			31.85	5.46	35.46	144	250	Peak
2490.52	45.62	43.61	54	-8.38	31.9	5.53	35.42	144	250	Average
2490.52	56.85	54.84	74	-17.15	31.9	5.53	35.42	144	250	Peak
4874	40.43	32.24	54	-13.57	33.98	8.27	34.06	118	246	Average
4874	47.35	39.16	74	-26.65	33.98	8.27	34.06	118	246	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	94.15	92.22			31.87	5.5	35.44	119	129	Average
2462	102.72	100.79			31.87	5.5	35.44	119	129	Peak
2483.52	44.78	42.82	54	-9.22	31.88	5.5	35.42	119	129	Average
2483.52	58.89	56.93	74	-15.11	31.88	5.5	35.42	119	129	Peak
4924	40.53	32.28	54	-13.47	33.99	8.28	34.02	186	225	Average
4924	48.63	40.38	74	-25.37	33.99	8.28	34.02	186	225	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	102.42	100.49			31.87	5.5	35.44	116	251	Average
2462	111.16	109.23			31.87	5.5	35.44	116	251	Peak
2483.52	52.74	50.78	54	-1.26	31.88	5.5	35.42	116	251	Average
2483.52	68.48	66.52	74	-5.52	31.88	5.5	35.42	116	251	Peak
4924	40.58	32.33	54	-13.42	33.99	8.28	34.02	113	340	Average
4924	48.36	40.11	74	-25.64	33.99	8.28	34.02	113	340	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	44.92	43.19	54	-9.08	31.8	5.4	35.47	120	128	Average
2389.92	62.11	60.38	74	-11.89	31.8	5.4	35.47	120	128	Peak
2412	93.31	91.54			31.81	5.43	35.47	120	128	Average
2412	101.39	99.62			31.81	5.43	35.47	120	128	Peak
4824	40.38	32.25	54	-13.62	33.97	8.26	34.1	195	85	Average
4824	46.85	38.72	74	-27.15	33.97	8.26	34.1	195	85	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**
2389.83	52.26	50.53	54	-1.74	31.8	5.4	35.47	123	139	Average
2389.83	69.91	68.18	74	-4.09	31.8	5.4	35.47	123	139	Peak
2412	101.51	99.74			31.81	5.43	35.47	123	139	Average
2412	110.16	108.39			31.81	5.43	35.47	123	139	Peak
4824	40.24	32.11	54	-13.76	33.97	8.26	34.1	189	133	Average
4824	47.32	39.19	74	-26.68	33.97	8.26	34.1	189	133	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2388.93	41.62	39.91	54	-12.38	31.8	5.4	35.49	145	129	Average
2388.93	52.83	51.12	74	-21.17	31.8	5.4	35.49	145	129	Peak
2437	95.4	93.55			31.85	5.46	35.46	145	129	Average
2437	103.48	101.63			31.85	5.46	35.46	145	129	Peak
2484.36	42.2	40.21	54	-11.8	31.88	5.53	35.42	145	129	Average
2484.36	52.99	51	74	-21.01	31.88	5.53	35.42	145	129	Peak
4874	40.36	32.17	54	-13.64	33.98	8.27	34.06	185	347	Average
4874	46.98	38.79	74	-27.02	33.98	8.27	34.06	185	347	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**
2386.59	44.93	43.22	54	-9.07	31.8	5.4	35.49	144	250	Average
2386.59	56.47	54.76	74	-17.53	31.8	5.4	35.49	144	250	Peak
2437	103.77	101.92			31.85	5.46	35.46	144	250	Average
2437	111.6	109.75			31.85	5.46	35.46	144	250	Peak
2484.44	45.59	43.6	54	-8.41	31.88	5.53	35.42	144	250	Average
2484.44	56.57	54.58	74	-17.43	31.88	5.53	35.42	144	250	Peak
4874	40.45	32.26	54	-13.55	33.98	8.27	34.06	195	225	Average
4874	46.77	38.58	74	-27.23	33.98	8.27	34.06	195	225	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	93.1	91.17			31.87	5.5	35.44	119	129	Average
2462	101.76	99.83			31.87	5.5	35.44	119	129	Peak
2483.52	44.93	42.97	54	-9.07	31.88	5.5	35.42	119	129	Average
2483.52	59.53	57.57	74	-14.47	31.88	5.5	35.42	119	129	Peak
4924	40.7	32.45	54	-13.3	33.99	8.28	34.02	147	13	Average
4924	47.34	39.09	74	-26.66	33.99	8.28	34.02	147	13	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	101.25	99.32			31.87	5.5	35.44	116	251	Average
2462	108.65	106.72			31.87	5.5	35.44	116	251	Peak
2483.52	52.99	51.03	54	-1.01	31.88	5.5	35.42	116	251	Average
2483.52	69.75	67.79	74	-4.25	31.88	5.5	35.42	116	251	Peak
4924	40.82	32.57	54	-13.18	33.99	8.28	34.02	124	300	Average
4924	47.3	39.05	74	-26.7	33.99	8.28	34.02	124	300	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.83	44.91	43.18	54	-9.09	31.8	5.4	35.47	120	128	Average
2389.83	59.01	57.28	74	-14.99	31.8	5.4	35.47	120	128	Peak
2422	88.75	86.95			31.83	5.43	35.46	120	128	Average
2422	96.98	95.18			31.83	5.43	35.46	120	128	Peak
2483.84	41.52	39.56	54	-12.48	31.88	5.5	35.42	120	128	Average
2483.84	52.53	50.57	74	-21.47	31.88	5.5	35.42	120	128	Peak
4844	40.8	32.65	54	-13.2	33.97	8.26	34.08	141	124	Average
4844	47.29	39.14	74	-26.71	33.97	8.26	34.08	141	124	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**
2389.92	52.08	50.35	54	-1.92	31.8	5.4	35.47	107	139	Average
2389.92	66.86	65.13	74	-7.14	31.8	5.4	35.47	107	139	Peak
2422	96.83	95.03			31.83	5.43	35.46	107	139	Average
2422	104.25	102.45			31.83	5.43	35.46	107	139	Peak
2485.8	43.58	41.59	54	-10.42	31.88	5.53	35.42	107	139	Average
2485.8	56.13	54.14	74	-17.87	31.88	5.53	35.42	107	139	Peak
4844	41	32.85	54	-13	33.97	8.26	34.08	144	305	Average
4844	47.14	38.99	74	-26.86	33.97	8.26	34.08	144	305	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.83	45.84	44.11	54	-8.16	31.8	5.4	35.47	145	129	Average
2389.83	58.24	56.51	74	-15.76	31.8	5.4	35.47	145	129	Peak
2437	93.1	91.25			31.85	5.46	35.46	145	129	Average
2437	100.92	99.07			31.85	5.46	35.46	145	129	Peak
2483.64	45.43	43.47	54	-8.57	31.88	5.5	35.42	145	129	Average
2483.64	60.42	58.46	74	-13.58	31.88	5.5	35.42	145	129	Peak
4874	41.08	32.89	54	-12.92	33.98	8.27	34.06	154	4	Average
4874	47.65	39.46	74	-26.35	33.98	8.27	34.06	154	4	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**
2389.92	52.72	50.99	54	-1.28	31.8	5.4	35.47	144	251	Average
2389.92	69.3	67.57	74	-4.7	31.8	5.4	35.47	144	251	Peak
2437	101.37	99.52			31.85	5.46	35.46	144	251	Average
2437	109.87	108.02			31.85	5.46	35.46	144	251	Peak
2483.72	51.92	49.96	54	-2.08	31.88	5.5	35.42	144	251	Average
2483.72	66.55	64.59	74	-7.45	31.88	5.5	35.42	144	251	Peak
4874	40.76	32.57	54	-13.24	33.98	8.27	34.06	160	324	Average
4874	46.79	38.6	74	-27.21	33.98	8.27	34.06	160	324	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 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2388.57	41.08	39.37	54	-12.92	31.8	5.4	35.49	119	129	Average
2388.57	52.23	50.52	74	-21.77	31.8	5.4	35.49	119	129	Peak
2452	87.98	86.11			31.85	5.46	35.44	119	129	Average
2452	96.58	94.71			31.85	5.46	35.44	119	129	Peak
2484.08	44.51	42.55	54	-9.49	31.88	5.5	35.42	119	129	Average
2484.08	57.83	55.87	74	-16.17	31.88	5.5	35.42	119	129	Peak
4904	41.19	32.97	54	-12.81	33.98	8.28	34.04	147	274	Average
4904	48.77	40.55	74	-25.23	33.98	8.28	34.04	147	274	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**
2389.2	43.9	42.19	54	-10.1	31.8	5.4	35.49	106	251	Average
2389.2	54.86	53.15	74	-19.14	31.8	5.4	35.49	106	251	Peak
2452	96.77	94.9			31.85	5.46	35.44	106	251	Average
2452	105.44	103.57			31.85	5.46	35.44	106	251	Peak
2483.92	52.76	50.8	54	-1.24	31.88	5.5	35.42	106	251	Average
2483.92	71.22	69.26	74	-2.78	31.88	5.5	35.42	106	251	Peak
4904	41.12	32.9	54	-12.88	33.98	8.28	34.04	142	111	Average
4904	47.03	38.81	74	-26.97	33.98	8.28	34.04	142	111	Peak

