

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2013

Report No.: RFBDBG-WTW-P21110468

FCC ID: JNZYR0078

Model No.: YR0078

Received Date: 2022/2/7

Test Date: 2022/2/14 ~ 2022/2/17

Issued Date: 2022/3/1

Applicant: LOGITECH FAR EAST LTD.

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

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

FCC Registration / 723255 / TW2022

Designation Number:

Approved by:



Clark Lin / Technical Manager

Date:

2022/3/1

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Prepared by : Claire Kuan / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P21110468	Original release.	2022/3/1

1 Certificate

Product: Wireless Keyboard

Brand: Logitech

Test Model: YR0078

Sample Status: Engineering sample

Applicant: LOGITECH FAR EAST LTD.

Test Date: 2022/2/14 ~ 2022/2/17

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2013

Measurement 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)	6dB 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 Emission	NA	Without AC power port of the EUT.
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -15.0 dB at 61.04 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -8.0 dB at 2390.00 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) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.5 dB
Unwanted Emissions below 1 GHz	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 Keyboard
Brand	Logitech
Test Model	YR0078
FW Version	PB1
Status of EUT	Engineering sample
Power Supply Rating	3 Vdc from battery
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2 Mbps (*Note 1)
Operating Frequency	2402 ~ 2480 MHz (*Note 1)
Number of Channel	40 (*Note 1)
Output Power	BT-LE 1M: 2.999 mW BT-LE 2M: 2.891 mW logi bolt 1M: 2.985 mW logi bolt 2M: 2.871 mW

Note:

1. BT-LE technique supports 1Mbps and 2Mbps data rates, both have been evaluated in this test report. Refer to “**section 3.3 Description of Test Modes**” for more detail specification.
2. This device have BT-LE and logi bolt functions. logi bolt is the same technology as BT-LE and is just a different marketing name.
3. The EUT may have a lot of colors for marketing requirement.
4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Antenna Description of EUT

The antenna information is listed as below.

Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
2.26	2.4~2.4835	Chip Antenna	None

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.3 Channel List

BT-LE & logi bolt channels:

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

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

Test Item	EUT Configure Mode	Mode	Tested Channel	Modulation	Data Rate Parameter
Unwanted Emissions below 1 GHz	A	BT-LE 1M	0	GFSK	1Mb/s
		logi bolt 1M	0	GFSK	1Mb/s
Unwanted Emissions above 1 GHz	A	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
RF Output Power \ 6dB Bandwidth \ Power Spectral Density \ Conducted Out of Band Emissions	B	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
EUT Configure Mode:	A	Radiated measurement in battery mode			
	B	Antenna Port Conducted measurement			

3.5 Duty Cycle of Test Signal

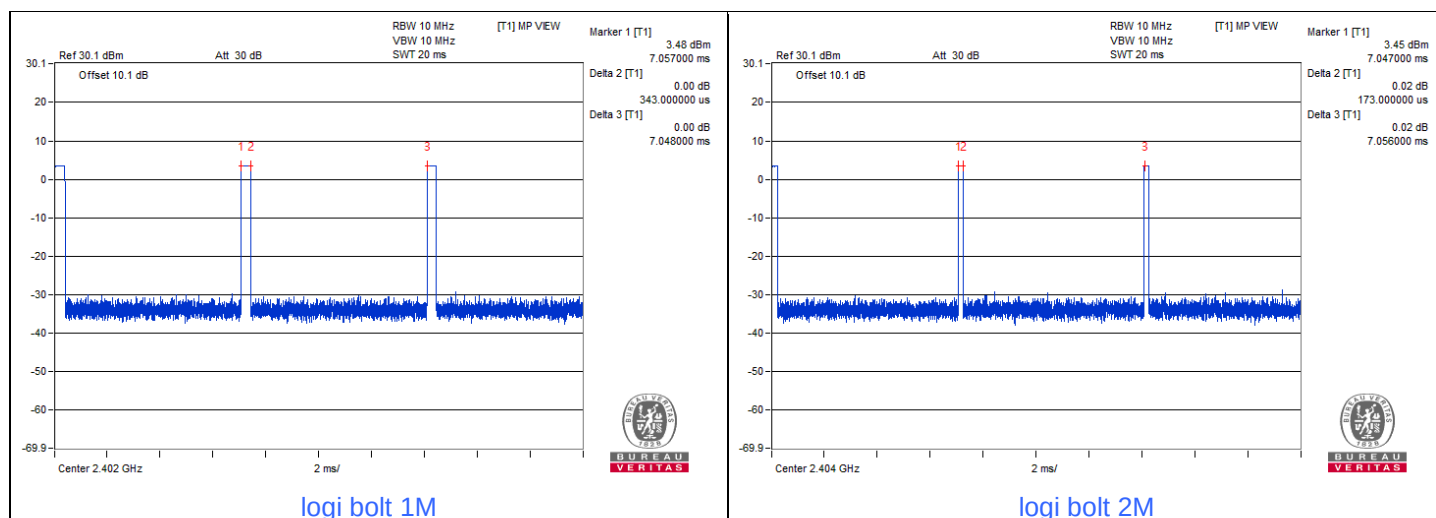
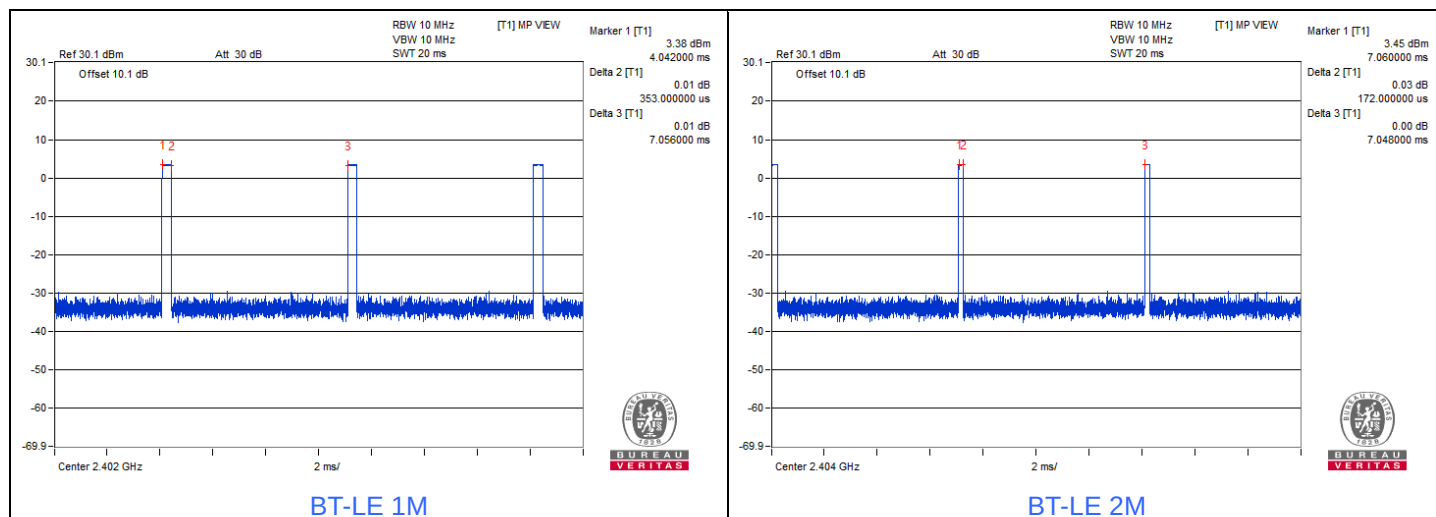
Duty cycle of test signal is < 98 %, duty factor shall be considered.

BT-LE 1M: Duty cycle = 0.353 ms / 7.056 ms = 5.0 %, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 13.01 \text{ dB}$

BT-LE 2M: Duty cycle = 0.172 ms / 7.048 ms = 2.4 %, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 16.13 \text{ dB}$

logi bolt 1M: Duty cycle = 0.343 ms / 7.048 ms = 5.0 %, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 13.13 \text{ dB}$

logi bolt 2M: Duty cycle = 0.173 ms / 7.056 ms = 2.4 %, duty factor = $10 \cdot \log(1/\text{Duty cycle}) = 16.11 \text{ dB}$

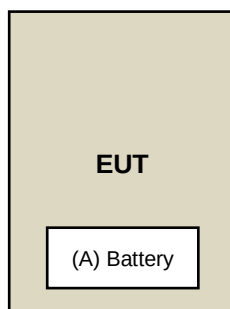


3.6 Test Program Used and Operation Descriptions

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	Test Program Used and Operation Descriptions
RF Output Power	◆ BLE 1M TX Modulated 2402MHz ◆ BLE 1M TX Modulated 2440MHz ◆ BLE 1M TX Modulated 2480MHz ◆ BLE2M TX Modulated 2404MHz ◆ BLE2M TX Modulated 2440MHz ◆ BLE2M TX Modulated 2478MHz
Power Spectral Density	
6dB Bandwidth	
Conducted Out of Band Emissions	
Unwanted Emissions below 1 GHz	
Unwanted Emissions above 1 GHz	

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*2	GP	AA	NA	NA	Supplied by applicant

4 Test Instruments

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

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Power Meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Pulse Power Sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA
Spectrum Analyzer R&S	FSV40	101516	2021/3/8	2022/3/7

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/2/14

4.2 Power Spectral Density

Refer to section 4.1 to get information of the instruments.

4.3 6dB Bandwidth

Refer to section 4.1 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.1 to get information of the instruments.

4.5 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2021/10/26	2022/10/25
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2022/1/10	2023/1/9
Pre_Amplifier EMCI	EMC330N	980538	2021/4/26	2022/4/25
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2021/4/26	2022/4/25
		966-5-2	2021/4/26	2022/4/25
		966-5-3	2021/4/26	2022/4/25
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
LOOP ANTENNA Electro-Metrics	EM-6879	264	2021/3/5	2022/3/4
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2022/1/6	2023/1/5

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2022/2/15 ~ 2022/2/17

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	NA	NA
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2021/11/14	2022/11/13
	BBHA 9170	BBHA9170519	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980509	2021/4/26	2022/4/25
	EMC184045SE	980387	2022/1/10	2023/1/9
RF cable (40GHz) EMCI	EMC-KM-KM-4000	200214	2021/3/10	2022/3/9
RF Cable-Frequency range: 1- 40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180503	2021/4/26	2022/4/25
	EMC104-SM-SM-2000	180501	2021/4/26	2022/4/25
	EMC104-SM-SM-6000	180506	2021/4/26	2022/4/25
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2021/5/21	2022/5/20
Test Receiver R&S	ESR3	102528	2021/3/2	2022/3/1

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2022/2/14 ~ 2022/2/17

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 6dB 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

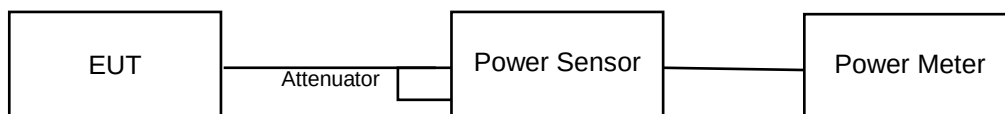
Notes:

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



6.1.2 Test Procedure

Peak Power:

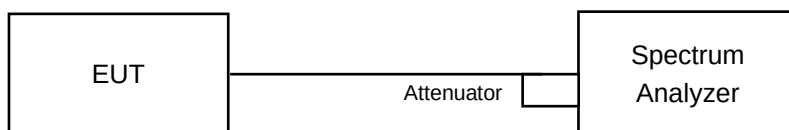
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average Power:

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

6.2 Power Spectral Density

6.2.1 Test Setup

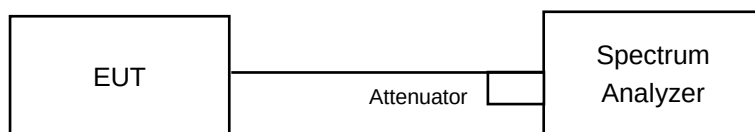


6.2.2 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- e. Detector = peak.
- f. Sweep time = auto couple.
- 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 6dB Bandwidth

