

Partial FCC Test Report

(WLAN 2.4GHz Band)

Report No.: RFBBGM-WTW-P21120093-6

FCC ID: WIYSLM500QA

Test Model: SLM500

Received Date: Dec. 24, 2021

Test Date: Feb. 25 ~ Mar. 02, 2022

Issued Date: Mar. 17, 2022

Applicant: CASTLES TECHNOLOGY CO., LTD.

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

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



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Release Control Record

Issue No.	Description	Date Issued
RFBBGM-WTW-P21120093-6	Original release.	Mar. 17, 2022

1 Certificate of Conformity

Product: Smart module

Brand:  **CASTLES
TECHNOLOGY**

Test Model: SLM500

Sample Status: Identical Prototype

Applicant: CASTLES TECHNOLOGY CO., LTD.

Test Date: Feb. 25 ~ Mar. 02, 2022

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 : Pettie Chan, **Date:** Mar. 17, 2022
Pettie Chen / Senior Specialist

Approved by : Jeremy Lin, **Date:** Mar. 17, 2022
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	Pass	Meet the requirement of limit. Minimum passing margin is -8.34dB at 0.67516MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.7dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note 1
15.247(a)(2)	6dB bandwidth	N/A	Refer to Note 1
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note 1
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) connector not a standard connector.

Note:

1. This report is a partial report. Therefore, only AC Power Conducted Emission, Conducted Power and radiated emissions were verified and recorded in this report. Other testing data please refer to the original SGS report no.: SZCR210300003003.
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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.63 dB
	200MHz ~ 1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Smart module
Brand	
Test Model	SLM500
Status of EUT	Identical Prototype
Power Supply Rating	5.0 Vdc (host equipment) 3.65 or 3.7 Vdc
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20): up to 72.2Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11
Output Power	56.754mW
Antenna Type	Refer to Note as below
Antenna Connector	Refer to Note as below
Accessory Device	Refer to Note as below
Cable Supplied	N/A

Note:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of SGS report no.: SZCR210300003003. The differences from the original report are adding an End-product (POS Terminal (Brand: , Model: SATURN1000)), using software to reduce power and disabling 802.11n (HT40). Only AC Power Conducted Emission, Conducted Power and radiated emissions were verified and recorded in this report. Other testing data please refer to the original SGS report no.: SZCR210300003003.
2. The EUT provides 1 completed transmitter and 1 receiver.

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

3. The EUT was installed in POS Terminal (Brand: , Model: SATURN1000).

4. The antenna information of POS Terminal is listed as below.

Antenna			
Antenna Type	Dipole	Brand	ARISTOTLE
Antenna Connector	ipex(MHF)	Model	RFA-25GPSJP32370B105
Antenna Gain (dBi)	0.76		

*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.

5. The battery and adapter information of POS Terminal is listed as below.

Battery 1 (Support unit)	
Brand	 CASTLES TECHNOLOGY
Model	SATURN1000
Rating	3.65Vdc, 5840mAh

Battery 2 (Support unit)	
Brand	 CASTLES TECHNOLOGY
Model	SATURN1000
Rating	3.7Vdc, 5840mAh

*Battery 2 was the worst for the final tests.

Adapter 1 (Support unit)	
Brand	LUCENT TRANS
Model	1A52-UB52A
Input Power	100-240 Vac; 50/60 Hz; 0.3 A
Output Power	5Vdc; 2A

Adapter 2 (Support unit)	
Brand	LUCENT TRANS
Model	1A52-SR52A
Input Power	100-240 Vac; 50/60 Hz; 0.3 A
Output Power	5Vdc; 2A
Power Cord	1.5m

6. 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.

3.2 Description of Test Modes

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE $\geq$ 1G	RE<1G	PLC	Power	
A	√	√	√	√	Power from adapter 1
B	-	√	√	-	Power from adapter 2

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 Power: Maximum Output Power

Note:

1. "-": Means no effect.
2. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	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.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A, B	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Conducted Output Power Measurement

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	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	21 deg. C, 71 % RH	120 Vac, 60 Hz	Rex Wang
RE<1G	21 deg. C, 71 % RH	120 Vac, 60 Hz	Rex Wang
PLC	25 deg. C, 75 % RH	120 Vac, 60 Hz	Rex Wang
Power	25 deg. C, 60 % RH	120 Vac, 60 Hz	Ivan Tseng

3.3 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Earphone	APPLE	MB77PFEB	NA	NA	-
B.	POS Terminal	 CASTLES TECHNOLOGY	SATURN1000	NA	NA	-
C.	Adapter	LUCENT TRANS	1A52-UB52A	NA	NA	For Test Mode A
			1A52-SR52A	NA	NA	For Test Mode B

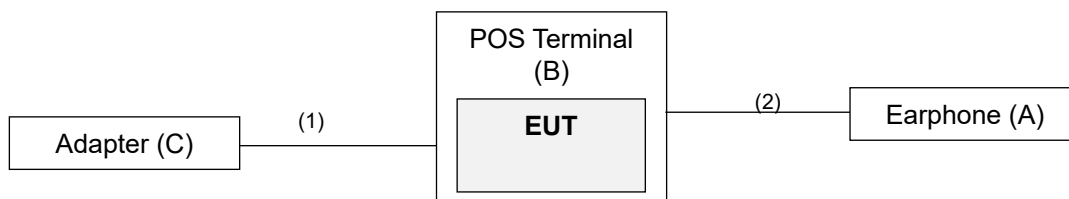
Note:

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

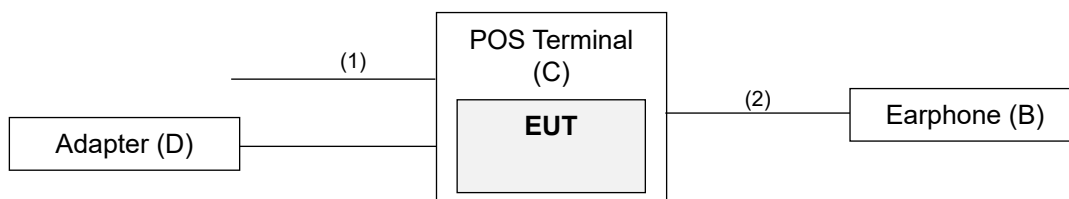
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	0.95	Y	0	Provided by client
2.	Audio cable	1	1.5	Y	0	-

