

# TEST REPORT

## CERTIFICATE OF CONFORMITY

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

**Report No.:** RFBDKG-WTW-P21110470

**FCC ID:** JNZYR0071

**Model No.:** YR0071

**Received Date:** 2022/1/8

**Test Date:** 2022/1/21 ~ 2022/1/27

**Issued Date:** 2022/2/16

**Applicant:** LOGITECH FAR EAST LTD.

**Address:** 7700 Gateway Boulevard Newark California United States

**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

**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:** \_\_\_\_\_

2022/2/16

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Prepared by : **Phoenix Huang / Specialist**



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## Release Control Record

Issue No.	Description	Date Issued
RFBDKG-WTW-P21110470	Original release.	2022/2/16

## 1 Certificate

**Product:** Wireless Keyboard  
**Brand:** Logitech  
**Test Model:** YR0071  
**Sample Status:** Engineering sample  
**Applicant:** LOGITECH FAR EAST LTD.  
**Test Date:** 2022/1/21 ~ 2022/1/27  
**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 -17.9 dB at 939.37 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -8.2 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	YR0071
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	<b>BT-LE 1M:</b> 2.735 mW <b>BT-LE 2M:</b> 2.716 mW <b>logi bolt 1M:</b> 2.723 mW <b>logi bolt 2M:</b> 2.704 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

1. The antenna information is listed as below.

Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
3.72	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
		logi bolt 1M	0, 19, 39	GFSK	1Mb/s
		BT-LE 2M	1, 19, 38	GFSK	2Mb/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
		logi bolt 1M	0, 19, 39	GFSK	1Mb/s
		BT-LE 2M	1, 19, 38	GFSK	2Mb/s
		logi bolt 2M	1, 19, 38	GFSK	2Mb/s
EUT Configure Mode:	A	With Battery			
	B	Antenna Port			

### 3.5 Duty Cycle of Test Signal

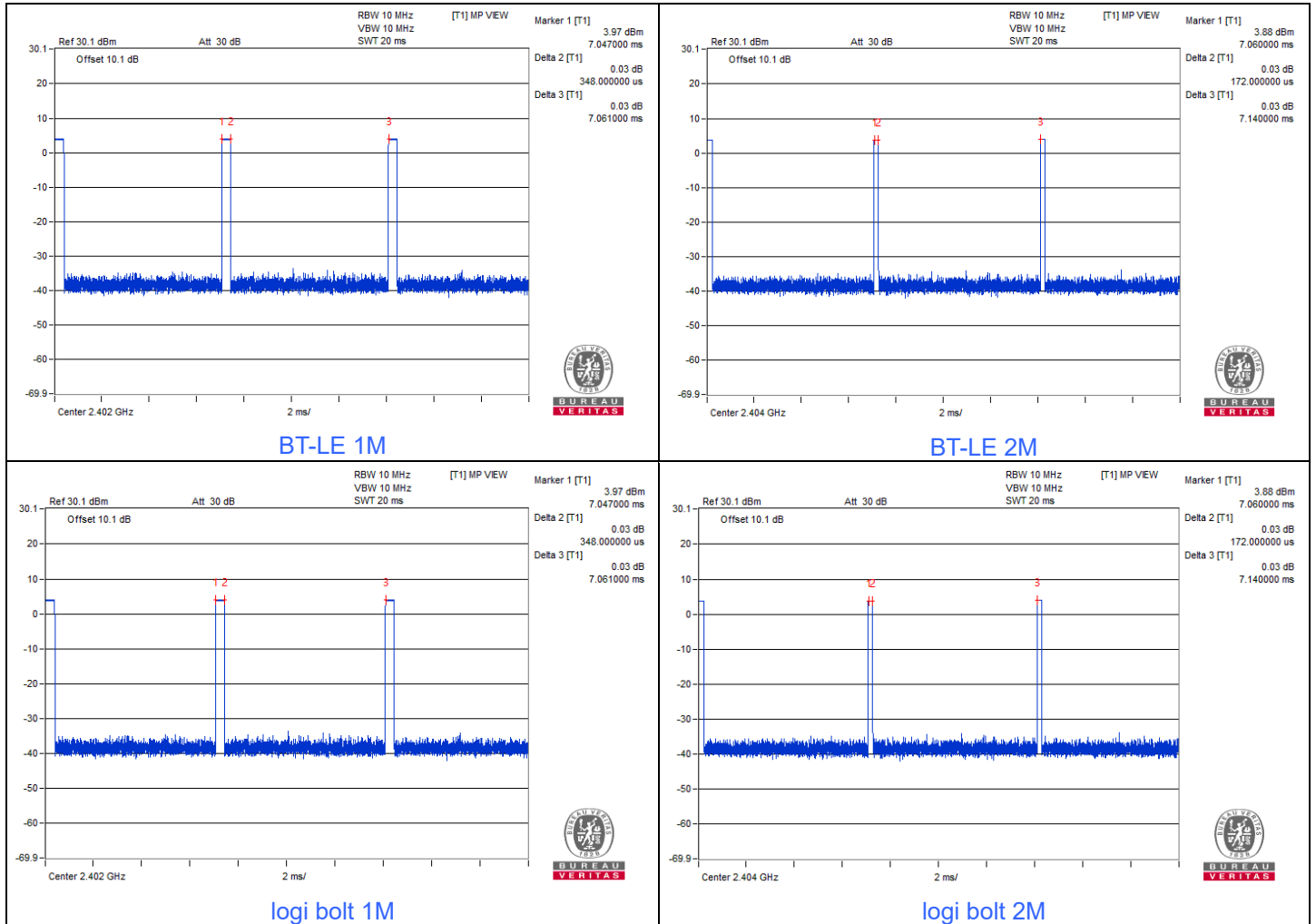
Duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.  
 Duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

**BT-LE 1M:** Duty cycle =  $0.345 \text{ ms} / 7.043 \text{ ms} = 4.9\%$ , duty factor =  $10 * \log(1/\text{Duty cycle}) = 13.10 \text{ dB}$

**BT-LE 2M:** Duty cycle =  $0.172 \text{ ms} / 7.058 \text{ ms} = 2.4\%$ , duty factor =  $10 * \log(1/\text{Duty cycle}) = 16.13 \text{ dB}$

**logi bolt 1M:** Duty cycle =  $0.348 \text{ ms} / 7.061 \text{ ms} = 4.9\%$ , duty factor =  $10 * \log(1/\text{Duty cycle}) = 13.07 \text{ dB}$

**logi bolt 2M:** Duty cycle =  $0.172 \text{ ms} / 7.140 \text{ ms} = 2.4\%$ , duty factor =  $10 * \log(1/\text{Duty cycle}) = 16.18 \text{ dB}$

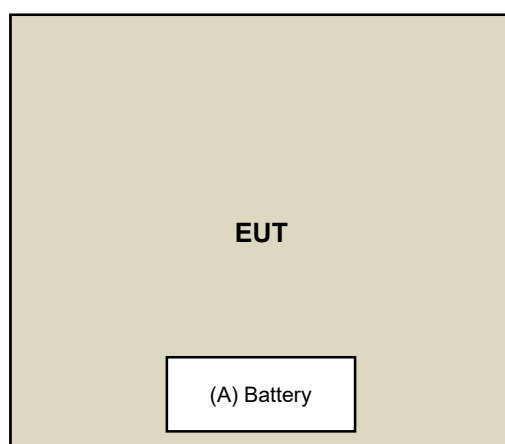


### 3.6 Test Program Used and Operation Descriptions

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	<ul style="list-style-type: none"> <li>◆ BLE1M TX Modulated on channel 2402MHz</li> <li>◆ BLE1M TX Modulated on channel 2440MHz</li> <li>◆ BLE1M TX Modulated on channel 2480MHz</li> <li>◆ BLE2M TX Modulated on channel 2404MHz</li> <li>◆ BLE2M TX Modulated on channel 2440MHz</li> <li>◆ BLE2M TX Modulated on channel 2478MHz</li> </ul>
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	Duracell	AA	NA	NA	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
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: 2022/1/26

### 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: 2022/1/21 ~ 2022/1/26

#### 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: 2022/1/21 ~ 2022/1/27

## 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:

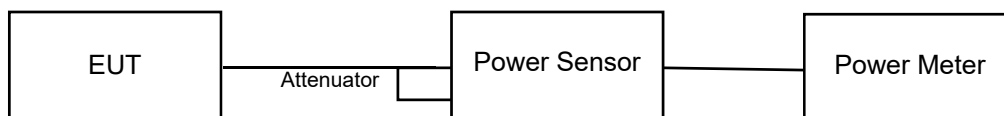
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted 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:

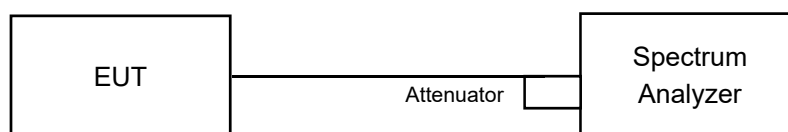
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

##### 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

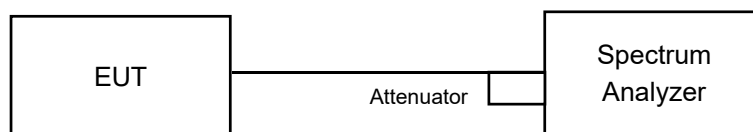


#### 6.2.2 Test Procedure

- 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

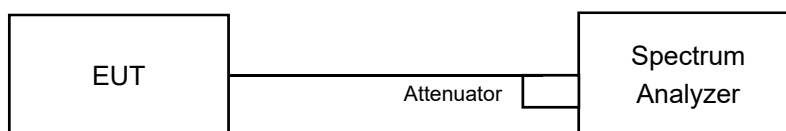


### 6.3.2 Test Procedure

- 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  $\geq 300$  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.

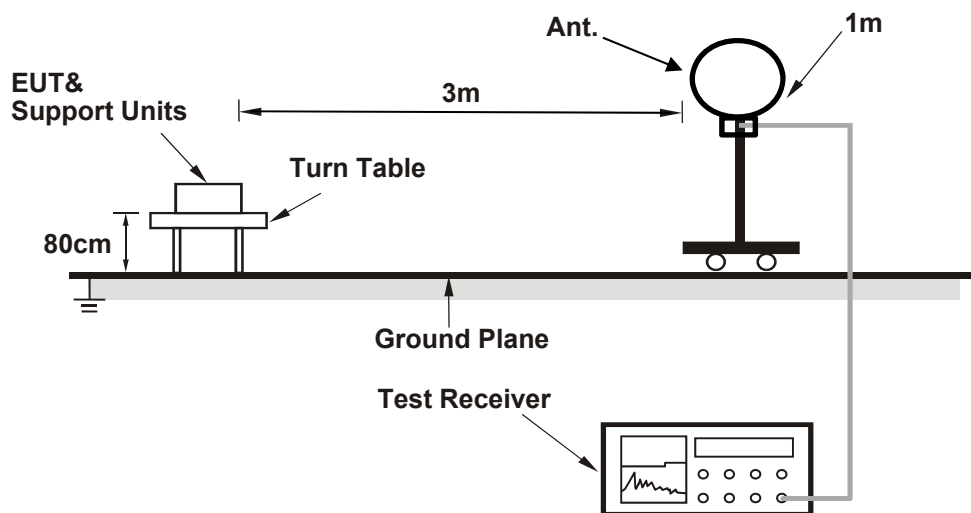
#### MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW  $\geq 300$  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.

