

TEST REPORT

(BLUETOOTH LOW ENERGY_DTS)

CERTIFICATE OF CONFORMITY

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

Report No.: RFCDBM-WTW-P24100096-1

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

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

Received Date: 2024/10/7

Test Date: 2024/11/15 ~ 2025/1/21

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
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FCC Registration / 788550 / TW0003

Designation Number:

Approved by:

Jeremy Lin

, Date:

2025/2/6

Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFCDBM-WTW-P24100096-1	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

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

Sample Status: Engineering samples fully representing the production models

Applicant: Silicon Laboratories Finland Oy

Test Date: 2024/11/15 ~ 2025/1/21

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 -16.86 dB at 6.91000 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.9 dB at 66.86 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -1.2 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	MGM260P22A: these modules use an integral antenna, therefore comply with the requirement of 15.203 (see section 3.2 for details)

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), Bluetooth Low Energy wireless radio modules (for BGM260P22A)
Brand	SILICON LABS
Test Model	MGM260P22A
Series Model	BGM260P22A
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 (from host equipment) Nominal: 3.0Vdc
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	1MBaud with 1Mbps transfer rate 1MBaud with Coded 125kbps transfer rate 1MBaud with Coded 500kbps 2MBaud with 2Mbps transfer rate
Operating Frequency	2402 ~ 2480 MHz
Number of Channel	1MBaud: 40 2MBaud: 37
Output Power	1MBaud: 12.218 mW (10.87 dBm) 1MBaud: 12.162 mW (10.85 dBm) (125kbps) 1MBaud: 12.106 mW (10.83 dBm) (500kbps) 2MBaud: 12.190 mW (10.86 dBm)

Note:

1. The models difference are as below. Model MGM260P22A is the representative for final test.

Product Spec.	Model
	MGM260P22A (covers BGM260P22A)
	Low-Power Bluetooth Low Energy and 802.15.4 (802.15.4 being disabled for BGM260P22A)
Max nominal RF TX power, as declared by manufacturer	10dBm
Antenna type	integral antenna
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
	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. BT LE (DTS/FHSS) and 802.15.4 modes technology cannot transmit at same time.
3. 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, BGM260P22A

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

3.3 Power setting is as below:

<1MBaud PHY with 1Mbps>

Channel	Power Setting
0	100
1	100
19	100
38	100
39	100

1MBaud PHY with 125kbps

Channel	Power Setting
0	100
1	100
19	100
38	100
39	100

1MBaud PHY with 500kbps

Channel	Power Setting
0	100
1	100
19	100
38	100
39	100

<2MBaud PHY>

Channel	Power Setting
1	100
19	100
38	100

3.4 Channel List

1MBaud PHY

40 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Note: The channels which were indicated in bold type of the above channel list were selected as representative test channel. Therefore only the data of the test channels were recorded in this report.

2MBaud PHY

37 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	2404	11	2424	21	2444	31	2464
2	2406	-	-	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460		
10	2422	20	2442	30	2462		

Note: The channels which were indicated in bold type of the above channel list were selected as representative test channel. Therefore only the data of the test channels were recorded in this report.

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: Y-axis

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

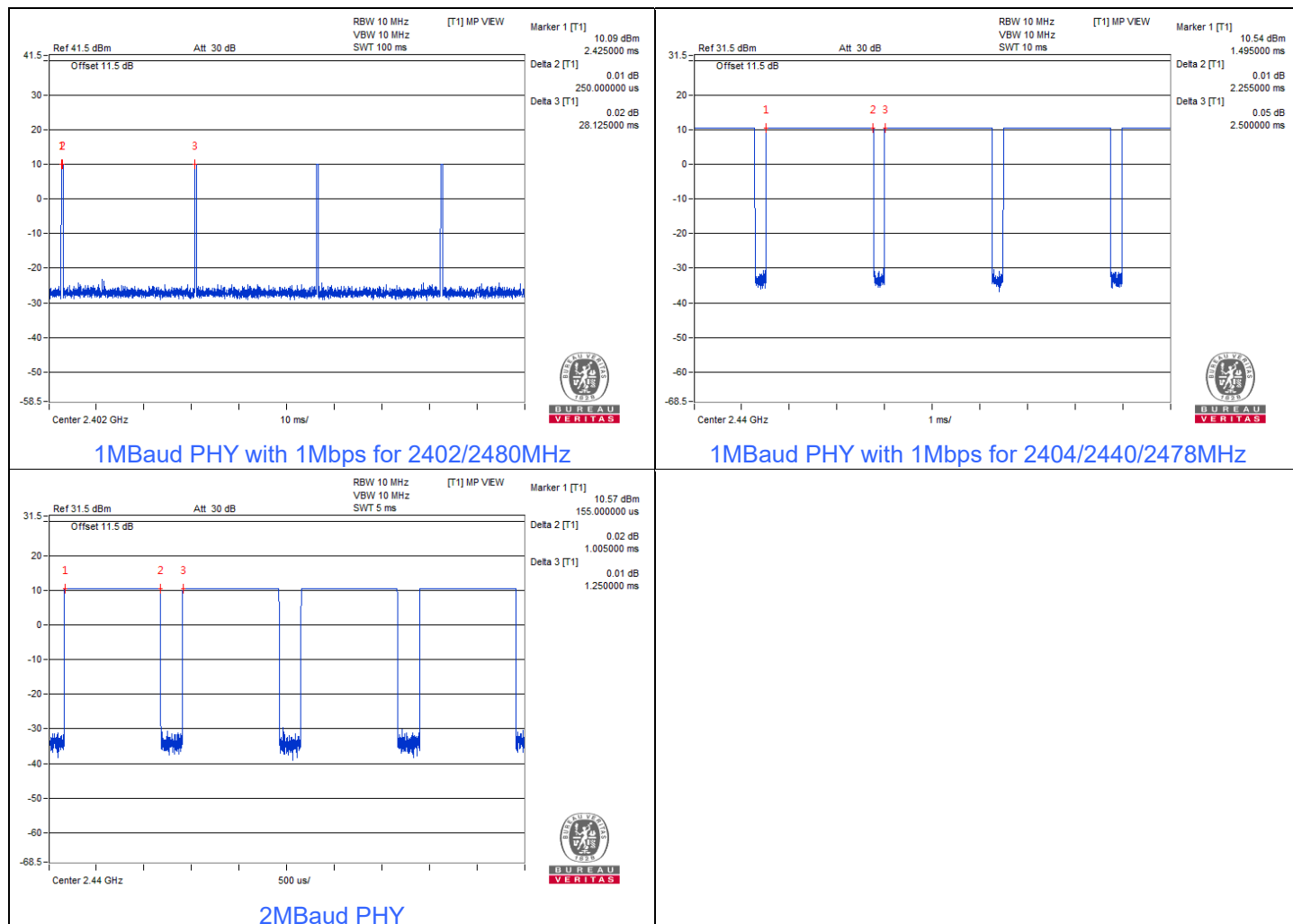
Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	1MBaud PHY	0, 1, 19, 38, 39	GFSK	1Mb/s
				125kb/s
				500kb/s
	2MBaud PHY	1, 19, 38		2Mb/s
Power Spectral Density	1MBaud PHY	0, 1, 19, 38, 39	GFSK	1Mb/s
	2MBaud PHY	1, 19, 38		2Mb/s
6 dB Bandwidth / Conducted Out of Band Emissions	1MBaud PHY	0, 1, 19, 38, 39	GFSK	1Mb/s
	2MBaud PHY	1, 19, 38		2Mb/s
AC Power Conducted Emissions	1MBaud PHY	1	GFSK	1Mb/s
Unwanted Emissions below 1 GHz	1MBaud PHY	1	GFSK	1Mb/s
Unwanted Emissions above 1 GHz	1MBaud PHY	0, 1, 19, 38, 39	GFSK	1Mb/s
	2MBaud PHY	1, 19, 38		2Mb/s
Note: 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

1MBaud PHY with 1Mbps for 2402/2480MHz: Duty cycle = $0.25 \times 4 \text{ ms} / 100 \text{ ms} \times 100\% = 1\%$, duty factor = $10 \times \log(1/\text{Duty cycle}) = 20.0 \text{ dB}$

1MBaud PHY with 1Mbps for 2404/2440/2478MHz: Duty cycle = $2.255 \text{ ms} / 2.5 \text{ ms} \times 100\% = 90.2\%$, duty factor = $10 \times \log(1/\text{Duty cycle}) = 0.45 \text{ dB}$

2MBaud PHY: Duty cycle = $1.005 \text{ ms} / 1.25 \text{ ms} \times 100\% = 80.4\%$, duty factor = $10 \times \log(1/\text{Duty cycle}) = 0.95 \text{ dB}$

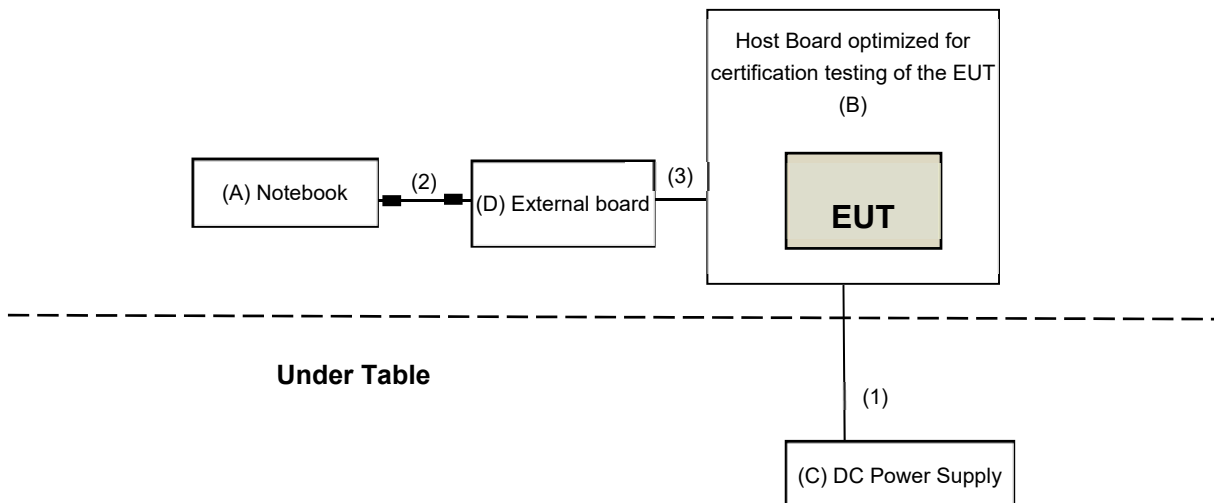


Note: 1MBaud PHY 1Mbps (2404/2440/2478MHz) use CTE on function according to manufacturer's requirement.