6.3.1 Test Setup

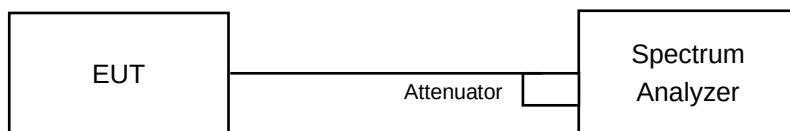


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

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

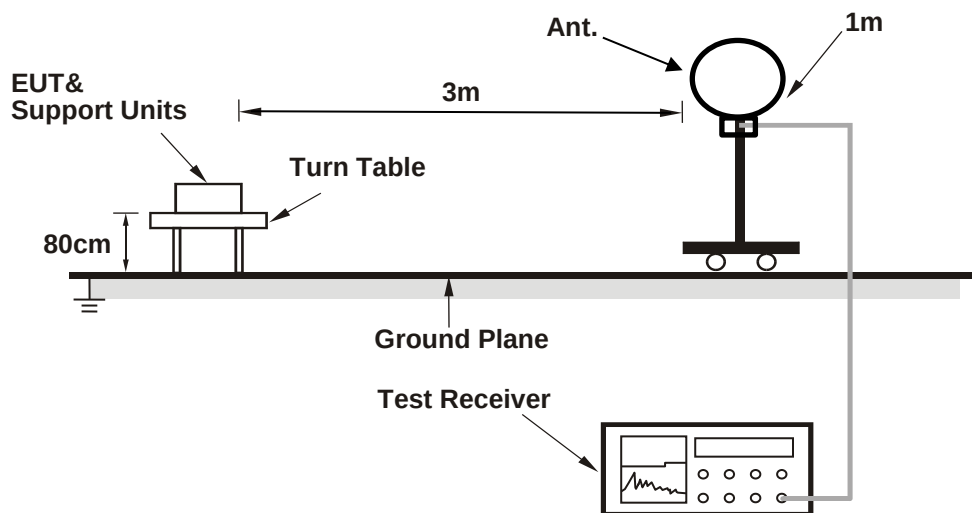
MEASUREMENT PROCEDURE OOB

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

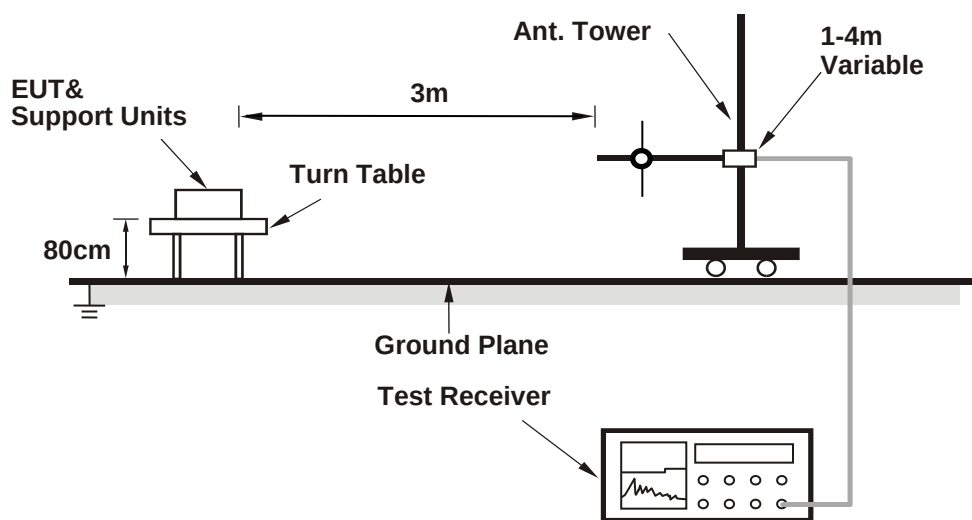
6.5 Unwanted Emissions below 1 GHz

6.5.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

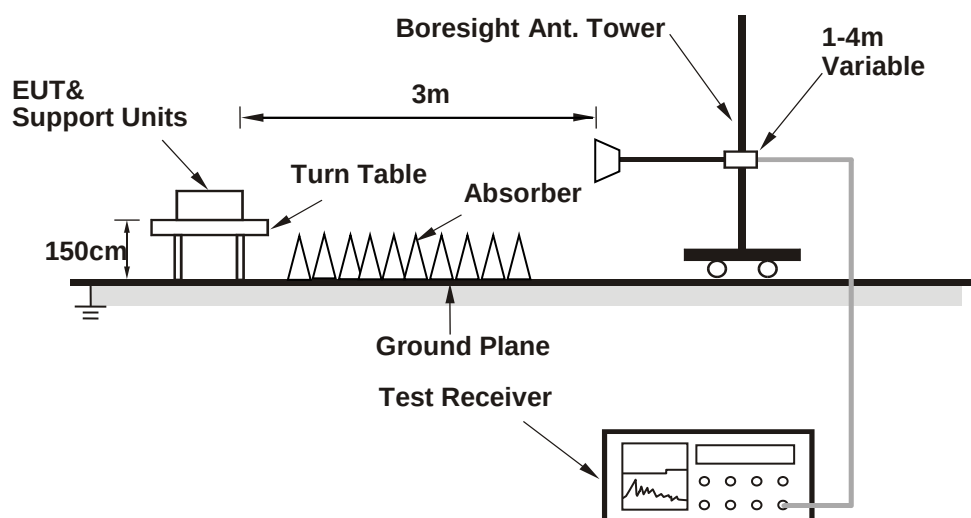
Notes:

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

6.6 Unwanted Emissions above 1 GHz

6.6.1 Test Setup

For Radiated emission above 1 GHz



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

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Leon Dai
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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	2.999	4.77	30	Pass
19	2440	2.858	4.56	30	Pass
39	2480	2.698	4.31	30	Pass

Note: The antenna gain is 2.26 dBi < 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	2.891	4.61	30	Pass
19	2440	2.831	4.52	30	Pass
38	2478	2.723	4.35	30	Pass

Note: The antenna gain is 2.26 dBi < 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	2.985	4.75	30	Pass
19	2440	2.844	4.54	30	Pass
39	2480	2.692	4.30	30	Pass

Note: The antenna gain is 2.26 dBi < 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	2.871	4.58	30	Pass
19	2440	2.818	4.50	30	Pass
38	2478	2.71	4.33	30	Pass

Note: The antenna gain is 2.26 dBi < 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	2.317	3.65
19	2440	2.208	3.44
39	2480	2.104	3.23

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	2.323	3.66
19	2440	2.223	3.47
38	2478	2.118	3.26

logi bolt 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	2.296	3.61
19	2440	2.198	3.42
39	2480	2.089	3.20

logi bolt 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	2.307	3.63
19	2440	2.203	3.43
38	2478	2.109	3.24

7.2 Power Spectral Density

Input Power:	3 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Leon Dai
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BT-LE 1M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-0.02	8.00	Pass
19	2440	-0.41	8.00	Pass
39	2480	-0.68	8.00	Pass

Note: The antenna gain is 2.26 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	-4.32	8.00	Pass
19	2440	-4.70	8.00	Pass
38	2478	-4.89	8.00	Pass

Note: The antenna gain is 2.26 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	0.00	8.00	Pass
19	2440	-0.34	8.00	Pass
39	2480	-0.51	8.00	Pass

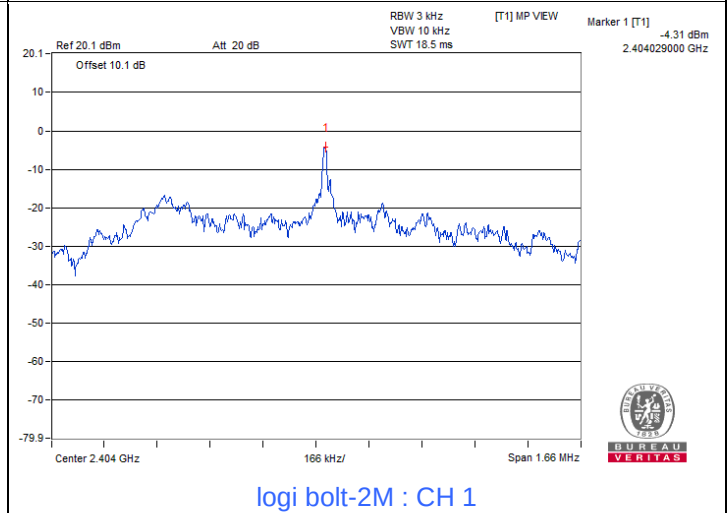
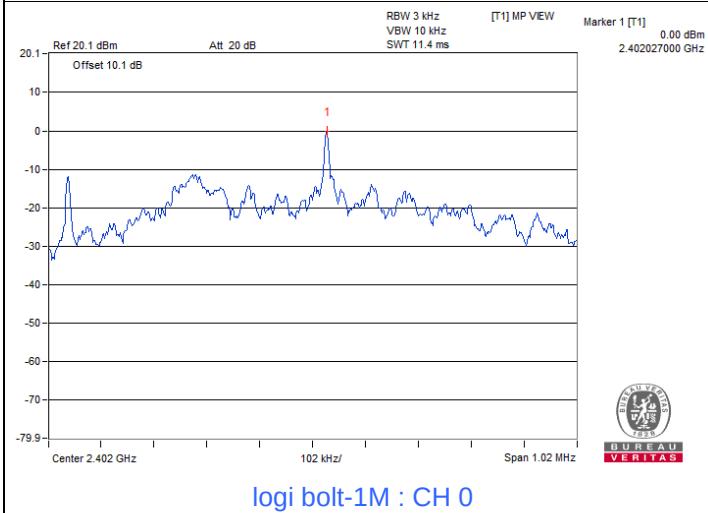
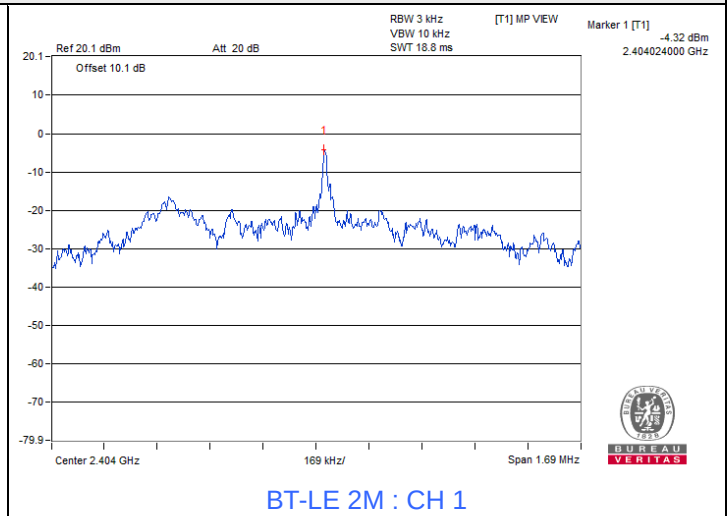
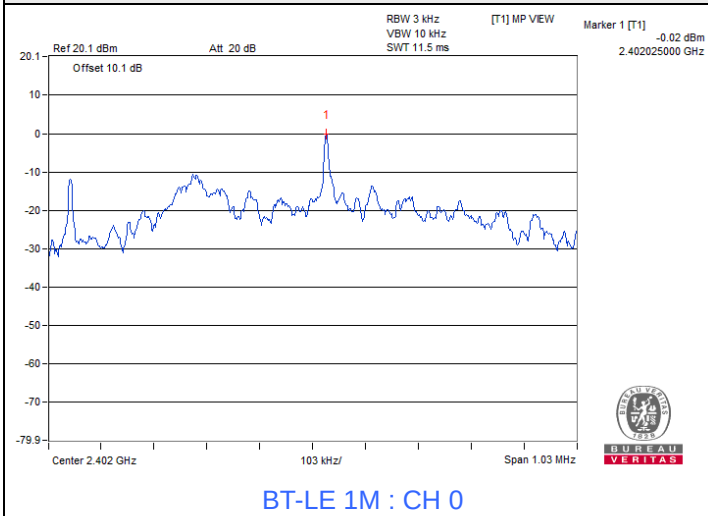
Note: The antenna gain is 2.26 dBi < 6 dBi, so the power density limit shall not be reduced.

logi bolt 2M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	-4.31	8.00	Pass
19	2440	-4.78	8.00	Pass
38	2478	-4.97	8.00	Pass

Note: The antenna gain is 2.26 dBi < 6 dBi, so the power density limit shall not be reduced.

Spectrum Plot of Maximum Value



7.3 6dB Bandwidth

Input Power:	3 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Leon Dai
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BT-LE 1M

Channel	Frequency (MHz)	6dB 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)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.13	0.5	Pass
19	2440	1.07	0.5	Pass
38	2478	1.2	0.5	Pass