Remarks:

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

Mode B

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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**
2389.65	40.94	39.23	54	-13.06	31.8	5.4	35.49	133	86	Average
2389.65	51.85	50.14	74	-22.15	31.8	5.4	35.49	133	86	Peak
2412	95.79	94.02			31.81	5.43	35.47	133	86	Average
2412	98.39	96.62			31.81	5.43	35.47	133	86	Peak
4824	38.39	30.26	54	-15.61	33.97	8.26	34.1	145	170	Average
4824	48.08	39.95	74	-25.92	33.97	8.26	34.1	145	170	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**
2371.92	43.9	42.24	54	-10.1	31.78	5.37	35.49	130	177	Average
2379.12	54.72	53.06	74	-19.28	31.78	5.37	35.49	130	177	Peak
2412	105.1	103.33			31.81	5.43	35.47	130	177	Average
2412	107.41	105.64			31.81	5.43	35.47	130	177	Peak
4824	52.98	44.85	54	-1.02	33.97	8.26	34.1	217	170	Average
4824	56.16	48.03	74	-17.84	33.97	8.26	34.1	217	170	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2368.41	40.95	39.31	54	-13.05	31.76	5.37	35.49	175	86	Average
2368.41	51.82	50.18	74	-22.18	31.76	5.37	35.49	175	86	Peak
2437	96.65	94.8			31.85	5.46	35.46	175	86	Average
2437	99.27	97.42			31.85	5.46	35.46	175	86	Peak
2485.08	41.82	39.83	54	-12.18	31.88	5.53	35.42	175	86	Average
2485.08	52.89	50.9	74	-21.11	31.88	5.53	35.42	175	86	Peak
4874	38.23	30.04	54	-15.77	33.98	8.27	34.06	121	196	Average
4874	47.81	39.62	74	-26.19	33.98	8.27	34.06	121	196	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**
2333.94	44.55	43.01	54	-9.45	31.73	5.33	35.52	126	229	Average
2333.94	54.13	52.59	74	-19.87	31.73	5.33	35.52	126	229	Peak
2437	105.47	103.62			31.85	5.46	35.46	126	229	Average
2437	108.36	106.51			31.85	5.46	35.46	126	229	Peak
2485.32	45.25	43.26	54	-8.75	31.88	5.53	35.42	126	229	Average
2485.32	55.37	53.38	74	-18.63	31.88	5.53	35.42	126	229	Peak
4874	52.98	44.79	54	-1.02	33.98	8.27	34.06	180	145	Average
4874	56.08	47.89	74	-17.92	33.98	8.27	34.06	180	145	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	99.93	98			31.87	5.5	35.44	118	101	Average
2462	102.64	100.71			31.87	5.5	35.44	118	101	Peak
2484.08	42.4	40.44	54	-11.6	31.88	5.5	35.42	118	101	Average
2484.08	53.92	51.96	74	-20.08	31.88	5.5	35.42	118	101	Peak
4924	42.82	34.57	54	-11.18	33.99	8.28	34.02	100	331	Average
4924	48.88	40.63	74	-25.12	33.99	8.28	34.02	100	331	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	109.27	107.34			31.87	5.5	35.44	101	270	Average
2462	111.75	109.82			31.87	5.5	35.44	101	270	Peak
2484.04	49.02	47.06	54	-4.98	31.88	5.5	35.42	101	270	Average
2484.04	57.93	55.97	74	-16.07	31.88	5.5	35.42	101	270	Peak
4924	52.86	44.61	54	-1.14	33.99	8.28	34.02	118	168	Average
4924	57.08	48.83	74	-16.92	33.99	8.28	34.02	118	168	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	42.57	40.84	54	-11.43	31.8	5.4	35.47	180	88	Average
2389.92	55.9	54.17	74	-18.1	31.8	5.4	35.47	180	88	Peak
2412	94.68	92.91			31.81	5.43	35.47	180	88	Average
2412	102.85	101.08			31.81	5.43	35.47	180	88	Peak
4824	40.39	32.26	54	-13.61	33.97	8.26	34.1	104	1	Average
4824	46.64	38.51	74	-27.36	33.97	8.26	34.1	104	1	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**
2389.92	52.96	51.23	54	-1.04	31.8	5.4	35.47	132	178	Average
2389.92	68.6	66.87	74	-5.4	31.8	5.4	35.47	132	178	Peak
2412	103.62	101.85			31.81	5.43	35.47	132	178	Average
2412	112.1	110.33			31.81	5.43	35.47	132	178	Peak
4824	41.02	32.89	54	-12.98	33.97	8.26	34.1	158	299	Average
4824	46.84	38.71	74	-27.16	33.97	8.26	34.1	158	299	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2388.93	40.93	39.22	54	-13.07	31.8	5.4	35.49	175	86	Average
2388.93	52.07	50.36	74	-21.93	31.8	5.4	35.49	175	86	Peak
2437	96.3	94.45			31.85	5.46	35.46	175	86	Average
2437	104.73	102.88			31.85	5.46	35.46	175	86	Peak
2483.72	42.06	40.1	54	-11.94	31.88	5.5	35.42	175	86	Average
2483.72	53.26	51.3	74	-20.74	31.88	5.5	35.42	175	86	Peak
4874	41.49	33.3	54	-12.51	33.98	8.27	34.06	111	123	Average
4874	47.86	39.67	74	-26.14	33.98	8.27	34.06	111	123	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**
2361.12	43.71	42.08	54	-10.29	31.76	5.37	35.5	126	229	Average
2361.12	54.47	52.84	74	-19.53	31.76	5.37	35.5	126	229	Peak
2437	104.77	102.92			31.85	5.46	35.46	126	229	Average
2437	112.62	110.77			31.85	5.46	35.46	126	229	Peak
2483.52	45.63	43.67	54	-8.37	31.88	5.5	35.42	126	229	Average
2483.52	56.63	54.67	74	-17.37	31.88	5.5	35.42	126	229	Peak
4874	41.64	33.45	54	-12.36	33.98	8.27	34.06	101	244	Average
4874	48.56	40.37	74	-25.44	33.98	8.27	34.06	101	244	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	94.19	92.26			31.87	5.5	35.44	118	101	Average
2462	102.29	100.36			31.87	5.5	35.44	118	101	Peak
2483.52	43.84	41.88	54	-10.16	31.88	5.5	35.42	118	101	Average
2483.52	59.32	57.36	74	-14.68	31.88	5.5	35.42	118	101	Peak
4924	40.93	32.68	54	-13.07	33.99	8.28	34.02	124	222	Average
4924	47.39	39.14	74	-26.61	33.99	8.28	34.02	124	222	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	103.47	101.54			31.87	5.5	35.44	101	270	Average
2462	111.89	109.96			31.87	5.5	35.44	101	270	Peak
2483.6	52.53	50.57	54	-1.47	31.88	5.5	35.42	101	270	Average
2483.6	69.42	67.46	74	-4.58	31.88	5.5	35.42	101	270	Peak
4924	40.98	32.73	54	-13.02	33.99	8.28	34.02	112	32	Average
4924	47.35	39.1	74	-26.65	33.99	8.28	34.02	112	32	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.74	42.29	40.58	54	-11.71	31.8	5.4	35.49	180	88	Average
2389.74	58.06	56.35	74	-15.94	31.8	5.4	35.49	180	88	Peak