3.3.1 Configuration of System under Test

Test Mode A



Test Mode B



3.4 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 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 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

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 09, 2021	Apr. 08, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 10, 2021	Jun. 09, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Oct. 28, 2021	Oct. 27, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Oct. 26, 2021	Oct. 25, 2022
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jun. 05, 2021	Jun. 04, 2022
Preamplifier Agilent (Above 1GHz)	8449B	3008A01963	Jul. 24, 2021	Jul. 23, 2022
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM80 00	CABLE-CH9-02 (248780+171006)	Jan. 16, 2021	Jan. 15, 2022
			Jan. 15, 2022	Jan. 14, 2023
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Jan. 16, 2021	Jan. 15, 2022
			Jan. 15, 2022	Jan. 14, 2023
RF signal cable Woken	8D-FB	Cable-CH9-01	Jun. 05, 2021	Jun. 04, 2022
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519000 4/MY55190007/MY55210 005	Jul. 12, 2021	Jul. 11, 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 9.

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 detect 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:

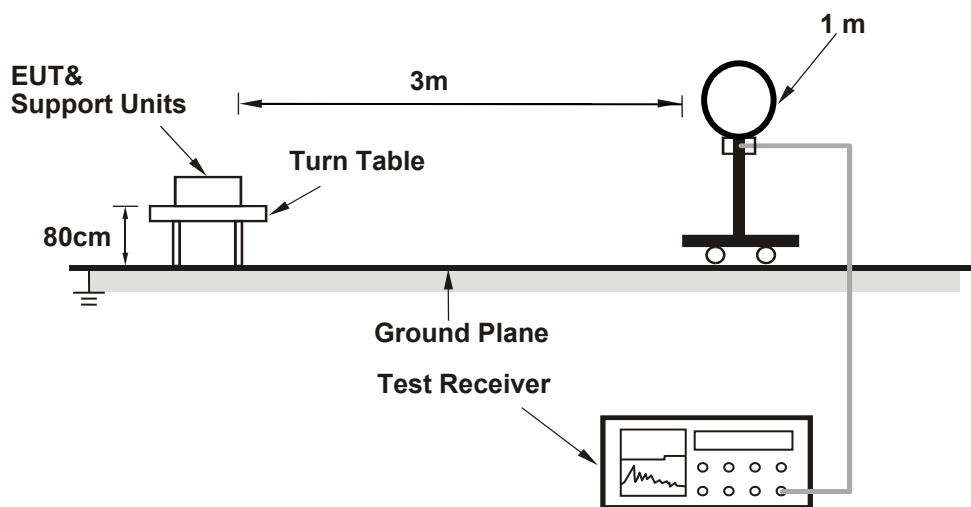
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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. (RBW = 1MHz, VBW = 10Hz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

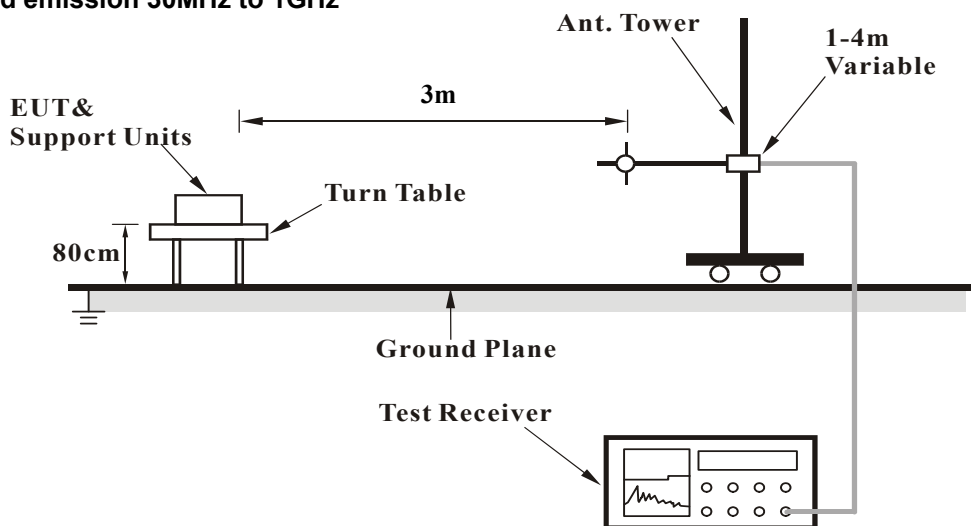
No deviation.

