

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDKG-WTW-P25040022

FCC ID: JNZMR0121

Product: Wireless Mouse

Brand: Logitech, logi, logitech

Model No.: MR0121

Received Date: 2025/10/29

Test Date: 2025/11/10 ~ 2025/12/3

Issued Date: 2025/12/18

Applicant: Logitech Far East Ltd.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

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FCC Registration / 723255 / TW2022

Designation Number:

Approved by:



Date:

2025/12/18

Wen Yu / Assistant Manager

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Prepared by: Vito Lung / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P25040022	Original release.	2025/12/18

1 Certificate

Product: Wireless Mouse

Brand: Logitech, logi, logitech

Test Model: MR0121

Sample Status: Engineering sample

Applicant: Logitech Far East Ltd.

Test Date: 2025/11/10 ~ 2025/12/3

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

Measurement ANSI C63.10-2020

procedure: 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 -12.54 dB at 12.00391 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -7.3 dB at 729.30 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -7.3 dB at 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:

Measurement	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
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 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	MR0121
Status of EUT	Engineering sample
Power Supply Rating	5 Vdc from USB interface or 3.8 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: 4.093 mW (6.12 dBm) BT-LE 2M: 4.083 mW (6.11 dBm) Logi Bolt 1M: 4.064 mW (6.09 dBm) Logi Bolt 2M: 4.064 mW (6.09 dBm)

Note:

1. BT-LE technique supports 1Mbps and 2Mbps data rates, both have been evaluated in this test report. Refer to “**section 3.3 Channel List**” for more detail specification.
2. The EUT uses following accessories.

Item	Brand	Model	Specification
Rechargeable Battery 1	SYNERGY	AHB391323H Hard Pack	Rating: 3.8 Vdc, 100mAh

3. This device has BT-LE and logi bolt functions. logi bolt is the same technology as BT-LE then enhancement secure protocol.
4. The EUT may have a lot of colors for marketing requirement.
5. 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
1.84	2.4~2.4835	Ceramic	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. 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. 2. EUT has support multiple power sources: USB-C (Laptop or AC Adapter)/ Battery. Pre-scan these sources and find the worst case as a representative test condition. 3. 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 Worst Condition of placement: X-axis 2. Test item the worst condition of power sources: Unwanted emission test item: USB-C (AC Adapter) AC conducted emission test item USB-C (Laptop)

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
AC Power Conducted Emissions	BT-LE 1M	39	GFSK	1Mb/s
	Logi Bolt 1M	39	GFSK	1Mb/s
Unwanted Emissions below 1 GHz	BT-LE 1M	39	GFSK	1Mb/s
	Logi Bolt 1M	39	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

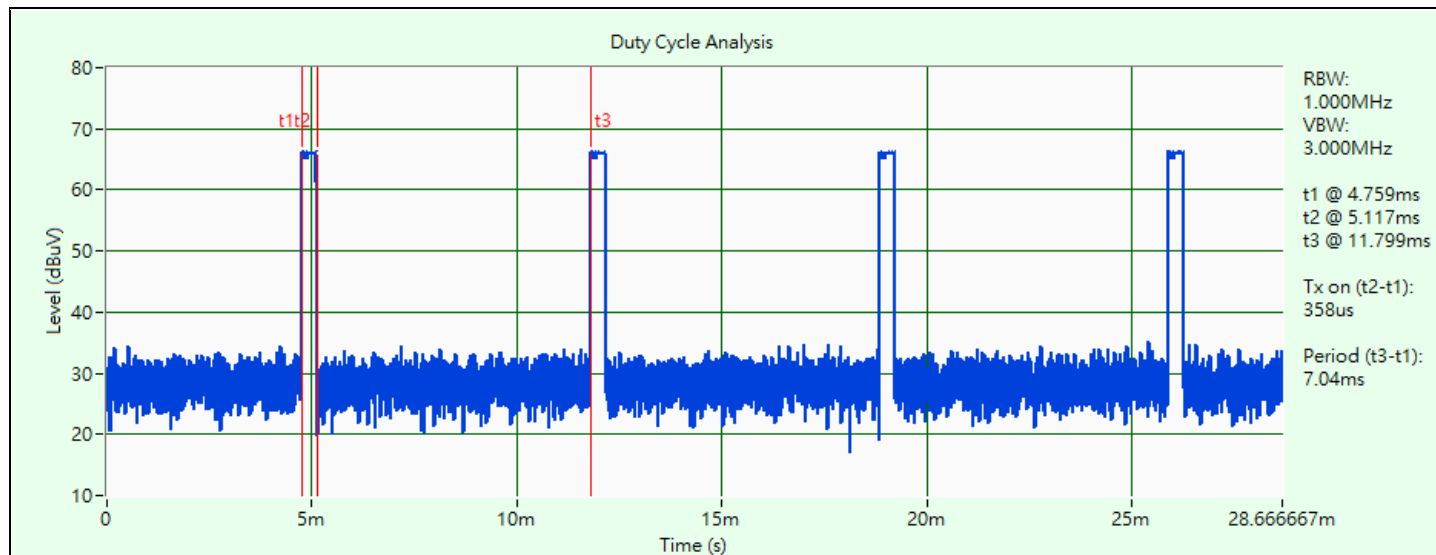
3.5 Duty Cycle of Test Signal

BT-LE 1M: Duty cycle = $0.358 \text{ ms} / 7.04 \text{ ms} \times 100\% = 5.1\%$

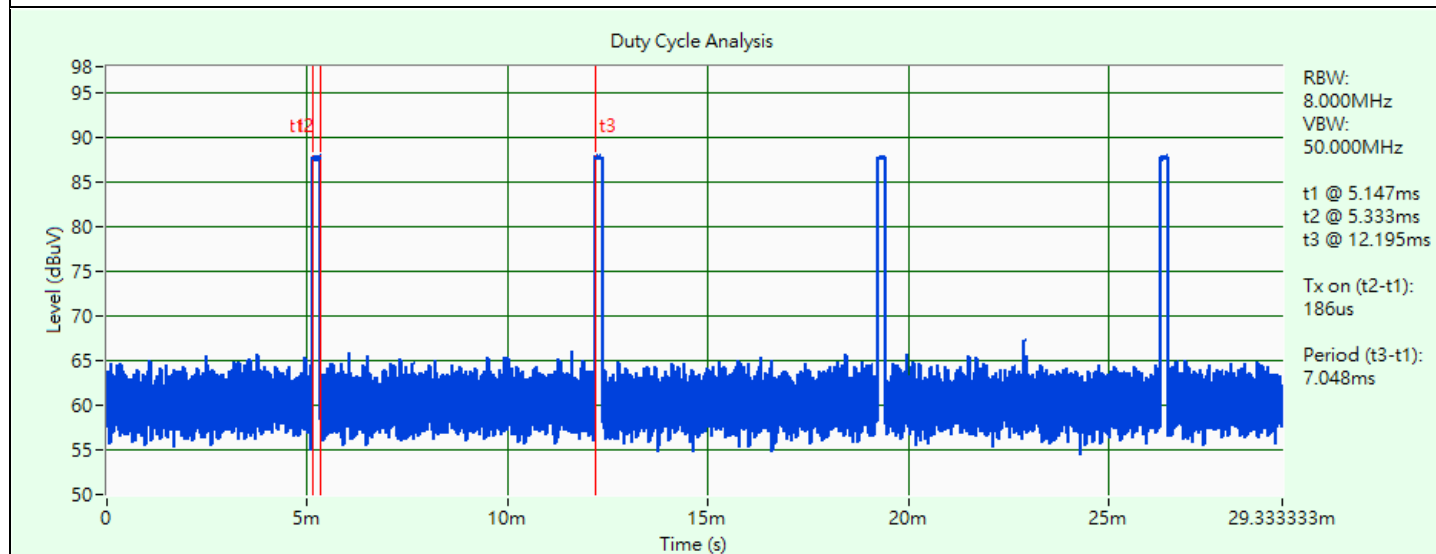
BT-LE 2M: Duty cycle = $0.186 \text{ ms} / 7.048 \text{ ms} \times 100\% = 2.6\%$

Logi Bolt 1M: Duty cycle = $0.357 \text{ ms} / 7.053 \text{ ms} \times 100\% = 5.1\%$

Logi Bolt 2M: Duty cycle = $0.185 \text{ ms} / 7.053 \text{ ms} \times 100\% = 2.6\%$

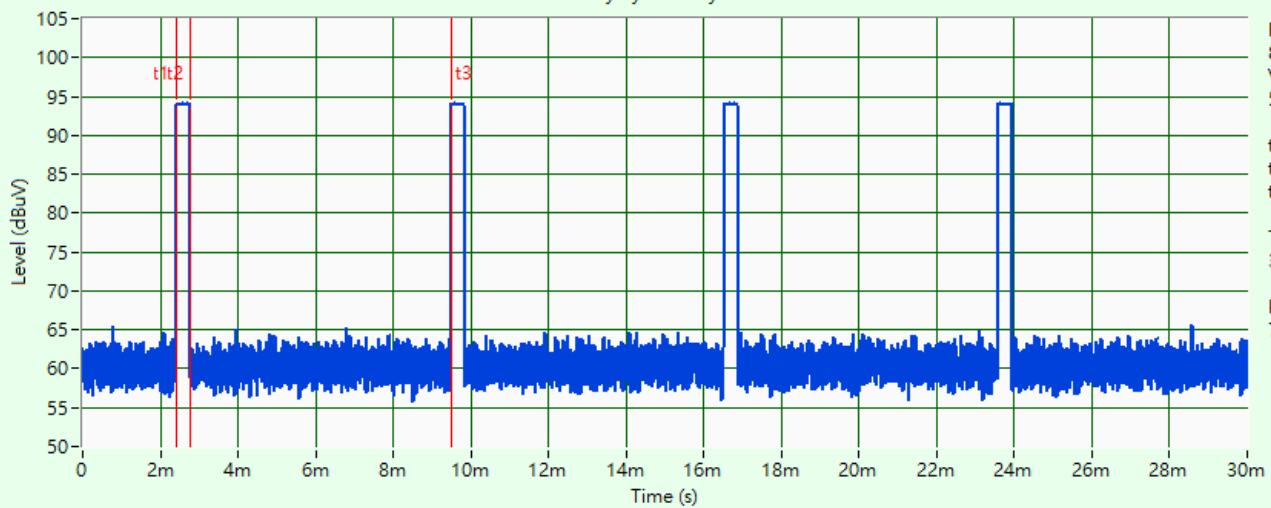


BT-LE 1M



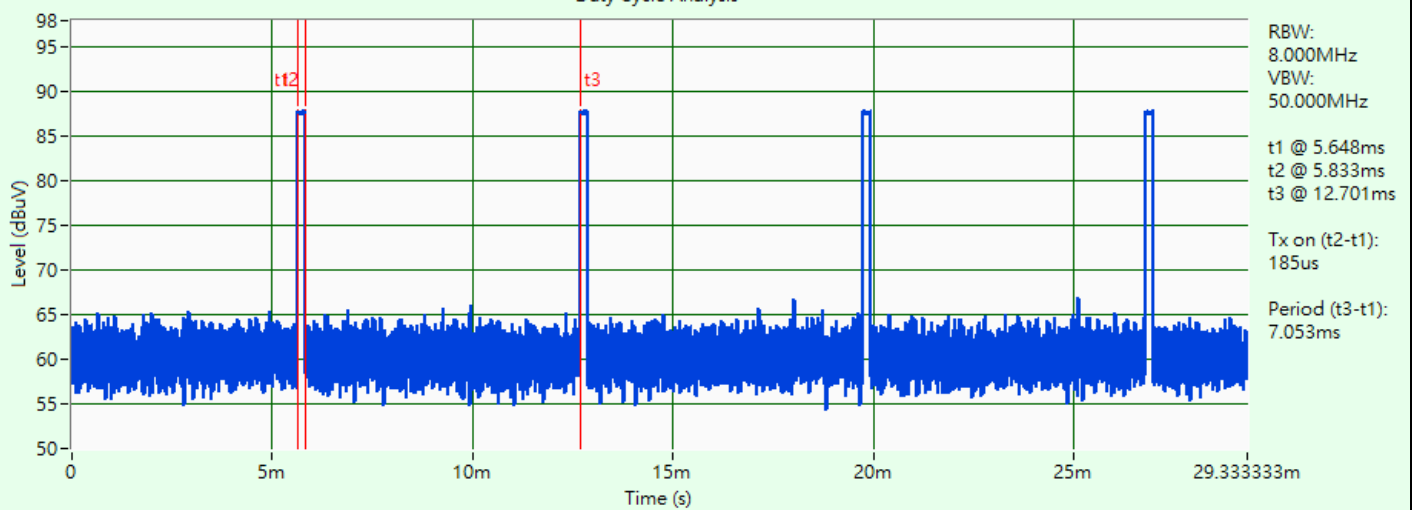
BT-LE 2M

Duty Cycle Analysis



Logi Bolt 1M

Duty Cycle Analysis



Logi Bolt 2M

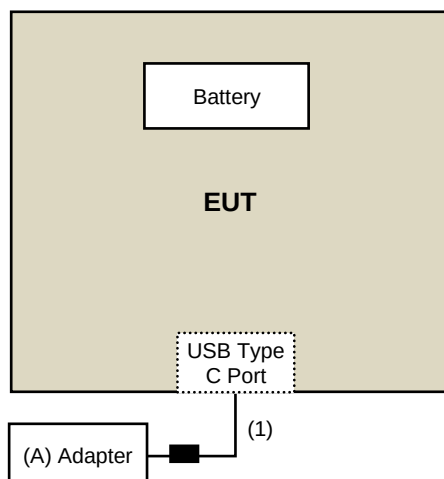
3.6 Test Program Used and Operation Descriptions

RF sample has been activated through the dongle [plug to laptop and press NumLock key into specific mode] to set the EUT under transmission condition continuously at the specific test frequency.

