

TEST REPORT

(802.15.4)

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFCDBM-WTW-P24100096-3
FCC ID: QOQ-GM260P
Product: Bluetooth Low Energy and 802.15.4 wireless radio module, Bluetooth Low Energy wireless radio modules (refer to item 3.1 for more details)
Brand: SILICON LABS
Model No.: MGM260P22A, MGM260P32A, MGM260P32N
Series Model: BGM260P22A, BGM260P32A, BGM260P32N (refer to item 3.1 for more details)
Received Date: 2024/10/7
Test Date: 2024/11/20 ~ 2024/11/22
Issued Date: 2025/2/6
Applicant: Silicon Laboratories Finland Oy
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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories
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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / 788550 / TW0003
Designation Number:

Approved by:

Jeremy Lin

Jeremy Lin / Project Engineer

, Date:

2025/2/6

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Prepared by : Polly Chien / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFCDBM-WTW-P24100096-3	Original release.	2025/2/6

1 Certificate

Product: Bluetooth Low Energy and 802.15.4 wireless radio module, Bluetooth Low Energy wireless radio modules (refer to item 3.1 for more details)

Brand: SILICON LABS

Test Model: MGM260P22A, MGM260P32A, MGM260P32N

Series Model: BGM260P22A, BGM260P32A, BGM260P32N (refer to item 3.1 for more details)

Sample Status: Engineering samples fully representing the production models

Applicant: Silicon Laboratories Finland Oy

Test Date: 2024/11/20 ~ 2024/11/22

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement procedure: ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02

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.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -15.75 dB at 6.85400 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.7 dB at 66.86 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.4 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	MGM260P22A & MGM260P32A: these modules use an integral antenna, therefore comply with the requirement of 15.203 (see section 3.2 for details). MGM260P32N: this module comes with a RF pin only, no own RF connector, and no external antenna is sold with it.

Note: 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	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.371 dB
Power Spectral Density	-	1.017 dB
6 dB Bandwidth	-	206.5 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.90 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Bluetooth Low Energy and 802.15.4 wireless radio module (for MGM260P22A, MGM260P32A, MGM260P32N), Bluetooth Low Energy wireless radio modules (for BGM260P22A, BGM260P32A, BGM260P32N)
Brand	SILICON LABS
Test Model	MGM260P22A, MGM260P32A, MGM260P32N
Series Model	BGM260P22A, BGM260P32A, BGM260P32N
Model Difference	Refer to Note as below
Status of EUT	Engineering samples fully representing the production models
Power Supply Rating	Range: 1.8V – 3.8Vdc Nominal for high-power variants: 3.3Vdc Nominal for low-power variant: 3.0Vdc
Modulation Type	O-QPSK
Modulation Technology	DSSS
Transfer Rate	250 kbps
Operating Frequency	2405 ~ 2480 MHz
Number of Channel	16
Output Power	MGM260P22A: 12.331 mW (10.91 dBm) MGM260P32A: 96.161 mW (19.83 dBm) MGM260P32N: 100.925 mW (20.04 dBm)

Note:

1. The models difference are as below.

Product Spec.	Model		
	MGM260P22A (covers BGM260P22A)	MGM260P32A (covers BGM260P32A)	MGM260P32N (covers BGM260P32N)
	Low-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P22A)	High-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P32A)	High-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P32N)
Max nominal RF TX power, as declared by manufacturer	10dBm	20dBm	20dBm
Antenna type	integral antenna	integral antenna	RF pin
Hardware	MGM260P22A (and BGM260P22A) --> hardware variants with integral antenna and 10dBm max power, to be tested as DTS for both 802.15.4 and Bluetooth Low Energy MGM260P32A (and BGM260P32A) --> hardware variants with integral antenna and 20dBm max power, to be tested as DTS for 802.15.4 and DTS + FHSS for Bluetooth Low Energy MGM260P32N (and BGM260P32N) --> hardware variants with RF pin and 20dBm max power, to be tested as DTS for 802.15.4 and DTS + FHSS for Bluetooth Low Energy MGM modules are the supersets under testing as they support both 802.15.4 and Bluetooth Low Energy, whereas the BGM modules are the series models because they are exactly the same except for the 802.15.4 being disabled for marketing differentiation.		

2. The 802.15.4 wireless standard supports Zigbee/Open Thread/Matter protocols. The RF specifications described and tested within this report are representative of all protocols supported.
3. BT LE (DTS/FHSS) and 802.15.4 modes technology cannot transmit at same time.
4. 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 Antenna Description of EUT

1. The antenna information is listed as below.

No.	Type	Connector	Gain (dBi)	Remark
1	Integral antenna	NA	2.87	For model: MGM260P22A, MGM260P32A, BGM260P22A, BGM260P32A
2	External reference dipole antenna**	RP-SMA	2.80	For model: MGM260P32N, BGM260P32N

*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

**The dipole antenna is not sold with the EUT, but is used during testing as a reference antenna for radiated measurements of the parts with the RF pin.

3.3 Channel List

16 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
11	2405	15	2425	19	2445	23	2465
12	2410	16	2430	20	2450	24	2470
13	2415	17	2435	21	2455	25	2475
14	2420	18	2440	22	2460	26	2480

3.4 Power setting is as below:

Model: MGM260P22A		Model: MGM260P32A		Model: MGM260P32N	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
11	100	11	200	11	200
18	100	18	200	18	200
26	100	25	200	25	200
-	-	26	100	26	100

3.5 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. X-axis/ Y-axis/ Z-axis Worst Condition: Mode A & C: Y-axis, Mode B: X-axis

Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A, B	802.15.4	11, 18, 25, 26	O-QPSK	250kb/s
	C	802.15.4	11, 18, 26	O-QPSK	250kb/s
Power Spectral Density	A, B	802.15.4	11, 18, 25, 26	O-QPSK	250kb/s
	C	802.15.4	11, 18, 26	O-QPSK	250kb/s
6 dB Bandwidth	A, B	802.15.4	11, 18, 25, 26	O-QPSK	250kb/s
	C	802.15.4	11, 18, 26	O-QPSK	250kb/s
Conducted Out of Band Emissions	A, B	802.15.4	11, 18, 25, 26	O-QPSK	250kb/s
	C	802.15.4	11, 18, 26	O-QPSK	250kb/s
AC Power Conducted Emissions	A, B	802.15.4	11	O-QPSK	250kb/s
	C	802.15.4	11	O-QPSK	250kb/s
Unwanted Emissions below 1 GHz	A, B	802.15.4	11	O-QPSK	250kb/s
	C	802.15.4	11	O-QPSK	250kb/s
Unwanted Emissions above 1 GHz	A, B	802.15.4	11, 18, 25, 26	O-QPSK	250kb/s
	C	802.15.4	11, 18, 26	O-QPSK	250kb/s
EUT Configure Mode:	A	Model: MGM260P32A + Integral Antenna			
	B	Model: MGM260P32N + External Antenna			
	C	Model: MGM260P22A + Integral Antenna			

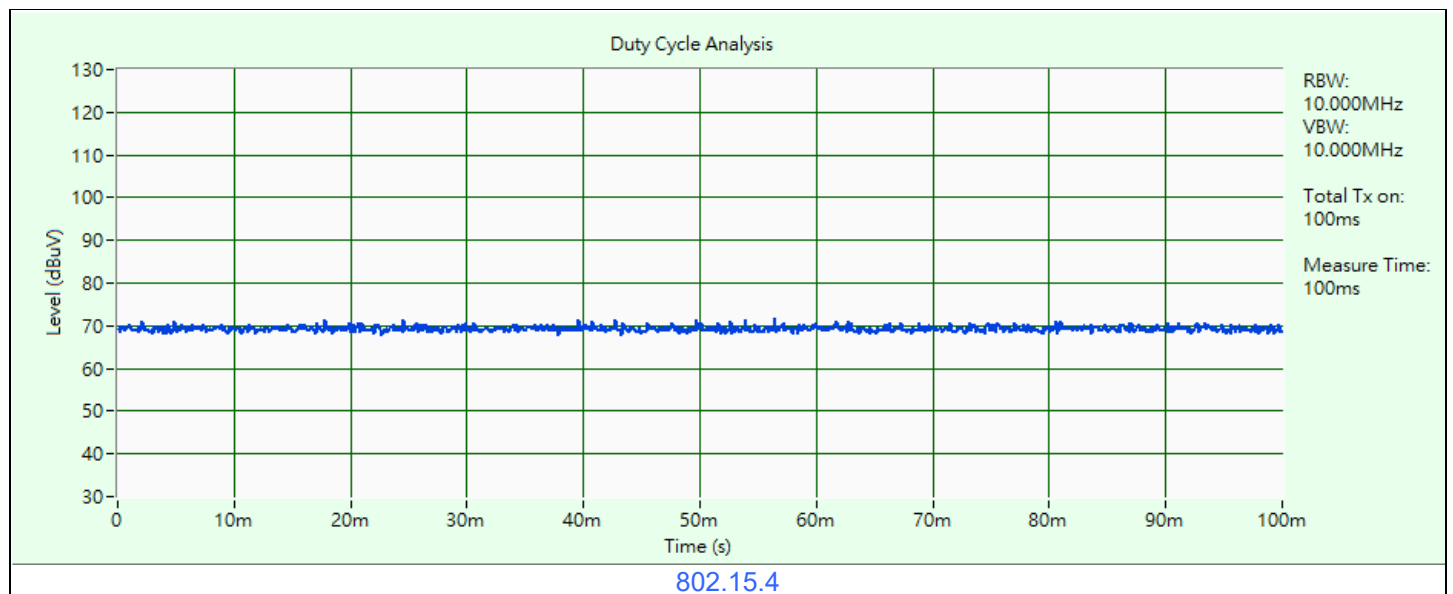
Note:

1. MGM modules are the supersets ones under testing as they support both 802.15.4 and Bluetooth Low Energy, whereas the BGM modules are the series models because they are exactly the same except for the 802.15.4 being disabled for marketing differentiation.