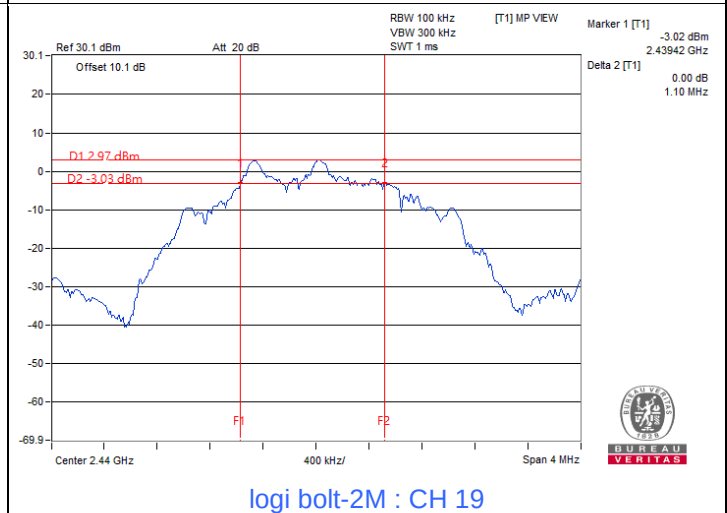
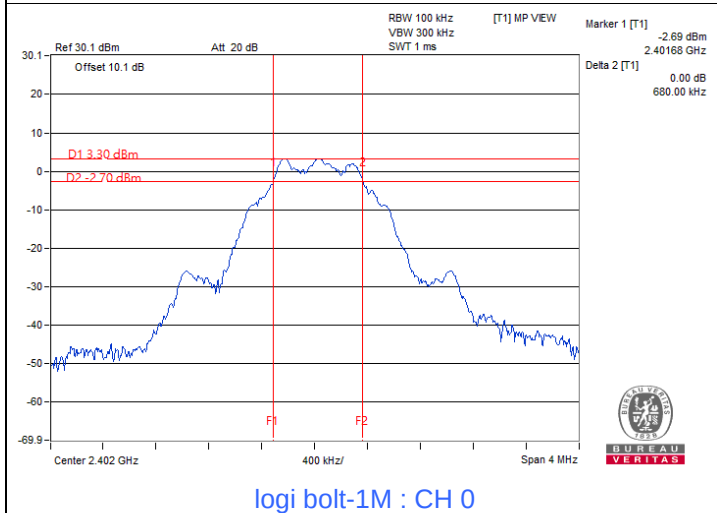
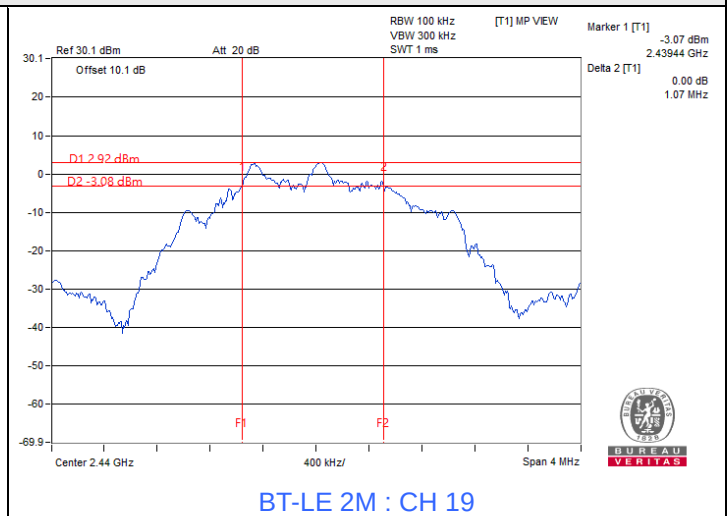
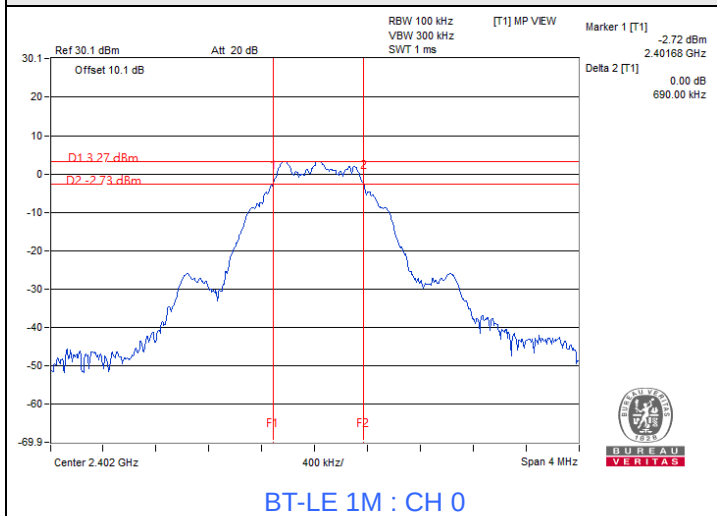
logi bolt 1M

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

logi bolt 2M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.11	0.5	Pass
19	2440	1.1	0.5	Pass
38	2478	1.1	0.5	Pass

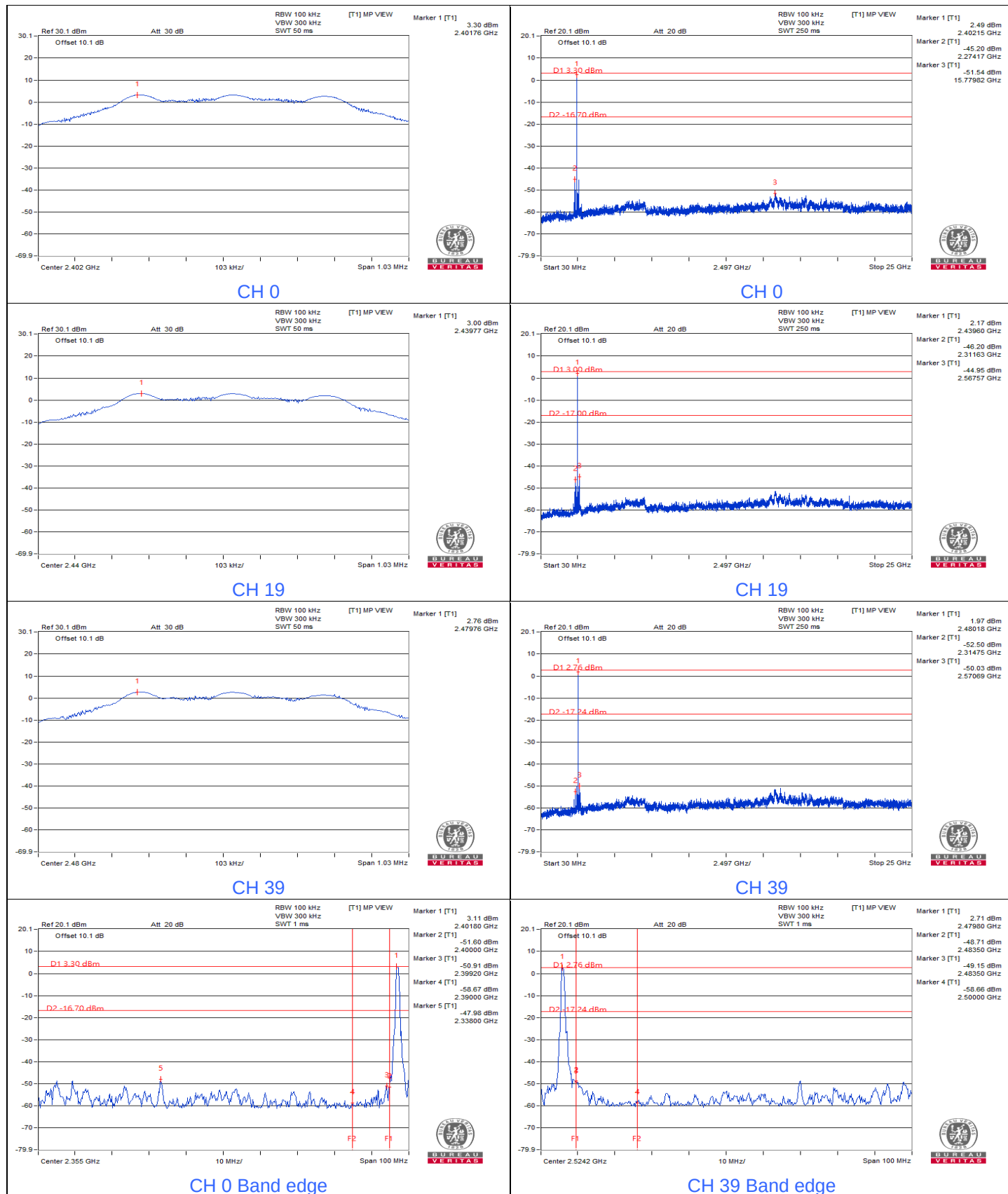
Spectrum Plot of Minimum Value



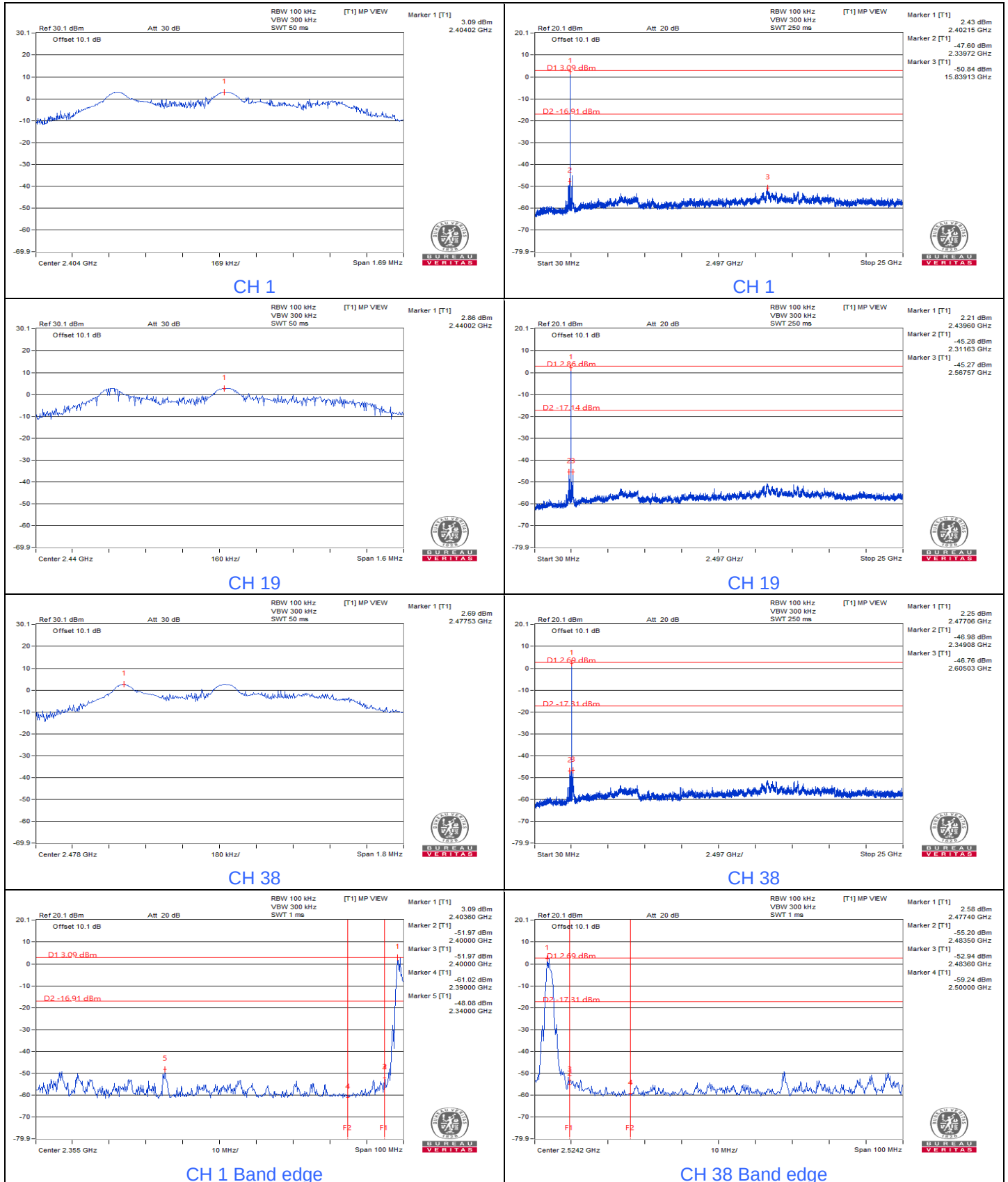
7.4 Conducted Out of Band Emissions

Input Power:	3 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Leon Dai
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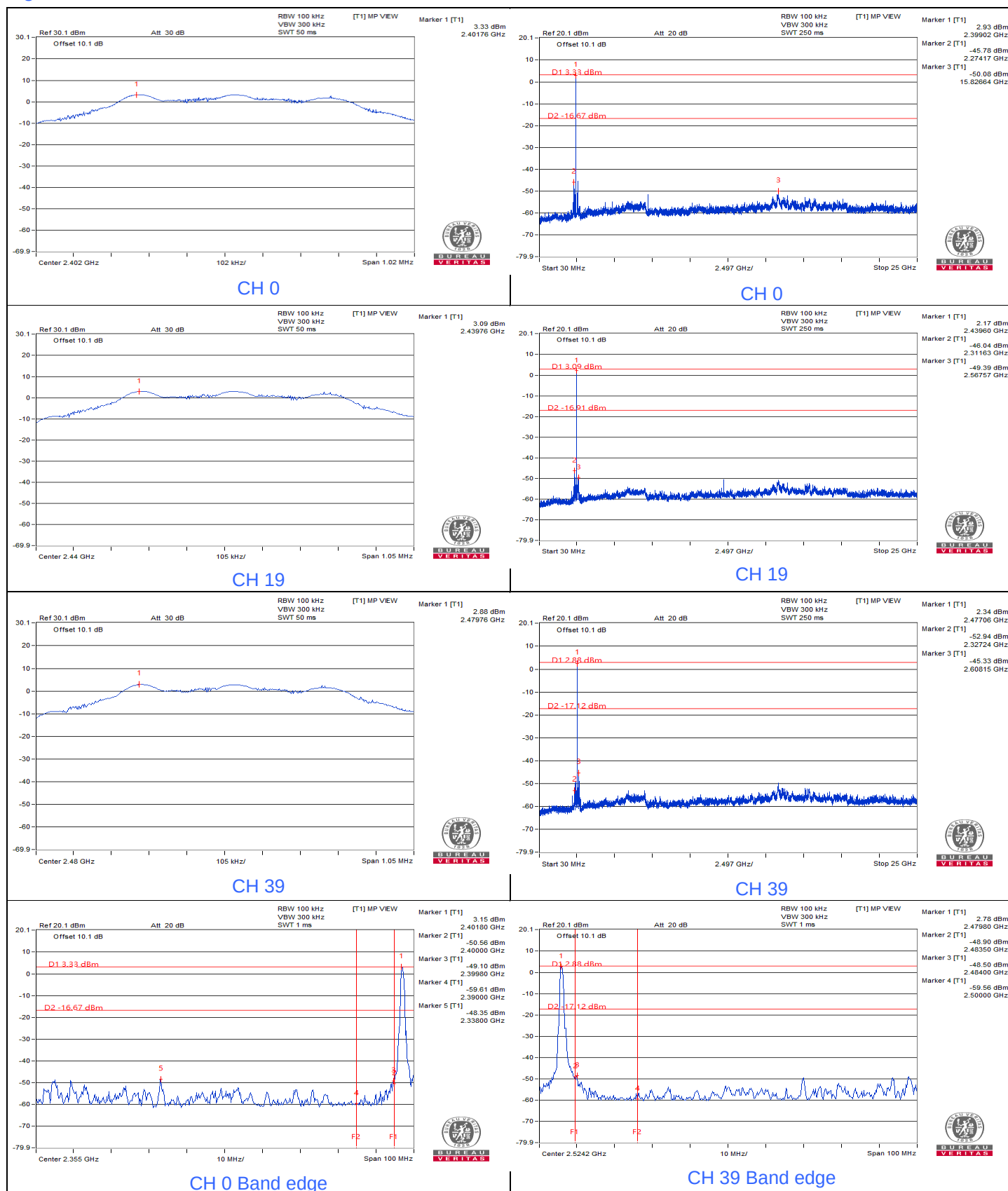
BT-LE 1M