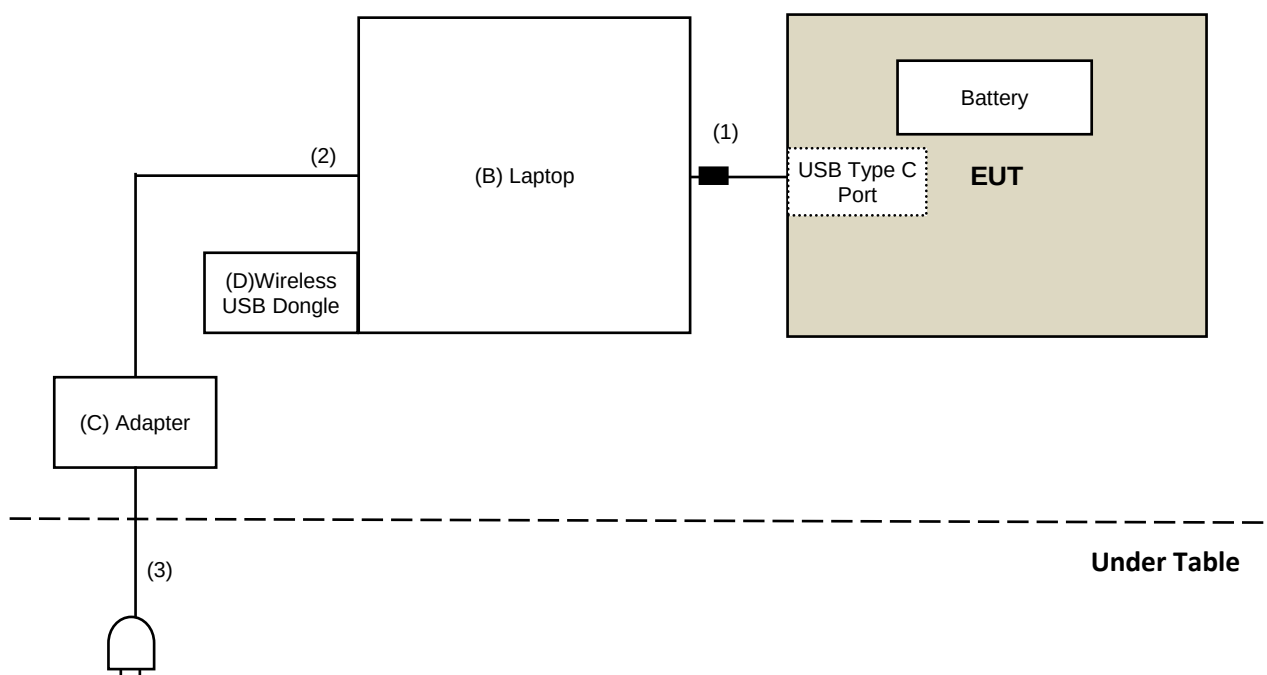
Test Item	Operation Description
RF Output Power	BLE1M TX Modulated 2402MHz
Power Spectral Density	BLE1M TX Modulated 2440MHz
6 dB Bandwidth	BLE1M TX Modulated 2480MHz
Conducted Out of Band Emissions	BLE2M TX Modulated 2404MHz
Unwanted Emissions above 1 GHz	BLE2M TX Modulated 2440MHz
	BLE2M TX Modulated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

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emissions test:



For AC Power Conducted Emission test:



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	ASUS	EXA1205UA	N/A	N/A	Provided by Lab
B	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	N/A	Provided by Lab
C	Adapter	Lenovo	ADLX45YLC3D	N/A	N/A	Provided by Lab
D	Wireless USB dongle	Logitech	CU0028	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB to Type C cable	1	1.8	Yes	1	Supplied by applicant
2	DC Cable	1	1.8	No	0	Provided by Lab
3	AC Cable	1	1	No	0	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	2025/5/23	2026/5/22
Pulse Power Sensor Anritsu	MA2411B	1726434	2025/6/3	2026/6/2
RF Power Meter Anritsu	ML2495A	1529002	2025/6/3	2026/6/2

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2025/11/21

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
EXA Signal Analyzer Agilent	N9010A	MY52220207	2024/12/30	2025/12/29
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Software	ADT_RF Test Software V8	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2025/11/21

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
50 ohm terminal resistance Telegartner	50 ohm	3	2025/10/29	2026/10/28
EMI Test Receiver R&S	ESCS 30	100375	2025/5/21	2026/5/20
Fixed Attenuator STI	STI02-2200-10	005	2025/2/17	2026/2/16
LISN R&S	ESH3-Z5	835239/001	2025/3/27	2026/3/26
		848773/004	2025/10/3	2026/10/2
RF Coaxial Cable JYEBAO	5D-FB	COCCAB-001	2025/2/17	2026/2/16
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2025/11/13

4.6 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
EMI Test Receiver R&S	ESR7	102026	2025/3/25	2026/3/24
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2025/3/29	2026/3/28
Loop Antenna TESEQ	HLA 6121	63620	2025/10/20	2026/10/19
Preamplifier EMCI	EMC330N	980538	2025/3/29	2026/3/28
	EMC001340	980142	2025/2/17	2026/2/16
PXA Signal Analyzer Keysight	N9030B	MY57141948	2025/5/20	2026/5/19
RF Coaxial Cable PEWC	8D	966-5-1	2025/3/29	2026/3/28
		966-5-2	2025/3/29	2026/3/28
		966-5-3	2025/3/29	2026/3/28
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2025/11/13

4.7 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
EMI Test Receiver R&S	ESR7	102026	2025/3/25	2026/3/24
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2025/11/9	2026/11/8
	BBHA 9170	9170-739	2025/11/9	2026/11/8
Preamplifier EMCI	EMC12630SE	980509	2025/1/18	2026/1/17
	EMC184045SE	980387	2025/8/7	2026/8/6
PXA Signal Analyzer Keysight	N9030B	MY57141948	2025/5/20	2026/5/19
RF Coaxial Cable EMCI	EMC102-KM-KM-1200	160924	2025/1/24	2026/1/23
	EMC102-KM-KM-4000	200214	2025/1/24	2026/1/23
	EMC104-SM-SM-1500	180503	2025/3/8	2026/3/7
	EMC104-SM-SM-2000	180501	2025/3/8	2026/3/7
	EMC104-SM-SM-6000	180506	2025/3/8	2026/3/7
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2025/11/10 ~ 2025/12/3

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

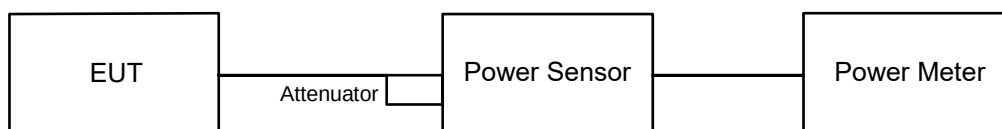
Notes:

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.

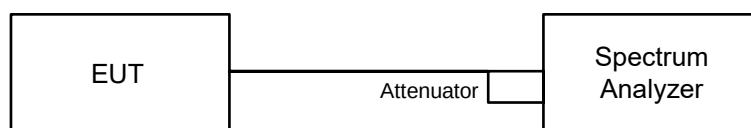
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

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

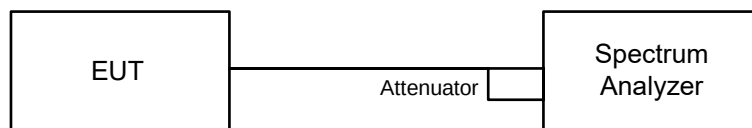


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span > 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- 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 amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

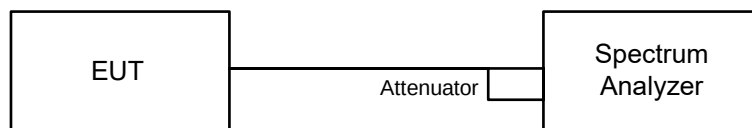


6.3.2 Test Procedure

- 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



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

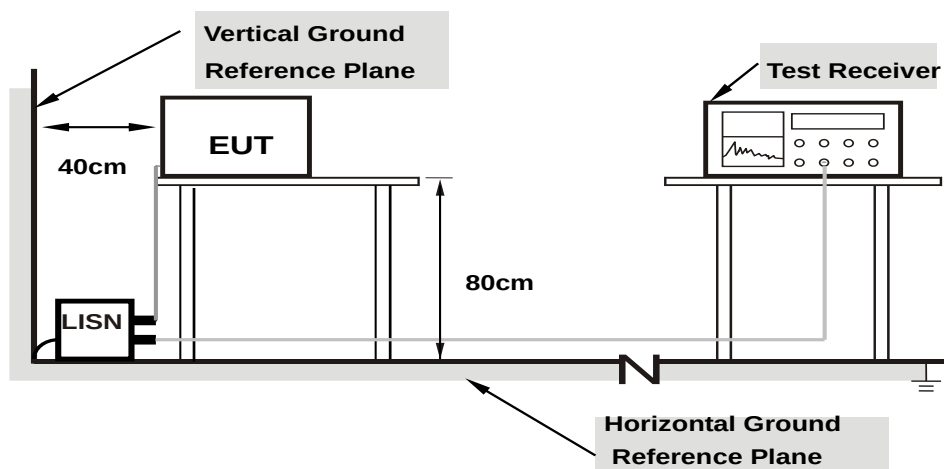
- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = No faster than coupled (auto) time.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use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

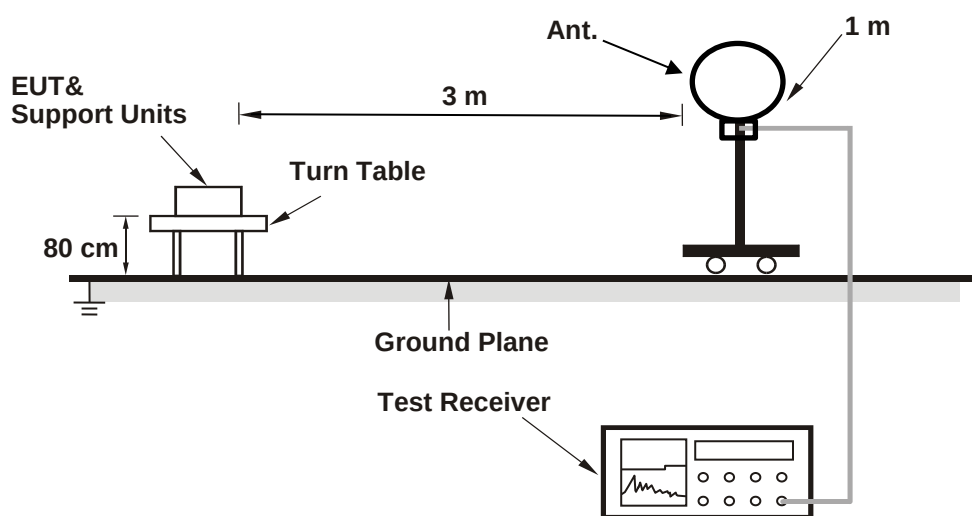
- Exploratory ac power-line conducted emission measurements: The EUT shall be operated on the mid channel and in the mode with highest output power unless the fundamental operates in the AC power-line emission test range then the EUT shall be operated in the range of typical modes of operation.
- The 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.

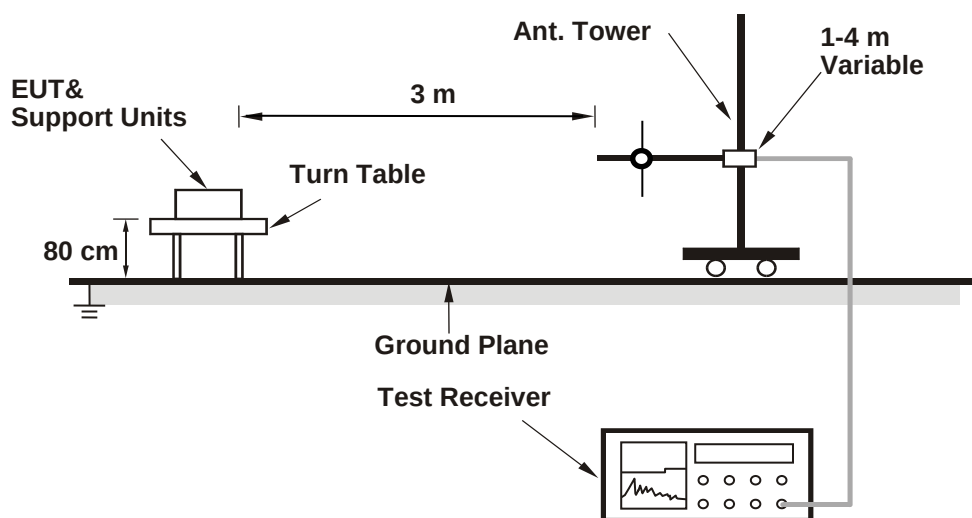
6.6 Unwanted Emissions below 1 GHz

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

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- 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.
- 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:

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

For Radiated emission above 30 MHz

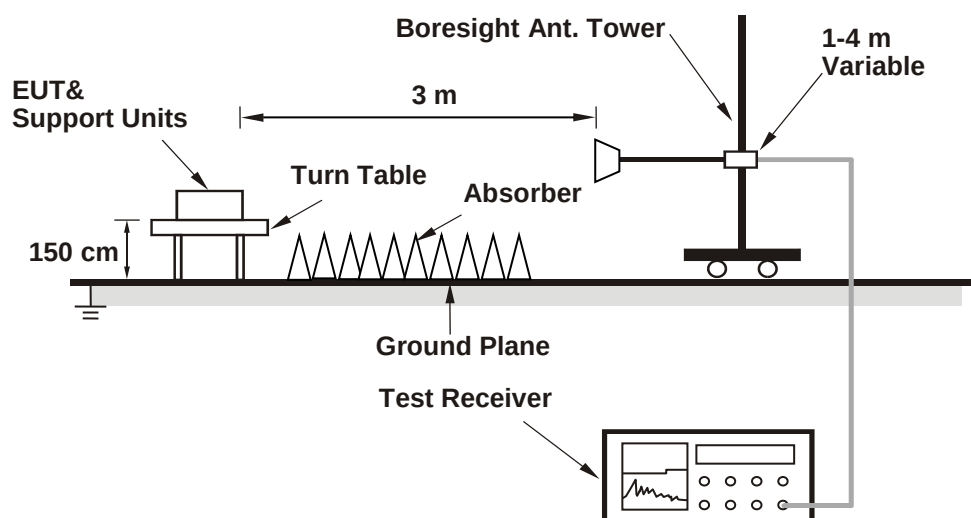
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top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

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
- 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 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:	3.8 Vdc	Environmental Conditions:	23°C, 56% RH	Tested By:	Kevin Ko
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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	3.475	5.41	30	Pass
19	2440	3.819	5.82	30	Pass
39	2480	4.093	6.12	30	Pass

Note: The antenna gain is 1.84 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	3.467	5.40	30	Pass
19	2440	3.802	5.80	30	Pass
38	2478	4.083	6.11	30	Pass

Note: The antenna gain is 1.84 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	3.451	5.38	30	Pass
19	2440	3.802	5.80	30	Pass
39	2480	4.064	6.09	30	Pass

Note: The antenna gain is 1.84 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	3.451	5.38	30	Pass
19	2440	3.784	5.78	30	Pass
38	2478	4.064	6.09	30	Pass

Note: The antenna gain is 1.84 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	3.443	5.37
19	2440	3.776	5.77
39	2480	4.055	6.08

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	3.428	5.35
19	2440	3.767	5.76
38	2478	4.036	6.06

Logi Bolt 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	3.42	5.34
19	2440	3.75	5.74
39	2480	4.036	6.06

Logi Bolt 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	3.404	5.32
19	2440	3.75	5.74
38	2478	4.018	6.04

7.2 Power Spectral Density

Input Power:	3.8 Vdc	Environmental Conditions:	23°C, 56% RH	Tested By:	Kevin Ko
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BT-LE 1M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	1.42	8	Pass
19	2440	1.53	8	Pass
39	2480	1.57	8	Pass

Note: The antenna gain is 1.84 dBi $\leq$ 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	-2.47	8	Pass
19	2440	-2.78	8	Pass
38	2478	-2.70	8	Pass

Note: The antenna gain is 1.84 dBi $\leq$ 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	1.35	8	Pass
19	2440	1.62	8	Pass
39	2480	1.61	8	Pass

