

FCC Test Report (2.4GHz WLAN)

Report No.: RFBDKG-WTW-P21070273A

FCC ID: JNZVR0030

Test Model: VR0030

Received Date: 2021/11/10

Test Date: 2021/11/15

Issued Date: 2021/11/27

Applicant: LOGITECH FAR EAST LTD.

Address: 7700 Gateway Boulevard Newark California United States

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

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P21070273A	Original release.	2021/11/27

1 Certificate of Conformity

Product: RoomMate

Brand: logitech

Test Model: VR0030


Sample Status: Engineering sample

Applicant: LOGITECH FAR EAST LTD.

Test Date: 2021/11/15

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :  , **Date:** 2021/11/27
Claire Kuan / Specialist

Approved by :  , **Date:** 2021/11/27
Clark Lin / Technical Manager

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 3 below
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -4.0 dB at 4824.00 MHz and 2390.00 MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note 3 below
15.247(a)(2)	6dB bandwidth	N/A	Refer to Note 3 below
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note 3 below
15.203	Antenna Requirement	Pass	Antenna connector is MHF(I-PEX) not a standard connector.

Note:

- For 2.4 GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- Radiated Emissions and Band Edge Measurement and Conducted power were performed for this addendum. The others testing data refer to original test report.
- N/A: Not Applicable.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.4 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.0 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (2.4GHz WLAN)

Product	RoomMate
Brand	logitech
Test Model	VR0030
Status of EUT	Engineering sample
Power Supply Rating	19 Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 144.4 Mbps
Operating Frequency	2.412 ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11
Output Power	247.511 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1; Remote x 1 (FCC ID: JNZRR0016)
Cable Supplied	NA

Note:

1. This report is prepared for FCC Class II permissive change. The difference compared with the Report No.: RFBDKG-WTW-P21070273 design is as the following information:

- ◆ FW update to reduce WLAN-2.4GHz Power, and didn't affect other RF function.

2. According to above condition, only Radiated Emissions and Band Edge Measurement and Conducted power needs to be performed. And all data are verified to meet the requirements.

3. The EUT has below radios as following table:

Radio 1	Radio 2
WLAN (2.4GHz + 5GHz)	Bluetooth

4. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	WLAN (5GHz)
2	WLAN (2.4GHz)	Bluetooth
3	WLAN (5GHz)	Bluetooth

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

5. The EUT must be supplied with a power adapter and following below table:

Brand	Model No.	Spec.
logitech	DSA-90PFE-19 3 190474	Input: 100-240 Vac, 1.5 A, 50/60Hz AC power cord (shielded, 0.9 m) Output: 19 Vdc, 4.74 A DC output cable (shielded, 1.5 m, with one core)

6. The antennas provided to the EUT, please refer to the following table:

Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain 0	Speed	F-0R-CC-6029-001-00	3.89 3.69 1.96 3.3 2.84	2.4~2.4835 5.15~5.25 5.25~5.35 5.47~5.725 5.725~5.850	Monopole	MHF(I-PEX)
2	Chain 1	Speed	F-0R-CC-6029-002-00	2.1 4.5 3.95 4.59 4.92	2.4~2.4835 5.15~5.25 5.25~5.35 5.47~5.725 5.725~5.850	Monopole	MHF(I-PEX)

Note:

1. The Bluetooth technology will fix transmission on Chain (0).

7. The EUT incorporates a MIMO function:

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX

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

9. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To			Description
	RE \geq 1G	RE $<$ 1G	APCM	
-	√	√	√	-

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

Note: In the original test report, the EUT had been pre-tested on the positioned of laying-flat and wall-mount. The worst case was found when positioned of on laying-flat.

Radiated Emission Test (Above 1GHz):

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Radiated Emission Test (Below 1GHz):

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE \geq 1G	25deg. C, 75%RH	120Vac, 60Hz	Nelson Teng
RE $<$ 1G	24deg. C, 70%RH	120Vac, 60Hz	Carter Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Carter Lin