2412	93.39	91.62			31.81	5.43	35.47	180	88	Average
2412	101.2	99.43			31.81	5.43	35.47	180	88	Peak
4824	40.98	32.85	54	-13.02	33.97	8.26	34.1	199	245	Average
4824	47.01	38.88	74	-26.99	33.97	8.26	34.1	199	245	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**
2389.83	52.62	50.89	54	-1.38	31.8	5.4	35.47	132	178	Average
2389.83	71.15	69.42	74	-2.85	31.8	5.4	35.47	132	178	Peak
2412	101.89	100.12			31.81	5.43	35.47	132	178	Average
2412	109.75	107.98			31.81	5.43	35.47	132	178	Peak
4824	41.19	33.06	54	-12.81	33.97	8.26	34.1	171	12	Average
4824	46.86	38.73	74	-27.14	33.97	8.26	34.1	171	12	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	40.92	39.19	54	-13.08	31.8	5.4	35.47	175	86	Average
2389.92	52.39	50.66	74	-21.61	31.8	5.4	35.47	175	86	Peak
2437	96.62	94.77			31.85	5.46	35.46	175	86	Average
2437	104.81	102.96			31.85	5.46	35.46	175	86	Peak
2484.08	42.23	40.27	54	-11.77	31.88	5.5	35.42	175	86	Average
2484.08	53.21	51.25	74	-20.79	31.88	5.5	35.42	175	86	Peak
4874	40.33	32.14	54	-13.67	33.98	8.27	34.06	120	244	Average
4874	47.1	38.91	74	-26.9	33.98	8.27	34.06	120	244	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**
2356.53	43.57	41.94	54	-10.43	31.76	5.37	35.5	126	229	Average
2356.53	54.62	52.99	74	-19.38	31.76	5.37	35.5	126	229	Peak
2437	104.47	102.62			31.85	5.46	35.46	126	229	Average
2437	113.25	111.4			31.85	5.46	35.46	126	229	Peak
2487.16	45.64	43.65	54	-8.36	31.88	5.53	35.42	126	229	Average
2487.16	56.62	54.63	74	-17.38	31.88	5.53	35.42	126	229	Peak
4874	42.33	34.14	54	-11.67	33.98	8.27	34.06	123	33	Average
4874	50.18	41.99	74	-23.82	33.98	8.27	34.06	123	33	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	93.19	91.26			31.87	5.5	35.44	118	101	Average
2462	101.49	99.56			31.87	5.5	35.44	118	101	Peak
2483.56	43.61	41.65	54	-10.39	31.88	5.5	35.42	118	101	Average
2483.56	57.54	55.58	74	-16.46	31.88	5.5	35.42	118	101	Peak
4924	41.65	33.4	54	-12.35	33.99	8.28	34.02	157	270	Average
4924	47.22	38.97	74	-26.78	33.99	8.28	34.02	157	270	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	102.33	100.4			31.87	5.5	35.44	101	270	Average
2462	110.46	108.53			31.87	5.5	35.44	101	270	Peak
2483.72	52.3	50.34	54	-1.7	31.88	5.5	35.42	101	270	Average
2483.72	69.79	67.83	74	-4.21	31.88	5.5	35.42	101	270	Peak
4924	40.79	32.54	54	-13.21	33.99	8.28	34.02	124	111	Average
4924	48.23	39.98	74	-25.77	33.99	8.28	34.02	124	111	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	42.29	40.56	54	-11.71	31.8	5.4	35.47	180	88	Average
2389.92	54.41	52.68	74	-19.59	31.8	5.4	35.47	180	88	Peak
2422	87.74	85.94			31.83	5.43	35.46	180	88	Average
2422	96.04	94.24			31.83	5.43	35.46	180	88	Peak
2483.56	41.33	39.37	54	-12.67	31.88	5.5	35.42	180	88	Average
2483.56	53.08	51.12	74	-20.92	31.88	5.5	35.42	180	88	Peak
4844	41.55	33.4	54	-12.45	33.97	8.26	34.08	113	280	Average
4844	47.05	38.9	74	-26.95	33.97	8.26	34.08	113	280	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**
2389.83	52.16	50.43	54	-1.84	31.8	5.4	35.47	132	178	Average
2389.83	66.28	64.55	74	-7.72	31.8	5.4	35.47	132	178	Peak
2422	96.43	94.63			31.83	5.43	35.46	132	178	Average
2422	105.06	103.26			31.83	5.43	35.46	132	178	Peak
2491.08	42.83	40.82	54	-11.17	31.9	5.53	35.42	132	178	Average
2491.08	53.64	51.63	74	-20.36	31.9	5.53	35.42	132	178	Peak
4844	41.31	33.16	54	-12.69	33.97	8.26	34.08	104	300	Average
4844	47.58	39.43	74	-26.42	33.97	8.26	34.08	104	300	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	43.36	41.63	54	-10.64	31.8	5.4	35.47	175	86	Average
2389.92	56.6	54.87	74	-17.4	31.8	5.4	35.47	175	86	Peak
2437	91.92	90.07			31.85	5.46	35.46	175	86	Average
2437	100.22	98.37			31.85	5.46	35.46	175	86	Peak
2483.6	45.53	43.57	54	-8.47	31.88	5.5	35.42	175	86	Average
2483.6	58.53	56.57	74	-15.47	31.88	5.5	35.42	175	86	Peak
4874	41.71	33.52	54	-12.29	33.98	8.27	34.06	122	0	Average
4874	47	38.81	74	-27	33.98	8.27	34.06	122	0	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**
2389.92	49.64	47.91	54	-4.36	31.8	5.4	35.47	126	229	Average
2389.92	67.2	65.47	74	-6.8	31.8	5.4	35.47	126	229	Peak
2437	100.26	98.41			31.85	5.46	35.46	126	229	Average
2437	108.92	107.07			31.85	5.46	35.46	126	229	Peak
2483.52	52.47	50.51	54	-1.53	31.88	5.5	35.42	126	229	Average
2483.52	69.88	67.92	74	-4.12	31.88	5.5	35.42	126	229	Peak
4874	41.45	33.26	54	-12.55	33.98	8.27	34.06	158	55	Average
4874	48.57	40.38	74	-25.43	33.98	8.27	34.06	158	55	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 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2386.05	40.86	39.15	54	-13.14	31.8	5.4	35.49	118	124	Average
2386.05	52.13	50.42	74	-21.87	31.8	5.4	35.49	118	124	Peak
2452	88.28	86.41			31.85	5.46	35.44	118	124	Average
2452	97.3	95.43			31.85	5.46	35.44	118	124	Peak
2483.92	44.6	42.64	54	-9.4	31.88	5.5	35.42	118	124	Average
2483.92	60.66	58.7	74	-13.34	31.88	5.5	35.42	118	124	Peak
4904	41.51	33.29	54	-12.49	33.98	8.28	34.04	134	222	Average
4904	47.04	38.82	74	-26.96	33.98	8.28	34.04	134	222	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	42.6	40.89	54	-11.4	31.8	5.4	35.49	107	270	Average
2388.12	53.88	52.17	74	-20.12	31.8	5.4	35.49	107	270	Peak
2452	97.87	96			31.85	5.46	35.44	107	270	Average
2452	106.65	104.78			31.85	5.46	35.44	107	270	Peak
2483.96	52.4	50.44	54	-1.6	31.88	5.5	35.42	107	270	Average
2483.96	71.7	69.74	74	-2.3	31.88	5.5	35.42	107	270	Peak
4904	41.48	33.26	54	-12.52	33.98	8.28	34.04	124	146	Average
4904	46.85	38.63	74	-27.15	33.98	8.28	34.04	124	146	Peak