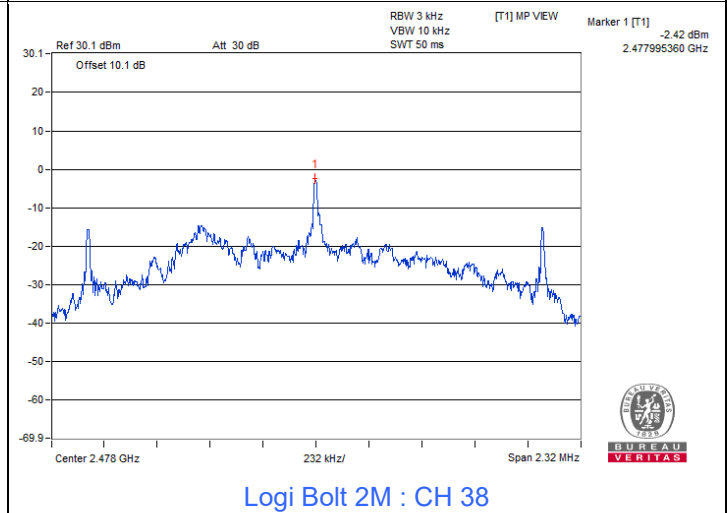
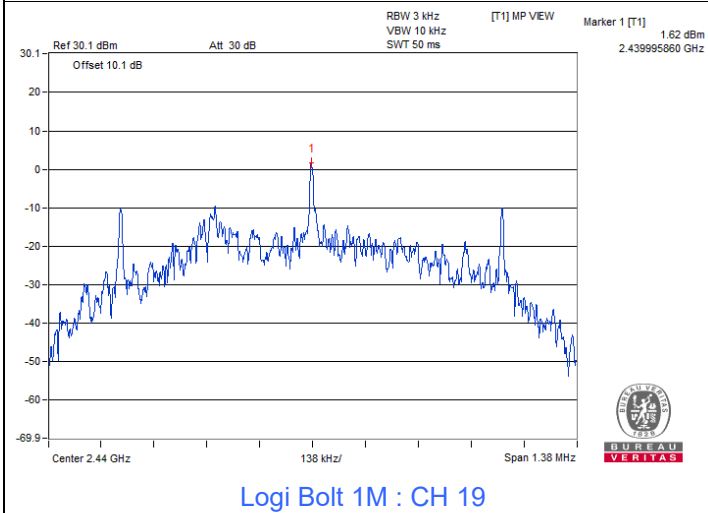
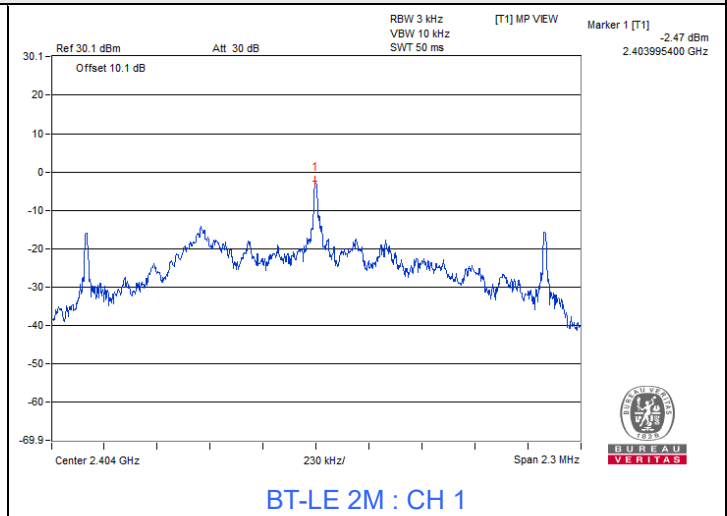
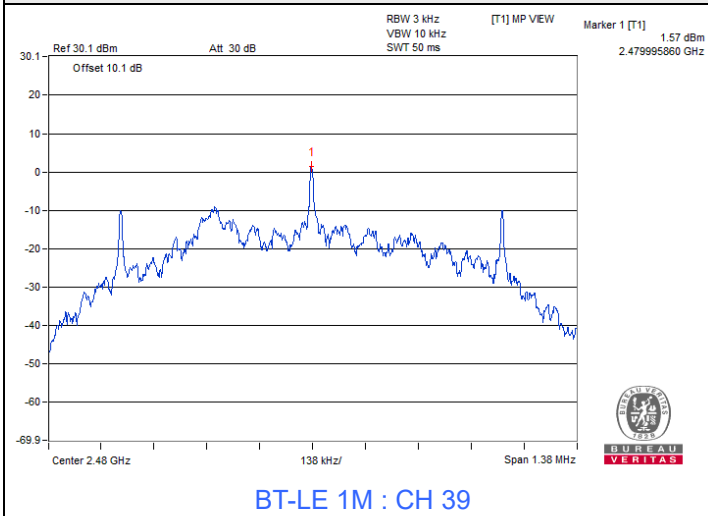
Note: The antenna gain is 1.84 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

Logi Bolt 2M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	-2.87	8	Pass
19	2440	-2.45	8	Pass
38	2478	-2.42	8	Pass

Note: The antenna gain is 1.84 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



7.3 6 dB Bandwidth

Input Power:	3.8 Vdc	Environmental Conditions:	23°C, 56% RH	Tested By:	Kevin Ko
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BT-LE 1M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.68	0.5	Pass
19	2440	0.7	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	1.15	0.5	Pass
19	2440	1.13	0.5	Pass
38	2478	1.15	0.5	Pass

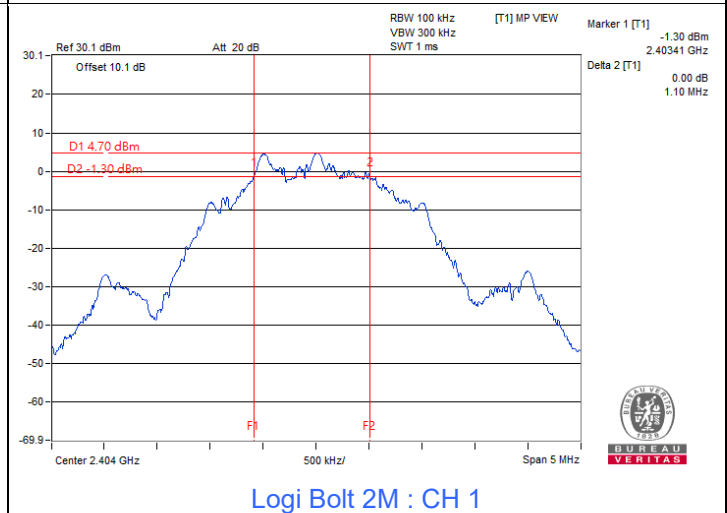
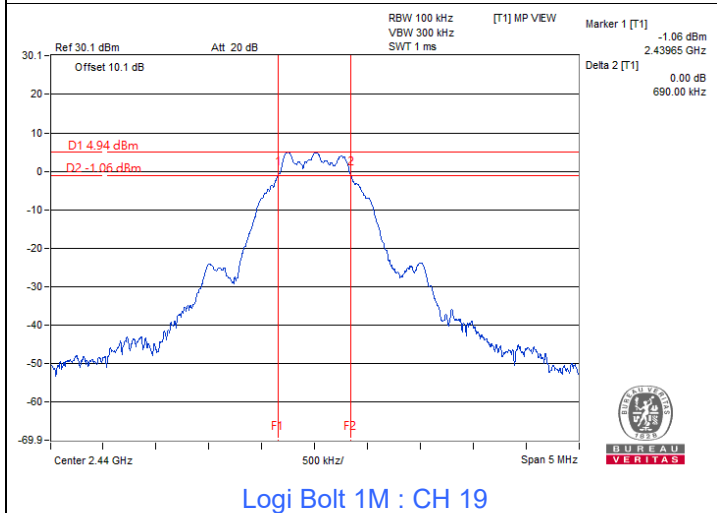
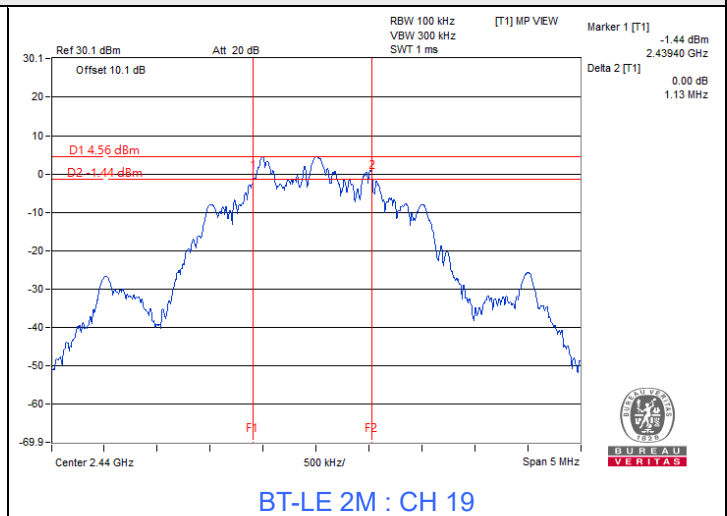
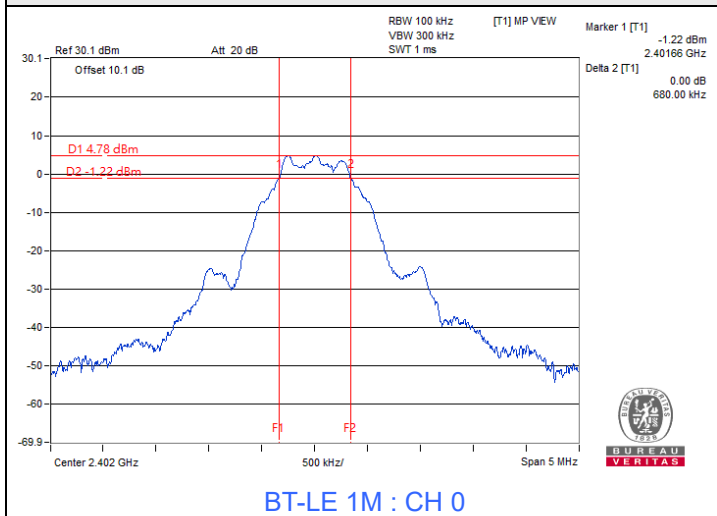
Logi Bolt 1M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.7	0.5	Pass
19	2440	0.69	0.5	Pass
39	2480	0.71	0.5	Pass

Logi Bolt 2M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.1	0.5	Pass
19	2440	1.16	0.5	Pass
38	2478	1.16	0.5	Pass

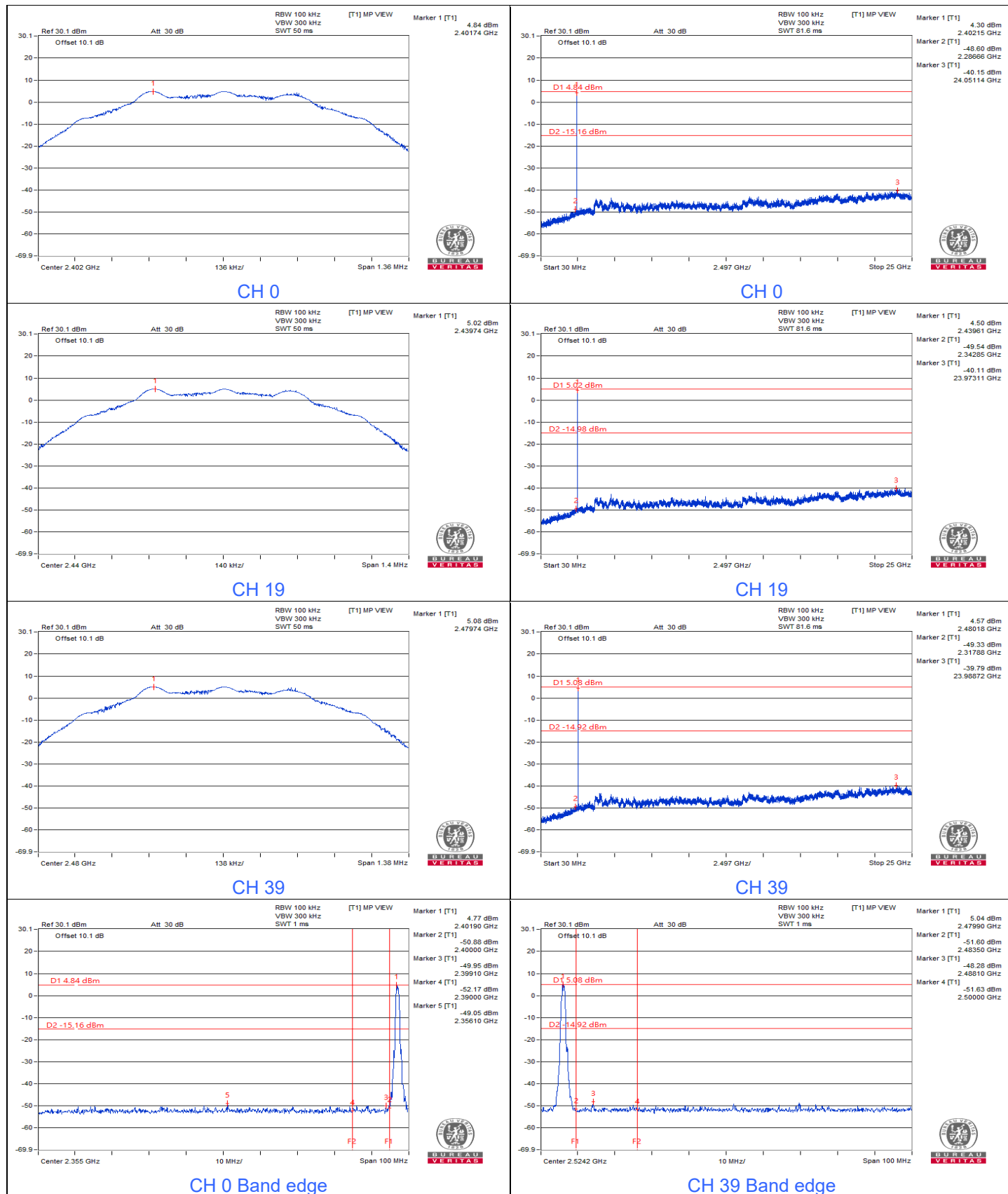
Spectrum Plot of Minimum Value



7.4 Conducted Out of Band Emissions

Input Power:	3.8 Vdc	Environmental Conditions:	23°C, 56% RH	Tested By:	Kevin Ko
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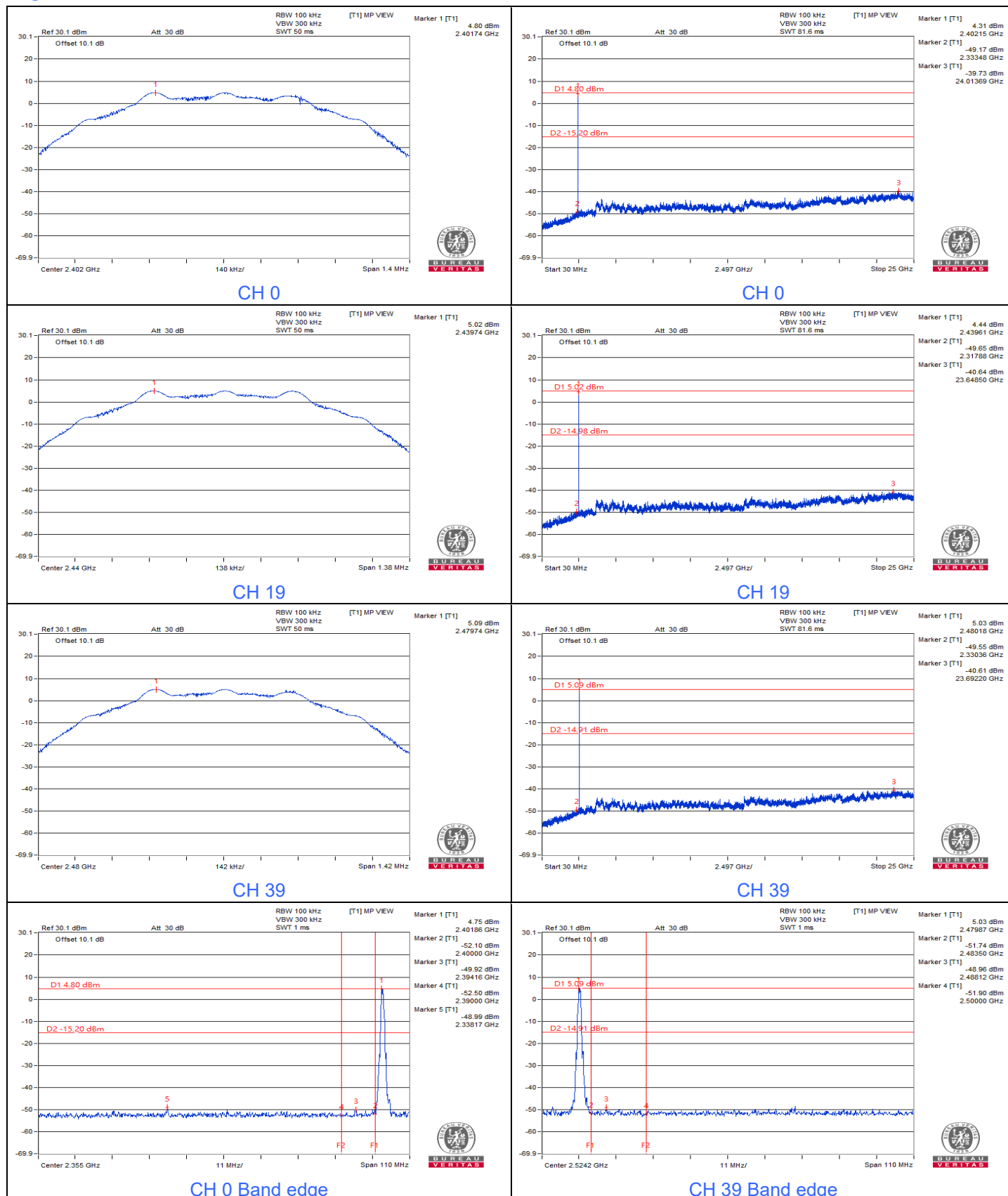
BT-LE 1M