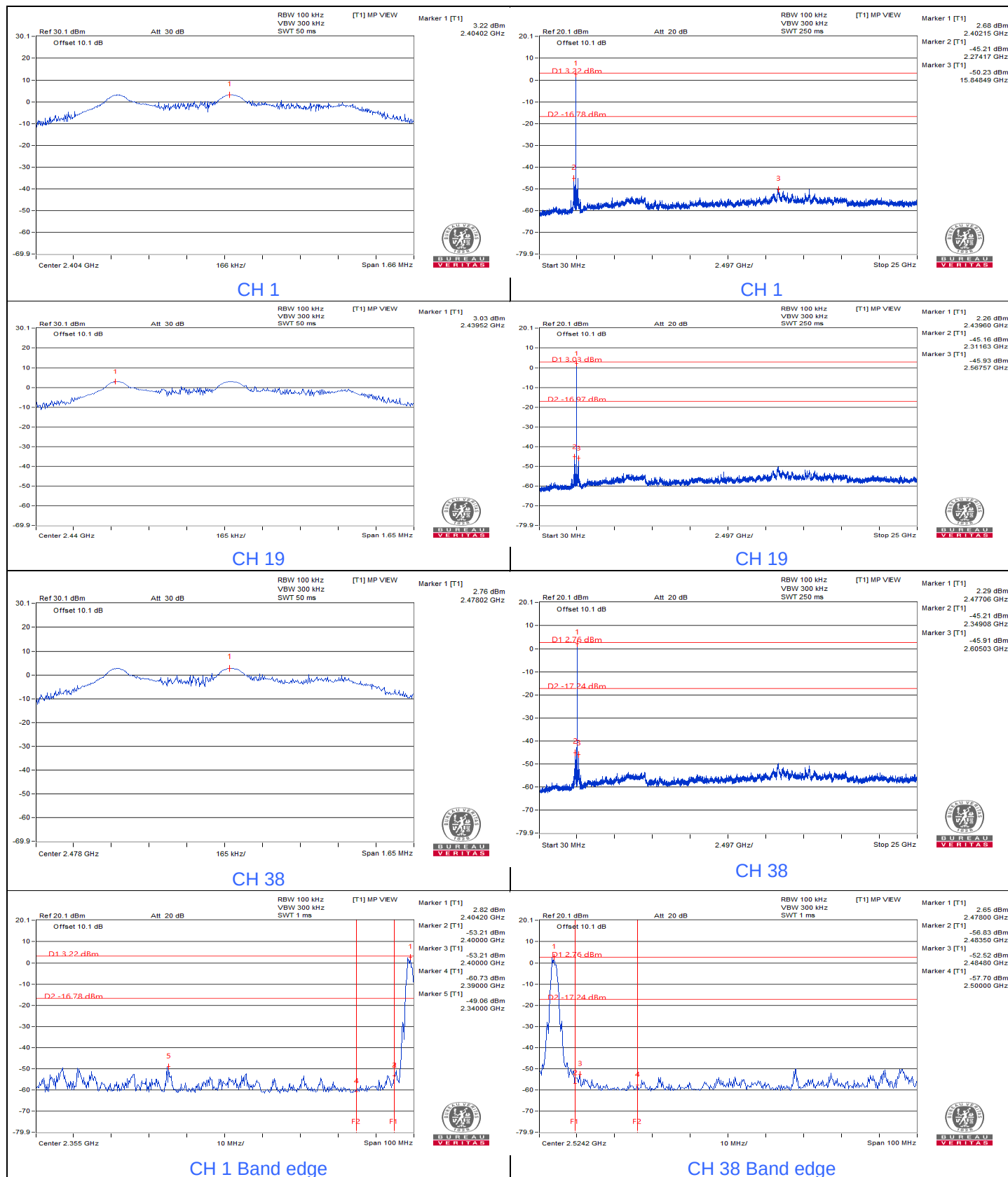
BT-LE 2M



logi bolt 1M



logi bolt 2M



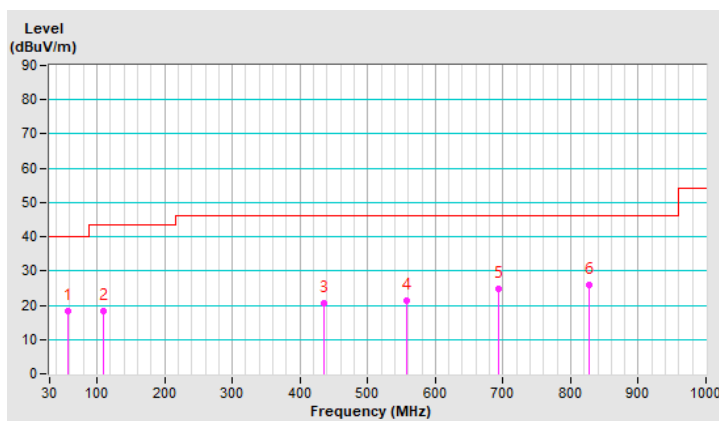
7.5 Unwanted Emissions below 1 GHz

RF Mode	TX BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	3 Vdc	Environmental Conditions	20 °C, 63 % RH
Tested By	Carter Lin		

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	56.63	18.4 QP	40.0	-21.6	3.00 H	1	31.5	-13.1
2	108.82	18.3 QP	43.5	-25.2	1.00 H	303	34.3	-16.0
3	435.92	20.6 QP	46.0	-25.4	2.00 H	218	29.1	-8.5
4	557.75	21.5 QP	46.0	-24.5	3.00 H	213	28.0	-6.5
5	693.76	24.9 QP	46.0	-21.1	2.00 H	358	28.7	-3.8
6	827.09	25.8 QP	46.0	-20.2	3.00 H	1	27.8	-2.0

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

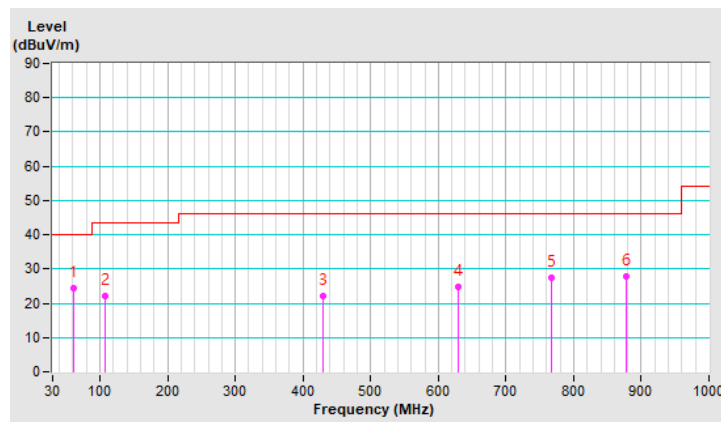


RF Mode	TX BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	3 Vdc	Environmental Conditions	20 °C, 63 % RH
Tested By	Carter Lin		

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	60.70	24.3 QP	40.0	-15.7	1.00 V	360	37.8	-13.5
2	106.68	22.0 QP	43.5	-21.5	2.00 V	235	38.3	-16.3
3	429.66	22.0 QP	46.0	-24.0	3.00 V	114	30.8	-8.8
4	629.05	24.9 QP	46.0	-21.1	3.00 V	148	29.6	-4.7
5	766.46	27.4 QP	46.0	-18.6	1.00 V	295	30.1	-2.7
6	878.26	27.8 QP	46.0	-18.2	1.00 V	5	29.4	-1.6

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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

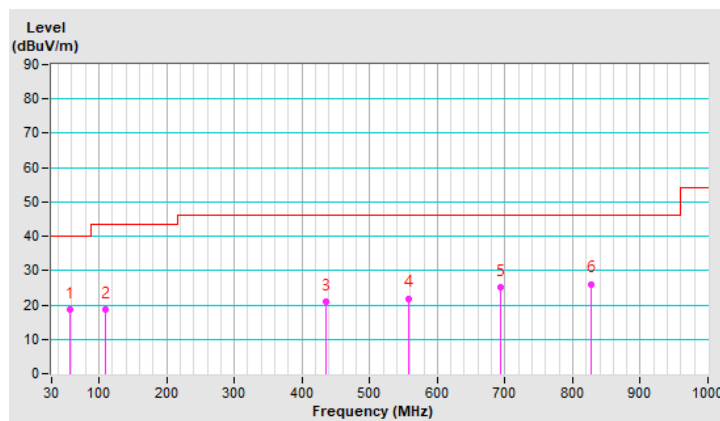


RF Mode	TX logi bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	3 Vdc	Environmental Conditions	20 °C, 63 % RH
Tested By	Barry Lin		

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	56.83	18.6 QP	40.0	-21.4	3.00 H	23	31.8	-13.2
2	109.01	18.6 QP	43.5	-24.9	1.00 H	329	34.5	-15.9
3	436.15	20.9 QP	46.0	-25.1	2.00 H	241	29.4	-8.5
4	557.95	21.9 QP	46.0	-24.1	3.00 H	250	28.4	-6.5
5	693.98	25.2 QP	46.0	-20.8	2.00 H	309	29.0	-3.8
6	827.34	26.1 QP	46.0	-19.9	3.00 H	59	28.1	-2.0

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

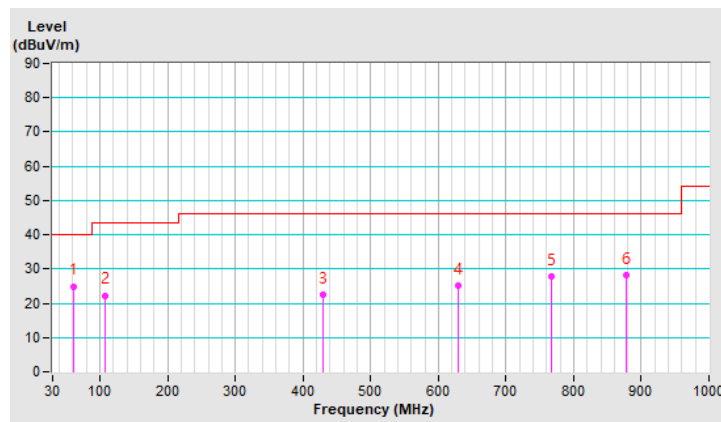


RF Mode	TX logi bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	3 Vdc	Environmental Conditions	20 °C, 63 % RH
Tested By	Barry Lin		

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	61.04	25.0 QP	40.0	-15.0	1.00 V	25	38.5	-13.5
2	106.90	22.3 QP	43.5	-21.2	2.00 V	296	38.5	-16.2
3	429.83	22.4 QP	46.0	-23.6	3.00 V	165	31.2	-8.8
4	629.21	25.2 QP	46.0	-20.8	3.00 V	182	29.9	-4.7
5	766.75	27.7 QP	46.0	-18.3	1.00 V	346	30.4	-2.7
6	878.59	28.2 QP	46.0	-17.8	1.00 V	66	29.8	-1.6

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 of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.6 Unwanted Emissions above 1 GHz

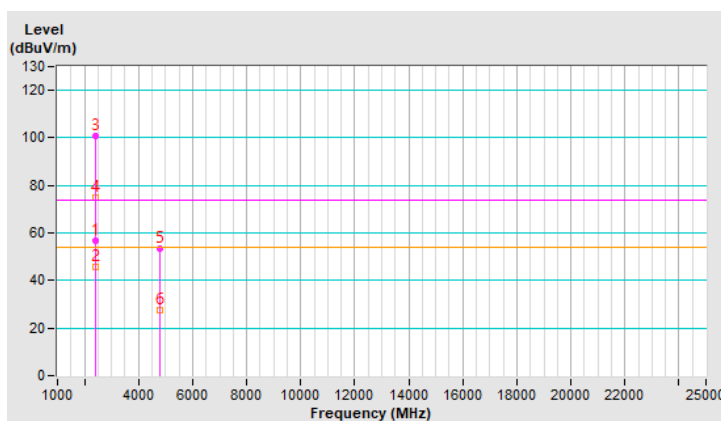
RF Mode	TX BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	56.9 PK	74.0	-17.1	1.42 H	347	59.6	-2.7
2	2390.00	45.8 AV	54.0	-8.2	1.42 H	347	48.5	-2.7
3	*2402.00	101.0 PK			1.42 H	347	103.7	-2.7
4	*2402.00	75.0 AV			1.42 H	347	77.7	-2.7
5	4804.00	53.6 PK	74.0	-20.4	2.08 H	316	52.1	1.5
6	4804.00	27.6 AV	54.0	-26.4	2.08 H	316	26.1	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



