

Variant FCC Test Report

Report No.: RFBERD-WTW-P21100651-2

FCC ID: COF-WMBACBM25

Test Model: WM-BAC-BM-25

Series Model: WM-BAC-BM-25_FF2

Received Date: Oct. 21, 2021

Test Date: Nov. 12 ~ Dec. 15, 2021

Issued Date: Dec. 27, 2021

Applicant: Universal Global Scientific Industrial Co., Ltd.

Address: 141, Lane 351, Sec. 1, Taiping Road., Tsao-tuen, Nantou 542007, Taiwan

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

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan

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



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	5
2.2 Modification Record	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Description of Test Modes.....	8
3.2.1 Test Mode Applicability and Tested Channel Detail.....	9
3.3 Description of Support Units	11
3.3.1 Configuration of System under Test	11
3.4 General Description of Applied Standards and References	12
4 Test Types and Results	13
4.1 Radiated Emission and Bandedge Measurement	13
4.1.1 Limits of Radiated Emission and Bandedge Measurement	13
4.1.2 Test Instruments	14
4.1.3 Test Procedures.....	15
4.1.4 Deviation from Test Standard	16
4.1.5 Test Set Up	16
4.1.6 EUT Operating Conditions.....	17
4.1.7 Test Results	18
4.2 Conducted Output Power Measurement	32
4.2.1 Limits of Conducted Output Power Measurement.....	32
4.2.2 Test Setup.....	32
4.2.3 Test Instruments	32
4.2.4 Test Procedures.....	32
4.2.5 Deviation from Test Standard	32
4.2.6 EUT Operating Conditions.....	32
4.2.7 Test Results	33
5 Pictures of Test Arrangements.....	35
Annex A- Band Edge Measurement	36
Appendix – Information of the Testing Laboratories	41

Release Control Record

Issue No.	Description	Date Issued
RFBERD-WTW-P21100651-2	Original Release	Dec. 27, 2021

1 Certificate of Conformity

Product: 802.11a/b/g/n/ac + BT 4.1 Module

Brand: USI

Test Model: WM-BAC-BM-25

Series Model: WM-BAC-BM-25_FF2

Sample Status: Engineering Sample

Applicant: Universal Global Scientific Industrial Co., Ltd.

Test Date: Nov. 12 ~ Dec. 15, 2021

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

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

Prepared by :

Gina Liu

, **Date:** Dec. 27, 2021

Gina Liu / Specialist

Approved by :

Jeremy Lin

, **Date:** Dec. 27, 2021

Jeremy Lin / 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 -1.03 dB at 2483.50 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	Pass	No antenna connector is used.

Note:

1. This report is a partial report, only test item of Radiated Emissions and Conducted Power were performed for this report. Other testing data please refer to original report no.:RF190103E03.
2. For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
3. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11a/b/g/n/ac + BT 4.1 Module
Brand	USI
Test Model	WM-BAC-BM-25
Series Model	WM-BAC-BM-25_FF2
Status of EUT	Engineering Sample
Power Supply Rating	3.6 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	13 for 802.11b, 802.11g, 802.11n (HT20) 9 for 802.11n (HT40)
Output Power	264.241 mW
Antenna Type	Ceramic Chip antenna with 1.59 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report to BV CPS report no. RF190103E03. The difference compared with original report is listed as below, only test item of Radiated Emissions and Maximum Peak Output Power were performed for this report.

- Added one Model Name: WM-BAC-BM-25_FF2.
- Change Ant. Matching , power reduce
- Correct the address postal code

2. All models are listed as below.

Brand	Model	Difference
USI	WM-BAC-BM-25	All models are electrically identical, different model names are for marketing purpose.
	WM-BAC-BM-25_FF2	

3. There are WLAN and Bluetooth technology used for the EUT.

4. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	Bluetooth
2	WLAN 5GHz	Bluetooth

5. The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
YANGO	ANT3216A063R2455A	1.59	2.4~2.4835	Ceramic Chip Antenna	none
		2.23	5.15~5.85		

6. 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.
7. 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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

9 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

Where **RE≥1G**: Radiated Emission above 1 GHz **RE<1G**: Radiated Emission below 1 GHz
APCM: Antenna Port Conducted Measurement

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

Radiated Emission Test (Above 1 GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Radiated Emission Test (Below 1 GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11n (HT40)	3 to 9	9	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)
-	802.11b	1 to 13	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	23 deg. C, 67 % RH	120 Vac, 60 Hz	Tim Chen
RE $<$ 1G	23 deg. C, 67 % RH	120 Vac, 60 Hz	Randy Wu
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyoung Wang