4.1.5 Test Setup

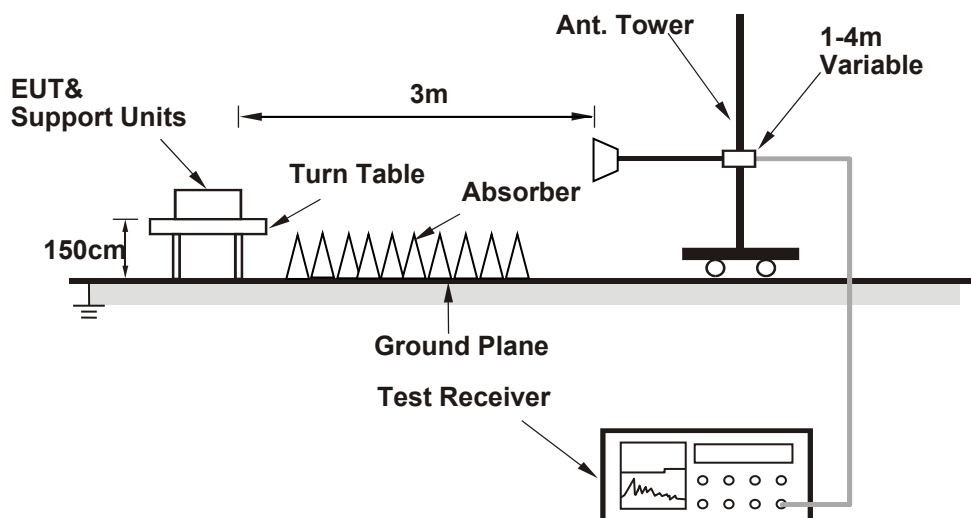
For Radiated emission below 30MHz



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

- a. The EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz worst-Case 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	57.50 PK	74.00	-16.50	1.53 H	228	24.63	32.87
2	2390.00	44.70 AV	54.00	-9.30	1.53 H	228	11.83	32.87
3	*2412.00	103.55 PK			1.53 H	228	70.72	32.83
4	*2412.00	100.85 AV			1.53 H	228	68.02	32.83
5	4824.00	48.69 PK	74.00	-25.31	1.04 H	336	43.02	5.67
6	4824.00	37.71 AV	54.00	-16.29	1.04 H	336	32.04	5.67
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	57.94 PK	74.00	-16.06	1.74 V	338	25.07	32.87
2	2390.00	44.83 AV	54.00	-9.17	1.74 V	338	11.96	32.87
3	*2412.00	105.10 PK			1.74 V	338	72.27	32.83
4	*2412.00	102.68 AV			1.74 V	338	69.85	32.83
5	4824.00	48.85 PK	74.00	-25.15	1.94 V	328	43.18	5.67
6	4824.00	39.23 AV	54.00	-14.77	1.94 V	328	33.56	5.67

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	103.45 PK			1.58 H	229	70.63	32.82
2	*2437.00	100.84 AV			1.58 H	229	68.02	32.82
3	4874.00	48.66 PK	74.00	-25.34	1.08 H	342	43.12	5.54
4	4874.00	37.69 AV	54.00	-16.31	1.08 H	342	32.15	5.54
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	105.25 PK			1.67 V	324	72.43	32.82
2	*2437.00	102.76 AV			1.67 V	324	69.94	32.82
3	4874.00	48.78 PK	74.00	-25.22	1.87 V	331	43.24	5.54
4	4874.00	39.16 AV	54.00	-14.84	1.87 V	331	33.62	5.54

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	102.53 PK			1.57 H	217	69.72	32.81
2	*2462.00	99.99 AV			1.57 H	217	67.18	32.81
3	2483.50	58.68 PK	74.00	-15.32	1.57 H	217	25.84	32.84
4	2483.50	46.38 AV	54.00	-7.62	1.57 H	217	13.54	32.84
5	4924.00	48.32 PK	74.00	-25.68	1.13 H	332	42.82	5.50
6	4924.00	37.47 AV	54.00	-16.53	1.13 H	332	31.97	5.50
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	104.49 PK			1.50 V	306	71.68	32.81
2	*2462.00	101.88 AV			1.50 V	306	69.07	32.81
3	2483.50	59.15 PK	74.00	-14.85	1.50 V	306	26.31	32.84
4	2483.50	47.02 AV	54.00	-6.98	1.50 V	306	14.18	32.84
5	4924.00	48.57 PK	74.00	-25.43	1.97 V	325	43.07	5.50
6	4924.00	38.93 AV	54.00	-15.07	1.97 V	325	33.43	5.50

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	57.80 PK	74.00	-16.20	1.47 H	229	24.93	32.87
2	2390.00	45.01 AV	54.00	-8.99	1.47 H	229	12.14	32.87
3	*2412.00	101.57 PK			1.47 H	229	68.74	32.83
4	*2412.00	91.37 AV			1.47 H	229	58.54	32.83
5	4824.00	47.01 PK	74.00	-26.99	1.17 H	352	41.34	5.67
6	4824.00	33.34 AV	54.00	-20.66	1.17 H	352	27.67	5.67

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	58.75 PK	74.00	-15.25	1.44 V	336	25.88	32.87
2	2390.00	45.30 AV	54.00	-8.70	1.44 V	336	12.43	32.87
3	*2412.00	103.69 PK			1.44 V	336	70.86	32.83
4	*2412.00	93.15 AV			1.44 V	336	60.32	32.83
5	4824.00	47.94 PK	74.00	-26.06	1.97 V	314	42.27	5.67
6	4824.00	34.19 AV	54.00	-19.81	1.97 V	314	28.52	5.67

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	101.96 PK			1.62 H	232	69.14	32.82
2	*2437.00	91.79 AV			1.62 H	232	58.97	32.82
3	4874.00	47.12 PK	74.00	-26.88	1.07 H	336	41.58	5.54
4	4874.00	33.27 AV	54.00	-20.73	1.07 H	336	27.73	5.54
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	103.86 PK			1.77 V	329	71.04	32.82
2	*2437.00	93.69 AV			1.77 V	329	60.87	32.82
3	4874.00	47.97 PK	74.00	-26.03	2.06 V	317	42.43	5.54
4	4874.00	34.21 AV	54.00	-19.79	2.06 V	317	28.67	5.54

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	100.43 PK			1.58 H	217	67.62	32.81
2	*2462.00	90.19 AV			1.58 H	217	57.38	32.81
3	2483.50	65.70 PK	74.00	-8.30	1.58 H	217	32.86	32.84
4	2483.50	47.51 AV	54.00	-6.49	1.58 H	217	14.67	32.84
5	4924.00	46.81 PK	74.00	-27.19	1.14 H	349	41.31	5.50
6	4924.00	33.08 AV	54.00	-20.92	1.14 H	349	27.58	5.50
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	102.23 PK			1.73 V	308	69.42	32.81
2	*2462.00	92.05 AV			1.73 V	308	59.24	32.81
3	2483.50	66.90 PK	74.00	-7.10	1.73 V	308	34.06	32.84
4	2483.50	48.58 AV	54.00	-5.42	1.73 V	308	15.74	32.84
5	4924.00	47.73 PK	74.00	-26.27	1.97 V	316	42.23	5.50
6	4924.00	33.91 AV	54.00	-20.09	1.97 V	316	28.41	5.50