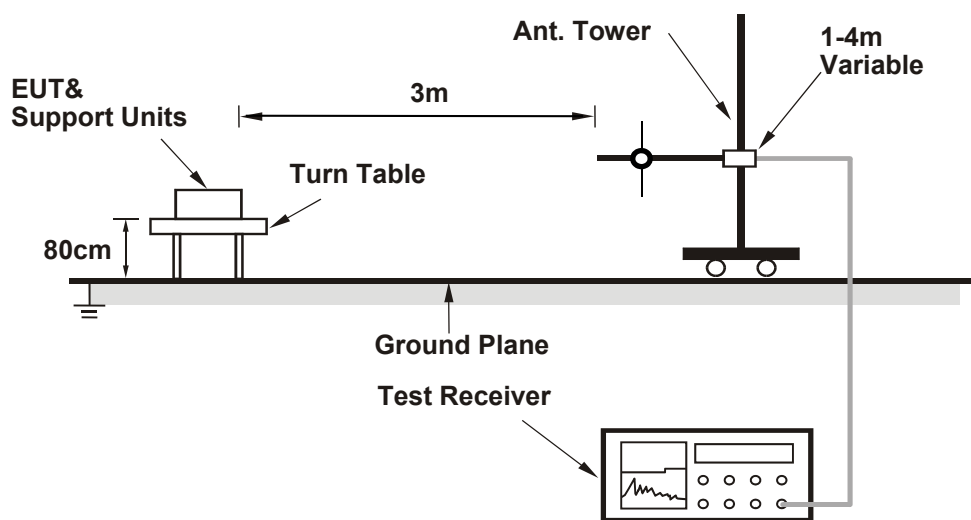
## 6.5 Unwanted Emissions below 1 GHz

### 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.

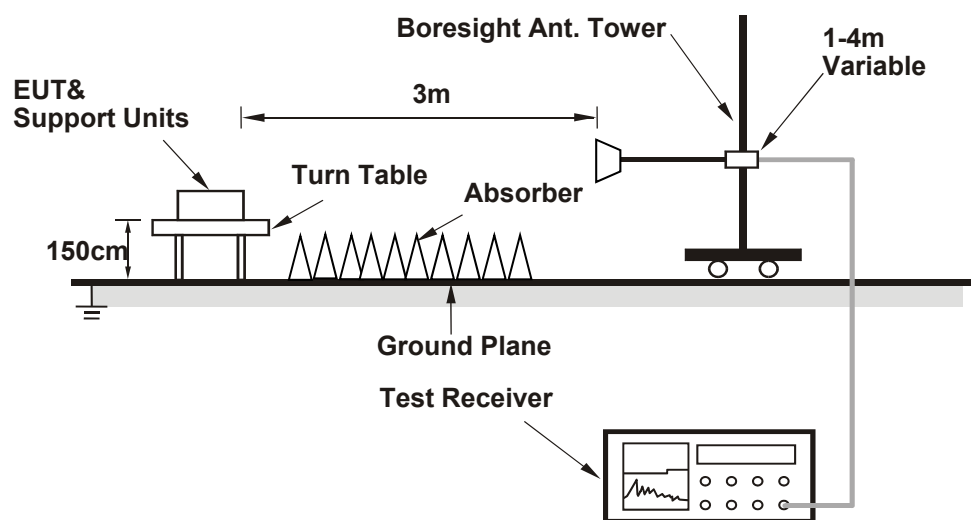
#### Notes:

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:	Curry Chen
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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	2.735	4.37	30	Pass
19	2440	2.71	4.33	30	Pass
39	2480	2.685	4.29	30	Pass

Note: The antenna gain is 3.72 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	2.716	4.34	30	Pass
19	2440	2.692	4.30	30	Pass
38	2478	2.679	4.28	30	Pass

Note: The antenna gain is 3.72 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	2.723	4.35	30	Pass
19	2440	2.704	4.32	30	Pass
39	2480	2.698	4.31	30	Pass

Note: The antenna gain is 3.72 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	2.704	4.32	30	Pass
19	2440	2.685	4.29	30	Pass
38	2478	2.673	4.27	30	Pass

Note: The antenna gain is 3.72 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	2.63	4.20
19	2440	2.6	4.15
39	2480	2.582	4.12

#### BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	2.624	4.19
19	2440	2.6	4.15
38	2478	2.588	4.13

#### logi bolt 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	2.618	4.18
19	2440	2.594	4.14
39	2480	2.588	4.13

#### logi bolt 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2404	2.618	4.18
19	2440	2.588	4.13
38	2478	2.582	4.12

## 7.2 Power Spectral Density

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

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	0.41	8.00	Pass
19	2440	0.43	8.00	Pass
39	2480	0.55	8.00	Pass

Note: The antenna gain is 3.72 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	-3.41	8.00	Pass
19	2440	-3.49	8.00	Pass
38	2478	-3.66	8.00	Pass

Note: The antenna gain is 3.72 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	0.65	8.00	Pass
19	2440	0.61	8.00	Pass
39	2480	0.53	8.00	Pass

Note: The antenna gain is 3.72 dBi < 6 dBi, so the power density limit shall not be reduced.

### logi bolt 2M

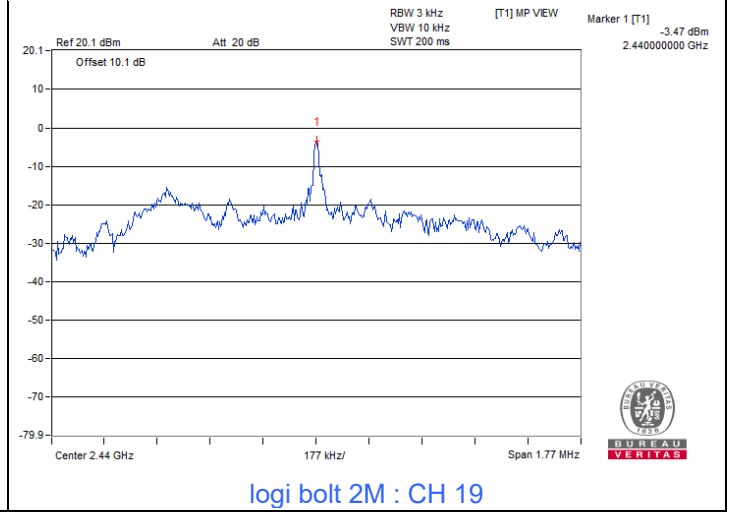
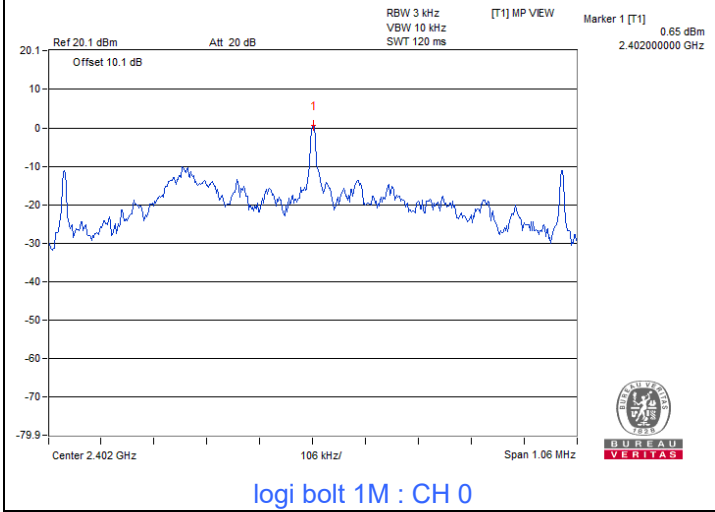
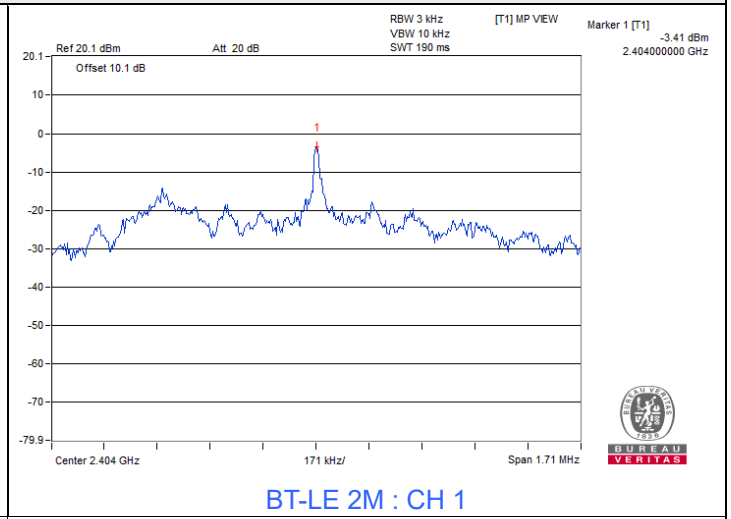
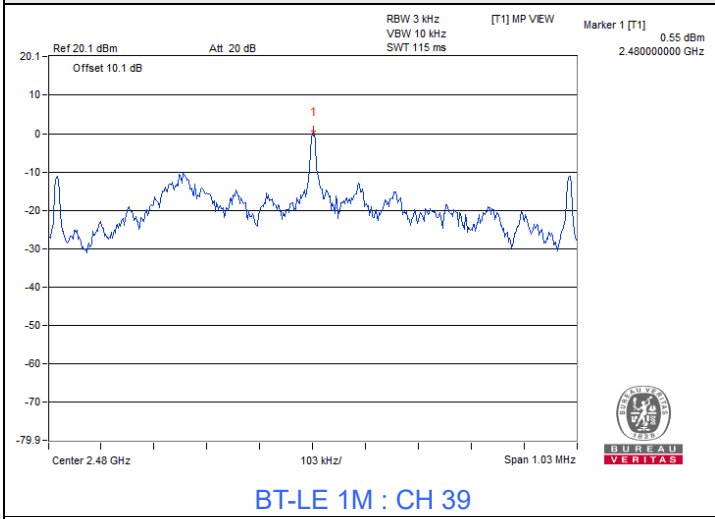
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2404	-3.98	8.00	Pass
19	2440	-3.47	8.00	Pass
38	2478	-3.73	8.00	Pass

Note: The antenna gain is 3.72 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:	Curry Chen
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#### BT-LE 1M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.7	0.5	Pass
19	2440	0.7	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	1.14	0.5	Pass
19	2440	1.16	0.5	Pass
38	2478	1.15	0.5	Pass

#### logi bolt 1M

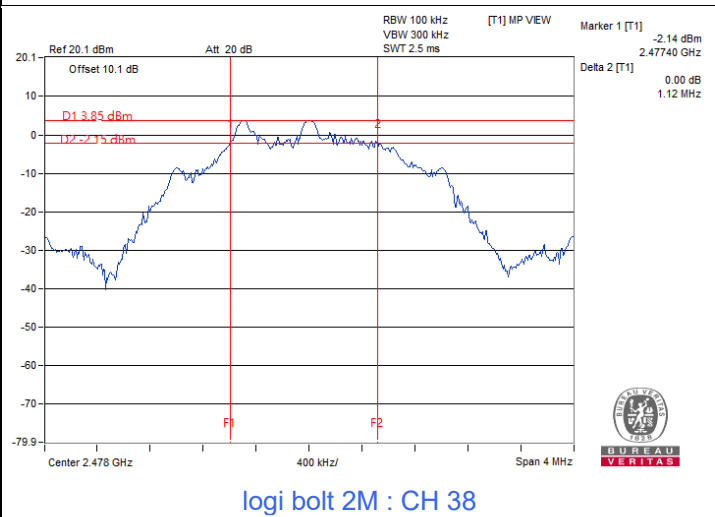
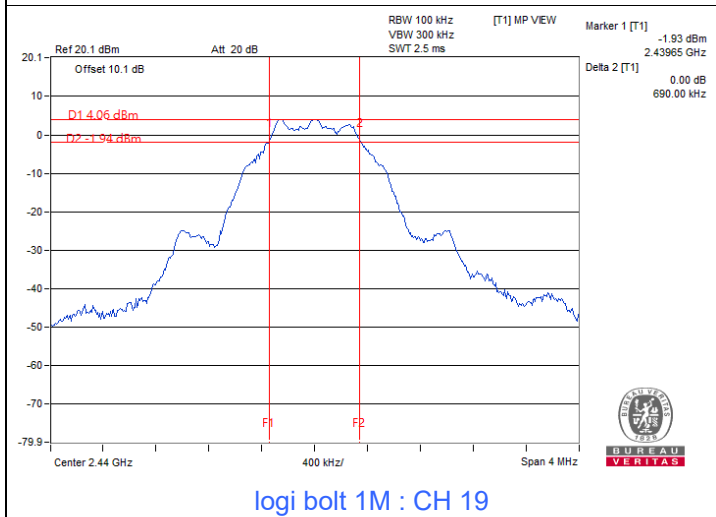
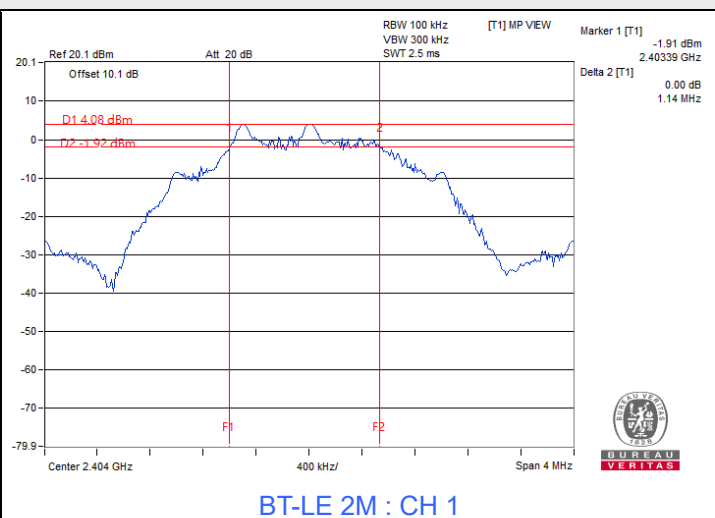
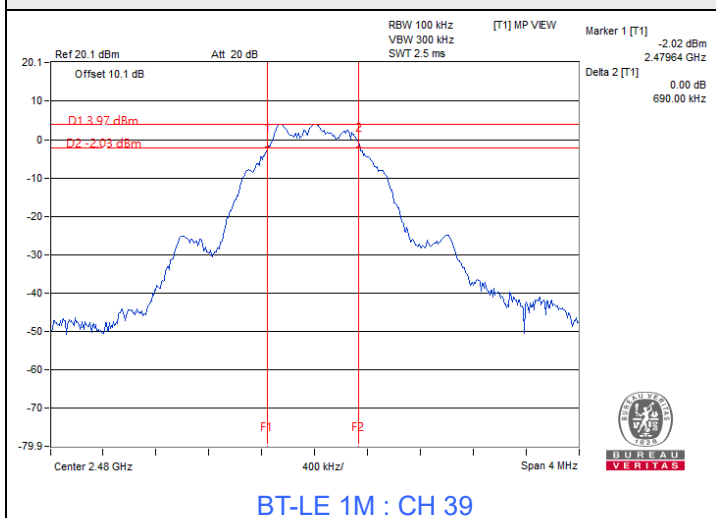
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.71	0.5	Pass
19	2440	0.69	0.5	Pass
39	2480	0.7	0.5	Pass