3.3 Duty Cycle of Test Signal

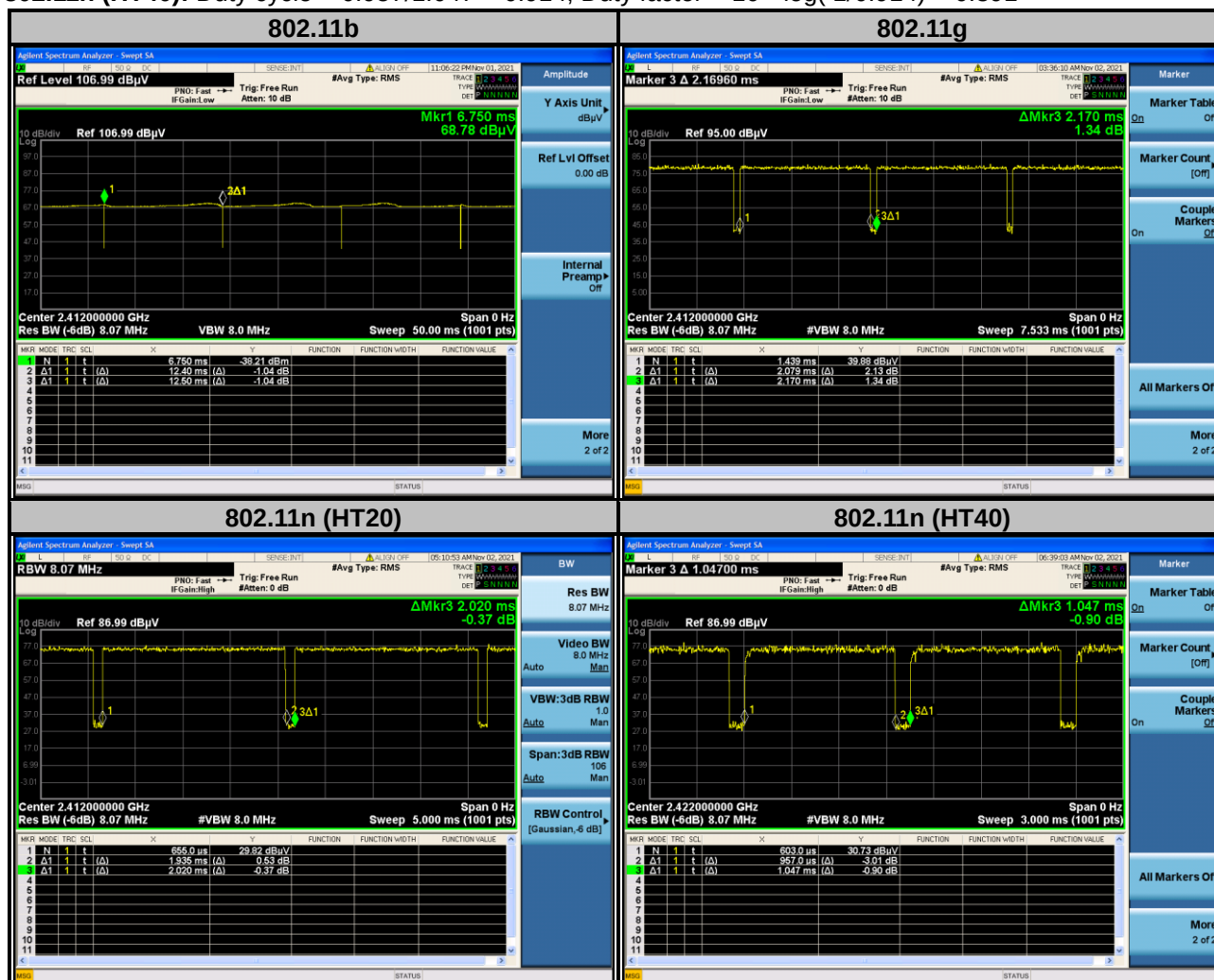
802.11b: Duty cycle = 12.40/12.50 = 0.992, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

Duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11g: Duty cycle = 2.079/2.170 = 0.958, Duty factor = $10 * \log(1/0.958) = 0.186$

802.11n (HT20): Duty cycle = 1.935/2.020 = 0.957, Duty factor = $10 * \log(1/0.957) = 0.191$

802.11n (HT40): Duty cycle = 0.957/1.047 = 0.914, Duty factor = $10 * \log(1/0.914) = 0.391$



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 Meas Guidance v05r02

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer Agilent	N9010A	MY52220207	Jan. 05, 2021	Jan. 04, 2022
Test Receiver KEYSIGHT	N9038A	MY51210203	Sep. 22, 2021	Sep. 21, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 12, 2021	Apr. 11, 2022
Broadband Horn Antenna SCHWARZBECK	BBHA 9170	148	Nov. 22, 2020	Nov. 21, 2021
			Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 22, 2020	Nov. 21, 2021
			Nov. 14, 2021	Nov. 13, 2022
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Oct. 28, 2021	Oct. 27, 2022
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 13, 2021	Apr. 12, 2022
Preamplifier EMCI	EMC001340	980201	Sep. 15, 2021	Sep. 14, 2022
Preamplifier EMCI	EMC 012645	980115	Oct. 05, 2021	Oct. 04, 2022
Preamplifier EMCI	EMC 330H	980112	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	171005	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 05, 2021	Oct. 04, 2022
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 05, 2021	Oct. 04, 2022
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Wideband Power Sensor KEYSIGHT	N1923A	MY58020002	Jan. 11, 2021	Jan. 10, 2022
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	Jan. 19, 2021	Jan. 18, 2022

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

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

Note:

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

For Radiated Emission above 30 MHz

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

Note:

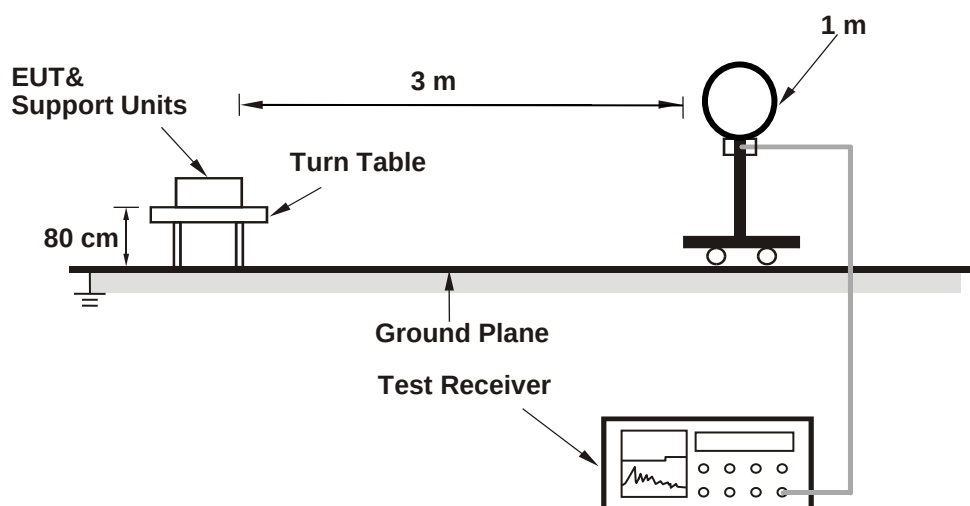
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
(11b: RBW = 1 MHz, VBW = 10 Hz ; 11g: RBW = 1 MHz, VBW = 510 Hz ; 11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 1.2 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

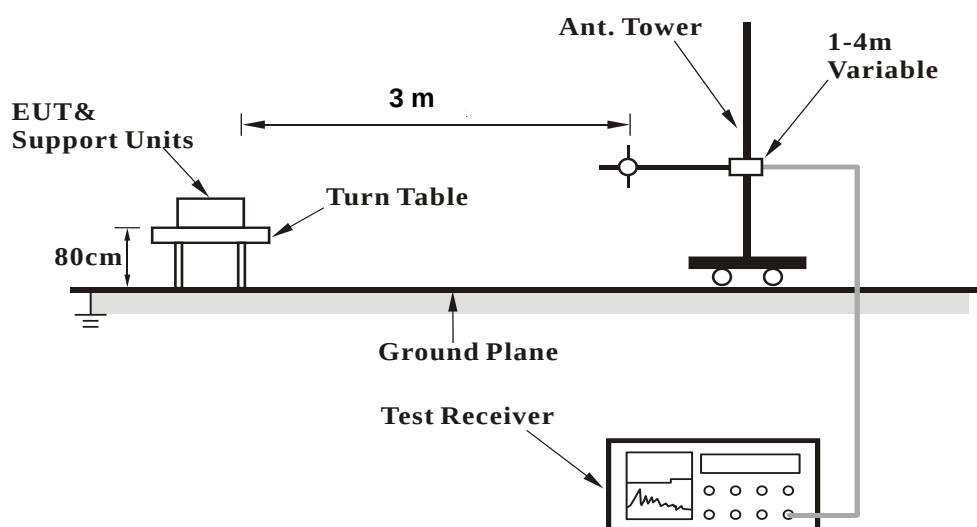
No deviation.