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	57.59 PK	74.00	-16.41	1.56 H	223	24.72	32.87
2	2390.00	45.11 AV	54.00	-8.89	1.56 H	223	12.24	32.87
3	*2412.00	101.20 PK			1.56 H	223	68.37	32.83
4	*2412.00	90.97 AV			1.56 H	223	58.14	32.83
5	4824.00	46.99 PK	74.00	-27.01	1.12 H	337	41.32	5.67
6	4824.00	33.25 AV	54.00	-20.75	1.12 H	337	27.58	5.67
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	58.79 PK	74.00	-15.21	1.24 V	339	25.92	32.87
2	2390.00	46.00 AV	54.00	-8.00	1.24 V	339	13.13	32.87
3	*2412.00	103.37 PK			1.24 V	339	70.54	32.83
4	*2412.00	92.76 AV			1.24 V	339	59.93	32.83
5	4824.00	47.91 PK	74.00	-26.09	1.83 V	321	42.24	5.67
6	4824.00	34.10 AV	54.00	-19.90	1.83 V	321	28.43	5.67

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	101.34 PK			1.56 H	234	68.52	32.82
2	*2437.00	91.08 AV			1.56 H	234	58.26	32.82
3	4874.00	46.82 PK	74.00	-27.18	1.06 H	342	41.28	5.54
4	4874.00	33.07 AV	54.00	-20.93	1.06 H	342	27.53	5.54
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	103.26 PK			1.32 V	326	70.44	32.82
2	*2437.00	92.95 AV			1.32 V	326	60.13	32.82
3	4874.00	47.73 PK	74.00	-26.27	1.91 V	316	42.19	5.54
4	4874.00	32.97 AV	54.00	-21.03	1.91 V	316	27.43	5.54

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	101.15 PK			1.56 H	221	68.34	32.81
2	*2462.00	90.83 AV			1.56 H	221	58.02	32.81
3	2483.50	66.68 PK	74.00	-7.32	1.56 H	221	33.84	32.84
4	2483.50	48.51 AV	54.00	-5.49	1.56 H	221	15.67	32.84
5	4924.00	46.69 PK	74.00	-27.31	1.13 H	339	41.19	5.50
6	4924.00	32.94 AV	54.00	-21.06	1.13 H	339	27.44	5.50
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	102.75 PK			1.51 V	306	69.94	32.81
2	*2462.00	92.54 AV			1.51 V	306	59.73	32.81
3	2483.50	68.98 PK	74.00	-5.02	1.51 V	306	36.14	32.84
4	2483.50	50.30 AV	54.00	-3.70	1.51 V	306	17.46	32.84
5	4924.00	47.71 PK	74.00	-26.29	2.02 V	313	42.21	5.50
6	4924.00	33.93 AV	54.00	-20.07	2.02 V	313	28.43	5.50

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.

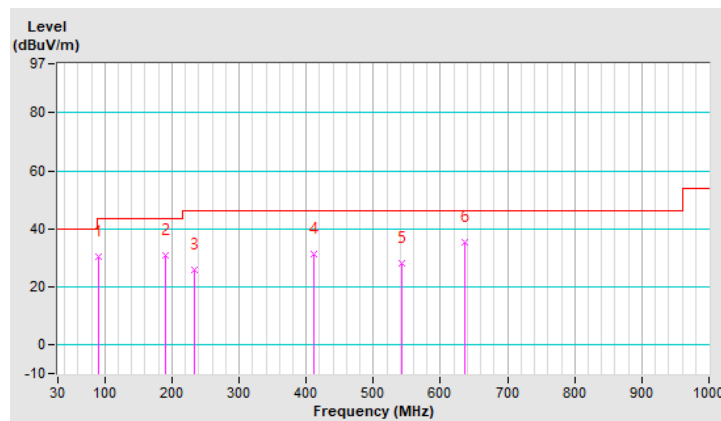
Below 1GHz worst-case data:

RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	91.11	30.23 QP	43.50	-13.27	1.50 H	79	44.92	-14.69
2	190.05	30.62 QP	43.50	-12.88	1.00 H	98	41.96	-11.34
3	233.70	25.62 QP	46.00	-20.38	1.50 H	89	35.85	-10.23
4	412.18	31.27 QP	46.00	-14.73	1.00 H	64	36.00	-4.73
5	543.13	28.10 QP	46.00	-17.90	1.25 H	351	29.84	-1.74
6	637.22	35.30 QP	46.00	-10.70	1.00 H	280	35.08	0.22

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.

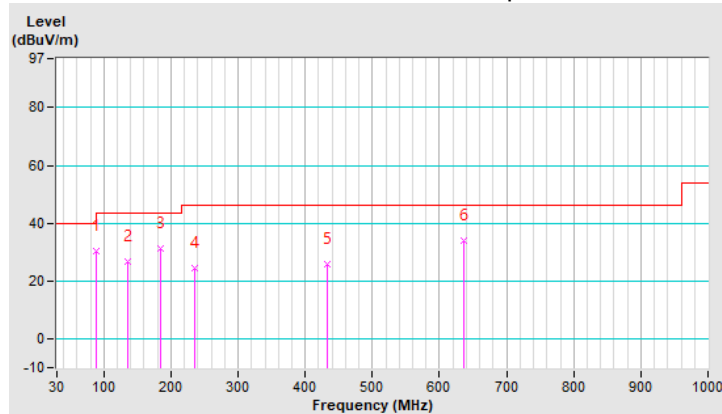


RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	A		

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	88.20	30.23 QP	43.50	-13.27	1.00 V	72	44.88	-14.65
2	135.73	26.58 QP	43.50	-16.92	1.25 V	235	36.21	-9.63
3	185.20	31.44 QP	43.50	-12.06	1.00 V	247	42.27	-10.83
4	234.67	24.43 QP	46.00	-21.57	1.25 V	39	34.49	-10.06
5	433.52	26.01 QP	46.00	-19.99	1.00 V	206	29.83	-3.82
6	636.25	34.13 QP	46.00	-11.87	1.50 V	176	33.91	0.22

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.