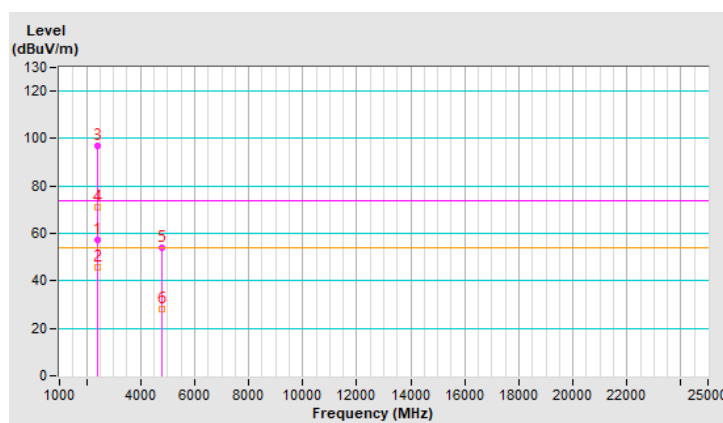
RF Mode	TX BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	2.65 V	128	59.9	-2.7
2	2390.00	45.7 AV	54.0	-8.3	2.65 V	128	48.4	-2.7
3	*2402.00	96.9 PK			2.65 V	128	99.6	-2.7
4	*2402.00	70.9 AV			2.65 V	128	73.6	-2.7
5	4804.00	54.0 PK	74.0	-20.0	1.06 V	352	52.5	1.5
6	4804.00	28.0 AV	54.0	-26.0	1.06 V	352	26.5	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



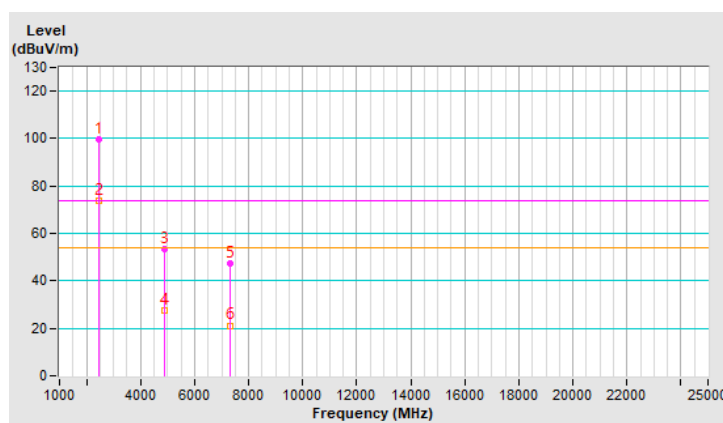
RF Mode	TX BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	99.7 PK			1.52 H	333	102.5	-2.8
2	*2440.00	73.7 AV			1.52 H	333	76.5	-2.8
3	4880.00	53.6 PK	74.0	-20.4	2.11 H	320	52.1	1.5
4	4880.00	27.6 AV	54.0	-26.4	2.11 H	320	26.1	1.5
5	7320.00	47.2 PK	74.0	-26.8	2.27 H	260	40.0	7.2
6	7320.00	21.2 AV	54.0	-32.8	2.27 H	260	14.0	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



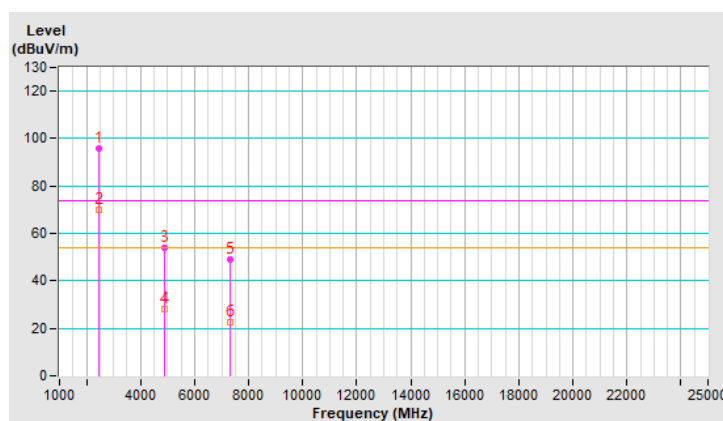
RF Mode	TX BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.8 PK			3.16 V	116	98.6	-2.8
2	*2440.00	69.8 AV			3.16 V	116	72.6	-2.8
3	4880.00	54.2 PK	74.0	-19.8	1.08 V	342	52.7	1.5
4	4880.00	28.2 AV	54.0	-25.8	1.08 V	342	26.7	1.5
5	7320.00	48.8 PK	74.0	-25.2	1.07 V	298	41.6	7.2
6	7320.00	22.8 AV	54.0	-31.2	1.07 V	298	15.6	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



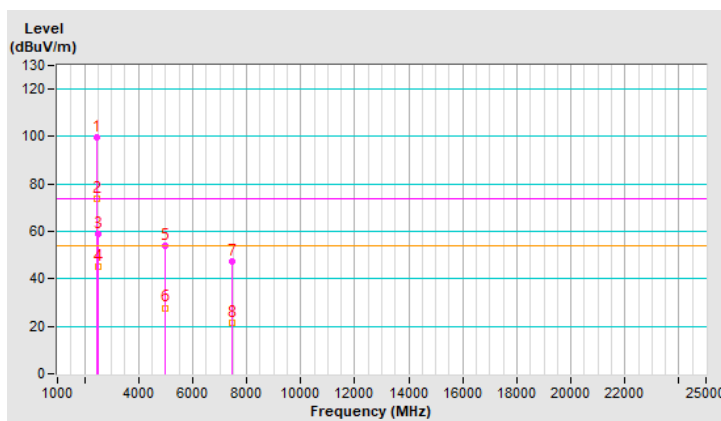
RF Mode	TX BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	99.8 PK			1.50 H	328	102.7	-2.9
2	*2480.00	73.8 AV			1.50 H	328	76.7	-2.9
3	2483.50	59.0 PK	74.0	-15.0	1.50 H	328	61.9	-2.9
4	2483.50	45.3 AV	54.0	-8.7	1.50 H	328	48.2	-2.9
5	4960.00	53.8 PK	74.0	-20.2	2.13 H	334	52.1	1.7
6	4960.00	27.8 AV	54.0	-26.2	2.13 H	334	26.1	1.7
7	7440.00	47.6 PK	74.0	-26.4	2.26 H	270	40.0	7.6
8	7440.00	21.6 AV	54.0	-32.4	2.26 H	270	14.0	7.6

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



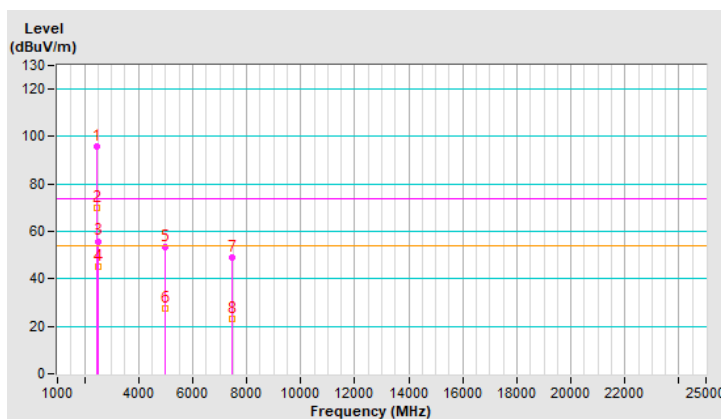
RF Mode	TX BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.7 PK			3.14 V	107	98.6	-2.9
2	*2480.00	69.7 AV			3.14 V	107	72.6	-2.9
3	2483.50	55.9 PK	74.0	-18.1	3.14 V	107	58.8	-2.9
4	2483.50	45.1 AV	54.0	-8.9	3.14 V	107	48.0	-2.9
5	4960.00	53.6 PK	74.0	-20.4	1.10 V	354	51.9	1.7
6	4960.00	27.6 AV	54.0	-26.4	1.10 V	354	25.9	1.7
7	7440.00	49.2 PK	74.0	-24.8	1.02 V	285	41.6	7.6
8	7440.00	23.2 AV	54.0	-30.8	1.02 V	285	15.6	7.6

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.353 \text{ ms} / 7.056 \text{ ms}) = -26.0 \text{ dB}$$



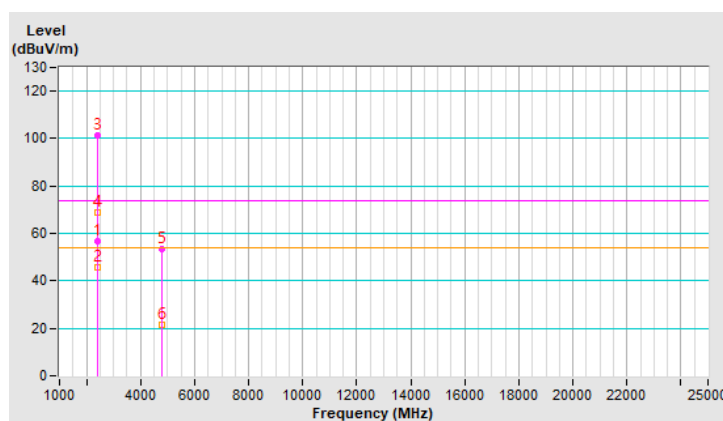
RF Mode	TX BT-LE 2M	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	56.7 PK	74.0	-17.3	1.45 H	350	59.4	-2.7
2	2390.00	45.8 AV	54.0	-8.2	1.45 H	350	48.5	-2.7
3	*2404.00	101.3 PK			1.45 H	350	104.0	-2.7
4	*2404.00	69.0 AV			1.45 H	350	71.7	-2.7
5	4808.00	53.6 PK	74.0	-20.4	2.06 H	334	52.1	1.5
6	4808.00	21.3 AV	54.0	-32.7	2.06 H	334	19.8	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



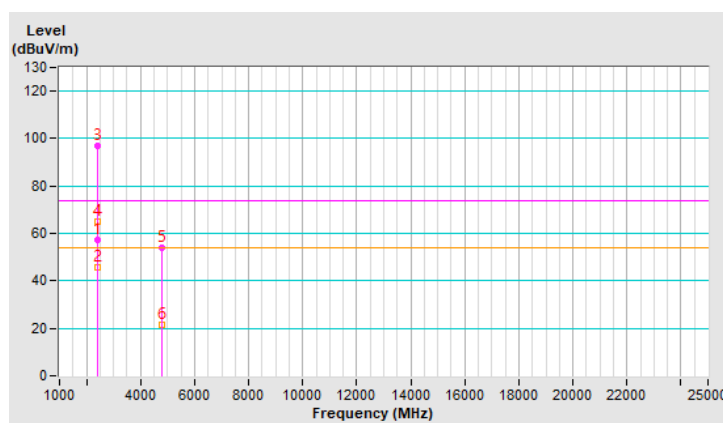
RF Mode	TX BT-LE 2M	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	2.65 V	123	59.9	-2.7
2	2390.00	45.9 AV	54.0	-8.1	2.65 V	123	48.6	-2.7
3	*2404.00	97.1 PK			2.65 V	123	99.8	-2.7
4	*2404.00	64.8 AV			2.65 V	123	67.5	-2.7
5	4808.00	53.8 PK	74.0	-20.2	1.13 V	360	52.3	1.5
6	4808.00	21.5 AV	54.0	-32.5	1.13 V	360	20.0	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



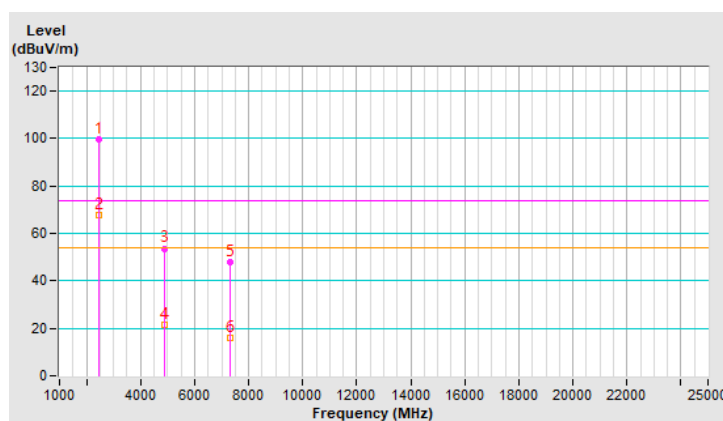
RF Mode	TX BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	99.8 PK			1.46 H	336	102.6	-2.8
2	*2440.00	67.5 AV			1.46 H	336	70.3	-2.8
3	4880.00	53.7 PK	74.0	-20.3	2.11 H	339	52.2	1.5
4	4880.00	21.4 AV	54.0	-32.6	2.11 H	339	19.9	1.5
5	7320.00	48.1 PK	74.0	-25.9	2.21 H	268	40.9	7.2
6	7320.00	15.8 AV	54.0	-38.2	2.21 H	268	8.6	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