3.7 Test Program Used and Operation Descriptions

Controlling software Python File has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.8 Connection Diagram of EUT and Peripheral Devices



3.9 Configuration of Peripheral Devices and Cable Connections

Remote Site

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	DC Power Supply	Topward	33010D	N/A	N/A	Provided by Lab
D	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: 2024/11/13 ~ 2024/12/13

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: 2024/11/15 ~ 2025/1/21

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: 2024/11/19 ~ 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

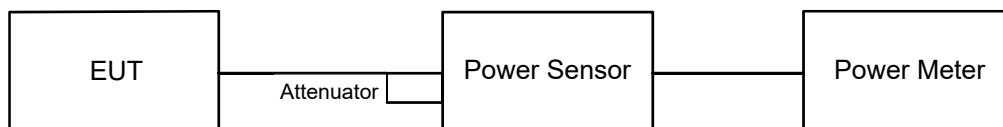
Notes:

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:

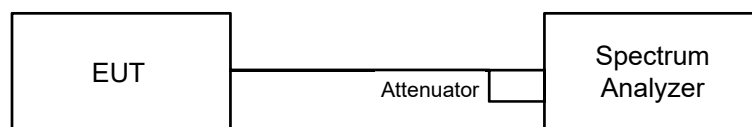
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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

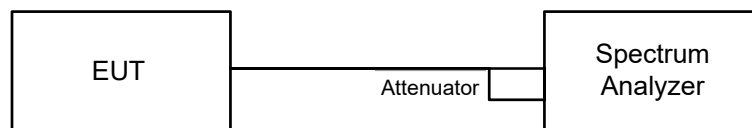


6.2.2 Test Procedure

- 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

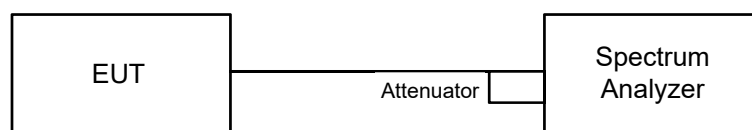


6.3.2 Test Procedure

- 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

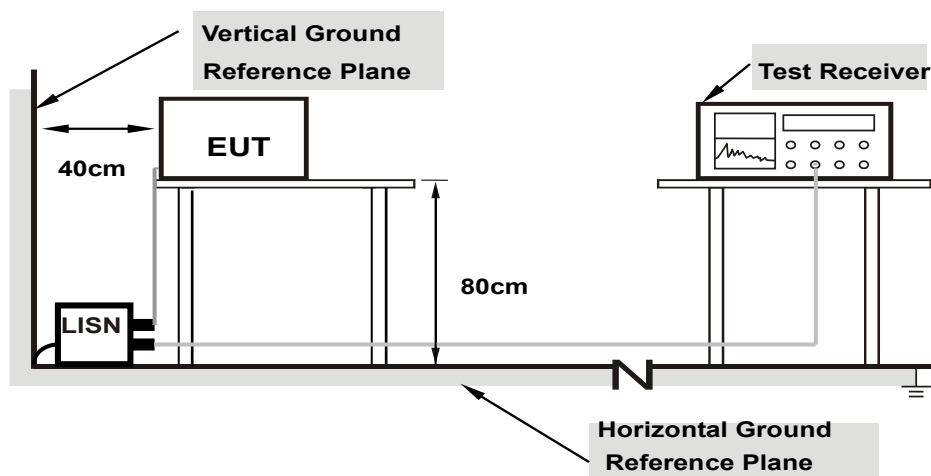
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- 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

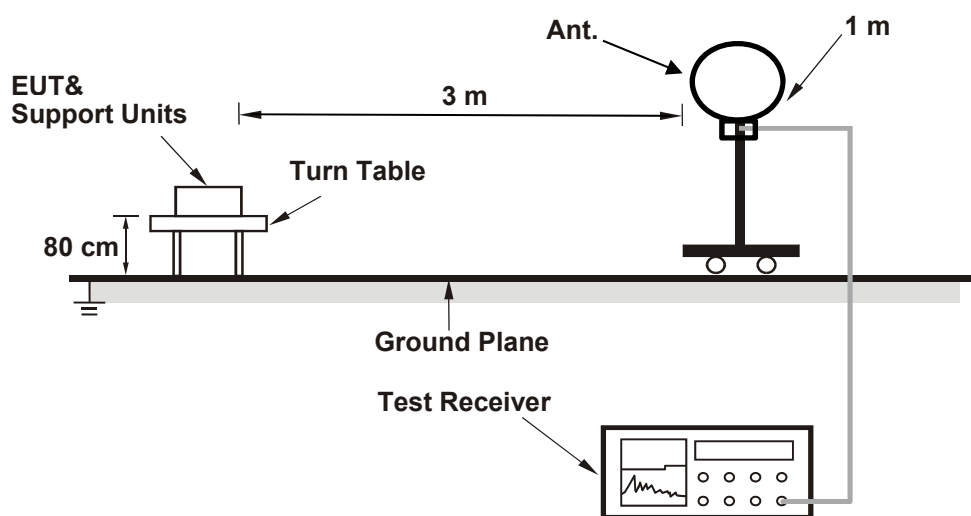
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The 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.

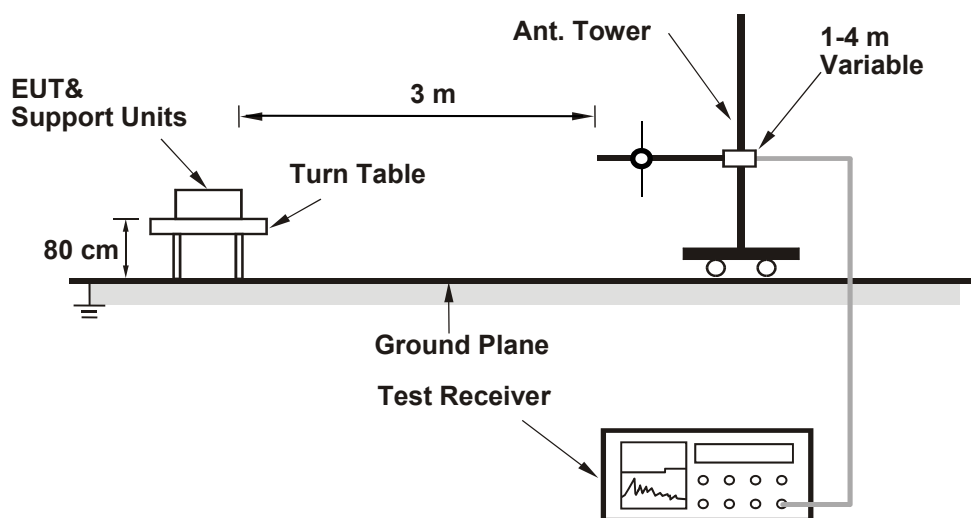
6.6 Unwanted Emissions below 1 GHz

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

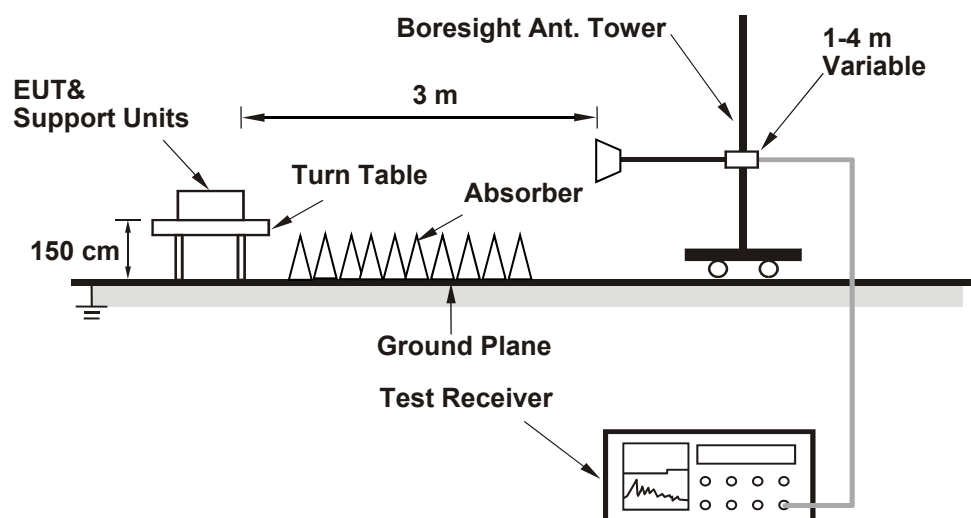
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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For Peak Power

1MBaud PHY with 1Mbps

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	12.162	10.85	30	Pass
1	2404	12.218	10.87	30	Pass
19	2440	11.967	10.78	30	Pass
38	2478	11.402	10.57	30	Pass
39	2480	11.376	10.56	30	Pass

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

1MBaud PHY with 125kbps

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	12.078	10.82	30	Pass
1	2404	12.162	10.85	30	Pass
19	2440	11.912	10.76	30	Pass
38	2478	11.35	10.55	30	Pass
39	2480	11.298	10.53	30	Pass