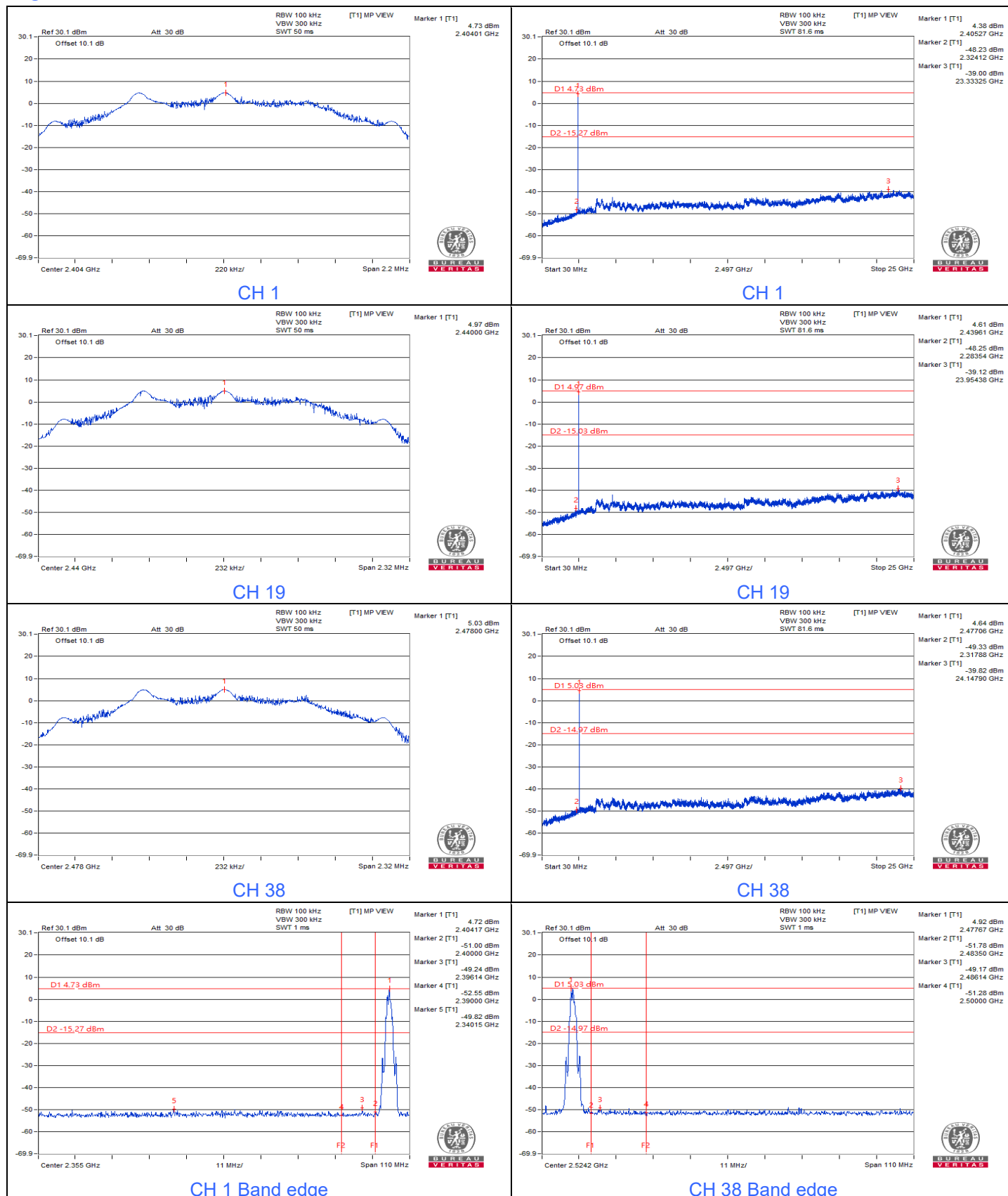
BT-LE 2M



Logi Bolt 1M



Logi Bolt 2M



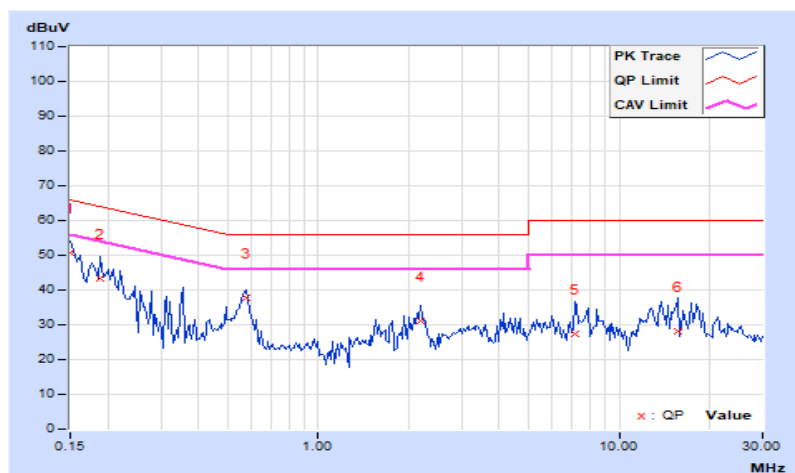
7.5 AC Power Conducted Emissions

RF Mode	BT LE-1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	28 °C, 68% RH
Tested By	Roy Mai		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.97	40.91	24.04	50.88	34.01	66.00	56.00	-15.12	-21.99
2	0.18906	9.96	33.30	15.57	43.26	25.53	64.08	54.08	-20.82	-28.55
3	0.57969	10.01	27.72	19.32	37.73	29.33	56.00	46.00	-18.27	-16.67
4	2.18750	10.10	20.87	10.42	30.97	20.52	56.00	46.00	-25.03	-25.48
5	7.16406	10.45	16.84	11.27	27.29	21.72	60.00	50.00	-32.71	-28.28
6	15.73047	11.01	17.12	11.38	28.13	22.39	60.00	50.00	-31.87	-27.61

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

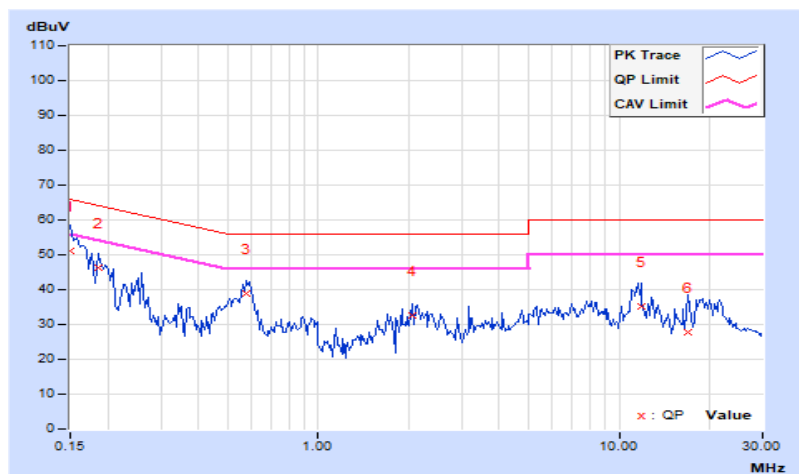


RF Mode	BT LE-1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	28 °C, 68% RH
Tested By	Roy Mai		

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	0.15000	9.99	41.12	24.74	51.11	34.73	66.00	56.00	-14.89	-21.27
2	0.18516	9.97	36.30	18.19	46.27	28.16	64.25	54.25	-17.98	-26.09
3	0.57969	9.95	29.00	21.19	38.95	31.14	56.00	46.00	-17.05	-14.86
4	2.05078	10.07	22.60	12.38	32.67	22.45	56.00	46.00	-23.33	-23.55
5	11.81250	10.55	24.67	16.99	35.22	27.54	60.00	50.00	-24.78	-22.46
6	16.91016	10.81	16.96	9.47	27.77	20.28	60.00	50.00	-32.23	-29.72

Remarks:

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

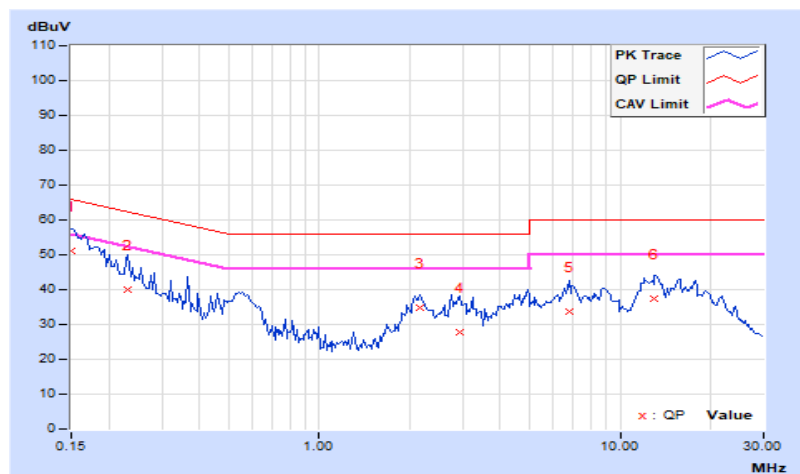


RF Mode	Logi Bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	28 °C, 68% RH
Tested By	Roy Mai		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.97	41.10	26.89	51.07	36.86	66.00	56.00	-14.93	-19.14
2	0.23203	9.96	30.03	18.56	39.99	28.52	62.38	52.38	-22.39	-23.86
3	2.15234	10.10	24.75	14.06	34.85	24.16	56.00	46.00	-21.15	-21.84
4	2.93750	10.16	17.68	13.54	27.84	23.70	56.00	46.00	-28.16	-22.30
5	6.75000	10.42	23.24	11.74	33.66	22.16	60.00	50.00	-26.34	-27.84
6	13.03125	10.83	26.74	19.68	37.57	30.51	60.00	50.00	-22.43	-19.49

Remarks:

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

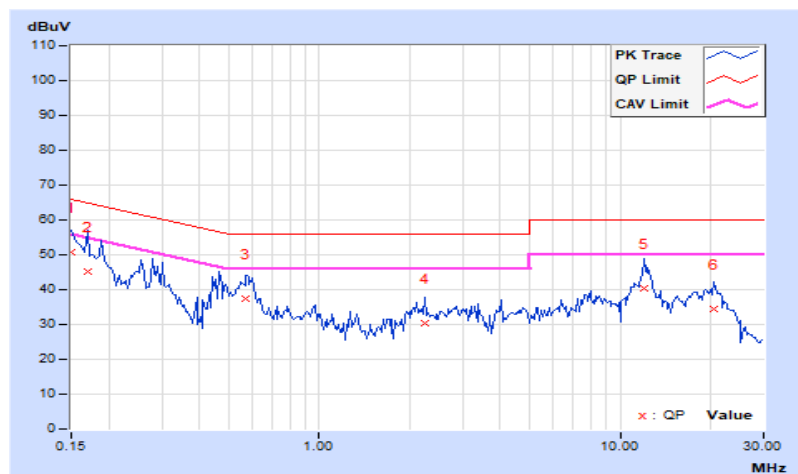


RF Mode	Logi Bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	28 °C, 68% RH
Tested By	Roy Mai		

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	0.15000	9.99	40.61	25.92	50.60	35.91	66.00	56.00	-15.40	-20.09
2	0.16953	9.98	35.26	19.61	45.24	29.59	64.98	54.98	-19.74	-25.39
3	0.57188	9.95	27.60	16.56	37.55	26.51	56.00	46.00	-18.45	-19.49
4	2.24219	10.08	20.26	12.75	30.34	22.83	56.00	46.00	-25.66	-23.17
5	12.00391	10.56	29.72	26.90	40.28	37.46	60.00	50.00	-19.72	-12.54
6	20.44922	10.97	23.50	16.46	34.47	27.43	60.00	50.00	-25.53	-22.57

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



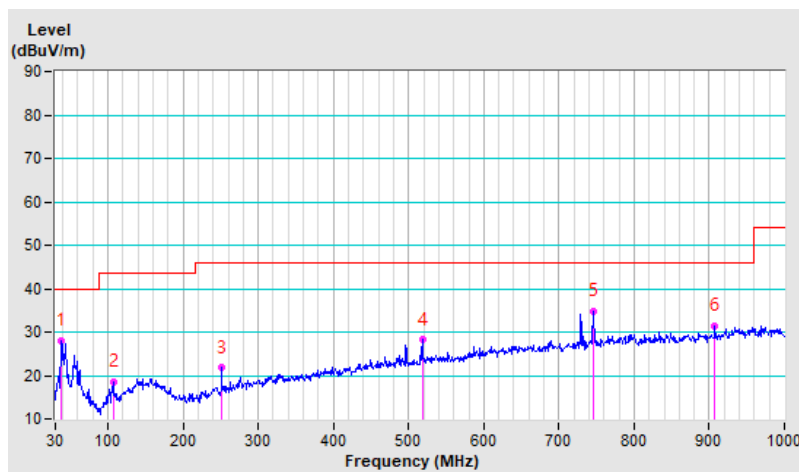
7.6 Unwanted Emissions below 1 GHz

RF Mode	BT LE-1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 69% RH
Tested By	Roy Mai		

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	38.39	28.0 QP	40.0	-12.0	1.00 H	360	41.0	-13.0
2	106.85	18.4 QP	43.5	-25.1	1.50 H	360	34.3	-15.9
3	252.06	21.7 QP	46.0	-24.3	1.50 H	82	35.1	-13.4
4	518.52	28.2 QP	46.0	-17.8	1.50 H	360	34.6	-6.4
5	745.50	34.8 QP	46.0	-11.2	1.50 H	359	36.9	-2.1
6	907.53	31.4 QP	46.0	-14.6	1.00 H	176	31.6	-0.2

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.

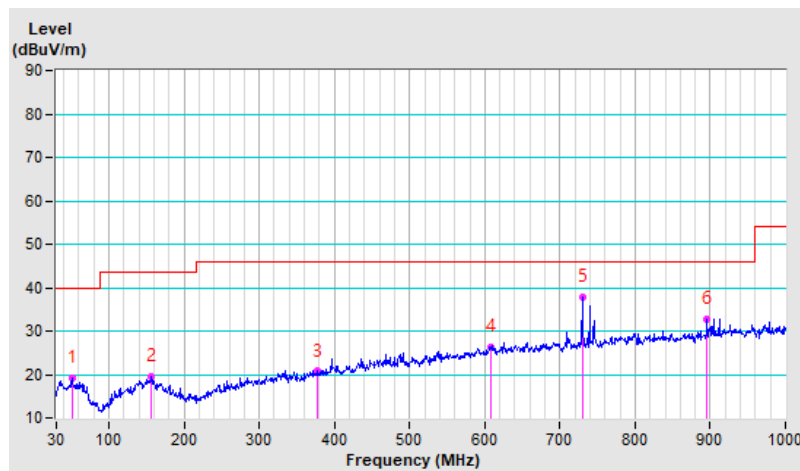


RF Mode	BT LE-1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 69% RH
Tested By	Roy Mai		

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	51.15	19.2 QP	40.0	-20.8	1.50 V	157	31.6	-12.4
2	157.00	19.5 QP	43.5	-24.0	1.00 V	360	31.6	-12.1
3	376.31	20.7 QP	46.0	-25.3	1.00 V	100	30.4	-9.7
4	608.97	26.3 QP	46.0	-19.7	1.50 V	88	30.3	-4.0
5	730.27	37.9 QP	46.0	-8.1	1.00 V	360	40.4	-2.5
6	895.77	32.7 QP	46.0	-13.3	1.50 V	144	33.2	-0.5

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 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.