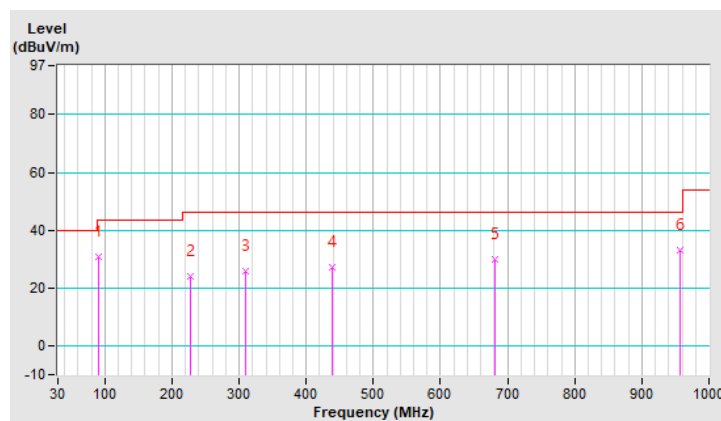


RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	91.11	30.68 QP	43.50	-12.82	1.00 H	258	45.37	-14.69
2	226.91	23.86 QP	46.00	-22.14	1.50 H	62	34.99	-11.13
3	310.33	25.61 QP	46.00	-20.39	1.50 H	83	32.13	-6.52
4	438.37	27.08 QP	46.00	-18.92	1.00 H	16	30.79	-3.71
5	681.84	29.91 QP	46.00	-16.09	2.00 H	19	29.25	0.66
6	957.32	33.14 QP	46.00	-12.86	1.00 H	279	26.85	6.29

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.

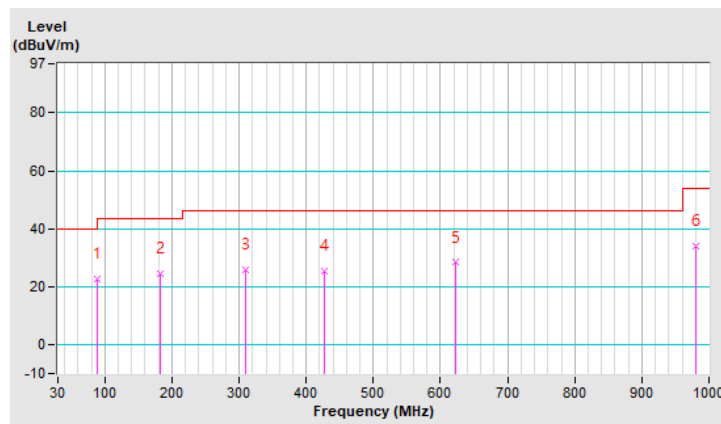


RF Mode	TX 802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Test Mode	B		

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	88.20	22.43 QP	43.50	-21.07	1.50 V	194	37.08	-14.65
2	183.26	24.61 QP	43.50	-18.89	1.50 V	229	35.17	-10.56
3	310.33	25.71 QP	46.00	-20.29	1.00 V	143	32.23	-6.52
4	426.73	25.46 QP	46.00	-20.54	1.25 V	60	29.50	-4.04
5	621.70	28.31 QP	46.00	-17.69	1.00 V	4	28.34	-0.03
6	980.60	33.99 QP	54.00	-20.01	1.00 V	156	27.72	6.27

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 Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 03, 2021	Dec. 02, 2022
RF signal cable Woken	5D-FB	Cable-cond1-01	Jan. 15, 2022	Jan. 14, 2023
LISN/AMN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Feb. 17, 2022	Feb. 16, 2023
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Sep. 07, 2021	Sep. 06, 2022
Software ADT	BV ADT_Conc_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1 (Conduction 1).

3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

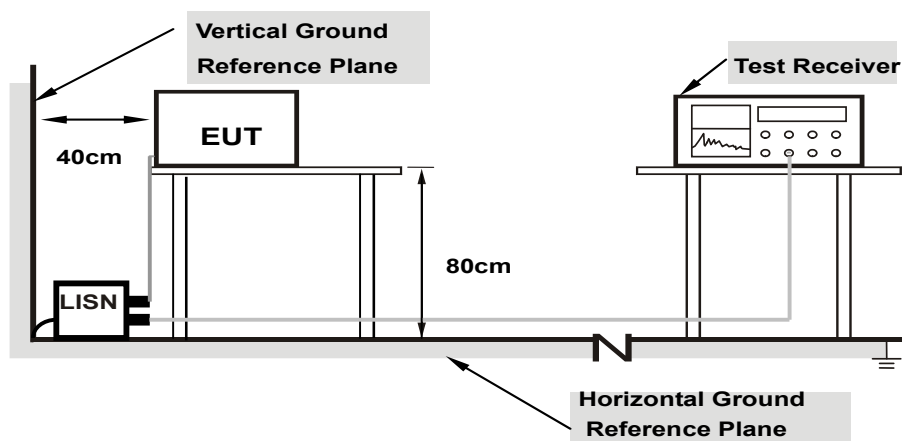
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

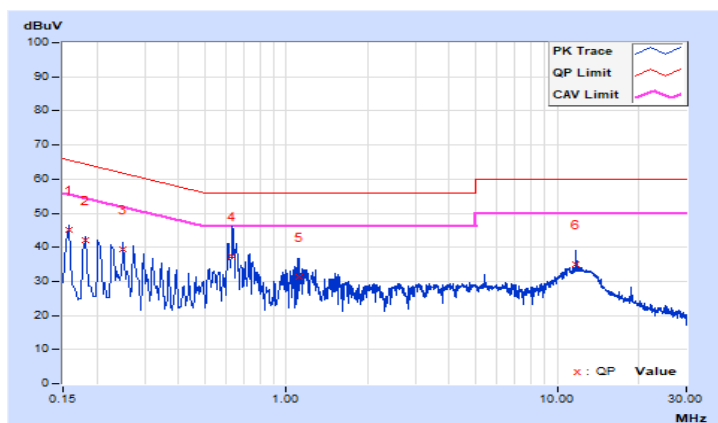
Worst-case data: 802.11b

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.77	35.24	18.20	45.01	27.97	65.57	55.57	-20.56	-27.60
2	0.18200	9.79	32.40	16.55	42.19	26.34	64.39	54.39	-22.20	-28.05
3	0.25000	9.82	29.52	17.23	39.34	27.05	61.76	51.76	-22.42	-24.71
4	0.63379	9.89	27.55	22.56	37.44	32.45	56.00	46.00	-18.56	-13.55
5	1.11000	9.92	21.26	14.52	31.18	24.44	56.00	46.00	-24.82	-21.56
6	11.77800	10.12	24.97	16.63	35.09	26.75	60.00	50.00	-24.91	-23.25