Remarks:

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

Mode C

802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2383.98	40.73	39.04	54	-13.27	31.78	5.4	35.49	129	125	Average
2383.98	52.18	50.49	74	-21.82	31.78	5.4	35.49	129	125	Peak
2412	94.8	93.03			31.81	5.43	35.47	129	125	Average
2412	97.51	95.74			31.81	5.43	35.47	129	125	Peak
4824	48.03	39.9	54	-5.97	33.97	8.26	34.1	106	253	Average
4824	52.56	44.43	74	-21.44	33.97	8.26	34.1	106	253	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**
2389.74	40.96	39.25	54	-13.04	31.8	5.4	35.49	112	175	Average
2389.74	52	50.29	74	-22	31.8	5.4	35.49	112	175	Peak
2412	97.55	95.78			31.81	5.43	35.47	112	175	Average
2412	100.08	98.31			31.81	5.43	35.47	112	175	Peak
4824	48.83	40.7	54	-5.17	33.97	8.26	34.1	100	259	Average
4824	51.86	43.73	74	-22.14	33.97	8.26	34.1	100	259	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2387.22	40.44	38.73	54	-13.56	31.8	5.4	35.49	168	128	Average
2387.22	51.36	49.65	74	-22.64	31.8	5.4	35.49	168	128	Peak
2437	97.09	95.24			31.85	5.46	35.46	168	128	Average
2437	99.3	97.45			31.85	5.46	35.46	168	128	Peak
2485	41.03	39.04	54	-12.97	31.88	5.53	35.42	168	128	Average
2485	52.58	50.59	74	-21.42	31.88	5.53	35.42	168	128	Peak
4874	47.4	39.21	54	-6.6	33.98	8.27	34.06	106	253	Average
4874	51.1	42.91	74	-22.9	33.98	8.27	34.06	106	253	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**
2385.87	40.73	39.02	54	-13.27	31.8	5.4	35.49	161	175	Average
2385.87	51.59	49.88	74	-22.41	31.8	5.4	35.49	161	175	Peak
2437	99.68	97.83			31.85	5.46	35.46	161	175	Average
2437	102.12	100.27			31.85	5.46	35.46	161	175	Peak
2490.84	41.11	39.1	54	-12.89	31.9	5.53	35.42	161	175	Average
2490.84	53.55	51.54	74	-20.45	31.9	5.53	35.42	161	175	Peak
4874	46.63	38.44	54	-7.37	33.98	8.27	34.06	100	259	Average
4874	50.14	41.95	74	-23.86	33.98	8.27	34.06	100	259	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	96.92	94.99			31.87	5.5	35.44	159	128	Average
2462	99.14	97.21			31.87	5.5	35.44	159	128	Peak
2485.8	44.32	42.33	54	-9.68	31.88	5.53	35.42	159	128	Average
2485.8	53.59	51.6	74	-20.41	31.88	5.53	35.42	159	128	Peak
4924	43.83	35.58	54	-10.17	33.99	8.28	34.02	106	253	Average
4924	48.07	39.82	74	-25.93	33.99	8.28	34.02	106	253	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	99.98	98.05			31.87	5.5	35.44	186	177	Average
2462	102.41	100.48			31.87	5.5	35.44	186	177	Peak
2486.12	45.86	43.87	54	-8.14	31.88	5.53	35.42	186	177	Average
2486.12	54.73	52.74	74	-19.27	31.88	5.53	35.42	186	177	Peak
4924	44.43	36.18	54	-9.57	33.99	8.28	34.02	100	255	Average
4924	48.8	40.55	74	-25.2	33.99	8.28	34.02	100	255	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.92	44.43	42.7	54	-9.57	31.8	5.4	35.47	129	125	Average
2389.92	57.62	55.89	74	-16.38	31.8	5.4	35.47	129	125	Peak
2412	92.09	90.32			31.81	5.43	35.47	129	125	Average
2412	100.17	98.4			31.81	5.43	35.47	129	125	Peak
4824	41.13	33	54	-12.87	33.97	8.26	34.1	105	260	Average
4824	44.24	36.11	74	-29.76	33.97	8.26	34.1	105	260	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**
2389.92	45.62	43.89	54	-8.38	31.8	5.4	35.47	112	175	Average
2389.92	59.66	57.93	74	-14.34	31.8	5.4	35.47	112	175	Peak
2412	94.61	92.84			31.81	5.43	35.47	112	175	Average
2412	102.45	100.68			31.81	5.43	35.47	112	175	Peak
4824	41.39	33.26	54	-12.61	33.97	8.26	34.1	110	246	Average
4824	46.35	38.22	74	-27.65	33.97	8.26	34.1	110	246	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2388.48	40.51	38.8	54	-13.49	31.8	5.4	35.49	168	128	Average
2388.48	51.63	49.92	74	-22.37	31.8	5.4	35.49	168	128	Peak
2437	92.92	91.07			31.85	5.46	35.46	168	128	Average
2437	101.11	99.26			31.85	5.46	35.46	168	128	Peak
2486.12	41.22	39.23	54	-12.78	31.88	5.53	35.42	168	128	Average
2486.12	52.45	50.46	74	-21.55	31.88	5.53	35.42	168	128	Peak
4874	41.17	32.98	54	-12.83	33.98	8.27	34.06	113	233	Average
4874	45.69	37.5	74	-28.31	33.98	8.27	34.06	113	233	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**
2389.2	40.73	39.02	54	-13.27	31.8	5.4	35.49	161	175	Average
2389.2	51.44	49.73	74	-22.56	31.8	5.4	35.49	161	175	Peak
2437	95.9	94.05			31.85	5.46	35.46	161	175	Average
2437	103.65	101.8			31.85	5.46	35.46	161	175	Peak
2485.88	41.36	39.37	54	-12.64	31.88	5.53	35.42	161	175	Average
2485.88	52.16	50.17	74	-21.84	31.88	5.53	35.42	161	175	Peak
4874	41.22	33.03	54	-12.78	33.98	8.27	34.06	100	258	Average
4874	46.71	38.52	74	-27.29	33.98	8.27	34.06	100	258	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	91.9	89.97			31.87	5.5	35.44	159	128	Average
2462	100.27	98.34			31.87	5.5	35.44	159	128	Peak
2483.56	50.03	48.07	54	-3.97	31.88	5.5	35.42	159	128	Average
2483.56	66.44	64.48	74	-7.56	31.88	5.5	35.42	159	128	Peak
4924	41.3	33.05	54	-12.7	33.99	8.28	34.02	110	250	Average
4924	46.14	37.89	74	-27.86	33.99	8.28	34.02	110	250	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	95.24	93.31			31.87	5.5	35.44	186	177	Average
2462	102.76	100.83			31.87	5.5	35.44	186	177	Peak
2483.52	52.98	51.02	54	-1.02	31.88	5.5	35.42	186	177	Average
2483.52	68.61	66.65	74	-5.39	31.88	5.5	35.42	186	177	Peak