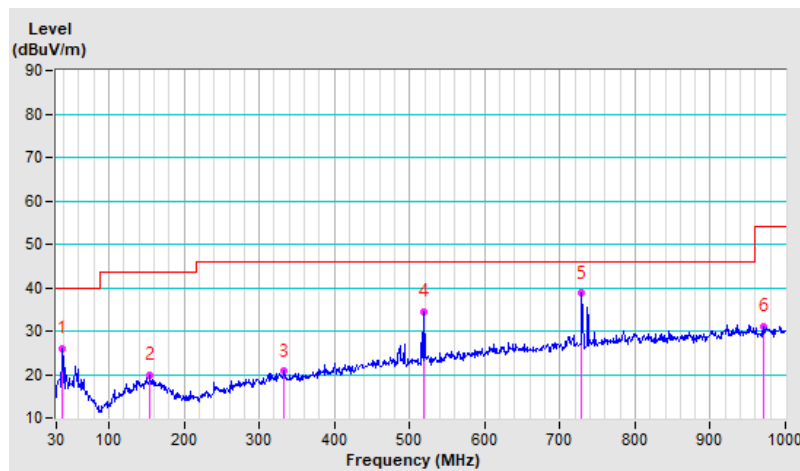


RF Mode	Logi Bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 69% RH
Tested By	Roy Mai		

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	37.91	26.0 QP	40.0	-14.0	1.50 H	360	39.0	-13.0
2	154.35	19.9 QP	43.5	-23.6	1.00 H	68	31.9	-12.0
3	333.29	20.7 QP	46.0	-25.3	1.50 H	202	31.4	-10.7
4	519.46	34.4 QP	46.0	-11.6	1.50 H	360	40.8	-6.4
5	729.30	38.7 QP	46.0	-7.3	1.00 H	17	41.2	-2.5
6	970.97	31.1 QP	54.0	-22.9	1.50 H	187	30.3	0.8

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 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.

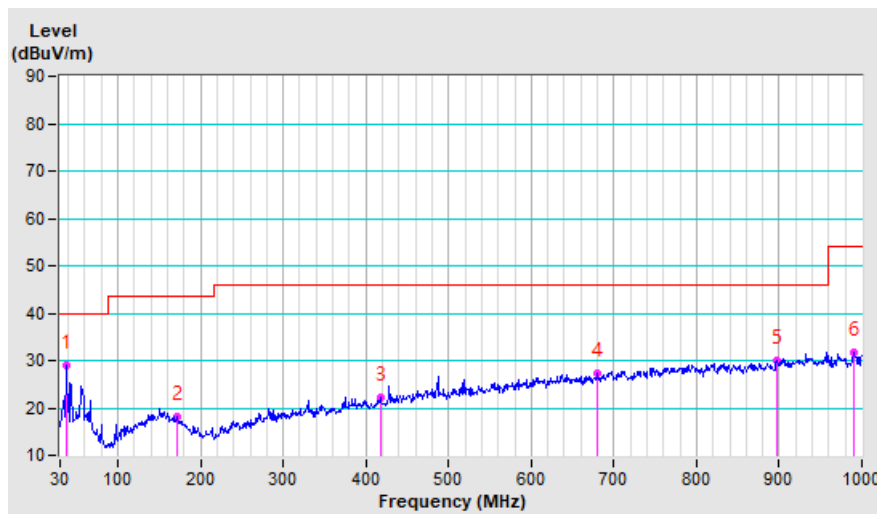


RF Mode	Logi Bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 69% RH
Tested By	Roy Mai		

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	38.32	28.9 QP	40.0	-11.1	1.00 V	331	41.9	-13.0
2	171.81	18.2 QP	43.5	-25.3	1.50 V	261	31.2	-13.0
3	417.90	22.2 QP	46.0	-23.8	1.50 V	201	30.8	-8.6
4	680.19	27.3 QP	46.0	-18.7	1.50 V	3	30.7	-3.4
5	897.18	30.1 QP	46.0	-15.9	1.50 V	209	30.6	-0.5
6	990.76	31.7 QP	54.0	-22.3	1.00 V	6	30.7	1.0

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.



7.7 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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	55.2 PK	74.0	-18.8	1.53 H	192	57.5	-2.3
2	2390.00	45.3 AV	54.0	-8.7	1.53 H	192	47.6	-2.3
3	*2402.00	101.5 PK			1.53 H	192	103.8	-2.3
4	*2402.00	75.6 AV			1.53 H	192	77.9	-2.3
5	4804.00	56.7 PK	74.0	-17.3	1.22 H	265	53.3	3.4
6	4804.00	30.8 AV	54.0	-23.2	1.22 H	265	27.4	3.4
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	2390.00	54.9 PK	74.0	-19.1	3.20 V	298	57.2	-2.3
2	2390.00	45.0 AV	54.0	-9.0	3.20 V	298	47.3	-2.3
3	*2402.00	95.5 PK			3.20 V	298	97.8	-2.3
4	*2402.00	69.6 AV			3.20 V	298	71.9	-2.3
5	4804.00	55.3 PK	74.0	-18.7	2.22 V	195	51.9	3.4
6	4804.00	29.4 AV	54.0	-24.6	2.22 V	195	26.0	3.4

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.358 \text{ ms} / 7.04 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	100.5 PK			1.10 H	185	102.9	-2.4
2	*2440.00	74.6 AV			1.10 H	185	77.0	-2.4
3	4880.00	58.9 PK	74.0	-15.1	1.56 H	244	55.3	3.6
4	4880.00	33.0 AV	54.0	-21.0	1.56 H	244	29.4	3.6
5	7320.00	57.4 PK	74.0	-16.6	2.46 H	153	47.0	10.4
6	7320.00	31.5 AV	54.0	-22.5	2.46 H	153	21.1	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	*2440.00	92.3 PK			3.64 V	275	94.7	-2.4
2	*2440.00	66.4 AV			3.64 V	275	68.8	-2.4
3	4880.00	57.7 PK	74.0	-16.3	1.20 V	310	54.1	3.6
4	4880.00	31.8 AV	54.0	-22.2	1.20 V	310	28.2	3.6
5	7320.00	56.6 PK	74.0	-17.4	1.11 V	251	46.2	10.4
6	7320.00	30.7 AV	54.0	-23.3	1.11 V	251	20.3	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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.358 \text{ ms} / 7.04 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	99.0 PK			1.97 H	193	101.4	-2.4
2	*2480.00	73.1 AV			1.97 H	193	75.5	-2.4
3	2483.50	55.9 PK	74.0	-18.1	1.97 H	193	58.3	-2.4
4	2483.50	45.0 AV	54.0	-9.0	1.97 H	193	47.4	-2.4
5	4960.00	57.7 PK	74.0	-16.3	2.47 H	111	53.9	3.8
6	4960.00	31.8 AV	54.0	-22.2	2.47 H	111	28.0	3.8
7	7440.00	56.3 PK	74.0	-17.7	2.14 H	125	45.6	10.7
8	7440.00	30.4 AV	54.0	-23.6	2.14 H	125	19.7	10.7
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	*2480.00	91.9 PK			3.11 V	292	94.3	-2.4
2	*2480.00	66.0 AV			3.11 V	292	68.4	-2.4
3	2483.50	55.4 PK	74.0	-18.6	3.11 V	292	57.8	-2.4
4	2483.50	44.5 AV	54.0	-9.5	3.11 V	292	46.9	-2.4
5	4960.00	56.4 PK	74.0	-17.6	1.30 V	156	52.6	3.8
6	4960.00	30.5 AV	54.0	-23.5	1.30 V	156	26.7	3.8
7	7440.00	55.2 PK	74.0	-18.8	2.14 V	143	44.5	10.7
8	7440.00	29.3 AV	54.0	-24.7	2.14 V	143	18.6	10.7

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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.358 \text{ ms} / 7.04 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	56.5 PK	74.0	-17.5	1.31 H	194	58.8	-2.3
2	2390.00	46.0 AV	54.0	-8.0	1.31 H	194	48.3	-2.3
3	*2404.00	101.6 PK			1.31 H	194	103.9	-2.3
4	*2404.00	70.0 AV			1.31 H	194	72.3	-2.3
5	4808.00	56.0 PK	74.0	-18.0	1.89 H	257	52.6	3.4
6	4808.00	24.4 AV	54.0	-29.6	1.89 H	257	21.0	3.4
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	2390.00	56.0 PK	74.0	-18.0	3.72 V	302	58.3	-2.3
2	2390.00	45.5 AV	54.0	-8.5	3.72 V	302	47.8	-2.3
3	*2404.00	96.6 PK			3.72 V	302	98.9	-2.3
4	*2404.00	65.0 AV			3.72 V	302	67.3	-2.3
5	4808.00	55.0 PK	74.0	-19.0	2.50 V	111	51.6	3.4
6	4808.00	23.4 AV	54.0	-30.6	2.50 V	111	20.0	3.4

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.186 \text{ ms} / 7.048 \text{ ms}) = -31.6 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	100.0 PK			1.53 H	195	102.4	-2.4
2	*2440.00	68.4 AV			1.53 H	195	70.8	-2.4
3	4880.00	58.1 PK	74.0	-15.9	1.25 H	257	54.5	3.6
4	4880.00	26.5 AV	54.0	-27.5	1.25 H	257	22.9	3.6
5	7320.00	57.0 PK	74.0	-17.0	1.99 H	252	46.6	10.4
6	7320.00	25.4 AV	54.0	-28.6	1.99 H	252	15.0	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	*2440.00	94.6 PK			4.00 V	294	97.0	-2.4
2	*2440.00	63.0 AV			4.00 V	294	65.4	-2.4
3	4880.00	57.0 PK	74.0	-17.0	1.25 V	148	53.4	3.6
4	4880.00	25.4 AV	54.0	-28.6	1.25 V	148	21.8	3.6
5	7320.00	56.1 PK	74.0	-17.9	2.22 V	217	45.7	10.4
6	7320.00	24.5 AV	54.0	-29.5	2.22 V	217	14.1	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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.186 \text{ ms} / 7.048 \text{ ms}) = -31.6 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	99.0 PK			1.28 H	196	101.4	-2.4
2	*2478.00	67.4 AV			1.28 H	196	69.8	-2.4
3	2483.50	56.6 PK	74.0	-17.4	1.28 H	196	59.0	-2.4
4	2483.50	46.7 AV	54.0	-7.3	1.28 H	196	49.1	-2.4
5	4956.00	57.0 PK	74.0	-17.0	1.25 H	220	53.2	3.8
6	4956.00	25.4 AV	54.0	-28.6	1.25 H	220	21.6	3.8
7	7434.00	55.8 PK	74.0	-18.2	1.25 H	222	45.1	10.7
8	7434.00	24.2 AV	54.0	-29.8	1.25 H	222	13.5	10.7
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	*2478.00	90.0 PK			1.27 V	119	92.4	-2.4
2	*2478.00	58.4 AV			1.27 V	119	60.8	-2.4
3	2483.50	56.4 PK	74.0	-17.6	1.27 V	119	58.8	-2.4
4	2483.50	46.0 AV	54.0	-8.0	1.27 V	119	48.4	-2.4
5	4956.00	56.0 PK	74.0	-18.0	1.48 V	257	52.2	3.8
6	4956.00	24.4 AV	54.0	-29.6	1.48 V	257	20.6	3.8
7	7434.00	54.6 PK	74.0	-19.4	1.43 V	196	43.9	10.7
8	7434.00	23.0 AV	54.0	-31.0	1.43 V	196	12.3	10.7

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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.186 \text{ ms} / 7.048 \text{ ms}) = -31.6 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	54.9 PK	74.0	-19.1	1.63 H	190	57.2	-2.3
2	2390.00	45.0 AV	54.0	-9.0	1.63 H	190	47.3	-2.3
3	*2402.00	101.2 PK			1.63 H	190	103.5	-2.3
4	*2402.00	75.3 AV			1.63 H	190	77.6	-2.3
5	4804.00	56.4 PK	74.0	-17.6	1.50 H	250	53.0	3.4
6	4804.00	30.5 AV	54.0	-23.5	1.50 H	250	27.1	3.4
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	2390.00	54.6 PK	74.0	-19.4	3.19 V	301	56.9	-2.3
2	2390.00	44.7 AV	54.0	-9.3	3.19 V	301	47.0	-2.3
3	*2402.00	95.0 PK			3.19 V	301	97.3	-2.3
4	*2402.00	69.1 AV			3.19 V	301	71.4	-2.3
5	4804.00	55.1 PK	74.0	-18.9	3.30 V	101	51.7	3.4
6	4804.00	29.2 AV	54.0	-24.8	3.30 V	101	25.8	3.4

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.357 \text{ ms} / 7.053 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	100.2 PK			1.11 H	190	102.6	-2.4
2	*2440.00	74.3 AV			1.11 H	190	76.7	-2.4
3	4880.00	58.6 PK	74.0	-15.4	1.30 H	200	55.0	3.6
4	4880.00	32.7 AV	54.0	-21.3	1.30 H	200	29.1	3.6
5	7320.00	57.1 PK	74.0	-16.9	2.10 H	158	46.7	10.4
6	7320.00	31.2 AV	54.0	-22.8	2.10 H	158	20.8	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	*2440.00	92.0 PK			3.30 V	280	94.4	-2.4
2	*2440.00	66.1 AV			3.30 V	280	68.5	-2.4
3	4880.00	57.4 PK	74.0	-16.6	2.56 V	220	53.8	3.6
4	4880.00	31.5 AV	54.0	-22.5	2.56 V	220	27.9	3.6
5	7320.00	56.2 PK	74.0	-17.8	2.11 V	148	45.8	10.4
6	7320.00	30.3 AV	54.0	-23.7	2.11 V	148	19.9	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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.357 \text{ ms} / 7.053 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	98.9 PK			1.25 H	202	101.3	-2.4
2	*2480.00	73.0 AV			1.25 H	202	75.4	-2.4
3	2483.50	55.6 PK	74.0	-18.4	1.25 H	202	58.0	-2.4
4	2483.50	44.9 AV	54.0	-9.1	1.25 H	202	47.3	-2.4
5	4960.00	57.3 PK	74.0	-16.7	1.63 H	190	53.5	3.8
6	4960.00	31.4 AV	54.0	-22.6	1.63 H	190	27.6	3.8
7	7440.00	56.1 PK	74.0	-17.9	1.91 H	223	45.4	10.7
8	7440.00	30.2 AV	54.0	-23.8	1.91 H	223	19.5	10.7
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	*2480.00	89.9 PK			1.09 V	116	92.3	-2.4
2	*2480.00	64.0 AV			1.09 V	116	66.4	-2.4
3	2483.50	55.0 PK	74.0	-19.0	1.09 V	116	57.4	-2.4
4	2483.50	44.5 AV	54.0	-9.5	1.09 V	116	46.9	-2.4
5	4960.00	56.1 PK	74.0	-17.9	1.60 V	148	52.3	3.8
6	4960.00	30.2 AV	54.0	-23.8	1.60 V	148	26.4	3.8
7	7440.00	55.0 PK	74.0	-19.0	2.20 V	166	44.3	10.7
8	7440.00	29.1 AV	54.0	-24.9	2.20 V	166	18.4	10.7

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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.357 \text{ ms} / 7.053 \text{ ms}) = -25.9 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	56.0 PK	74.0	-18.0	1.87 H	194	58.3	-2.3
2	2390.00	45.4 AV	54.0	-8.6	1.87 H	194	47.7	-2.3
3	*2404.00	101.0 PK			1.87 H	191	103.3	-2.3
4	*2404.00	69.4 AV			1.87 H	191	71.7	-2.3
5	4808.00	55.6 PK	74.0	-18.4	1.48 H	330	52.2	3.4
6	4808.00	24.0 AV	54.0	-30.0	1.48 H	330	20.6	3.4
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	2390.00	55.3 PK	74.0	-18.7	3.68 V	316	57.6	-2.3
2	2390.00	45.0 AV	54.0	-9.0	3.68 V	316	47.3	-2.3
3	*2404.00	95.6 PK			3.68 V	316	97.9	-2.3
4	*2404.00	64.0 AV			3.68 V	316	66.3	-2.3
5	4808.00	54.4 PK	74.0	-19.6	1.59 V	310	51.0	3.4
6	4808.00	22.8 AV	54.0	-31.2	1.59 V	310	19.4	3.4