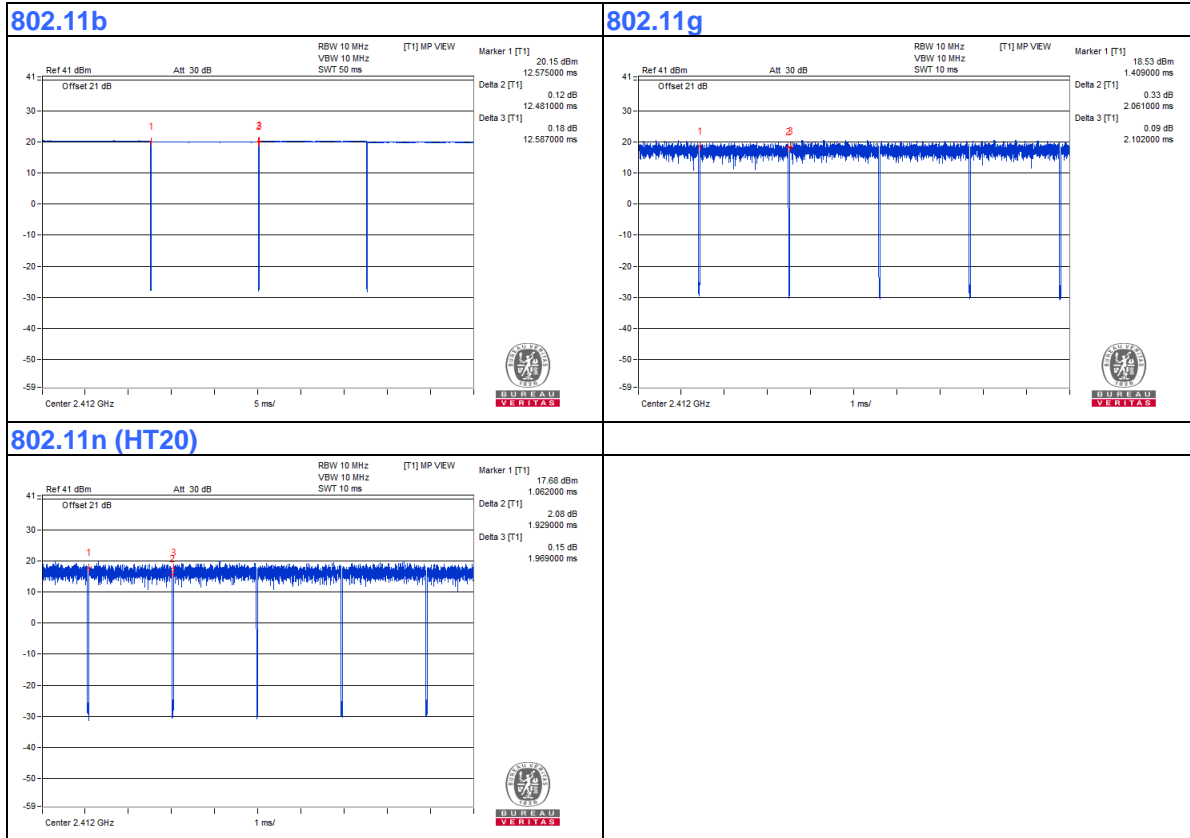
3.3 Duty Cycle of Test Signal

Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11b: Duty cycle = $12.481 \text{ ms} / 12.587 \text{ ms} = 0.992$

802.11g: Duty cycle = $2.061 \text{ ms} / 2.102 \text{ ms} = 0.98$

802.11n (HT20): Duty cycle = $1.929 \text{ ms} / 1.969 \text{ ms} = 0.98$



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Monitor	LG	24UD58	806NTSU6H462	N/A	Provided by Lab
B.	Monitor	DELL	P2415Q	CN-0J1P7F-QDC00-8 5L-13GB-A09	FCC DoC	Provided by Lab
C.	Mouse	Lemel	M857C	NA	NA	Provided by Lab
D.	Keyboard	Logitech	Y-U0009	NA	NA	Provided by Lab
E.	Camera	Logitech	VU0062	NA	NA	Supplied by client
F.	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
G.	Router	ASUS	RT-N12+	NA	NA	Provided by Lab

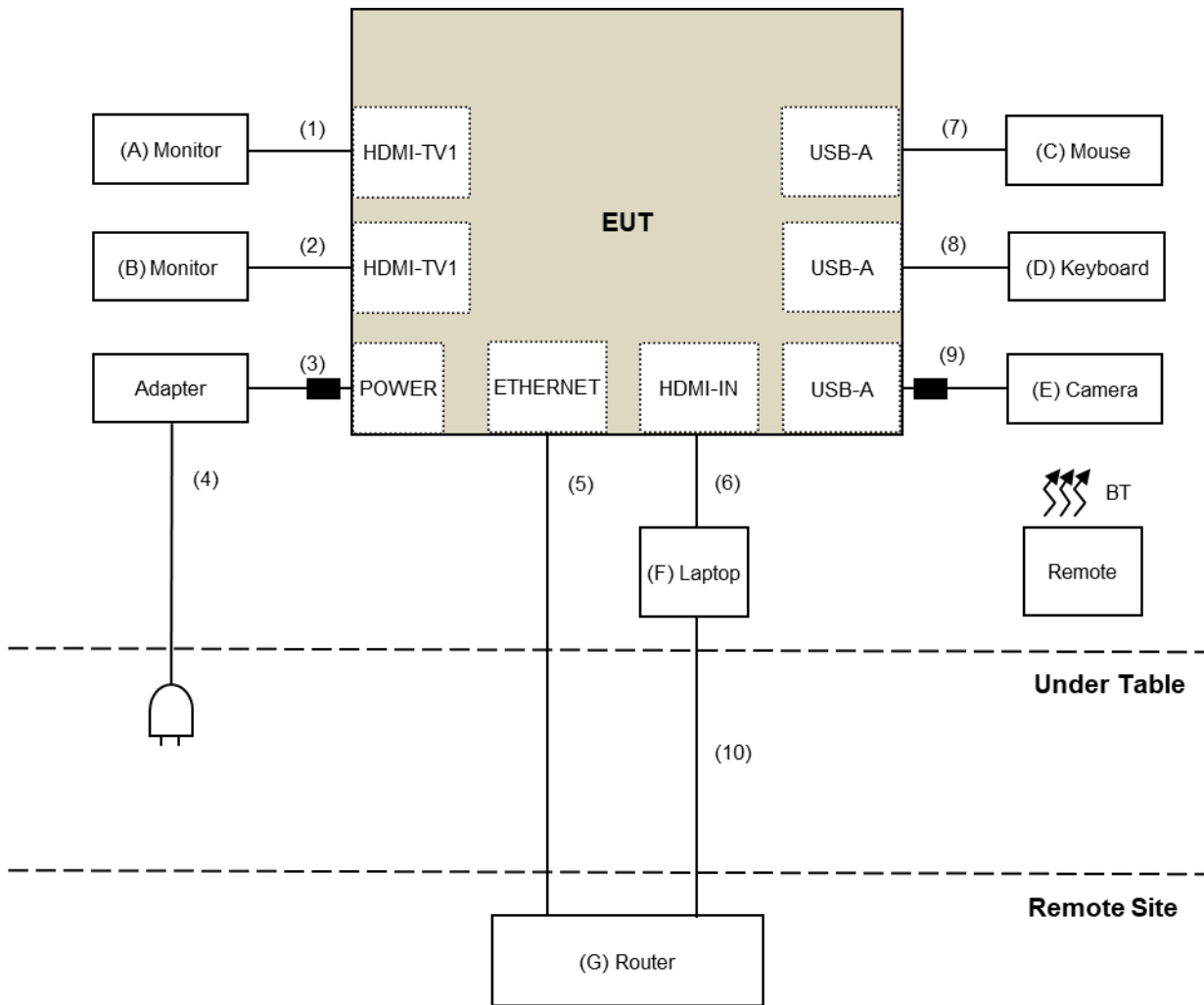
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	HDMI Cable	1	1.8	Yes	0	Provided by Lab
2.	HDMI Cable	1	3	Yes	0	Provided by Lab
3.	DC Cable	1	1.5	Yes	1	Supplied by client
4.	AC Cable	1	0.9	Yes	0	Supplied by client
5.	RJ-45 Cable	1	10	No	0	Provided by Lab
6.	HDMI Cable	1	1.8	Yes	0	Provided by Lab
7.	USB Cable	1	1.4	Yes	0	Provided by Lab
8.	USB Cable	1	1.5	Yes	0	Provided by Lab
9.	USB Cable	1	1.8	Yes	1	Supplied by client
10.	RJ-45 Cable	1	10	No	0	Provided by Lab