#### logi bolt 2M

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2404	1.17	0.5	Pass
19	2440	1.18	0.5	Pass
38	2478	1.12	0.5	Pass



### Spectrum Plot of Minimum Value

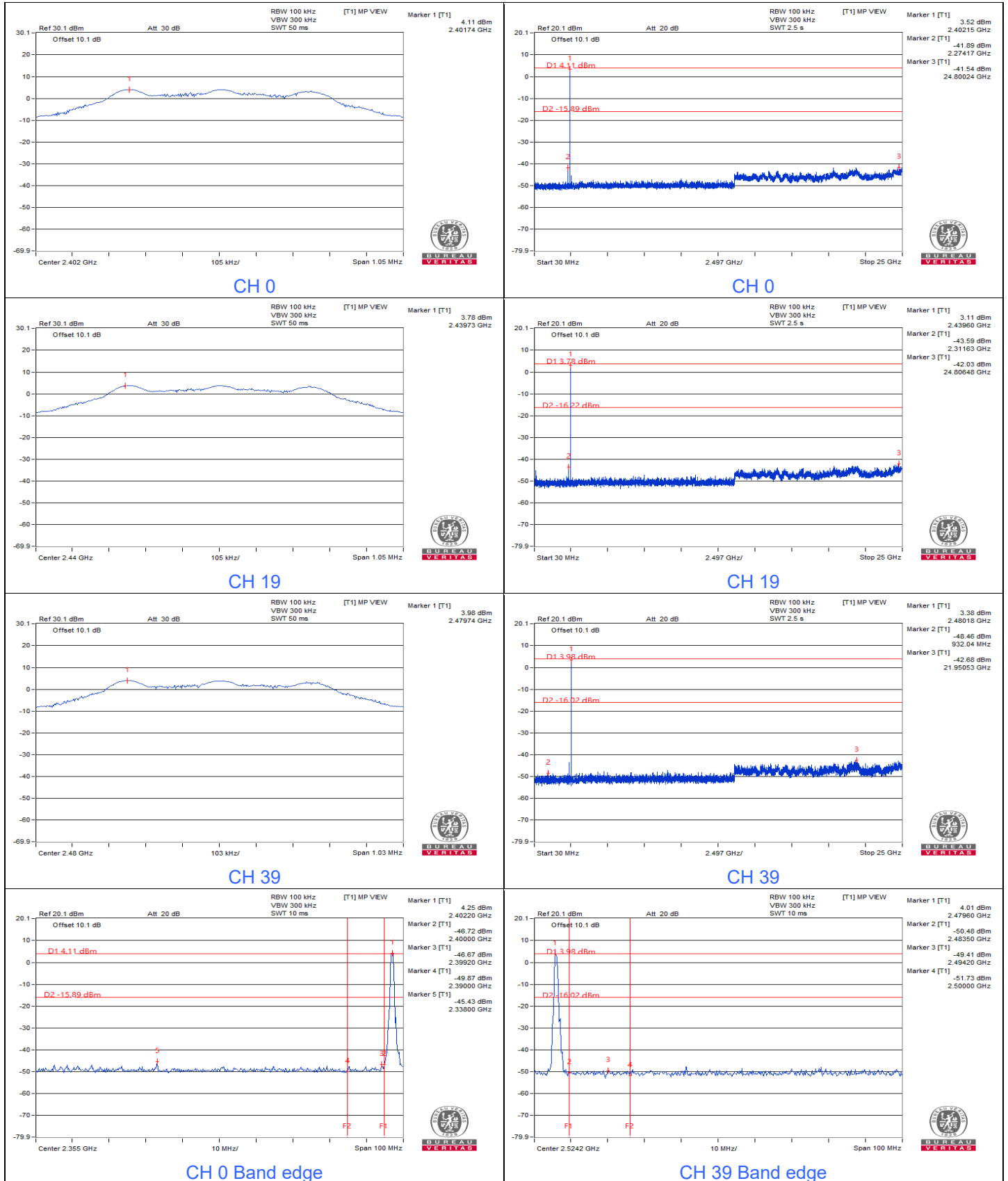




### 7.4 Conducted Out of Band Emissions

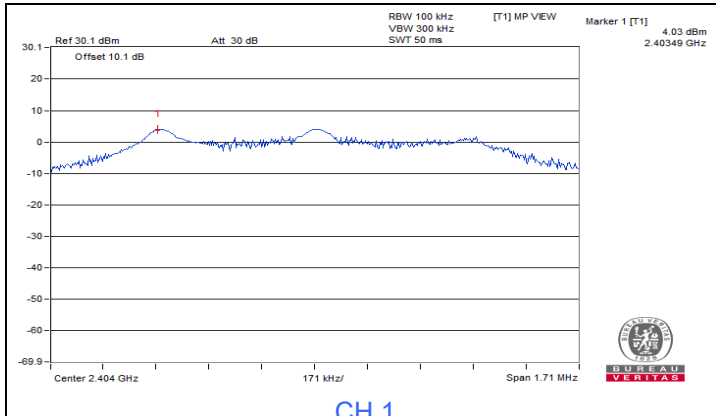
Input Power:	3 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Curry Chen
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#### BT-LE 1M

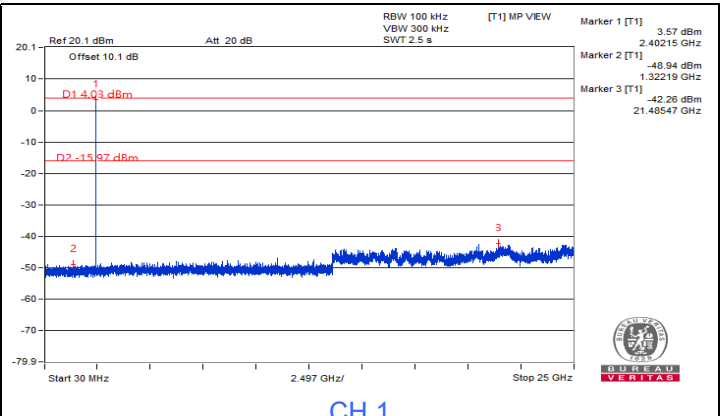




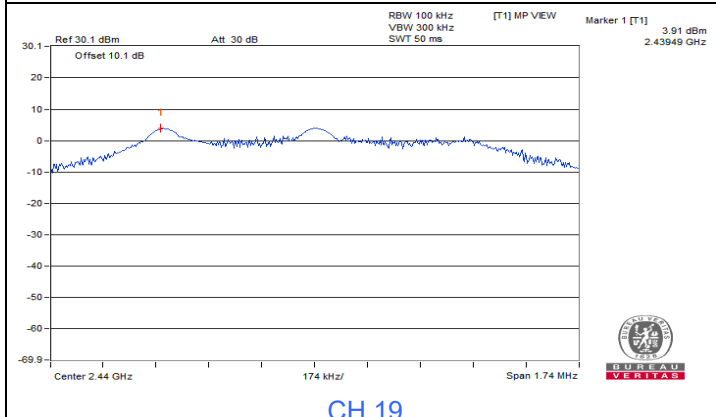
BT-LE 2M



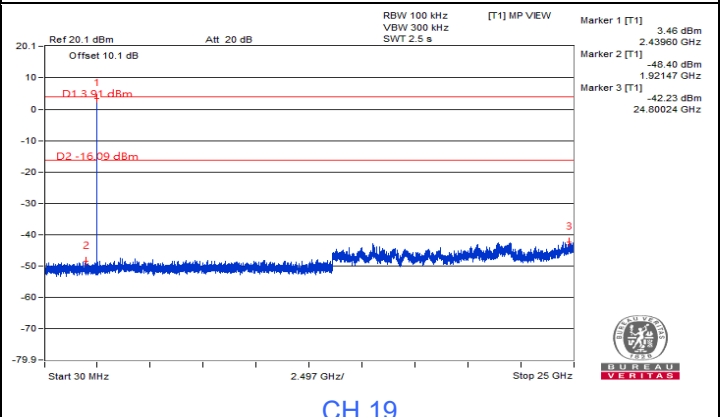
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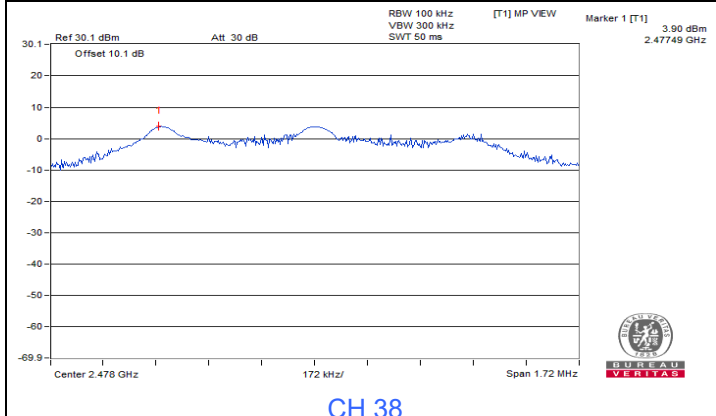
CH 1



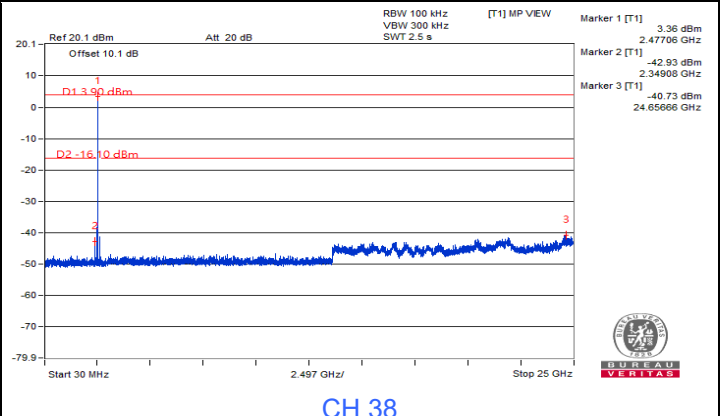
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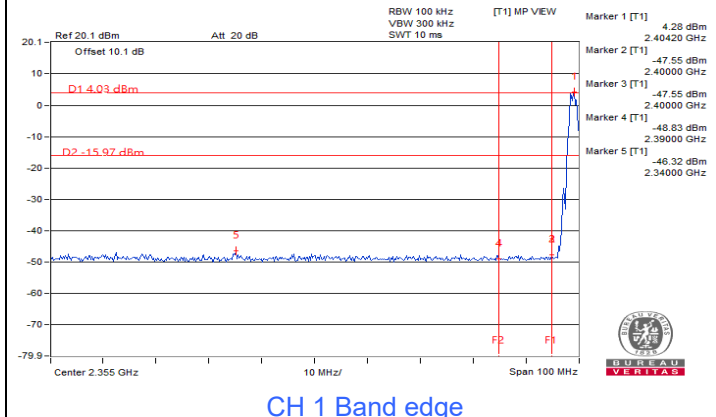
CH 19