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

1MBaud PHY with 500kbps

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	11.995	10.79	30	Pass
1	2404	12.106	10.83	30	Pass
19	2440	11.885	10.75	30	Pass
38	2478	11.324	10.54	30	Pass
39	2480	11.246	10.51	30	Pass

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

2MBaud PHY

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2404	12.19	10.86	30	Pass
19	2440	11.967	10.78	30	Pass
38	2478	11.508	10.61	30	Pass

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

For Average Power

1MBaud PHY with 1Mbps

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	11.272	10.52
1	2404	11.298	10.53
19	2440	11.041	10.43
38	2478	10.666	10.28
39	2480	10.641	10.27

1MBaud PHY with 125kbps

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	11.22	10.50
1	2404	11.246	10.51
19	2440	10.965	10.40
38	2478	10.617	10.26
39	2480	10.593	10.25

1MBaud PHY with 500kbps

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	11.169	10.48
1	2404	11.22	10.50
19	2440	10.94	10.39
38	2478	10.568	10.24
39	2480	10.544	10.23

2MBaud PHY

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	11.35	10.55
19	2440	11.092	10.45
38	2478	10.691	10.29

7.2 Power Spectral Density

Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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1MBaud PHY with 1Mbps

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-6.31	8	Pass
1	2404	6.21	8	Pass
19	2440	6.12	8	Pass
38	2478	5.97	8	Pass
39	2480	-6.66	8	Pass

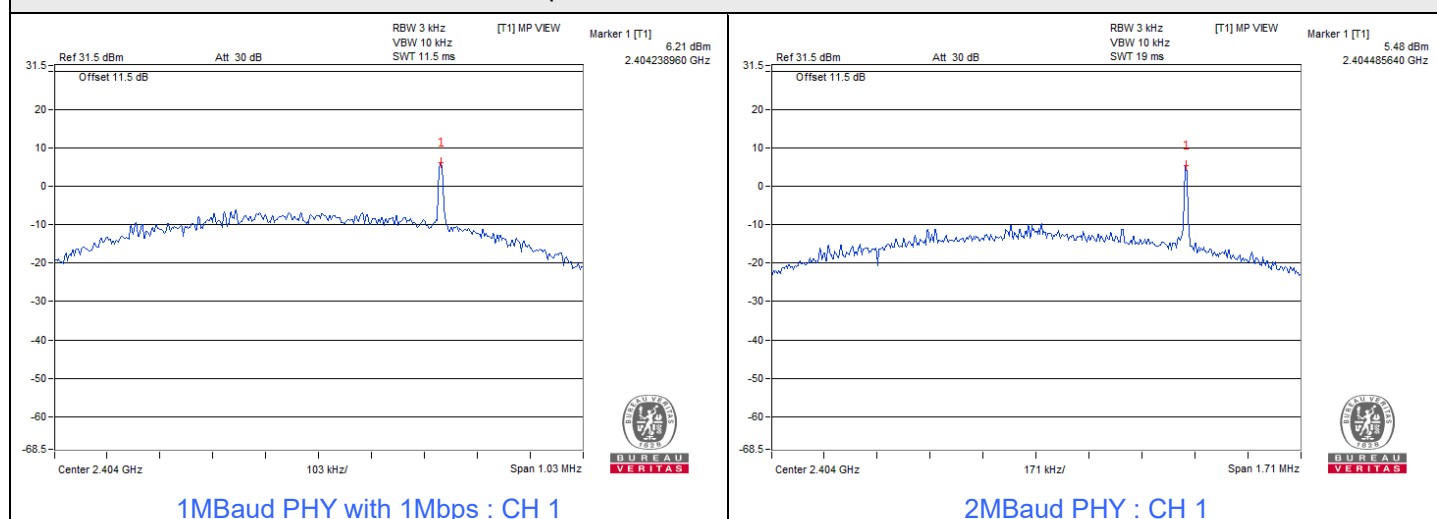
Note: The antenna gain is 2.87 dBi < 6 dBi, so the power density limit shall not be reduced.

2MBaud PHY

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	5.48	8	Pass
19	2440	5.37	8	Pass
38	2478	5.20	8	Pass

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

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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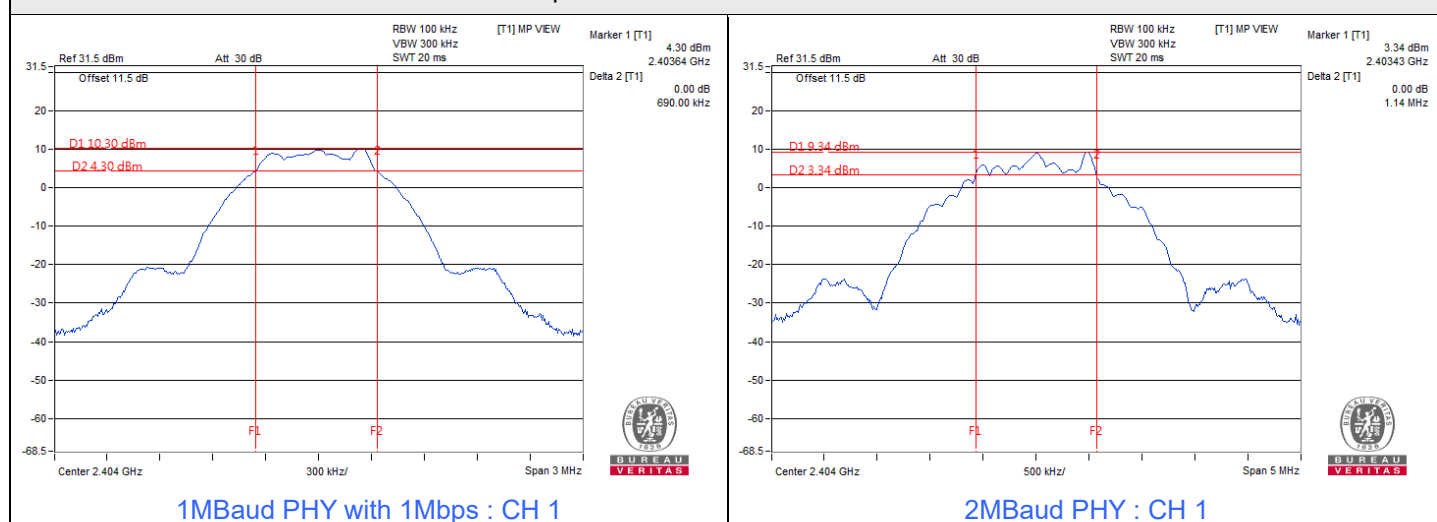
1MBaud PHY with 1Mbps

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.74	0.5	Pass
1	2404	0.69	0.5	Pass
19	2440	0.69	0.5	Pass
38	2478	0.69	0.5	Pass
39	2480	0.74	0.5	Pass

2MBaud PHY

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.14	0.5	Pass
19	2440	1.14	0.5	Pass
38	2478	1.14	0.5	Pass

