

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDKG-WTW-P26080434

FCC ID: JNZMR0160

Product: Wireless Mouse

Brand: Logitech, logi, logitech

Model No.: MR0160

Received Date: 2026/8/20

Test Date: 2026/8/26 ~ 2026/9/16

Issued Date: 2026/9/23

Applicant: Logitech Far East Ltd.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____


Wen Yu / Assistant Manager

, Date: _____

2026/9/23

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Prepared by: Vito Lung / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P26080434	Original release.	2026/9/23

1 Certificate

Product: Wireless Mouse

Brand: Logitech, logi, logitech

Test Model: MR0160

Sample Status: Engineering sample

Applicant: Logitech Far East Ltd.

Test Date: 2026/8/26 ~ 2026/9/16

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

Measurement procedure: ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024
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	N/A	Power supply is from battery.
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -5.2 dB at 55.68 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -6.4 dB at 2390.00 MHz and 2483.50 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

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:

Parameter	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Power Spectral Density	-	1.3 dB
6 dB Bandwidth	-	1050.00 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.6 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 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	Wireless Mouse
Brand	Logitech, logi, logitech
Test Model	MR0160
Status of EUT	Engineering sample
Power Supply Rating	1.5 Vdc from battery
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2 Mbps (*Note 1)
Operating Frequency	2.402 GHz ~ 2.48 GHz (*Note 1)
Number of Channel	40 (*Note 1)
Output Power	BT-LE 1M: 4.256 mW (6.29 dBm) BT-LE 2M: 4.227 mW (6.26 dBm) Logi Bolt 1M: 4.178 mW (6.21 dBm) Logi Bolt 2M: 4.159 mW (6.19 dBm)

Note:

1. BT-LE technique supports 1 Mbps and 2 Mbps data rates, both have been evaluated in this test report. Refer to “**section 3.3 Channel List**” for more detail specification.
2. The EUT may have a lot of colors for marketing requirement.
3. The product is supplied by primary alkaline batteries.
4. This device has BT-LE and Logi Bolt functions. Logi Bolt is the same technology as BT-LE then enhancement secure protocol.
5. The EUT has several appearances for marketing, and the variant appearances are electrically identical and utilize the same PCB layout and RF circuitry as declared by the manufacturer.

Marketing Name	M550	M650	M750	M550 L	M650 L	M650L Left	M750 L
Length(mm)	107.7	107.7	107.7	118.2	118.2	118.2	118.2
Width(mm)	60.5	60.5	60.5	65.7	65.7	65.7	65.7
Height(mm)	38.3	38.3	38.3	41.5	41.5	41.5	41.5
Island	Small	Big	Big	Small	Big	Big	Big
DPI	No	No	Yes	No	No	No	Yes
Host LED	1	1	3	1	1	1	3
Battery Indicator	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Side buttons	No	Yes	Yes	No	Yes	Yes for lefty	Yes

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

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Connector Type
1	2.4~2.4835	Printed Monopole	None

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

3.3 Channel List

40 channels are provided for BT-LE & Logi Bolt:

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The EUT has several variants with different appearances. Pre-scan was performed on all variants to determine the worst-case variant as the representative test condition. 2. Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	1. EUT variant selected as the worst case for final testing: M750

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	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
	Logi Bolt 1M	0, 19, 39	GFSK	1Mb/s
	Logi Bolt 2M	1, 19, 38	GFSK	2Mb/s
Power Spectral Density	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
	Logi Bolt 1M	0, 19, 39	GFSK	1Mb/s
	Logi Bolt 2M	1, 19, 38	GFSK	2Mb/s
6 dB Bandwidth / Conducted Out of Band Emissions	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
	Logi Bolt 1M	0, 19, 39	GFSK	1Mb/s
	Logi Bolt 2M	1, 19, 38	GFSK	2Mb/s
Unwanted Emissions below 1 GHz	BT-LE 1M	0	GFSK	1Mb/s
	Logi Bolt 1M	0	GFSK	1Mb/s
Unwanted Emissions above 1 GHz	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	1, 19, 38	GFSK	2Mb/s
	Logi Bolt 1M	0, 19, 39	GFSK	1Mb/s
	Logi Bolt 2M	1, 19, 38	GFSK	2Mb/s

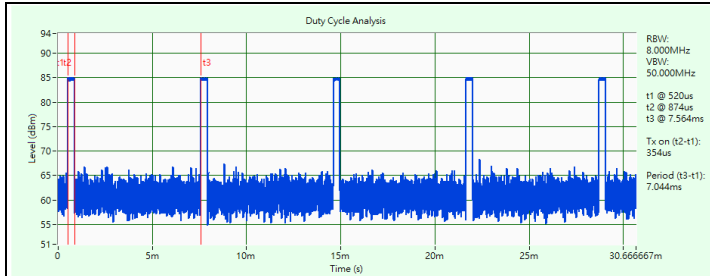
3.5 Duty Cycle of Test Signal

BT-LE 1M: Duty cycle = $0.354 \text{ ms} / 7.044 \text{ ms} \times 100\% = 5.0\%$

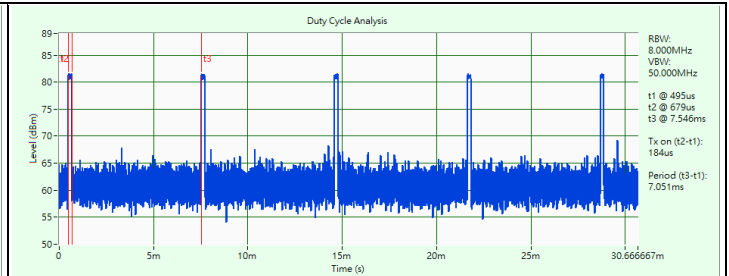
BT-LE 2M: Duty cycle = $0.184 \text{ ms} / 7.051 \text{ ms} \times 100\% = 2.6\%$

Logi Bolt 1M: Duty cycle = $0.356 \text{ ms} / 7.043 \text{ ms} \times 100\% = 5.1\%$

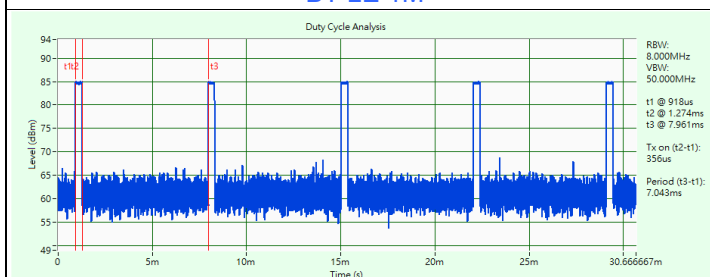
Logi Bolt 2M: Duty cycle = $0.184 \text{ ms} / 7.05 \text{ ms} \times 100\% = 2.6\%$



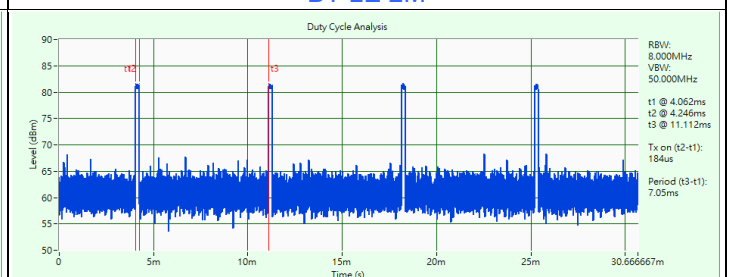
BT-LE 1M



BT-LE 2M



Logi Bolt 1M



Logi Bolt 2M

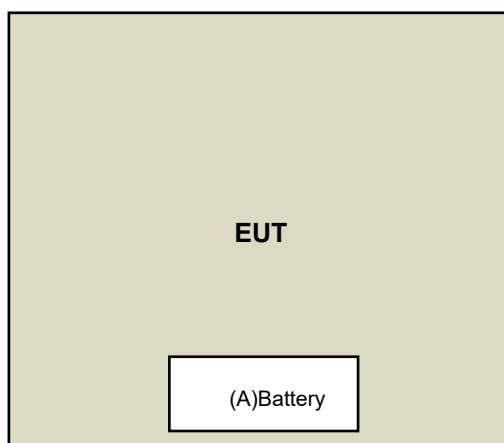
3.6 Test Program Used and Operation Descriptions

Controlling software (RF Sample with Receiver [Number Lock]) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

Test Item	Operation Description
RF Output Power	BLE1M TX Modulated low duty 2402MHz
Power Spectral Density	BLE1M TX Modulated low duty 2440MHz
6 dB Bandwidth	BLE1M TX Modulated low duty 2480MHz
Conducted Out of Band Emissions	BLE2M TX Modulated low duty 2404MHz
Unwanted Emissions above 1 GHz	BLE2M TX Modulated low duty 2440MHz
	BLE2M TX Modulated low duty 2478MHz
Unwanted Emissions below 1 GHz	BLE1M TX Modulated low duty 2402MHz

Note: The operational description for Logi Bolt follows the same procedure as described for BLE.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Battery	Energizer	AA	N/A	N/A	Provided by Lab

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
Fixed Attenuator Woken	00800A1K01A-20	00800A1K01A-20-02	2026/5/21	2027/5/20
Pulse Power Sensor Anritsu	MA2411B	1726433	2026/5/8	2027/5/7
RF Power Meter Anritsu	ML2496A	1529003	2026/6/15	2027/6/14

Notes:

1. The test was performed in HC - Oven room 2(Hsinchu).
2. Tested Date: 2026/8/26

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2026/5/21	2027/5/20
MXA Signal Analyzer Keysight	N9020B	MY60112408	2026/2/12	2027/2/11
Software	ADT_RF Test Software v8.5.6.4	N/A	N/A	N/A

Notes:

1. The test was performed in HC - Oven room 2(Hsinchu).
2. Tested Date: 2026/8/26

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 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-0842	2025/9/16	2026/9/15
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2026/3/15	2027/3/14
Loop Antenna TESEQ	HLA 6121	63620	2025/10/20	2026/10/19
MXE EMI Receiver Keysight	N9038A	MY54450088	2026/4/1	2027/3/31
Preamplifier EMCI	EMC330N	980538	2026/3/15	2027/3/14
PXA Signal Analyzer Keysight	N9030B	MY57141948	2026/5/25	2027/5/24
RF Coaxial Cable PEWC	8D	966-5-1	2026/3/15	2027/3/14
		966-5-2	2026/3/15	2027/3/14
		966-5-3	2026/3/15	2027/3/14
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in HC - 966 Chamber No. 5(Hsinchu).
2. Tested Date: 2026/9/16

4.6 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2025/11/9	2026/11/8
	BBHA 9170	9170-739	2025/11/9	2026/11/8
MXE EMI Receiver Keysight	N9038A	MY54450088	2026/4/1	2027/3/31
Preamplifier EMCI	EMC12630SE	980509	2026/1/17	2027/1/16
	EMC184045SE	980387	2026/8/5	2027/8/4
PXA Signal Analyzer Keysight	N9030B	MY57141948	2026/5/25	2027/5/24
RF Coaxial Cable EMCI	EMC102-KM-KM-1200	160924	2026/1/15	2027/1/14
	EMC102-KM-KM-4000	200214	2026/1/15	2027/1/14
	EMC104-SM-SM-1500	180503	2026/3/7	2027/3/6
	EMC104-SM-SM-2000	180501	2026/3/7	2027/3/6
	EMC104-SM-SM-6000	180506	2026/3/7	2027/3/6
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in HC - 966 Chamber No. 5(Hsinchu).
2. Tested Date: 2026/9/1 ~ 2026/9/16

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 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).

5.6 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

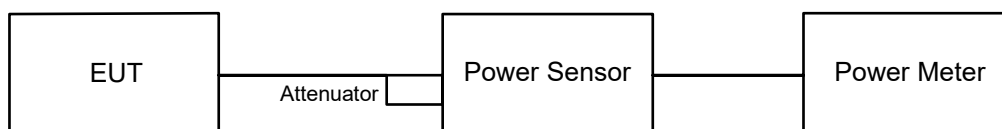
Notes:

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



Note: The correction factor has already been compensated by the instrument.

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.

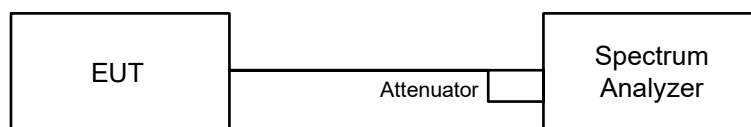
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

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



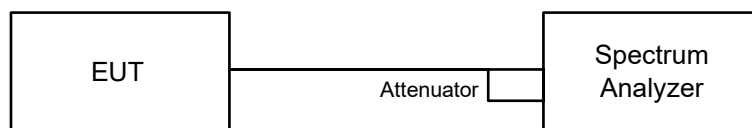
Note: The correction factor has already been compensated by the instrument.

6.2.2 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span > 1.5 times the DTS bandwidth.
- c. Set the RBW to: 3 kHz.
- d. Set the VBW $\geq 3 \times$ RBW.
- e. Detector = peak.
- f. Sweep time = No faster than coupled (auto) time.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup



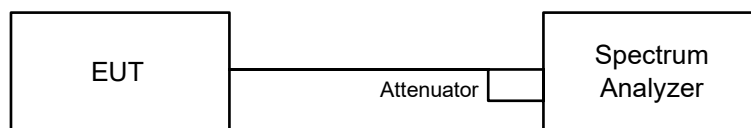
Note: The correction factor has already been compensated by the instrument.

6.3.2 Test Procedure

- a. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- b. Set the VBW $\geq [3 \times \text{RBW}]$.
- c. Detector = peak.
- d. Trace mode = max-hold.
- e. Sweep = No faster than coupled (auto) time.
- f. Allow the trace to stabilize.
- g. Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



Note: The correction factor has already been compensated by the instrument.