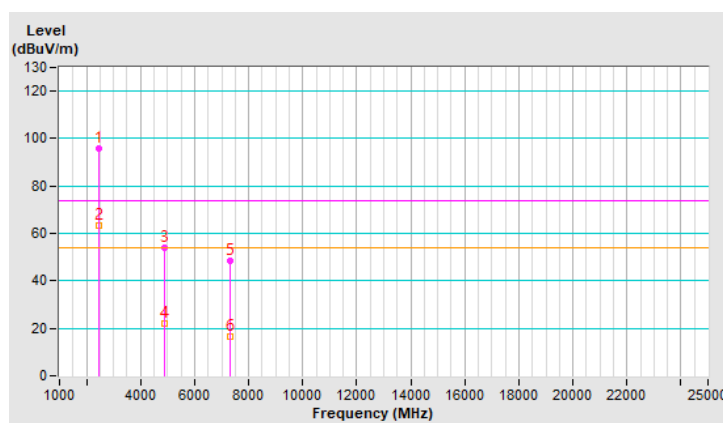
RF Mode	TX BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.8 PK			3.13 V	132	98.6	-2.8
2	*2440.00	63.5 AV			3.13 V	132	66.3	-2.8
3	4880.00	54.1 PK	74.0	-19.9	1.13 V	334	52.6	1.5
4	4880.00	21.8 AV	54.0	-32.2	1.13 V	334	20.3	1.5
5	7320.00	48.7 PK	74.0	-25.3	1.06 V	307	41.5	7.2
6	7320.00	16.4 AV	54.0	-37.6	1.06 V	307	9.2	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



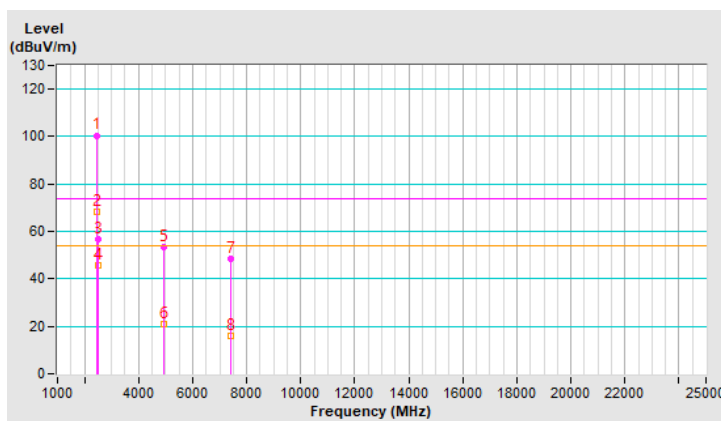
RF Mode	TX BT-LE 2M	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	100.5 PK			1.64 H	350	103.4	-2.9
2	*2478.00	68.2 AV			1.64 H	350	71.1	-2.9
3	2483.50	56.9 PK	74.0	-17.1	1.64 H	350	59.8	-2.9
4	2483.50	45.6 AV	54.0	-8.4	1.64 H	350	48.5	-2.9
5	4956.00	53.4 PK	74.0	-20.6	2.18 H	332	51.7	1.7
6	4956.00	21.1 AV	54.0	-32.9	2.18 H	332	19.4	1.7
7	7434.00	48.3 PK	74.0	-25.7	2.25 H	279	40.8	7.5
8	7434.00	16.0 AV	54.0	-38.0	2.25 H	279	8.5	7.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



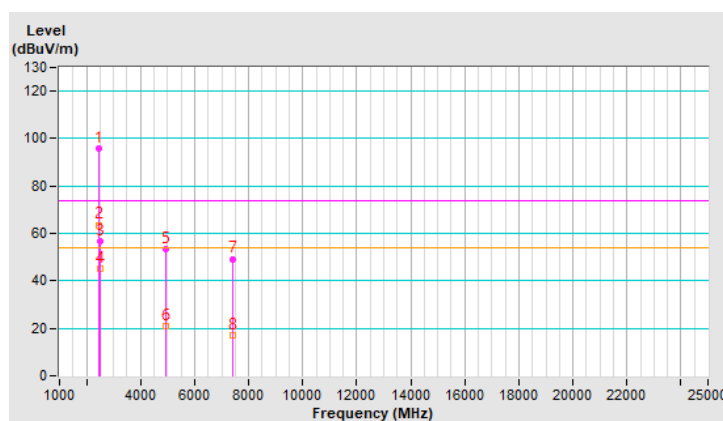
RF Mode	TX BT-LE 2M	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.9 PK			3.15 V	122	98.8	-2.9
2	*2478.00	63.6 AV			3.15 V	122	66.5	-2.9
3	2483.50	56.6 PK	74.0	-17.4	3.15 V	122	59.5	-2.9
4	2483.50	45.2 AV	54.0	-8.8	3.15 V	122	48.1	-2.9
5	4956.00	53.2 PK	74.0	-20.8	1.10 V	351	51.5	1.7
6	4956.00	20.9 AV	54.0	-33.1	1.10 V	351	19.2	1.7
7	7434.00	49.3 PK	74.0	-24.7	1.00 V	271	41.8	7.5
8	7434.00	17.0 AV	54.0	-37.0	1.00 V	271	9.5	7.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.048 \text{ ms}) = -32.3 \text{ dB}$$



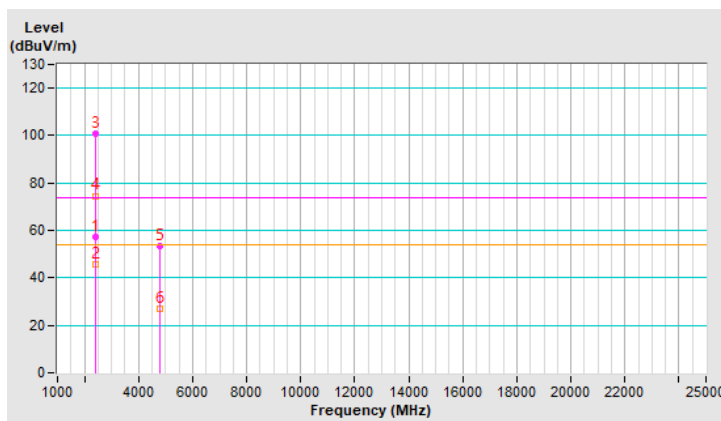
RF Mode	TX logi bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	57.2 PK	74.0	-16.8	1.37 H	358	59.9	-2.7
2	2390.00	45.8 AV	54.0	-8.2	1.37 H	358	48.5	-2.7
3	*2402.00	100.9 PK			1.37 H	358	103.6	-2.7
4	*2402.00	74.6 AV			1.37 H	358	77.3	-2.7
5	4804.00	53.2 PK	74.0	-20.8	2.11 H	309	51.7	1.5
6	4804.00	26.9 AV	54.0	-27.1	2.11 H	309	25.4	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.343 \text{ ms} / 7.048 \text{ ms}) = -26.3 \text{ dB}$$



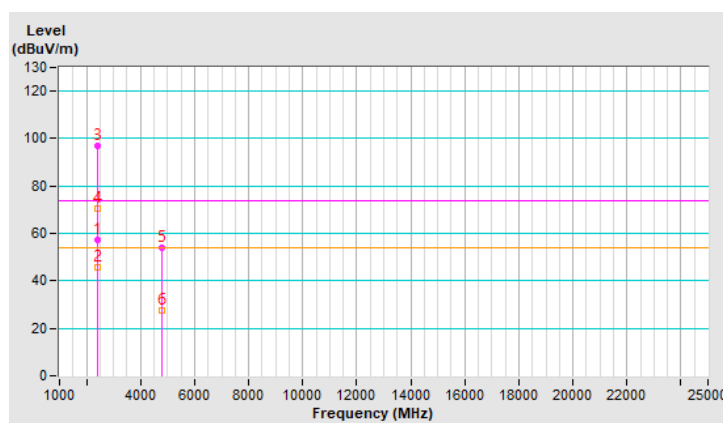
RF Mode	TX logi bolt 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.1 PK	74.0	-16.9	2.63 V	123	59.8	-2.7
2	2390.00	45.5 AV	54.0	-8.5	2.63 V	123	48.2	-2.7
3	*2402.00	96.9 PK			2.63 V	123	99.6	-2.7
4	*2402.00	70.6 AV			2.63 V	123	73.3	-2.7
5	4804.00	53.9 PK	74.0	-20.1	1.04 V	360	52.4	1.5
6	4804.00	27.6 AV	54.0	-26.4	1.04 V	360	26.1	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.343 \text{ ms} / 7.048 \text{ ms}) = -26.3 \text{ dB}$$



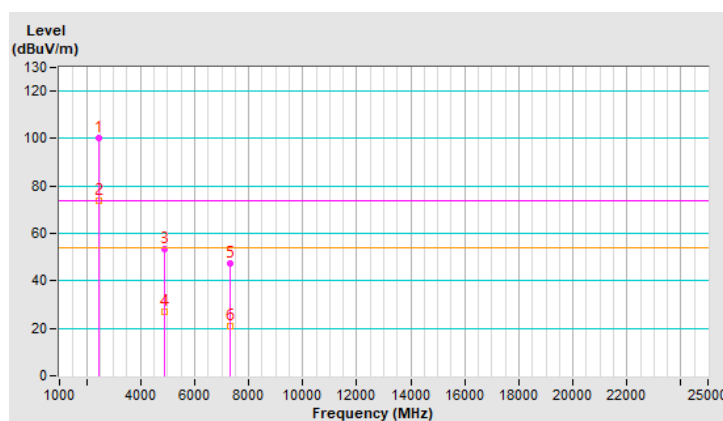
RF Mode	TX logi bolt 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	100.3 PK			1.54 H	338	103.1	-2.8
2	*2440.00	74.0 AV			1.54 H	338	76.8	-2.8
3	4880.00	53.3 PK	74.0	-20.7	2.06 H	316	51.8	1.5
4	4880.00	27.0 AV	54.0	-27.0	2.06 H	316	25.5	1.5
5	7320.00	47.3 PK	74.0	-26.7	2.30 H	273	40.1	7.2
6	7320.00	21.0 AV	54.0	-33.0	2.30 H	273	13.8	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.343 \text{ ms} / 7.048 \text{ ms}) = -26.3 \text{ dB}$$



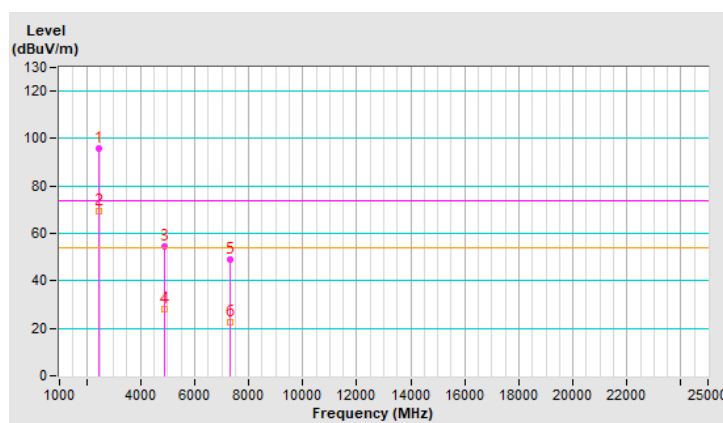
RF Mode	TX logi bolt 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.6 PK			3.13 V	117	98.4	-2.8
2	*2440.00	69.3 AV			3.13 V	117	72.1	-2.8
3	4880.00	54.4 PK	74.0	-19.6	1.08 V	336	52.9	1.5
4	4880.00	28.1 AV	54.0	-25.9	1.08 V	336	26.6	1.5
5	7320.00	49.1 PK	74.0	-24.9	1.05 V	297	41.9	7.2
6	7320.00	22.8 AV	54.0	-31.2	1.05 V	297	15.6	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.343 \text{ ms} / 7.048 \text{ ms}) = -26.3 \text{ dB}$$



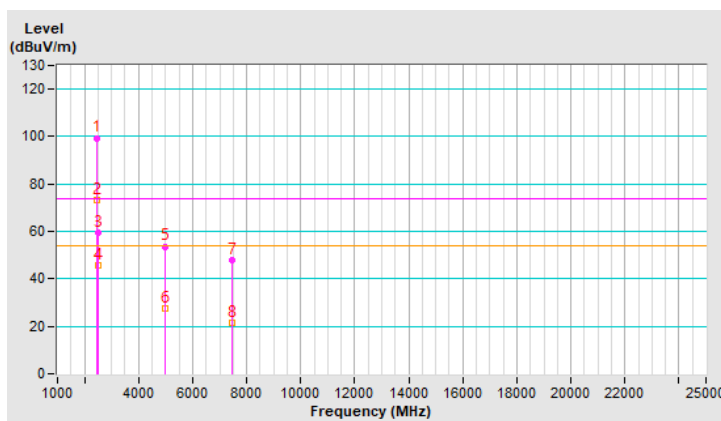
RF Mode	TX logi bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	99.4 PK			1.48 H	331	102.3	-2.9
2	*2480.00	73.1 AV			1.48 H	331	76.0	-2.9
3	2483.50	59.5 PK	74.0	-14.5	1.48 H	331	62.4	-2.9
4	2483.50	45.6 AV	54.0	-8.4	1.48 H	331	48.5	-2.9
5	4960.00	53.7 PK	74.0	-20.3	2.09 H	348	52.0	1.7
6	4960.00	27.4 AV	54.0	-26.6	2.09 H	348	25.7	1.7
7	7440.00	47.8 PK	74.0	-26.2	2.29 H	255	40.2	7.6
8	7440.00	21.5 AV	54.0	-32.5	2.29 H	255	13.9	7.6

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.343 \text{ ms} / 7.048 \text{ ms}) = -26.3 \text{ dB}$$