4.1.5 Test Set Up

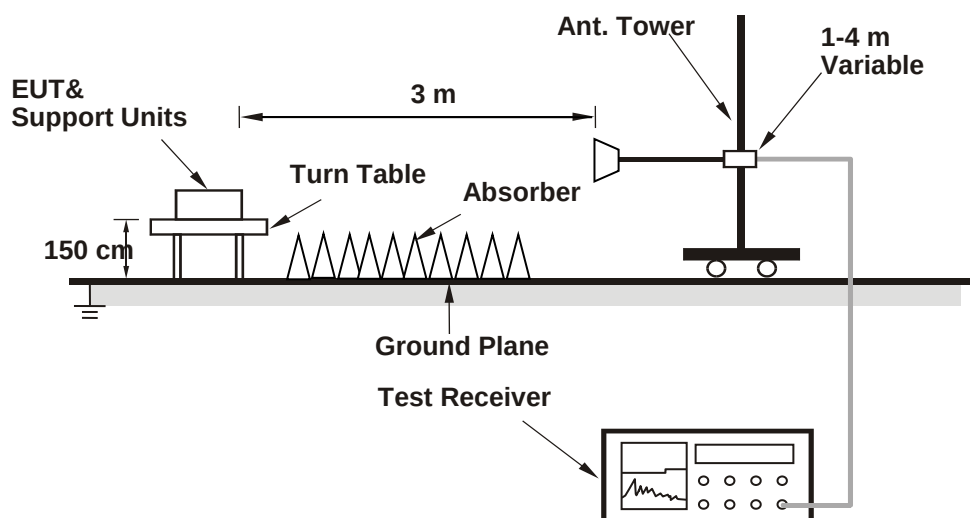
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1 GHz Data :

RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	57.55 PK	74.00	-16.45	1.04 H	61	26.63	30.92
2	2390.00	46.08 AV	54.00	-7.92	1.04 H	61	15.16	30.92
3	*2412.00	92.61 PK			1.04 H	61	61.73	30.88
4	*2412.00	90.44 AV			1.04 H	61	59.56	30.88
5	4824.00	44.50 PK	74.00	-29.50	2.51 H	116	61.29	-16.79
6	4824.00	34.58 AV	54.00	-19.42	2.51 H	116	51.37	-16.79
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	56.96 PK	74.00	-17.04	1.33 V	165	26.04	30.92
2	2390.00	47.68 AV	54.00	-6.32	1.33 V	165	16.76	30.92
3	*2412.00	101.53 PK			1.33 V	165	70.65	30.88
4	*2412.00	99.42 AV			1.33 V	165	68.54	30.88
5	4824.00	44.83 PK	74.00	-29.17	1.79 V	194	61.62	-16.79
6	4824.00	34.75 AV	54.00	-19.25	1.79 V	194	51.54	-16.79

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)

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	*2437.00	97.42 PK			1.05 H	73	66.56	30.86
2	*2437.00	95.29 AV			1.05 H	73	64.43	30.86
3	4874.00	44.36 PK	74.00	-29.64	2.04 H	94	61.37	-17.01
4	4874.00	34.33 AV	54.00	-19.67	2.04 H	94	51.34	-17.01
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	*2437.00	106.54 PK			1.43 V	167	75.68	30.86
2	*2437.00	104.36 AV			1.43 V	167	73.50	30.86
3	4874.00	44.68 PK	74.00	-29.32	1.70 V	197	61.69	-17.01
4	4874.00	34.61 AV	54.00	-19.39	1.70 V	197	51.62	-17.01

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)

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	94.74 PK			1.02 H	68	63.43	31.31
2	*2462.00	92.57 AV			1.02 H	68	61.26	31.31
3	2483.50	57.84 PK	74.00	-16.16	1.02 H	68	26.55	31.29
4	2483.50	48.17 AV	54.00	-5.83	1.02 H	68	16.88	31.29
5	4924.00	44.39 PK	74.00	-29.61	1.53 H	102	61.43	-17.04
6	4924.00	35.31 AV	54.00	-18.69	1.53 H	102	52.35	-17.04
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	103.17 PK			1.28 V	167	72.32	30.85
2	*2462.00	101.14 AV			1.28 V	167	70.29	30.85
3	2483.50	61.02 PK	74.00	-12.98	1.28 V	167	30.19	30.83
4	2483.50	52.90 AV	54.00	-1.10	1.28 V	167	22.07	30.83
5	4924.00	44.61 PK	74.00	-29.39	1.07 V	219	61.59	-16.98
6	4924.00	34.68 AV	54.00	-19.32	1.07 V	219	51.66	-16.98

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)

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	59.72 PK	74.00	-14.28	1.08 H	77	28.80	30.92
2	2390.00	46.93 AV	54.00	-7.07	1.08 H	77	16.01	30.92
3	*2412.00	93.82 PK			1.08 H	77	62.94	30.88
4	*2412.00	86.27 AV			1.08 H	77	55.39	30.88
5	4824.00	44.69 PK	74.00	-29.31	1.42 H	116	61.48	-16.79
6	4824.00	34.72 AV	54.00	-19.28	1.42 H	116	51.51	-16.79
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	66.93 PK	74.00	-7.07	1.31 V	163	36.01	30.92
2	2390.00	51.22 AV	54.00	-2.78	1.31 V	163	20.30	30.92
3	*2412.00	103.39 PK			1.31 V	163	72.51	30.88
4	*2412.00	95.95 AV			1.31 V	163	65.07	30.88
5	4824.00	44.89 PK	74.00	-29.11	2.17 V	184	61.68	-16.79
6	4824.00	34.93 AV	54.00	-19.07	2.17 V	184	51.72	-16.79

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)