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.185 \text{ ms} / 7.053 \text{ ms}) = -31.6 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	99.5 PK			1.52 H	180	101.9	-2.4
2	*2440.00	67.9 AV			1.52 H	180	70.3	-2.4
3	4880.00	57.4 PK	74.0	-16.6	2.90 H	124	53.8	3.6
4	4880.00	25.8 AV	54.0	-28.2	2.90 H	124	22.2	3.6
5	7320.00	56.3 PK	74.0	-17.7	2.48 H	130	45.9	10.4
6	7320.00	24.7 AV	54.0	-29.3	2.48 H	130	14.3	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	*2440.00	94.0 PK			3.51 V	222	96.4	-2.4
2	*2440.00	62.4 AV			3.51 V	222	64.8	-2.4
3	4880.00	56.6 PK	74.0	-17.4	2.59 V	198	53.0	3.6
4	4880.00	25.0 AV	54.0	-29.0	2.59 V	198	21.4	3.6
5	7320.00	55.7 PK	74.0	-18.3	2.31 V	158	45.3	10.4
6	7320.00	24.1 AV	54.0	-29.9	2.31 V	158	13.7	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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.185 \text{ ms} / 7.053 \text{ ms}) = -31.6 \text{ dB}$$

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 (System)	120 Vac, 60 Hz	Environmental Conditions	22 °C, 68% RH
Tested By	Roy Mai		

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	98.0 PK			1.77 H	168	99.4	-1.4
2	*2478.00	66.4 AV			1.77 H	168	67.8	-1.4
3	2483.50	56.3 PK	74.0	-17.7	1.77 H	168	57.7	-1.4
4	2483.50	46.2 AV	54.0	-7.8	1.77 H	168	47.6	-1.4
5	4956.00	56.7 PK	74.0	-17.3	2.45 H	123	53.6	3.1
6	4956.00	25.1 AV	54.0	-28.9	2.45 H	123	22.0	3.1
7	7434.00	55.0 PK	74.0	-19.0	2.30 H	148	45.2	9.8
8	7434.00	23.4 AV	54.0	-30.6	2.30 H	148	13.6	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	*2478.00	89.0 PK			1.22 V	114	90.4	-1.4
2	*2478.00	57.4 AV			1.22 V	114	58.8	-1.4
3	2483.50	56.1 PK	74.0	-17.9	1.22 V	114	57.5	-1.4
4	2483.50	45.5 AV	54.0	-8.5	1.22 V	114	46.9	-1.4
5	4956.00	55.3 PK	74.0	-18.7	1.23 V	110	52.2	3.1
6	4956.00	23.7 AV	54.0	-30.3	1.23 V	110	20.6	3.1
7	7434.00	54.0 PK	74.0	-20.0	2.60 V	148	44.2	9.8
8	7434.00	22.4 AV	54.0	-31.6	2.60 V	148	12.6	9.8

Remarks:

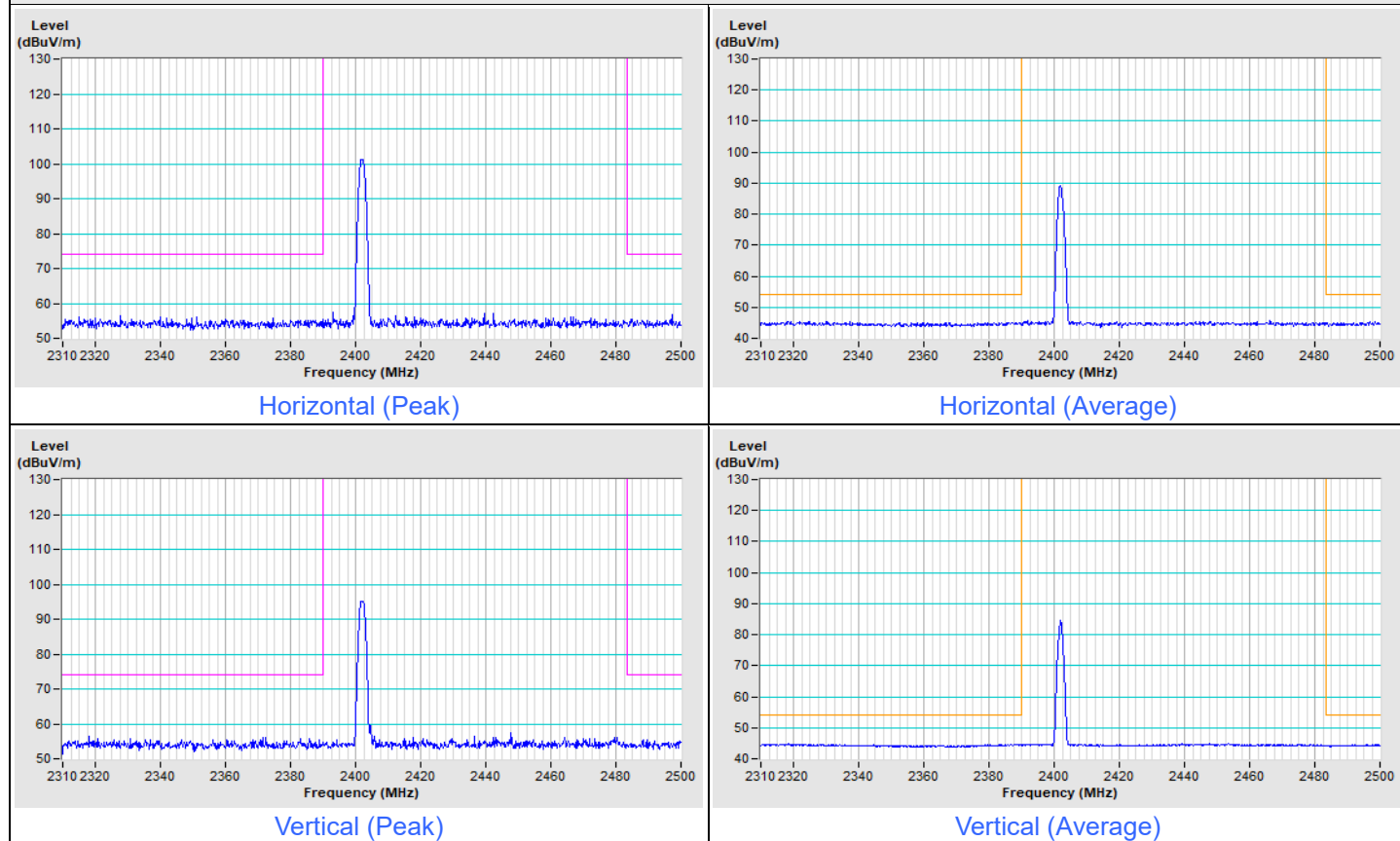
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency,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

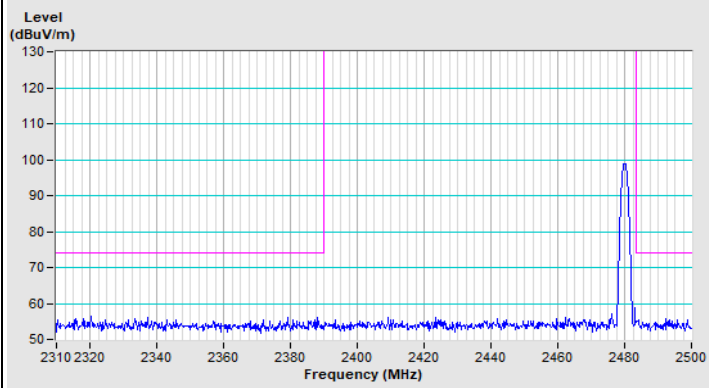
$$20 \log(\text{Duty cycle}) = 20 \log(0.185 \text{ ms} / 7.053 \text{ ms}) = -31.6 \text{ dB}$$

Plot of Band Edge

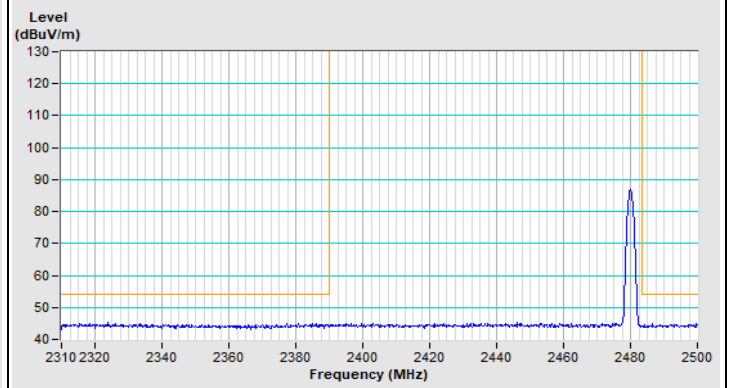
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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BT LE-1M Channel 0

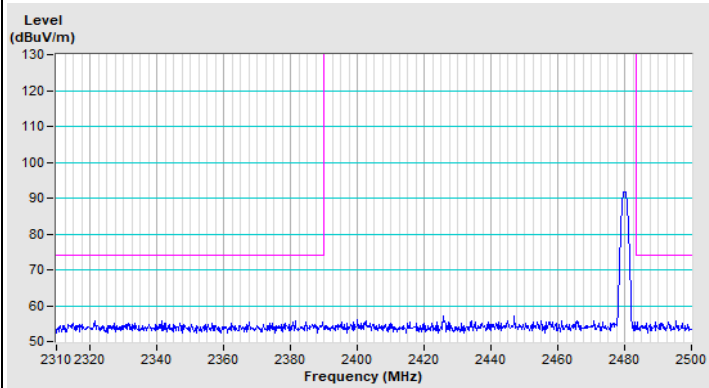


BT LE-1M Channel 39

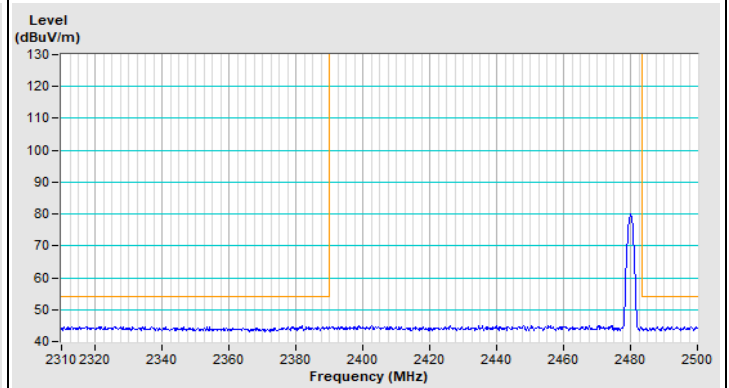
Horizontal (Peak)



Horizontal (Average)



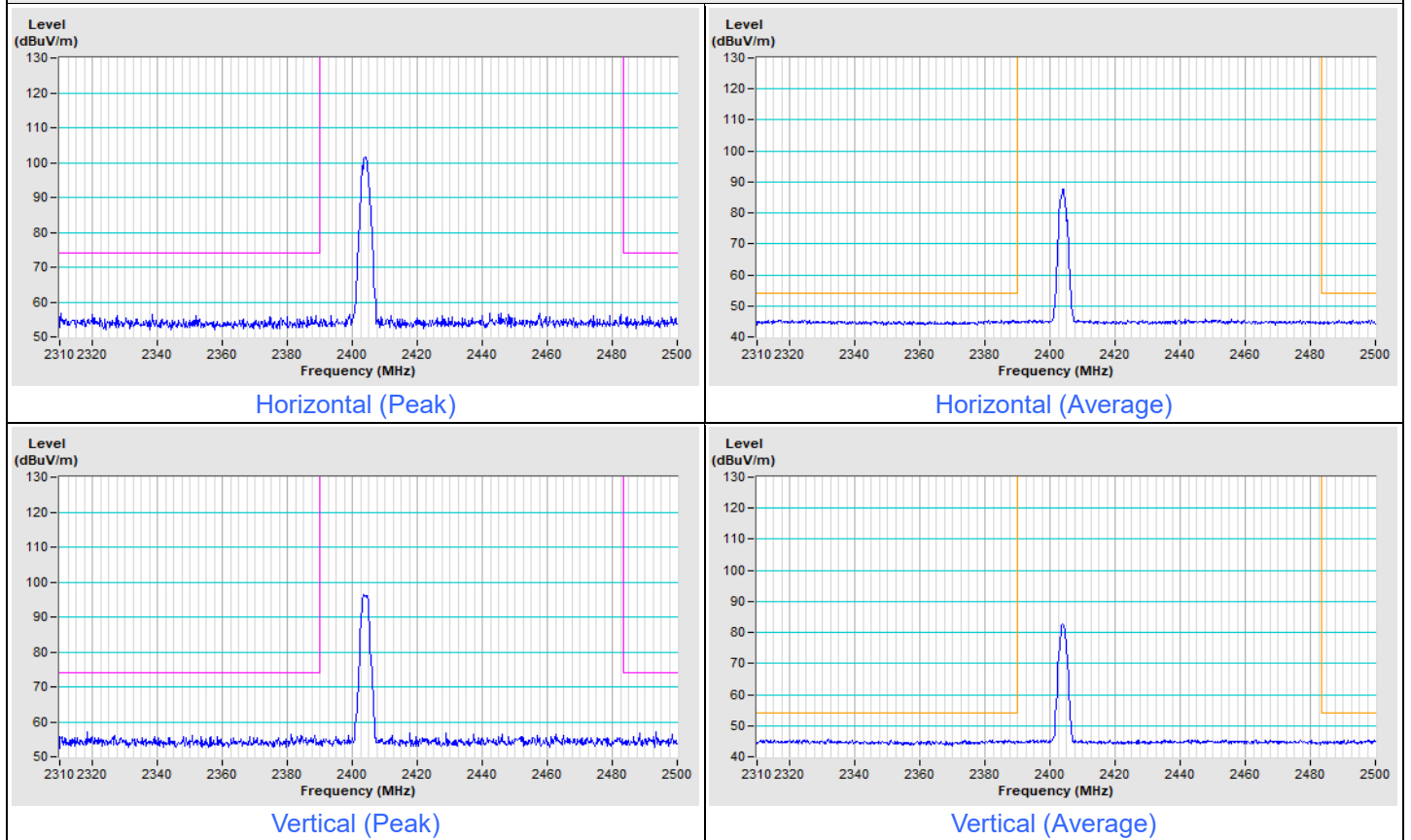
Vertical (Peak)

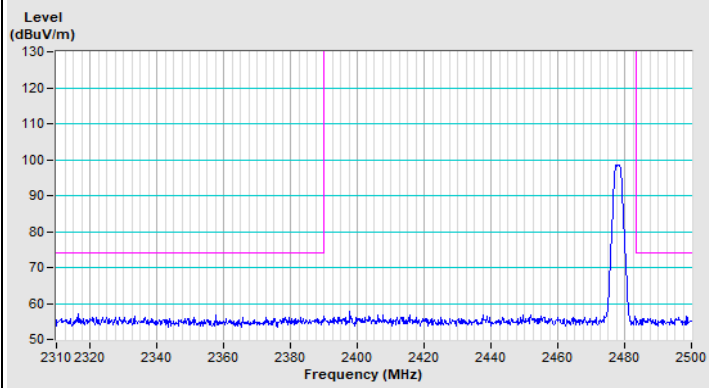


Vertical (Average)

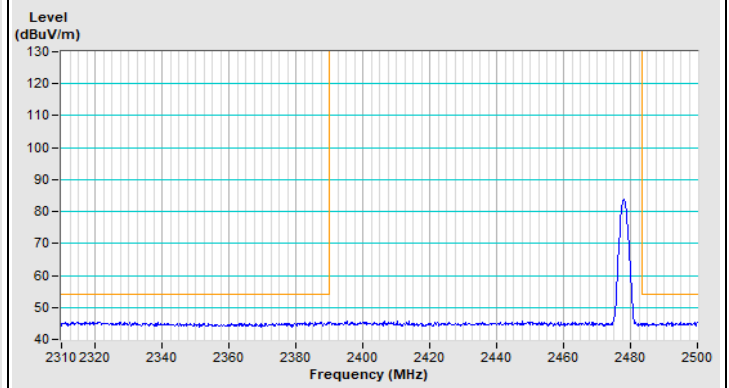
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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BT LE-2M Channel 1