3.6 Duty Cycle of Test Signal

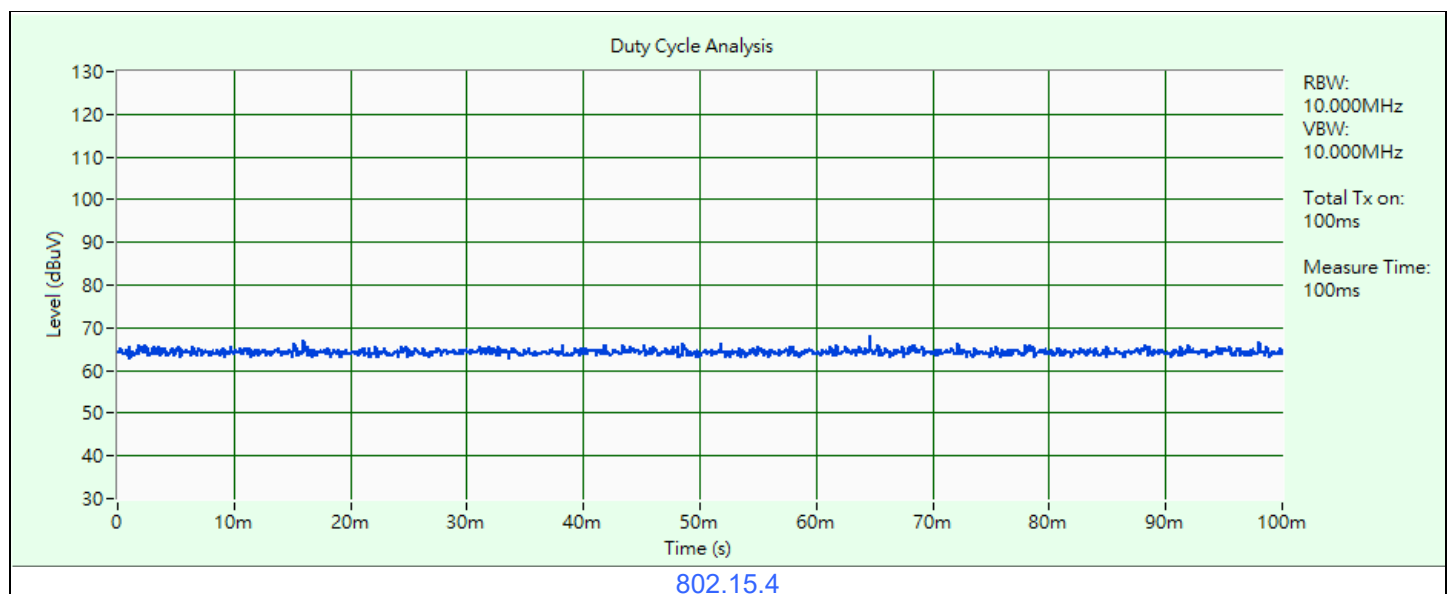
Mode A

802.15.4: Duty cycle = 100 ms / 100 ms x 100% = 100.0%



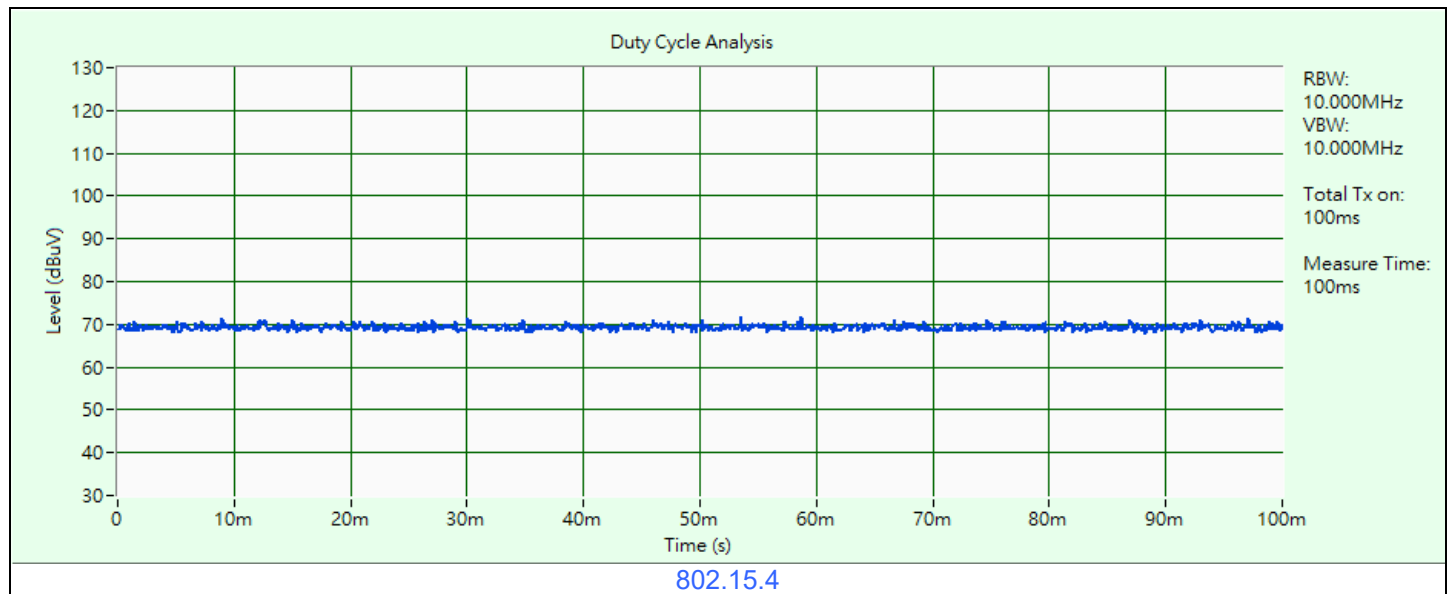
Mode B

802.15.4: Duty cycle = 100 ms / 100 ms x 100% = 100.0%



Mode C

802.15.4: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

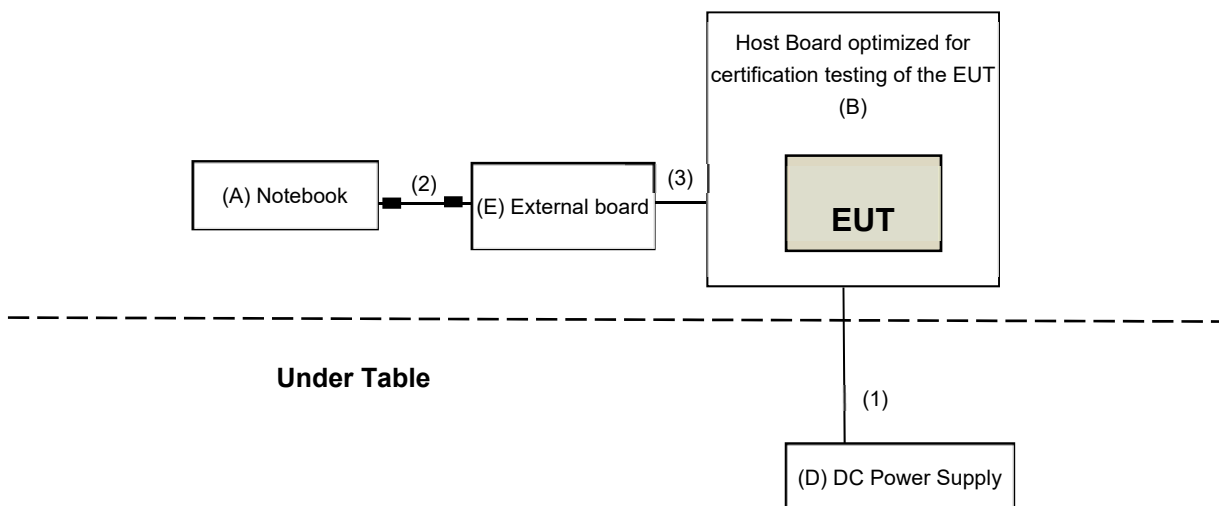


3.7 Test Program Used and Operation Descriptions

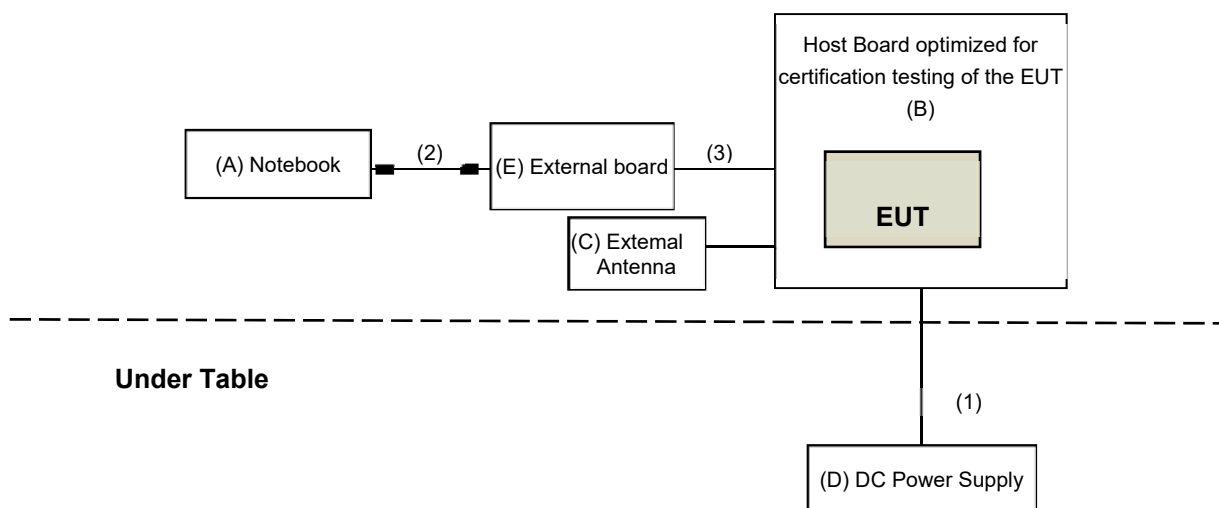
Controlling software Tera Term 5.3.0.0 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.8 Connection Diagram of EUT and Peripheral Devices

Mode A & C



Mode B



3.9 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	Lenovo	X250	PC04UZN1	N/A	Provided by Lab
B	Host Board optimized for certification testing of the EUT	SILICON LABS	xGM260P val_board_V2	N/A	N/A	Supplied by applicant
C	External Antenna	TE Connectivity	ANT-2.4-CW-CT-RPS	N/A	N/A	Supplied by applicant
D	DC Power Supply	Topward	33010D	N/A	N/A	Provided by Lab
E	External board	SILICON LABS	BRD4001A Rev. A01	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	2	N	N	Provided by Lab
2	USB Mini Cable	1	2	Y	2	Supplied by applicant
3	10-wire flat ribbon data Cable	1	0.15	N	N	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer Keysight	8990B	MY51000485	2024/1/21	2025/1/20
Wideband Power Sensor Keysight	N1923A	MY58020002	2024/1/18	2025/1/17
		MY58140009	2024/1/18	2025/1/17

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2024/11/21 ~ 2024/11/22

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal & Spectrum Analyzer R&S	FSV3044	101105	2024/2/27	2025/2/26
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2024/11/21 ~ 2024/11/22

4.3 6 dB Bandwidth

Refer to section 4.2 to get the tested date and information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get the tested date and information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2024/11/5	2025/11/4
EMI Test Receiver R&S	ESR3	102783	2023/12/13	2024/12/12
Fixed Attenuator STI	BNC5W10dB	PAD-COND2-01	2024/8/25	2025/8/24
LISN R&S	ESH2-Z5	100100	2024/3/6	2025/3/5
	ESH3-Z5	100312	2024/9/9	2025/9/8
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2024/8/25	2025/8/24
Software BVADT	BVADT_Conf_ V7.4.1.0	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2024/8/28	2025/8/27

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2024/11/22

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2024/10/9	2025/10/8
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Keysight	N9038B	MY60180018	2024/3/13	2025/3/12
Preamplifier Agilent	8447D	2944A10638	2024/5/1	2025/4/30
Preamplifier EMCI	EMC001340	980201	2024/9/24	2025/9/23
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2024/5/1	2025/4/30
Signal & Spectrum Analyzer R&S	FSW43	101867	2023/12/29	2024/12/28
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2024/11/22

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1169	2024/11/10	2025/11/9
	BBHA 9170	9170-480	2024/11/10	2025/11/9
		BBHA9170243	2024/11/10	2025/11/9
MXE EMI Receiver Keysight	N9038B	MY60180018	2024/3/13	2025/3/12
Preamplifier Agilent	8449B	3008A02367	2024/1/6	2025/1/5
Preamplifier EMCI	EMC 184045	980116	2024/9/24	2025/9/23
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2024/7/6	2025/7/5
	EMC102-KM-KM-3000	150929	2024/7/6	2025/7/5
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2024/1/6	2025/1/5
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2024/1/6	2025/1/5
Signal & Spectrum Analyzer R&S	FSW43	101867	2023/12/29	2024/12/28
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2024/11/20 ~ 2024/11/22

5 Limits of Test Items

5.1 RF Output Power

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

5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 AC Power Conducted Emissions

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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz 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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz 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)
Above 960	500	3

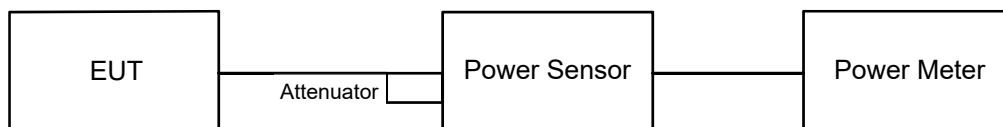
Notes:

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.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

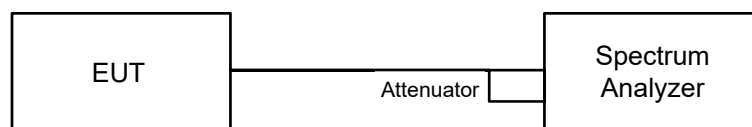
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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.

6.2 Power Spectral Density

6.2.1 Test Setup

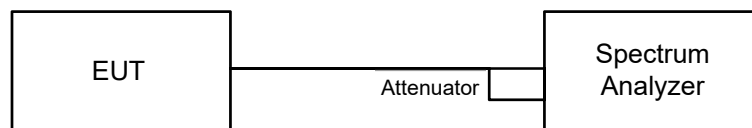


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

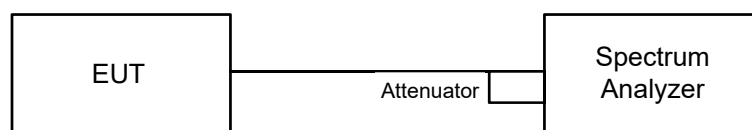


6.3.2 Test Procedure

- Set resolution bandwidth (RBW) = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

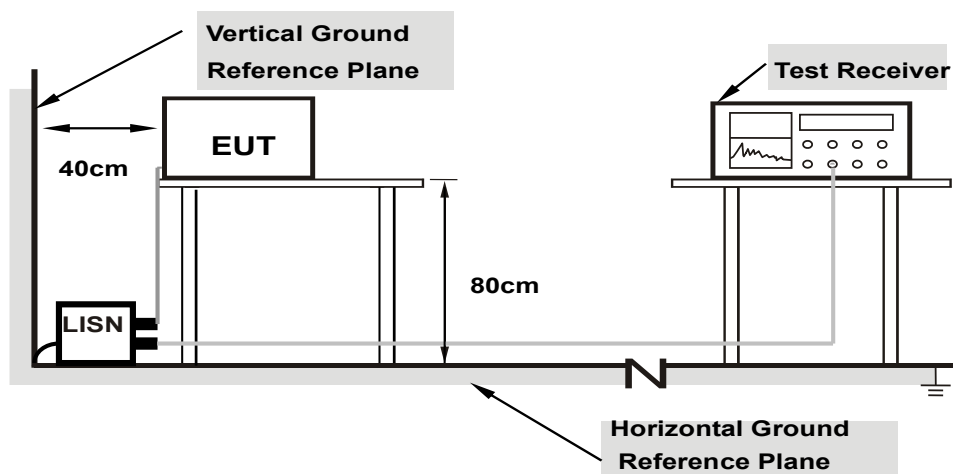
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

6.5 AC Power Conducted Emissions

6.5.1 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).

6.5.2 Test Procedure

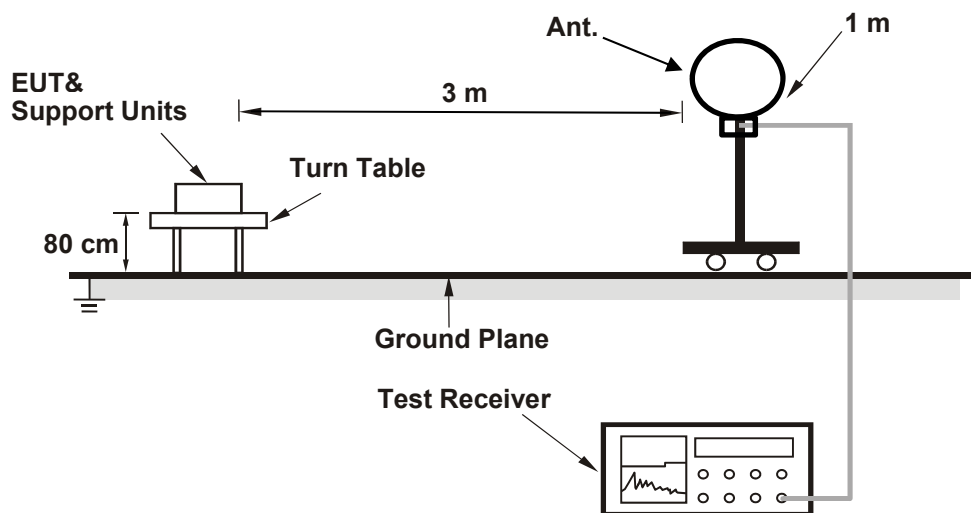
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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

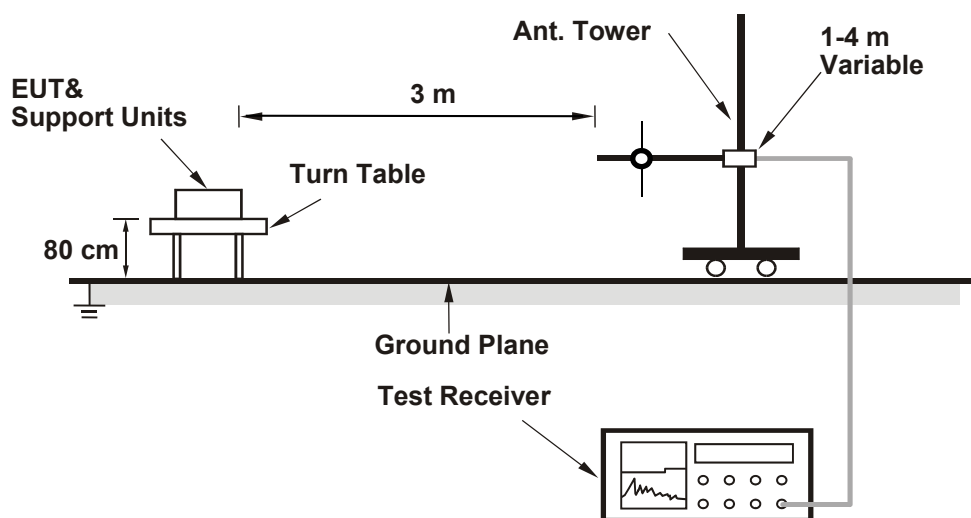
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.6.2 Test Procedure

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 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. 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, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

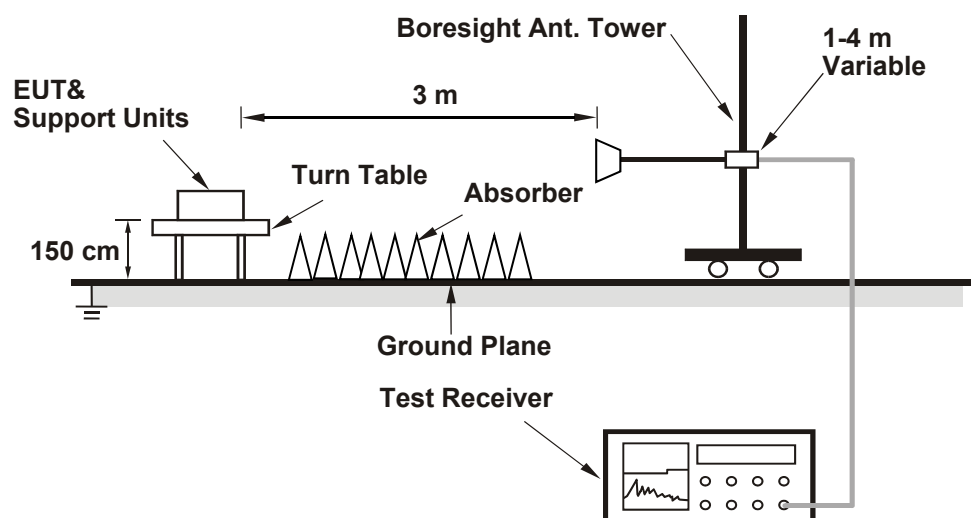
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