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	*2437.00	101.40 PK			1.05 H	75	70.54	30.86
2	*2437.00	93.84 AV			1.05 H	75	62.98	30.86
3	4874.00	44.63 PK	74.00	-29.37	2.24 H	190	61.64	-17.01
4	4874.00	34.60 AV	54.00	-19.40	2.24 H	190	51.61	-17.01
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	*2437.00	110.14 PK			1.43 V	165	79.28	30.86
2	*2437.00	102.51 AV			1.43 V	165	71.65	30.86
3	4874.00	44.74 PK	74.00	-29.26	1.83 V	311	61.75	-17.01
4	4874.00	34.80 AV	54.00	-19.20	1.83 V	311	51.81	-17.01

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)

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	97.22 PK			1.04 H	67	66.37	30.85
2	*2462.00	89.60 AV			1.04 H	67	58.75	30.85
3	2483.50	55.40 PK	74.00	-18.60	1.04 H	67	24.57	30.83
4	2483.50	46.55 AV	54.00	-7.45	1.04 H	67	15.72	30.83
5	4924.00	44.55 PK	74.00	-29.45	1.72 H	301	61.53	-16.98
6	4924.00	34.48 AV	54.00	-19.52	1.72 H	301	51.46	-16.98
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	106.49 PK			1.28 V	169	75.64	30.85
2	*2462.00	99.12 AV			1.28 V	169	68.27	30.85
3	2483.50	66.90 PK	74.00	-7.10	1.28 V	169	36.07	30.83
4	2483.50	52.86 AV	54.00	-1.14	1.28 V	169	22.03	30.83
5	4924.00	44.84 PK	74.00	-29.16	2.38 V	271	61.82	-16.98
6	4924.00	34.93 AV	54.00	-19.07	2.38 V	271	51.91	-16.98

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)

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	58.63 PK	74.00	-15.37	1.11 H	76	27.71	30.92
2	2390.00	46.74 AV	54.00	-7.26	1.11 H	76	15.82	30.92
3	*2412.00	95.64 PK			1.11 H	76	64.76	30.88
4	*2412.00	87.96 AV			1.11 H	76	57.08	30.88
5	4824.00	44.83 PK	74.00	-29.17	2.26 H	144	61.62	-16.79
6	4824.00	34.97 AV	54.00	-19.03	2.26 H	144	51.76	-16.79
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	68.78 PK	74.00	-5.22	1.48 V	166	37.86	30.92
2	2390.00	52.82 AV	54.00	-1.18	1.48 V	166	21.90	30.92
3	*2412.00	106.32 PK			1.48 V	166	75.44	30.88
4	*2412.00	97.89 AV			1.48 V	166	67.01	30.88
5	4824.00	45.12 PK	74.00	-28.88	3.15 V	204	61.91	-16.79
6	4824.00	35.09 AV	54.00	-18.91	3.15 V	204	51.88	-16.79

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)

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	*2437.00	102.04 PK			1.06 H	73	71.18	30.86
2	*2437.00	94.30 AV			1.06 H	73	63.44	30.86
3	4874.00	44.95 PK	74.00	-29.05	1.64 H	308	61.96	-17.01
4	4874.00	35.13 AV	54.00	-18.87	1.64 H	308	52.14	-17.01
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	*2437.00	110.69 PK			1.45 V	167	79.83	30.86
2	*2437.00	103.48 AV			1.45 V	167	72.62	30.86
3	4874.00	44.96 PK	74.00	-29.04	1.36 V	284	61.97	-17.01
4	4874.00	35.21 AV	54.00	-18.79	1.36 V	284	52.22	-17.01

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)

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	98.26 PK			1.06 H	72	67.41	30.85
2	*2462.00	90.44 AV			1.06 H	72	59.59	30.85
3	2483.50	63.26 PK	74.00	-10.74	1.06 H	72	32.43	30.83
4	2483.50	47.80 AV	54.00	-6.20	1.06 H	72	16.97	30.83
5	4924.00	44.75 PK	74.00	-29.25	1.24 H	334	61.73	-16.98
6	4924.00	34.71 AV	54.00	-19.29	1.24 H	334	51.69	-16.98
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	105.92 PK			1.46 V	167	75.07	30.85
2	*2462.00	98.11 AV			1.46 V	167	67.26	30.85
3	2483.50	69.28 PK	74.00	-4.72	1.46 V	167	38.45	30.83
4	2483.50	52.89 AV	54.00	-1.11	1.46 V	167	22.06	30.83
5	4924.00	44.81 PK	74.00	-29.19	2.81 V	316	61.79	-16.98
6	4924.00	34.88 AV	54.00	-19.12	2.81 V	316	51.86	-16.98

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 (HT40)	Channel	CH 3 : 2422 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	57.37 PK	74.00	-16.63	2.76 H	38	26.44	30.93
2	2390.00	46.04 AV	54.00	-7.96	2.76 H	38	15.11	30.93
3	*2422.00	87.19 PK			2.76 H	38	56.29	30.90
4	*2422.00	78.24 AV			2.76 H	38	47.34	30.90
5	4844.00	41.75 PK	74.00	-32.25	3.08 H	110	58.57	-16.82
6	4844.00	31.60 AV	54.00	-22.40	3.08 H	110	48.42	-16.82
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	65.53 PK	74.00	-8.47	1.55 V	129	34.60	30.93
2	2390.00	51.89 AV	54.00	-2.11	1.55 V	129	20.96	30.93
3	*2422.00	98.61 PK			1.55 V	129	67.71	30.90
4	*2422.00	90.91 AV			1.55 V	129	60.01	30.90
5	4844.00	41.89 PK	74.00	-32.11	1.27 V	259	58.71	-16.82
6	4844.00	31.81 AV	54.00	-22.19	1.27 V	259	48.63	-16.82

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 (HT40)	Channel	CH 6 : 2437 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	57.11 PK	74.00	-16.89	2.97 H	41	26.18	30.93
2	2390.00	46.09 AV	54.00	-7.91	2.97 H	41	15.16	30.93
3	*2437.00	89.91 PK			2.97 H	41	59.02	30.89
4	*2437.00	81.65 AV			2.97 H	41	50.76	30.89
5	2483.50	56.84 PK	74.00	-17.16	2.97 H	41	25.97	30.87
6	2483.50	46.48 AV	54.00	-7.52	2.97 H	41	15.61	30.87
7	4874.00	41.80 PK	74.00	-32.20	3.15 H	84	58.71	-16.91
8	4874.00	31.92 AV	54.00	-22.08	3.15 H	84	48.83	-16.91
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	65.80 PK	74.00	-8.20	1.30 V	132	34.87	30.93
2	2390.00	52.81 AV	54.00	-1.19	1.30 V	132	21.88	30.93
3	*2437.00	103.59 PK			1.30 V	132	72.70	30.89
4	*2437.00	95.45 AV			1.30 V	132	64.56	30.89
5	2483.50	64.26 PK	74.00	-9.74	1.30 V	132	33.39	30.87
6	2483.50	50.65 AV	54.00	-3.35	1.30 V	132	19.78	30.87
7	4874.00	41.92 PK	74.00	-32.08	1.82 V	170	58.83	-16.91
8	4874.00	32.00 AV	54.00	-22.00	1.82 V	170	48.91	-16.91