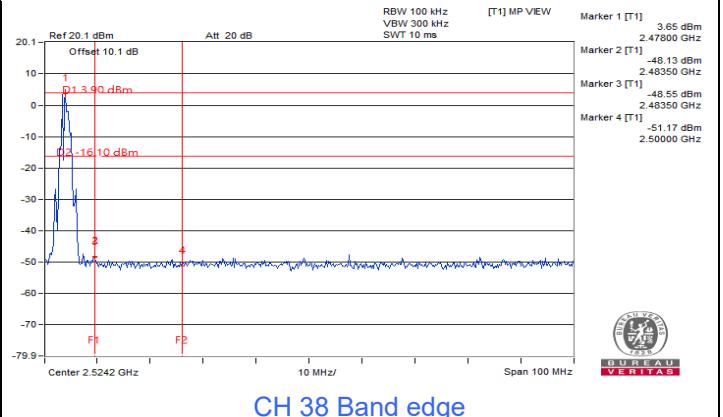
CH 38



CH 38

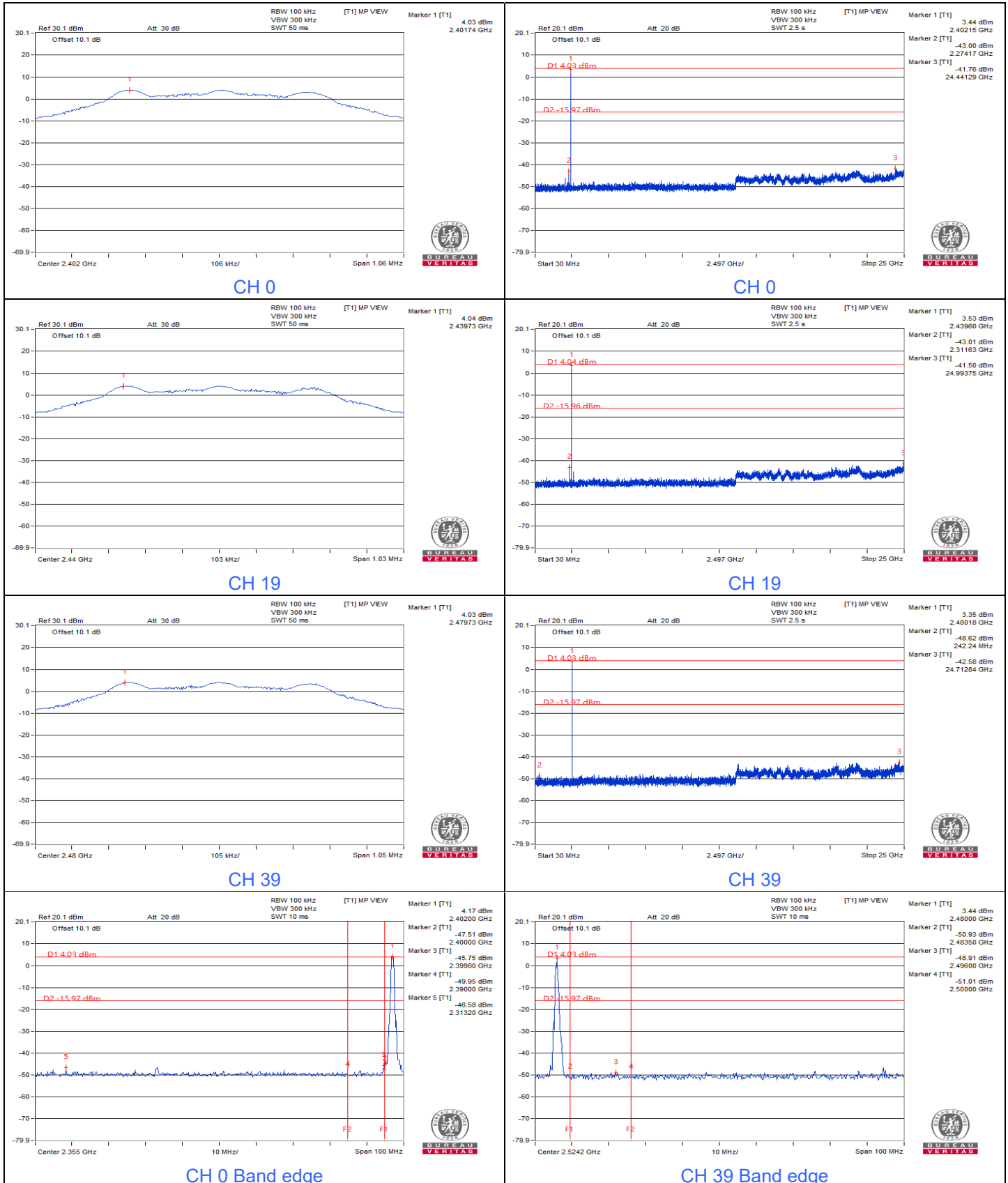


CH 1 Band edge



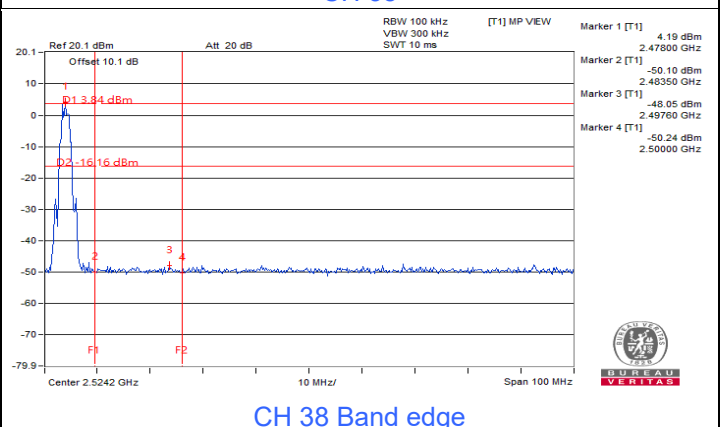
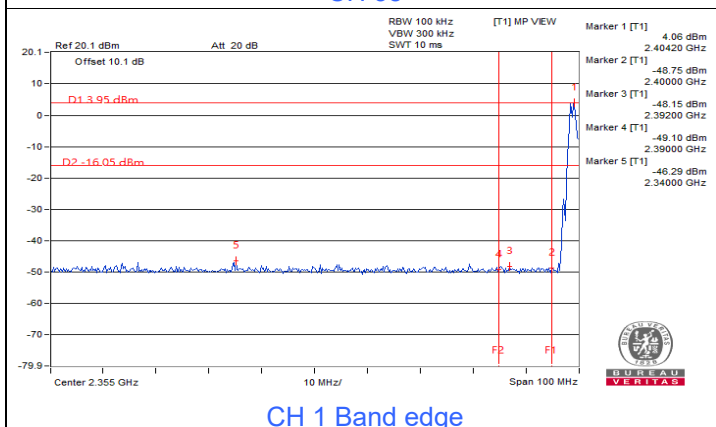
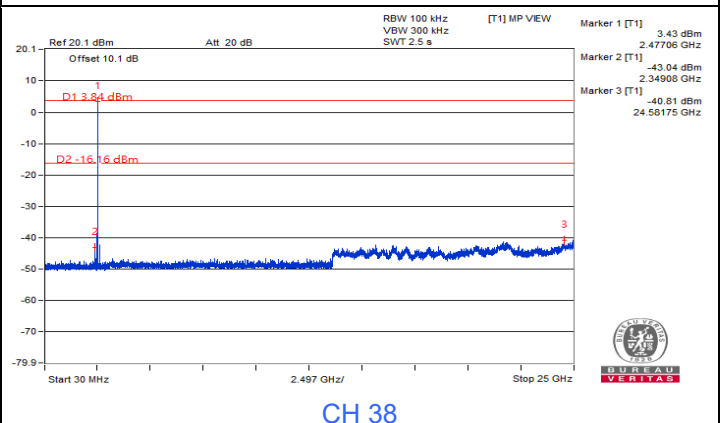
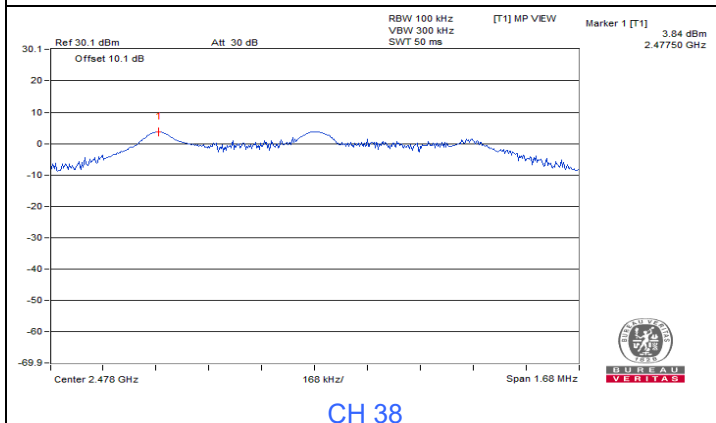
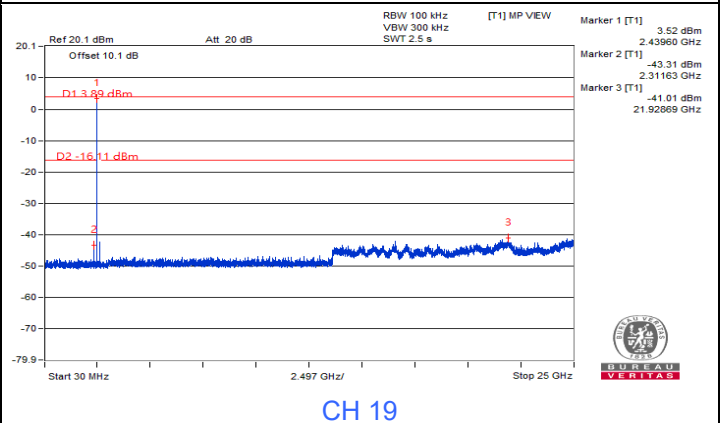
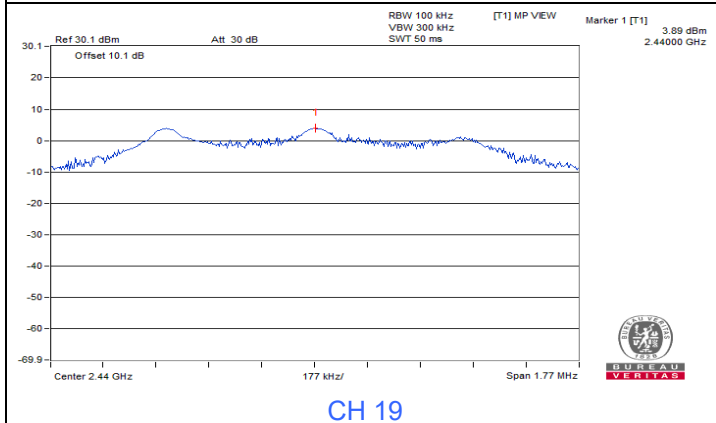
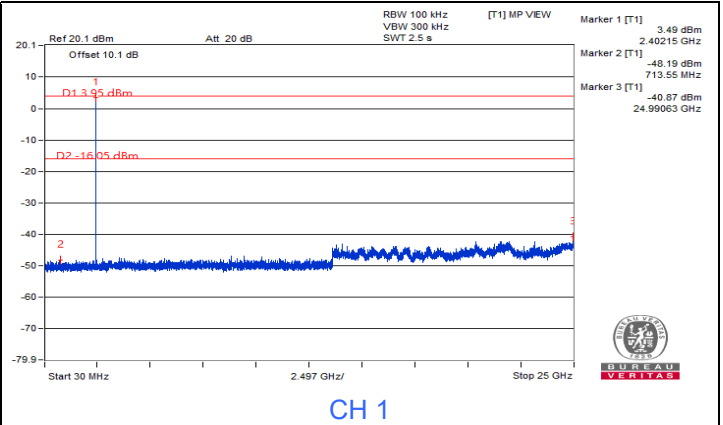
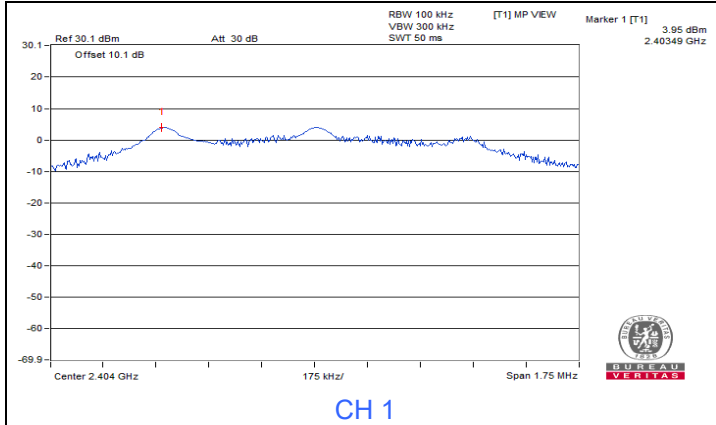
CH 38 Band edge

logi bolt 1M





logi bolt 2M



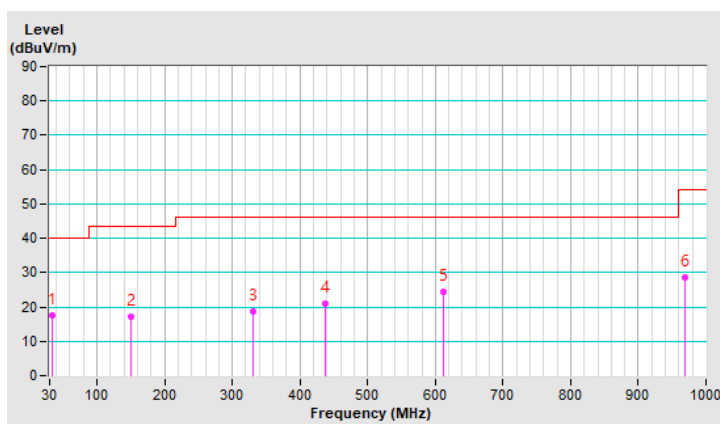
## 7.5 Unwanted Emissions below 1 GHz

RF Mode	TX BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)
Input Power	3 Vdc	Environmental Conditions	21 °C, 64 % 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	34.61	17.5 QP	40.0	-22.5	1.00 H	1	31.1	-13.6
2	150.43	17.1 QP	43.5	-26.4	2.50 H	50	29.7	-12.6
3	331.39	18.7 QP	46.0	-27.3	1.00 H	238	30.0	-11.3
4	438.20	21.0 QP	46.0	-25.0	2.50 H	294	29.5	-8.5
5	611.98	24.3 QP	46.0	-21.7	1.00 H	246	29.2	-4.9
6	968.38	28.6 QP	54.0	-25.4	2.00 H	345	29.1	-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 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.