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

6.7.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver/spectrum analyzer 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.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For harmonic signal measurement, 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.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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Mode A

For Peak Power

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
11	2405	96.161	19.83	30	Pass
18	2440	93.325	19.70	30	Pass
25	2475	91.201	19.60	30	Pass
26	2480	9.419	9.74	30	Pass

Note: The antenna gain is 2.87 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
11	2405	94.406	19.75
18	2440	91.201	19.60
25	2475	89.125	19.50
26	2480	9.162	9.62

Mode B

For Peak Power

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
11	2405	100.925	20.04	30	Pass
18	2440	97.724	19.90	30	Pass
25	2475	95.499	19.80	30	Pass
26	2480	10.257	10.11	30	Pass

Note: The antenna gain is 2.8 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
11	2405	99.312	19.97
18	2440	96.161	19.83
25	2475	93.756	19.72
26	2480	9.863	9.94

Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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Mode C

For Peak Power

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
11	2405	12.331	10.91	30	Pass
18	2440	12.218	10.87	30	Pass
26	2480	11.695	10.68	30	Pass

Note: The antenna gain is 2.87 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
11	2405	10.965	10.40
18	2440	10.864	10.36
26	2480	10.471	10.20

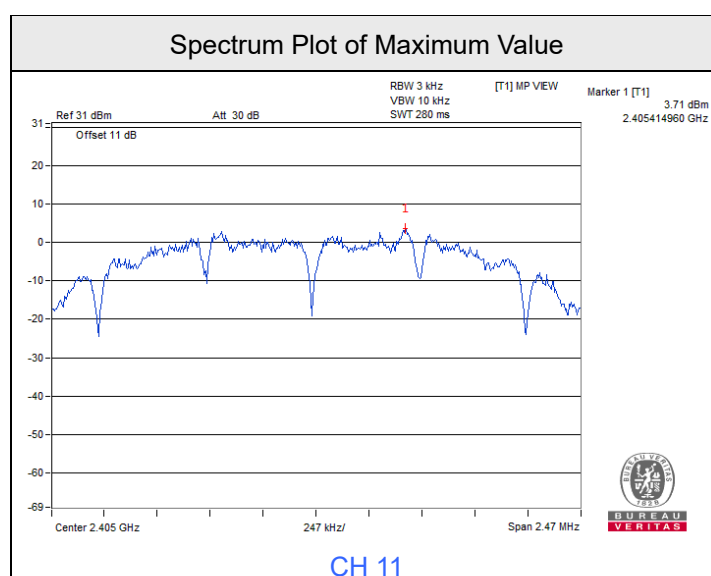
7.2 Power Spectral Density

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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Mode A

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
11	2405	3.71	8	Pass
18	2440	3.64	8	Pass
25	2475	3.51	8	Pass
26	2480	-6.38	8	Pass

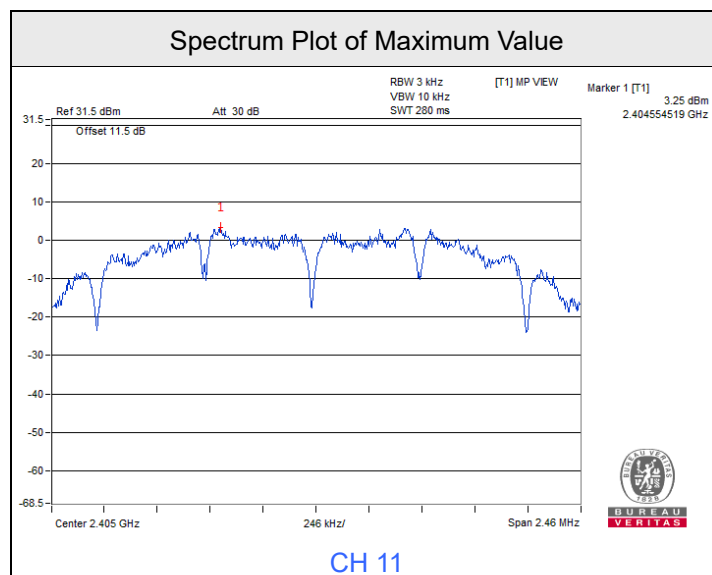
Note: The antenna gain is 2.87 dBi < 6 dBi, so the power density limit shall not be reduced.



Mode B

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
11	2405	3.25	8	Pass
18	2440	3.13	8	Pass
25	2475	3.03	8	Pass
26	2480	-6.53	8	Pass

Note: The antenna gain is 2.8 dBi < 6 dBi, so the power density limit shall not be reduced.

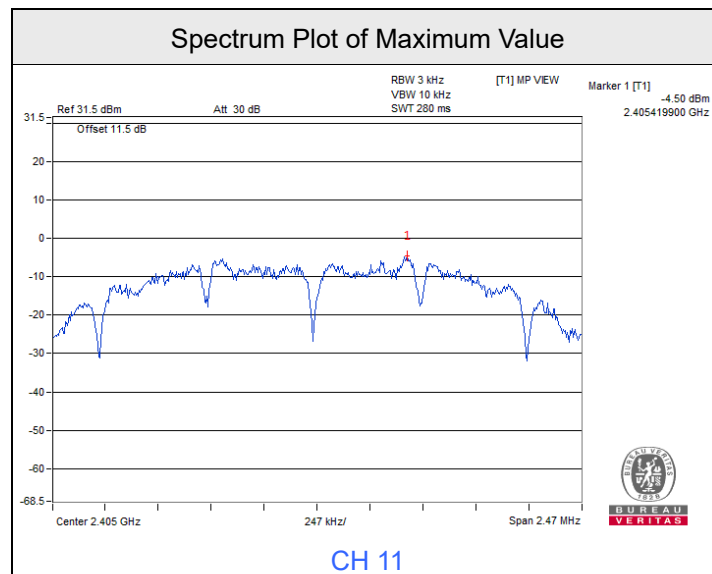


Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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Mode C

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
11	2405	-4.50	8	Pass
18	2440	-4.52	8	Pass
26	2480	-4.75	8	Pass

Note: The antenna gain is 2.87 dBi < 6 dBi, so the power density limit shall not be reduced.

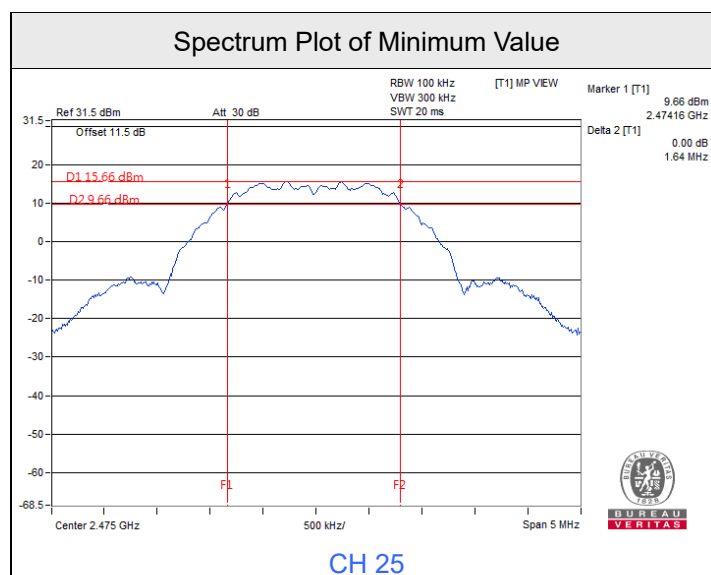


7.3 6 dB Bandwidth

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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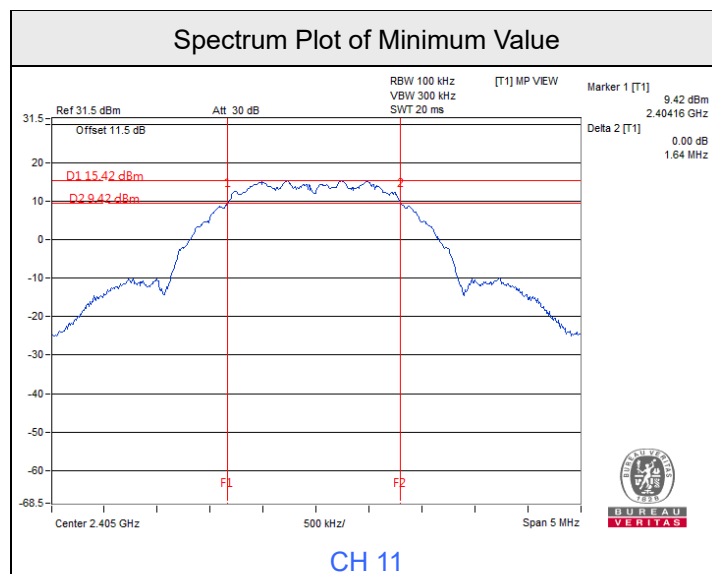
Mode A

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
11	2405	1.65	0.5	Pass
18	2440	1.65	0.5	Pass
25	2475	1.64	0.5	Pass
26	2480	1.64	0.5	Pass



Mode B

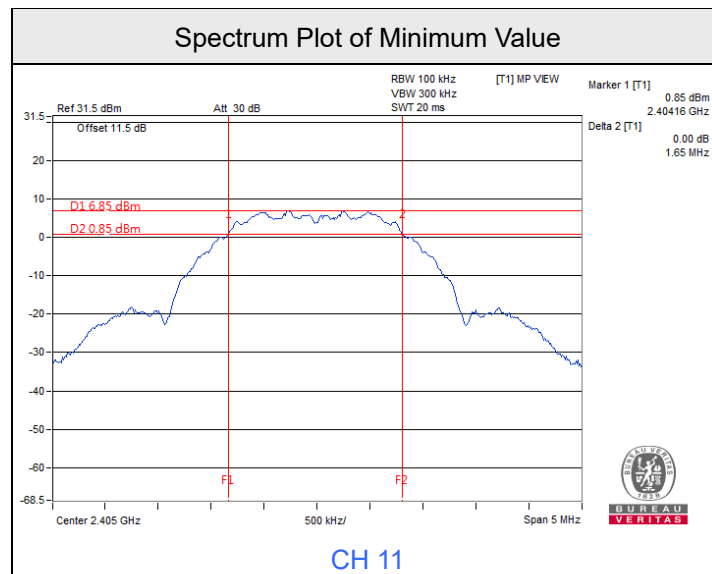
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
11	2405	1.64	0.5	Pass
18	2440	1.64	0.5	Pass
25	2475	1.65	0.5	Pass
26	2480	1.65	0.5	Pass



Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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Mode C

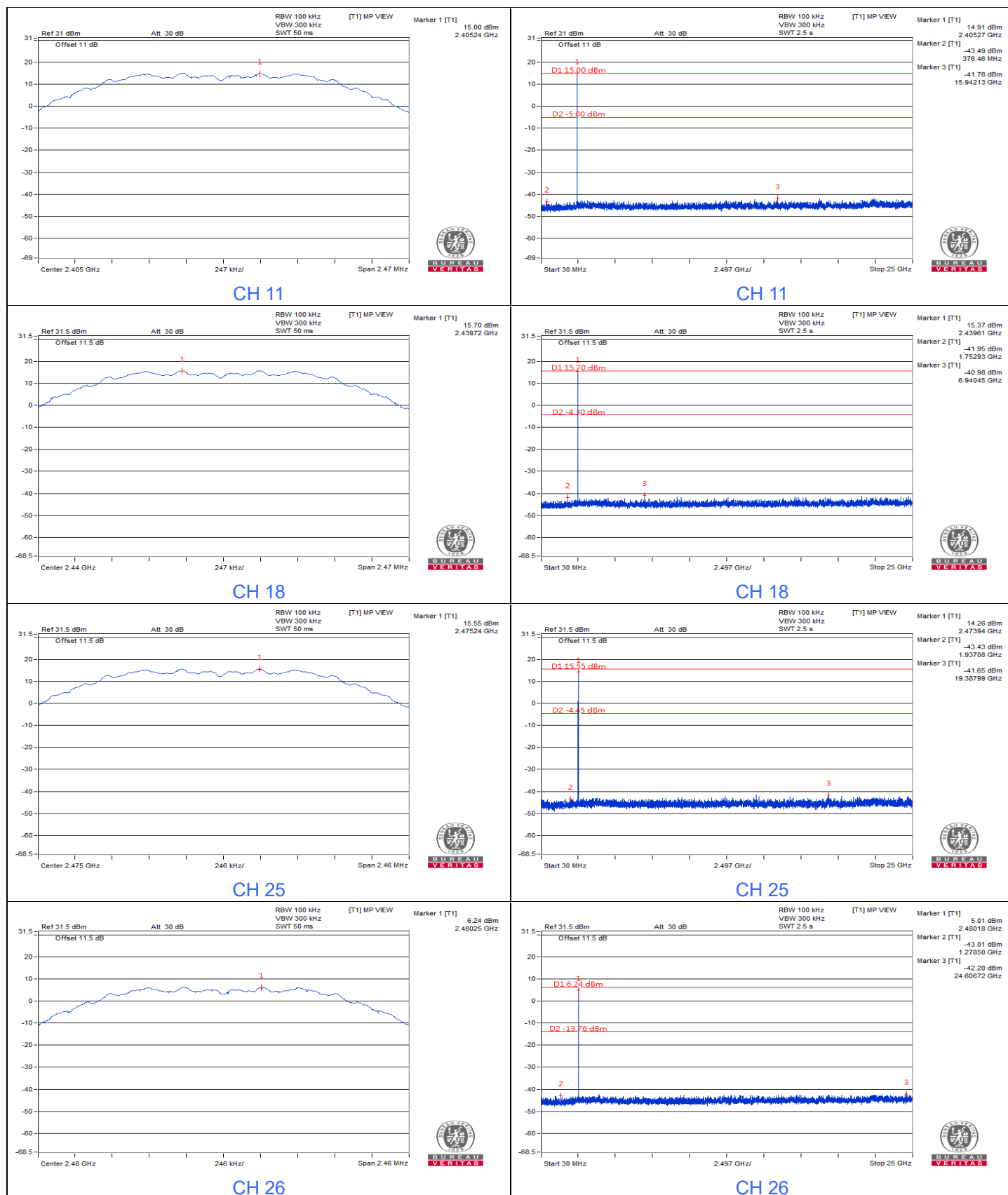
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
11	2405	1.65	0.5	Pass
18	2440	1.65	0.5	Pass
26	2480	1.65	0.5	Pass