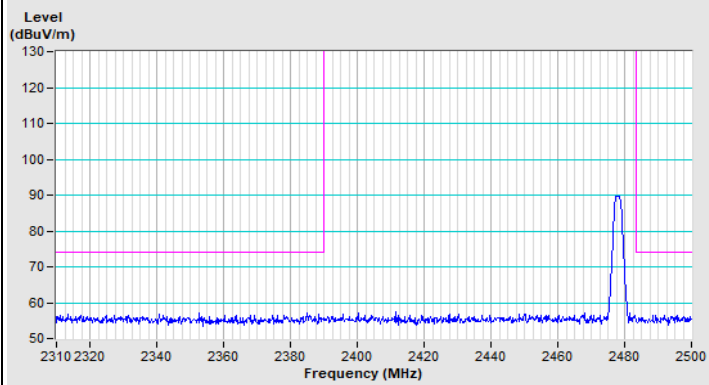


BT LE-2M Channel 38

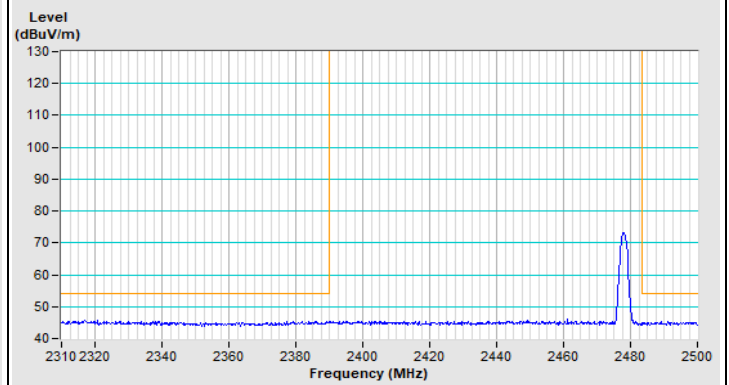
Horizontal (Peak)



Horizontal (Average)



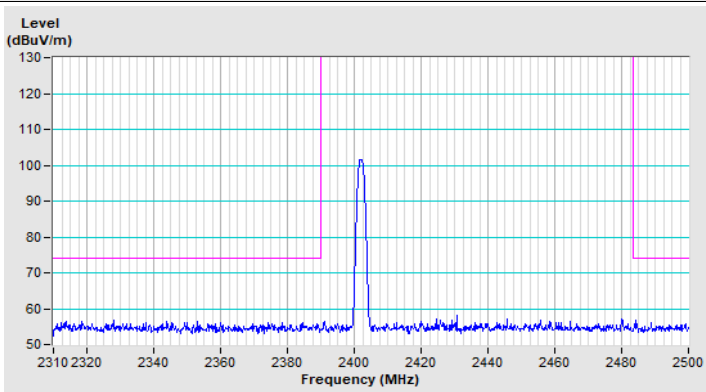
Vertical (Peak)



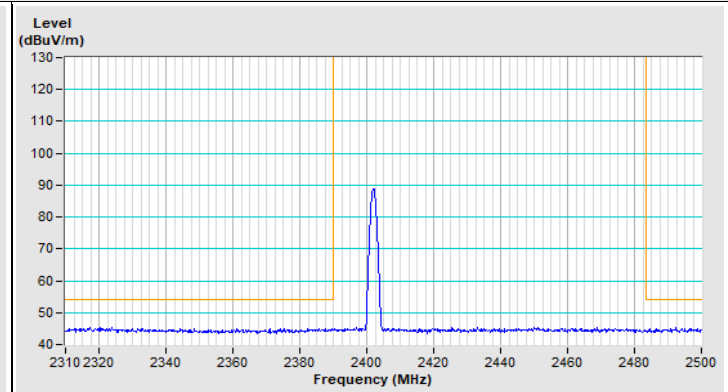
Vertical (Average)

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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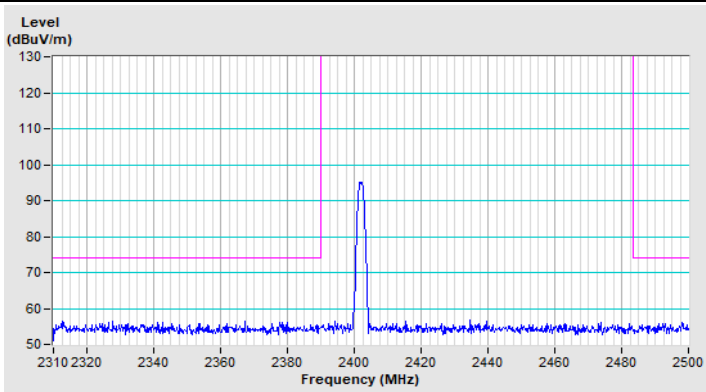
Logi Bolt 1M Channel 0



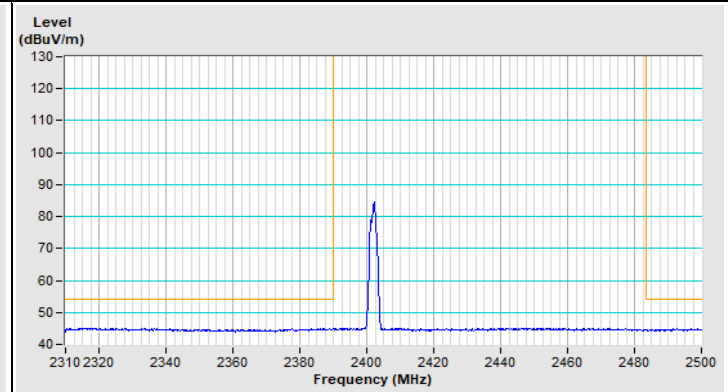
Horizontal (Peak)



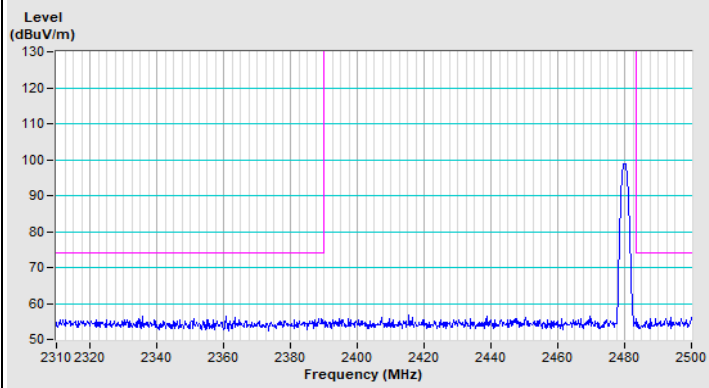
Horizontal (Average)



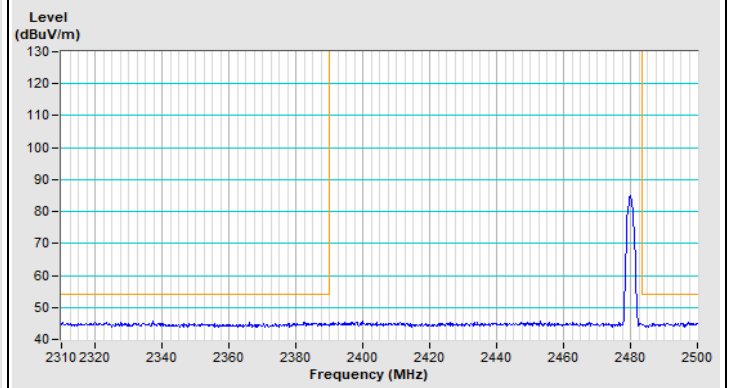
Vertical (Peak)



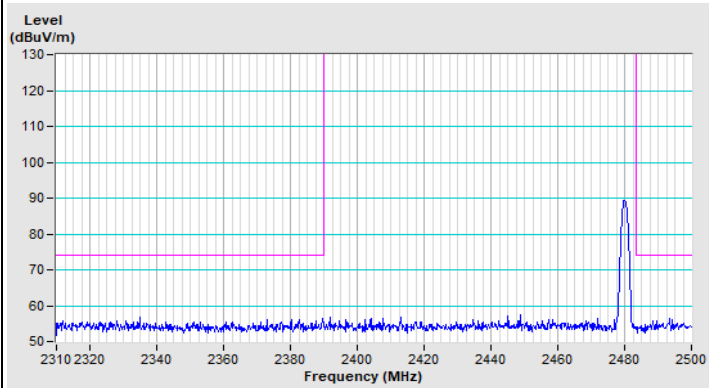
Vertical (Average)

Logi Bolt 1M Channel 39

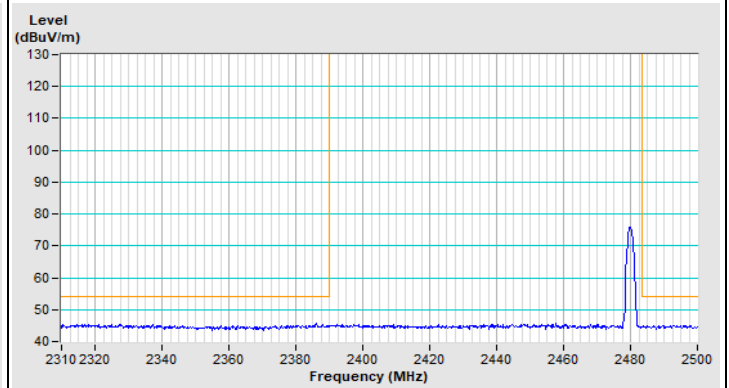
Horizontal (Peak)



Horizontal (Average)



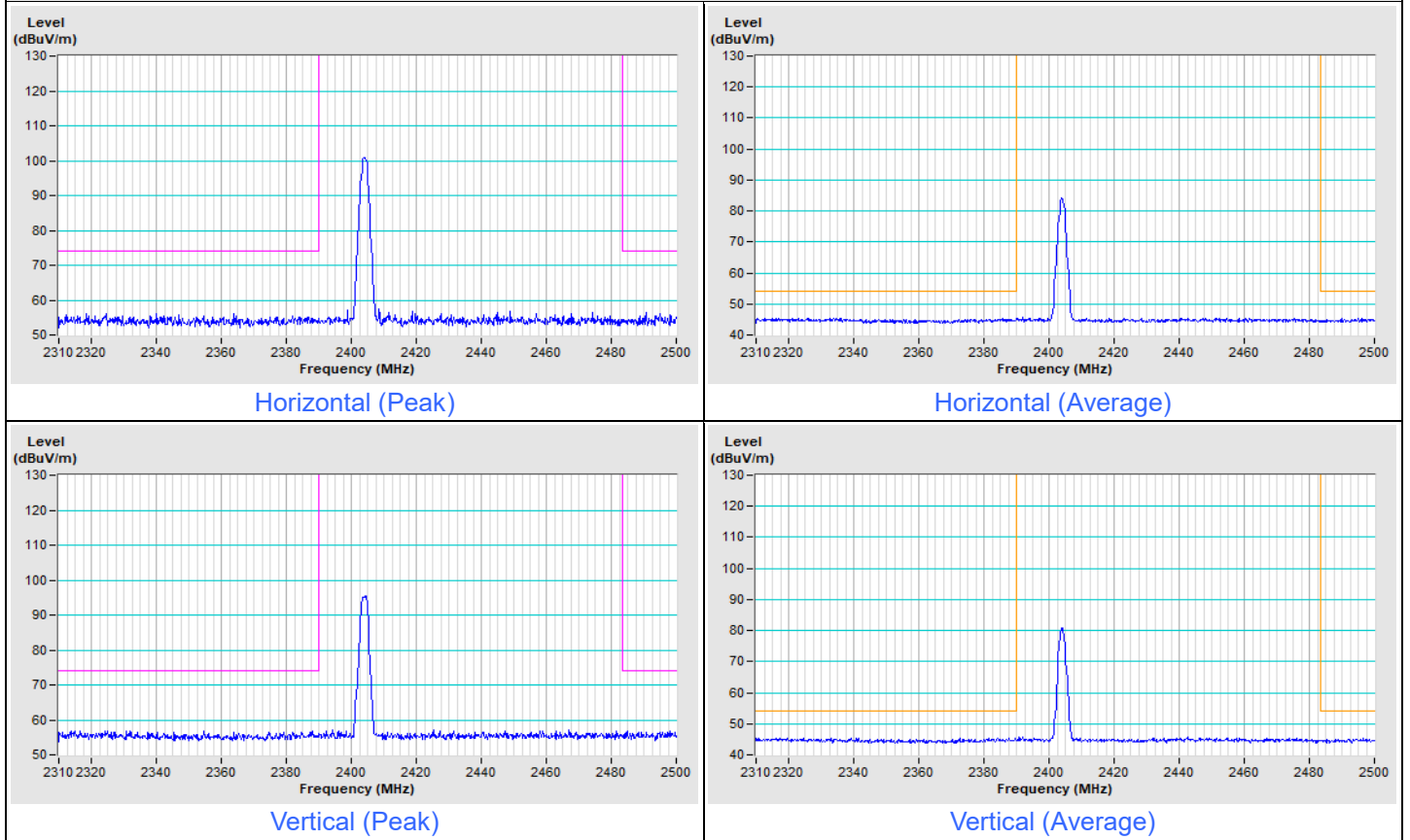
Vertical (Peak)

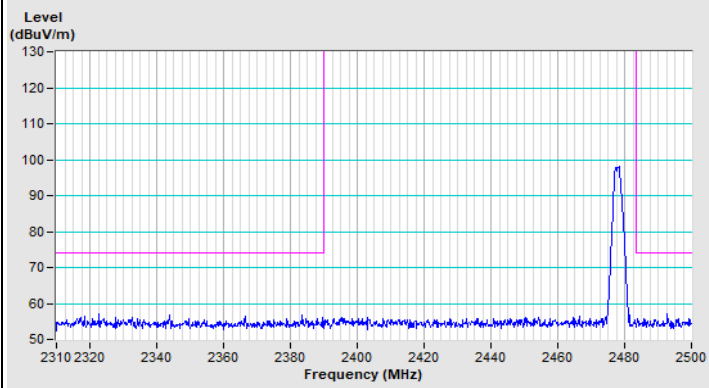


Vertical (Average)

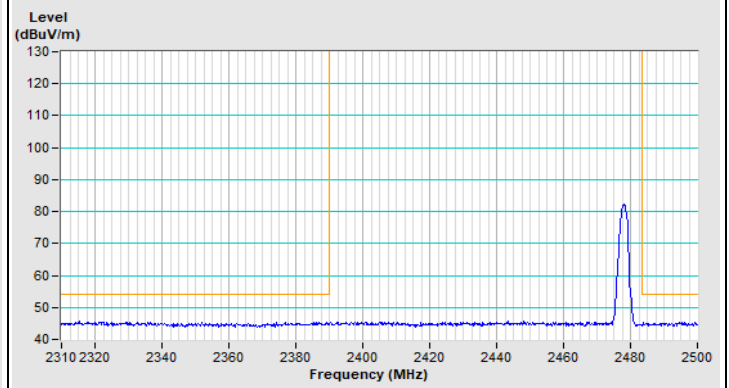
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
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Logi Bolt 2M Channel 1

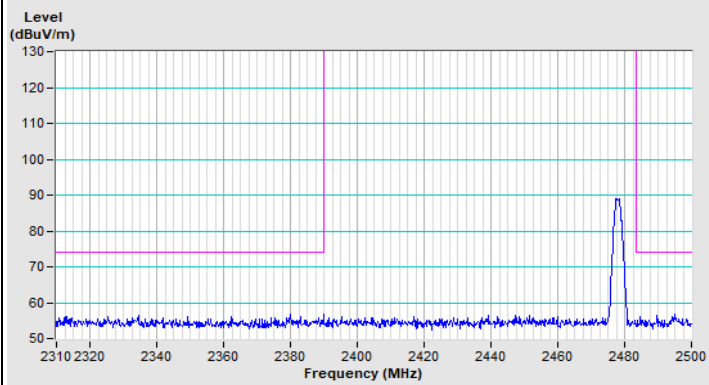


Logi Bolt 2M Channel 38

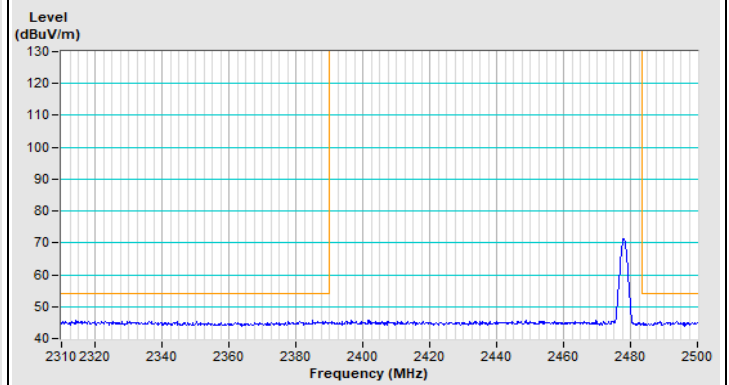
Horizontal (Peak)