4924	41.24	32.99	54	-12.76	33.99	8.28	34.02	100	264	Average
4924	46.59	38.34	74	-27.41	33.99	8.28	34.02	100	264	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.74	43.38	41.67	54	-10.62	31.8	5.4	35.49	129	125	Average
2389.74	56.8	55.09	74	-17.2	31.8	5.4	35.49	129	125	Peak
2412	90.91	89.14			31.81	5.43	35.47	129	125	Average
2412	98.99	97.22			31.81	5.43	35.47	129	125	Peak
4824	41.26	33.13	54	-12.74	33.97	8.26	34.1	106	253	Average
4824	44.11	35.98	74	-29.89	33.97	8.26	34.1	106	253	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**
2389.83	44.77	43.04	54	-9.23	31.8	5.4	35.47	112	175	Average
2389.83	58.82	57.09	74	-15.18	31.8	5.4	35.47	112	175	Peak
2412	93.4	91.63			31.81	5.43	35.47	112	175	Average
2412	102.05	100.28			31.81	5.43	35.47	112	175	Peak
4824	41.02	32.89	54	-12.98	33.97	8.26	34.1	105	241	Average
4824	46.21	38.08	74	-27.79	33.97	8.26	34.1	105	241	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2386.77	40.55	38.84	54	-13.45	31.8	5.4	35.49	168	128	Average
2386.77	51.66	49.95	74	-22.34	31.8	5.4	35.49	168	128	Peak
2437	92.73	90.88			31.85	5.46	35.46	168	128	Average
2437	100.62	98.77			31.85	5.46	35.46	168	128	Peak
2488.04	41.3	39.29	54	-12.7	31.9	5.53	35.42	168	128	Average
2488.04	52.44	50.43	74	-21.56	31.9	5.53	35.42	168	128	Peak
4874	41.3	33.11	54	-12.7	33.98	8.27	34.06	104	250	Average
4874	45.84	37.65	74	-28.16	33.98	8.27	34.06	104	250	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**
2389.02	40.9	39.19	54	-13.1	31.8	5.4	35.49	161	175	Average
2389.02	52.32	50.61	74	-21.68	31.8	5.4	35.49	161	175	Peak
2437	95.39	93.54			31.85	5.46	35.46	161	175	Average
2437	103.68	101.83			31.85	5.46	35.46	161	175	Peak
2487.28	41.5	39.51	54	-12.5	31.88	5.53	35.42	161	175	Average
2487.28	52.41	50.42	74	-21.59	31.88	5.53	35.42	161	175	Peak
4874	41.51	33.32	54	-12.49	33.98	8.27	34.06	101	252	Average
4874	46.24	38.05	74	-27.76	33.98	8.27	34.06	101	252	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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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	90.87	88.94			31.87	5.5	35.44	159	128	Average
2462	98.84	96.91			31.87	5.5	35.44	159	128	Peak
2483.52	50.23	48.27	54	-3.77	31.88	5.5	35.42	159	128	Average
2483.52	66.03	64.07	74	-7.97	31.88	5.5	35.42	159	128	Peak
4924	41.22	32.97	54	-12.78	33.99	8.28	34.02	112	264	Average
4924	45.93	37.68	74	-28.07	33.99	8.28	34.02	112	264	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	93.71	91.78			31.87	5.5	35.44	186	177	Average
2462	101.54	99.61			31.87	5.5	35.44	186	177	Peak
2483.64	52.99	51.03	54	-1.01	31.88	5.5	35.42	186	177	Average
2483.64	67.59	65.63	74	-6.41	31.88	5.5	35.42	186	177	Peak
4924	41.53	33.28	54	-12.47	33.99	8.28	34.02	100	244	Average
4924	46.53	38.28	74	-27.47	33.99	8.28	34.02	100	244	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.65	51.5	49.79	54	-2.5	31.8	5.4	35.49	129	125	Average
2389.65	64.44	62.73	74	-9.56	31.8	5.4	35.49	129	125	Peak
2422	89.5	87.7			31.83	5.43	35.46	129	125	Average
2422	97.35	95.55			31.83	5.43	35.46	129	125	Peak
2483.72	41.39	39.43	54	-12.61	31.88	5.5	35.42	129	125	Average
2483.72	52.65	50.69	74	-21.35	31.88	5.5	35.42	129	125	Peak
4844	41.6	33.45	54	-12.4	33.97	8.26	34.08	104	222	Average
4844	44.93	36.78	74	-29.07	33.97	8.26	34.08	104	222	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**
2389.92	52.99	51.26	54	-1.01	31.8	5.4	35.47	137	175	Average
2389.92	66.19	64.46	74	-7.81	31.8	5.4	35.47	137	175	Peak
2422	92.02	90.22			31.83	5.43	35.46	137	175	Average
2422	100.57	98.77			31.83	5.43	35.46	137	175	Peak
2483.64	41.92	39.96	54	-12.08	31.88	5.5	35.42	137	175	Average
2483.64	54.5	52.54	74	-19.5	31.88	5.5	35.42	137	175	Peak
4844	41.69	33.54	54	-12.31	33.97	8.26	34.08	101	280	Average
4844	46.85	38.7	74	-27.15	33.97	8.26	34.08	101	280	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp 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	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2389.47	45.95	44.24	54	-8.05	31.8	5.4	35.49	168	128	Average
2389.47	58.47	56.76	74	-15.53	31.8	5.4	35.49	168	128	Peak
2437	90.66	88.81			31.85	5.46	35.46	168	128	Average
2437	99.25	97.4			31.85	5.46	35.46	168	128	Peak
2483.52	50.53	48.57	54	-3.47	31.88	5.5	35.42	168	128	Average
2483.52	64	62.04	74	-10	31.88	5.5	35.42	168	128	Peak
4874	41.76	33.57	54	-12.24	33.98	8.27	34.06	133	300	Average
4874	45.77	37.58	74	-28.23	33.98	8.27	34.06	133	300	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**
2389.65	47.98	46.27	54	-6.02	31.8	5.4	35.49	161	175	Average
2389.65	61.35	59.64	74	-12.65	31.8	5.4	35.49	161	175	Peak
2437	93.47	91.62			31.85	5.46	35.46	161	175	Average
2437	102.23	100.38			31.85	5.46	35.46	161	175	Peak
2483.8	52.61	50.65	54	-1.39	31.88	5.5	35.42	161	175	Average
2483.8	66.98	65.02	74	-7.02	31.88	5.5	35.42	161	175	Peak
4874	41.82	33.63	54	-12.18	33.98	8.27	34.06	102	275	Average
4874	46.54	38.35	74	-27.46	33.98	8.27	34.06	102	275	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 9	**Frequency Range**	1 GHz ~ 25 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Karl Lee