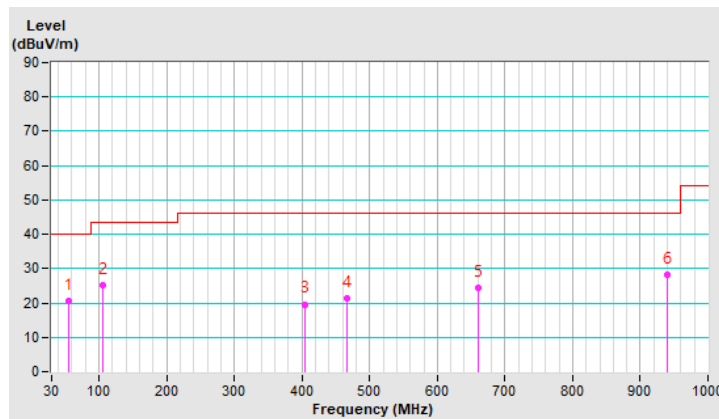
<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	21 °C, 64 % RH
<b>Tested By</b>	Nelson Teng		

**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	55.17	20.7 QP	40.0	-19.3	2.00 V	1	33.7	-13.0
2	104.74	25.1 QP	43.5	-18.4	1.00 V	110	41.6	-16.5
3	404.78	19.6 QP	46.0	-26.4	1.00 V	166	29.3	-9.7
4	465.79	21.5 QP	46.0	-24.5	2.50 V	360	29.5	-8.0
5	660.73	24.4 QP	46.0	-21.6	1.00 V	71	28.8	-4.4
<b>6</b>	<b>939.37</b>	<b>28.1 QP</b>	<b>46.0</b>	<b>-17.9</b>	<b>2.50 V</b>	<b>341</b>	<b>28.8</b>	<b>-0.7</b>

**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.

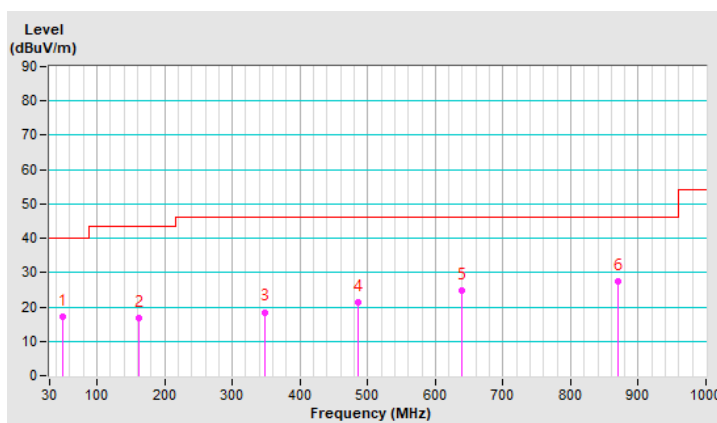


<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	21 °C, 64 % RH
<b>Tested By</b>	Nelson Teng		

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	50.03	17.0 QP	40.0	-23.0	2.00 H	121	29.8	-12.8
2	162.27	16.6 QP	43.5	-26.9	1.00 H	118	29.4	-12.8
3	348.13	18.5 QP	46.0	-27.5	2.50 H	172	29.7	-11.2
4	485.83	21.2 QP	46.0	-24.8	2.00 H	113	28.9	-7.7
5	639.63	24.6 QP	46.0	-21.4	1.00 H	1	29.2	-4.6
6	869.43	27.4 QP	46.0	-18.6	2.00 H	360	29.0	-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.

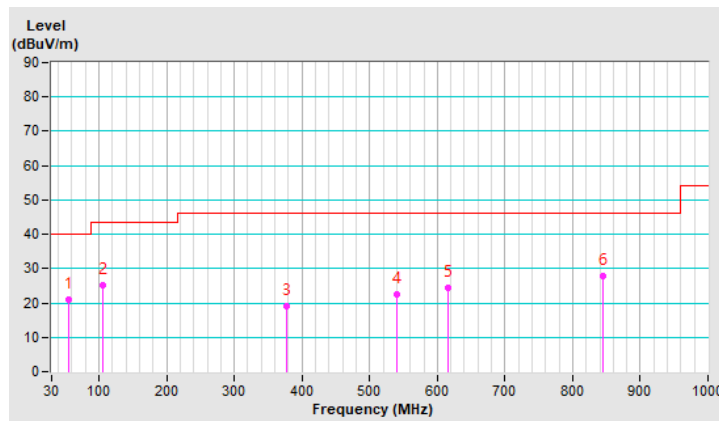


<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	9kHz ~ 1GHz	<b>Detector Function</b>	Quasi-Peak (QP)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	21 °C, 64 % RH
<b>Tested By</b>	Nelson Teng		

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	55.32	21.0 QP	40.0	-19.0	2.00 V	15	34.0	-13.0
2	104.86	25.3 QP	43.5	-18.2	1.00 V	133	41.8	-16.5
3	377.57	19.1 QP	46.0	-26.9	2.00 V	284	29.6	-10.5
4	539.95	22.6 QP	46.0	-23.4	2.50 V	350	29.6	-7.0
5	615.52	24.3 QP	46.0	-21.7	1.00 V	189	29.2	-4.9
6	845.37	27.9 QP	46.0	-18.1	2.50 V	273	29.8	-1.9

**Remarks:**

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



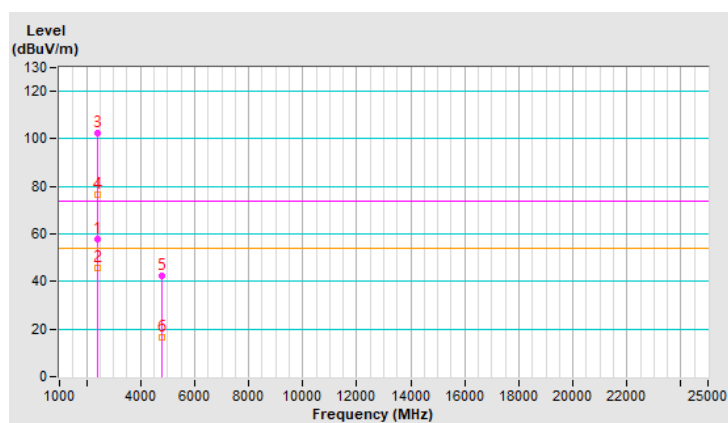
## 7.6 Unwanted Emissions above 1 GHz

<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	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	57.8 PK	74.0	-16.2	1.53 H	326	60.5	-2.7
2	2390.00	45.7 AV	54.0	-8.3	1.53 H	326	48.4	-2.7
3	*2402.00	102.5 PK			1.53 H	326	105.2	-2.7
4	*2402.00	76.3 AV			1.53 H	326	79.0	-2.7
5	4804.00	42.5 PK	74.0	-31.5	1.30 H	350	41.0	1.5
6	4804.00	16.3 AV	54.0	-37.7	1.30 H	350	14.8	1.5

### Remarks:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " \* " : Fundamental frequency.
- 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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.

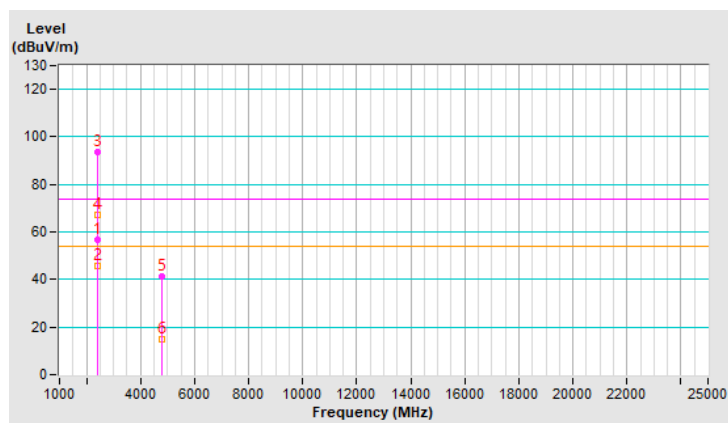


<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	56.8 PK	74.0	-17.2	3.33 V	176	59.5	-2.7
2	<b>2390.00</b>	<b>45.8 AV</b>	<b>54.0</b>	<b>-8.2</b>	<b>3.33 V</b>	<b>176</b>	<b>48.5</b>	<b>-2.7</b>
3	*2402.00	93.6 PK			3.33 V	176	96.3	-2.7
4	*2402.00	67.4 AV			3.33 V	176	70.1	-2.7
5	4804.00	41.3 PK	74.0	-32.7	1.05 V	65	39.8	1.5
6	4804.00	15.1 AV	54.0	-38.9	1.05 V	65	13.6	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.



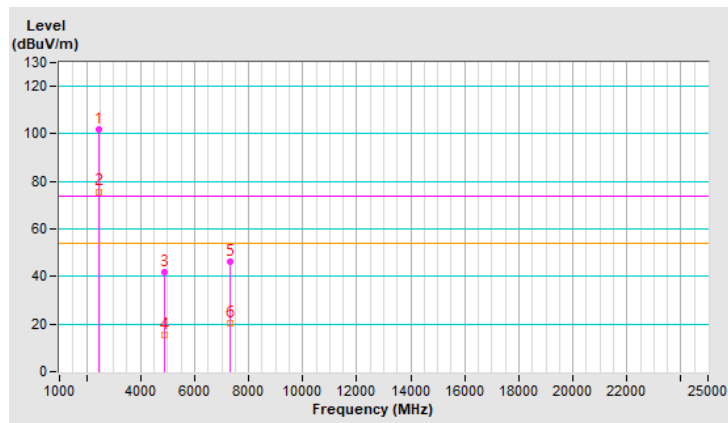
<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	101.9 PK			1.52 H	319	104.7	-2.8
2	*2440.00	75.7 AV			1.52 H	319	78.5	-2.8
3	4880.00	41.6 PK	74.0	-32.4	1.32 H	358	40.1	1.5
4	4880.00	15.4 AV	54.0	-38.6	1.32 H	358	13.9	1.5
5	7320.00	46.5 PK	74.0	-27.5	1.15 H	221	39.3	7.2
6	7320.00	20.3 AV	54.0	-33.7	1.15 H	221	13.1	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.

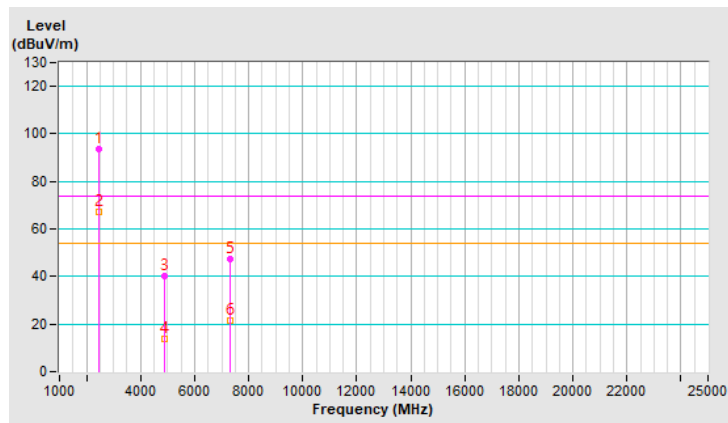


<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	93.6 PK			3.31 V	166	96.4	-2.8
2	*2440.00	67.4 AV			3.31 V	166	70.2	-2.8
3	4880.00	40.0 PK	74.0	-34.0	1.02 V	84	38.5	1.5
4	4880.00	13.8 AV	54.0	-40.2	1.02 V	84	12.3	1.5
5	7320.00	47.6 PK	74.0	-26.4	2.43 V	114	40.4	7.2
6	7320.00	21.4 AV	54.0	-32.6	2.43 V	114	14.2	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.