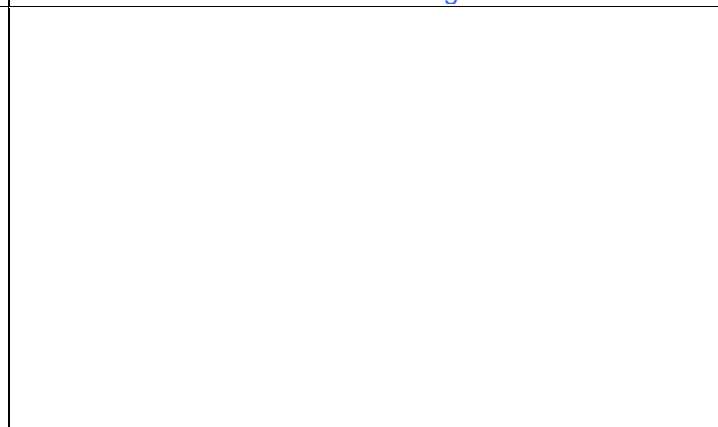
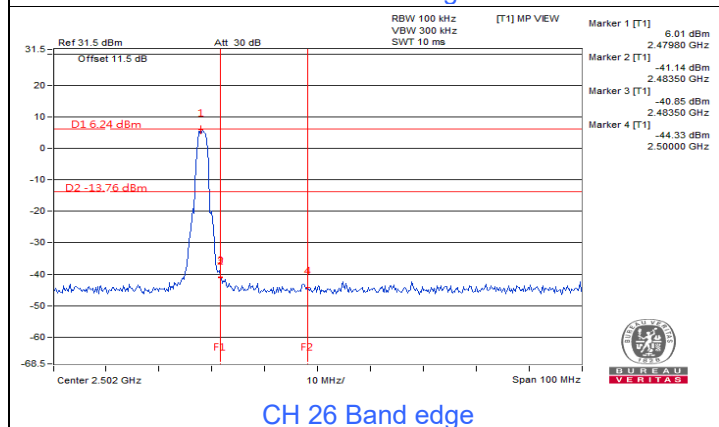
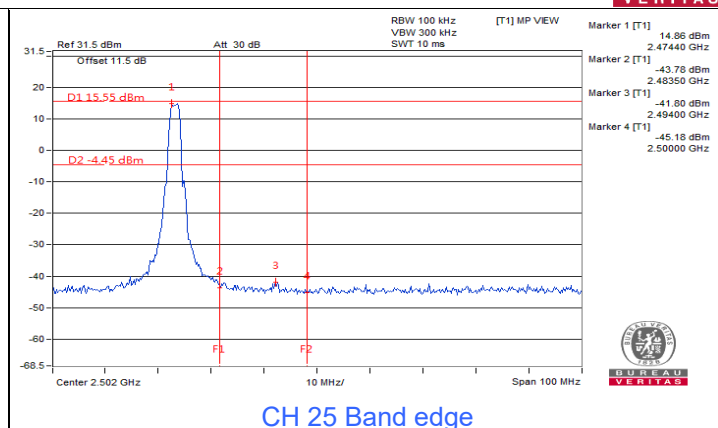
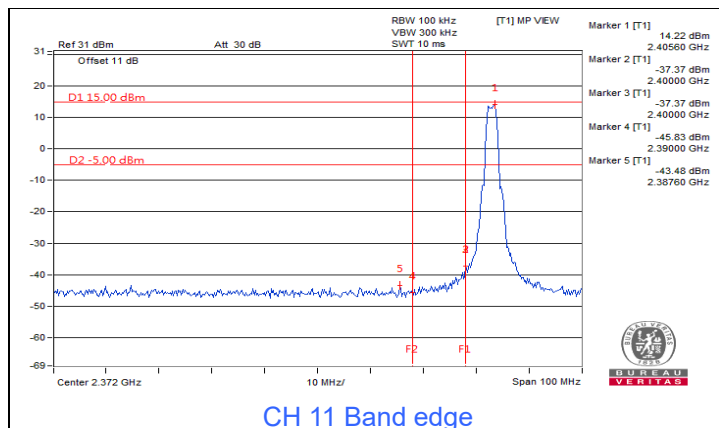


7.4 Conducted Out of Band Emissions

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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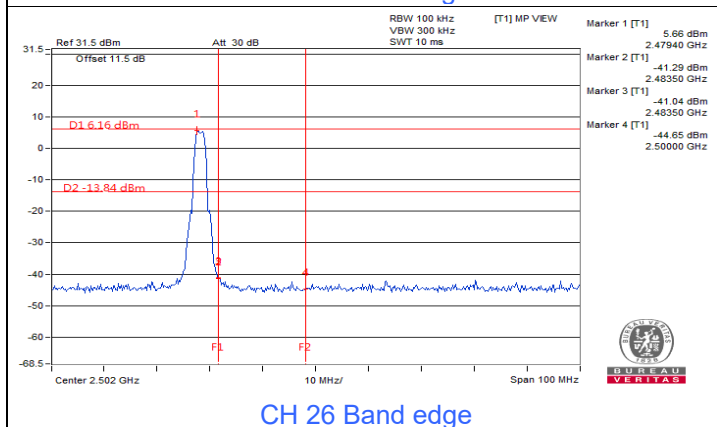
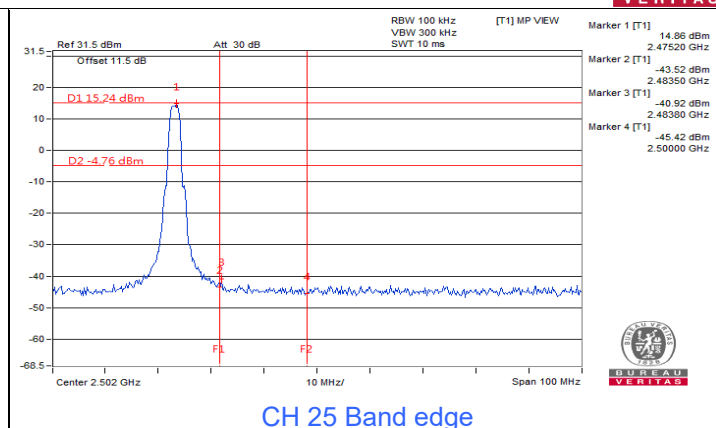
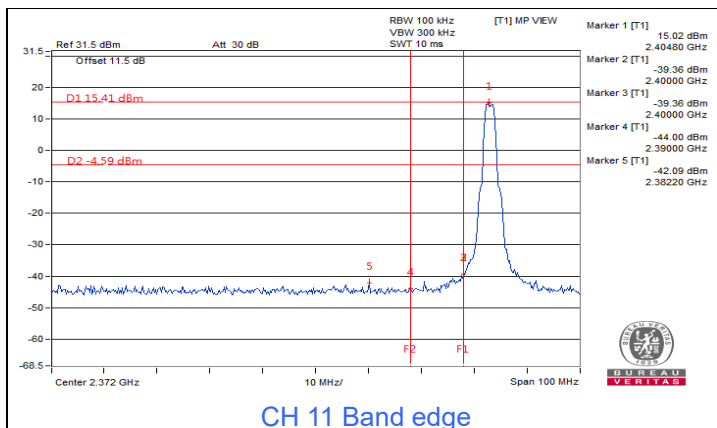
Mode A





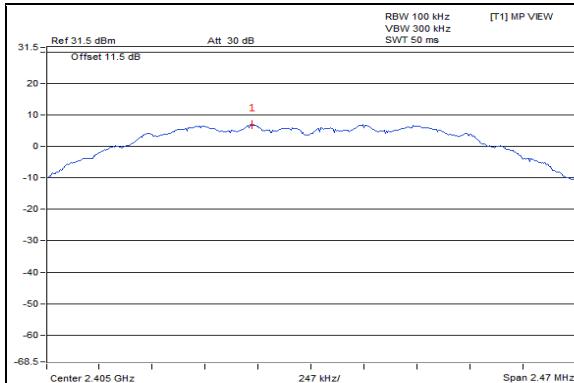
Mode B



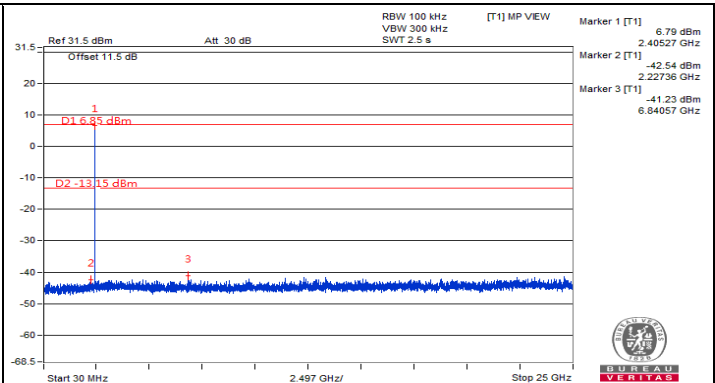


Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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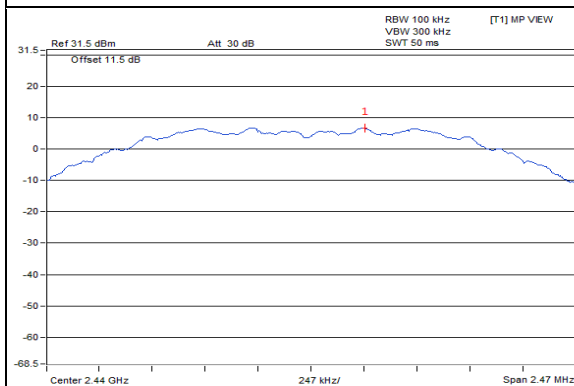
Mode C



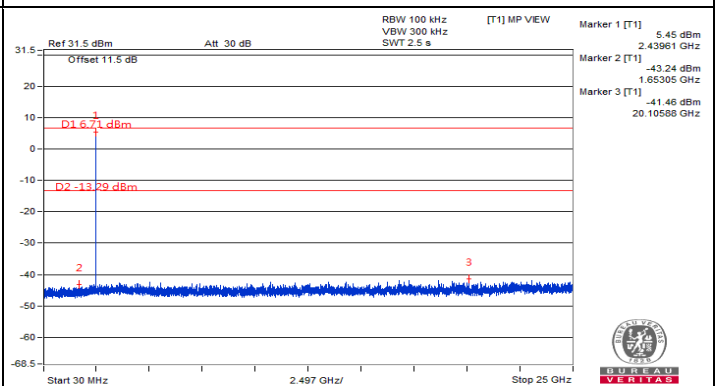
CH 11



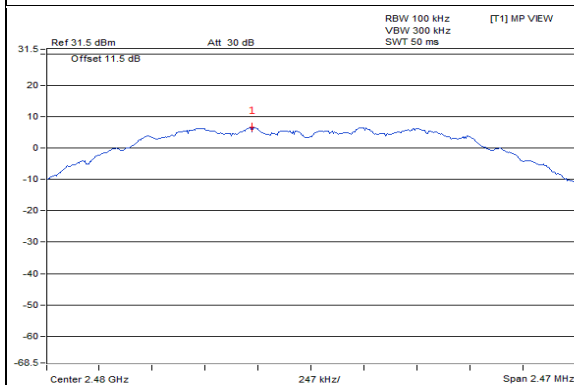
CH 11



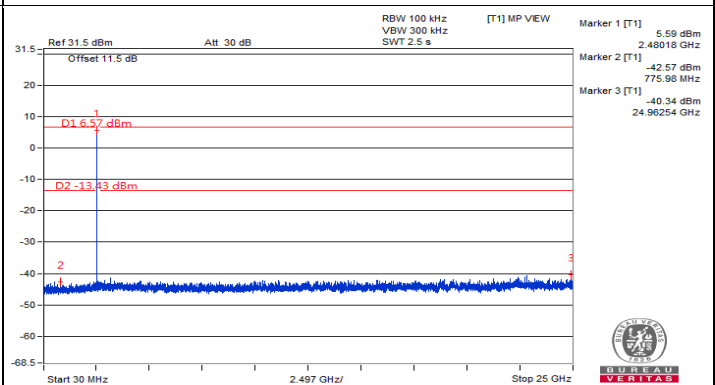
CH 18



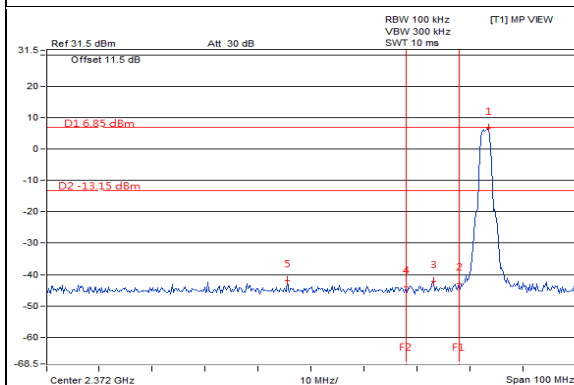
CH 18



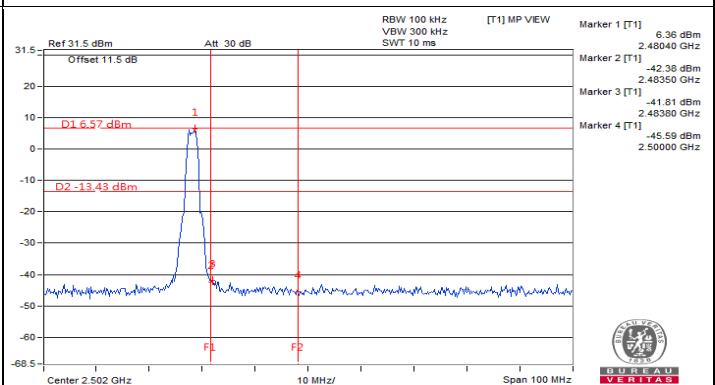
CH 26



CH 26



CH 11 Band edge



CH 26 Band edge

7.5 AC Power Conducted Emissions

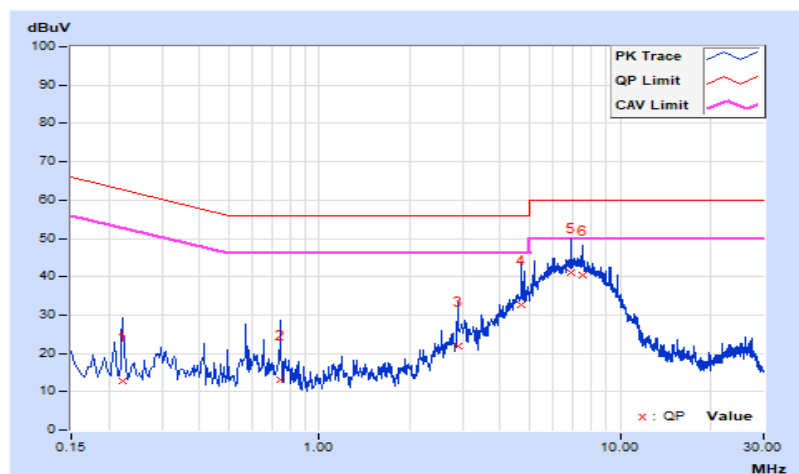
Mode A

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22200	10.11	2.83	1.05	12.94	11.16	62.74	52.74	-49.80	-41.58
2	0.74200	10.13	3.10	1.45	13.23	11.58	56.00	46.00	-42.77	-34.42
3	2.89400	10.22	11.75	4.63	21.97	14.85	56.00	46.00	-34.03	-31.15
4	4.70600	10.26	22.35	15.27	32.61	25.53	56.00	46.00	-23.39	-20.47
5	6.85400	10.28	30.81	23.97	41.09	34.25	60.00	50.00	-18.91	-15.75
6	7.48200	10.28	30.03	23.45	40.31	33.73	60.00	50.00	-19.69	-16.27