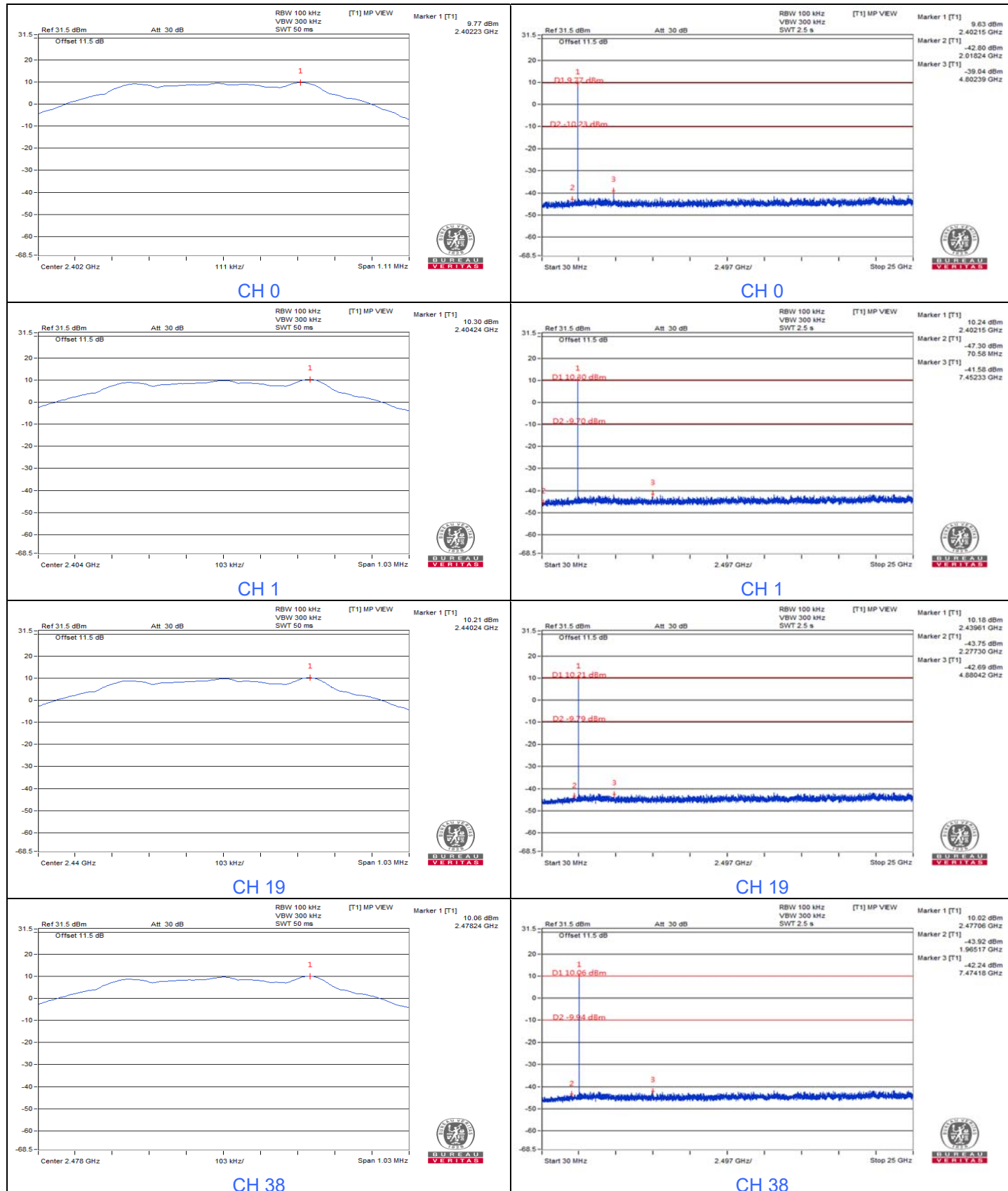
Spectrum Plot of Minimum Value

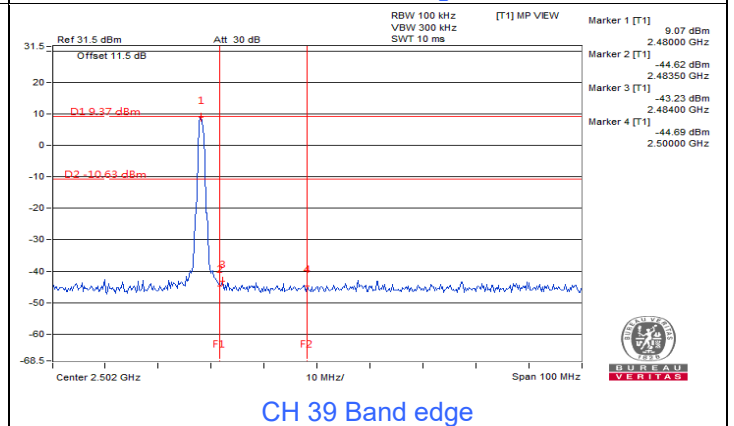
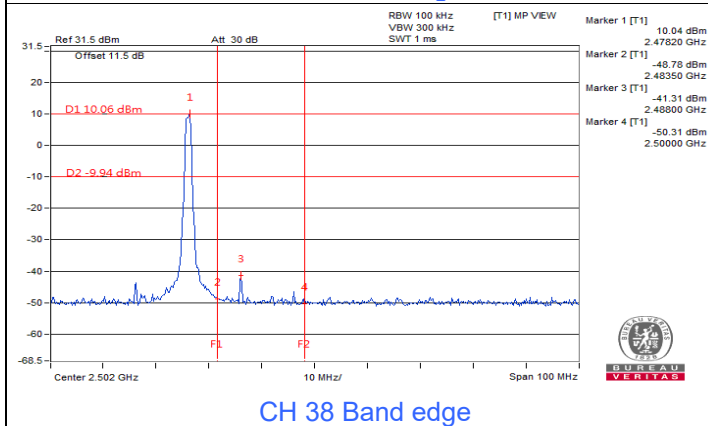
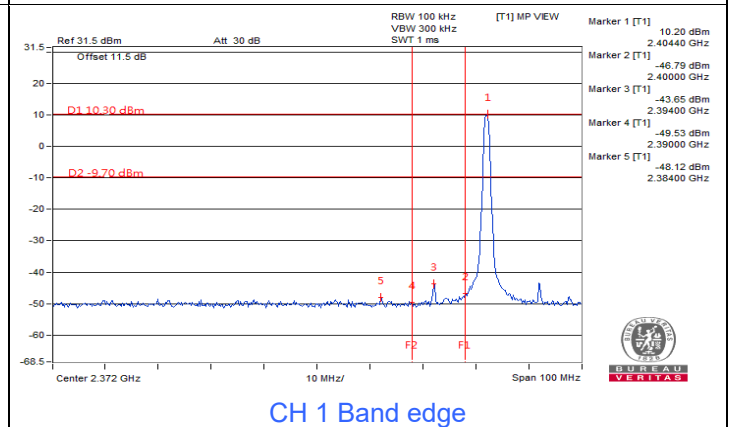
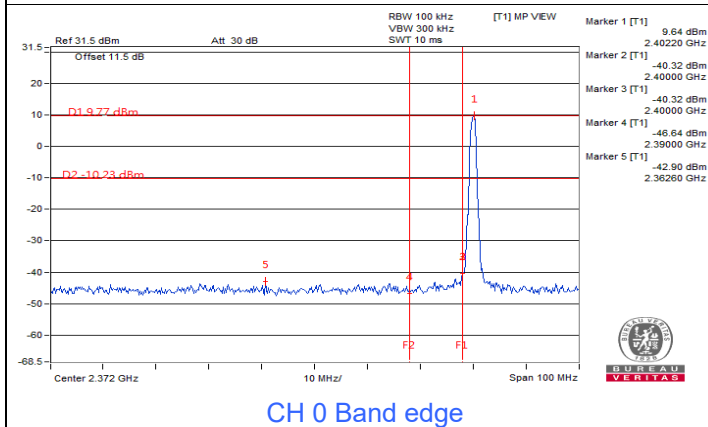
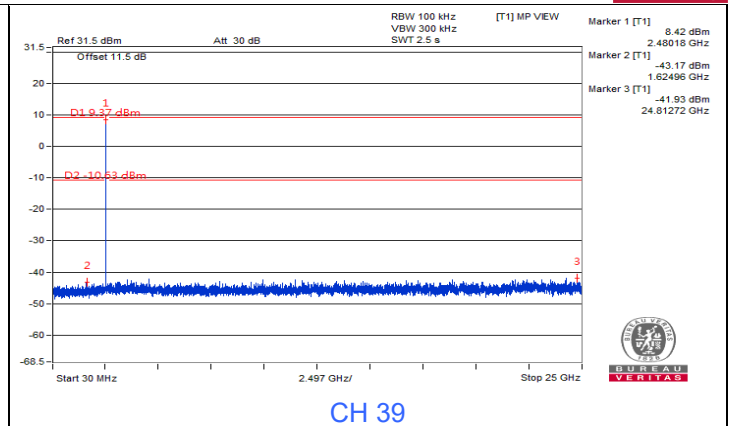
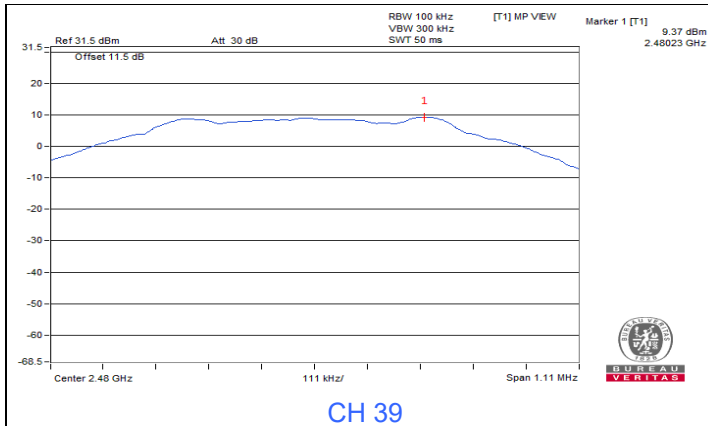


7.4 Conducted Out of Band Emissions

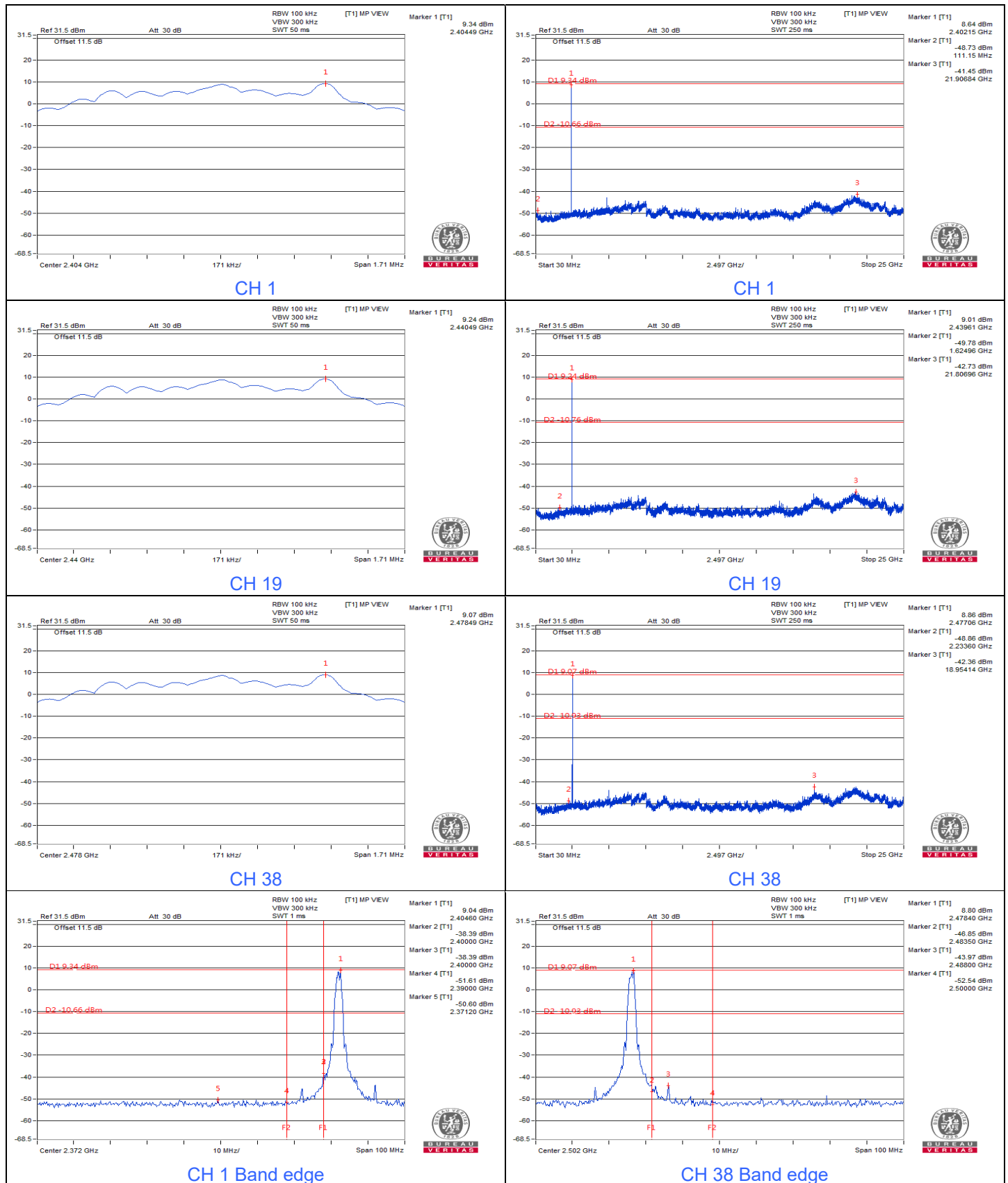
Input Power:	3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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1MBaud PHY with 1Mbps