6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

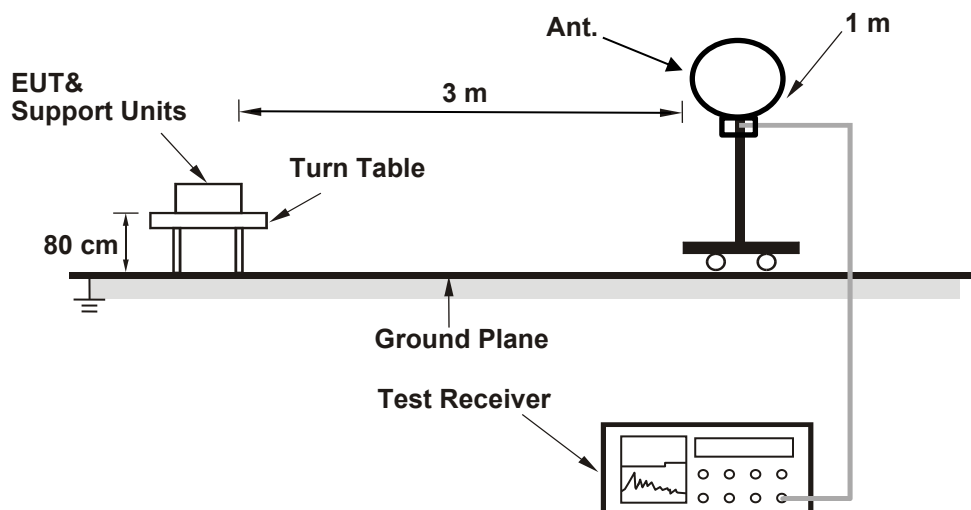
MEASUREMENT PROCEDURE OOB

- Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
- Set RBW = 100 kHz.
- Set VBW ≥ 300 kHz.
- Detector = peak.
- Sweep = No faster than coupled (auto) time.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

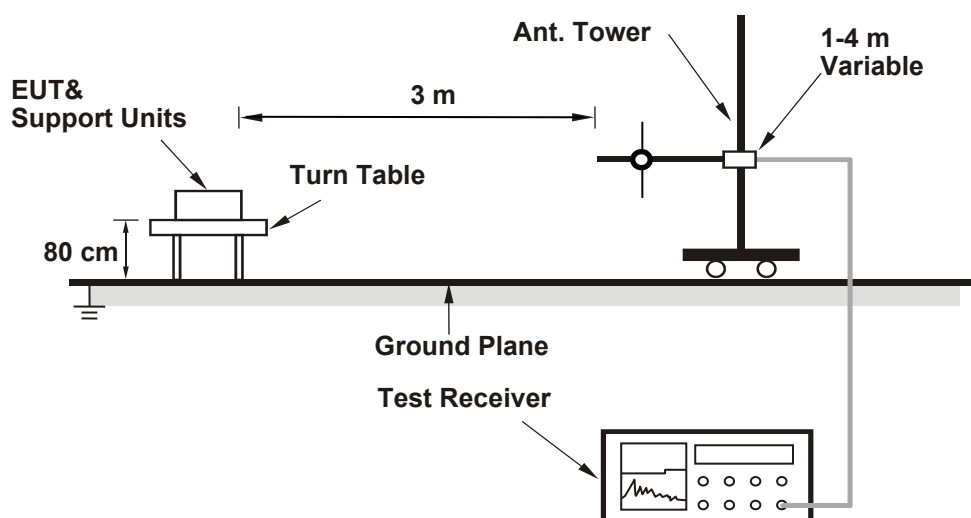
6.5 Unwanted Emissions below 1 GHz

6.5.1 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).

6.5.2 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 (however, peak detector measurements may be used to determine compliance with QP requirements), 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

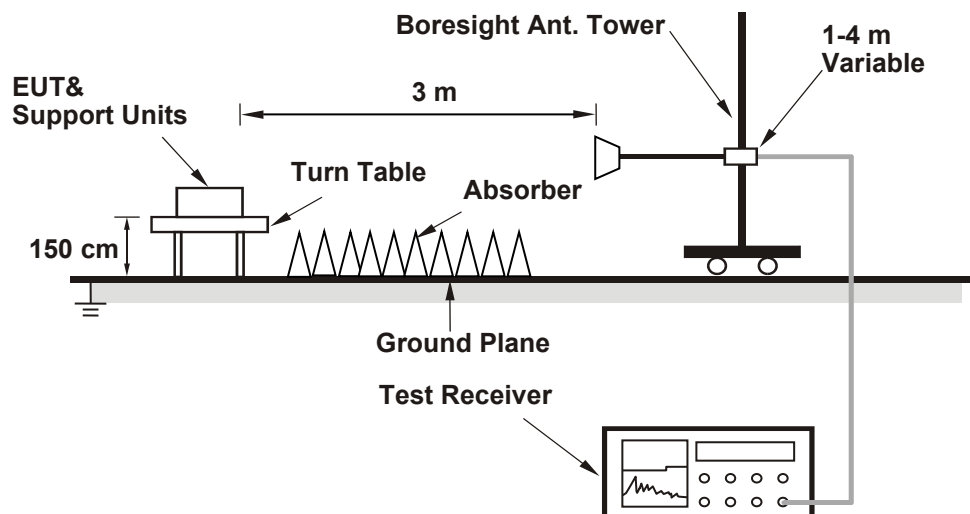
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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(QP) detect function, Average(AV) detect function, Peak(PK) detect function and specified bandwidth with maximum hold mode when the test frequencies less than or equal to 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 (however, peak detector measurements may be used to determine compliance with QP requirements).
2. All modes of operation were investigated and the worst-case emissions are reported.

6.6 Unwanted Emissions above 1 GHz

6.6.1 Test Setup



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

6.6.2 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 fundamental and harmonic signal measurement, according to KDB 558074 D01 15.247 Meas Guidance v05r02 section 8.1(c)(3). The spectrum analyzer settings meet the requirements of 11.12.2.4 in ANSI C63.10 for making a Peak measurement, the average value = Peak value + duty cycle correction factor. The duty cycle measurement refers to FCC 47 CFR Part 15C section 15.35 (c). For duty cycle correction factor values, see the Test Signal Duty Cycle section in this report.
- 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:	1.5 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	MAX Tseng
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For Peak Power

BT-LE 1M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	4.256	6.29	30	Pass
19	2440	3.864	5.87	30	Pass
39	2480	3.428	5.35	30	Pass

Note: The antenna gain is 1 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2404	4.227	6.26	30	Pass
19	2440	3.837	5.84	30	Pass
38	2478	3.443	5.37	30	Pass

Note: The antenna gain is 1 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

Logi Bolt 1M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	4.178	6.21	30	Pass
19	2440	3.793	5.79	30	Pass
39	2480	3.381	5.29	30	Pass

Note: The antenna gain is 1 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

Logi Bolt 2M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2404	4.159	6.19	30	Pass
19	2440	3.784	5.78	30	Pass
38	2478	3.404	5.32	30	Pass

Note: The antenna gain is 1 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

For Average Power

BT-LE 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.169	6.20
19	2440	3.776	5.77
39	2480	3.334	5.23

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	4.14	6.17
19	2440	3.767	5.76
38	2478	3.35	5.25

Logi Bolt 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.093	6.12
19	2440	3.698	5.68
39	2480	3.289	5.17

Logi Bolt 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	4.074	6.10
19	2440	3.715	5.70
38	2478	3.311	5.20

7.2 Power Spectral Density

Input Power:	1.5 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	MAX Tseng
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BT-LE 1M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	5.36	8	Pass
19	2440	5.16	8	Pass
39	2480	4.77	8	Pass

Note: The antenna gain is 1 dBi <= 6 dBi, so the power density limit shall not be reduced.

BT-LE 2M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	2.29	8	Pass
19	2440	1.52	8	Pass
38	2478	1.04	8	Pass

Note: The antenna gain is 1 dBi <= 6 dBi, so the power density limit shall not be reduced.

Logi Bolt 1M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	5.94	8	Pass
19	2440	5.16	8	Pass
39	2480	4.36	8	Pass

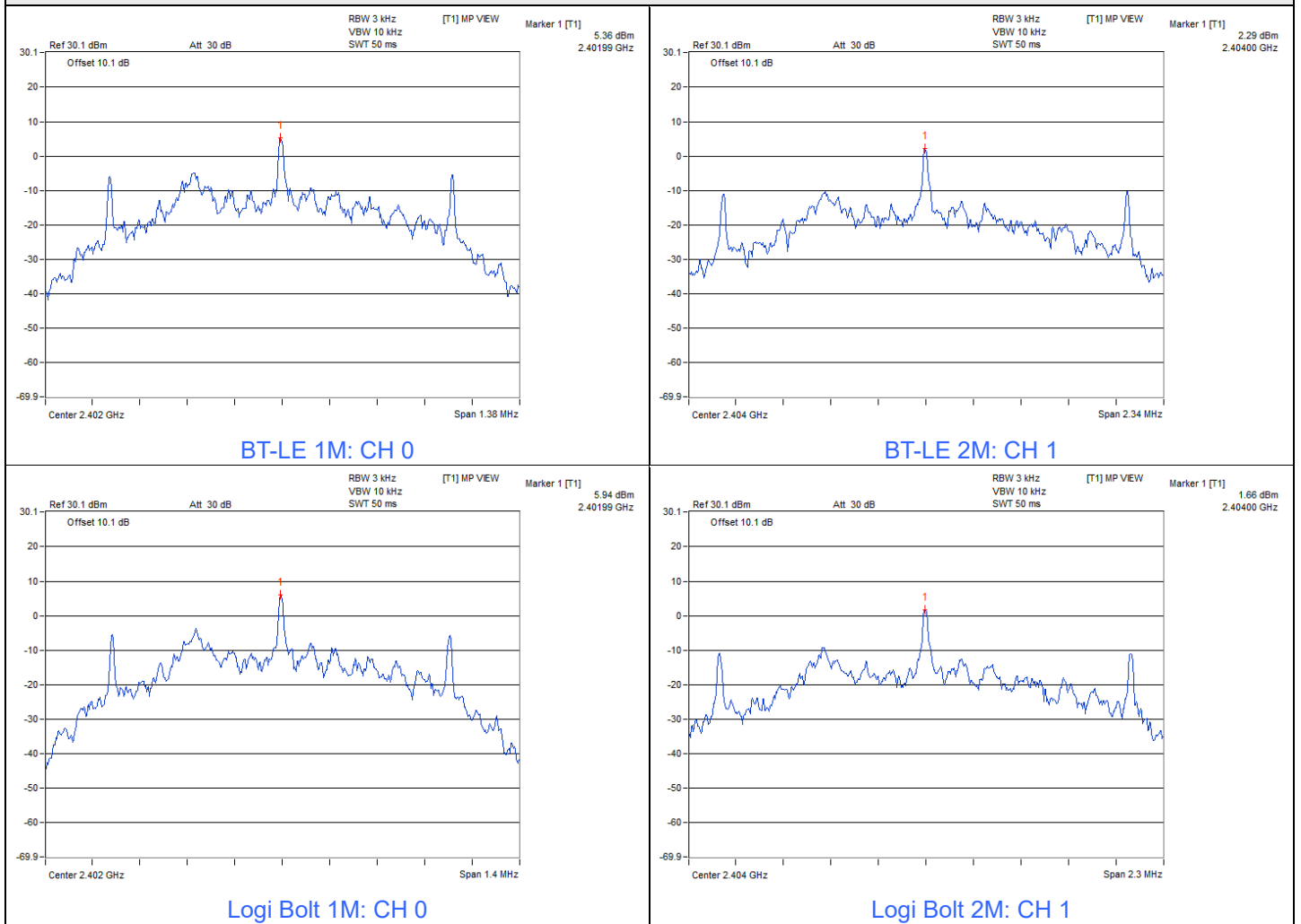
Note: The antenna gain is 1 dBi <= 6 dBi, so the power density limit shall not be reduced.

Logi Bolt 2M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	1.66	8	Pass
19	2440	1.43	8	Pass
38	2478	0.06	8	Pass

Note: The antenna gain is 1 dBi <= 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	1.5 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	MAX Tseng
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BT-LE 1M

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

BT-LE 2M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.17	0.5	Pass
19	2440	1.12	0.5	Pass
38	2478	1.13	0.5	Pass

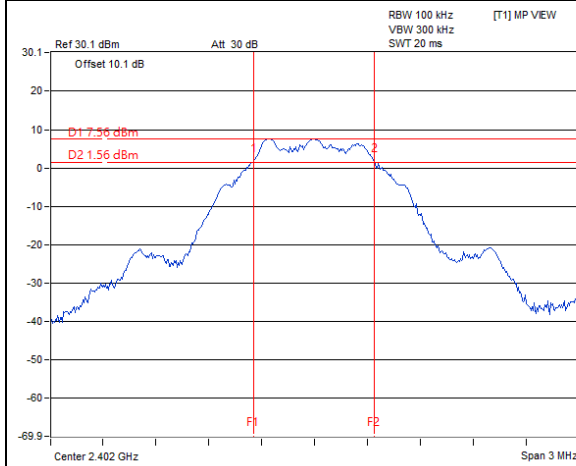
Logi Bolt 1M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.7	0.5	Pass
19	2440	0.68	0.5	Pass
39	2480	0.69	0.5	Pass

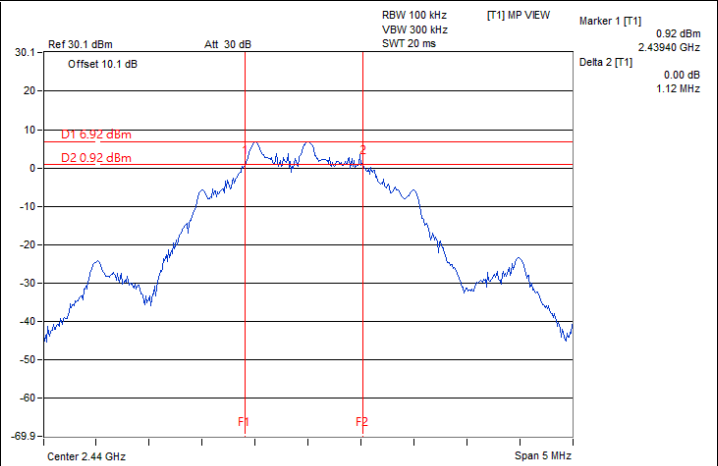
Logi Bolt 2M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.15	0.5	Pass
19	2440	1.12	0.5	Pass
38	2478	1.23	0.5	Pass