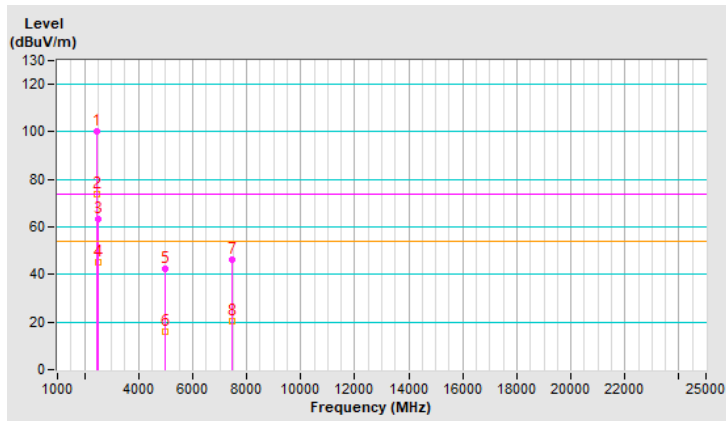


<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	100.2 PK			1.53 H	327	103.1	-2.9
2	*2480.00	74.0 AV			1.53 H	327	76.9	-2.9
3	2483.50	63.2 PK	74.0	-10.8	1.53 H	327	66.1	-2.9
4	2483.50	44.9 AV	54.0	-9.1	1.53 H	327	47.8	-2.9
5	4960.00	42.2 PK	74.0	-31.8	1.33 H	344	40.5	1.7
6	4960.00	16.0 AV	54.0	-38.0	1.33 H	344	14.3	1.7
7	7440.00	46.5 PK	74.0	-27.5	1.19 H	226	38.9	7.6
8	7440.00	20.3 AV	54.0	-33.7	1.19 H	226	12.7	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.



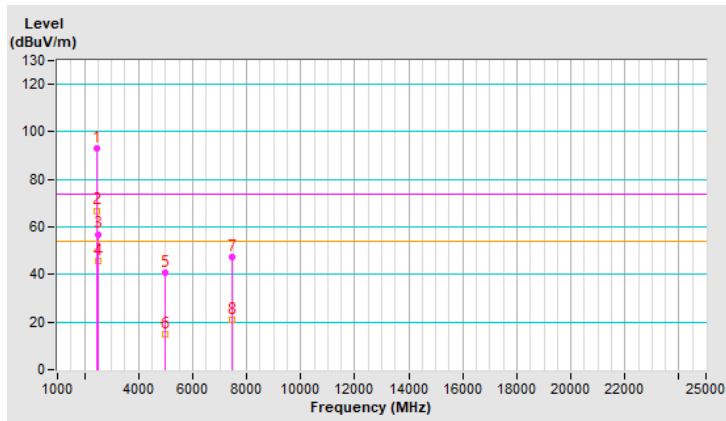


<b>RF Mode</b>	TX BT-LE 1M	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	93.1 PK			3.34 V	163	96.0	-2.9
2	*2480.00	66.9 AV			3.34 V	163	69.8	-2.9
3	2483.50	57.0 PK	74.0	-17.0	3.34 V	163	59.9	-2.9
4	2483.50	45.7 AV	54.0	-8.3	3.34 V	163	48.6	-2.9
5	4960.00	40.8 PK	74.0	-33.2	1.06 V	75	39.1	1.7
6	4960.00	14.6 AV	54.0	-39.4	1.06 V	75	12.9	1.7
7	7440.00	47.3 PK	74.0	-26.7	2.42 V	107	39.7	7.6
8	7440.00	21.1 AV	54.0	-32.9	2.42 V	107	13.5	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.345 \text{ ms} / 7.043 \text{ ms}) = -26.2 \text{ dB}$  for plotted duty.



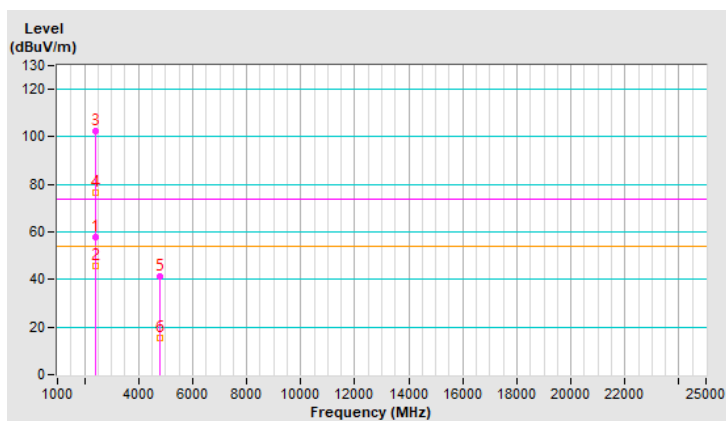
<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	57.6 PK	74.0	-16.4	1.49 H	312	60.3	-2.7
2	2390.00	45.5 AV	54.0	-8.5	1.49 H	312	48.2	-2.7
3	*2402.00	102.4 PK			1.49 H	312	105.1	-2.7
4	*2402.00	76.3 AV			1.49 H	312	79.0	-2.7
5	4804.00	41.4 PK	74.0	-32.6	1.26 H	352	39.9	1.5
6	4804.00	15.3 AV	54.0	-38.7	1.26 H	352	13.8	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.

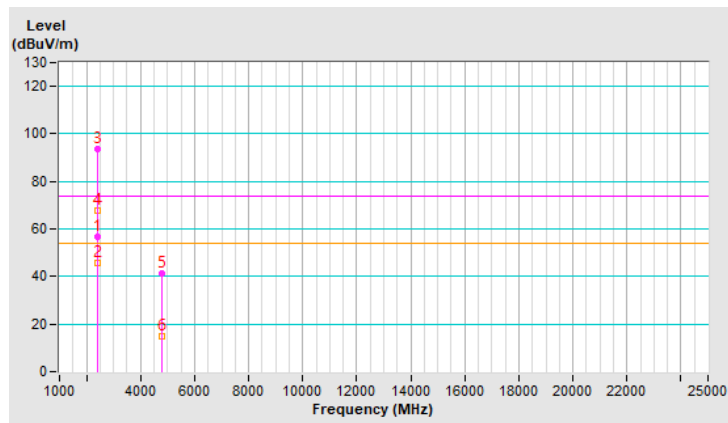


<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 0 : 2402 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	56.5 PK	74.0	-17.5	3.24 V	169	59.2	-2.7
2	2390.00	45.5 AV	54.0	-8.5	3.24 V	169	48.2	-2.7
3	*2402.00	93.8 PK			3.24 V	169	96.5	-2.7
4	*2402.00	67.7 AV			3.24 V	169	70.4	-2.7
5	4804.00	41.2 PK	74.0	-32.8	1.10 V	56	39.7	1.5
6	4804.00	15.1 AV	54.0	-38.9	1.10 V	56	13.6	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.



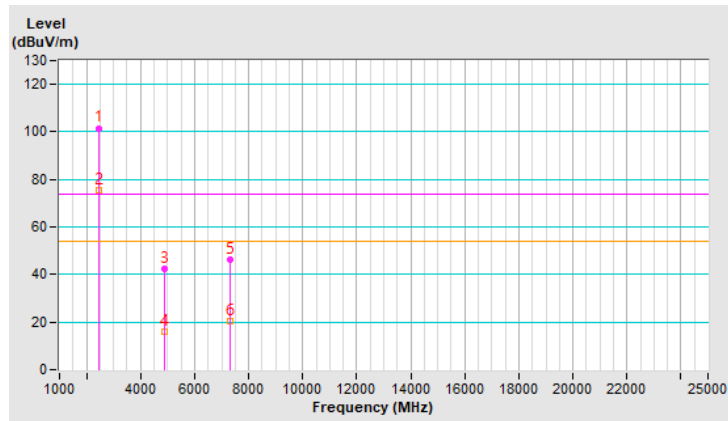
<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	101.6 PK			1.59 H	313	104.4	-2.8
2	*2440.00	75.5 AV			1.59 H	313	78.3	-2.8
3	4880.00	42.3 PK	74.0	-31.7	1.40 H	331	40.8	1.5
4	4880.00	16.2 AV	54.0	-37.8	1.40 H	331	14.7	1.5
5	7320.00	46.3 PK	74.0	-27.7	1.23 H	232	39.1	7.2
6	7320.00	20.2 AV	54.0	-33.8	1.23 H	232	13.0	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.

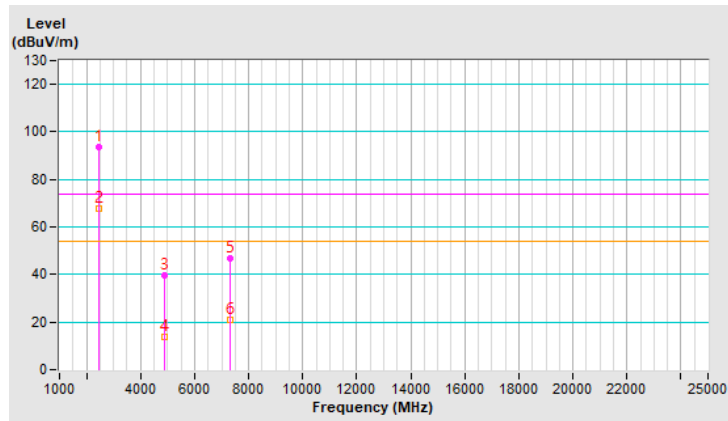


<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	93.8 PK			3.32 V	162	96.6	-2.8
2	*2440.00	67.7 AV			3.32 V	162	70.5	-2.8
3	4880.00	39.7 PK	74.0	-34.3	1.10 V	94	38.2	1.5
4	4880.00	13.6 AV	54.0	-40.4	1.10 V	94	12.1	1.5
5	7320.00	46.8 PK	74.0	-27.2	2.50 V	116	39.6	7.2
6	7320.00	20.7 AV	54.0	-33.3	2.50 V	116	13.5	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.



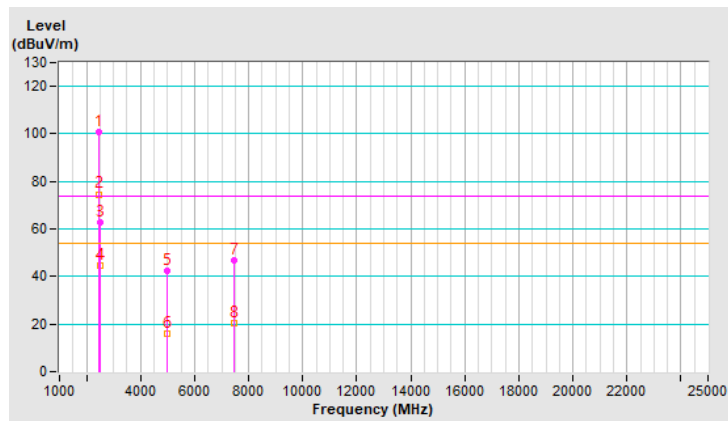
<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	100.7 PK			1.52 H	322	103.6	-2.9
2	*2480.00	74.6 AV			1.52 H	322	77.5	-2.9
3	2483.50	62.9 PK	74.0	-11.1	1.52 H	322	65.8	-2.9
4	2483.50	44.7 AV	54.0	-9.3	1.52 H	322	47.6	-2.9
5	4960.00	42.3 PK	74.0	-31.7	1.25 H	327	40.6	1.7
6	4960.00	16.2 AV	54.0	-37.8	1.25 H	327	14.5	1.7
7	7440.00	46.7 PK	74.0	-27.3	1.08 H	221	39.1	7.6
8	7440.00	20.6 AV	54.0	-33.4	1.08 H	221	13.0	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.