2MBaud PHY



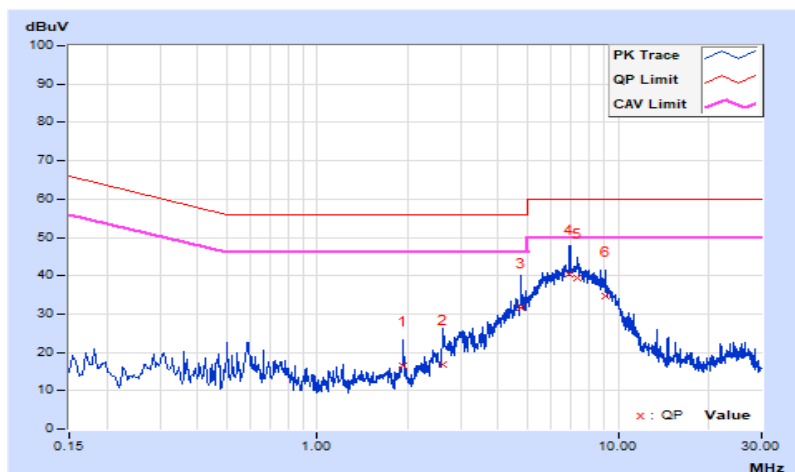
7.5 AC Power Conducted Emissions

RF Mode	1MBaud PHY with 1Mbps	Channel	CH 1 : 2404 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	1.93000	10.19	6.37	4.12	16.56	14.31	56.00	46.00	-39.44	-31.69
2	2.62600	10.21	6.58	0.13	16.79	10.34	56.00	46.00	-39.21	-35.66
3	4.75400	10.26	21.35	14.39	31.61	24.65	56.00	46.00	-24.39	-21.35
4	6.91000	10.28	30.01	22.86	40.29	33.14	60.00	50.00	-19.71	-16.86
5	7.35800	10.28	29.21	22.71	39.49	32.99	60.00	50.00	-20.51	-17.01
6	9.08600	10.30	24.34	17.79	34.64	28.09	60.00	50.00	-25.36	-21.91

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

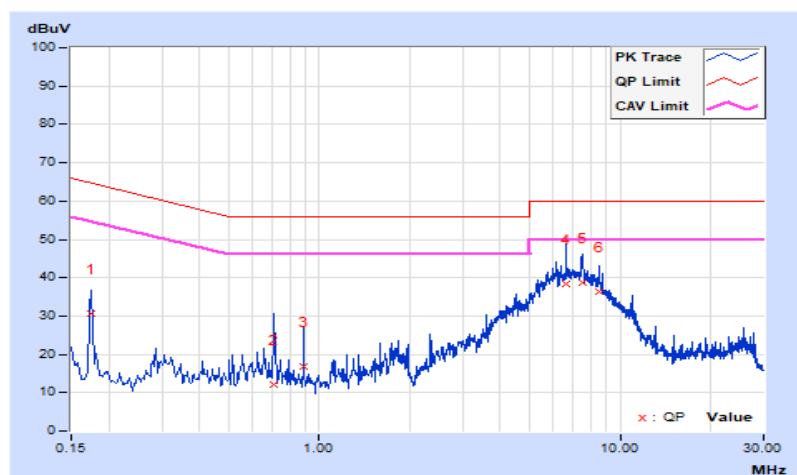


RF Mode	1MBaud PHY with 1Mbps	Channel	CH 1 : 2404 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Rex Wang		

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	0.17400	10.13	20.65	4.59	30.78	14.72	64.77	54.77	-33.99	-40.05
2	0.71000	10.16	1.83	0.15	11.99	10.31	56.00	46.00	-44.01	-35.69
3	0.88600	10.16	6.68	0.55	16.84	10.71	56.00	46.00	-39.16	-35.29
4	6.62600	10.33	28.09	21.49	38.42	31.82	60.00	50.00	-21.58	-18.18
5	7.46600	10.34	28.30	21.69	38.64	32.03	60.00	50.00	-21.36	-17.97
6	8.57800	10.35	26.18	19.22	36.53	29.57	60.00	50.00	-23.47	-20.43

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



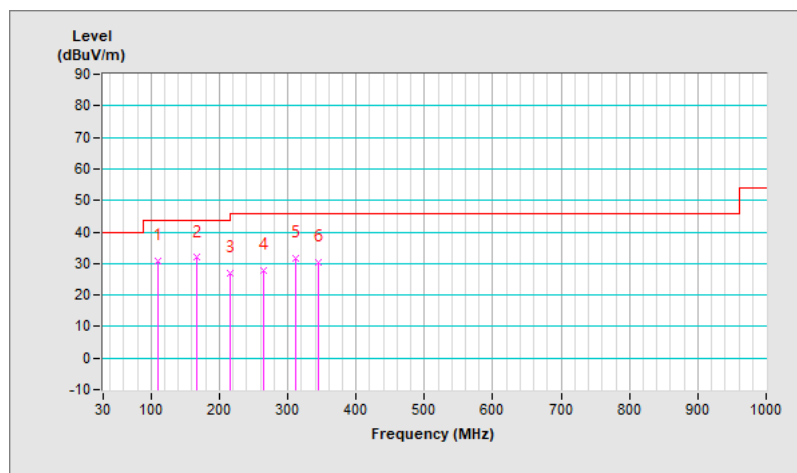
7.6 Unwanted Emissions below 1 GHz

RF Mode	1MBaud PHY with 1Mbps	Channel	CH 1 : 2404 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	109.54	30.7 QP	43.5	-12.8	1.01 H	219	42.3	-11.6
2	167.74	31.8 QP	43.5	-11.7	1.01 H	225	40.2	-8.4
3	215.27	27.0 QP	43.5	-16.5	1.01 H	81	37.7	-10.7
4	263.77	27.7 QP	46.0	-18.3	1.01 H	138	35.6	-7.9
5	312.27	31.6 QP	46.0	-14.4	1.01 H	241	37.8	-6.2
6	345.25	30.4 QP	46.0	-15.6	1.01 H	270	36.3	-5.9

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.

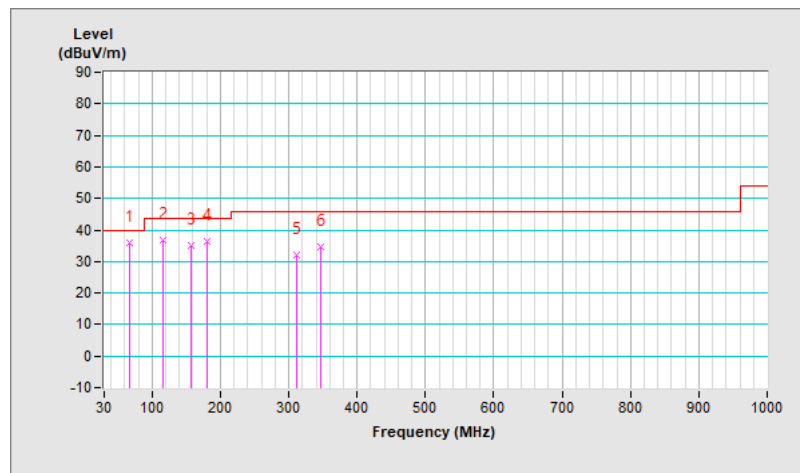


RF Mode	1MBaud PHY with 1Mbps	Channel	CH 1 : 2404 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.9 °C, 76.3 % RH
Tested By	Rex Wang		

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	1.00 V	226	46.1	-10.0
2	116.33	36.8 QP	43.5	-6.7	1.00 V	221	47.8	-11.0
3	158.04	35.1 QP	43.5	-8.4	1.49 V	51	43.2	-8.1
4	181.32	36.4 QP	43.5	-7.1	1.00 V	154	46.1	-9.7
5	312.27	32.1 QP	46.0	-13.9	1.49 V	220	38.3	-6.2
6	346.22	34.7 QP	46.0	-11.3	1.49 V	64	40.6	-5.9

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.