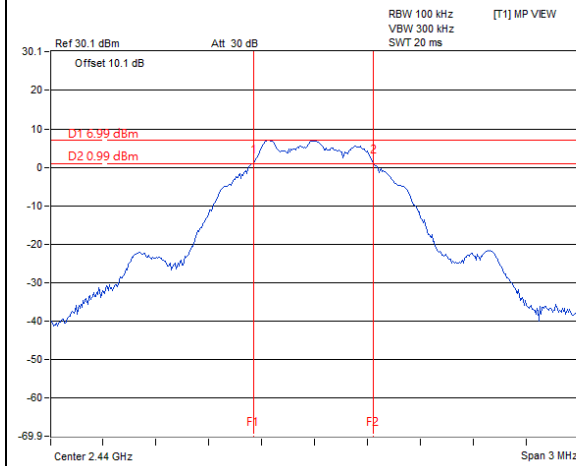
Spectrum Plot of Minimum Value



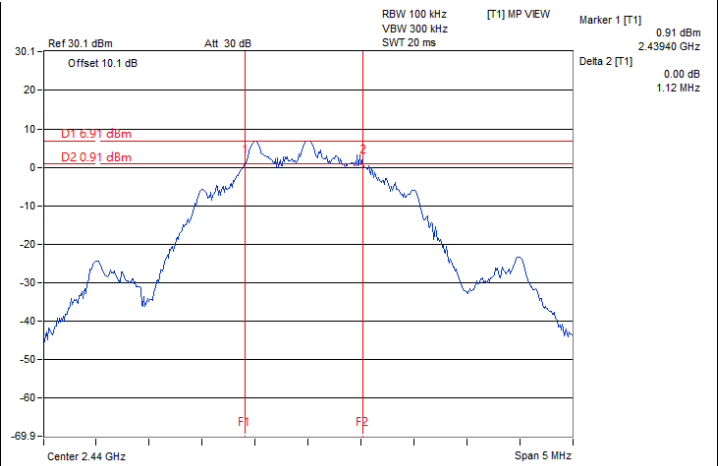
BT-LE 1M: CH 0



BT-LE 2M: CH 19



Logi Bolt 1M: CH 19

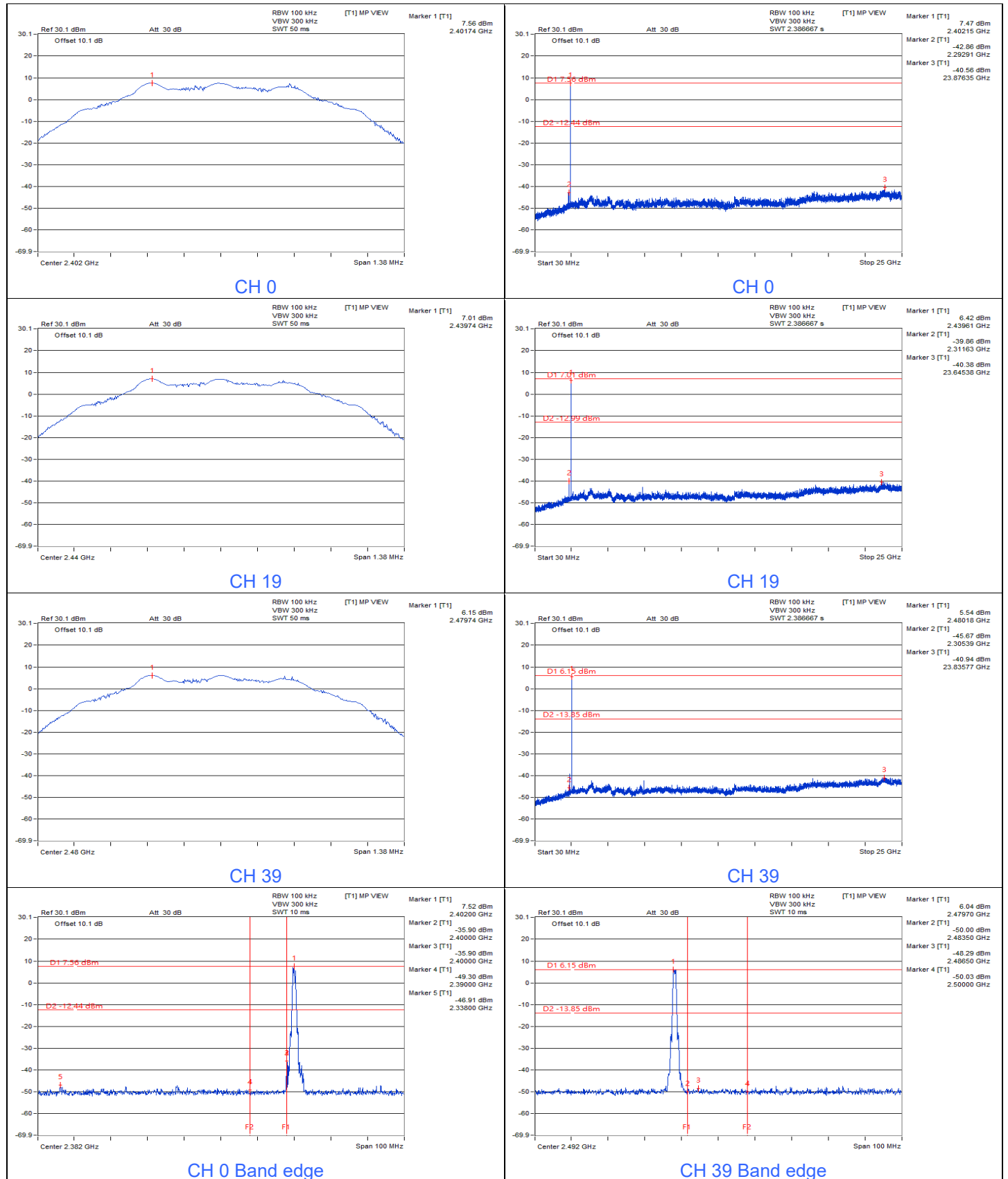


Logi Bolt 2M: CH 19

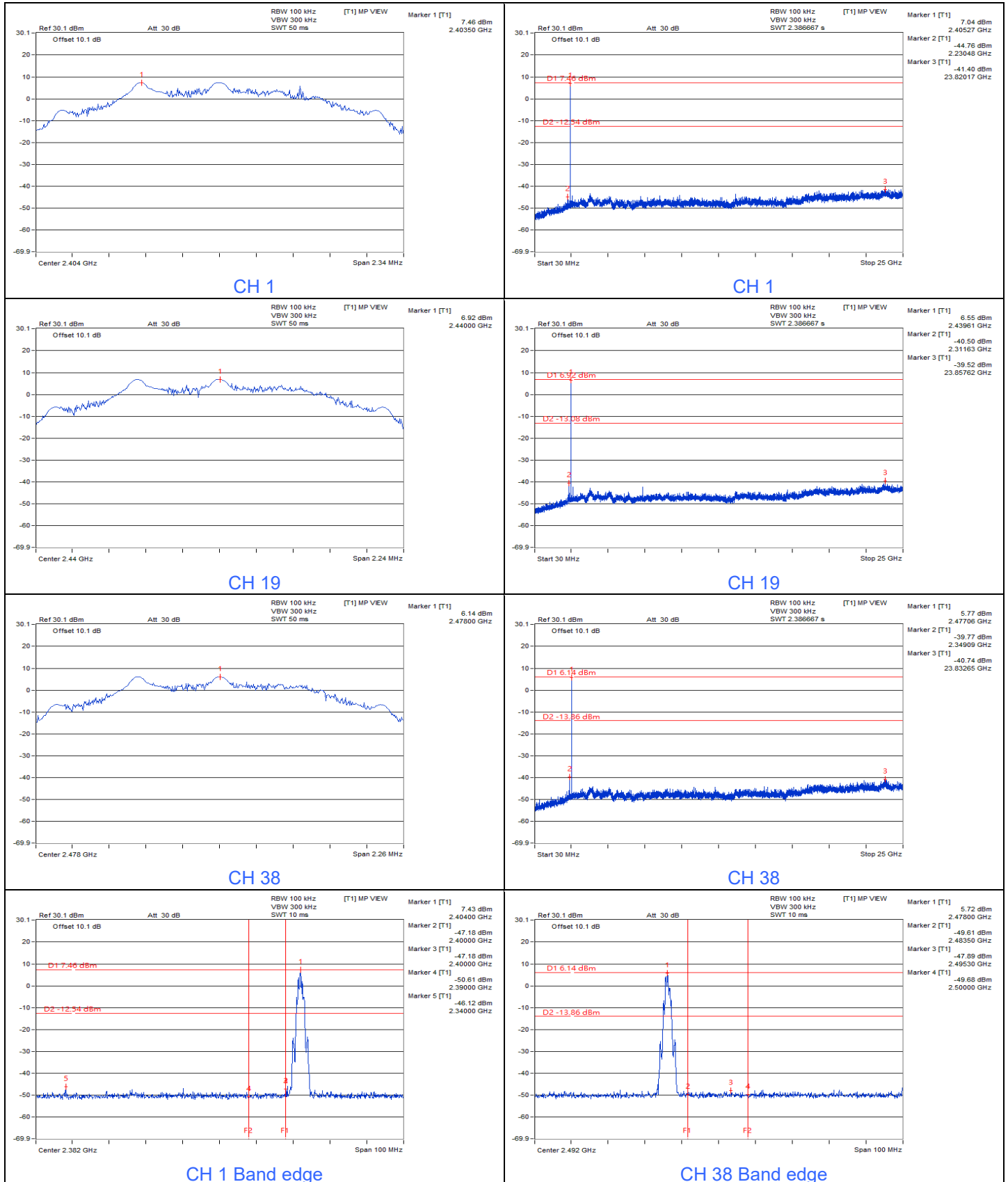
7.4 Conducted Out of Band Emissions

Input Power:	1.5 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	MAX Tseng
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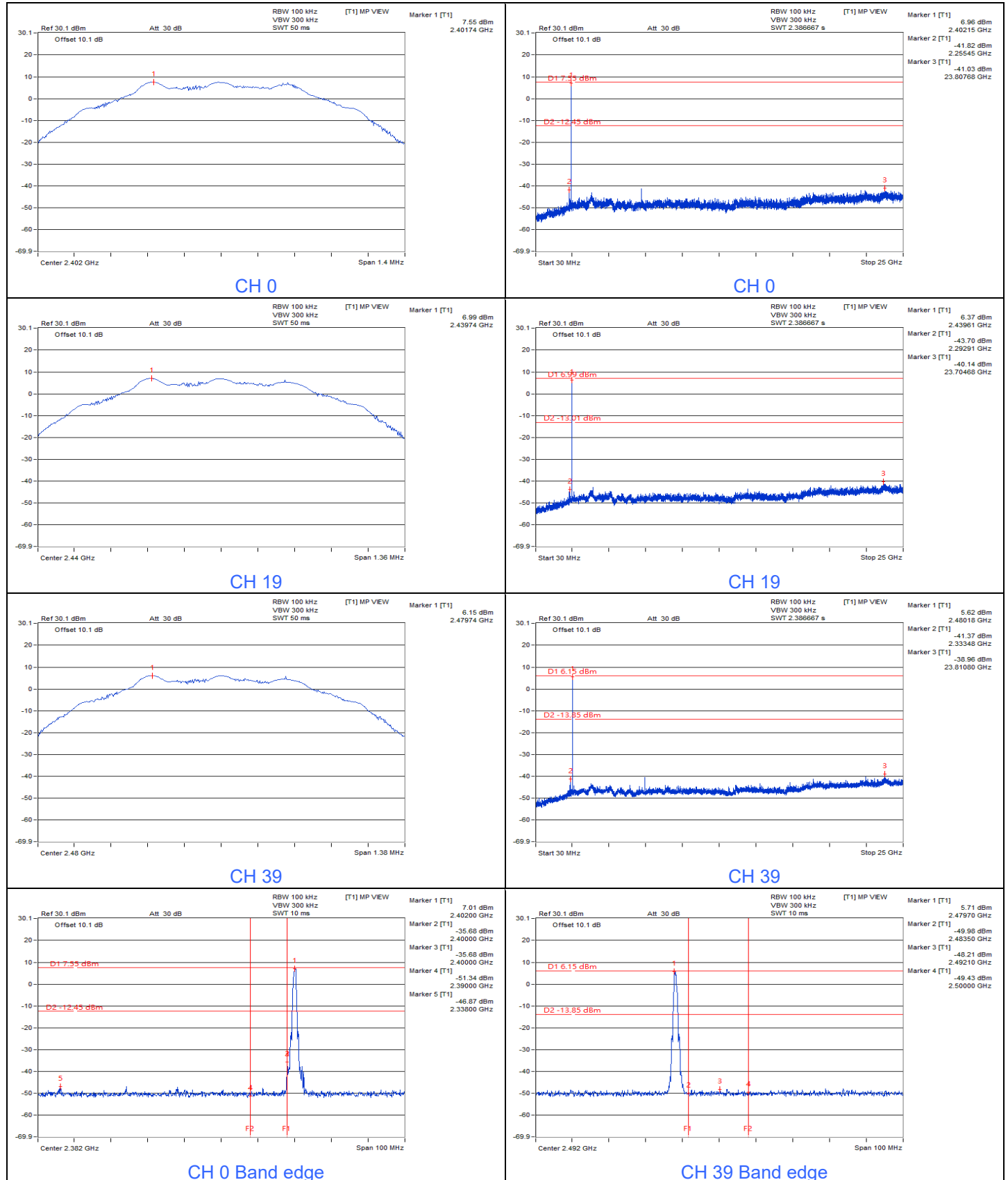
BT-LE 1M