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

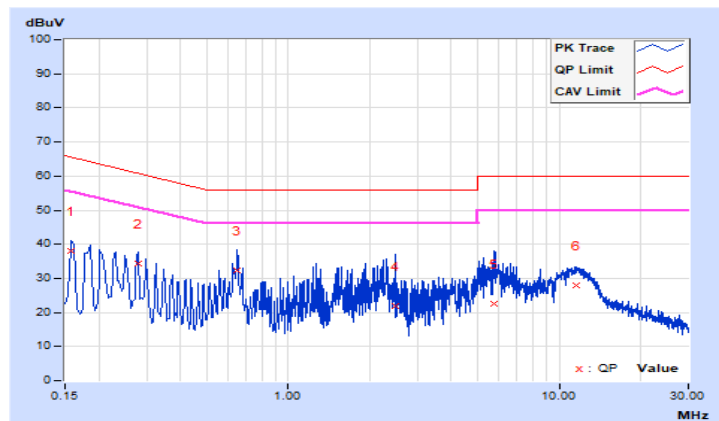


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.83	28.14	11.23	37.97	21.06	65.57	55.57	-27.60	-34.51
2	0.27800	9.89	24.62	10.86	34.51	20.75	60.88	50.88	-26.37	-30.13
3	0.65000	9.96	22.35	14.12	32.31	24.08	56.00	46.00	-23.69	-21.92
4	2.47400	10.05	11.67	2.55	21.72	12.60	56.00	46.00	-34.28	-33.40
5	5.72600	10.12	12.52	2.01	22.64	12.13	60.00	50.00	-37.36	-37.87
6	11.55800	10.21	17.81	7.08	28.02	17.29	60.00	50.00	-31.98	-32.71

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

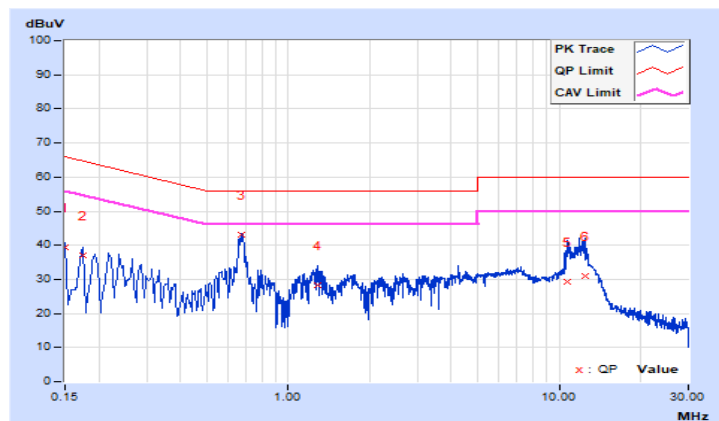


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.77	29.49	17.26	39.26	27.03	66.00	56.00	-26.74	-28.97
2	0.17400	9.78	27.34	15.59	37.12	25.37	64.77	54.77	-27.65	-29.40
3	0.67516	9.89	33.16	27.77	43.05	37.66	56.00	46.00	-12.95	-8.34
4	1.29000	9.93	18.42	9.94	28.35	19.87	56.00	46.00	-27.65	-26.13
5	10.69400	10.12	19.08	12.25	29.20	22.37	60.00	50.00	-30.80	-27.63
6	12.54200	10.13	20.88	13.62	31.01	23.75	60.00	50.00	-28.99	-26.25

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

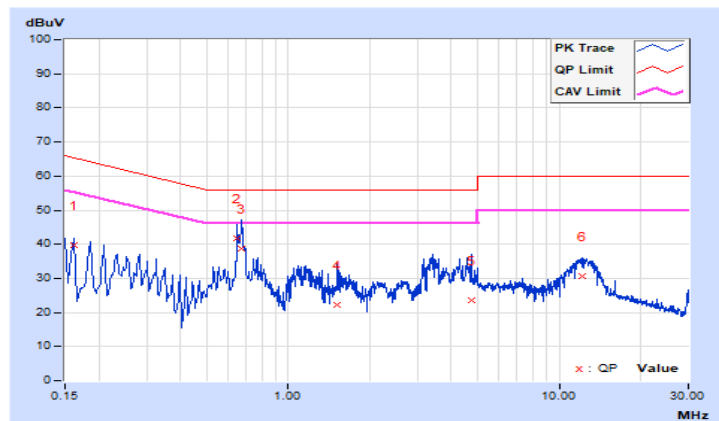


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	9.83	29.99	14.70	39.82	24.53	65.37	55.37	-25.55	-30.84
2	0.65000	9.96	31.76	23.49	41.72	33.45	56.00	46.00	-14.28	-12.55
3	0.67000	9.96	28.64	25.64	38.60	35.60	56.00	46.00	-17.40	-10.40
4	1.51800	10.02	12.24	7.37	22.26	17.39	56.00	46.00	-33.74	-28.61
5	4.75400	10.10	13.46	7.80	23.56	17.90	56.00	46.00	-32.44	-28.10
6	12.16200	10.22	20.29	6.29	30.51	16.51	60.00	50.00	-29.49	-33.49

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

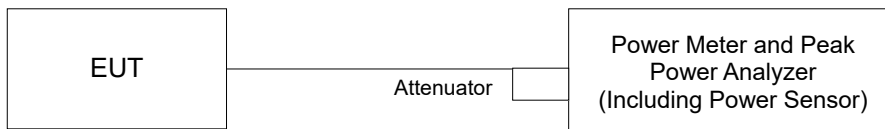


4.3 Conducted Output Power Measurement

4.3.1 Limits of Conducted Output Power Measurement

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

For Peak Power

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.