7.7 Unwanted Emissions above 1 GHz

RF Mode	1MBaud PHY with 1Mbps	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5.1 kHz, 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	2.17 H	7	25.8	33.6
2	2390.00	46.2 AV	54.0	-7.8	2.17 H	7	12.6	33.6
3	*2402.00	108.6 PK			2.17 H	7	74.9	33.7
4	*2402.00	107.6 AV			2.17 H	7	73.9	33.7
5	4804.00	50.6 PK	74.0	-23.4	2.32 H	183	40.8	9.8
6	4804.00	38.4 AV	54.0	-15.6	2.32 H	183	28.6	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	2.97 V	72	25.5	33.6
2	2390.00	46.1 AV	54.0	-7.9	2.97 V	72	12.5	33.6
3	*2402.00	106.7 PK			2.97 V	72	73.0	33.7
4	*2402.00	105.7 AV			2.97 V	72	72.0	33.7
5	4804.00	50.4 PK	74.0	-23.6	2.20 V	255	40.6	9.8
6	4804.00	37.4 AV	54.0	-16.6	2.20 V	255	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	1MBaud PHY with 1Mbps	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, 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	2.20 H	9	25.8	33.6
2	2390.00	46.2 AV	54.0	-7.8	2.20 H	9	12.6	33.6
3	*2404.00	108.5 PK			2.20 H	9	74.8	33.7
4	*2404.00	107.7 AV			2.20 H	9	74.0	33.7
5	4808.00	50.9 PK	74.0	-23.1	2.33 H	185	41.1	9.8
6	4808.00	38.4 AV	54.0	-15.6	2.33 H	185	28.6	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	59.0 PK	74.0	-15.0	3.24 V	81	25.4	33.6
2	2390.00	46.1 AV	54.0	-7.9	3.24 V	81	12.5	33.6
3	*2404.00	106.9 PK			3.24 V	81	73.2	33.7
4	*2404.00	105.9 AV			3.24 V	81	72.2	33.7
5	4808.00	50.5 PK	74.0	-23.5	2.28 V	261	40.7	9.8
6	4808.00	37.5 AV	54.0	-16.5	2.28 V	261	27.7	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	1MBaud PHY with 1Mbps	Channel	CH 19 : 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=1 kHz, 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			2.37 H	9	74.8	33.6
2	*2440.00	107.5 AV			2.37 H	9	73.9	33.6
3	4880.00	51.1 PK	74.0	-22.9	2.33 H	189	41.0	10.1
4	4880.00	38.6 AV	54.0	-15.4	2.33 H	189	28.5	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	106.5 PK			3.11 V	79	72.9	33.6
2	*2440.00	105.6 AV			3.11 V	79	72.0	33.6
3	4880.00	50.9 PK	74.0	-23.1	2.24 V	257	40.8	10.1
4	4880.00	38.0 AV	54.0	-16.0	2.24 V	257	27.9	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	1MBaud PHY with 1Mbps	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, 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	*2478.00	107.1 PK			2.58 H	0	73.5	33.6
2	*2478.00	106.1 AV			2.58 H	0	72.5	33.6
3	2483.50	59.2 PK	74.0	-14.8	2.58 H	0	25.6	33.6
4	2483.50	48.7 AV	54.0	-5.3	2.58 H	0	15.1	33.6
5	4956.00	51.2 PK	74.0	-22.8	2.28 H	187	40.8	10.4
6	4956.00	38.8 AV	54.0	-15.2	2.28 H	187	28.4	10.4
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	*2478.00	105.4 PK			3.06 V	87	71.8	33.6
2	*2478.00	104.5 AV			3.06 V	87	70.9	33.6
3	2483.50	59.1 PK	74.0	-14.9	3.06 V	87	25.5	33.6
4	2483.50	48.4 AV	54.0	-5.6	3.06 V	87	14.8	33.6
5	4956.00	50.9 PK	74.0	-23.1	2.25 V	263	40.5	10.4
6	4956.00	38.4 AV	54.0	-15.6	2.25 V	263	28.0	10.4

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

RF Mode	1MBaud PHY with 1Mbps	Channel	CH 39 : 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=5.1 kHz, 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	106.9 PK			2.60 H	6	73.3	33.6
2	*2480.00	106.2 AV			2.60 H	6	72.6	33.6
3	2483.50	60.6 PK	74.0	-13.4	2.60 H	6	27.0	33.6
4	2483.50	50.0 AV	54.0	-4.0	2.60 H	6	16.4	33.6
5	4960.00	51.3 PK	74.0	-22.7	2.35 H	185	40.8	10.5
6	4960.00	39.0 AV	54.0	-15.0	2.35 H	185	28.5	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	105.5 PK			3.05 V	86	71.9	33.6
2	*2480.00	104.5 AV			3.05 V	86	70.9	33.6
3	2483.50	60.4 PK	74.0	-13.6	3.08 V	86	26.8	33.6
4	2483.50	49.5 AV	54.0	-4.5	3.08 V	86	15.9	33.6
5	4960.00	51.0 PK	74.0	-23.0	2.34 V	253	40.5	10.5
6	4960.00	38.7 AV	54.0	-15.3	2.34 V	253	28.2	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.

RF Mode	2MBaud PHY	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, 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	2.19 H	6	25.6	33.6
2	2390.00	46.3 AV	54.0	-7.7	2.19 H	6	12.7	33.6
3	*2404.00	108.7 PK			2.19 H	6	75.0	33.7
4	*2404.00	106.1 AV			2.19 H	6	72.4	33.7
5	4808.00	50.5 PK	74.0	-23.5	2.35 H	189	40.7	9.8
6	4808.00	38.1 AV	54.0	-15.9	2.35 H	189	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	3.69 V	82	25.5	33.6
2	2390.00	46.2 AV	54.0	-7.8	3.69 V	82	12.6	33.6
3	*2404.00	107.1 PK			3.69 V	82	73.4	33.7
4	*2404.00	104.5 AV			3.69 V	82	70.8	33.7
5	4808.00	50.3 PK	74.0	-23.7	2.29 V	260	40.5	9.8
6	4808.00	37.8 AV	54.0	-16.2	2.29 V	260	28.0	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	2MBaud PHY	Channel	CH 19 : 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=1 kHz, 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	108.3 PK			2.38 H	12	74.7	33.6
2	*2440.00	105.7 AV			2.38 H	12	72.1	33.6
3	4880.00	50.9 PK	74.0	-23.1	2.34 H	187	40.8	10.1
4	4880.00	38.6 AV	54.0	-15.4	2.34 H	187	28.5	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	106.6 PK			3.63 V	80	73.0	33.6
2	*2440.00	104.0 AV			3.63 V	80	70.4	33.6
3	4880.00	50.7 PK	74.0	-23.3	2.34 V	257	40.6	10.1
4	4880.00	38.3 AV	54.0	-15.7	2.34 V	257	28.2	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	2MBaud PHY	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, 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	*2478.00	107.0 PK			2.57 H	4	73.4	33.6
2	*2478.00	104.6 AV			2.57 H	4	71.0	33.6
3	2483.50	64.4 PK	74.0	-9.6	2.57 H	4	30.8	33.6
4	2483.50	52.8 AV	54.0	-1.2	2.57 H	4	19.2	33.6
5	4956.00	51.1 PK	74.0	-22.9	2.35 H	187	40.7	10.4
6	4956.00	38.8 AV	54.0	-15.2	2.35 H	187	28.4	10.4
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	*2478.00	105.1 PK			2.79 V	82	71.5	33.6
2	*2478.00	102.7 AV			2.79 V	82	69.1	33.6
3	2483.50	63.5 PK	74.0	-10.5	2.79 V	82	29.9	33.6
4	2483.50	51.3 AV	54.0	-2.7	2.79 V	82	17.7	33.6
5	4956.00	51.0 PK	74.0	-23.0	2.34 V	255	40.6	10.4
6	4956.00	38.5 AV	54.0	-15.5	2.34 V	255	28.1	10.4

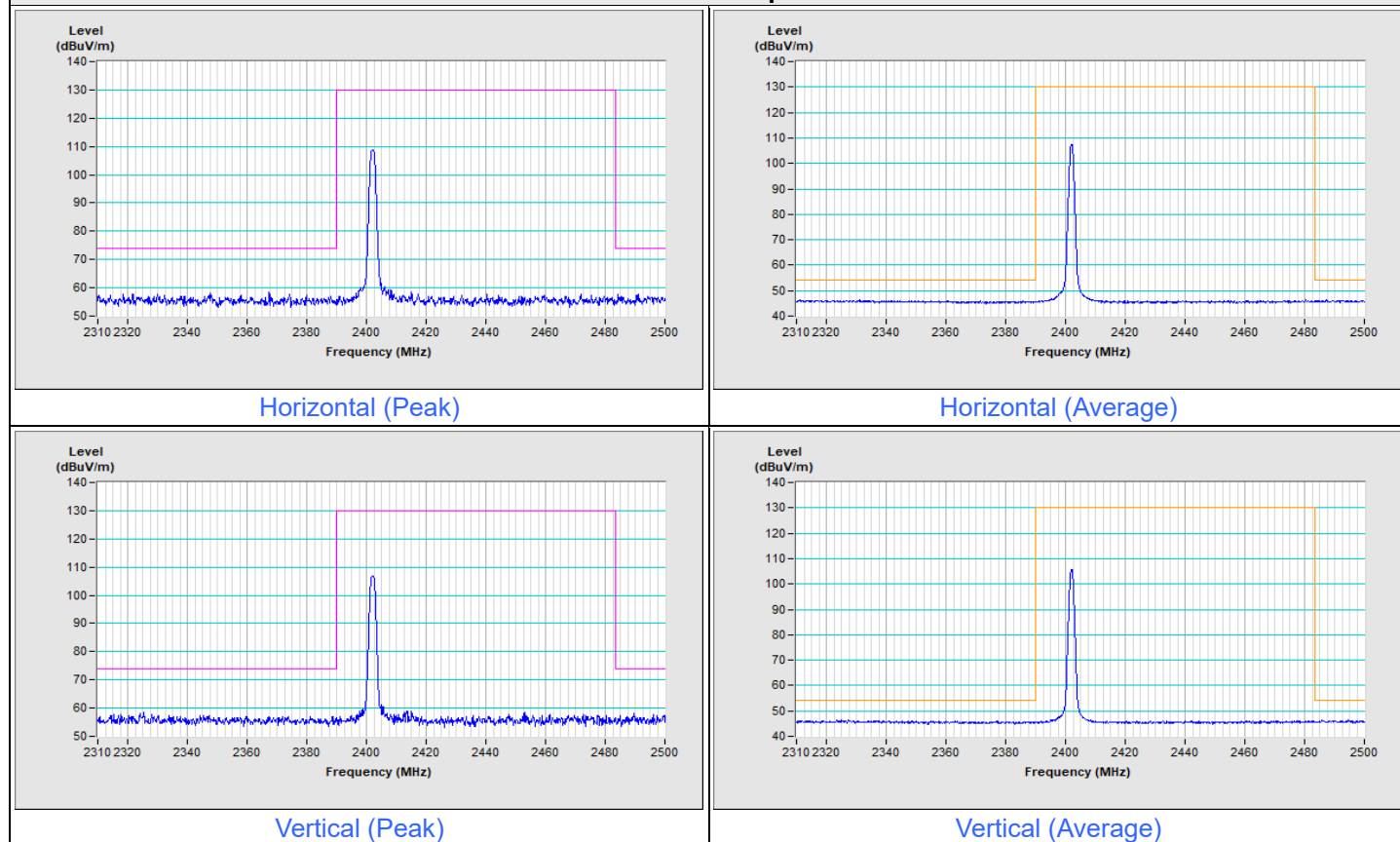
Remarks:

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

Plot of Band Edge

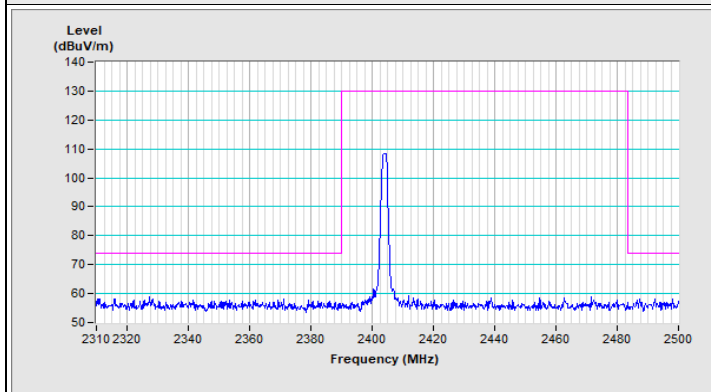
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=5.1 kHz, DET=Peak
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1MBaud PHY with 1Mbps Channel 0

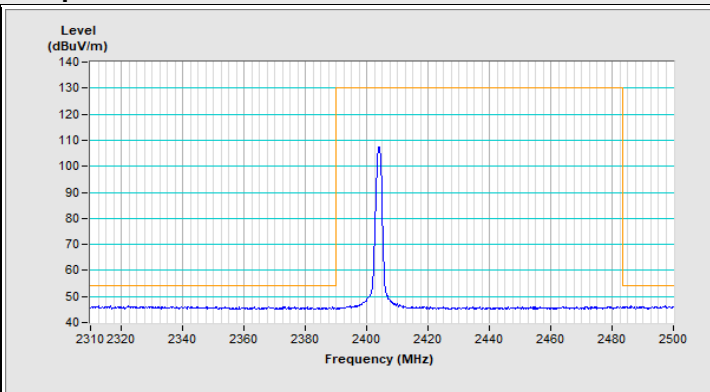


Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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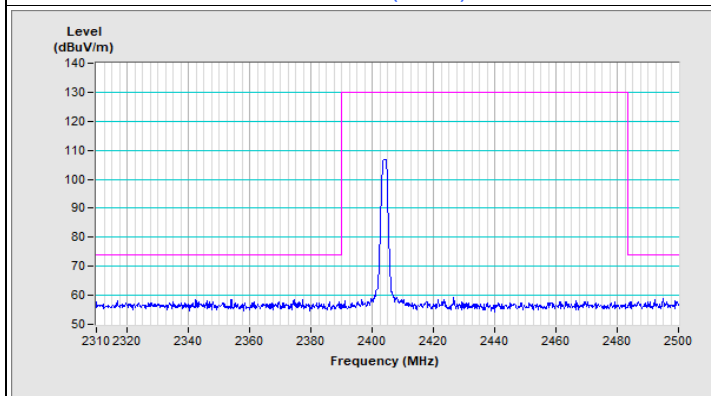
1MBaud PHY with 1Mbps Channel 1



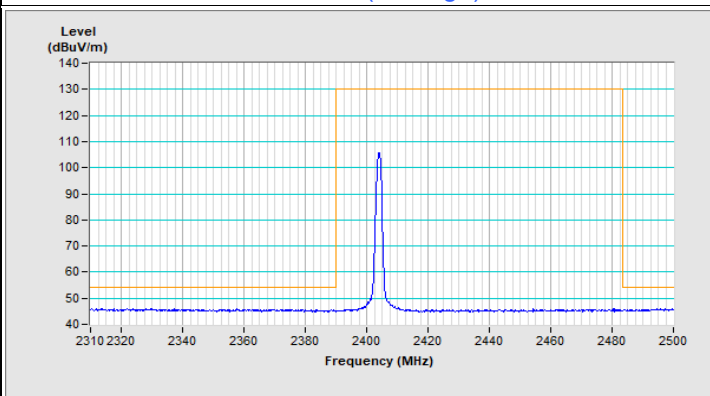
Horizontal (Peak)



Horizontal (Average)

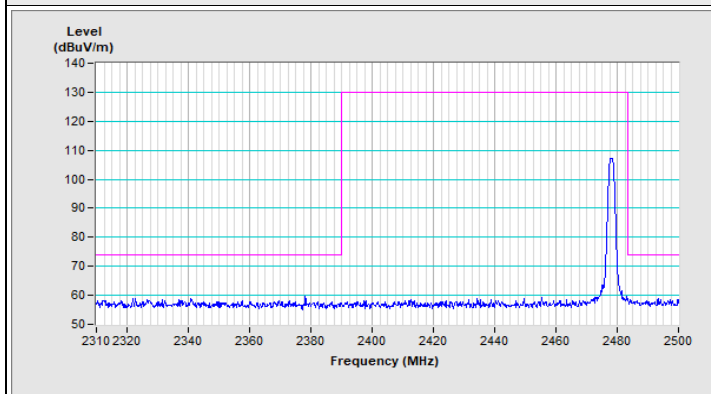


Vertical (Peak)

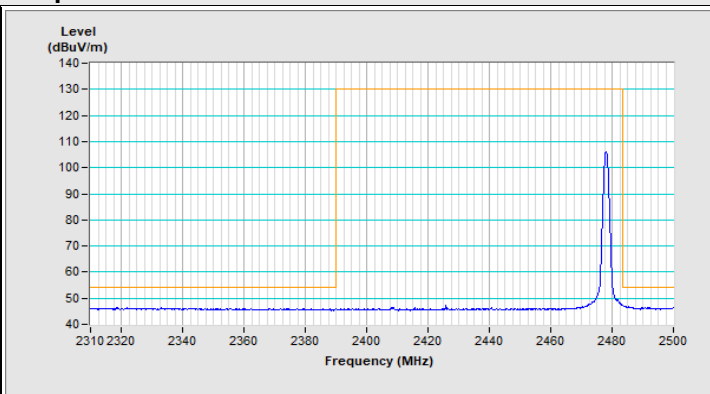


Vertical (Average)

1MBaud PHY with 1Mbps Channel 38

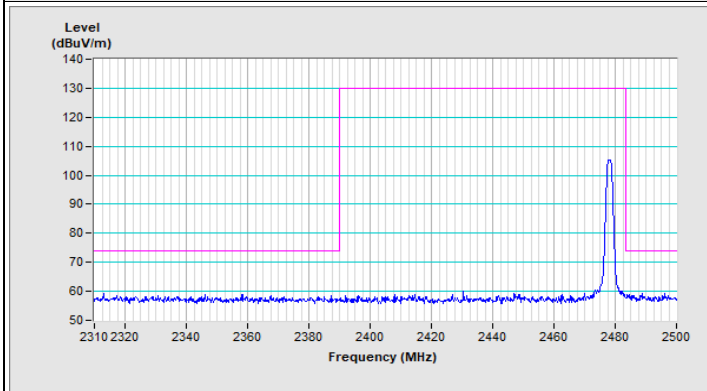


Horizontal (Peak)

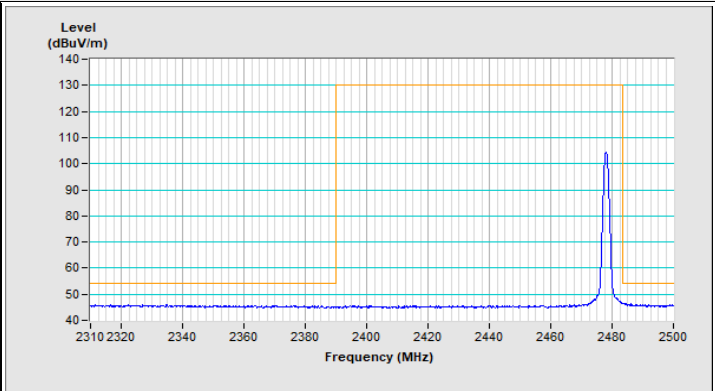


Horizontal (Average)

1MBaud PHY with 1Mbps Channel 38



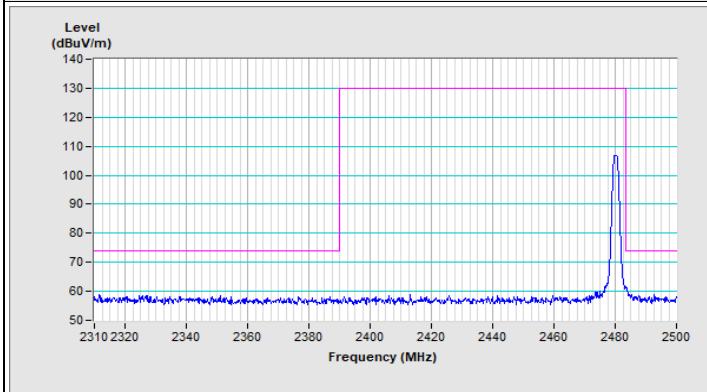
Vertical (Peak)