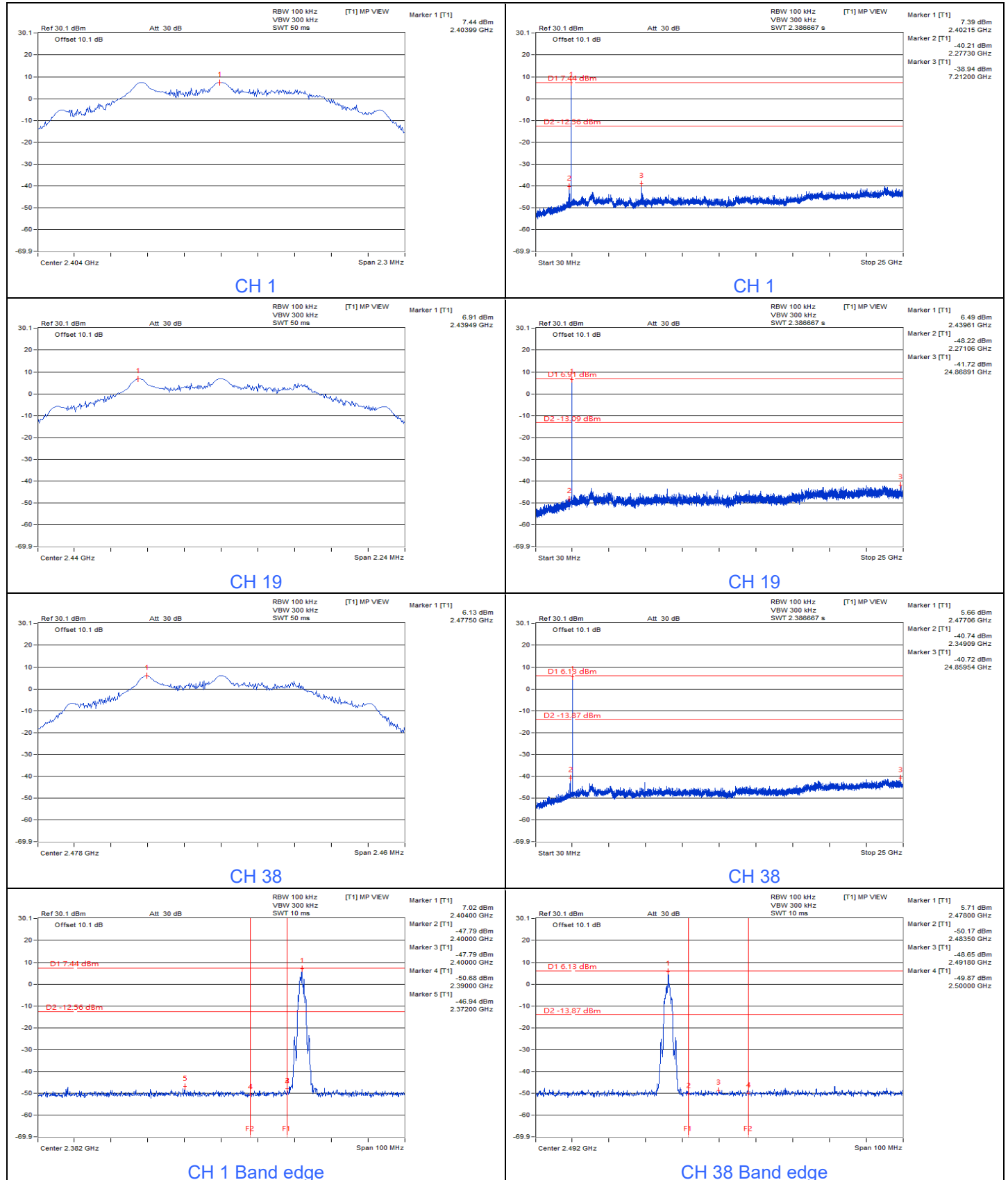
BT-LE 2M



Logi Bolt 1M



Logi Bolt 2M



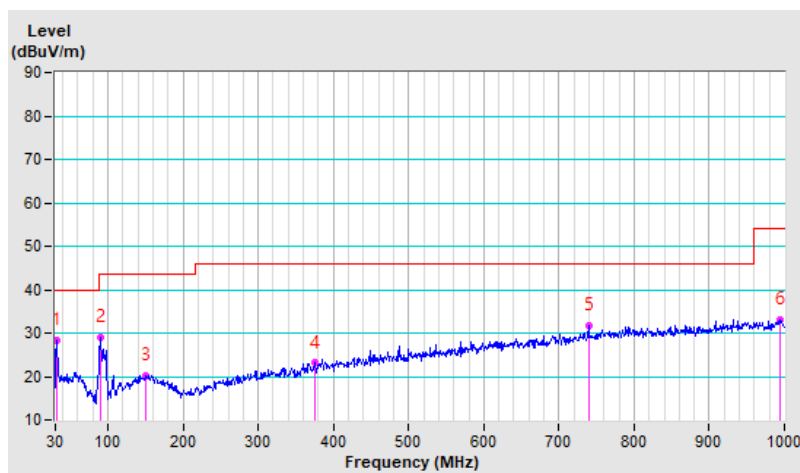
7.5 Unwanted Emissions below 1 GHz

RF Mode	BT LE-1M	Channel	CH 0 : 2402 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	32.01	28.4 PK	40.0	-11.6	2.00 H	256	39.3	-10.9
2	90.36	29.1 PK	43.5	-14.4	1.00 H	325	44.6	-15.5
3	150.11	20.2 PK	43.5	-23.3	3.50 H	216	29.7	-9.5
4	375.64	23.1 PK	46.0	-22.9	2.50 H	95	30.5	-7.4
5	739.43	31.8 PK	46.0	-14.2	1.00 H	349	31.8	0.0
6	993.48	33.0 PK	54.0	-21.0	4.00 H	218	29.8	3.2

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.

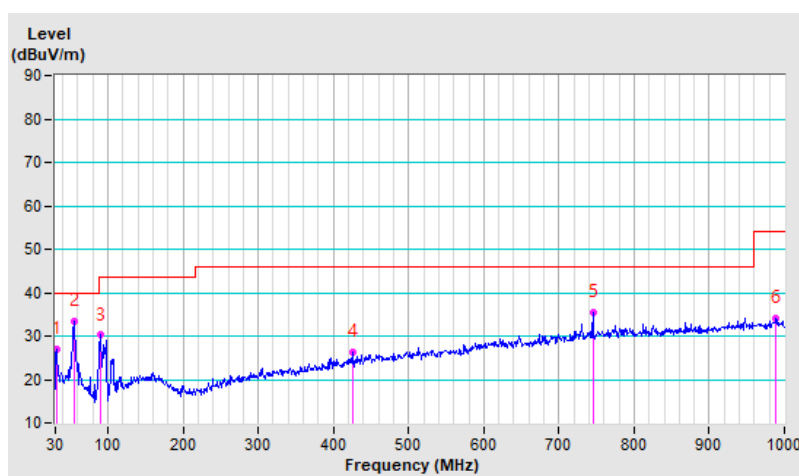


RF Mode	BT LE-1M	Channel	CH 0 : 2402 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	31.50	27.0 PK	40.0	-13.0	4.00 V	360	38.0	-11.0
2	55.12	33.5 PK	40.0	-6.5	1.50 V	335	43.5	-10.0
3	89.44	30.2 PK	43.5	-13.3	3.50 V	57	45.8	-15.6
4	425.03	26.2 PK	46.0	-19.8	3.00 V	239	32.1	-5.9
5	745.67	35.4 PK	46.0	-10.6	1.50 V	320	35.2	0.2
6	988.99	34.0 PK	54.0	-20.0	1.00 V	338	30.9	3.1

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 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.

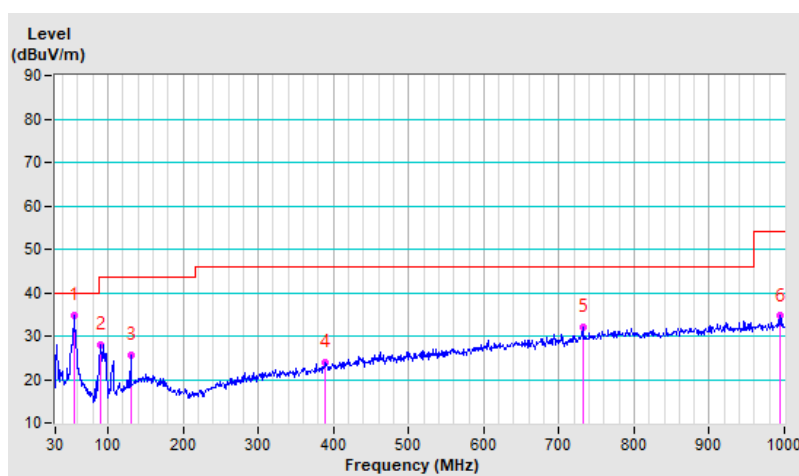


RF Mode	Logi Bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	55.68	34.8 PK	40.0	-5.2	2.00 H	360	44.7	-9.9
2	90.29	28.1 PK	43.5	-15.4	1.00 H	210	43.6	-15.5
3	130.73	25.6 PK	43.5	-17.9	3.00 H	234	36.5	-10.9
4	389.09	24.0 PK	46.0	-22.0	1.50 H	79	31.0	-7.0
5	732.09	32.0 PK	46.0	-14.0	4.00 H	360	32.2	-0.2
6	993.84	34.6 PK	54.0	-19.4	2.00 H	147	31.4	3.2

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.

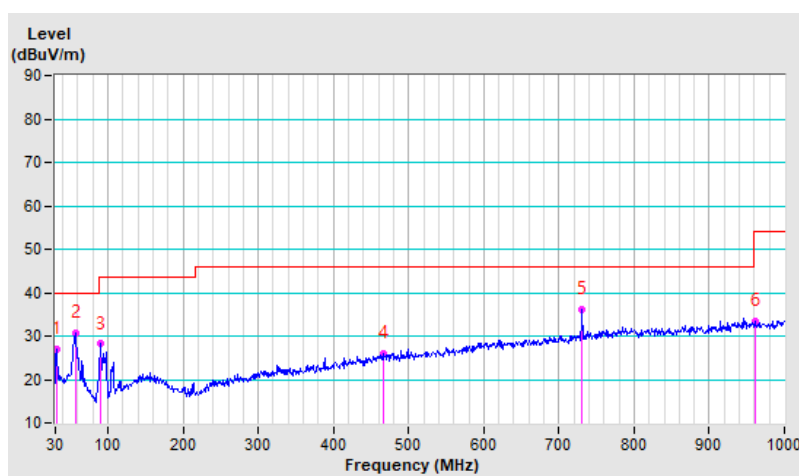


RF Mode	Logi Bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	PK: RB=120 kHz, DET=Peak
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	31.48	27.0 PK	40.0	-13.0	2.00 V	360	38.0	-11.0
2	56.53	30.6 PK	40.0	-9.4	2.50 V	360	40.5	-9.9
3	90.33	28.2 PK	43.5	-15.3	1.00 V	360	43.7	-15.5
4	466.94	25.9 PK	46.0	-20.1	4.00 V	62	31.0	-5.1
5	730.39	36.2 PK	46.0	-9.8	3.00 V	1	36.5	-0.3
6	961.64	33.5 PK	54.0	-20.5	3.00 V	199	30.5	3.0

Remarks:

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



7.6 Unwanted Emissions above 1 GHz

RF Mode	BT LE-1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.5 PK	74.0	-16.5	1.30 H	83	61.0	-3.5
2	2390.00	46.8 AV	54.0	-7.2	1.30 H	83	50.3	-3.5
3	*2402.00	103.4 PK			1.30 H	83	106.8	-3.4
4	*2402.00	77.4 AV			1.30 H	83	80.8	-3.4
5	4804.00	42.1 PK	74.0	-31.9	2.51 H	38	41.0	1.1
6	4804.00	16.1 AV	54.0	-37.9	2.51 H	38	15.0	1.1
7	12010.00	60.5 PK	74.0	-13.5	2.24 H	2	48.8	11.7
8	12010.00	34.5 AV	54.0	-19.5	2.24 H	2	22.8	11.7

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.7 PK	74.0	-17.3	3.52 V	314	60.2	-3.5
2	2390.00	47.6 AV	54.0	-6.4	3.52 V	314	51.1	-3.5
3	*2402.00	94.6 PK			3.52 V	314	98.0	-3.4
4	*2402.00	68.6 AV			3.52 V	314	72.0	-3.4
5	4804.00	41.6 PK	74.0	-32.4	1.07 V	228	40.5	1.1
6	4804.00	15.6 AV	54.0	-38.4	1.07 V	228	14.5	1.1
7	12010.00	59.1 PK	74.0	-14.9	1.09 V	23	47.4	11.7
8	12010.00	33.1 AV	54.0	-20.9	1.09 V	23	21.4	11.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.354 \text{ ms} / 7.044 \text{ ms}) = -26.0 \text{ dB}$$

RF Mode	BT LE-1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	103.2 PK			2.20 H	282	106.7	-3.5
2	*2440.00	77.2 AV			2.20 H	282	80.7	-3.5
3	4880.00	47.3 PK	74.0	-26.7	1.45 H	159	46.3	1.0
4	4880.00	21.3 AV	54.0	-32.7	1.45 H	159	20.3	1.0
5	7320.00	48.6 PK	74.0	-25.4	1.47 H	175	41.1	7.5
6	7320.00	22.6 AV	54.0	-31.4	1.47 H	175	15.1	7.5
7	12200.00	59.1 PK	74.0	-14.9	1.21 H	360	47.1	12.0
8	12200.00	33.1 AV	54.0	-20.9	1.21 H	360	21.1	12.0
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	93.3 PK			1.45 V	168	96.8	-3.5
2	*2440.00	67.3 AV			1.45 V	168	70.8	-3.5
3	4880.00	46.9 PK	74.0	-27.1	1.01 V	208	45.9	1.0
4	4880.00	20.9 AV	54.0	-33.1	1.01 V	208	19.9	1.0
5	7320.00	48.3 PK	74.0	-25.7	1.22 V	201	40.8	7.5
6	7320.00	22.3 AV	54.0	-31.7	1.22 V	201	14.8	7.5
7	12200.00	56.0 PK	74.0	-18.0	1.32 V	276	44.0	12.0
8	12200.00	30.0 AV	54.0	-24.0	1.32 V	276	18.0	12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.354 \text{ ms} / 7.044 \text{ ms}) = -26.0 \text{ dB}$$

RF Mode	BT LE-1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	103.1 PK			1.46 H	99	106.6	-3.5
2	*2480.00	77.1 AV			1.46 H	99	80.6	-3.5
3	2483.50	55.4 PK	74.0	-18.6	1.46 H	99	58.9	-3.5
4	2483.50	46.4 AV	54.0	-7.6	1.46 H	99	49.9	-3.5
5	4960.00	44.3 PK	74.0	-29.7	2.55 H	39	43.1	1.2
6	4960.00	18.3 AV	54.0	-35.7	2.55 H	39	17.1	1.2
7	7440.00	46.9 PK	74.0	-27.1	1.35 H	248	39.4	7.5
8	7440.00	20.9 AV	54.0	-33.1	1.35 H	248	13.4	7.5
9	12400.00	56.1 PK	74.0	-17.9	1.27 H	30	44.6	11.5
10	12400.00	30.1 AV	54.0	-23.9	1.27 H	30	18.6	11.5
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	92.3 PK			3.62 V	342	95.8	-3.5
2	*2480.00	66.3 AV			3.62 V	342	69.8	-3.5
3	2483.50	56.0 PK	74.0	-18.0	3.62 V	342	59.5	-3.5
4	2483.50	46.6 AV	54.0	-7.4	3.62 V	342	50.1	-3.5
5	4960.00	45.3 PK	74.0	-28.7	2.55 V	39	44.1	1.2
6	4960.00	19.3 AV	54.0	-34.7	2.55 V	39	18.1	1.2
7	7440.00	46.5 PK	74.0	-27.5	1.35 V	248	39.0	7.5
8	7440.00	20.5 AV	54.0	-33.5	1.35 V	248	13.0	7.5
9	12400.00	54.7 PK	74.0	-19.3	1.34 V	184	43.2	11.5
10	12400.00	28.7 AV	54.0	-25.3	1.34 V	184	17.2	11.5

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.354 \text{ ms} / 7.044 \text{ ms}) = -26.0 \text{ dB}$$

RF Mode	BT LE-2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	54.0 PK	74.0	-20.0	1.11 H	67	57.5	-3.5
2	2390.00	44.5 AV	54.0	-9.5	1.11 H	67	48.0	-3.5
3	*2404.00	101.4 PK			1.11 H	67	104.8	-3.4
4	*2404.00	69.7 AV			1.11 H	67	73.1	-3.4
5	4808.00	42.3 PK	74.0	-31.7	1.13 H	80	41.2	1.1
6	4808.00	10.6 AV	54.0	-43.4	1.13 H	80	9.5	1.1
7	12020.00	59.2 PK	74.0	-14.8	1.18 H	321	47.4	11.8
8	12020.00	27.5 AV	54.0	-26.5	1.18 H	321	15.7	11.8
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	54.7 PK	74.0	-19.3	3.62 V	307	58.2	-3.5
2	2390.00	44.3 AV	54.0	-9.7	3.62 V	307	47.8	-3.5
3	*2404.00	95.6 PK			3.62 V	307	99.0	-3.4
4	*2404.00	63.9 AV			3.62 V	307	67.3	-3.4
5	4808.00	41.9 PK	74.0	-32.1	3.33 V	164	40.8	1.1
6	4808.00	10.2 AV	54.0	-43.8	3.33 V	164	9.1	1.1
7	12020.00	57.8 PK	74.0	-16.2	1.18 V	321	46.0	11.8
8	12020.00	26.1 AV	54.0	-27.9	1.18 V	321	14.3	11.8

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.051 \text{ ms}) = -31.7 \text{ dB}$$