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**
2381.64	40.45	38.76	54	-13.55	31.78	5.4	35.49	159	128	Average
2381.64	51.58	49.89	74	-22.42	31.78	5.4	35.49	159	128	Peak
2452	86.18	84.31			31.85	5.46	35.44	159	128	Average
2452	94.25	92.38			31.85	5.46	35.44	159	128	Peak
2483.6	49.61	47.65	54	-4.39	31.88	5.5	35.42	159	128	Average
2483.6	64.76	62.8	74	-9.24	31.88	5.5	35.42	159	128	Peak
4904	41.74	33.52	54	-12.26	33.98	8.28	34.04	106	253	Average
4904	46.32	38.1	74	-27.68	33.98	8.28	34.04	106	253	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**
2381.28	40.39	38.7	54	-13.61	31.78	5.4	35.49	186	177	Average
2381.28	51.73	50.04	74	-22.27	31.78	5.4	35.49	186	177	Peak
2452	88.09	86.22			31.85	5.46	35.44	186	177	Average
2452	96.17	94.3			31.85	5.46	35.44	186	177	Peak
2483.68	52.24	50.28	54	-1.76	31.88	5.5	35.42	186	177	Average
2483.68	65.73	63.77	74	-8.27	31.88	5.5	35.42	186	177	Peak
4904	41.84	33.62	54	-12.16	33.98	8.28	34.04	110	274	Average
4904	46.63	38.41	74	-27.37	33.98	8.28	34.04	110	274	Peak

Remarks:

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

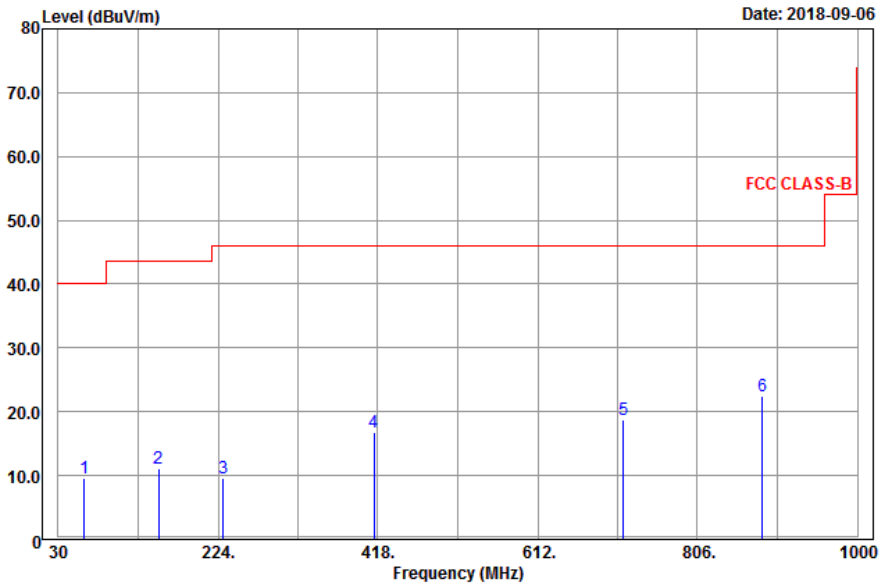
30 MHz ~ 1 GHz Worst-Case Data:

802.11n (HT20)