For Average Power

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	54.702	17.38	30.00	Pass
6	2437	51.523	17.12	30.00	Pass
11	2462	56.494	17.52	30.00	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	54.954	17.40	30.00	Pass
6	2437	54.200	17.34	30.00	Pass
11	2462	54.075	17.33	30.00	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	52.845	17.23	30.00	Pass
6	2437	56.754	17.54	30.00	Pass
11	2462	55.976	17.48	30.00	Pass

Average Power

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	31.842	15.03
6	2437	27.861	14.45
11	2462	30.761	14.88

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	10.544	10.23
6	2437	10.116	10.05
11	2462	10.069	10.03

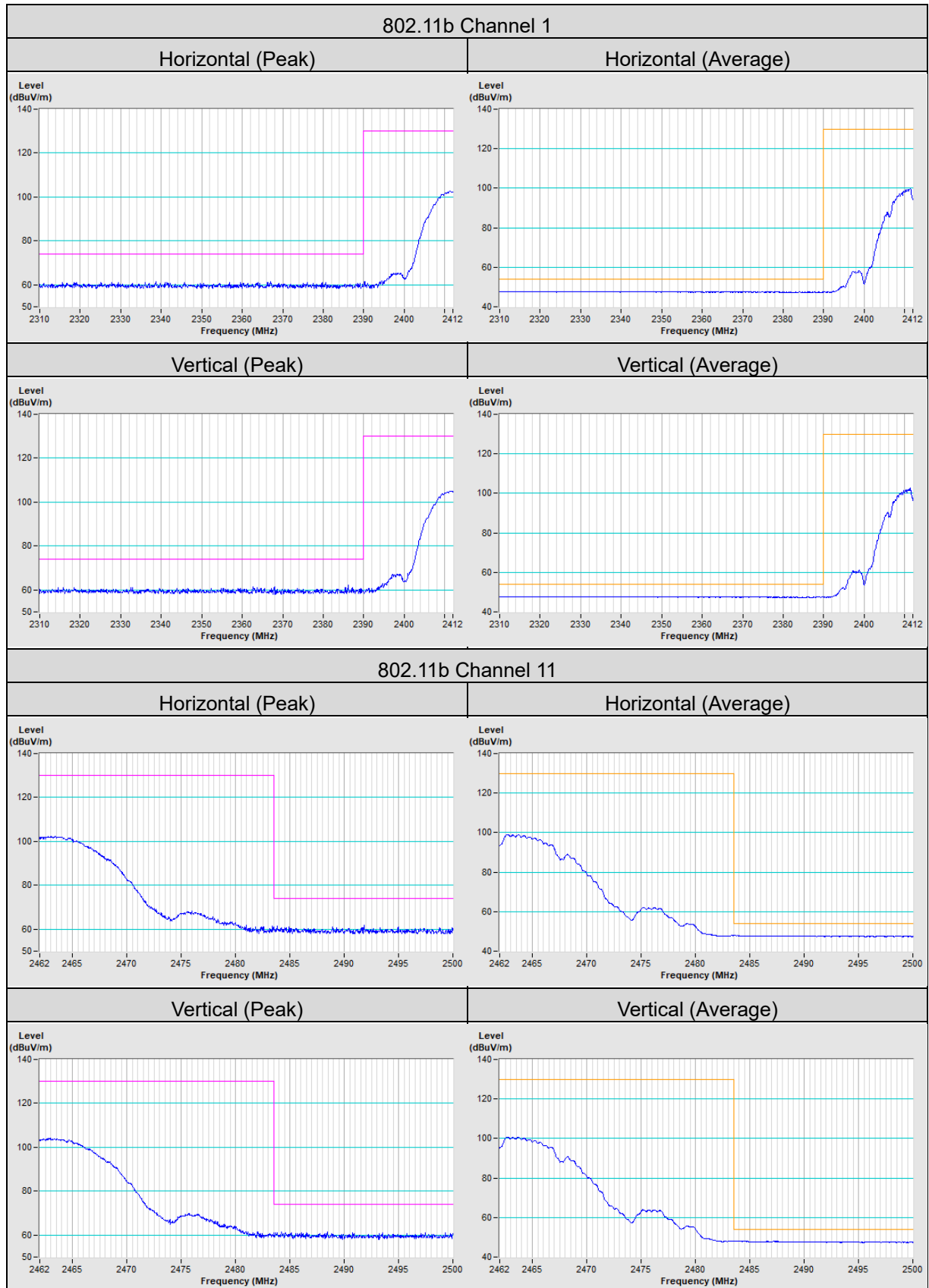
802.11n (HT20)