RF Mode	BT LE-2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	100.7 PK			2.35 H	117	104.2	-3.5
2	*2440.00	69.0 AV			2.35 H	117	72.5	-3.5
3	4880.00	48.2 PK	74.0	-25.8	1.73 H	162	47.2	1.0
4	4880.00	16.5 AV	54.0	-37.5	1.73 H	162	15.5	1.0
5	7320.00	49.3 PK	74.0	-24.7	2.48 H	191	41.8	7.5
6	7320.00	17.6 AV	54.0	-36.4	2.48 H	191	10.1	7.5
7	12200.00	57.3 PK	74.0	-16.7	1.17 H	274	45.3	12.0
8	12200.00	25.6 AV	54.0	-28.4	1.17 H	274	13.6	12.0
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	95.1 PK			3.62 V	307	98.6	-3.5
2	*2440.00	63.4 AV			3.62 V	307	66.9	-3.5
3	4880.00	46.4 PK	74.0	-27.6	1.73 V	162	45.4	1.0
4	4880.00	14.7 AV	54.0	-39.3	1.73 V	162	13.7	1.0
5	7320.00	47.8 PK	74.0	-26.2	2.48 V	191	40.3	7.5
6	7320.00	16.1 AV	54.0	-37.9	2.48 V	191	8.6	7.5
7	12200.00	56.6 PK	74.0	-17.4	1.45 V	235	44.6	12.0
8	12200.00	24.9 AV	54.0	-29.1	1.45 V	235	12.9	12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.051 \text{ ms}) = -31.7 \text{ dB}$$

RF Mode	BT LE-2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	101.0 PK			2.35 H	117	104.5	-3.5
2	*2478.00	69.3 AV			2.35 H	117	72.8	-3.5
3	2483.50	55.8 PK	74.0	-18.2	2.35 H	117	59.3	-3.5
4	2483.50	44.3 AV	54.0	-9.7	2.35 H	117	47.8	-3.5
5	4956.00	46.5 PK	74.0	-27.5	1.73 H	162	45.3	1.2
6	4956.00	14.8 AV	54.0	-39.2	1.73 H	162	13.6	1.2
7	7434.00	46.9 PK	74.0	-27.1	2.48 H	191	39.4	7.5
8	7434.00	15.2 AV	54.0	-38.8	2.48 H	191	7.7	7.5
9	12390.00	56.8 PK	74.0	-17.2	1.17 H	265	45.2	11.6
10	12390.00	25.1 AV	54.0	-28.9	1.17 H	265	13.5	11.6
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	94.7 PK			3.82 V	46	98.2	-3.5
2	*2478.00	63.0 AV			3.82 V	46	66.5	-3.5
3	2483.50	54.7 PK	74.0	-19.3	3.82 V	46	58.2	-3.5
4	2483.50	44.1 AV	54.0	-9.9	3.82 V	46	47.6	-3.5
5	4956.00	45.1 PK	74.0	-28.9	1.58 V	264	43.9	1.2
6	4956.00	13.4 AV	54.0	-40.6	1.58 V	264	12.2	1.2
7	7434.00	45.7 PK	74.0	-28.3	1.75 V	298	38.2	7.5
8	7434.00	14.0 AV	54.0	-40.0	1.75 V	298	6.5	7.5
9	12390.00	55.3 PK	74.0	-18.7	1.27 V	277	43.7	11.6
10	12390.00	23.6 AV	54.0	-30.4	1.27 V	277	12.0	11.6

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.051 \text{ ms}) = -31.7 \text{ dB}$$

RF Mode	Logi Bolt 1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.3 PK	74.0	-16.7	1.23 H	82	60.8	-3.5
2	2390.00	46.6 AV	54.0	-7.4	1.23 H	82	50.1	-3.5
3	*2402.00	103.2 PK			1.23 H	82	106.6	-3.4
4	*2402.00	77.3 AV			1.23 H	82	80.7	-3.4
5	4804.00	40.1 PK	74.0	-33.9	2.51 H	38	39.0	1.1
6	4804.00	14.2 AV	54.0	-39.8	2.51 H	38	13.1	1.1
7	12010.00	57.6 PK	74.0	-16.4	1.21 H	360	45.9	11.7
8	12010.00	31.7 AV	54.0	-22.3	1.21 H	360	20.0	11.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.5 PK	74.0	-17.5	3.50 V	312	60.0	-3.5
2	2390.00	47.4 AV	54.0	-6.6	3.50 V	312	50.9	-3.5
3	*2402.00	94.4 PK			3.50 V	312	97.8	-3.4
4	*2402.00	68.5 AV			3.50 V	312	71.9	-3.4
5	4804.00	41.5 PK	74.0	-32.5	2.35 V	332	40.4	1.1
6	4804.00	15.6 AV	54.0	-38.4	2.35 V	332	14.5	1.1
7	12010.00	59.0 PK	74.0	-15.0	1.09 V	23	47.3	11.7
8	12010.00	33.1 AV	54.0	-20.9	1.09 V	23	21.4	11.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.356 \text{ ms} / 7.043 \text{ ms}) = -25.9 \text{ dB}$$

RF Mode	Logi Bolt 1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	103.1 PK			2.55 H	276	106.6	-3.5
2	*2440.00	77.2 AV			2.55 H	276	80.7	-3.5
3	4880.00	47.3 PK	74.0	-26.7	1.12 H	29	46.3	1.0
4	4880.00	21.4 AV	54.0	-32.6	1.12 H	29	20.4	1.0
5	7320.00	48.6 PK	74.0	-25.4	3.25 H	17	41.1	7.5
6	7320.00	22.7 AV	54.0	-31.3	3.25 H	17	15.2	7.5
7	12200.00	59.1 PK	74.0	-14.9	1.17 H	357	47.1	12.0
8	12200.00	33.2 AV	54.0	-20.8	1.17 H	357	21.2	12.0
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	93.1 PK			1.32 V	165	96.6	-3.5
2	*2440.00	67.2 AV			1.32 V	165	70.7	-3.5
3	4880.00	46.7 PK	74.0	-27.3	1.10 V	235	45.7	1.0
4	4880.00	20.8 AV	54.0	-33.2	1.10 V	235	19.8	1.0
5	7320.00	48.1 PK	74.0	-25.9	1.27 V	312	40.6	7.5
6	7320.00	22.2 AV	54.0	-31.8	1.27 V	312	14.7	7.5
7	12200.00	55.9 PK	74.0	-18.1	1.32 V	258	43.9	12.0
8	12200.00	30.0 AV	54.0	-24.0	1.32 V	258	18.0	12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.356 \text{ ms} / 7.043 \text{ ms}) = -25.9 \text{ dB}$$

RF Mode	Logi Bolt 1M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	103.1 PK			1.32 H	97	106.6	-3.5
2	*2480.00	77.2 AV			1.32 H	97	80.7	-3.5
3	2483.50	55.4 PK	74.0	-18.6	1.32 H	97	58.9	-3.5
4	2483.50	46.3 AV	54.0	-7.7	1.32 H	97	49.8	-3.5
5	4960.00	44.1 PK	74.0	-29.9	1.20 H	267	42.9	1.2
6	4960.00	18.2 AV	54.0	-35.8	1.20 H	267	17.0	1.2
7	7440.00	46.7 PK	74.0	-27.3	2.58 H	182	39.2	7.5
8	7440.00	20.8 AV	54.0	-33.2	2.58 H	182	13.3	7.5
9	12400.00	56.0 PK	74.0	-18.0	2.56 H	322	44.5	11.5
10	12400.00	30.1 AV	54.0	-23.9	2.56 H	322	18.6	11.5
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	92.2 PK			3.35 V	321	95.7	-3.5
2	*2480.00	66.3 AV			3.35 V	321	69.8	-3.5
3	2483.50	56.9 PK	74.0	-17.1	3.35 V	321	60.4	-3.5
4	2483.50	46.4 AV	54.0	-7.6	3.35 V	321	49.9	-3.5
5	4960.00	45.2 PK	74.0	-28.8	2.14 V	34	44.0	1.2
6	4960.00	19.3 AV	54.0	-34.7	2.14 V	34	18.1	1.2
7	7440.00	46.4 PK	74.0	-27.6	2.54 V	312	38.9	7.5
8	7440.00	20.5 AV	54.0	-33.5	2.54 V	312	13.0	7.5
9	12400.00	54.6 PK	74.0	-19.4	1.55 V	235	43.1	11.5
10	12400.00	28.7 AV	54.0	-25.3	1.55 V	235	17.2	11.5

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.356 \text{ ms} / 7.043 \text{ ms}) = -25.9 \text{ dB}$$

RF Mode	Logi Bolt 2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	55.0 PK	74.0	-19.0	1.10 H	80	58.5	-3.5
2	2390.00	44.4 AV	54.0	-9.6	1.10 H	80	47.9	-3.5
3	*2404.00	101.3 PK			1.10 H	80	104.7	-3.4
4	*2404.00	69.6 AV			1.10 H	80	73.0	-3.4
5	4808.00	42.2 PK	74.0	-31.8	2.35 H	322	41.1	1.1
6	4808.00	10.5 AV	54.0	-43.5	2.35 H	322	9.4	1.1
7	12020.00	59.1 PK	74.0	-14.9	1.47 H	334	47.3	11.8
8	12020.00	27.4 AV	54.0	-26.6	1.47 H	334	15.6	11.8
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	54.2 PK	74.0	-19.8	3.62 V	307	57.7	-3.5
2	2390.00	44.3 AV	54.0	-9.7	3.62 V	307	47.8	-3.5
3	*2404.00	95.5 PK			3.62 V	307	98.9	-3.4
4	*2404.00	63.8 AV			3.62 V	307	67.2	-3.4
5	4808.00	41.9 PK	74.0	-32.1	3.33 V	164	40.8	1.1
6	4808.00	10.2 AV	54.0	-43.8	3.33 V	164	9.1	1.1
7	12020.00	57.8 PK	74.0	-16.2	1.19 V	323	46.0	11.8
8	12020.00	26.1 AV	54.0	-27.9	1.19 V	323	14.3	11.8

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

$$20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.05 \text{ ms}) = -31.7 \text{ dB}$$

RF Mode	Logi Bolt 2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	100.7 PK			1.26 H	83	104.2	-3.5
2	*2440.00	69.0 AV			1.26 H	83	72.5	-3.5
3	4880.00	48.1 PK	74.0	-25.9	1.45 H	278	47.1	1.0
4	4880.00	16.4 AV	54.0	-37.6	1.45 H	278	15.4	1.0
5	7320.00	49.1 PK	74.0	-24.9	1.17 H	311	41.6	7.5
6	7320.00	17.4 AV	54.0	-36.6	1.17 H	311	9.9	7.5
7	12200.00	57.1 PK	74.0	-16.9	1.24 H	252	45.1	12.0
8	12200.00	25.4 AV	54.0	-28.6	1.24 H	252	13.4	12.0
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	94.9 PK			3.62 V	307	98.4	-3.5
2	*2440.00	63.2 AV			3.62 V	307	66.7	-3.5
3	4880.00	46.3 PK	74.0	-27.7	1.10 V	235	45.3	1.0
4	4880.00	14.6 AV	54.0	-39.4	1.10 V	235	13.6	1.0
5	7320.00	47.6 PK	74.0	-26.4	1.27 V	312	40.1	7.5
6	7320.00	15.9 AV	54.0	-38.1	1.27 V	312	8.4	7.5
7	12200.00	56.5 PK	74.0	-17.5	1.28 V	282	44.5	12.0
8	12200.00	24.8 AV	54.0	-29.2	1.28 V	282	12.8	12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.05 \text{ ms}) = -31.7 \text{ dB}$

RF Mode	Logi Bolt 2M	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=3 MHz, DET=RMS
Input Power	1.5 Vdc	Environmental Conditions	25 °C, 75% RH
Tested By	Felix Chang		

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	101.0 PK			2.45 H	91	104.5	-3.5
2	*2478.00	69.3 AV			2.45 H	91	72.8	-3.5
3	2483.50	55.8 PK	74.0	-18.2	2.45 H	91	59.3	-3.5
4	2483.50	44.3 AV	54.0	-9.7	2.45 H	91	47.8	-3.5
5	4956.00	46.3 PK	74.0	-27.7	1.48 H	189	45.1	1.2
6	4956.00	14.6 AV	54.0	-39.4	1.48 H	189	13.4	1.2
7	7434.00	46.8 PK	74.0	-27.2	2.55 H	236	39.3	7.5
8	7434.00	15.1 AV	54.0	-38.9	2.55 H	236	7.6	7.5
9	12390.00	56.7 PK	74.0	-17.3	2.35 H	324	45.1	11.6
10	12390.00	25.0 AV	54.0	-29.0	2.35 H	324	13.4	11.6
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	94.6 PK			2.55 V	77	98.1	-3.5
2	*2478.00	62.9 AV			2.55 V	77	66.4	-3.5
3	2483.50	54.7 PK	74.0	-19.3	2.55 V	77	58.2	-3.5
4	2483.50	44.3 AV	54.0	-9.7	2.55 V	77	47.8	-3.5
5	4956.00	44.9 PK	74.0	-29.1	1.43 V	258	43.7	1.2
6	4956.00	13.2 AV	54.0	-40.8	1.43 V	258	12.0	1.2
7	7434.00	45.6 PK	74.0	-28.4	1.75 V	325	38.1	7.5
8	7434.00	13.9 AV	54.0	-40.1	1.75 V	325	6.4	7.5
9	12390.00	55.1 PK	74.0	-18.9	1.21 V	288	43.5	11.6
10	12390.00	23.4 AV	54.0	-30.6	1.21 V	288	11.8	11.6