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

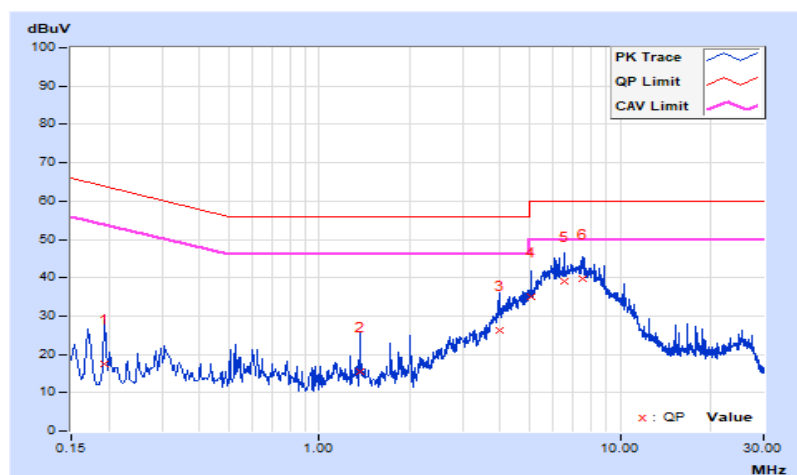


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19400	10.14	7.36	2.15	17.50	12.29	63.86	53.86	-46.36	-41.57
2	1.36200	10.19	5.32	1.23	15.51	11.42	56.00	46.00	-40.49	-34.58
3	3.96200	10.29	15.98	10.20	26.27	20.49	56.00	46.00	-29.73	-25.51
4	5.06600	10.30	24.69	17.15	34.99	27.45	60.00	50.00	-25.01	-22.55
5	6.54200	10.32	28.89	22.39	39.21	32.71	60.00	50.00	-20.79	-17.29
6	7.50600	10.34	29.45	23.19	39.79	33.53	60.00	50.00	-20.21	-16.47

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



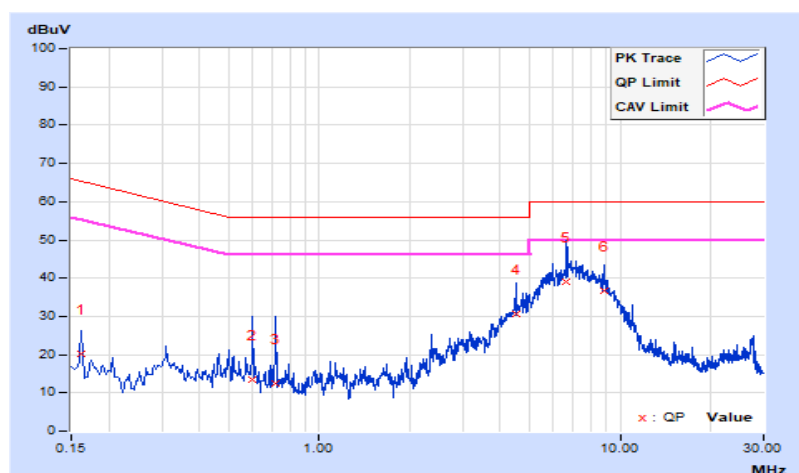
Mode B

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	10.10	10.23	3.68	20.33	13.78	65.36	55.36	-45.03	-41.58
2	0.60200	10.12	3.35	0.58	13.47	10.70	56.00	46.00	-42.53	-35.30
3	0.71400	10.13	2.28	1.22	12.41	11.35	56.00	46.00	-43.59	-34.65
4	4.50200	10.26	20.25	14.08	30.51	24.34	56.00	46.00	-25.49	-21.66
5	6.65400	10.28	28.88	22.30	39.16	32.58	60.00	50.00	-20.84	-17.42
6	8.81000	10.30	26.47	19.99	36.77	30.29	60.00	50.00	-23.23	-19.71

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

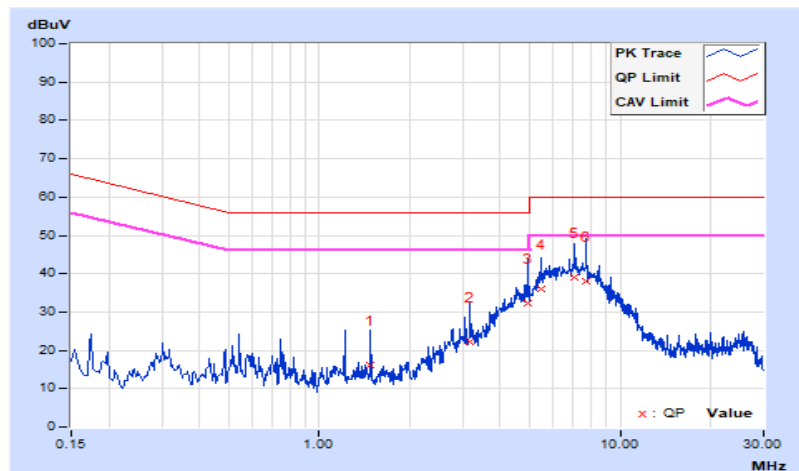


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	1.48600	10.19	5.85	1.24	16.04	11.43	56.00	46.00	-39.96	-34.57
2	3.17400	10.26	12.00	4.68	22.26	14.94	56.00	46.00	-33.74	-31.06
3	4.91400	10.30	21.87	14.04	32.17	24.34	56.00	46.00	-23.83	-21.66
4	5.46200	10.31	25.88	19.45	36.19	29.76	60.00	50.00	-23.81	-20.24
5	7.04600	10.33	28.83	22.31	39.16	32.64	60.00	50.00	-20.84	-17.36
6	7.73800	10.34	27.80	21.00	38.14	31.34	60.00	50.00	-21.86	-18.66

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



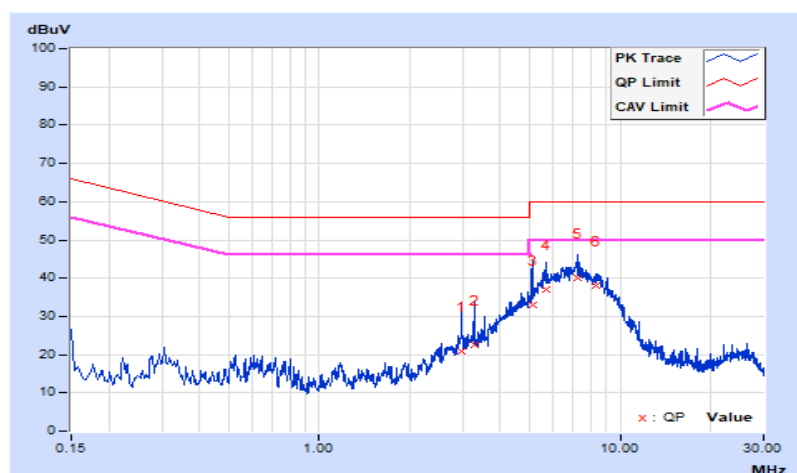
Mode C

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	2.96600	10.22	10.81	4.71	21.03	14.93	56.00	46.00	-34.97	-31.07
2	3.27000	10.23	12.43	4.14	22.66	14.37	56.00	46.00	-33.34	-31.63
3	5.10600	10.26	22.79	15.27	33.05	25.53	60.00	50.00	-26.95	-24.47
4	5.65400	10.27	26.70	20.23	36.97	30.50	60.00	50.00	-23.03	-19.50
5	7.23800	10.28	29.90	23.31	40.18	33.59	60.00	50.00	-19.82	-16.41
6	8.32200	10.29	27.60	20.99	37.89	31.28	60.00	50.00	-22.11	-18.72

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

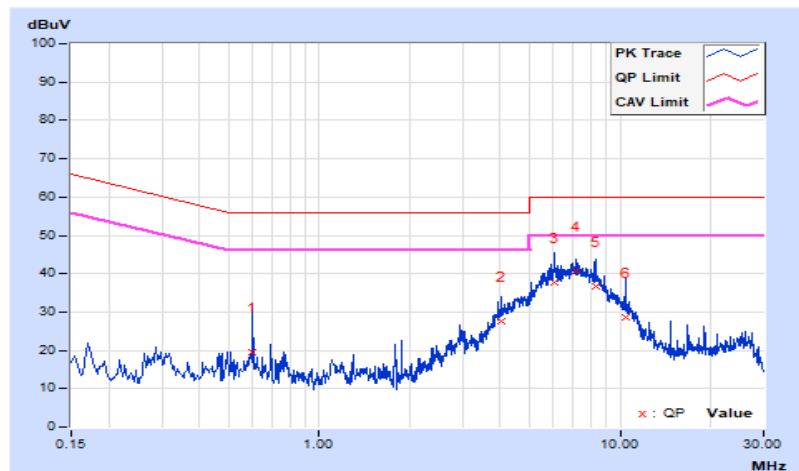


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.60200	10.15	9.39	3.85	19.54	14.00	56.00	46.00	-36.46	-32.00
2	4.01800	10.29	17.44	11.66	27.73	21.95	56.00	46.00	-28.27	-24.05
3	6.05000	10.32	27.45	20.78	37.77	31.10	60.00	50.00	-22.23	-18.90
4	7.15400	10.33	30.36	22.90	40.69	33.23	60.00	50.00	-19.31	-16.77
5	8.33800	10.35	26.29	19.87	36.64	30.22	60.00	50.00	-23.36	-19.78
6	10.41400	10.38	18.10	11.49	28.48	21.87	60.00	50.00	-31.52	-28.13

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



7.6 Unwanted Emissions below 1 GHz

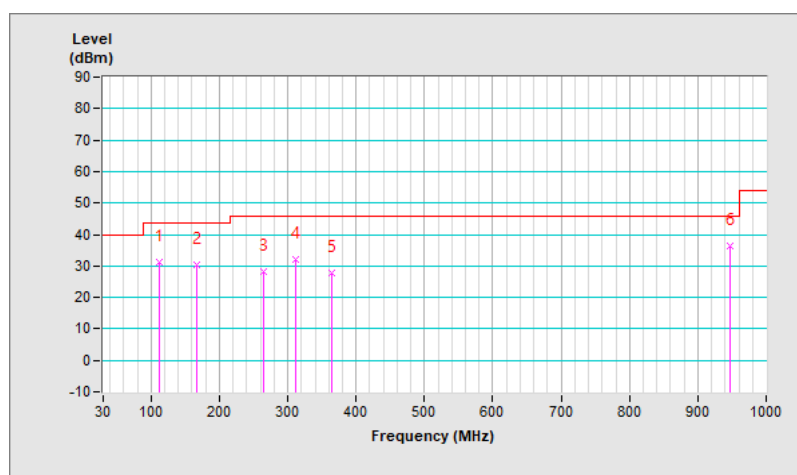
Mode A

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	31.4 QP	43.5	-12.1	1.50 H	180	42.7	-11.3
2	167.74	30.5 QP	43.5	-13.0	1.01 H	283	38.9	-8.4
3	263.77	28.1 QP	46.0	-17.9	1.01 H	127	36.0	-7.9
4	312.27	31.9 QP	46.0	-14.1	1.01 H	43	38.1	-6.2
5	363.68	27.6 QP	46.0	-18.4	1.01 H	241	33.2	-5.6
6	946.65	36.5 QP	46.0	-9.5	2.00 H	64	31.1	5.4

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

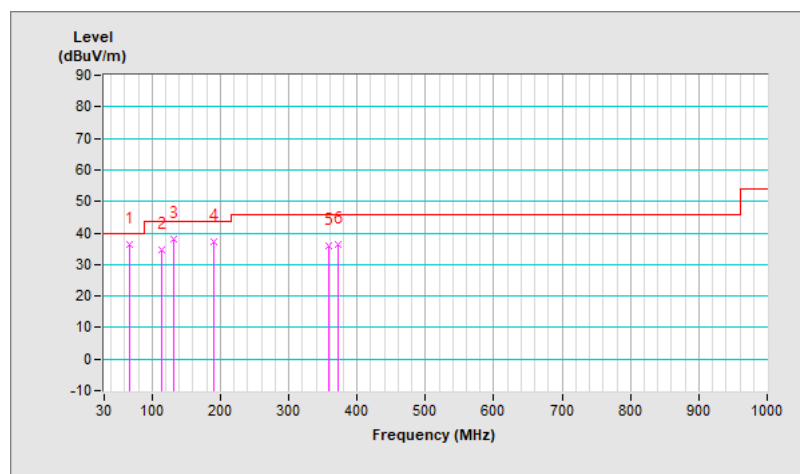


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	66.86	36.3 QP	40.0	-3.7	1.00 V	186	46.3	-10.0
2	114.39	34.8 QP	43.5	-8.7	1.00 V	234	46.0	-11.2
3	131.85	38.1 QP	43.5	-5.4	2.00 V	274	47.7	-9.6
4	190.05	37.2 QP	43.5	-6.3	1.00 V	148	47.9	-10.7
5	357.86	36.0 QP	46.0	-10.0	1.50 V	37	41.7	-5.7
6	372.41	36.2 QP	46.0	-9.8	1.50 V	37	41.6	-5.4

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



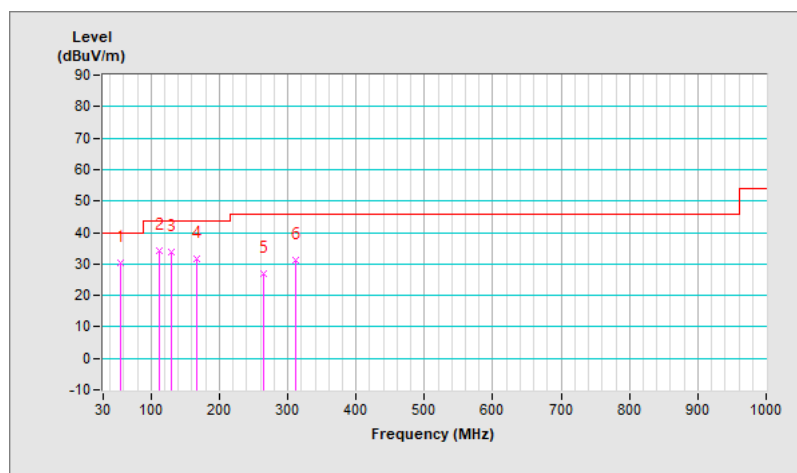
Mode B

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	55.22	30.3 QP	40.0	-9.7	1.99 H	26	39.2	-8.9
2	111.48	34.0 QP	43.5	-9.5	1.49 H	175	45.5	-11.5
3	129.91	33.7 QP	43.5	-9.8	1.49 H	187	43.4	-9.7
4	167.74	31.6 QP	43.5	-11.9	1.00 H	238	40.0	-8.4
5	263.77	26.9 QP	46.0	-19.1	1.00 H	128	34.8	-7.9
6	312.27	31.3 QP	46.0	-14.7	1.00 H	21	37.5	-6.2

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

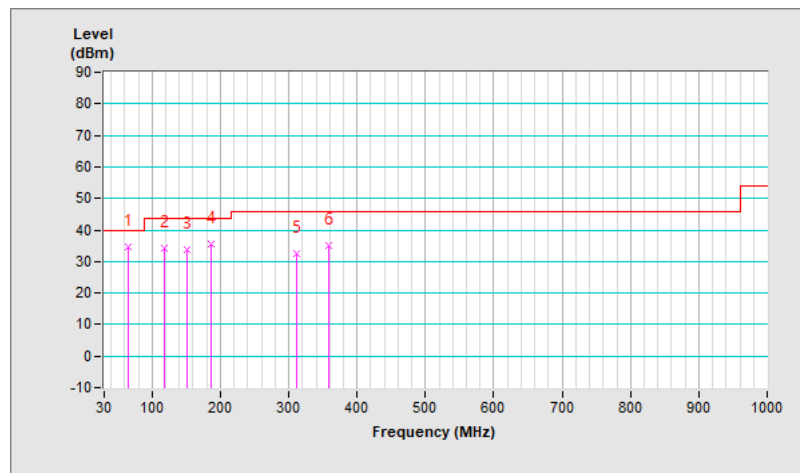


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	64.92	34.5 QP	40.0	-5.5	1.50 V	344	44.8	-10.3
2	117.30	34.0 QP	43.5	-9.5	1.50 V	246	44.9	-10.9
3	151.25	33.6 QP	43.5	-9.9	1.50 V	310	41.9	-8.3
4	186.17	35.7 QP	43.5	-7.8	1.50 V	158	46.0	-10.3
5	312.27	32.5 QP	46.0	-13.5	1.50 V	218	38.7	-6.2
6	358.83	35.2 QP	46.0	-10.8	1.50 V	142	40.9	-5.7