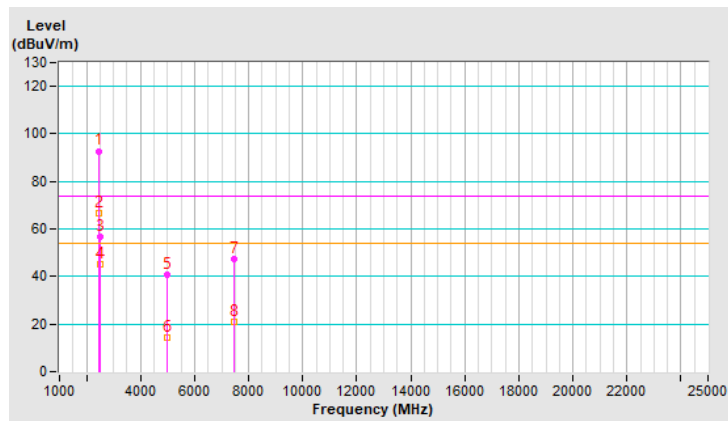


<b>RF Mode</b>	TX logi bolt 1M	<b>Channel</b>	CH 39 : 2480 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	92.8 PK			3.34 V	167	95.7	-2.9
2	*2480.00	66.7 AV			3.34 V	167	69.6	-2.9
3	2483.50	56.8 PK	74.0	-17.2	3.34 V	167	59.7	-2.9
4	2483.50	45.4 AV	54.0	-8.6	3.34 V	167	48.3	-2.9
5	4960.00	40.5 PK	74.0	-33.5	1.07 V	83	38.8	1.7
6	4960.00	14.4 AV	54.0	-39.6	1.07 V	83	12.7	1.7
7	7440.00	47.1 PK	74.0	-26.9	2.42 V	101	39.5	7.6
8	7440.00	21.0 AV	54.0	-33.0	2.42 V	101	13.4	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.348 \text{ ms} / 7.061 \text{ ms}) = -26.1 \text{ dB}$  for plotted duty.

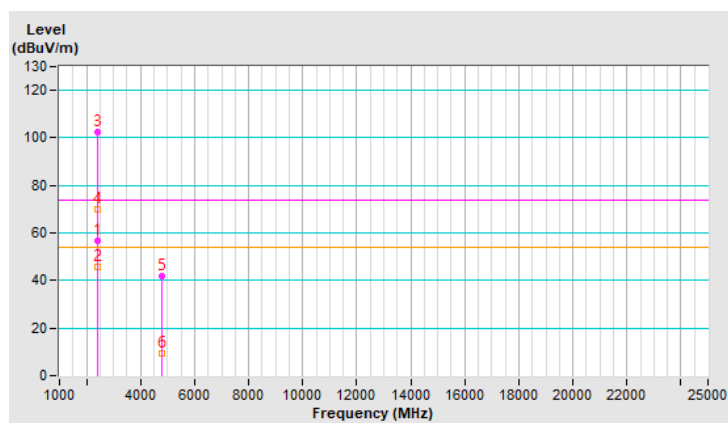


RF Mode	TX BT-LE 2M	Channel	CH 1 : 2404 MHz
Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AV)
Input Power	3 Vdc	Environmental Conditions	23 °C, 69 % RH
Tested By	Nelson Teng		

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	56.6 PK	74.0	-17.4	1.55 H	321	59.3	-2.7
2	2390.00	45.7 AV	54.0	-8.3	1.55 H	321	48.4	-2.7
3	*2404.00	102.2 PK			1.55 H	321	104.9	-2.7
4	*2404.00	69.9 AV			1.55 H	321	72.6	-2.7
5	4808.00	41.7 PK	74.0	-32.3	1.31 H	330	40.2	1.5
6	4808.00	9.4 AV	54.0	-44.6	1.31 H	330	7.9	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.



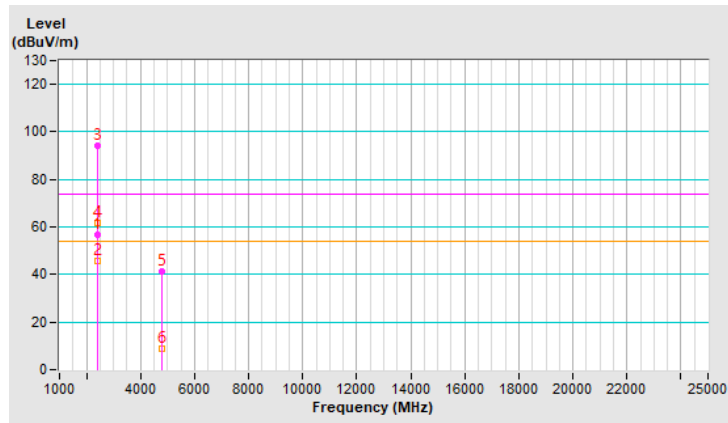


<b>RF Mode</b>	TX BT-LE 2M	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	56.9 PK	74.0	-17.1	3.36 V	173	59.6	-2.7
2	<b>2390.00</b>	<b>45.8 AV</b>	<b>54.0</b>	<b>-8.2</b>	<b>3.36 V</b>	<b>173</b>	<b>48.5</b>	<b>-2.7</b>
3	*2404.00	94.1 PK			3.36 V	173	96.8	-2.7
4	*2404.00	61.8 AV			3.36 V	173	64.5	-2.7
5	4808.00	41.1 PK	74.0	-32.9	1.05 V	75	39.6	1.5
6	4808.00	8.8 AV	54.0	-45.2	1.05 V	75	7.3	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.



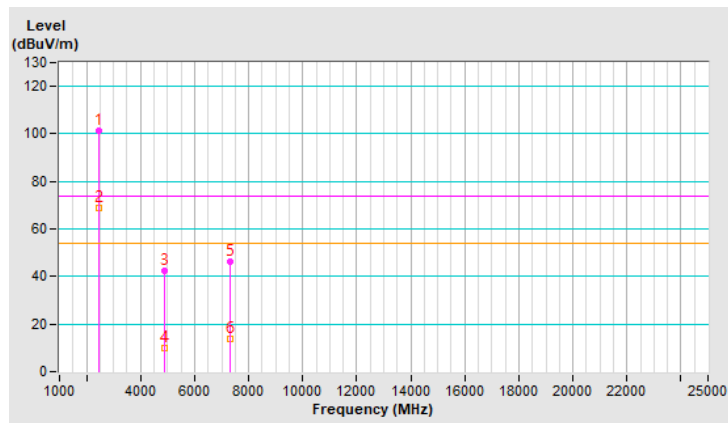
<b>RF Mode</b>	TX BT-LE 2M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	101.1 PK			1.52 H	318	103.9	-2.8
2	*2440.00	68.8 AV			1.52 H	318	71.6	-2.8
3	4880.00	42.4 PK	74.0	-31.6	1.38 H	353	40.9	1.5
4	4880.00	10.1 AV	54.0	-43.9	1.38 H	353	8.6	1.5
5	7320.00	46.2 PK	74.0	-27.8	1.13 H	216	39.0	7.2
6	7320.00	13.9 AV	54.0	-40.1	1.13 H	216	6.7	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.

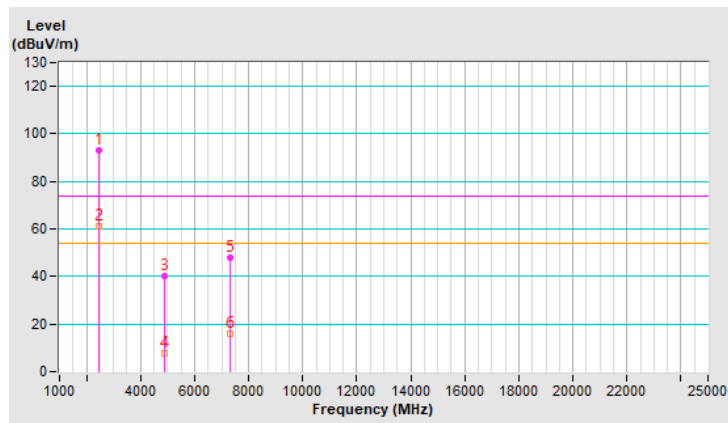


<b>RF Mode</b>	TX BT-LE 2M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	93.2 PK			3.38 V	161	96.0	-2.8
2	*2440.00	60.9 AV			3.38 V	161	63.7	-2.8
3	4880.00	40.2 PK	74.0	-33.8	1.07 V	64	38.7	1.5
4	4880.00	7.9 AV	54.0	-46.1	1.07 V	64	6.4	1.5
5	7320.00	48.1 PK	74.0	-25.9	2.41 V	115	40.9	7.2
6	7320.00	15.8 AV	54.0	-38.2	2.41 V	115	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.

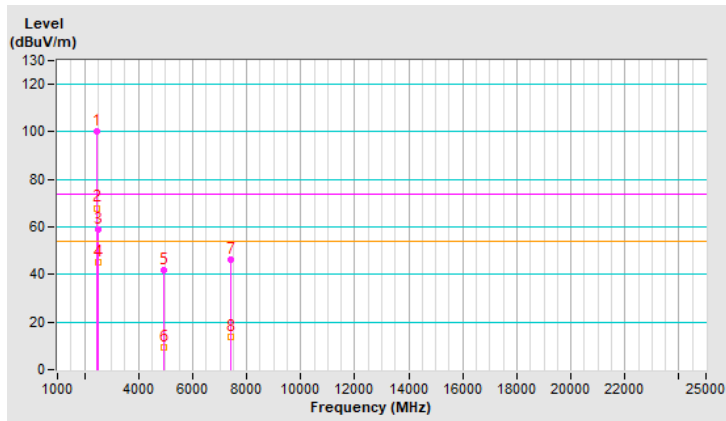


<b>RF Mode</b>	TX BT-LE 2M	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	100.3 PK			1.53 H	325	103.2	-2.9
2	*2478.00	68.0 AV			1.53 H	325	70.9	-2.9
3	2483.50	59.1 PK	74.0	-14.9	1.53 H	325	62.0	-2.9
4	2483.50	45.0 AV	54.0	-9.0	1.53 H	325	47.9	-2.9
5	4956.00	41.6 PK	74.0	-32.4	1.39 H	352	39.9	1.7
6	4956.00	9.3 AV	54.0	-44.7	1.39 H	352	7.6	1.7
7	7434.00	46.0 PK	74.0	-28.0	1.16 H	241	38.5	7.5
8	7434.00	13.7 AV	54.0	-40.3	1.16 H	241	6.2	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.

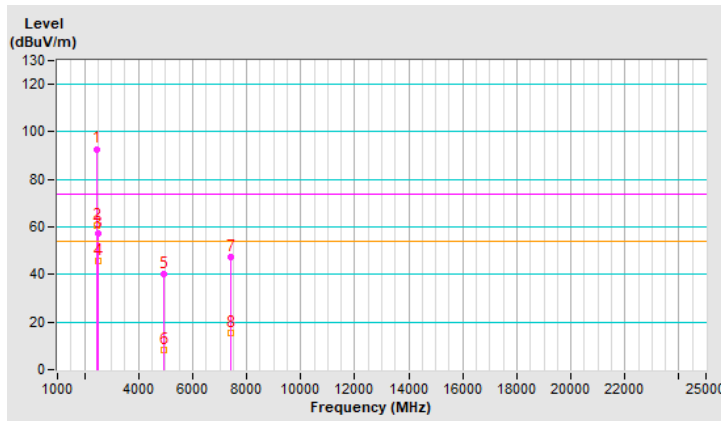


<b>RF Mode</b>	TX BT-LE 2M	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	92.8 PK			3.34 V	161	95.7	-2.9
2	*2478.00	60.5 AV			3.34 V	161	63.4	-2.9
3	2483.50	57.1 PK	74.0	-16.9	3.34 V	161	60.0	-2.9
4	2483.50	45.5 AV	54.0	-8.5	3.34 V	161	48.4	-2.9
5	4956.00	40.3 PK	74.0	-33.7	1.11 V	74	38.6	1.7
6	4956.00	8.0 AV	54.0	-46.0	1.11 V	74	6.3	1.7
7	7434.00	47.6 PK	74.0	-26.4	2.41 V	96	40.1	7.5
8	7434.00	15.3 AV	54.0	-38.7	2.41 V	96	7.8	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.058 \text{ ms}) = -32.3 \text{ dB}$  for plotted duty.



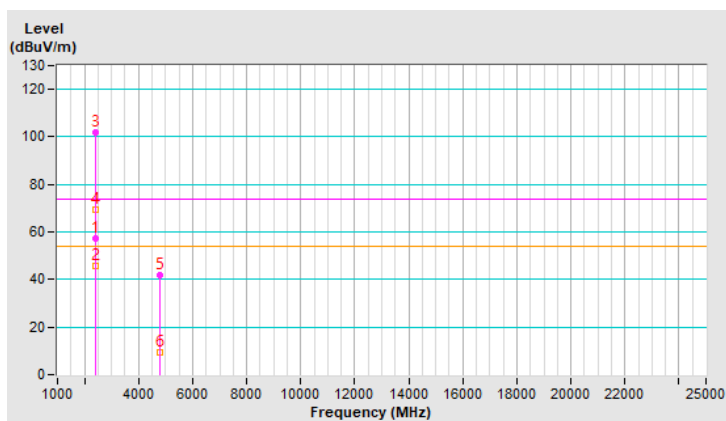
<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	57.4 PK	74.0	-16.6	1.64 H	294	60.1	-2.7
2	2390.00	45.5 AV	54.0	-8.5	1.64 H	294	48.2	-2.7
3	*2404.00	101.8 PK			1.64 H	294	104.5	-2.7
4	*2404.00	69.4 AV			1.64 H	294	72.1	-2.7
5	4808.00	41.9 PK	74.0	-32.1	1.35 H	329	40.4	1.5
6	4808.00	9.5 AV	54.0	-44.5	1.35 H	329	8.0	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.