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test Standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB 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 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

For Radiated Emission and Bandedge test:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Test Receiver Agilent	N9038A	MY50010156	2021/7/22	2022/7/21
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2021/1/7	2022/1/6
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2021/1/7	2022/1/6
Pre_Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	2021/10/19	2022/10/18
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-361	2021/10/26	2022/10/25
RF Coaxial Cable COMMATE/PEWC	8D	966-3-1	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-2	2021/3/16	2022/3/15
RF Coaxial Cable COMMATE/PEWC	8D	966-3-3	2021/3/16	2022/3/15
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2021/9/23	2022/9/22
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980384	2021/1/11	2022/1/10
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2021/4/26	2022/4/25
RF Coaxial Cable EMCI	EMC104-SM-SM-2000	180601	2021/6/8	2022/6/7
RF Coaxial Cable EMCI	EMC104-SM-SM-6000	210201	2021/5/13	2022/5/12
Fix tool for Boresight antenna tower LIOW GUU	FBA-01	FBA_SIP01	NA	NA
Spectrum Analyzer Keysight	N9030A	MY54490679	2021/7/9	2022/7/8
Pre_Amplifier EMCI	EMC184045SE	980387	2021/1/11	2022/1/10
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170519	2021/11/14	2022/11/13
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2021/1/11	2022/1/10
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	2021/3/10	2022/3/9

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 966 Chamber No. 3.
3. Tested Date: 2021/11/15

For Conducted power test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7
Power Meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Pulse Power Sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: 2021/11/15

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

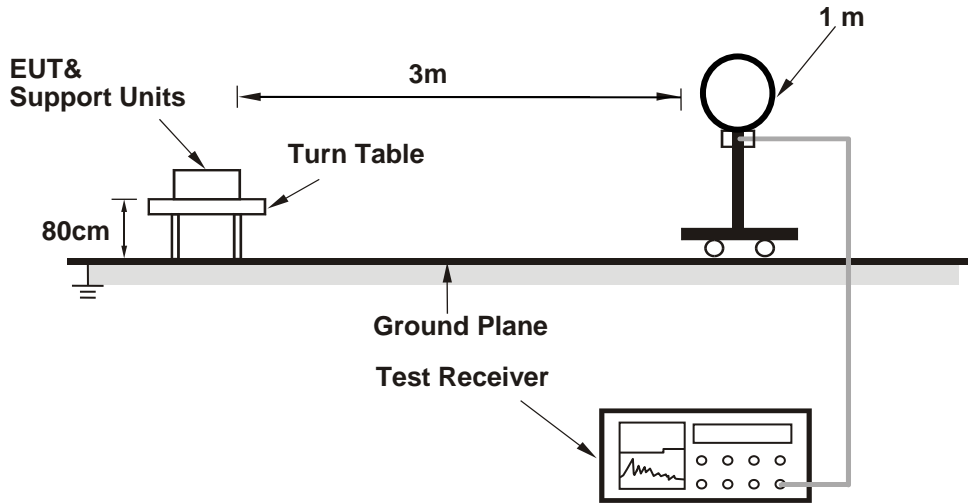
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

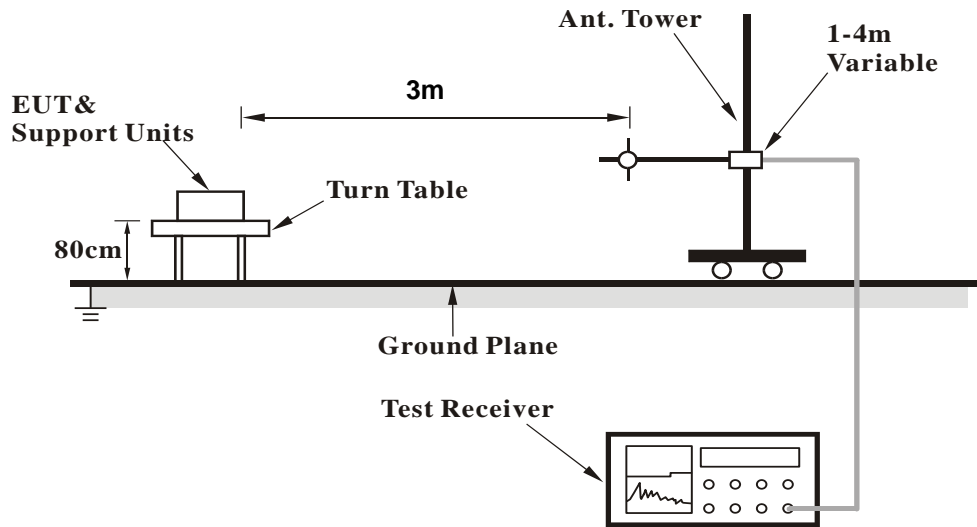
No deviation.