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 (HT40)	Channel	CH 9 : 2452 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)

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	*2452.00	87.69 PK			3.25 H	49	56.79	30.90
2	*2452.00	79.35 AV			3.25 H	49	48.45	30.90
3	2483.50	57.28 PK	74.00	-16.72	3.25 H	49	26.41	30.87
4	2483.50	46.90 AV	54.00	-7.10	3.25 H	49	16.03	30.87
5	4904.00	41.68 PK	74.00	-32.32	2.51 H	114	58.65	-16.97
6	4904.00	31.74 AV	54.00	-22.26	2.51 H	114	48.71	-16.97
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	*2452.00	100.61 PK			1.24 V	136	69.71	30.90
2	*2452.00	92.43 AV			1.24 V	136	61.53	30.90
3	2483.50	67.68 PK	74.00	-6.32	1.24 V	136	36.81	30.87
4	2483.50	52.97 AV	54.00	-1.03	1.24 V	136	22.10	30.87
5	4904.00	41.96 PK	74.00	-32.04	1.62 V	151	58.93	-16.97
6	4904.00	31.92 AV	54.00	-22.08	1.62 V	151	48.89	-16.97

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.

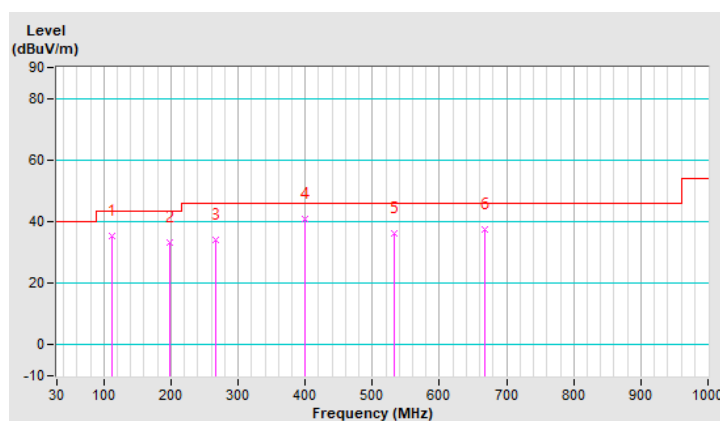
30 MHz ~ 1 GHz Worst-Case Data:

RF Mode	TX 802.11n (HT40)	Channel	CH 9 : 2452 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	112.45	35.35 QP	43.50	-8.15	1.49 H	88	56.41	-21.06
2	197.81	33.30 QP	43.50	-10.20	1.99 H	136	54.93	-21.63
3	266.68	33.92 QP	46.00	-12.08	1.00 H	70	52.67	-18.75
4	399.57	40.91 QP	46.00	-5.09	1.99 H	66	56.09	-15.18
5	533.43	36.02 QP	46.00	-9.98	1.49 H	27	48.33	-12.31
6	667.29	37.59 QP	46.00	-8.41	1.00 H	77	47.34	-9.75

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.

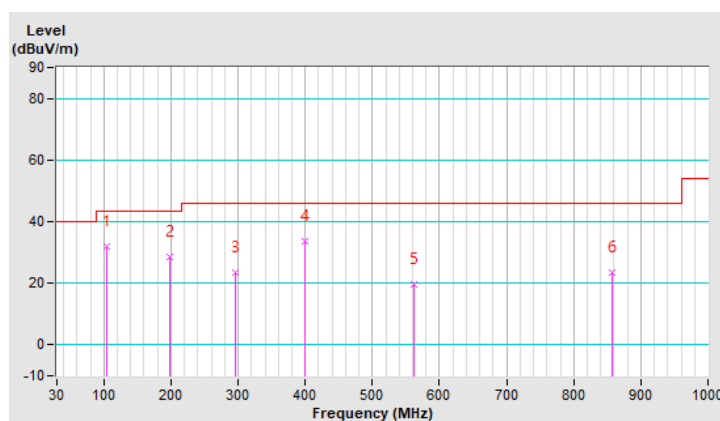


RF Mode	TX 802.11n (HT40)	Channel	CH 9 : 2452 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	104.69	31.83 QP	43.50	-11.67	1.00 V	115	53.70	-21.87
2	197.81	28.68 QP	43.50	-14.82	1.99 V	4	50.31	-21.63
3	296.75	23.51 QP	46.00	-22.49	1.49 V	181	41.20	-17.69
4	399.57	33.73 QP	46.00	-12.27	1.99 V	108	48.91	-15.18
5	562.53	19.73 QP	46.00	-26.27	1.00 V	197	31.36	-11.63
6	857.41	23.58 QP	46.00	-22.42	1.49 V	136	30.44	-6.86

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 (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

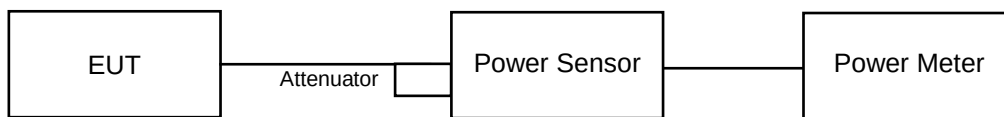
Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = $5 \log(NANT/NSS)$ dB or 3 dB, whichever is less for 20 MHz channel widths with $NANT \geq 5$.