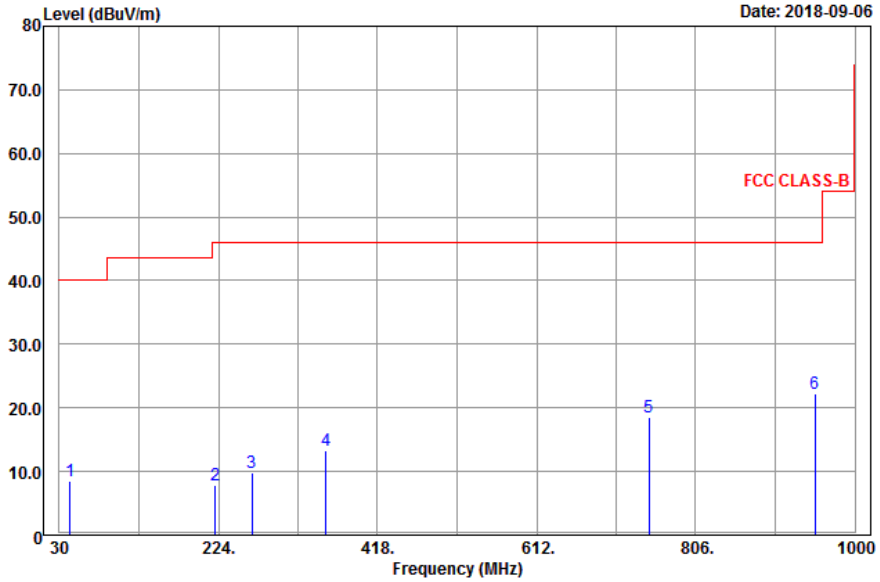
Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 11	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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
61.32	9.66	27.88	40	-30.34	13.11	0.9	32.23	154	196	Peak
151.5	11.17	33.48	43.5	-32.33	8.44	1.52	32.27	111	215	Peak
230.61	9.49	28.02	46	-36.51	11.79	1.85	32.17	117	213	Peak
413.4	16.74	31.38	46	-29.26	15.15	2.41	32.2	114	164	Peak
715.8	18.75	28.29	46	-27.25	19.46	3.11	32.11	194	205	Peak
885.2	22.48	29.19	46	-23.52	21.37	3.49	31.57	166	164	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
43.23	8.53	25.68	40	-31.47	14.17	0.9	32.22	143	285	Peak
220.62	7.9	27.08	46	-38.1	11.38	1.65	32.21	113	320	Peak
264.9	9.76	27.37	46	-36.24	12.56	1.94	32.11	195	299	Peak
355.3	13.26	28.8	46	-32.74	14.28	2.26	32.08	179	133	Peak
748.7	18.63	27.75	46	-27.37	19.8	3.22	32.14	124	14	Peak
951.7	22.32	28.02	46	-23.68	21.76	3.62	31.08	188	210	Peak

Remarks:

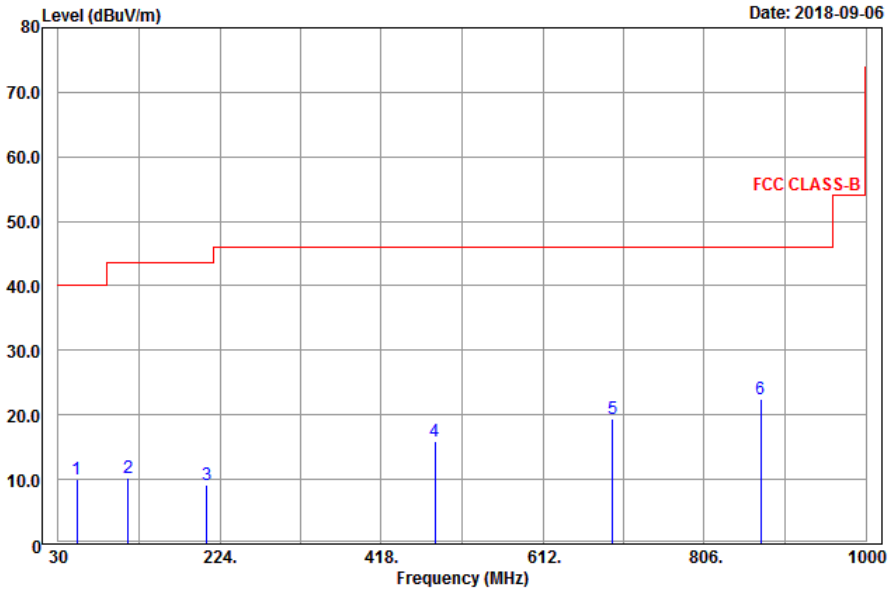
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value.
2. The emission levels of other frequencies were very low against the limit.

802.11b

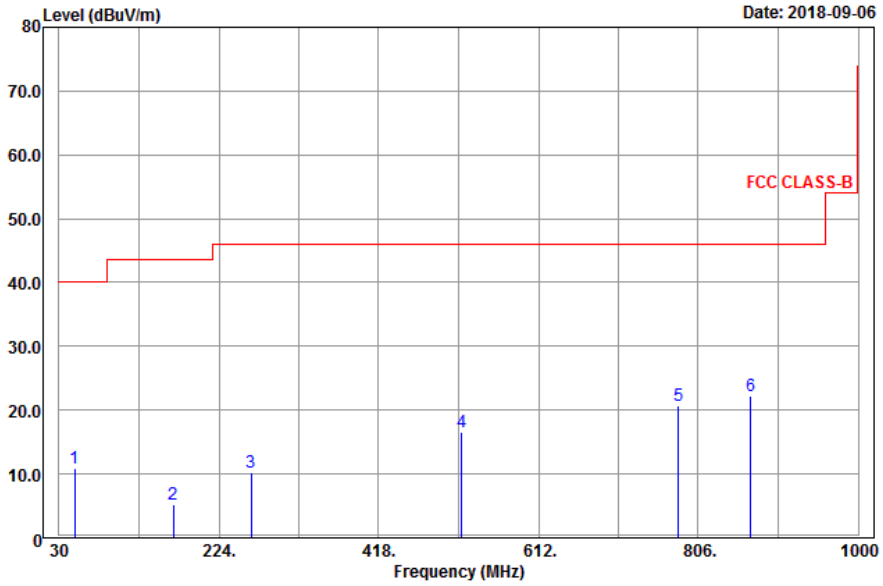
Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 1	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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
52.68	10	26.95	40	-30	14.38	0.9	32.23	165	33	Peak
113.97	10.14	29.69	43.5	-33.36	11.42	1.28	32.25	167	8	Peak
208.74	9.19	28.65	43.5	-34.31	11.15	1.65	32.26	154	113	Peak
482.7	15.95	29.39	46	-30.05	16.11	2.56	32.11	157	285	Peak
696.2	19.41	29.21	46	-26.59	19.18	3.11	32.09	194	305	Peak
874	22.41	29.34	46	-23.59	21.28	3.44	31.65	187	46	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
48.63	10.93	27.69	40	-29.07	14.56	0.9	32.22	145	109	Peak
168.78	5.16	26.82	43.5	-38.34	9.06	1.52	32.24	168	99	Peak
263.55	10.23	27.85	46	-35.77	12.55	1.94	32.11	125	177	Peak
518.4	16.48	29.32	46	-29.52	16.59	2.7	32.13	164	118	Peak
781.6	20.6	29.27	46	-25.4	20.15	3.27	32.09	149	205	Peak
869.8	22.26	29.25	46	-23.74	21.24	3.44	31.67	146	146	Peak

Remarks:

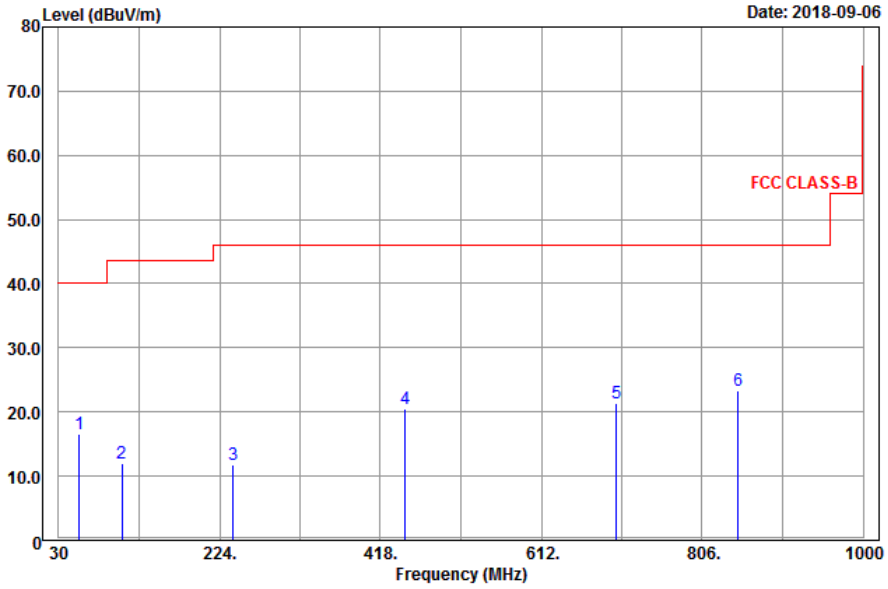
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value.
2. The emission levels of other frequencies were very low against the limit.

802.11n (HT40)

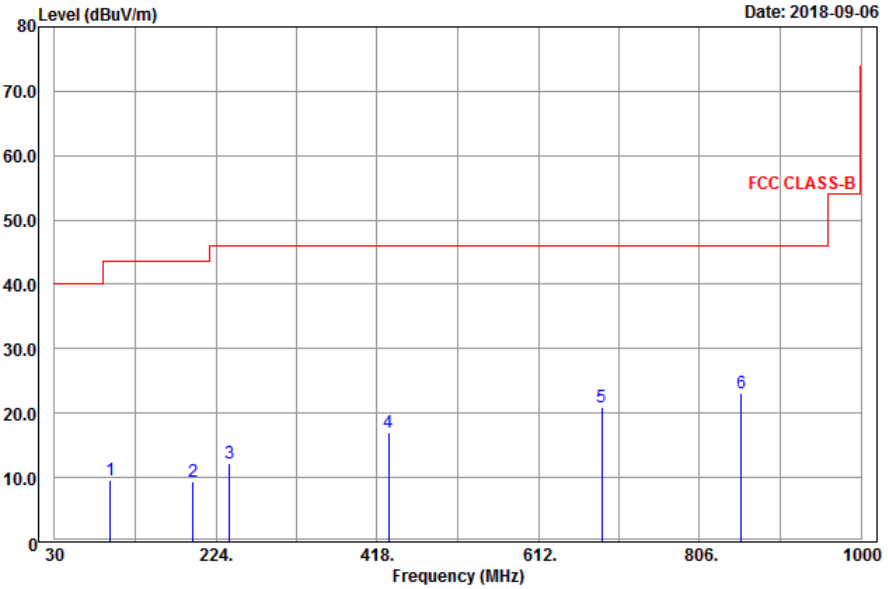
Mode C

EUT Test Condition		Measurement Detail	
Channel	Channel 3	**Frequency Range**	30 MHz ~ 1 GHz
Input Power	3.3 Vdc	**Detector Function**	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	**Tested By**	Harry Hsueh

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
55.11	16.57	33.76	40	-23.43	14.14	0.9	32.23	136	203	Peak
106.68	12.03	30.74	43.5	-31.47	12.26	1.28	32.25	155	107	Peak
240.6	11.81	29.99	46	-34.19	12.1	1.85	32.13	140	243	Peak
447.7	20.45	34.57	46	-25.55	15.54	2.49	32.15	145	178	Peak
702.5	21.47	31.18	46	-24.53	19.27	3.11	32.09	134	180	Peak
849.5	23.22	30.56	46	-22.78	21.02	3.44	31.8	155	243	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
96.69	9.51	28.45	43.5	-33.99	11.88	1.28	32.1	140	78	Peak
196.32	9.41	29.11	43.5	-34.09	10.97	1.61	32.28	168	299	Peak
240.06	12.27	30.45	46	-33.73	12.1	1.85	32.13	175	140	Peak
431.6	16.97	31.39	46	-29.03	15.34	2.41	32.17	127	132	Peak
688.5	20.87	30.86	46	-25.13	19.06	3.05	32.1	105	119	Peak
856.5	23.15	30.35	46	-22.85	21.11	3.44	31.75	142	116	Peak

Remarks:

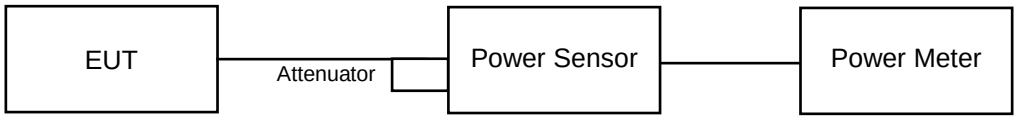
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value.
2. The emission levels of other frequencies were very low against the limit.

4.2 Conducted Output Power Measurement

4.2.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test 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.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

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

4.2.7 Test Results

Mode A

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	130.02	21.14	30	Pass
6	2437	156.68	21.95	30	Pass
11	2462	146.89	21.67	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	260.62	24.16	30	Pass
6	2437	267.30	24.27	30	Pass
11	2462	224.39	23.51	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	232.81	23.67	30	Pass
6	2437	260.02	24.15	30	Pass
11	2462	244.34	23.88	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	66.99	18.26	30	Pass
6	2437	116.41	20.66	30	Pass
9	2452	70.15	18.46	30	Pass

Mode B

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	130.02	21.14	30	Pass
6	2437	105.93	20.25	30	Pass
11	2462	146.89	21.67	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	230.14	23.62	30	Pass
6	2437	267.30	24.27	30	Pass
11	2462	70.15	18.46	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	181.97	22.60	30	Pass
6	2437	260.02	24.15	30	Pass
11	2462	62.81	17.98	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	44.77	16.51	30	Pass
6	2437	173.38	22.39	30	Pass
9	2452	49.43	16.94	30	Pass

Mode C

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	130.02	21.14	30	Pass
6	2437	156.68	21.95	30	Pass
11	2462	146.89	21.67	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	260.62	24.16	30	Pass
6	2437	267.30	24.27	30	Pass
11	2462	168.66	22.27	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	232.81	23.67	30	Pass
6	2437	260.02	24.15	30	Pass
11	2462	148.25	21.71	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	172.19	22.36	30	Pass
6	2437	202.30	23.06	30	Pass
9	2452	113.24	20.54	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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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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