4.1.5 Test Setup

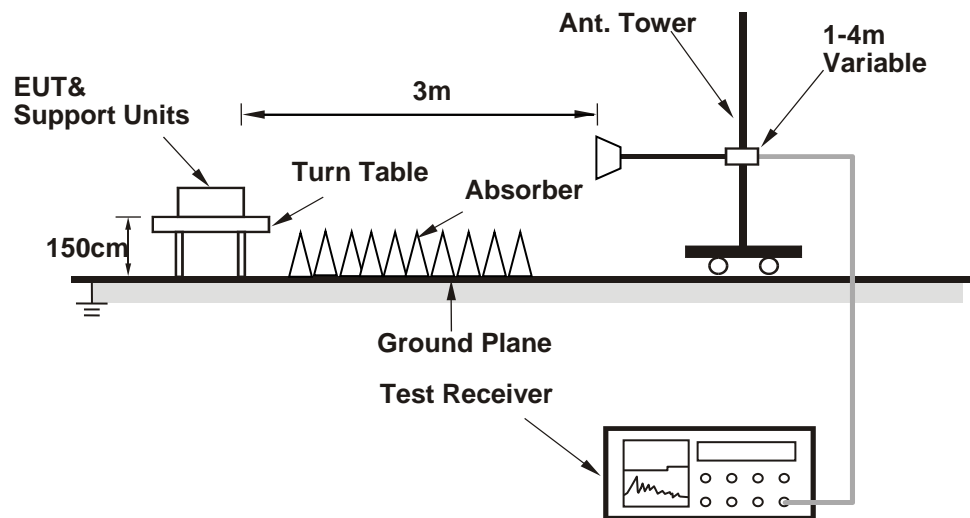
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Controlling software (qdart.win.4.8_installer_00074.101-30-20_06_01_09) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.4 PK	74.0	-14.6	2.43 H	270	60.6	-1.2
2	2390.00	46.4 AV	54.0	-7.6	2.43 H	270	47.6	-1.2
3	*2412.00	109.1 PK			2.43 H	270	110.3	-1.2
4	*2412.00	106.2 AV			2.43 H	270	107.4	-1.2
5	4824.00	49.3 PK	74.0	-24.7	1.31 H	205	45.6	3.7
6	4824.00	40.2 AV	54.0	-13.8	1.31 H	205	36.5	3.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.0 PK	74.0	-16.0	1.55 V	167	59.2	-1.2
2	2390.00	45.7 AV	54.0	-8.3	1.55 V	167	46.9	-1.2
3	*2412.00	105.6 PK			1.55 V	167	106.8	-1.2
4	*2412.00	102.8 AV			1.55 V	167	104.0	-1.2
5	4824.00	54.5 PK	74.0	-19.5	3.09 V	89	50.8	3.7
6	4824.00	50.0 AV	54.0	-4.0	3.09 V	89	46.3	3.7

Remarks:

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

RF Mode	TX 802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.1 PK	74.0	-16.9	2.12 H	292	58.3	-1.2
2	2390.00	45.5 AV	54.0	-8.5	2.12 H	292	46.7	-1.2
3	*2437.00	109.8 PK			2.12 H	292	111.0	-1.2
4	*2437.00	106.1 AV			2.12 H	292	107.3	-1.2
5	2483.50	55.8 PK	74.0	-18.2	2.12 H	292	57.0	-1.2
6	2483.50	44.8 AV	54.0	-9.2	2.12 H	292	46.0	-1.2
7	4874.00	48.3 PK	74.0	-25.7	1.53 H	183	44.5	3.8
8	4874.00	40.3 AV	54.0	-13.7	1.53 H	183	36.5	3.8
9	7311.00	43.1 PK	74.0	-30.9	2.10 H	226	33.4	9.7
10	7311.00	35.4 AV	54.0	-18.6	2.10 H	226	25.7	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	1.48 V	175	56.6	-1.2
2	2390.00	43.9 AV	54.0	-10.1	1.48 V	175	45.1	-1.2
3	*2437.00	104.7 PK			1.48 V	175	105.9	-1.2
4	*2437.00	102.1 AV			1.48 V	175	103.3	-1.2
5	2483.50	54.8 PK	74.0	-19.2	1.48 V	175	56.0	-1.2
6	2483.50	44.2 AV	54.0	-9.8	1.48 V	175	45.4	-1.2
7	4874.00	56.6 PK	74.0	-17.4	3.24 V	92	52.8	3.8
8	4874.00	49.8 AV	54.0	-4.2	3.24 V	92	46.0	3.8
9	7311.00	47.6 PK	74.0	-26.4	2.45 V	89	37.9	9.7
10	7311.00	40.1 AV	54.0	-13.9	2.45 V	89	30.4	9.7

Remarks:

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

RF Mode	TX 802.11b	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.0 PK			2.47 H	284	112.2	-1.2
2	*2462.00	109.0 AV			2.47 H	284	110.2	-1.2
3	2483.50	58.9 PK	74.0	-15.1	2.47 H	284	60.1	-1.2
4	2483.50	48.2 AV	54.0	-5.8	2.47 H	284	49.4	-1.2
5	4924.00	48.6 PK	74.0	-25.4	1.36 H	211	44.7	3.9
6	4924.00	38.9 AV	54.0	-15.1	1.36 H	211	35.0	3.9
7	7386.00	42.4 PK	74.0	-31.6	2.01 H	227	32.7	9.7
8	7386.00	35.1 AV	54.0	-18.9	2.01 H	227	25.4	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.7 PK			1.55 V	141	106.9	-1.2
2	*2462.00	103.4 AV			1.55 V	141	104.6	-1.2
3	2483.50	59.7 PK	74.0	-14.3	1.55 V	141	60.9	-1.2
4	2483.50	48.0 AV	54.0	-6.0	1.55 V	141	49.2	-1.2
5	4924.00	53.5 PK	74.0	-20.5	3.13 V	84	49.6	3.9
6	4924.00	49.4 AV	54.0	-4.6	3.13 V	84	45.5	3.9
7	7386.00	46.9 PK	74.0	-27.1	2.52 V	96	37.2	9.7
8	7386.00	39.3 AV	54.0	-14.7	2.52 V	96	29.6	9.7

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.2 PK	74.0	-11.8	2.35 H	289	63.4	-1.2
2	2390.00	50.0 AV	54.0	-4.0	2.35 H	289	51.2	-1.2
3	*2412.00	111.7 PK			2.35 H	289	112.9	-1.2
4	*2412.00	102.1 AV			2.35 H	289	103.3	-1.2
5	4824.00	48.2 PK	74.0	-25.8	1.33 H	220	44.5	3.7
6	4824.00	36.2 AV	54.0	-17.8	1.33 H	220	32.5	3.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.8 PK	74.0	-11.2	3.04 V	63	64.0	-1.2
2	2390.00	49.3 AV	54.0	-4.7	3.04 V	63	50.5	-1.2
3	*2412.00	111.2 PK			3.04 V	63	112.4	-1.2
4	*2412.00	102.2 AV			3.04 V	63	103.4	-1.2
5	4824.00	49.8 PK	74.0	-24.2	3.11 V	90	46.1	3.7
6	4824.00	38.3 AV	54.0	-15.7	3.11 V	90	34.6	3.7