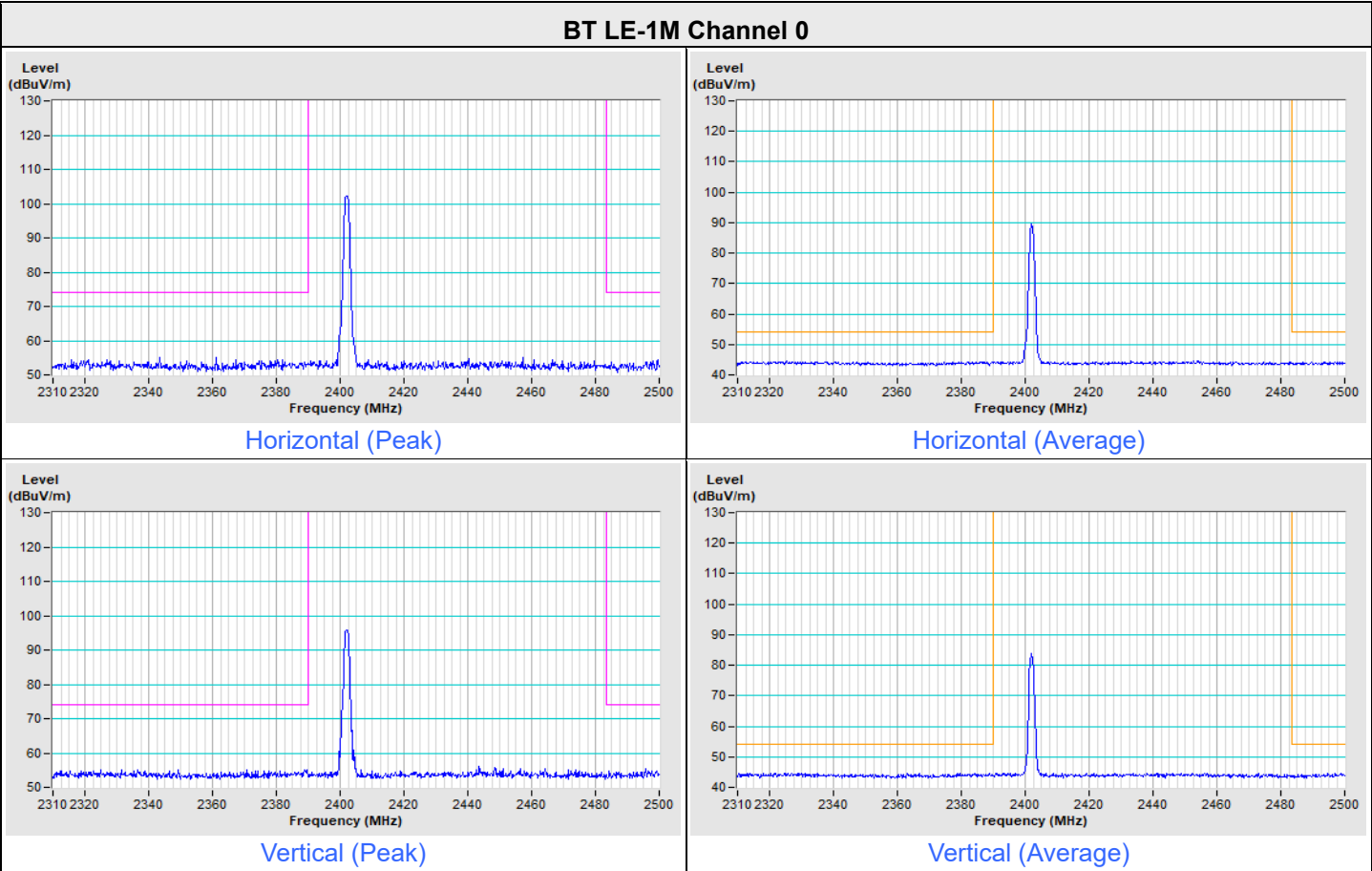
Remarks:

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.
6. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:

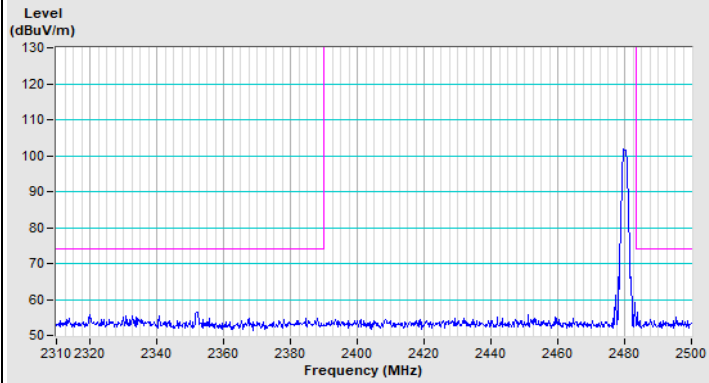
$$20 \log(\text{Duty cycle}) = 20 \log(0.184 \text{ ms} / 7.05 \text{ ms}) = -31.7 \text{ dB}$$

Plot of Band Edge

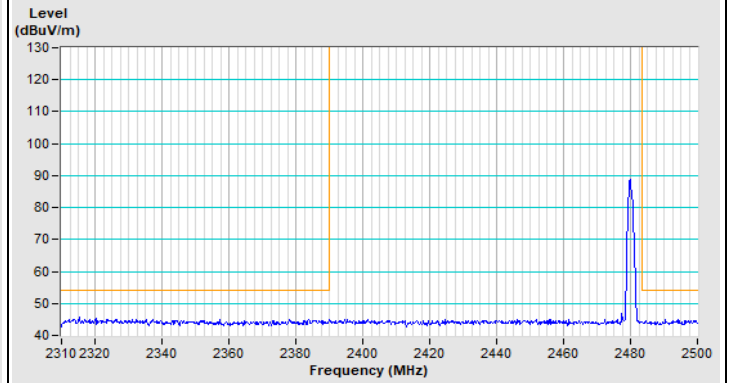
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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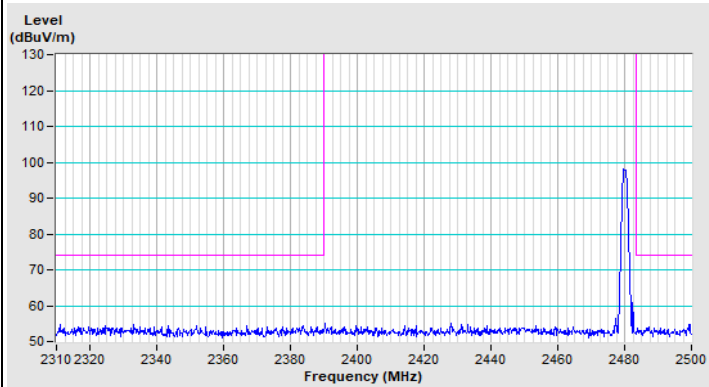
BT LE-1M Channel 39



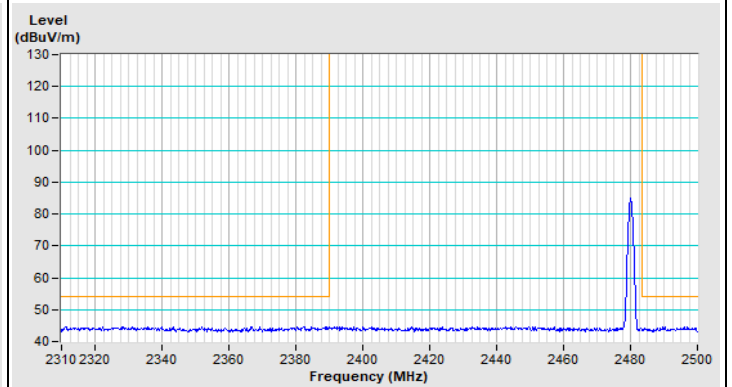
Horizontal (Peak)



Horizontal (Average)



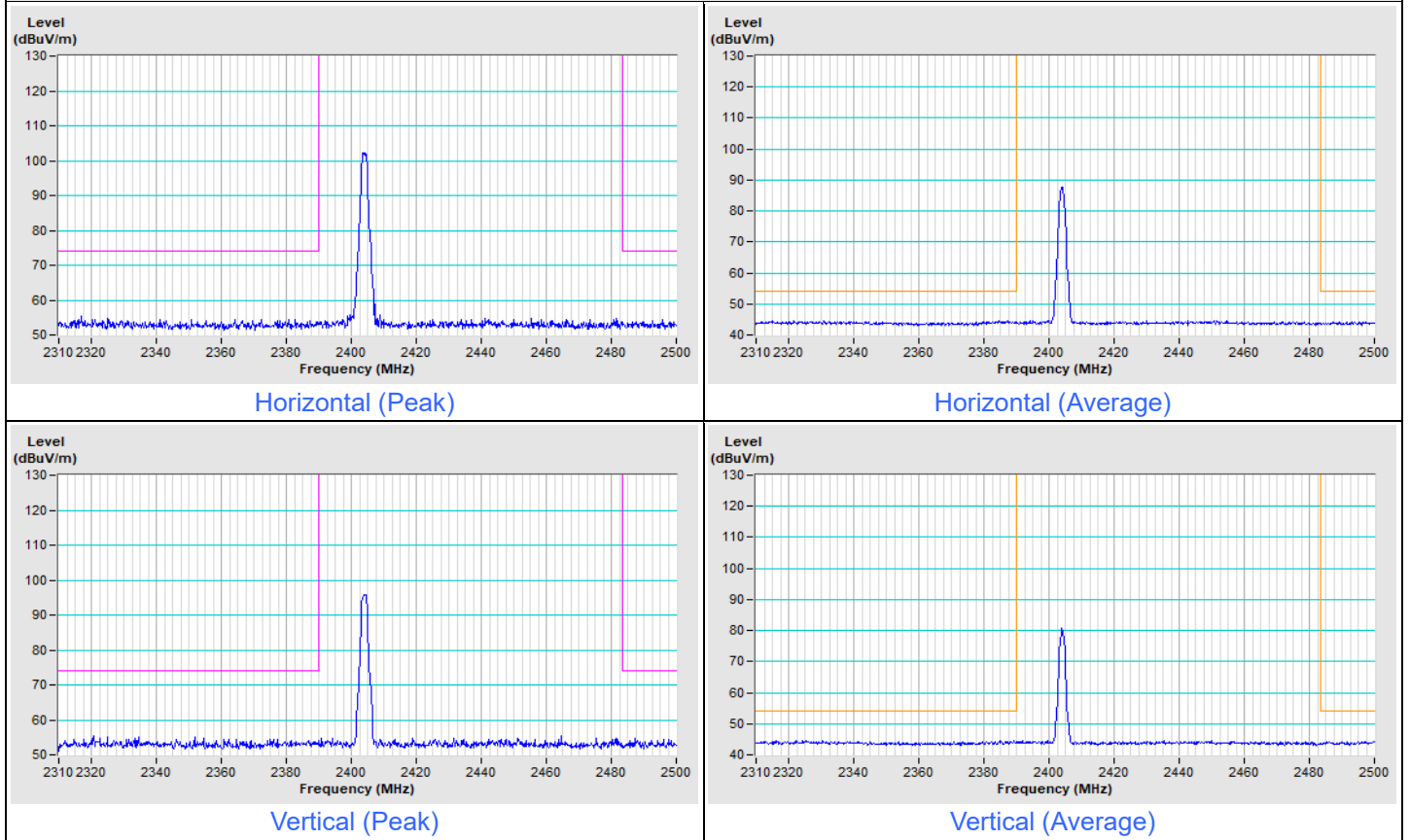
Vertical (Peak)



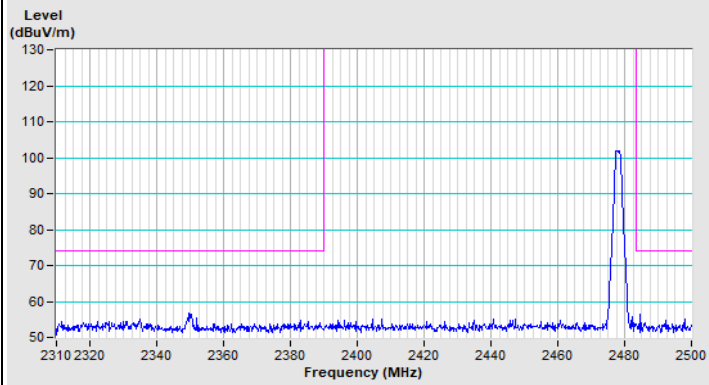
Vertical (Average)

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=3 MHz, DET=RMS
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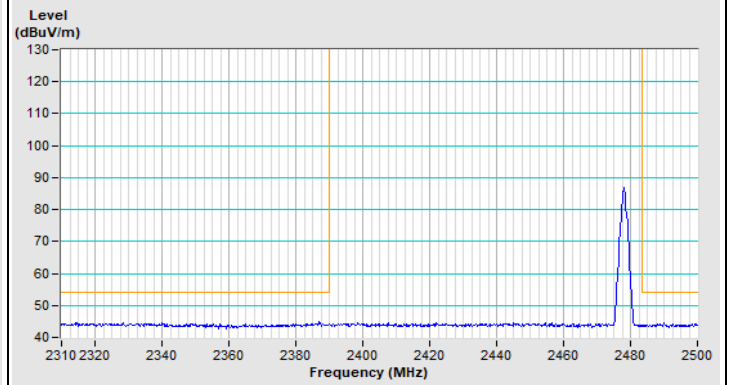
BT LE-2M Channel 1



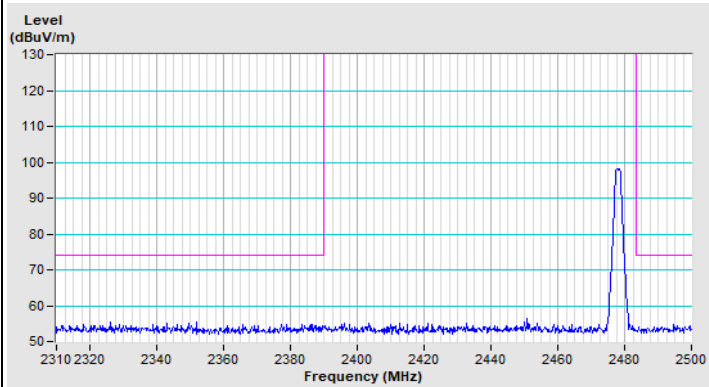
BT LE-2M Channel 38



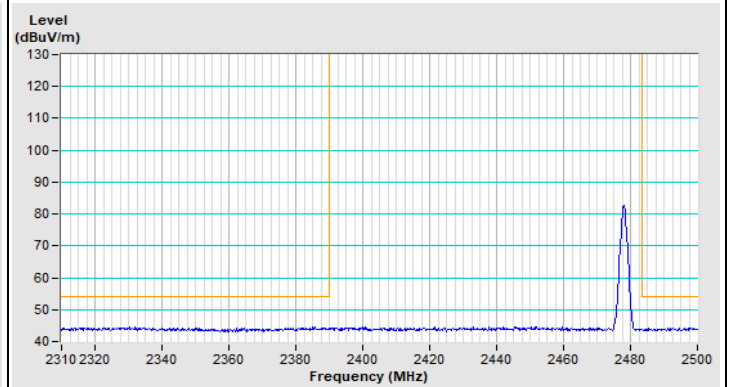
Horizontal (Peak)



Horizontal (Average)