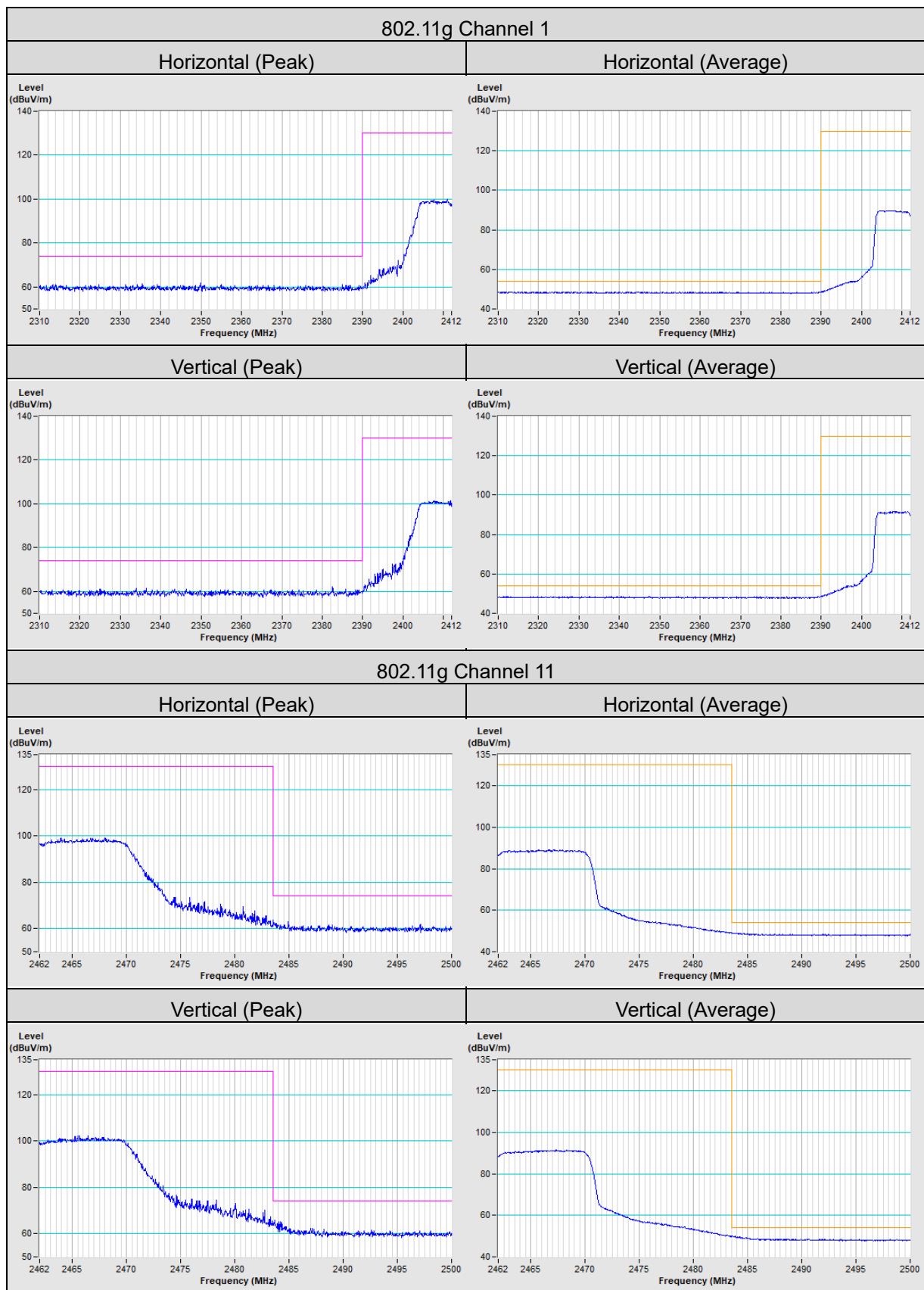
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	9.886	9.95
6	2437	10.304	10.13
11	2462	10.257	10.11

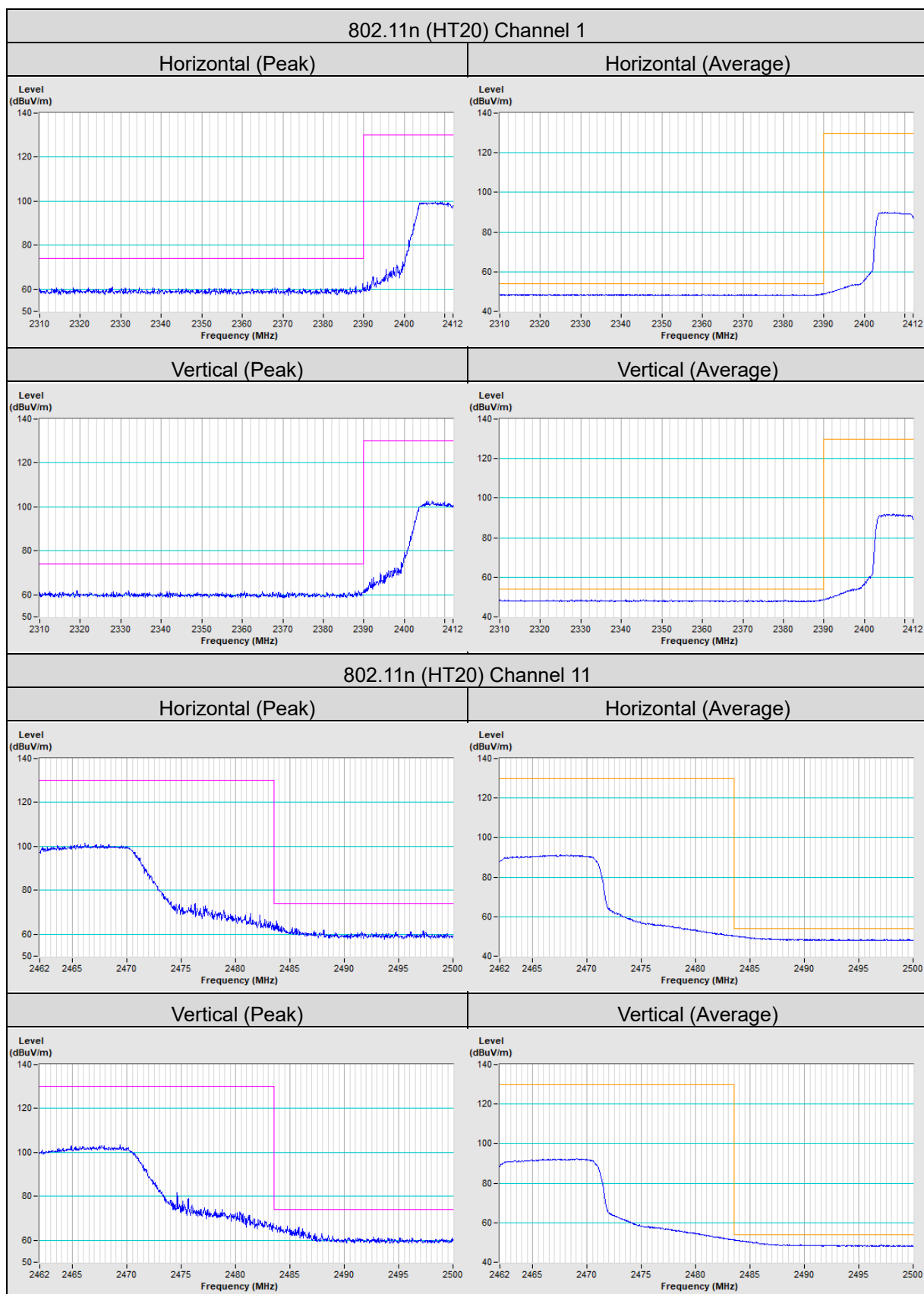
5 Pictures of Test Arrangements

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 and approved according to ISO/IEC 17025.

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

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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