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

4.2.2 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

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

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	104.713	20.20	30	Pass
6	2437	206.063	23.14	30	Pass
11	2462	105.439	20.23	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	174.582	22.42	30	Pass
6	2437	258.226	24.12	30	Pass
11	2462	206.063	23.14	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	198.609	22.98	30	Pass
6	2437	264.241	24.22	30	Pass
11	2462	207.491	23.17	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	95.06	19.78	30	Pass
6	2437	167.109	22.23	30	Pass
9	2452	121.06	20.83	30	Pass

Average Power

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	52.723	17.22
6	2437	103.753	20.16
11	2462	55.463	17.44

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	30.832	14.89
6	2437	93.756	19.72
11	2462	31.842	15.03

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	31.623	15.00
6	2437	87.7	19.43
11	2462	33.651	15.27

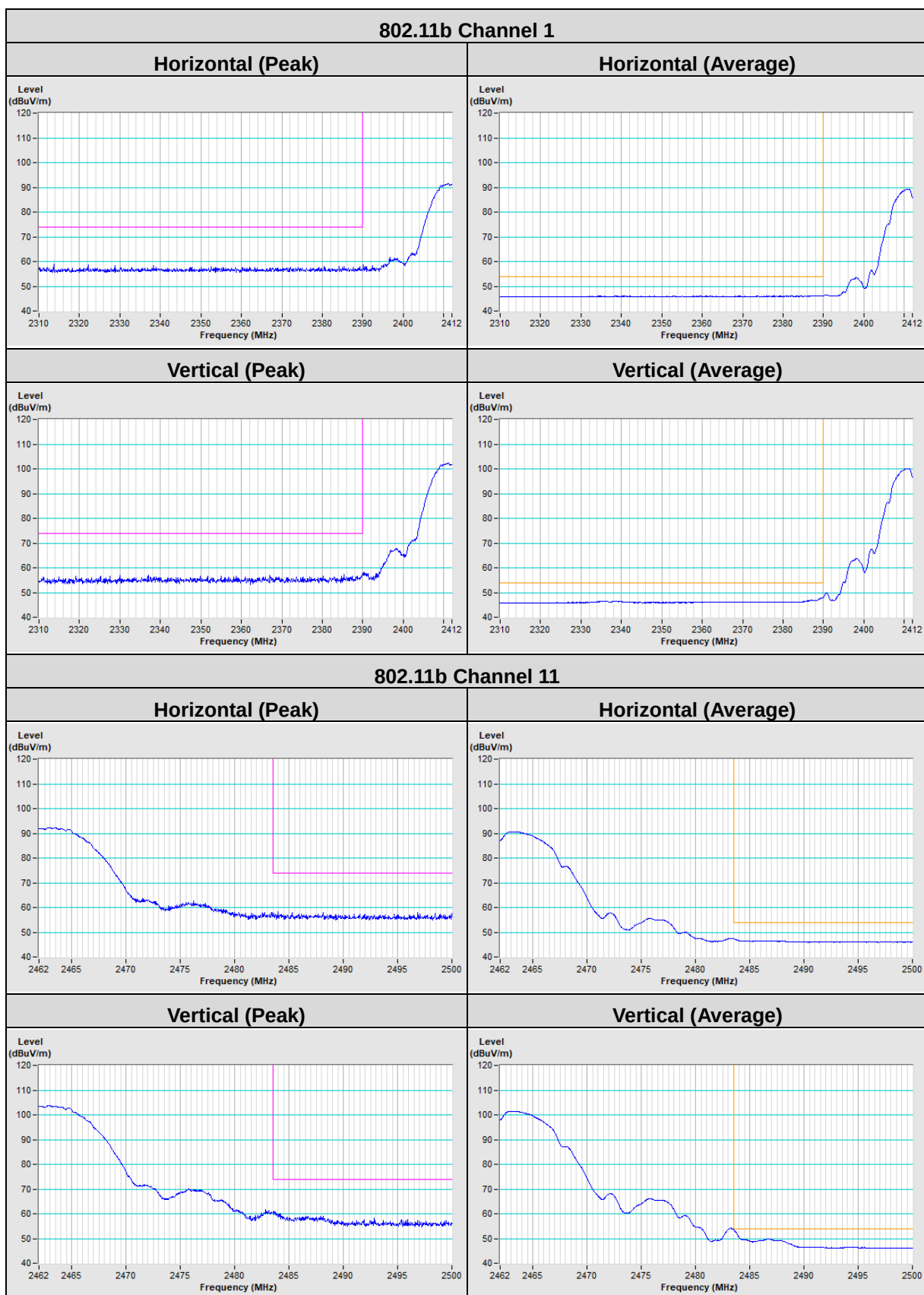
802.11n (HT40)

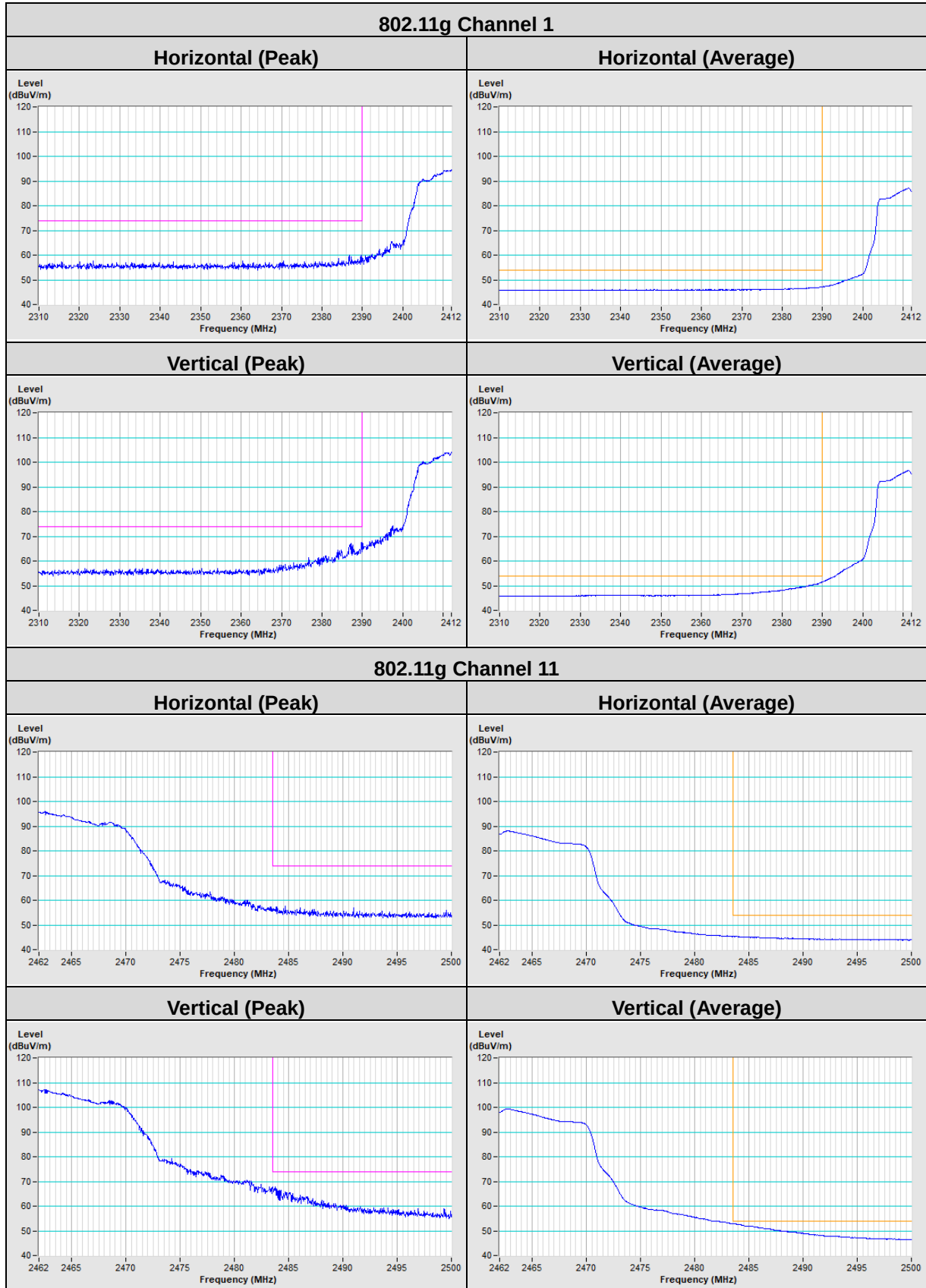
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	14.588	11.64
6	2437	25.763	14.11
9	2452	16.181	12.09