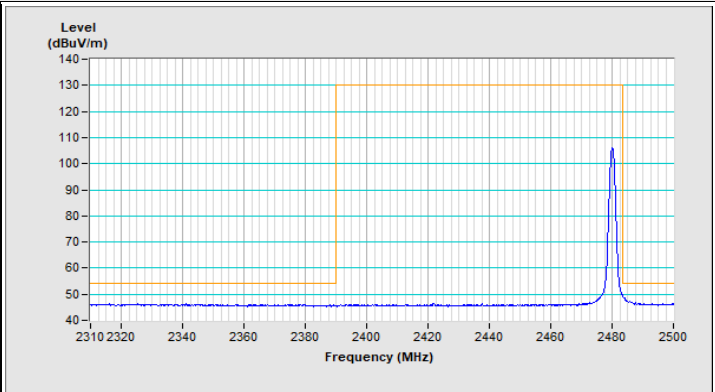
Vertical (Average)

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=5.1 kHz, DET=Peak
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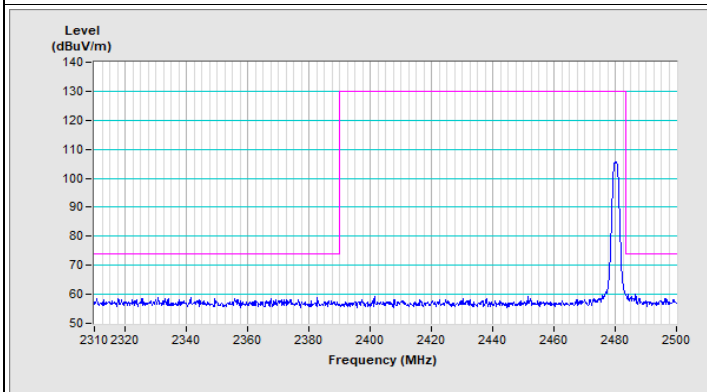
1MBaud PHY with 1Mbps Channel 39



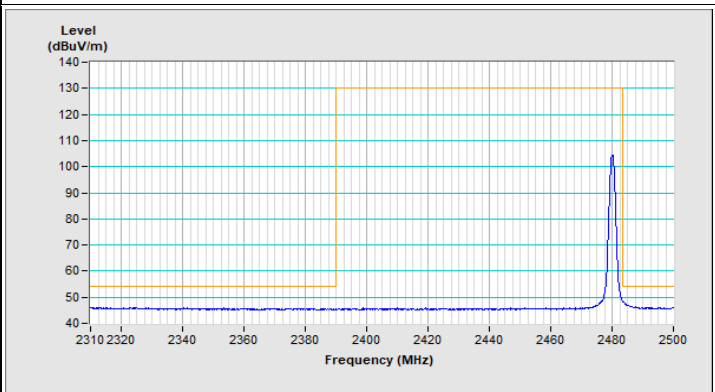
Horizontal (Peak)



Horizontal (Average)



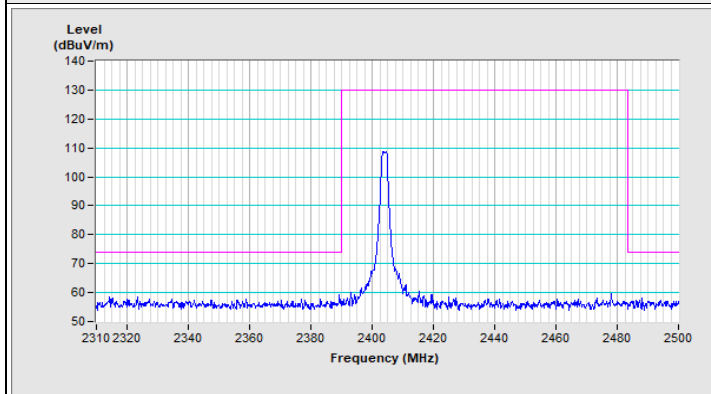
Vertical (Peak)



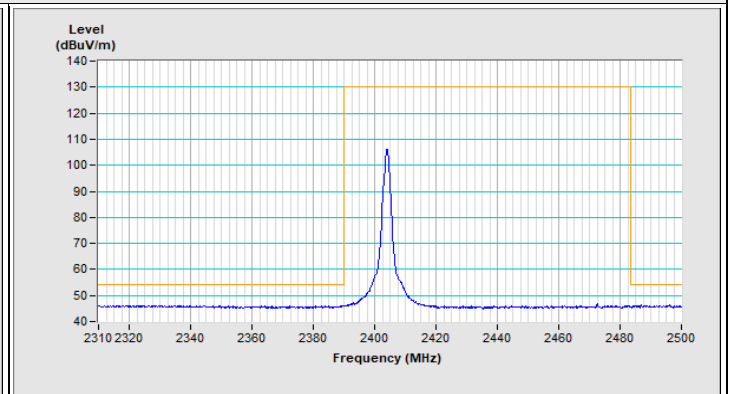
Vertical (Average)

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=1 kHz, DET=Peak
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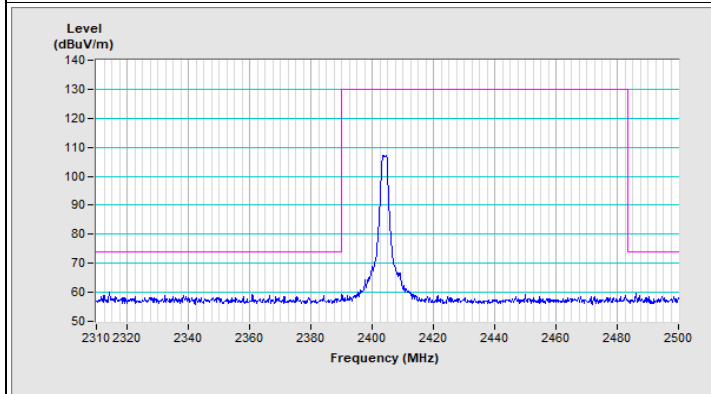
2MBaud PHY Channel 1



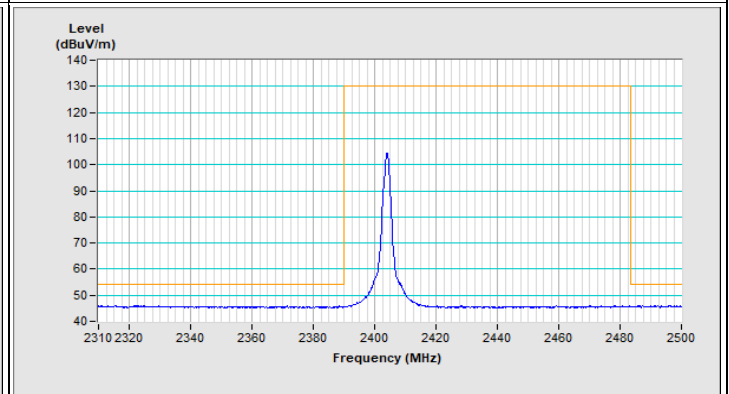
Horizontal (Peak)



Horizontal (Average)

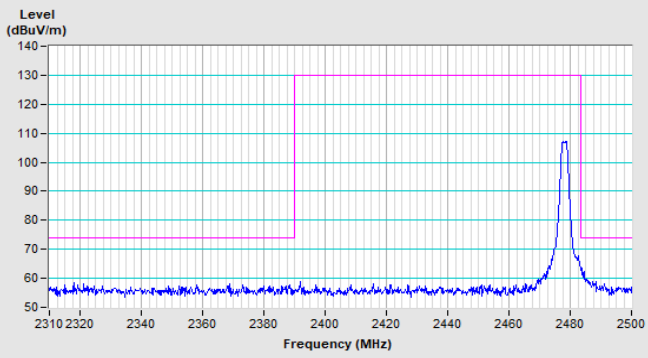


Vertical (Peak)

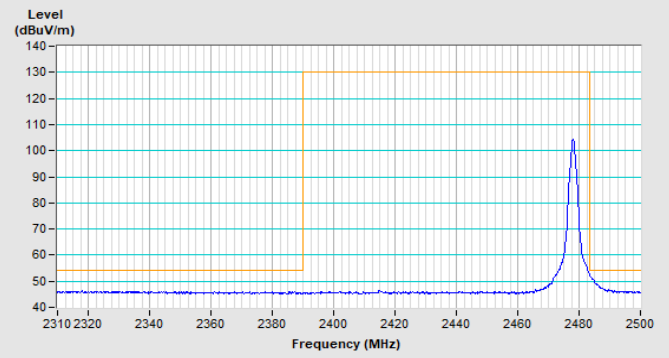


Vertical (Average)

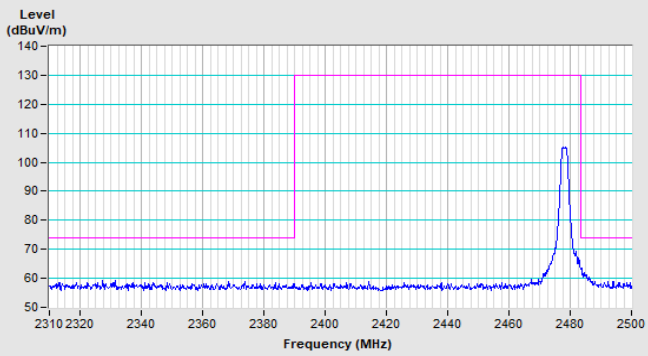
2MBaud PHY Channel 39



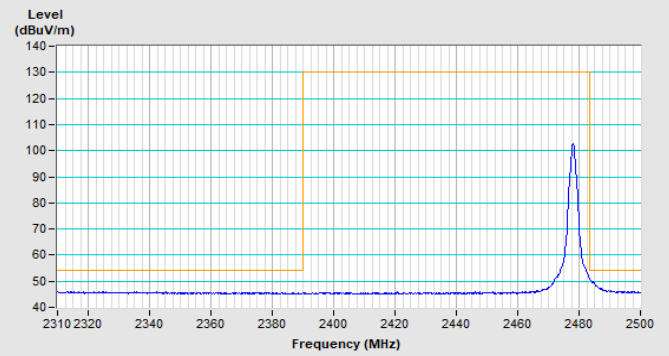
Horizontal (Peak)



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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Email: service.adt@bureauveritas.com

Web Site: <http://ee.bureauveritas.com.tw>

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

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