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.9 PK	74.0	-12.1	2.07 H	280	63.1	-1.2
2	2390.00	46.4 AV	54.0	-7.6	2.07 H	280	47.6	-1.2
3	*2437.00	113.6 PK			2.07 H	280	114.8	-1.2
4	*2437.00	104.2 AV			2.07 H	280	105.4	-1.2
5	2483.50	59.0 PK	74.0	-15.0	2.07 H	280	60.2	-1.2
6	2483.50	49.0 AV	54.0	-5.0	2.07 H	280	50.2	-1.2
7	4874.00	48.5 PK	74.0	-25.5	1.31 H	188	44.7	3.8
8	4874.00	38.3 AV	54.0	-15.7	1.31 H	188	34.5	3.8
9	7311.00	41.6 PK	74.0	-32.4	2.09 H	222	31.9	9.7
10	7311.00	32.4 AV	54.0	-21.6	2.09 H	222	22.7	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	3.07 V	86	62.6	-1.2
2	2390.00	45.1 AV	54.0	-8.9	3.07 V	86	46.3	-1.2
3	*2437.00	113.1 PK			3.07 V	86	114.3	-1.2
4	*2437.00	104.1 AV			3.07 V	86	105.3	-1.2
5	2483.50	58.2 PK	74.0	-15.8	3.07 V	86	59.4	-1.2
6	2483.50	47.6 AV	54.0	-6.4	3.07 V	86	48.8	-1.2
7	4874.00	53.7 PK	74.0	-20.3	3.05 V	94	49.9	3.8
8	4874.00	40.7 AV	54.0	-13.3	3.05 V	94	36.9	3.8
9	7311.00	45.5 PK	74.0	-28.5	2.56 V	101	35.8	9.7
10	7311.00	35.2 AV	54.0	-18.8	2.56 V	101	25.5	9.7

Remarks:

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

RF Mode	TX 802.11g	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.1 PK			2.36 H	291	112.3	-1.2
2	*2462.00	102.3 AV			2.36 H	291	103.5	-1.2
3	2483.50	62.3 PK	74.0	-11.7	2.36 H	291	63.5	-1.2
4	2483.50	49.7 AV	54.0	-4.3	2.36 H	291	50.9	-1.2
5	4924.00	47.3 PK	74.0	-26.7	1.42 H	206	43.4	3.9
6	4924.00	35.3 AV	54.0	-18.7	1.42 H	206	31.4	3.9
7	7386.00	40.3 PK	74.0	-33.7	2.13 H	220	30.6	9.7
8	7386.00	32.0 AV	54.0	-22.0	2.13 H	220	22.3	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.3 PK			3.17 V	95	110.5	-1.2
2	*2462.00	100.2 AV			3.17 V	95	101.4	-1.2
3	2483.50	59.7 PK	74.0	-14.3	3.17 V	95	60.9	-1.2
4	2483.50	48.6 AV	54.0	-5.4	3.17 V	95	49.8	-1.2
5	4924.00	49.4 PK	74.0	-24.6	3.05 V	94	45.5	3.9
6	4924.00	38.1 AV	54.0	-15.9	3.05 V	94	34.2	3.9
7	7386.00	45.5 PK	74.0	-28.5	2.66 V	98	35.8	9.7
8	7386.00	33.6 AV	54.0	-20.4	2.66 V	98	23.9	9.7

Remarks:

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

RF Mode	TX 802.11n (HT20)	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.4 PK	74.0	-11.6	1.84 H	283	63.6	-1.2
2	2390.00	49.6 AV	54.0	-4.4	1.84 H	283	50.8	-1.2
3	*2412.00	109.9 PK			1.84 H	283	111.1	-1.2
4	*2412.00	100.6 AV			1.84 H	283	101.8	-1.2
5	4824.00	47.3 PK	74.0	-26.7	1.37 H	212	43.6	3.7
6	4824.00	35.7 AV	54.0	-18.3	1.37 H	212	32.0	3.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.6 PK	74.0	-12.4	3.16 V	90	62.8	-1.2
2	2390.00	48.6 AV	54.0	-5.4	3.16 V	90	49.8	-1.2
3	*2412.00	109.2 PK			3.16 V	90	110.4	-1.2
4	*2412.00	99.8 AV			3.16 V	90	101.0	-1.2
5	4824.00	49.9 PK	74.0	-24.1	3.03 V	81	46.2	3.7
6	4824.00	38.1 AV	54.0	-15.9	3.03 V	81	34.4	3.7

Remarks:

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

RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.5 PK	74.0	-12.5	2.17 H	292	62.7	-1.2
2	2390.00	47.7 AV	54.0	-6.3	2.17 H	292	48.9	-1.2
3	*2437.00	114.4 PK			2.17 H	292	115.6	-1.2
4	*2437.00	104.2 AV			2.17 H	292	105.4	-1.2
5	2483.50	59.6 PK	74.0	-14.4	2.17 H	292	60.8	-1.2
6	2483.50	49.1 AV	54.0	-4.9	2.17 H	292	50.3	-1.2
7	4874.00	49.0 PK	74.0	-25.0	1.40 H	210	45.2	3.8
8	4874.00	37.6 AV	54.0	-16.4	1.40 H	210	33.8	3.8
9	7311.00	41.3 PK	74.0	-32.7	2.16 H	237	31.6	9.7
10	7311.00	32.9 AV	54.0	-21.1	2.16 H	237	23.2	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.4 PK	74.0	-12.6	3.00 V	72	62.6	-1.2
2	2390.00	47.1 AV	54.0	-6.9	3.00 V	72	48.3	-1.2
3	*2437.00	114.5 PK			3.00 V	72	115.7	-1.2
4	*2437.00	104.0 AV			3.00 V	72	105.2	-1.2
5	2483.50	59.1 PK	74.0	-14.9	3.00 V	72	60.3	-1.2
6	2483.50	48.6 AV	54.0	-5.4	3.00 V	72	49.8	-1.2
7	4874.00	53.9 PK	74.0	-20.1	3.08 V	81	50.1	3.8
8	4874.00	40.1 AV	54.0	-13.9	3.08 V	81	36.3	3.8
9	7311.00	44.8 PK	74.0	-29.2	2.52 V	128	35.1	9.7
10	7311.00	34.6 AV	54.0	-19.4	2.52 V	128	24.9	9.7

Remarks:

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

RF Mode	TX 802.11n (HT20)	Channel	CH 11 : 2462 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.1 PK			2.29 H	293	111.3	-1.2
2	*2462.00	100.1 AV			2.29 H	293	101.3	-1.2
3	2483.50	60.6 PK	74.0	-13.4	2.29 H	293	61.8	-1.2
4	2483.50	49.9 AV	54.0	-4.1	2.29 H	293	51.1	-1.2
5	4924.00	46.9 PK	74.0	-27.1	1.37 H	219	43.0	3.9
6	4924.00	35.2 AV	54.0	-18.8	1.37 H	219	31.3	3.9
7	7386.00	40.7 PK	74.0	-33.3	2.09 H	212	31.0	9.7
8	7386.00	32.2 AV	54.0	-21.8	2.09 H	212	22.5	9.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.6 PK			2.94 V	80	110.8	-1.2
2	*2462.00	100.0 AV			2.94 V	80	101.2	-1.2
3	2483.50	61.6 PK	74.0	-12.4	2.94 V	80	62.8	-1.2
4	2483.50	49.3 AV	54.0	-4.7	2.94 V	80	50.5	-1.2
5	4924.00	49.4 PK	74.0	-24.6	3.23 V	83	45.5	3.9
6	4924.00	38.4 AV	54.0	-15.6	3.23 V	83	34.5	3.9
7	7386.00	45.3 PK	74.0	-28.7	2.60 V	104	35.6	9.7
8	7386.00	33.7 AV	54.0	-20.3	2.60 V	104	24.0	9.7

Remarks:

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

Below 1GHz Data:

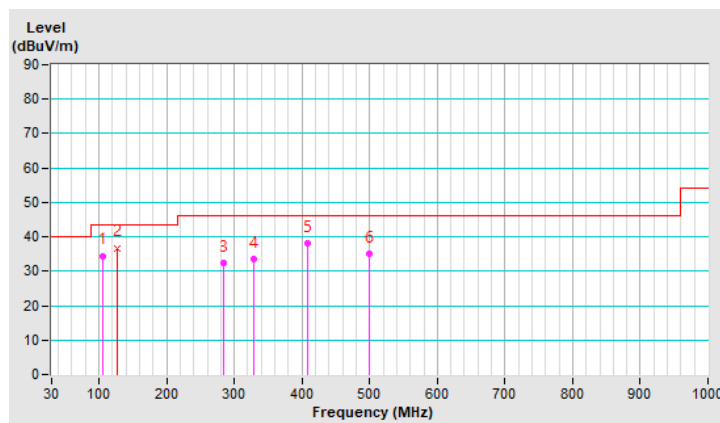
RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 70% RH
Tested By	Carter Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	104.72	34.5 QP	43.5	-9.0	2.00 H	100	46.0	-11.5
2	127.66	36.8 QP	43.5	-6.7	1.50 H	50	45.9	-9.1
3	284.13	32.4 QP	46.0	-13.6	1.50 H	100	39.6	-7.2
4	328.67	33.6 QP	46.0	-12.4	1.50 H	360	39.1	-5.5
5	408.26	38.1 QP	46.0	-7.9	1.00 H	0	41.6	-3.5
6	499.87	35.0 QP	46.0	-11.0	1.00 H	60	36.0	-1.0

Remarks:

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

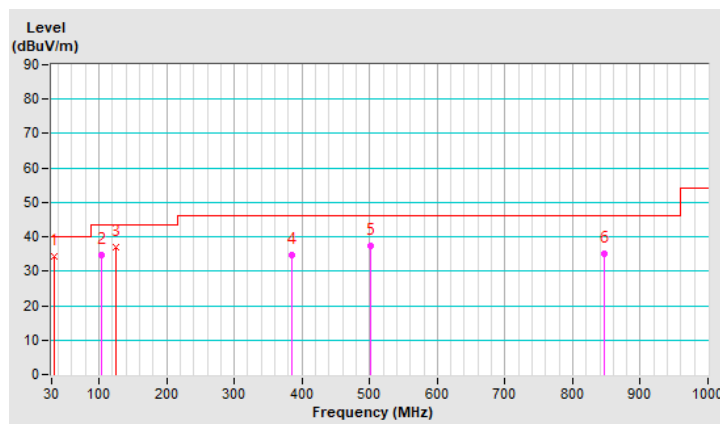


RF Mode	TX 802.11n (HT20)	Channel	CH 6 : 2437 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	120Vac, 60Hz	Environmental Conditions	24 °C, 70% RH
Tested By	Carter Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	34.68	34.3 QP	40.0	-5.7	1.00 V	360	43.5	-9.2
2	103.24	34.7 QP	43.5	-8.8	1.50 V	30	46.4	-11.7
3	124.18	37.1 QP	43.5	-6.4	1.50 V	30	46.6	-9.5
4	384.97	34.7 QP	46.0	-11.3	1.00 V	270	38.9	-4.2
5	501.26	37.3 QP	46.0	-8.7	1.50 V	0	38.3	-1.0
6	845.81	35.2 QP	46.0	-10.8	1.50 V	211	29.4	5.8

Remarks:

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

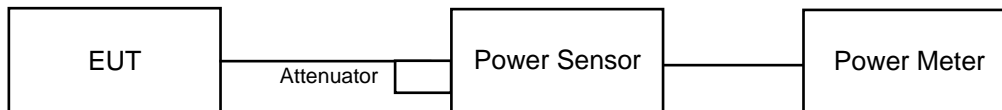


4.2 Conducted Output Power Measurement

4.2.1 Limits of Conducted Output Power Measurement

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

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.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.2.5 Deviation from Test Standard

No deviation.

4.2.6 EUT Operating Conditions

Same as Item 4.1.6.

4.2.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.40	20.17	213.64	23.30	30	Pass
6	2437	20.50	21.08	240.435	23.81	30	Pass
11	2462	20.57	20.64	229.903	23.62	30	Pass

Note: The maximum gain is 3.89 dBi < 6dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.40	19.79	204.927	23.12	30	Pass
6	2437	20.85	21.00	247.511	23.94	30	Pass
11	2462	20.48	20.32	219.333	23.41	30	Pass

Note: The maximum gain is 3.89 dBi < 6dBi, so the output power limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.32	19.18	168.301	22.26	30	Pass
6	2437	20.71	20.80	237.987	23.77	30	Pass
11	2462	19.38	19.40	173.793	22.40	30	Pass

Note: The maximum gain is 3.89 dBi < 6dBi, so the output power limit shall not be reduced.