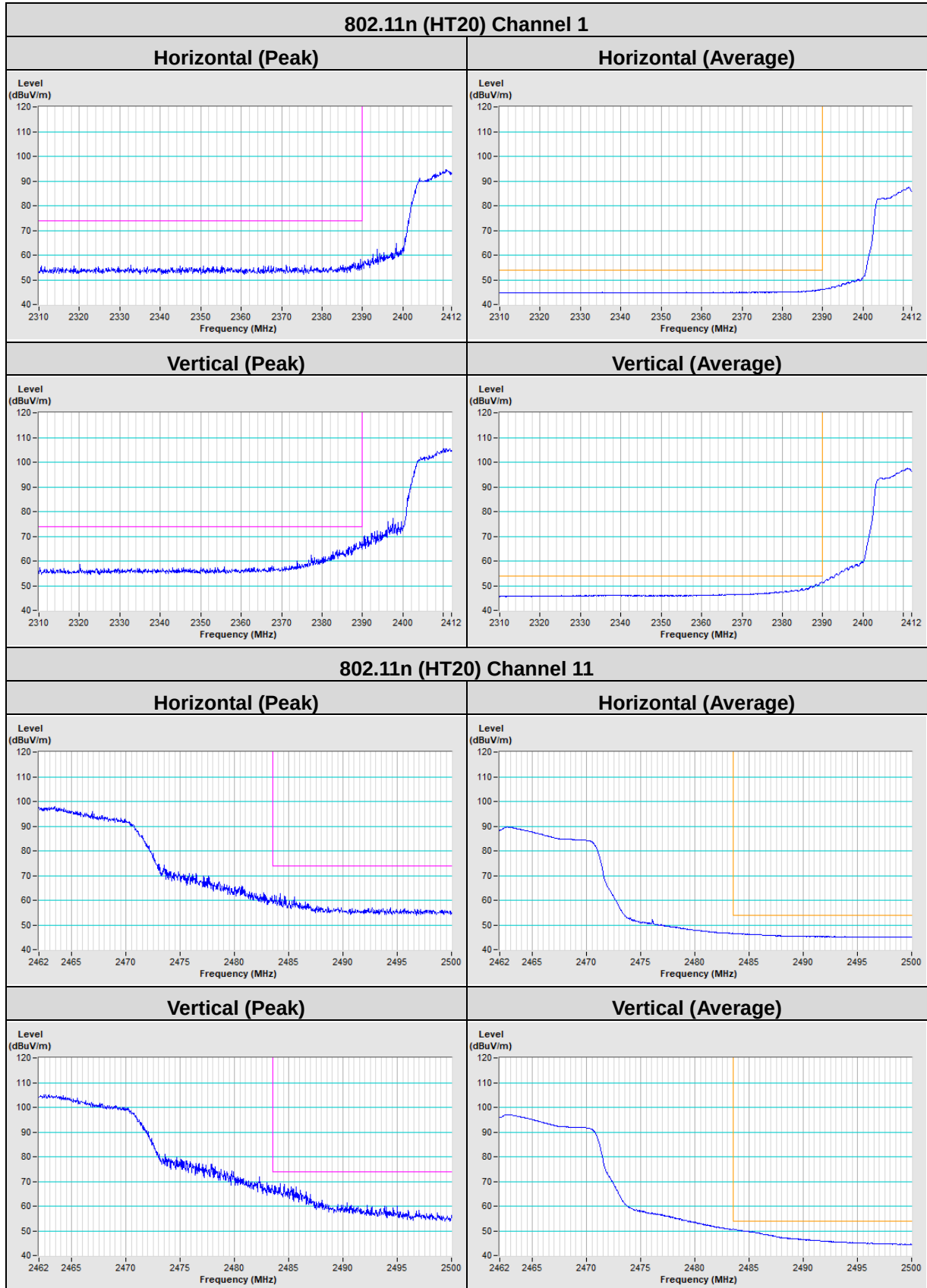
5 Pictures of Test Arrangements

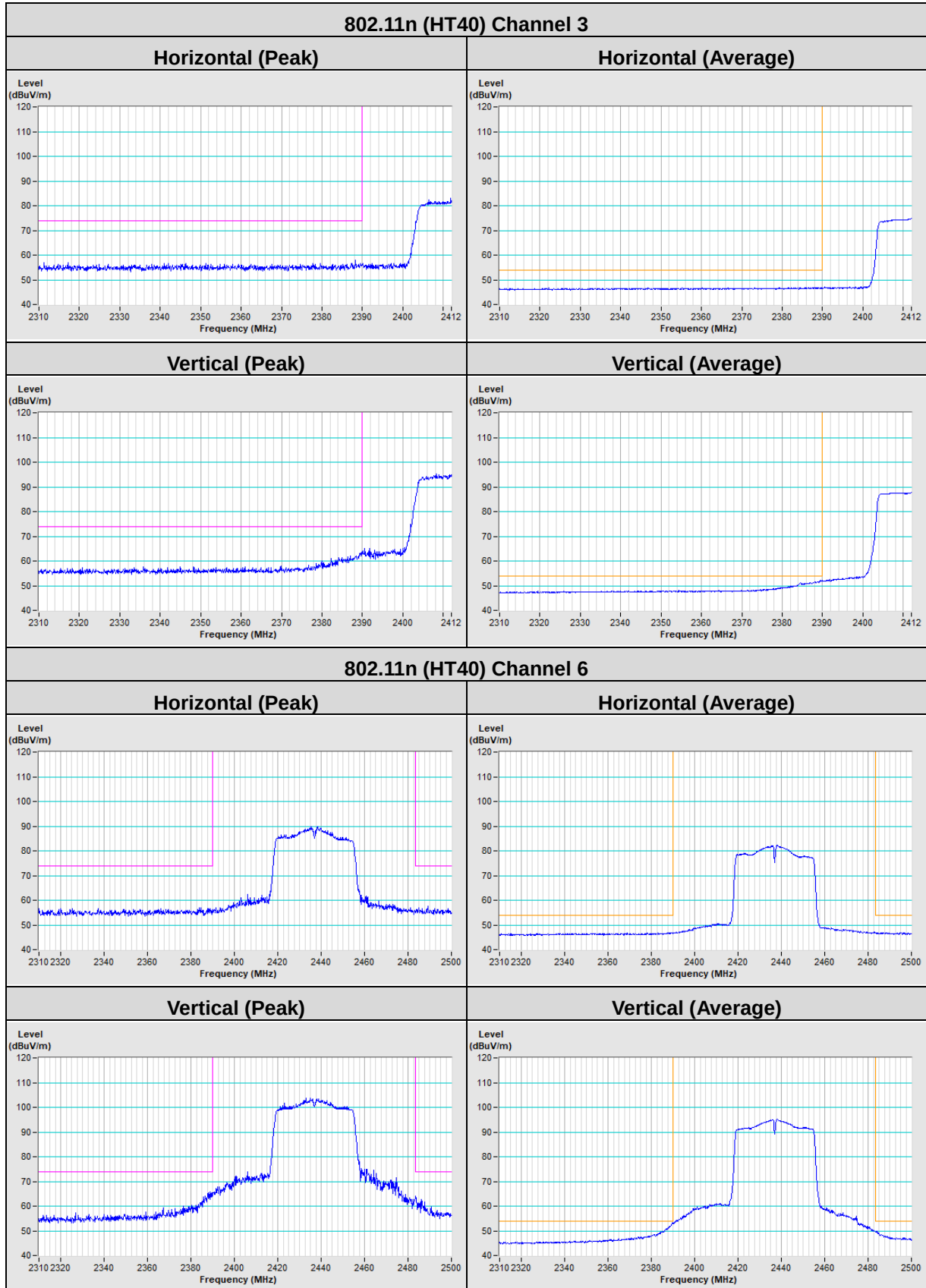
Please refer to the attached file (Test Setup Photo).