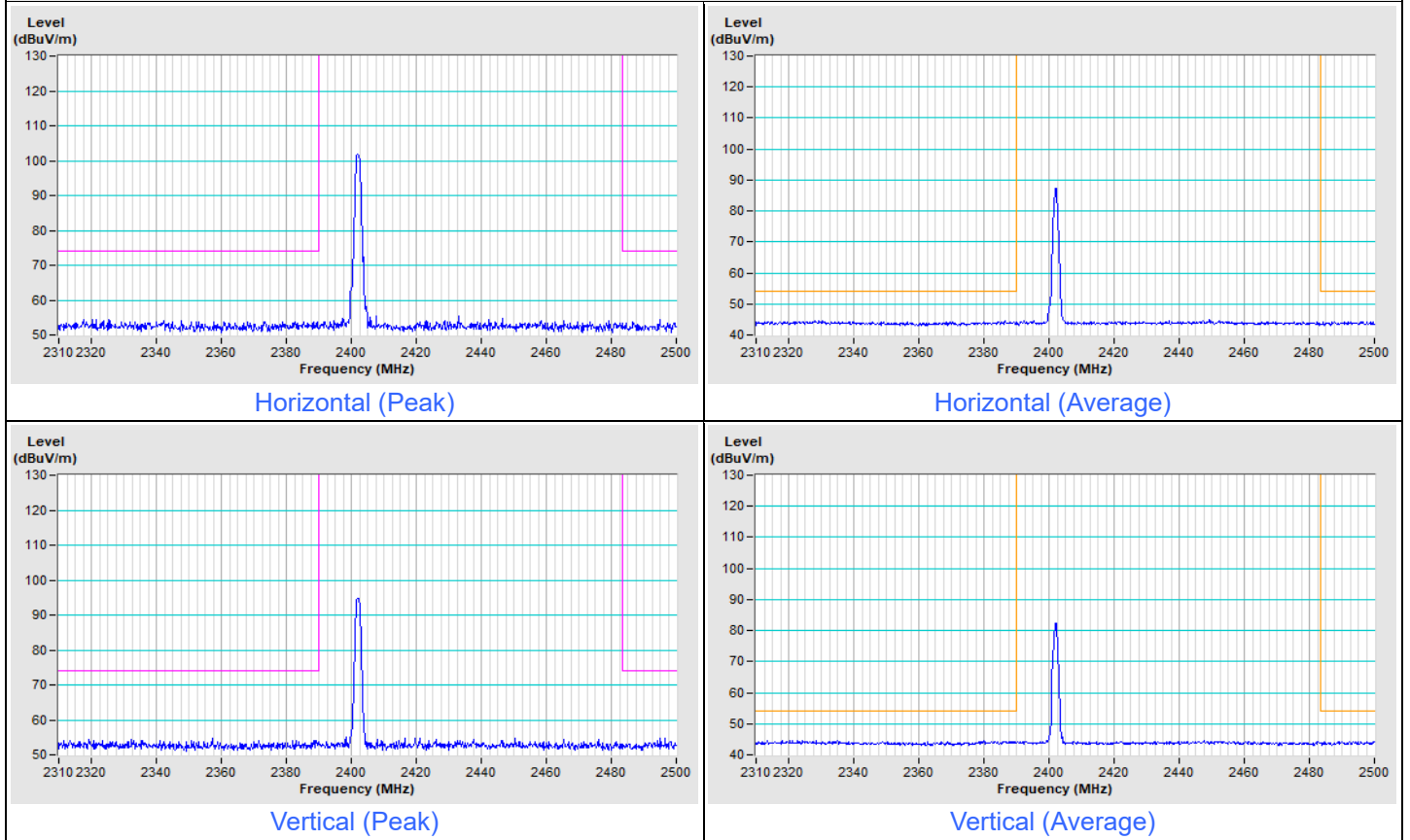
Vertical (Peak)



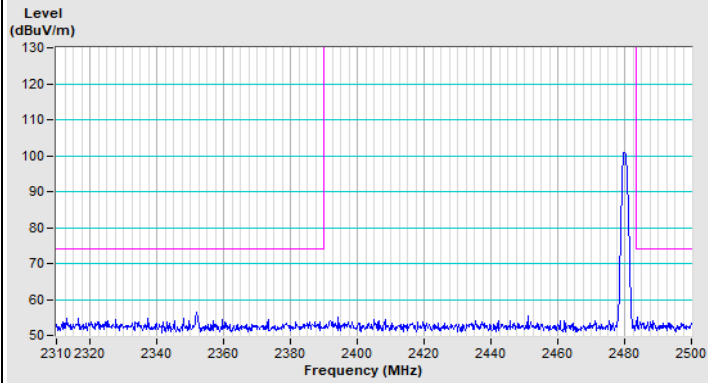
Vertical (Average)

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=3 MHz, DET=RMS
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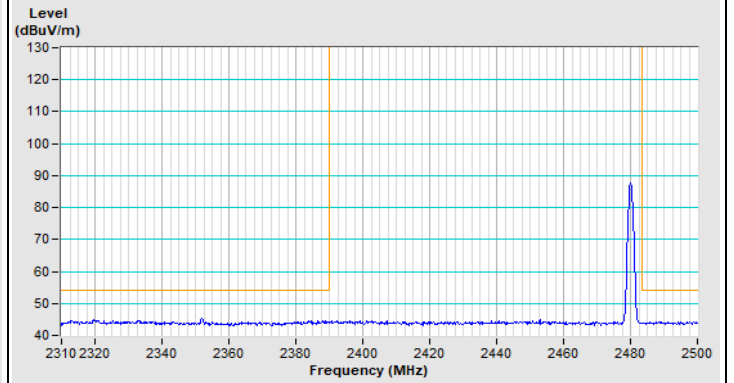
Logi Bolt 1M Channel 0



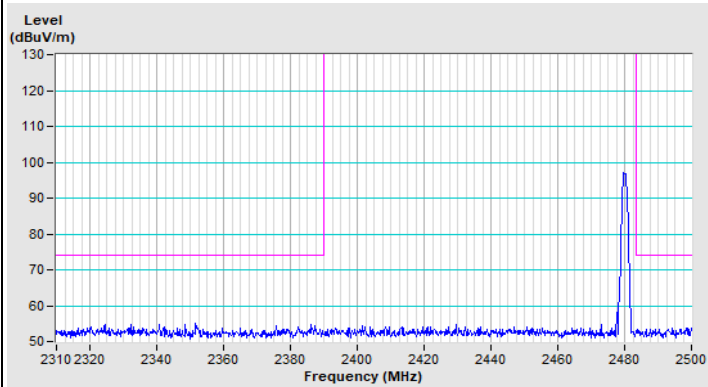
Logi Bolt 1M Channel 39



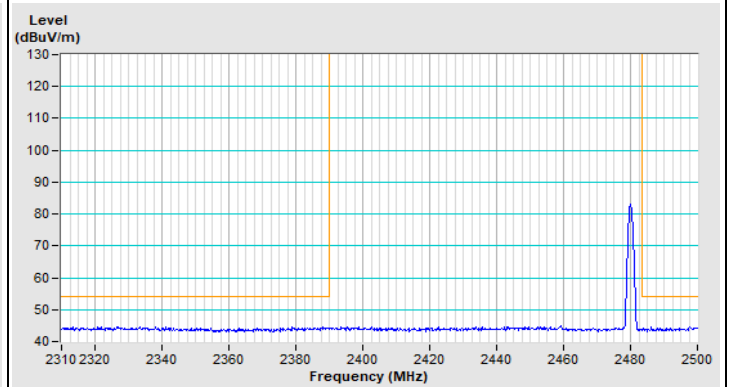
Horizontal (Peak)



Horizontal (Average)



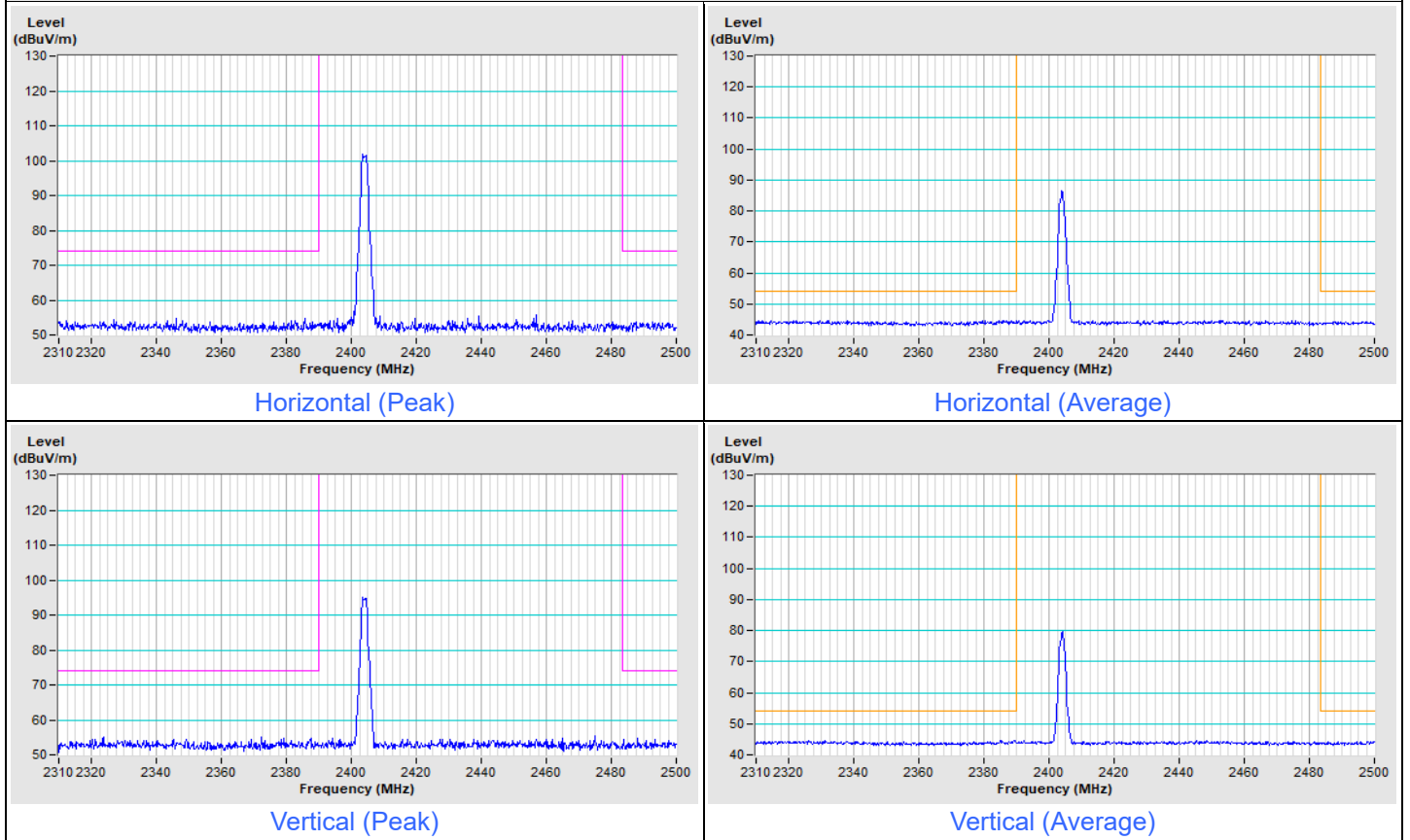
Vertical (Peak)



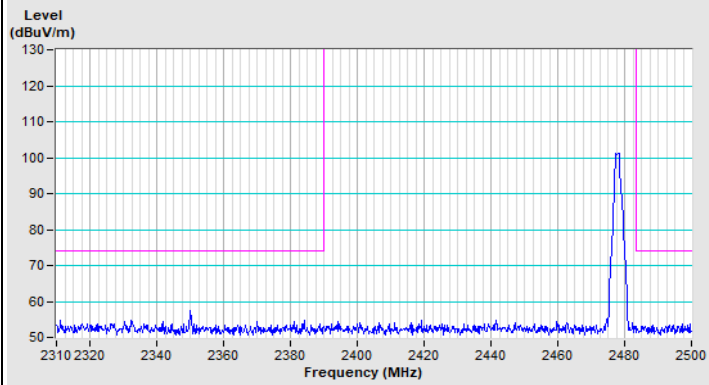
Vertical (Average)

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=3 MHz, DET=RMS
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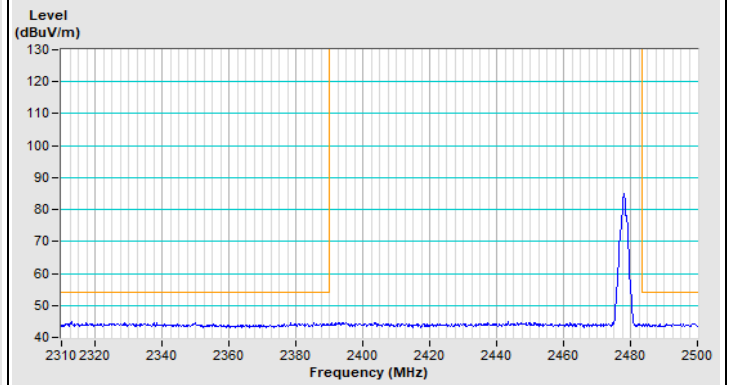
Logi Bolt 2M Channel 1



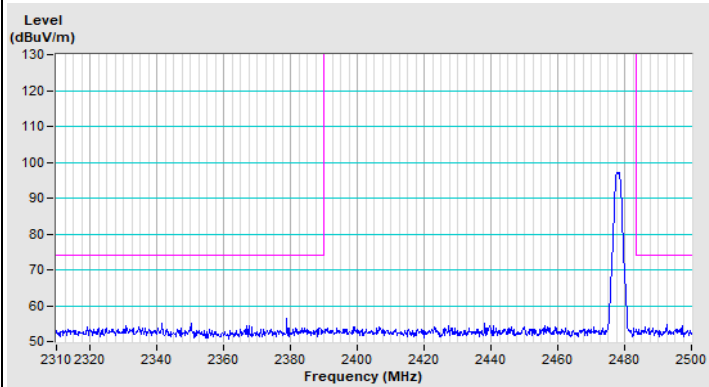
Logi Bolt 2M Channel 38



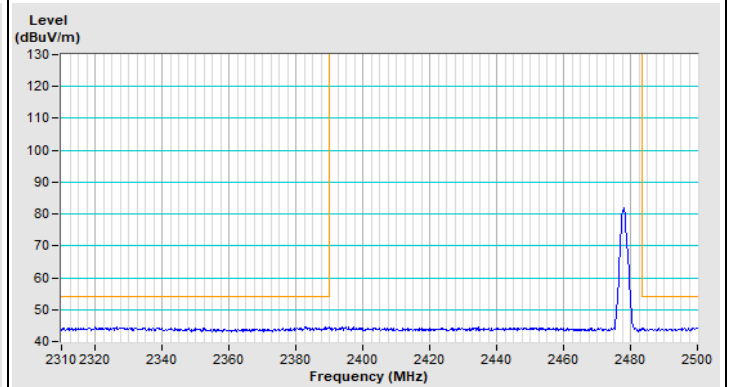
Horizontal (Peak)



Horizontal (Average)