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 of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



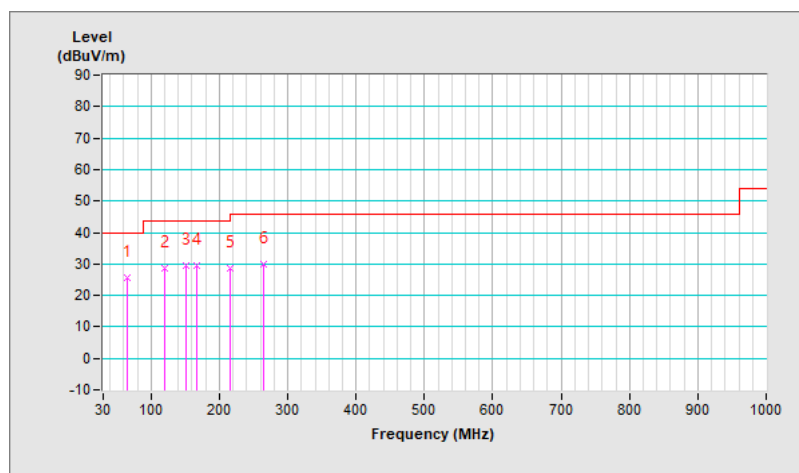
Mode C

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	64.92	25.8 QP	40.0	-14.2	1.00 H	34	36.1	-10.3
2	119.24	28.7 QP	43.5	-14.8	1.49 H	166	39.4	-10.7
3	150.28	29.4 QP	43.5	-14.1	1.00 H	108	37.7	-8.3
4	167.74	29.6 QP	43.5	-13.9	1.00 H	358	38.0	-8.4
5	215.27	28.6 QP	43.5	-14.9	1.49 H	88	39.3	-10.7
6	263.77	29.9 QP	46.0	-16.1	1.00 H	134	37.8	-7.9

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

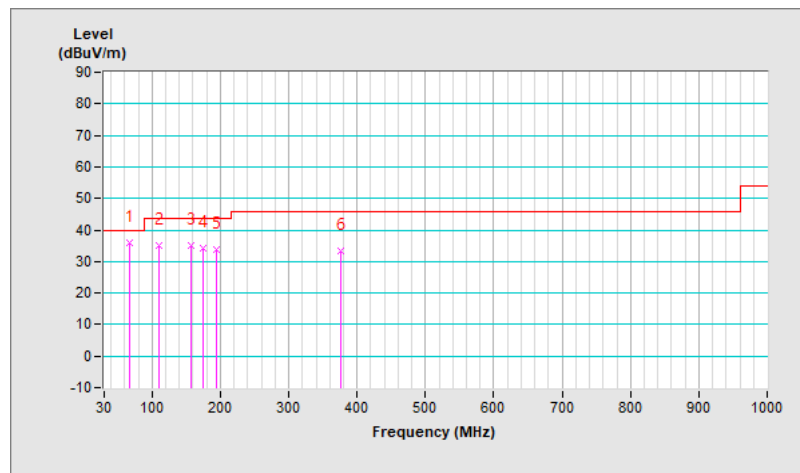


RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	66.86	36.1 QP	40.0	-3.9	1.01 V	181	46.1	-10.0
2	109.54	35.2 QP	43.5	-8.3	1.01 V	242	46.8	-11.6
3	158.04	34.9 QP	43.5	-8.6	1.51 V	304	43.0	-8.1
4	175.50	34.1 QP	43.5	-9.4	1.01 V	157	43.1	-9.0
5	194.90	33.7 QP	43.5	-9.8	1.01 V	147	44.7	-11.0
6	376.29	33.4 QP	46.0	-12.6	1.01 V	167	38.7	-5.3

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 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.7 Unwanted Emissions above 1 GHz

Mode A

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 75.3 % RH
Tested By	Rex Wang		

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	59.6 PK	74.0	-14.4	2.71 H	355	26.0	33.6
2	2390.00	47.2 AV	54.0	-6.8	2.71 H	355	13.6	33.6
3	*2405.00	119.6 PK			2.71 H	355	86.0	33.6
4	*2405.00	115.6 AV			2.71 H	355	82.0	33.6
5	4810.00	51.2 PK	74.0	-22.8	2.46 H	205	41.4	9.8
6	4810.00	37.6 AV	54.0	-16.4	2.46 H	205	27.8	9.8
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	59.5 PK	74.0	-14.5	3.21 V	68	25.9	33.6
2	2390.00	46.5 AV	54.0	-7.5	3.21 V	68	12.9	33.6
3	*2405.00	115.7 PK			3.21 V	68	82.1	33.6
4	*2405.00	111.8 AV			3.21 V	68	78.2	33.6
5	4810.00	51.0 PK	74.0	-23.0	2.23 V	258	41.2	9.8
6	4810.00	37.4 AV	54.0	-16.6	2.23 V	258	27.6	9.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 18 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 75.3 % RH
Tested By	Rex Wang		

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	*2440.00	118.5 PK			2.39 H	18	84.9	33.6
2	*2440.00	114.6 AV			2.39 H	18	81.0	33.6
3	4880.00	51.5 PK	74.0	-22.5	2.25 H	264	41.4	10.1
4	4880.00	37.8 AV	54.0	-16.2	2.25 H	264	27.7	10.1
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	*2440.00	114.5 PK			2.74 V	68	80.9	33.6
2	*2440.00	110.6 AV			2.74 V	68	77.0	33.6
3	4880.00	51.0 PK	74.0	-23.0	2.25 V	257	40.9	10.1
4	4880.00	37.5 AV	54.0	-16.5	2.25 V	257	27.4	10.1

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, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 25 : 2475 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 75.3 % RH
Tested By	Rex Wang		

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	*2475.00	119.0 PK			2.31 H	355	85.4	33.6
2	*2475.00	115.1 AV			2.31 H	355	81.5	33.6
3	2483.50	65.0 PK	74.0	-9.0	2.31 H	355	31.4	33.6
4	2483.50	52.7 AV	54.0	-1.3	2.31 H	355	19.1	33.6
5	4950.00	51.6 PK	74.0	-22.4	2.24 H	255	41.3	10.3
6	4950.00	37.9 AV	54.0	-16.1	2.24 H	255	27.6	10.3
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	*2475.00	114.2 PK			3.02 V	68	80.6	33.6
2	*2475.00	110.6 AV			3.02 V	68	77.0	33.6
3	2483.50	60.6 PK	74.0	-13.4	3.02 V	68	27.0	33.6
4	2483.50	50.1 AV	54.0	-3.9	3.02 V	68	16.5	33.6
5	4950.00	51.1 PK	74.0	-22.9	2.27 V	252	40.8	10.3
6	4950.00	37.6 AV	54.0	-16.4	2.27 V	252	27.3	10.3

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, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 26 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 75.3 % RH
Tested By	Rex Wang		

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	*2480.00	107.9 PK			2.28 H	354	74.3	33.6
2	*2480.00	104.0 AV			2.28 H	354	70.4	33.6
3	2483.50	64.6 PK	74.0	-9.4	2.28 H	354	31.0	33.6
4	2483.50	53.3 AV	54.0	-0.7	2.28 H	354	19.7	33.6
5	4960.00	51.3 PK	74.0	-22.7	2.24 H	258	40.8	10.5
6	4960.00	38.1 AV	54.0	-15.9	2.24 H	258	27.6	10.5
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	*2480.00	104.0 PK			3.03 V	69	70.4	33.6
2	*2480.00	100.1 AV			3.03 V	69	66.5	33.6
3	2483.50	61.4 PK	74.0	-12.6	3.03 V	69	27.8	33.6
4	2483.50	51.3 AV	54.0	-2.7	3.03 V	69	17.7	33.6
5	4960.00	51.0 PK	74.0	-23.0	2.28 V	255	40.5	10.5
6	4960.00	37.9 AV	54.0	-16.1	2.28 V	255	27.4	10.5

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, the limit was restricted at the RF Output Power.

Mode B

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	3.40 H	294	25.8	33.6
2	2390.00	46.6 AV	54.0	-7.4	3.40 H	294	13.0	33.6
3	*2405.00	116.9 PK			3.40 H	294	83.3	33.6
4	*2405.00	113.0 AV			3.40 H	294	79.4	33.6
5	4810.00	52.2 PK	74.0	-21.8	2.46 H	277	42.4	9.8
6	4810.00	39.8 AV	54.0	-14.2	2.46 H	277	30.0	9.8
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	59.2 PK	74.0	-14.8	2.86 V	190	25.6	33.6
2	2390.00	46.4 AV	54.0	-7.6	2.86 V	190	12.8	33.6
3	*2405.00	114.1 PK			3.86 V	190	80.5	33.6
4	*2405.00	110.1 AV			3.86 V	190	76.5	33.6
5	4810.00	51.1 PK	74.0	-22.9	2.93 V	87	41.3	9.8
6	4810.00	38.9 AV	54.0	-15.1	2.93 V	87	29.1	9.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 18 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	*2440.00	117.2 PK			3.21 H	281	83.6	33.6
2	*2440.00	113.4 AV			3.21 H	281	79.8	33.6
3	4880.00	52.7 PK	74.0	-21.3	2.47 H	276	42.6	10.1
4	4880.00	40.3 AV	54.0	-13.7	2.47 H	276	30.2	10.1
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	*2440.00	114.3 PK			3.79 V	191	80.7	33.6
2	*2440.00	110.5 AV			3.79 V	191	76.9	33.6
3	4880.00	51.5 PK	74.0	-22.5	2.90 V	80	41.4	10.1
4	4880.00	39.1 AV	54.0	-14.9	2.90 V	80	29.0	10.1

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, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 25 : 2475 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	*2475.00	118.5 PK			2.89 H	280	84.9	33.6
2	*2475.00	114.6 AV			2.89 H	280	81.0	33.6
3	2483.50	65.2 PK	74.0	-8.8	2.89 H	280	31.6	33.6
4	2483.50	53.1 AV	54.0	-0.9	2.89 H	280	19.5	33.6
5	4950.00	52.9 PK	74.0	-21.1	2.65 H	275	42.6	10.3
6	4950.00	40.4 AV	54.0	-13.6	2.65 H	275	30.1	10.3
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	*2475.00	115.5 PK			3.87 V	186	81.9	33.6
2	*2475.00	111.5 AV			3.87 V	186	77.9	33.6
3	2483.50	63.8 PK	74.0	-10.2	3.87 V	186	30.2	33.6
4	2483.50	52.1 AV	54.0	-1.9	3.87 V	186	18.5	33.6
5	4950.00	51.9 PK	74.0	-22.1	2.82 V	89	41.6	10.3
6	4950.00	39.5 AV	54.0	-14.5	2.82 V	89	29.2	10.3

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, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 26 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	*2480.00	108.2 PK			2.90 H	275	74.6	33.6
2	*2480.00	104.3 AV			2.90 H	275	70.7	33.6
3	2483.50	64.6 PK	74.0	-9.4	2.90 H	275	31.0	33.6
4	2483.50	53.2 AV	54.0	-0.8	2.90 H	275	19.6	33.6
5	4960.00	51.4 PK	74.0	-22.6	2.71 H	279	40.9	10.5
6	4960.00	38.7 AV	54.0	-15.3	2.71 H	279	28.2	10.5
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	*2480.00	105.6 PK			3.92 V	193	72.0	33.6
2	*2480.00	101.6 AV			3.92 V	193	68.0	33.6
3	2483.50	64.1 PK	74.0	-9.9	3.92 V	193	30.5	33.6
4	2483.50	52.3 AV	54.0	-1.7	3.92 V	193	18.7	33.6
5	4960.00	51.2 PK	74.0	-22.8	2.92 V	87	40.7	10.5
6	4960.00	38.3 AV	54.0	-15.7	2.92 V	87	27.8	10.5

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, the limit was restricted at the RF Output Power.

Mode C

RF Mode	802.15.4	Channel	CH 11 : 2405 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	59.2 PK	74.0	-14.8	3.38 H	7	25.6	33.6
2	2390.00	46.3 AV	54.0	-7.7	3.38 H	7	12.7	33.6
3	*2405.00	107.8 PK			3.38 H	7	74.2	33.6
4	*2405.00	103.9 AV			3.38 H	7	70.3	33.6
5	4810.00	50.6 PK	74.0	-23.4	2.28 H	196	40.8	9.8
6	4810.00	38.1 AV	54.0	-15.9	2.28 H	196	28.3	9.8
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	59.1 PK	74.0	-14.9	3.67 V	81	25.5	33.6
2	2390.00	46.2 AV	54.0	-7.8	3.67 V	81	12.6	33.6
3	*2405.00	106.2 PK			3.67 V	81	72.6	33.6
4	*2405.00	102.2 AV			3.67 V	81	68.6	33.6
5	4810.00	50.3 PK	74.0	-23.7	2.39 V	267	40.5	9.8
6	4810.00	37.7 AV	54.0	-16.3	2.39 V	267	27.9	9.8

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 18 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	*2440.00	108.4 PK			2.38 H	10	74.8	33.6
2	*2440.00	104.5 AV			2.38 H	10	70.9	33.6
3	4880.00	50.9 PK	74.0	-23.1	2.29 H	185	40.8	10.1
4	4880.00	38.5 AV	54.0	-15.5	2.29 H	185	28.4	10.1
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	*2440.00	106.8 PK			3.65 V	80	73.2	33.6
2	*2440.00	102.9 AV			3.65 V	80	69.3	33.6
3	4880.00	50.8 PK	74.0	-23.2	2.35 V	258	40.7	10.1
4	4880.00	38.2 AV	54.0	-15.8	2.35 V	258	28.1	10.1

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, the limit was restricted at the RF Output Power.