FOR AVERAGE POWER

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.87	17.71	120.255	20.80
6	2437	18.70	19.17	156.735	21.95
11	2462	18.56	18.85	148.516	21.72

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	15.89	15.39	73.409	18.66
6	2437	18.09	17.57	121.565	20.85
11	2462	15.80	15.37	72.454	18.60

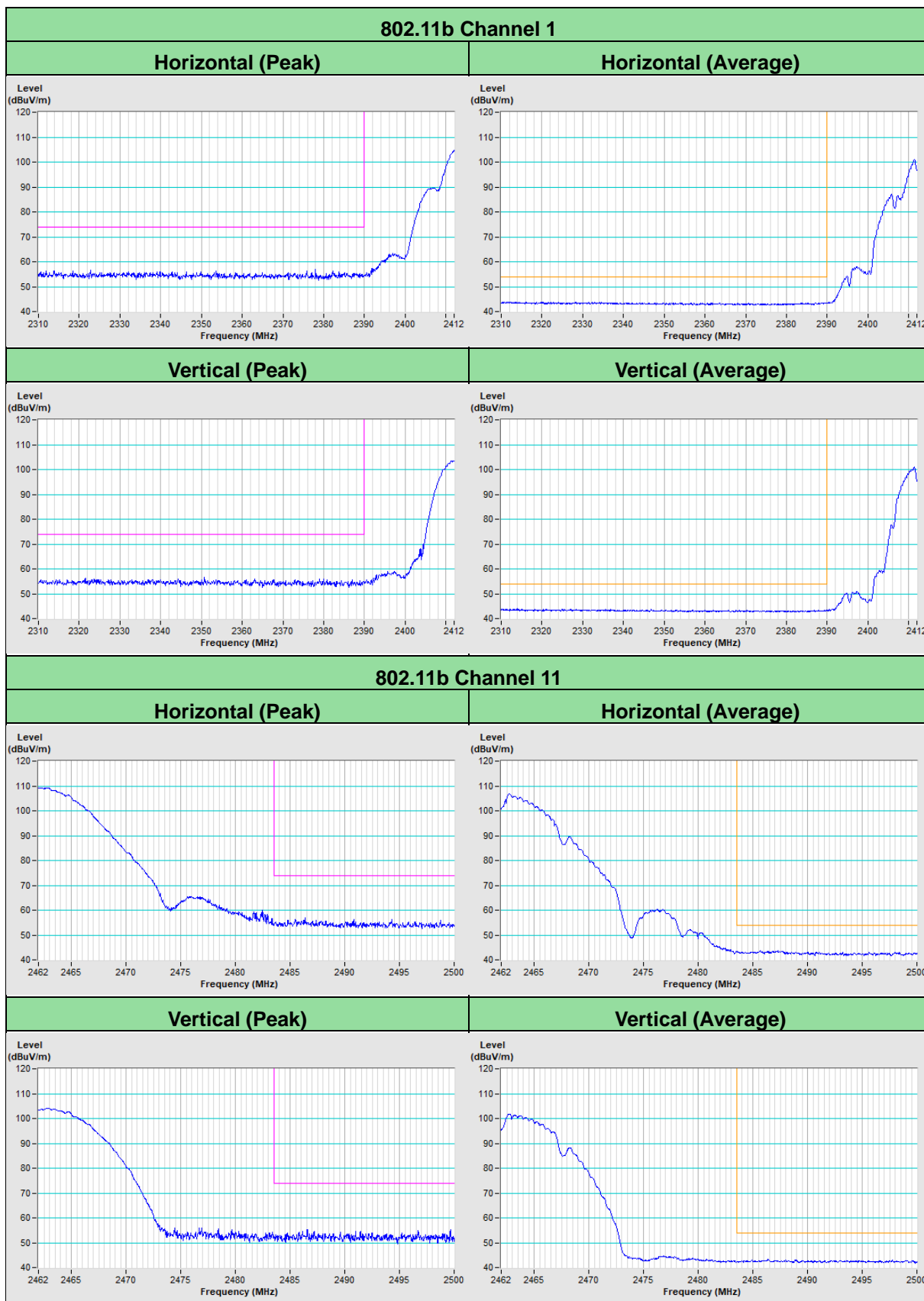
802.11n (HT20)