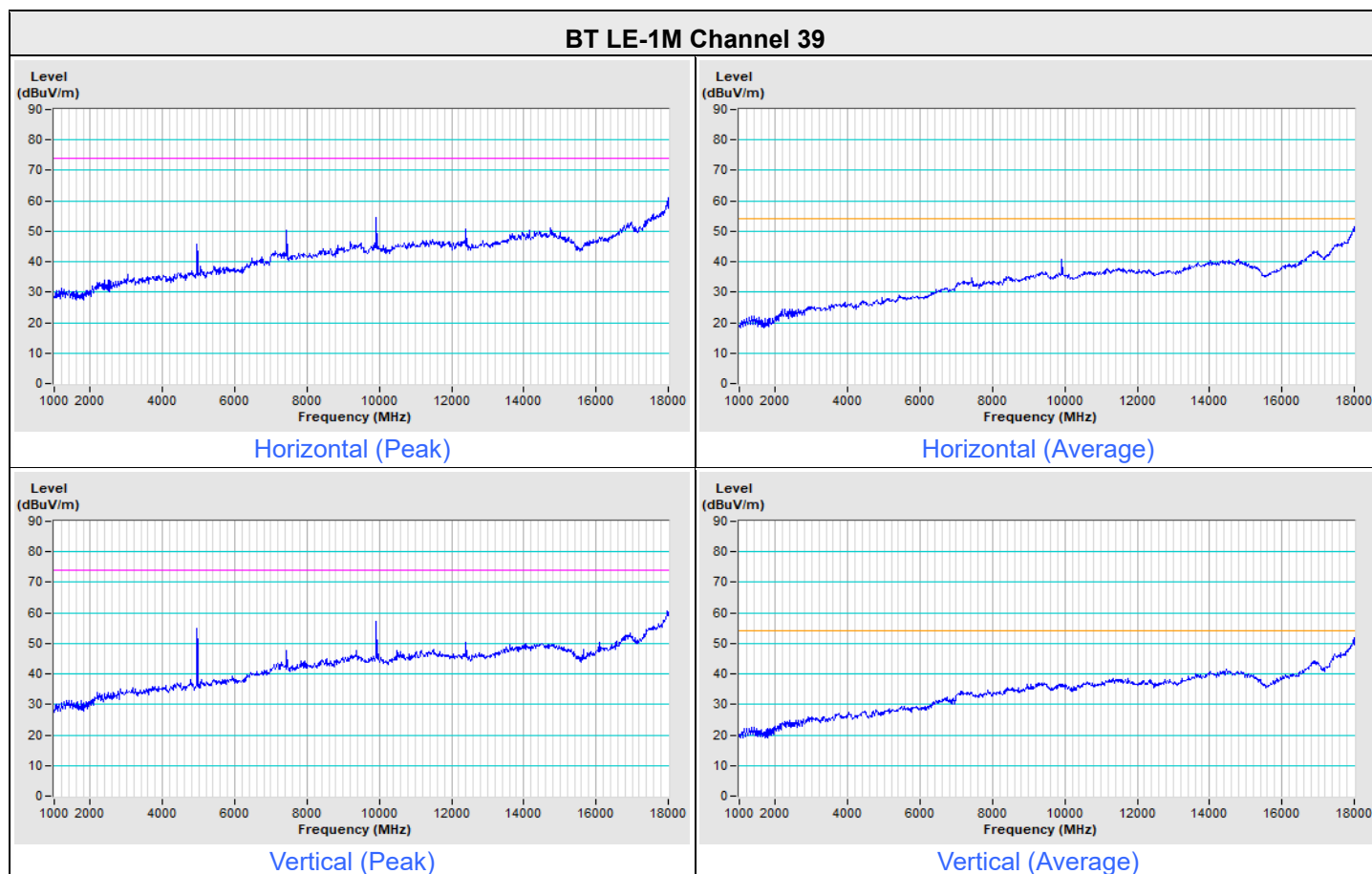
Vertical (Peak)



Vertical (Average)

Plot of Other Emission

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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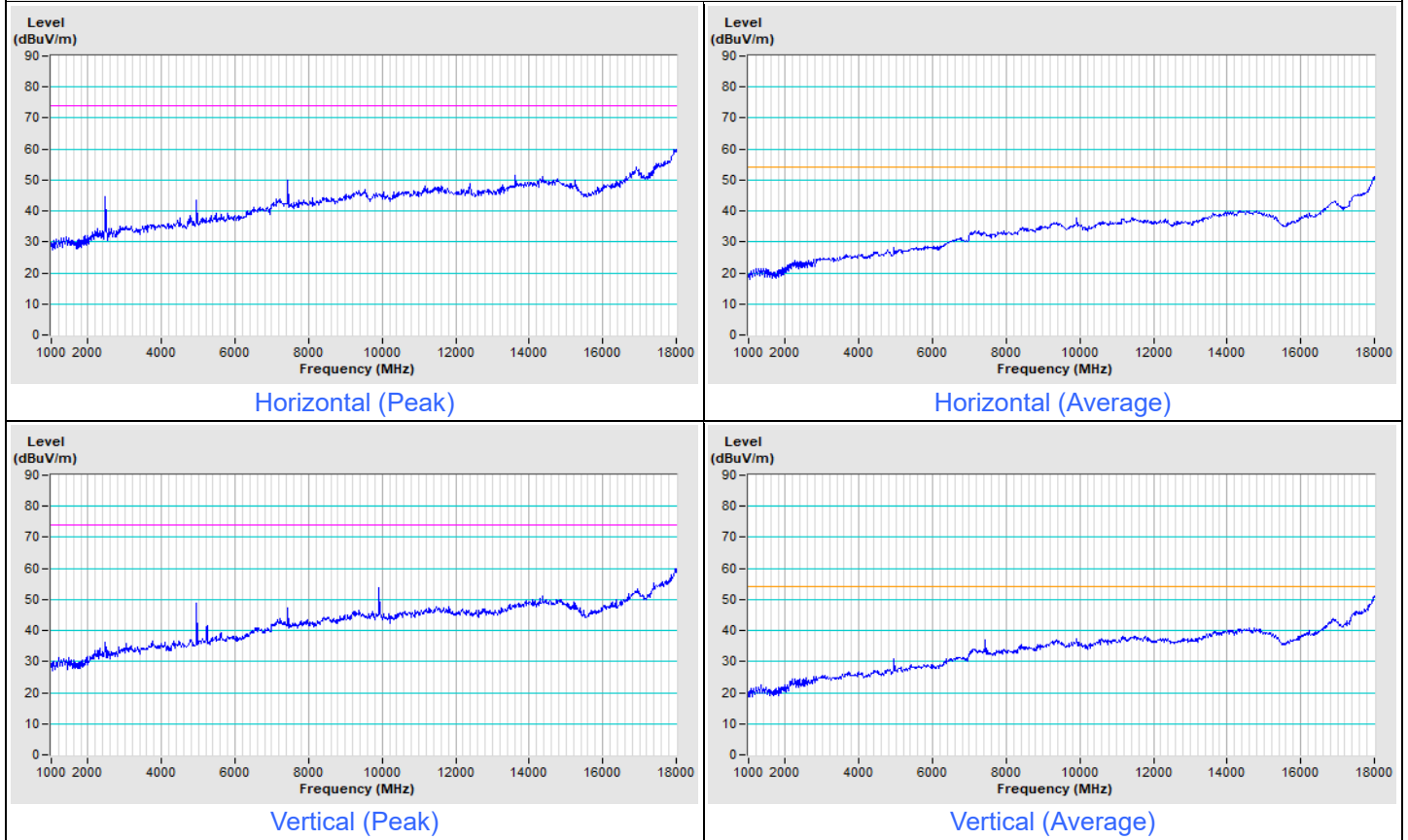


Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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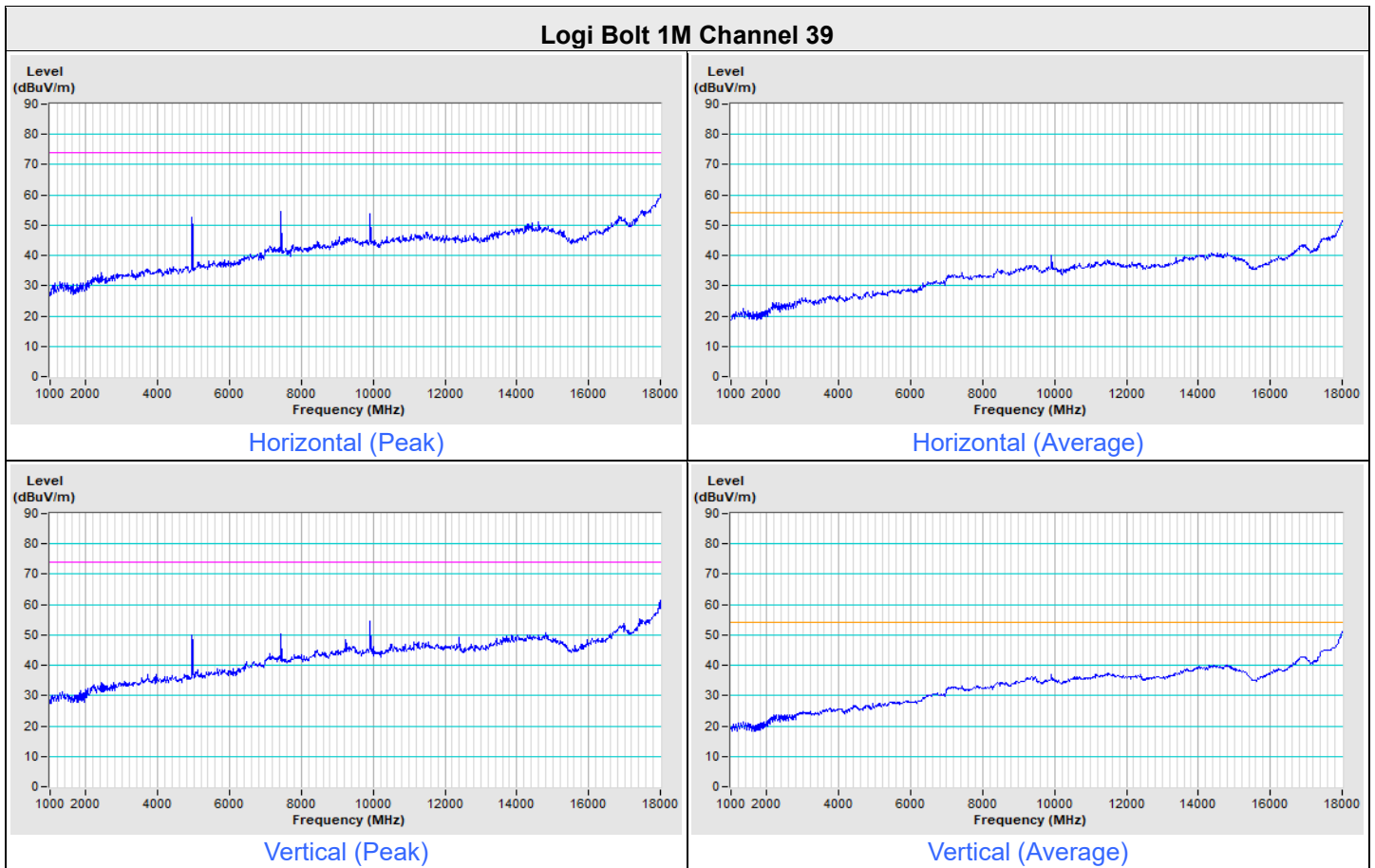
BT LE-2M Channel 38



Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

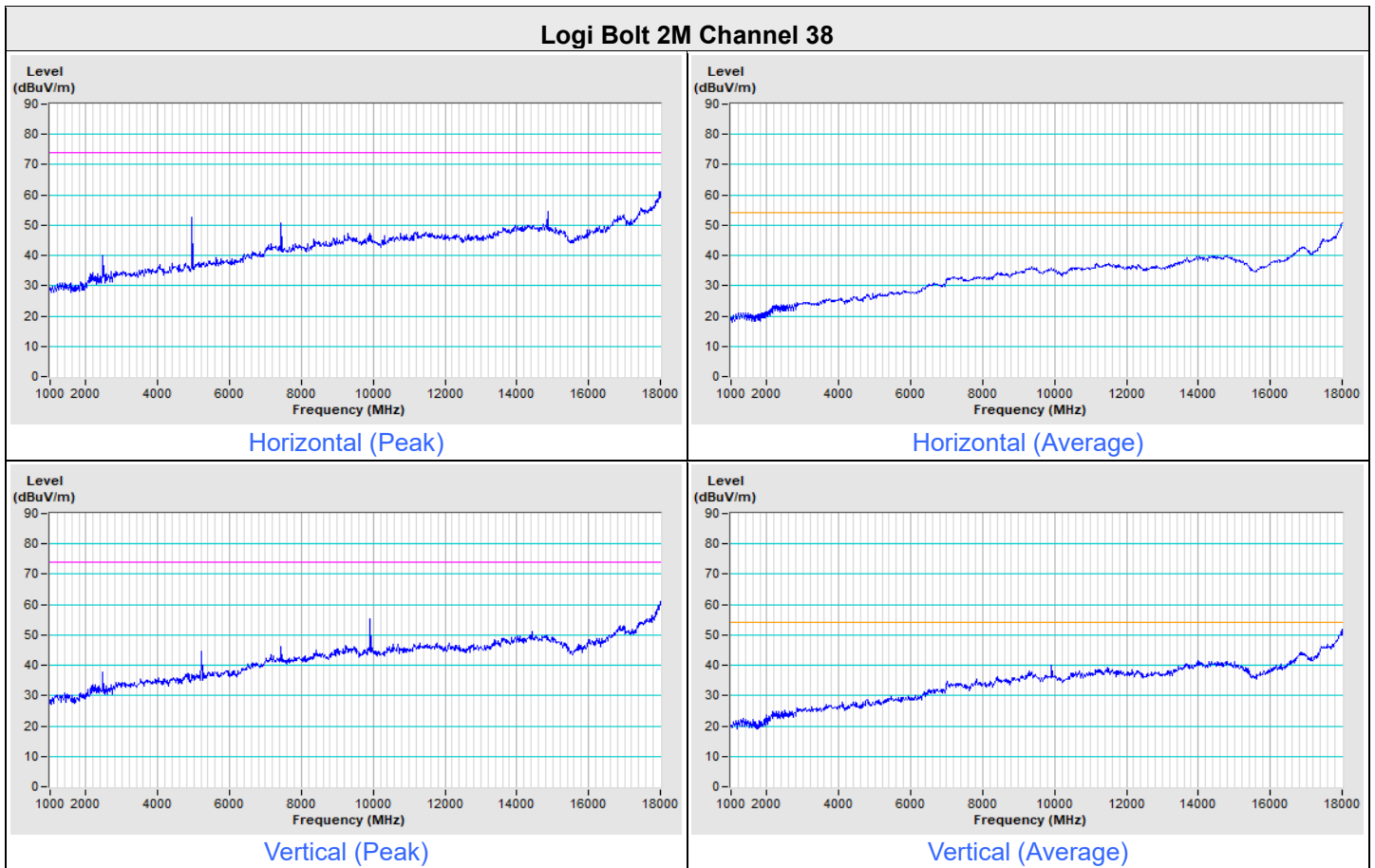
Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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Notes:

1. For radiated emission test data, complete spectral plots shall be presented in the report only for the worst-case scenarios of each mode within each operating frequency band.
2. The frequency range 18 GHz ~ 25 GHz: After investigation, no any emissions were found to exist, therefore they are not recorded in this report.

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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Hsin Chu EMC/RF/Telecom Lab

Tel: 886-(0)3-6668565 (SIP)

Tel: 886-(0)3-5120595 (WD)

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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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