RF Mode	802.15.4	Channel	CH 26 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Rex Wang		

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	*2480.00	107.2 PK			2.59 H	2	73.6	33.6
2	*2480.00	103.2 AV			2.59 H	2	69.6	33.6
3	2483.50	64.4 PK	74.0	-9.6	2.59 H	2	30.8	33.6
4	2483.50	53.6 AV	54.0	-0.4	2.59 H	2	20.0	33.6
5	4960.00	51.2 PK	74.0	-22.8	2.27 H	186	40.7	10.5
6	4960.00	38.7 AV	54.0	-15.3	2.27 H	186	28.2	10.5
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	*2480.00	105.3 PK			3.45 V	86	71.7	33.6
2	*2480.00	101.3 AV			3.45 V	86	67.7	33.6
3	2483.50	64.3 PK	74.0	-9.7	3.45 V	86	30.7	33.6
4	2483.50	52.8 AV	54.0	-1.2	3.45 V	86	19.2	33.6
5	4960.00	51.0 PK	74.0	-23.0	2.30 V	252	40.5	10.5
6	4960.00	38.3 AV	54.0	-15.7	2.30 V	252	27.8	10.5

Remarks:

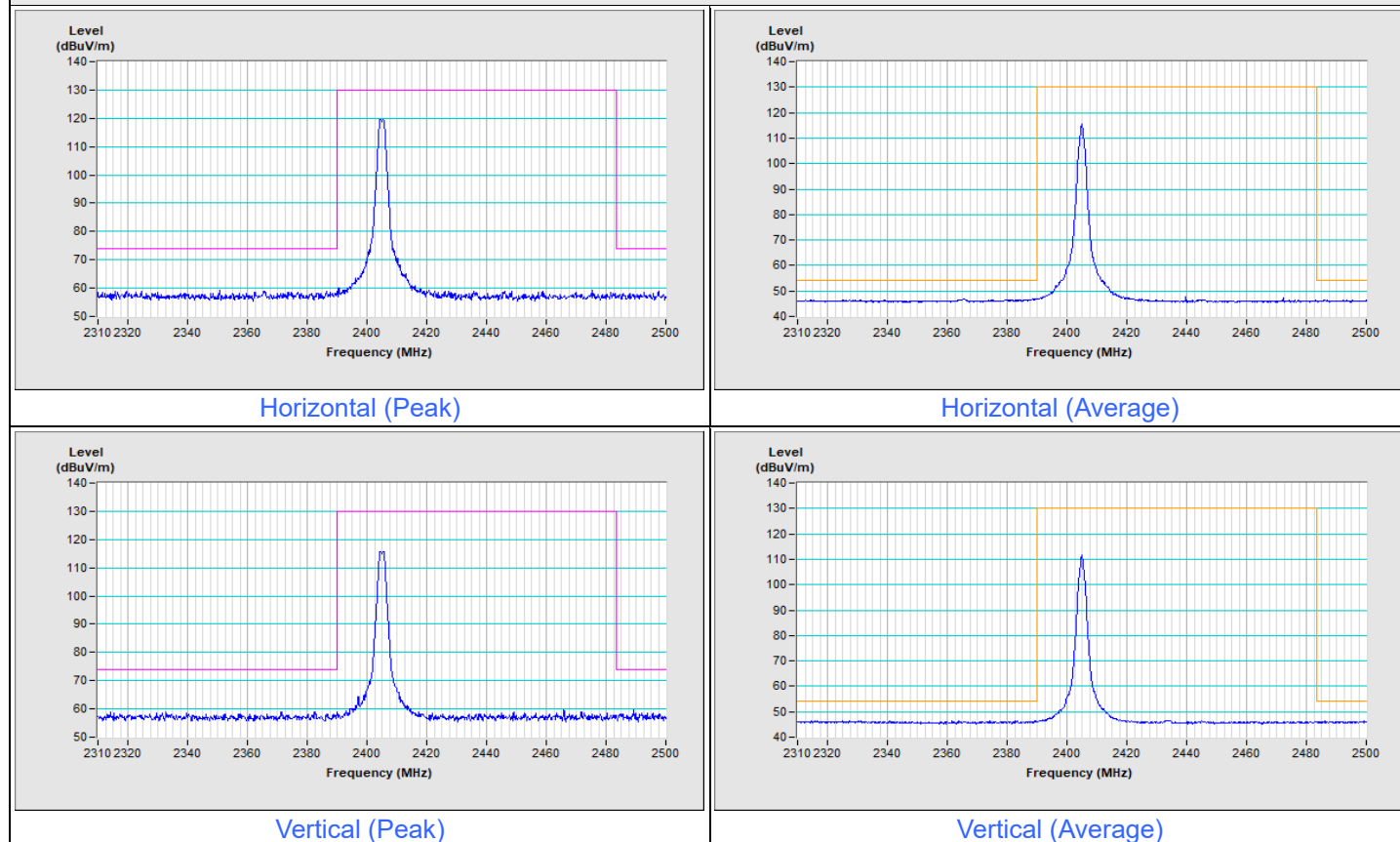
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

Plot of Band Edge

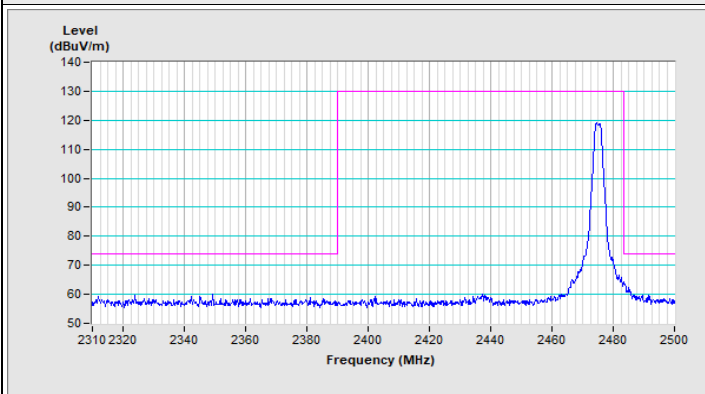
Mode A

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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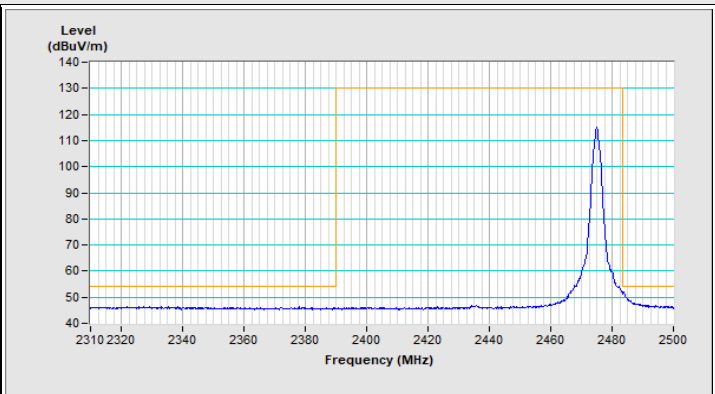
802.15.4 Channel 11



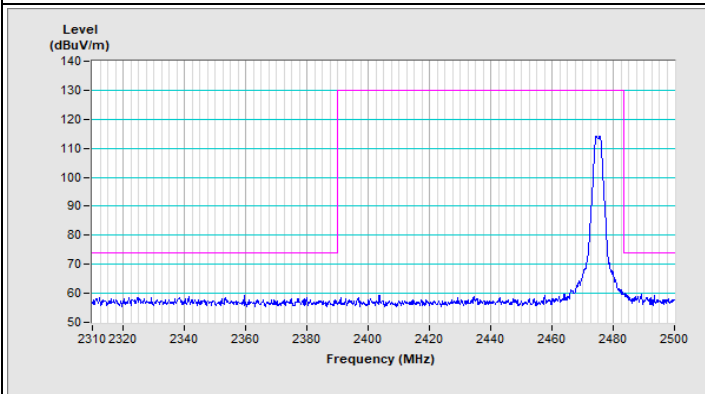
802.15.4 Channel 25



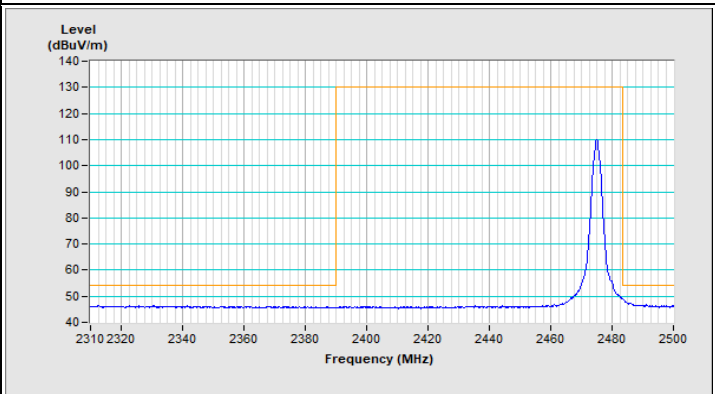
Horizontal (Peak)



Horizontal (Average)

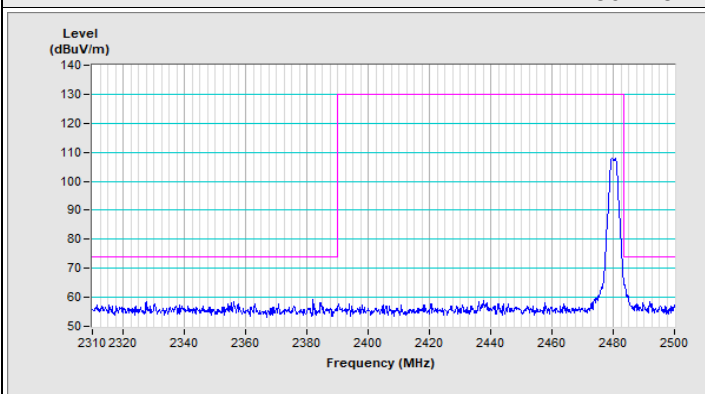


Vertical (Peak)

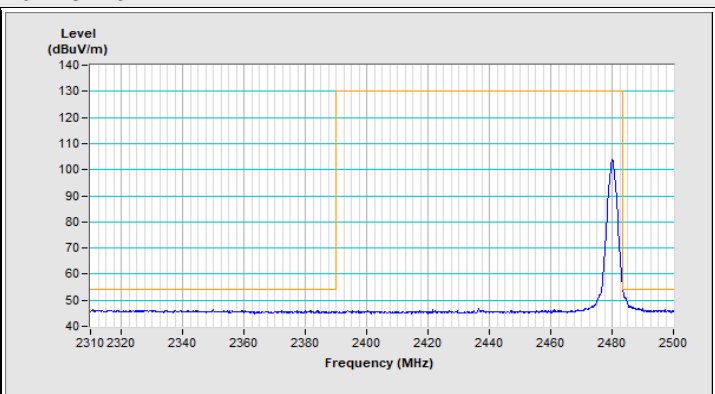


Vertical (Average)

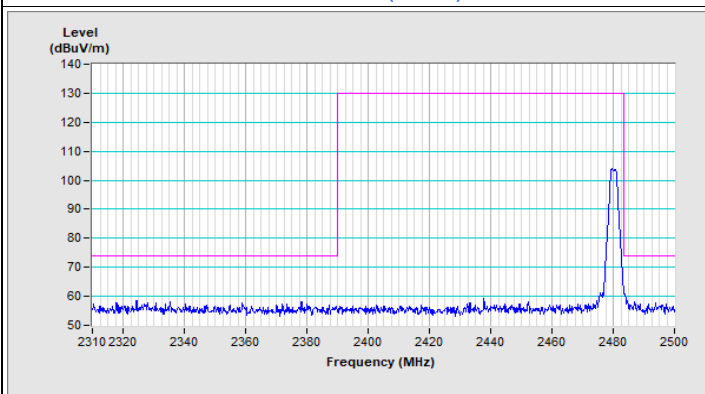
802.15.4 Channel 26



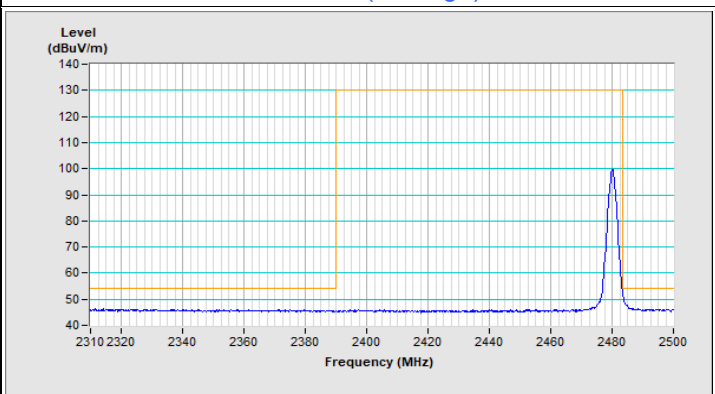
Horizontal (Peak)



Horizontal (Average)



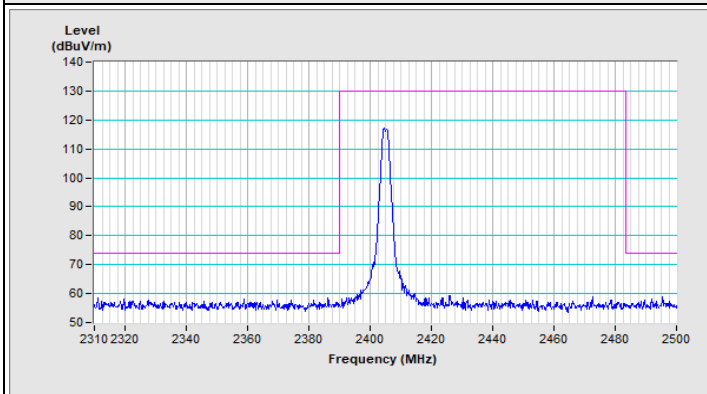
Vertical (Peak)



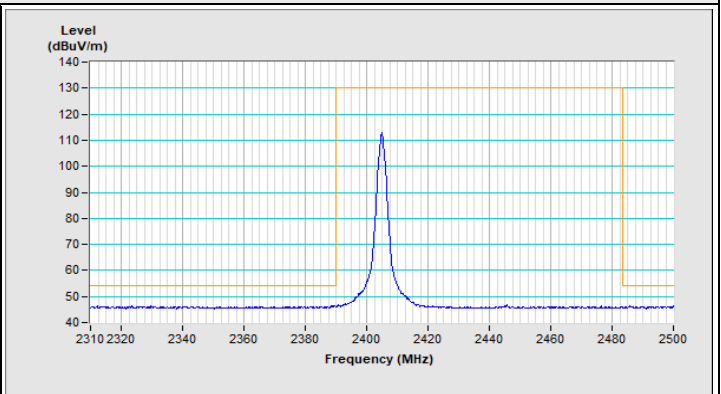
Vertical (Average)

Mode B

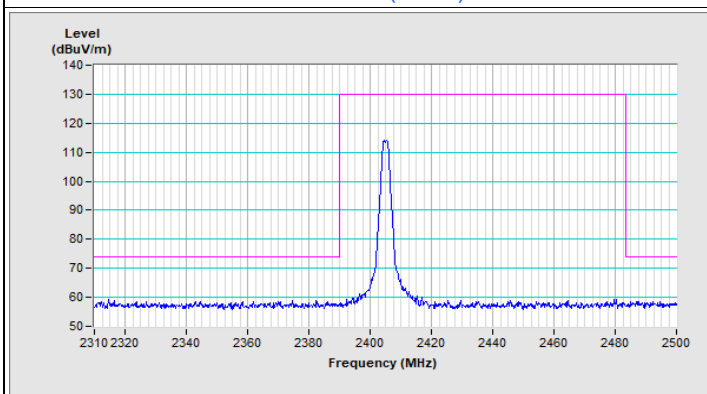
802.15.4 Channel 11



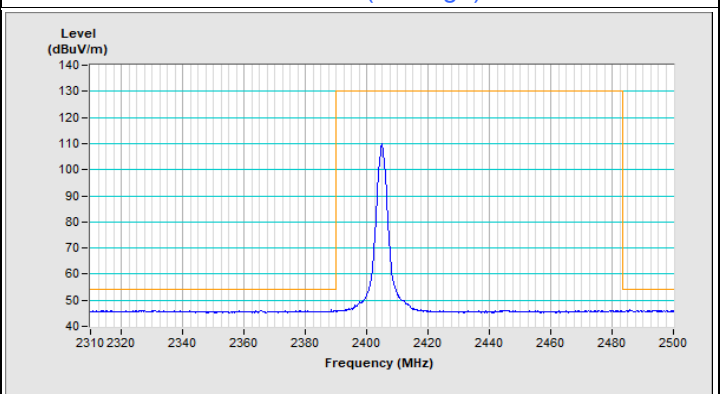
Horizontal (Peak)