Horizontal (Average)



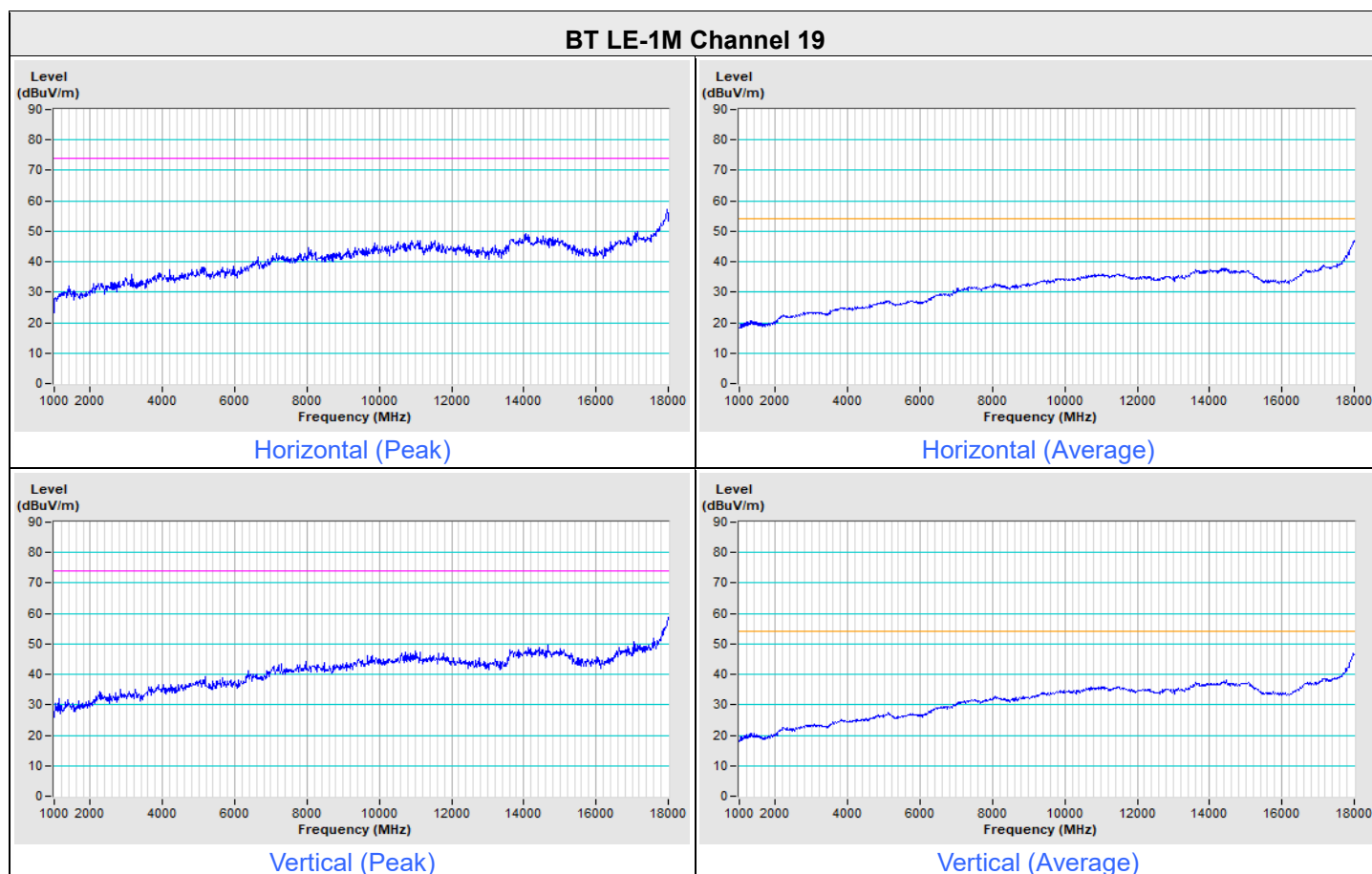
Vertical (Peak)



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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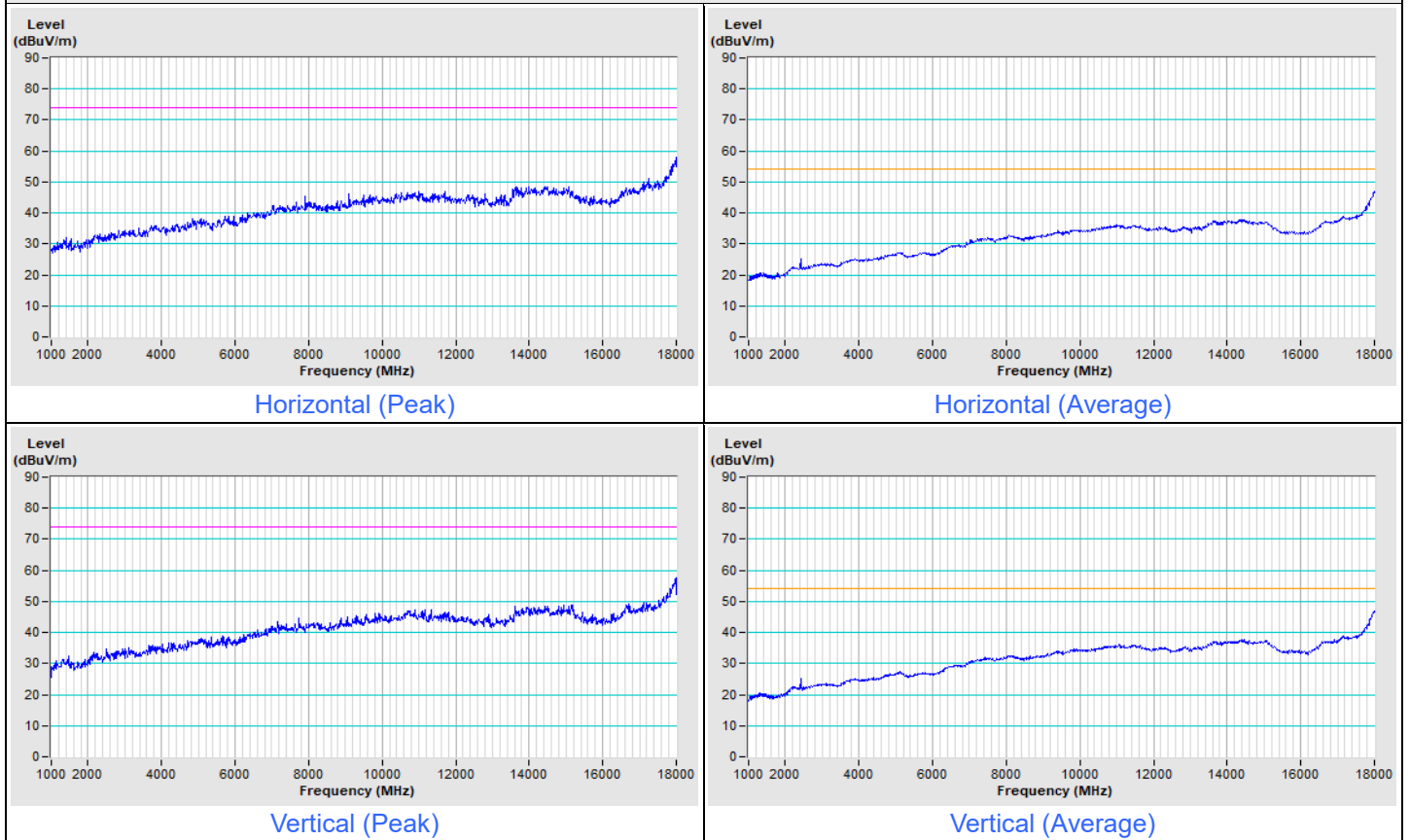


Notes:

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 19

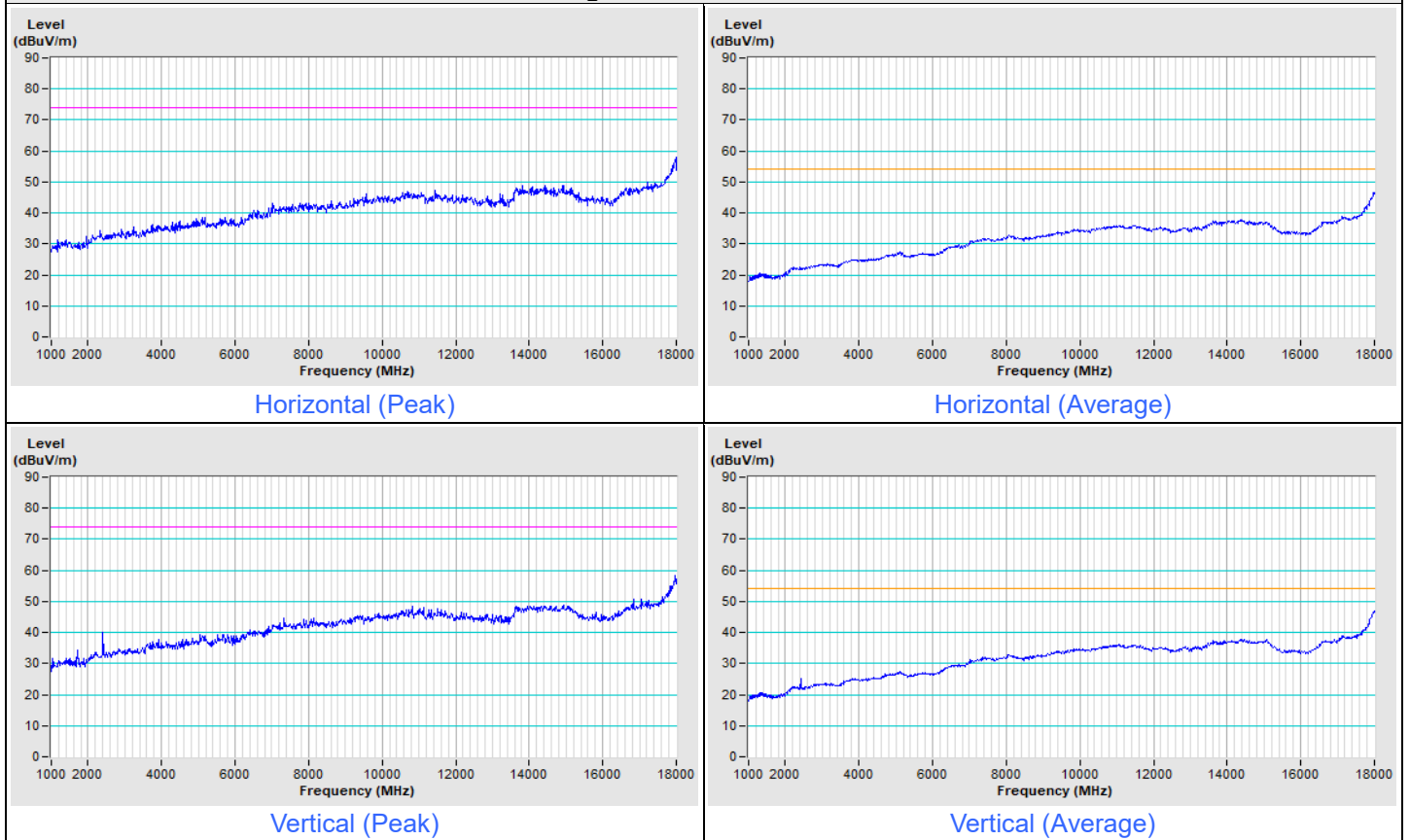


Notes:

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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Logi Bolt 1M Channel 19

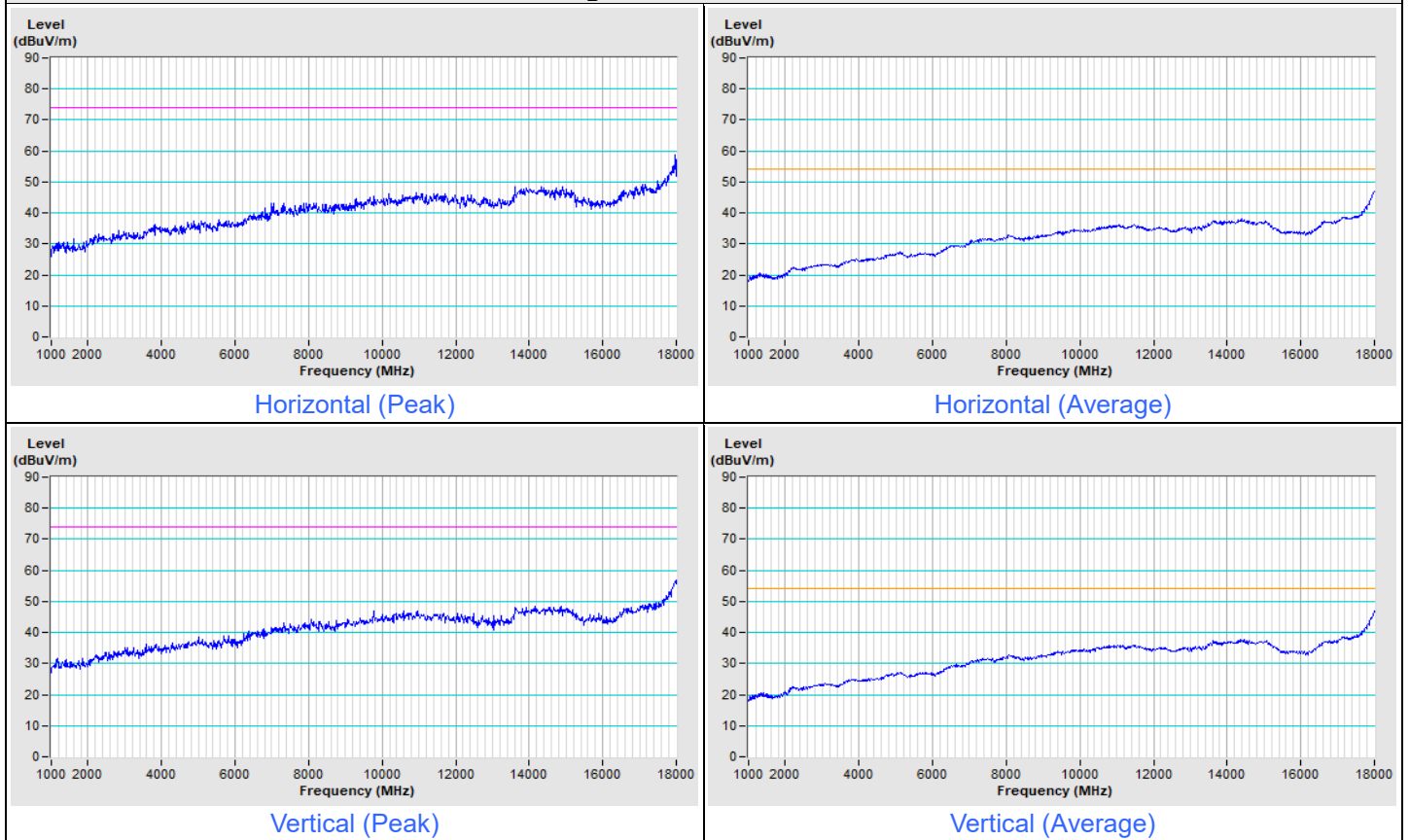


Notes:

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.
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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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Logi Bolt 2M Channel 19



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

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