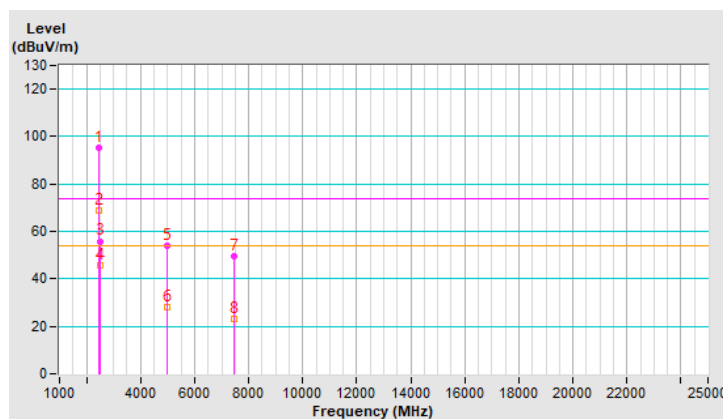
RF Mode	TX logi bolt 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.3 PK			3.13 V	120	98.2	-2.9
2	*2480.00	69.0 AV			3.13 V	120	71.9	-2.9
3	2483.50	55.9 PK	74.0	-18.1	3.13 V	120	58.8	-2.9
4	2483.50	45.9 AV	54.0	-8.1	3.13 V	120	48.8	-2.9
5	4960.00	54.2 PK	74.0	-19.8	1.07 V	342	52.5	1.7
6	4960.00	27.9 AV	54.0	-26.1	1.07 V	342	26.2	1.7
7	7440.00	49.6 PK	74.0	-24.4	1.05 V	299	42.0	7.6
8	7440.00	23.3 AV	54.0	-30.7	1.05 V	299	15.7	7.6

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$$

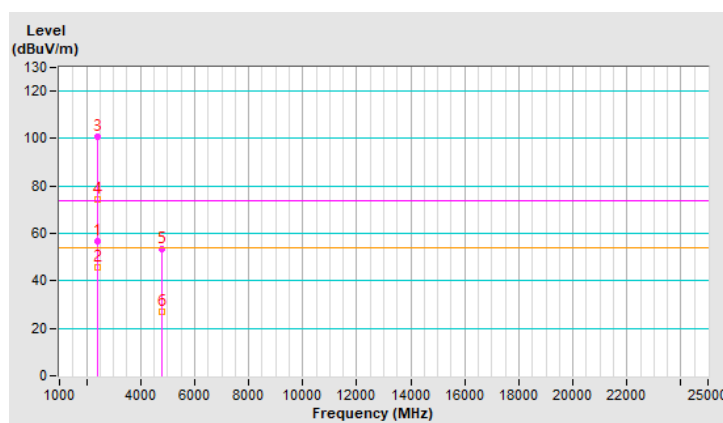


RF Mode	TX logi bolt 2M	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	56.8 PK	74.0	-17.2	1.69 H	359	59.5	-2.7
2	2390.00	45.8 AV	54.0	-8.2	1.69 H	359	48.5	-2.7
3	*2404.00	100.6 PK			1.59 H	337	103.3	-2.7
4	*2404.00	74.3 AV			1.59 H	337	77.0	-2.7
5	4808.00	53.4 PK	74.0	-20.6	2.20 H	334	51.9	1.5
6	4808.00	27.1 AV	54.0	-26.9	2.20 H	334	25.6	1.5

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.
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:
 $20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$



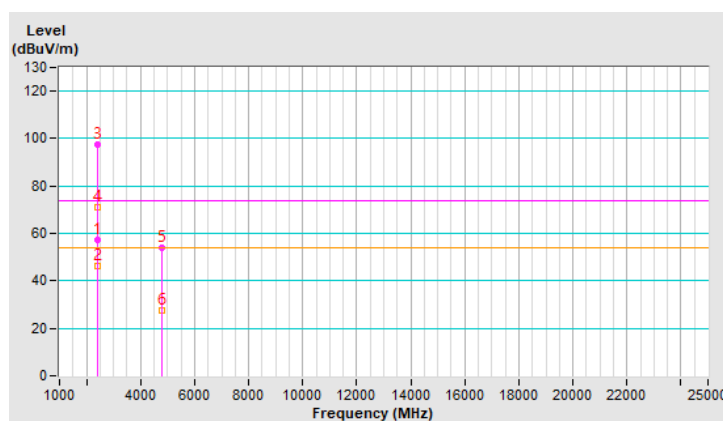
RF Mode	TX logi bolt 2M	Channel	CH 1 : 2404 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.3 PK	74.0	-16.7	2.63 V	122	60.0	-2.7
2	2390.00	46.0 AV	54.0	-8.0	2.63 V	122	48.7	-2.7
3	*2404.00	97.5 PK			2.68 V	119	100.2	-2.7
4	*2404.00	71.2 AV			2.68 V	119	73.9	-2.7
5	4808.00	53.9 PK	74.0	-20.1	1.09 V	360	52.4	1.5
6	4808.00	27.6 AV	54.0	-26.4	1.09 V	360	26.1	1.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$$

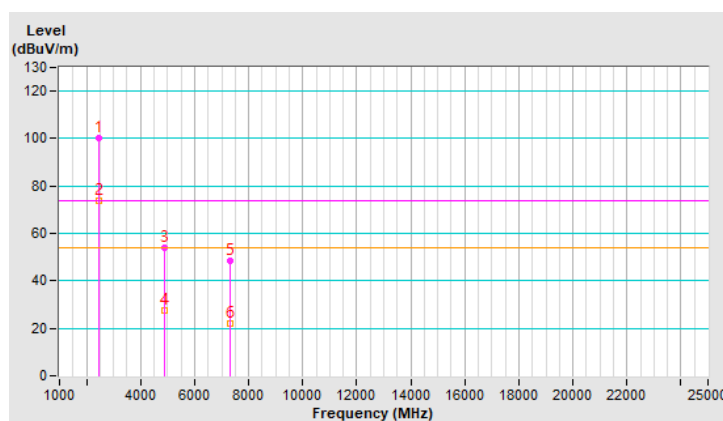


RF Mode	TX logi bolt 2M	Channel	CH 19 : 2.440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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			1.62 H	337	102.8	-2.8
2	*2440.00	73.7 AV			1.62 H	337	76.5	-2.8
3	4880.00	53.8 PK	74.0	-20.2	2.19 H	343	52.3	1.5
4	4880.00	27.5 AV	54.0	-26.5	2.19 H	343	26.0	1.5
5	7320.00	48.5 PK	74.0	-25.5	2.31 H	266	41.3	7.2
6	7320.00	22.2 AV	54.0	-31.8	2.31 H	266	15.0	7.2

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.
5. " * ": Fundamental frequency.
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:
 $20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$



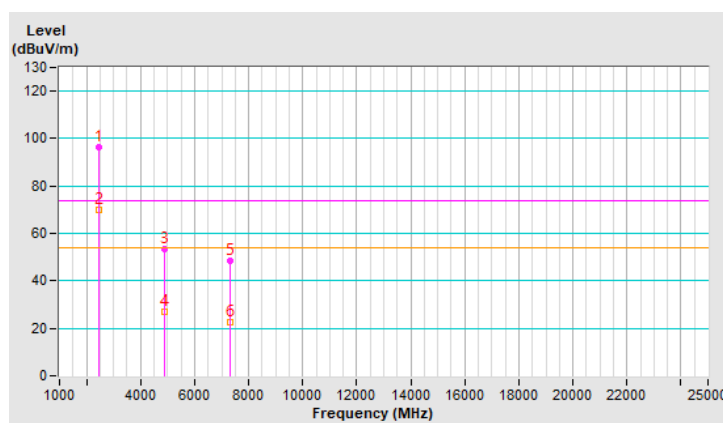
RF Mode	TX logi bolt 2M	Channel	CH 19 : 2.440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	96.2 PK			3.10 V	124	99.0	-2.8
2	*2440.00	69.9 AV			3.10 V	124	72.7	-2.8
3	4880.00	53.5 PK	74.0	-20.5	1.06 V	354	52.0	1.5
4	4880.00	27.2 AV	54.0	-26.8	1.06 V	354	25.7	1.5
5	7320.00	48.7 PK	74.0	-25.3	1.00 V	264	41.5	7.2
6	7320.00	22.4 AV	54.0	-31.6	1.00 V	264	15.2	7.2

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.
5. " * ": Fundamental frequency.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$$



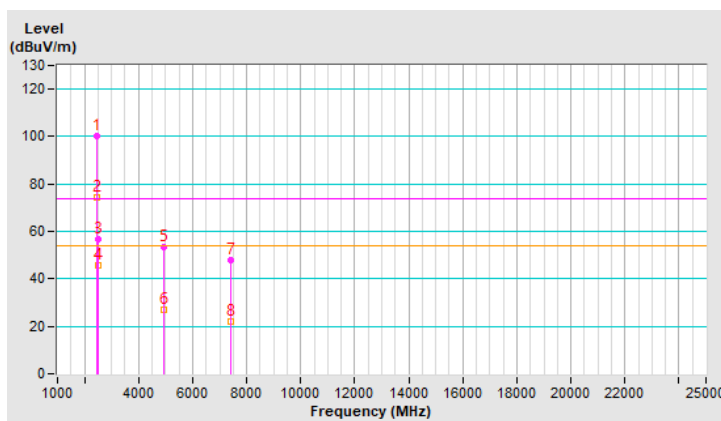
RF Mode	TX logi bolt 2M	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	100.4 PK			1.65 H	356	103.3	-2.9
2	*2478.00	74.1 AV			1.65 H	356	77.0	-2.9
3	2483.50	56.8 PK	74.0	-17.2	1.60 H	346	59.7	-2.9
4	2483.50	45.6 AV	54.0	-8.4	1.60 H	346	48.5	-2.9
5	4956.00	53.4 PK	74.0	-20.6	2.16 H	335	51.7	1.7
6	4956.00	27.1 AV	54.0	-26.9	2.16 H	335	25.4	1.7
7	7434.00	48.1 PK	74.0	-25.9	2.26 H	263	40.6	7.5
8	7434.00	21.8 AV	54.0	-32.2	2.26 H	263	14.3	7.5

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.
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:

$$20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$$



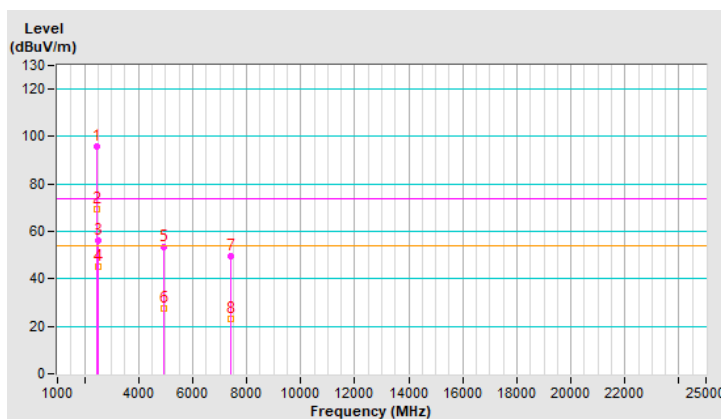
RF Mode	TX logi bolt 2M	Channel	CH 38 : 2478 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	25 °C, 65 % RH
Tested By	Nelson Teng		

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	95.6 PK			3.15 V	113	98.5	-2.9
2	*2478.00	69.3 AV			3.15 V	113	72.2	-2.9
3	2483.50	56.1 PK	74.0	-17.9	3.18 V	112	59.0	-2.9
4	2483.50	45.0 AV	54.0	-9.0	3.18 V	112	47.9	-2.9
5	4956.00	53.6 PK	74.0	-20.4	1.09 V	349	51.9	1.7
6	4956.00	27.3 AV	54.0	-26.7	1.09 V	349	25.6	1.7
7	7434.00	49.6 PK	74.0	-24.4	1.00 V	264	42.1	7.5
8	7434.00	23.3 AV	54.0	-30.7	1.00 V	264	15.8	7.5

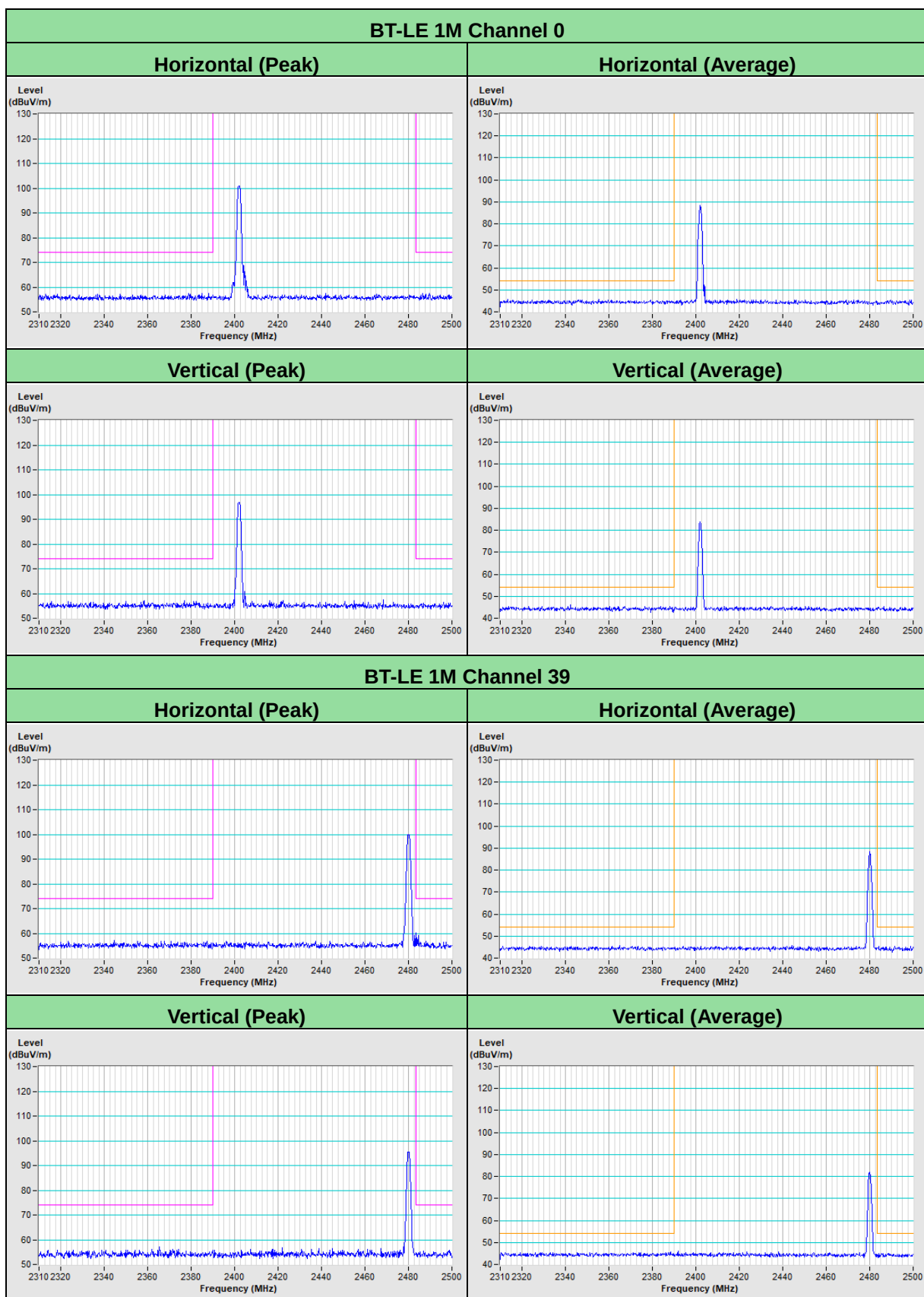
Remarks:

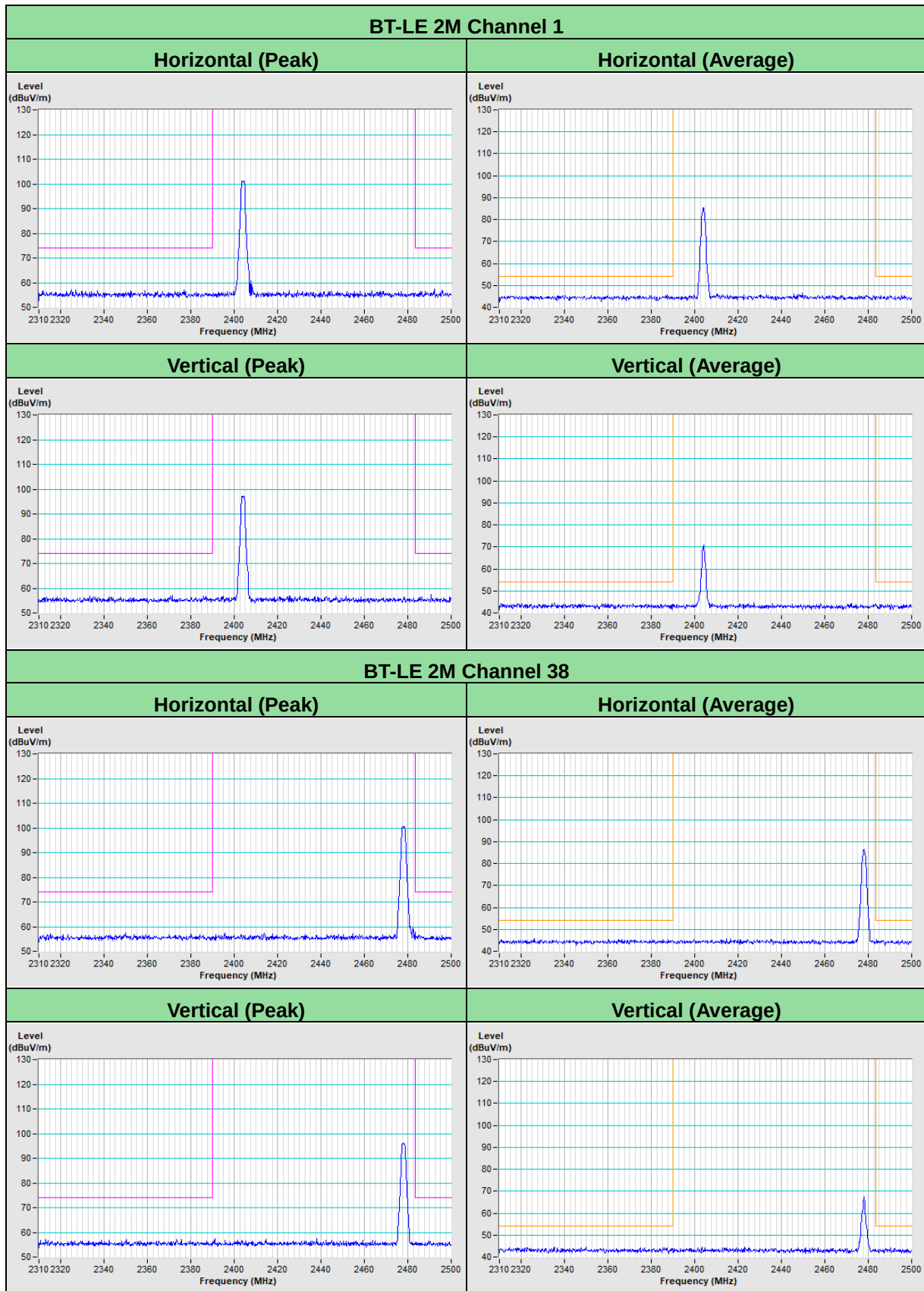
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.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

$$20 \log(\text{Duty cycle}) = 20 \log(0.173 \text{ ms} / 7.056 \text{ ms}) = -32.2 \text{ dB}$$

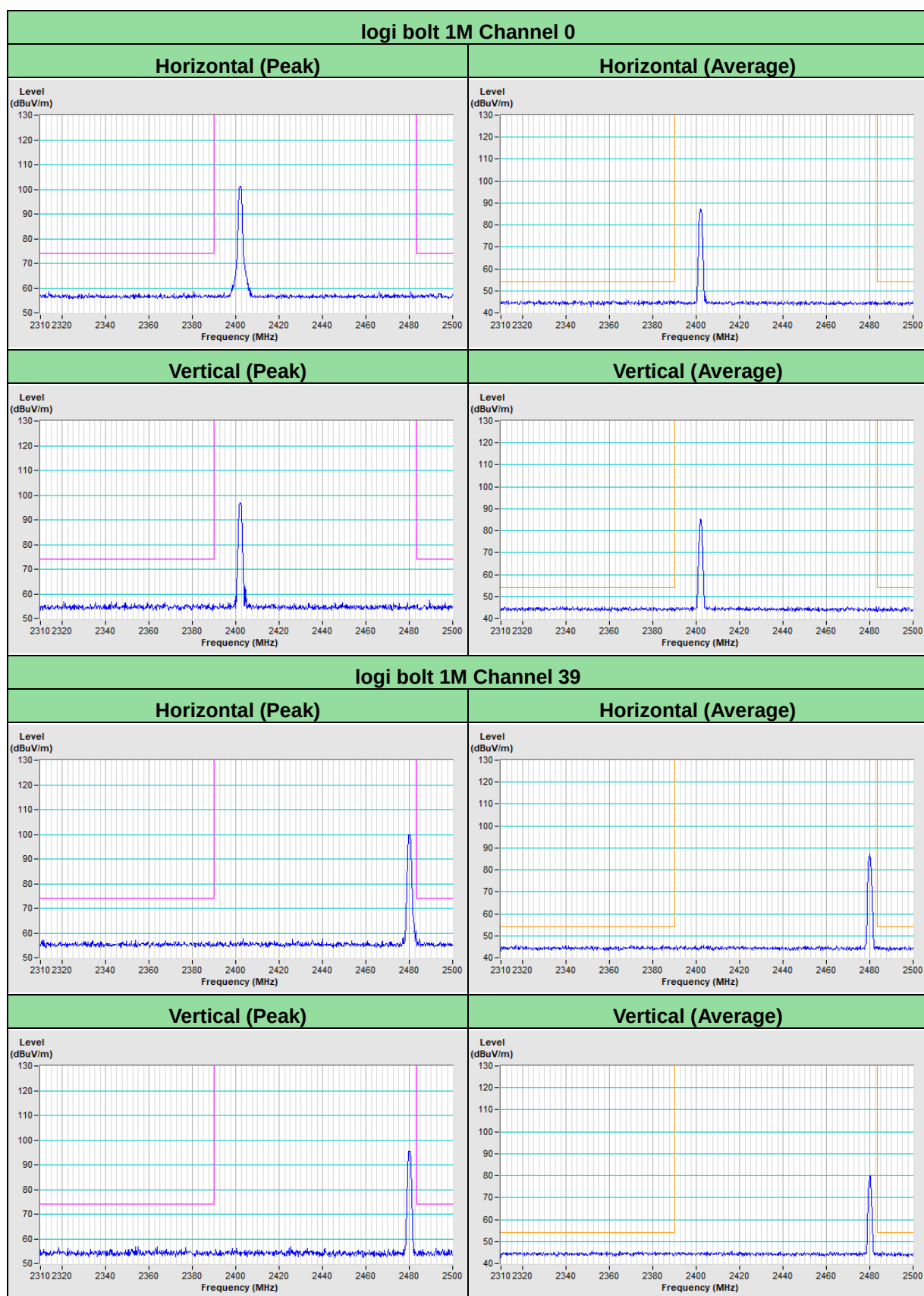


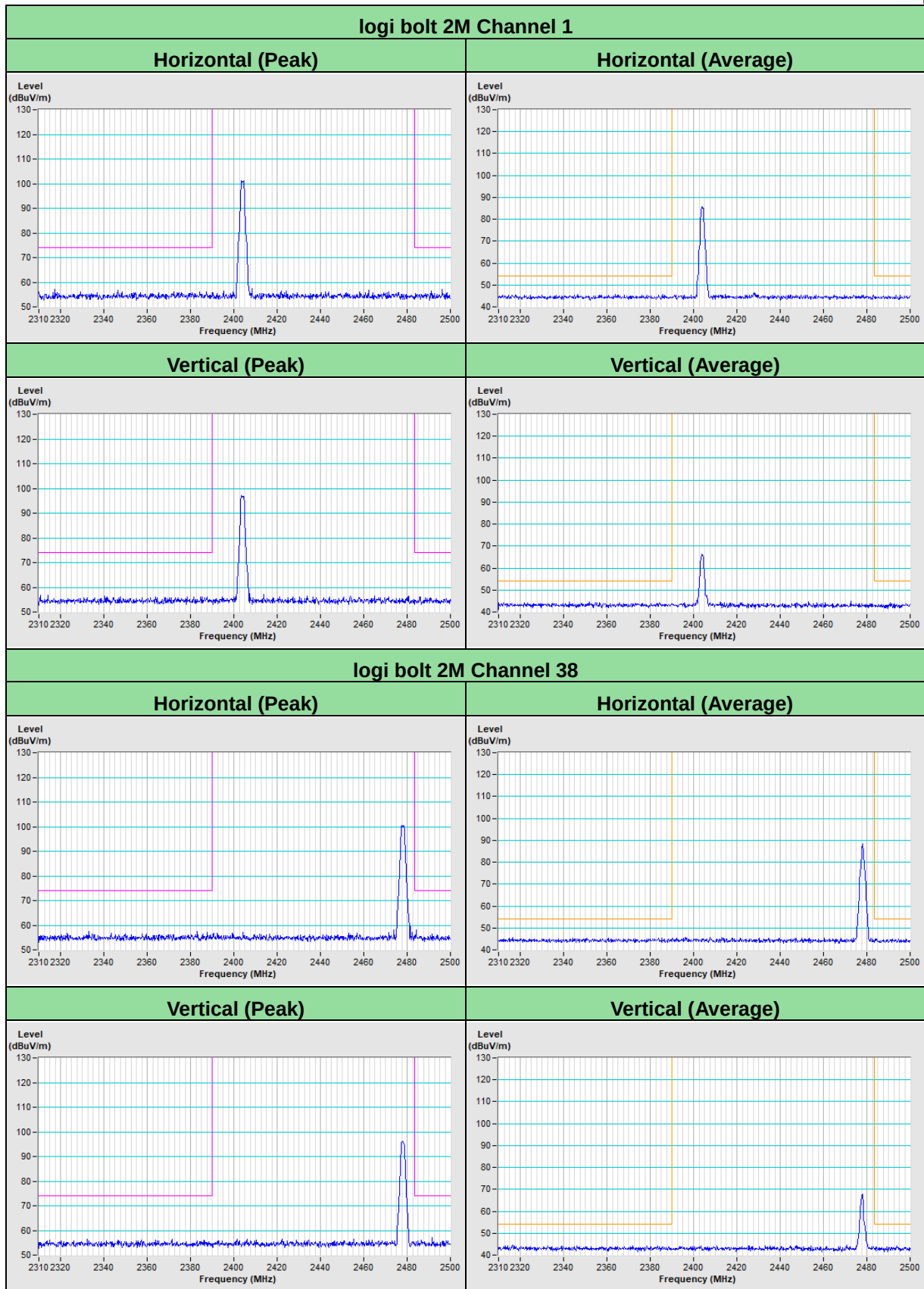
Plot of Band Edge_BT-LE





Plot of Band Edge_logi bolt





8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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Email: service.adt@bureauveritas.com

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

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

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