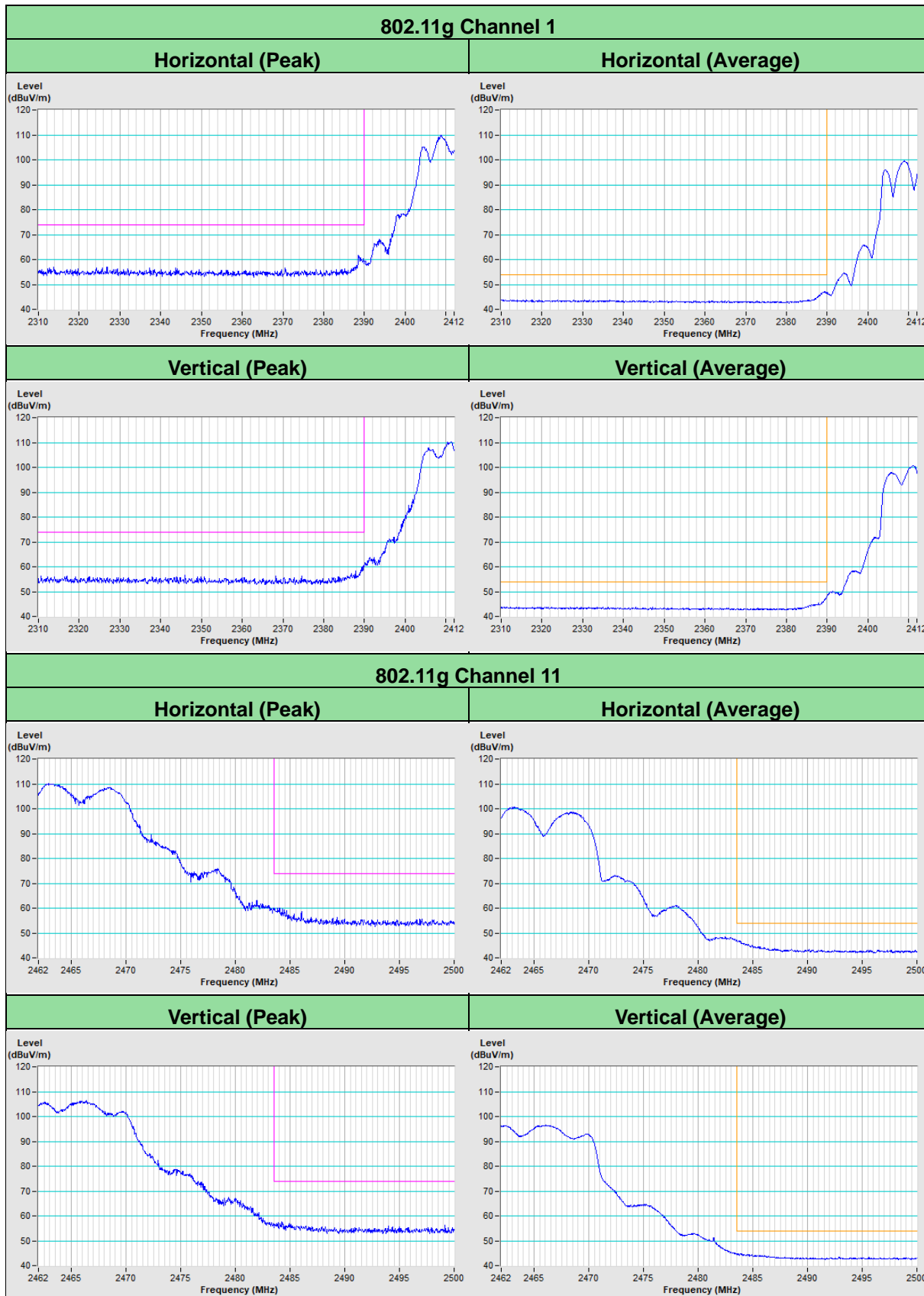
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	15.20	14.97	64.518	18.10
6	2437	18.95	18.96	157.228	21.97
11	2462	14.79	15.21	63.32	18.02

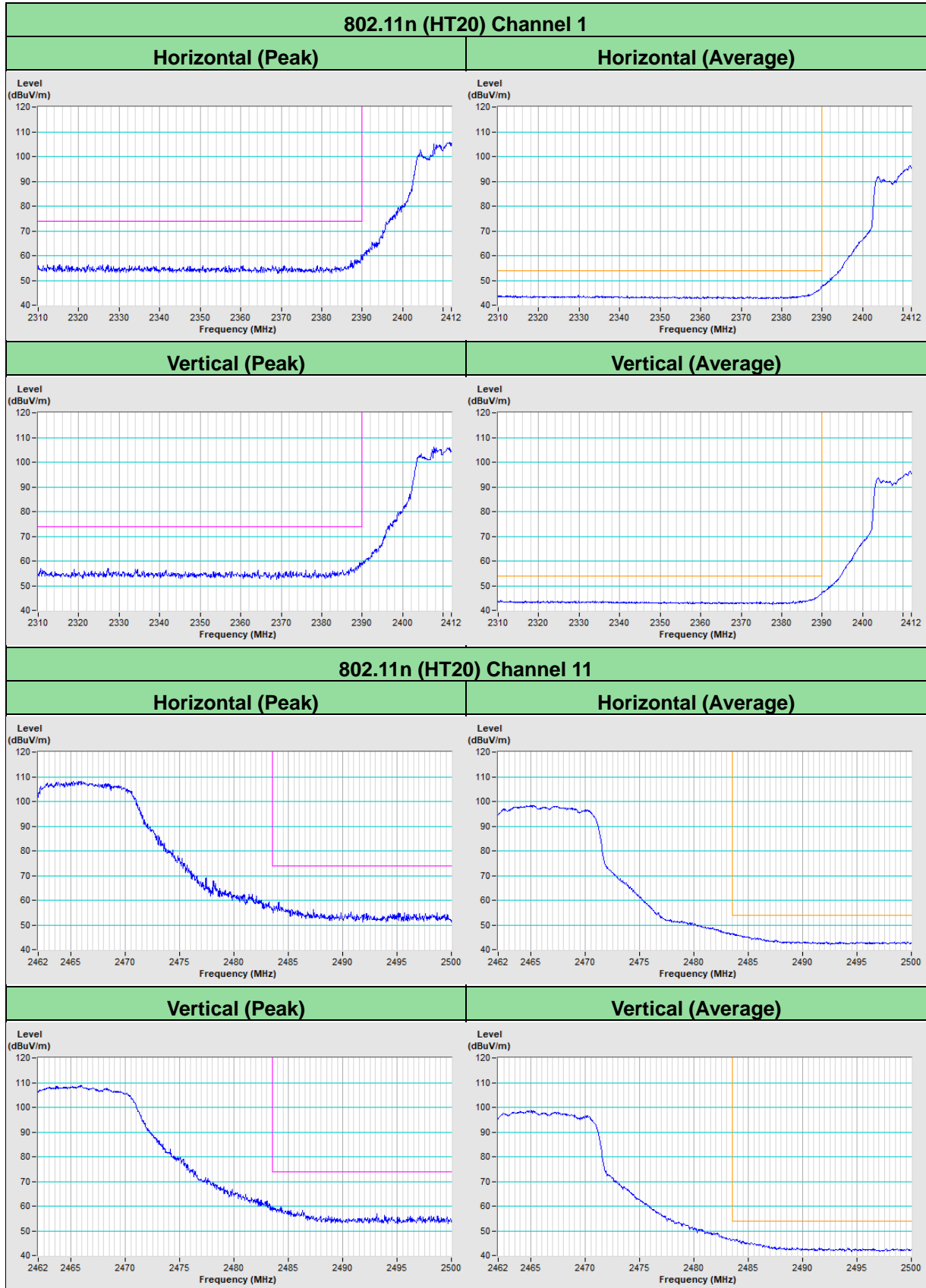
5 Pictures of Test Arrangements

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

Annex A - Band-Edge Measurement







Appendix – Information of the Testing Laboratories

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

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

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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