Horizontal (Average)

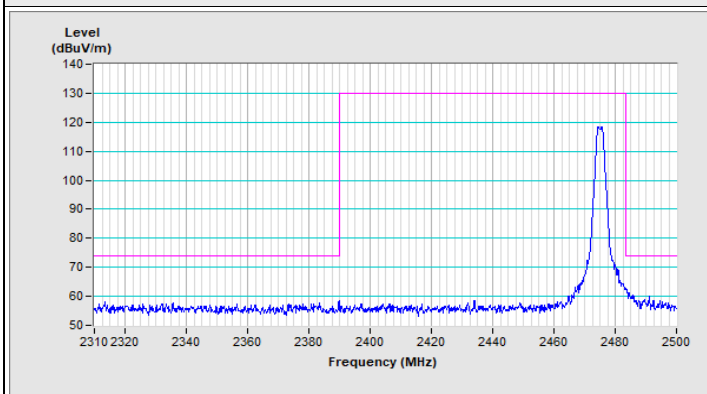


Vertical (Peak)

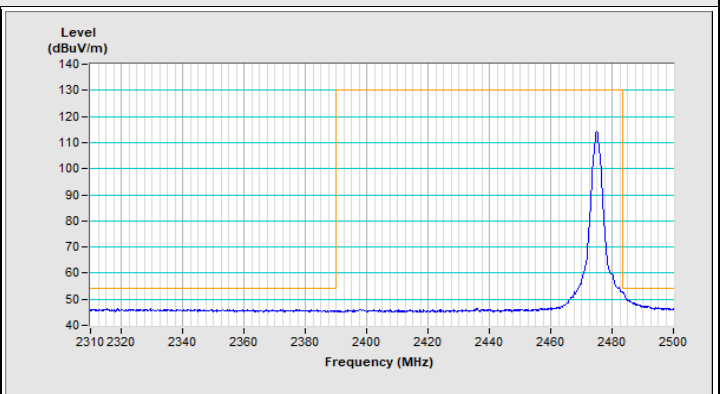


Vertical (Average)

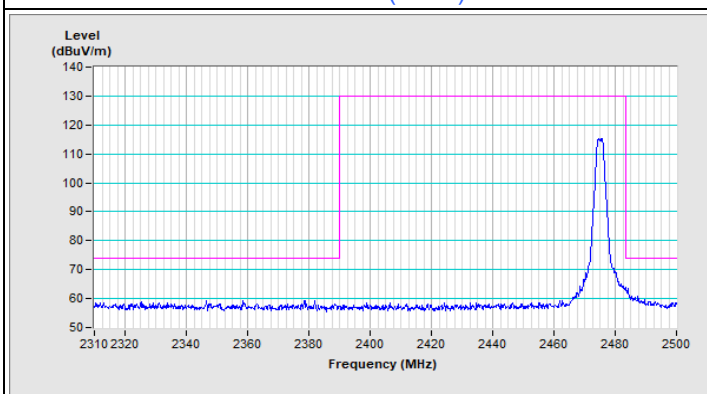
802.15.4 Channel 25



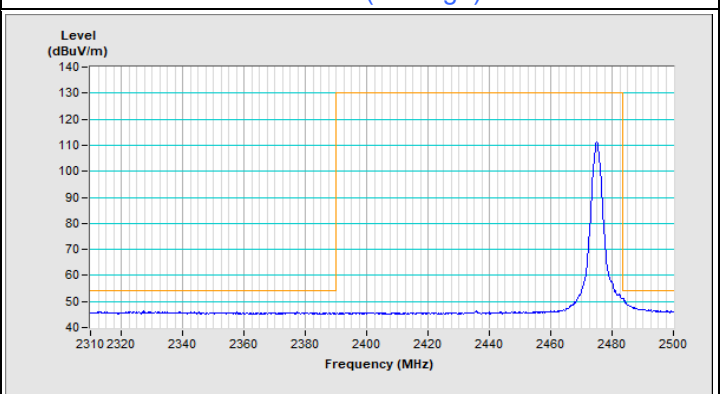
Horizontal (Peak)



Horizontal (Average)

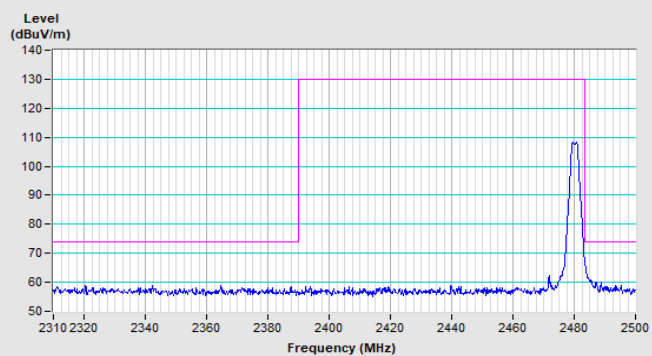


Vertical (Peak)

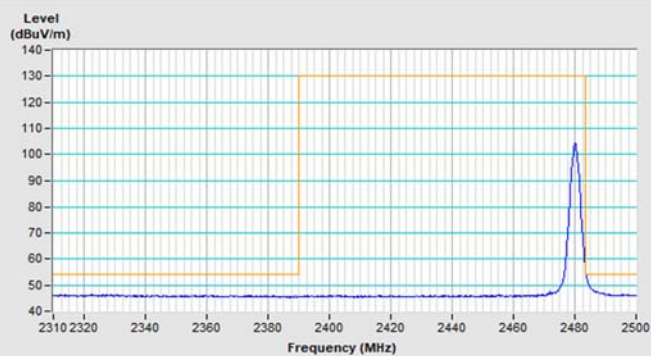


Vertical (Average)

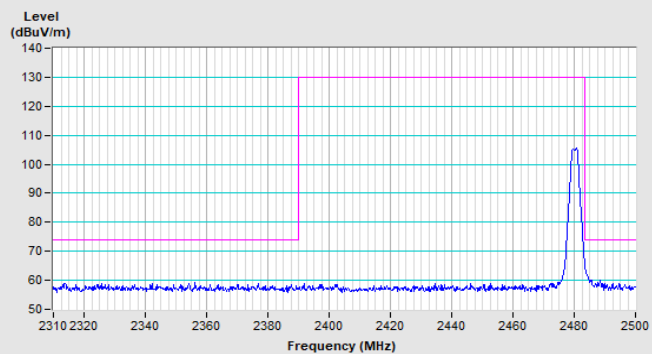
802.15.4 Channel 26



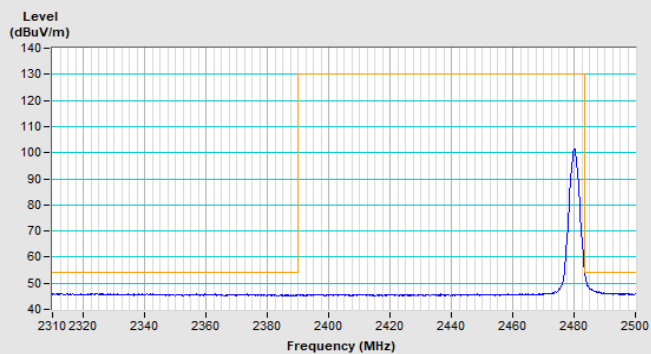
Horizontal (Peak)



Horizontal (Average)



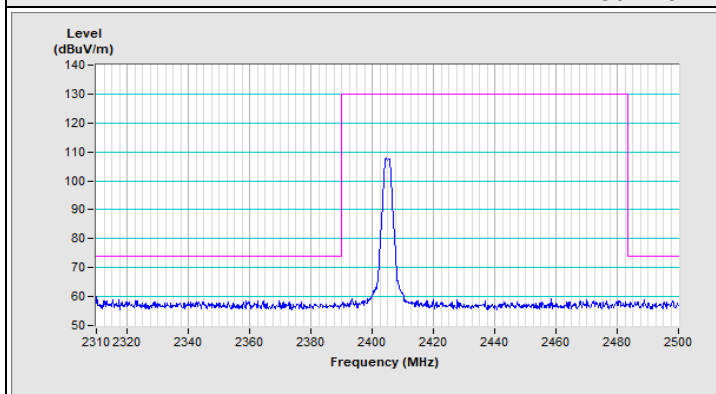
Vertical (Peak)



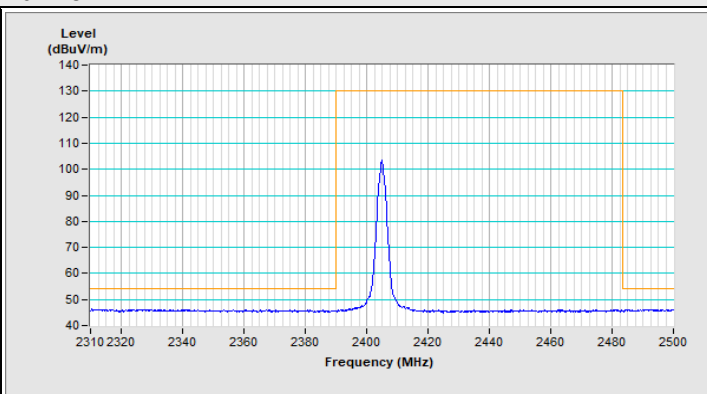
Vertical (Average)

Mode C

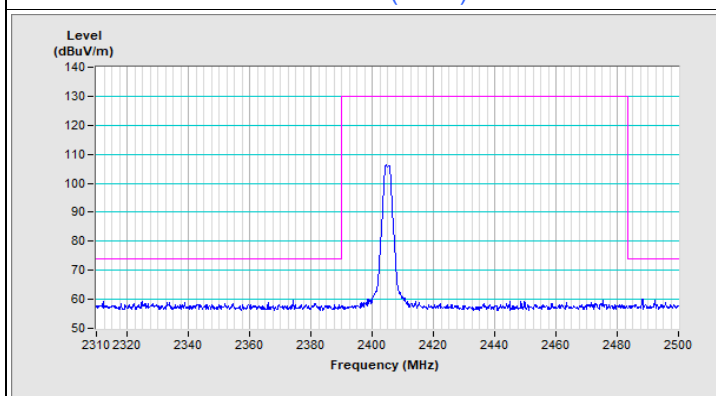
802.15.4 Channel 11



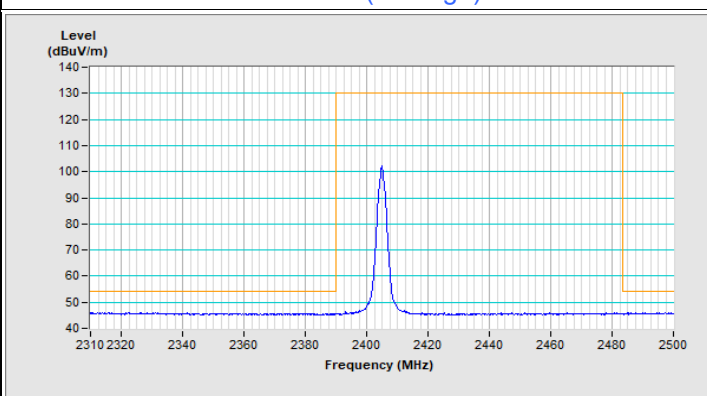
Horizontal (Peak)



Horizontal (Average)

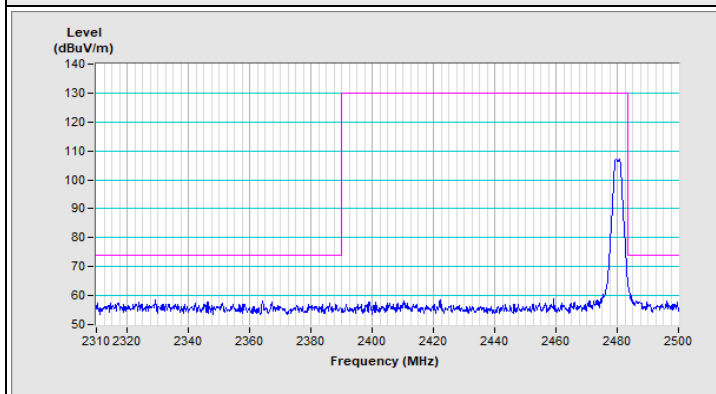


Vertical (Peak)

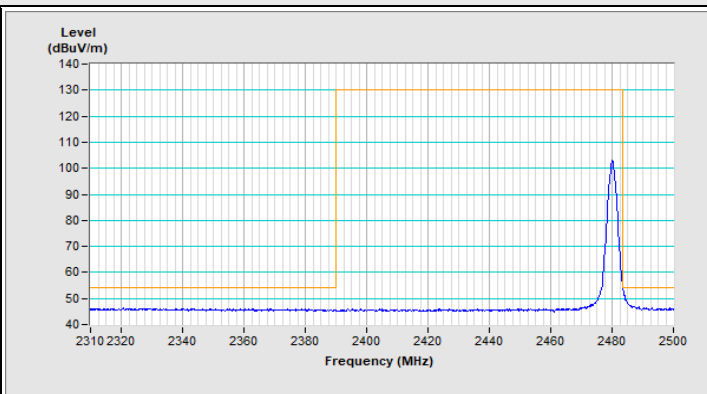


Vertical (Average)

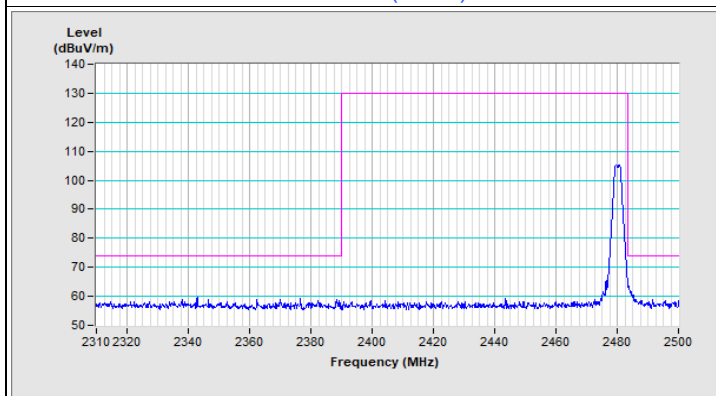
802.15.4 Channel 26



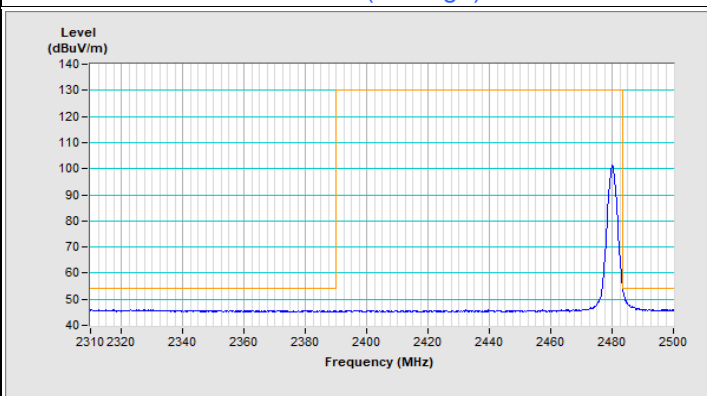
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 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:

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

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