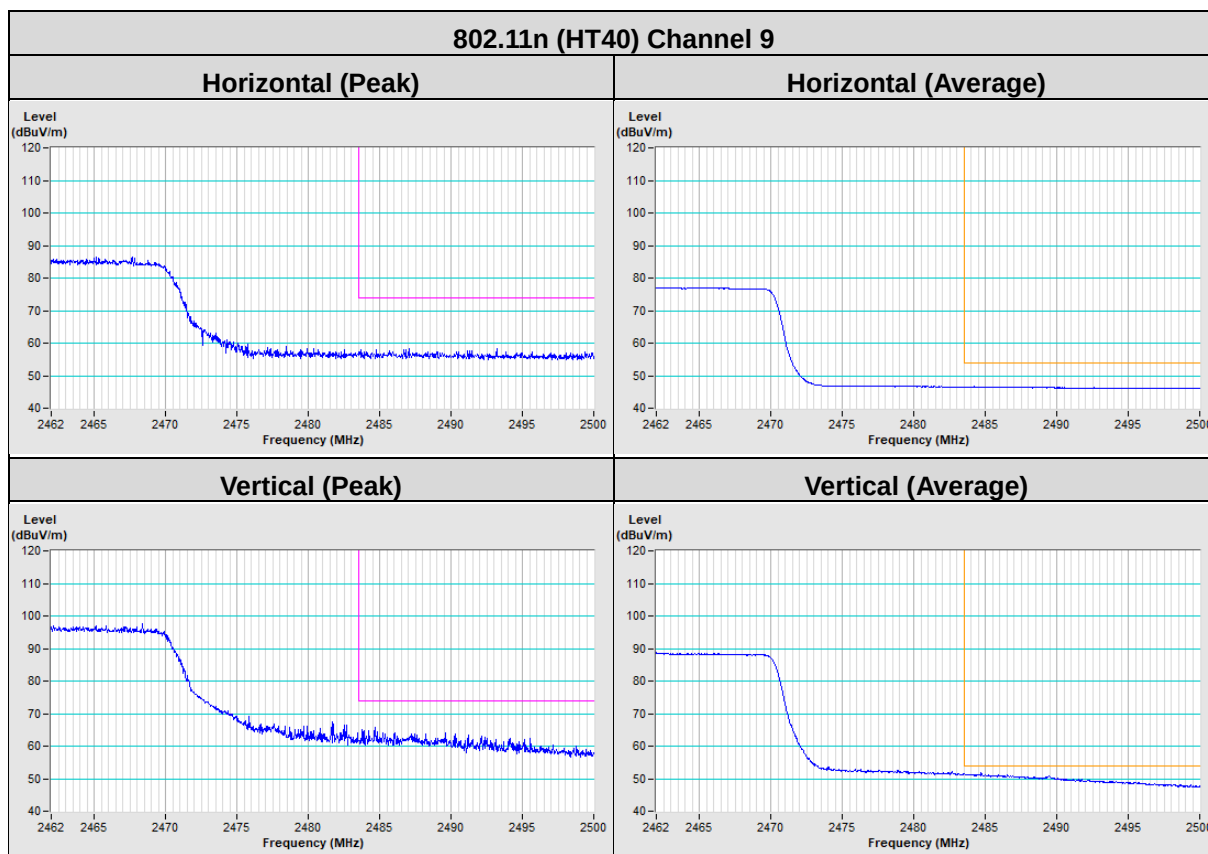
Annex A- Band Edge Measurement











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.

--- END ---