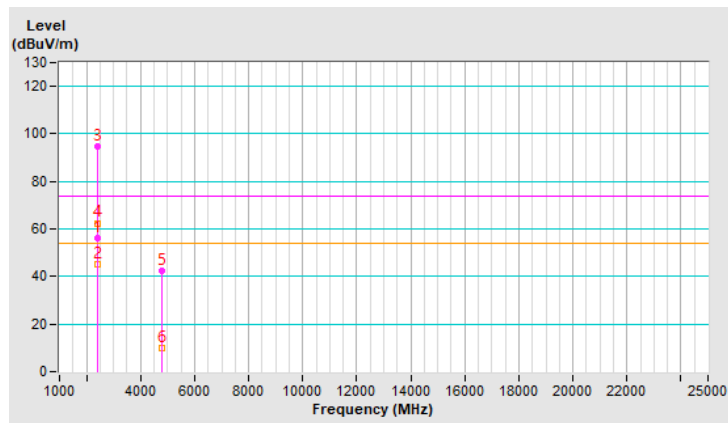


<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 1 : 2404 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	56.4 PK	74.0	-17.6	3.37 V	155	59.1	-2.7
2	2390.00	45.4 AV	54.0	-8.6	3.37 V	155	48.1	-2.7
3	*2404.00	94.9 PK			3.37 V	155	97.6	-2.7
4	*2404.00	62.5 AV			3.37 V	155	65.2	-2.7
5	4808.00	42.5 PK	74.0	-31.5	1.00 V	69	41.0	1.5
6	4808.00	10.1 AV	54.0	-43.9	1.00 V	69	8.6	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.



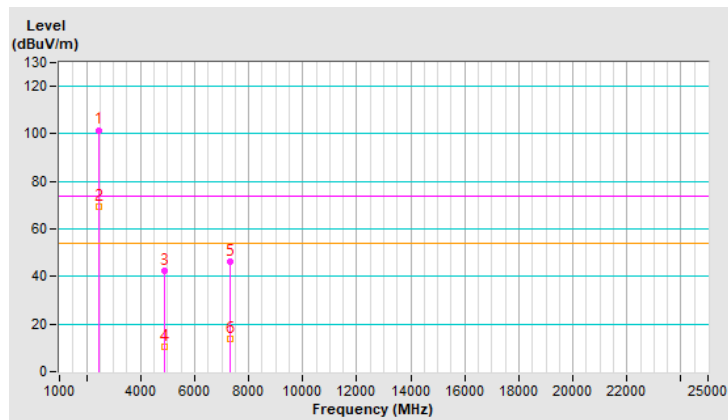
<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

**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	101.6 PK			1.50 H	329	104.4	-2.8
2	*2440.00	69.2 AV			1.50 H	329	72.0	-2.8
3	4880.00	42.6 PK	74.0	-31.4	1.28 H	334	41.1	1.5
4	4880.00	10.2 AV	54.0	-43.8	1.28 H	334	8.7	1.5
5	7320.00	46.0 PK	74.0	-28.0	1.19 H	217	38.8	7.2
6	7320.00	13.6 AV	54.0	-40.4	1.19 H	217	6.4	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.



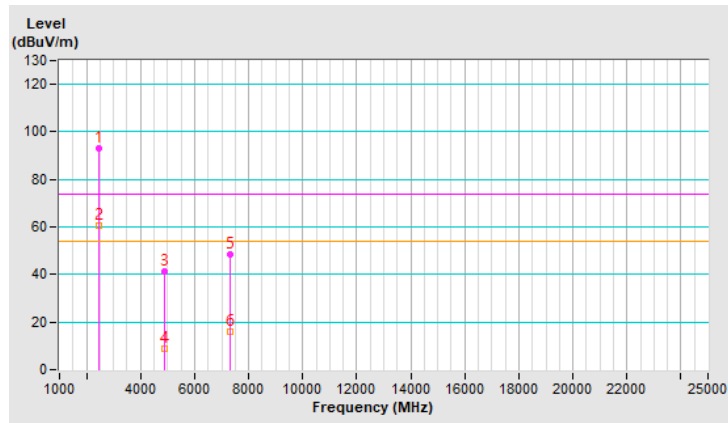


<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 19 : 2440 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	92.9 PK			3.39 V	180	95.7	-2.8
2	*2440.00	60.5 AV			3.39 V	180	63.3	-2.8
3	4880.00	41.3 PK	74.0	-32.7	1.14 V	35	39.8	1.5
4	4880.00	8.9 AV	54.0	-45.1	1.14 V	35	7.4	1.5
5	7320.00	48.3 PK	74.0	-25.7	2.45 V	97	41.1	7.2
6	7320.00	15.9 AV	54.0	-38.1	2.45 V	97	8.7	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.

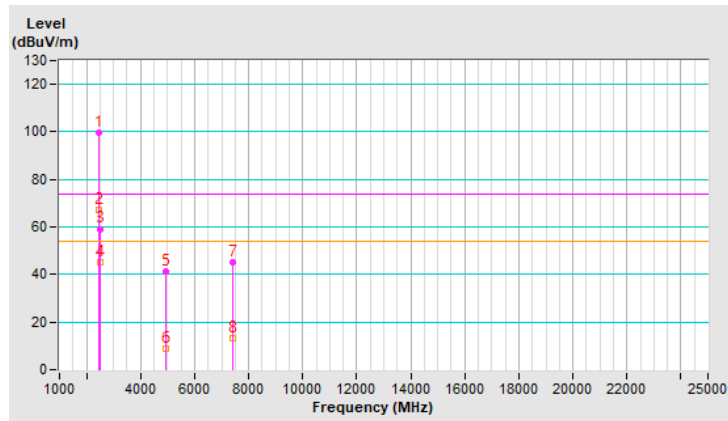


<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

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	99.8 PK			1.54 H	331	102.7	-2.9
2	*2478.00	67.4 AV			1.54 H	331	70.3	-2.9
3	2483.50	59.2 PK	74.0	-14.8	1.54 H	331	62.1	-2.9
4	2483.50	45.2 AV	54.0	-8.8	1.54 H	331	48.1	-2.9
5	4956.00	41.3 PK	74.0	-32.7	1.44 H	347	39.6	1.7
6	4956.00	8.9 AV	54.0	-45.1	1.44 H	347	7.2	1.7
7	7434.00	45.4 PK	74.0	-28.6	1.08 H	215	37.9	7.5
8	7434.00	13.0 AV	54.0	-41.0	1.08 H	215	5.5	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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.

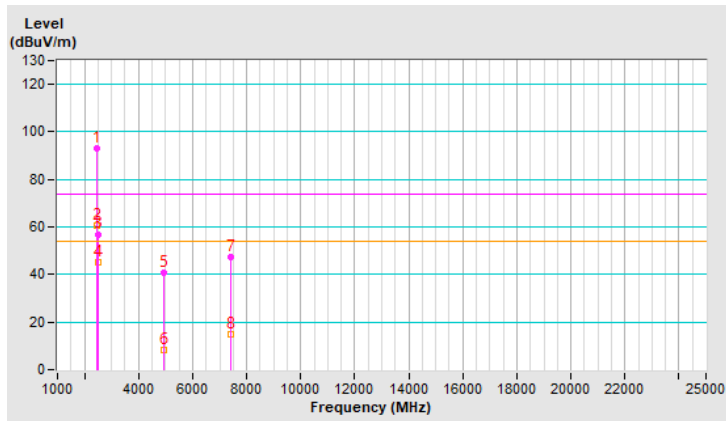


<b>RF Mode</b>	TX logi bolt 2M	<b>Channel</b>	CH 38 : 2478 MHz
<b>Frequency Range</b>	1GHz ~ 25GHz	<b>Detector Function</b>	Peak (PK) Average (AV)
<b>Input Power</b>	3 Vdc	<b>Environmental Conditions</b>	23 °C, 69 % RH
<b>Tested By</b>	Nelson Teng		

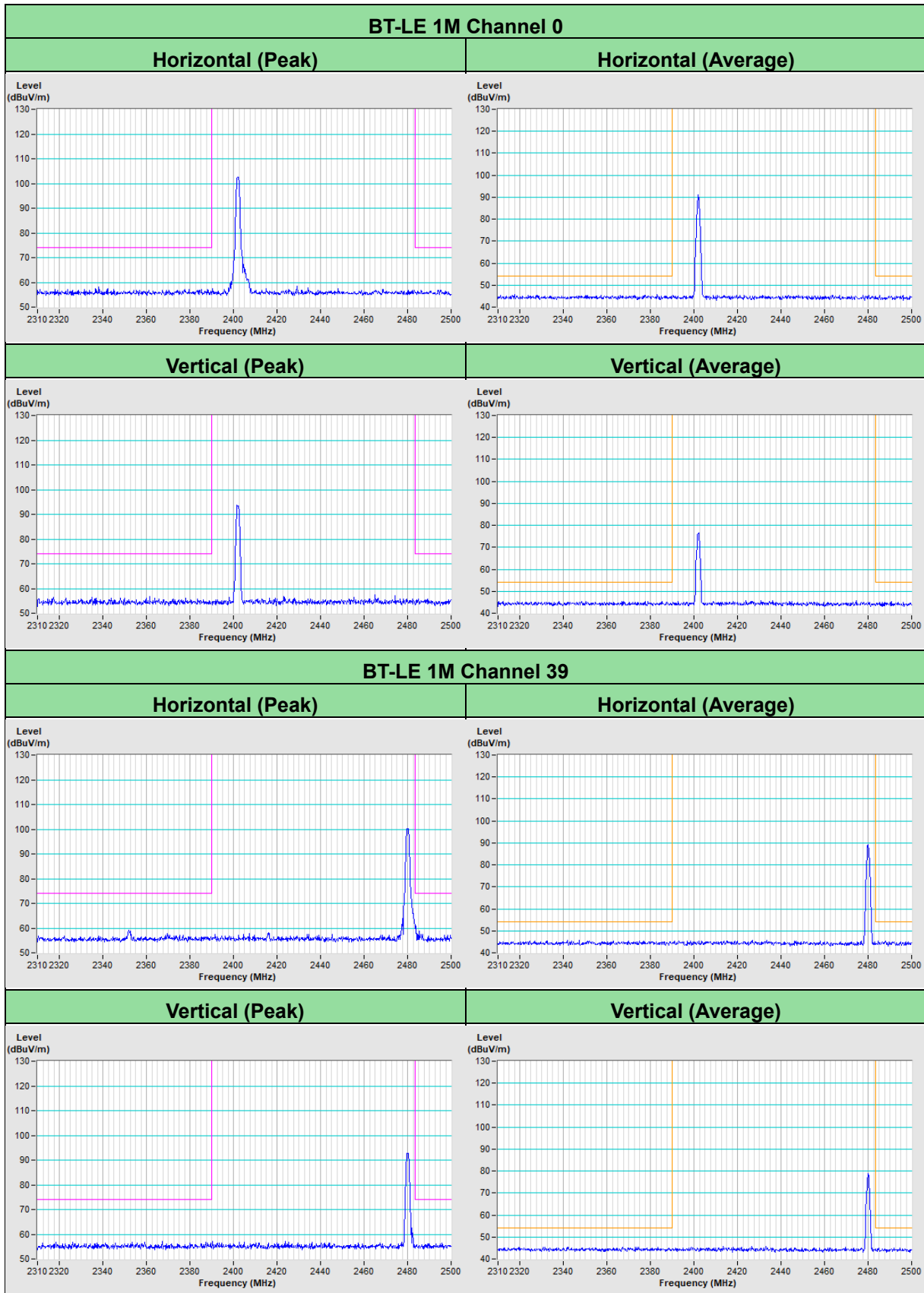
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2478.00	93.0 PK			3.40 V	162	95.9	-2.9
2	*2478.00	60.6 AV			3.40 V	162	63.5	-2.9
3	2483.50	57.0 PK	74.0	-17.0	3.40 V	162	59.9	-2.9
4	2483.50	45.4 AV	54.0	-8.6	3.40 V	162	48.3	-2.9
5	4956.00	40.5 PK	74.0	-33.5	1.03 V	101	38.8	1.7
6	4956.00	8.1 AV	54.0	-45.9	1.03 V	101	6.4	1.7
7	7434.00	47.2 PK	74.0	-26.8	2.46 V	102	39.7	7.5
8	7434.00	14.8 AV	54.0	-39.2	2.46 V	102	7.3	7.5

**Remarks:**

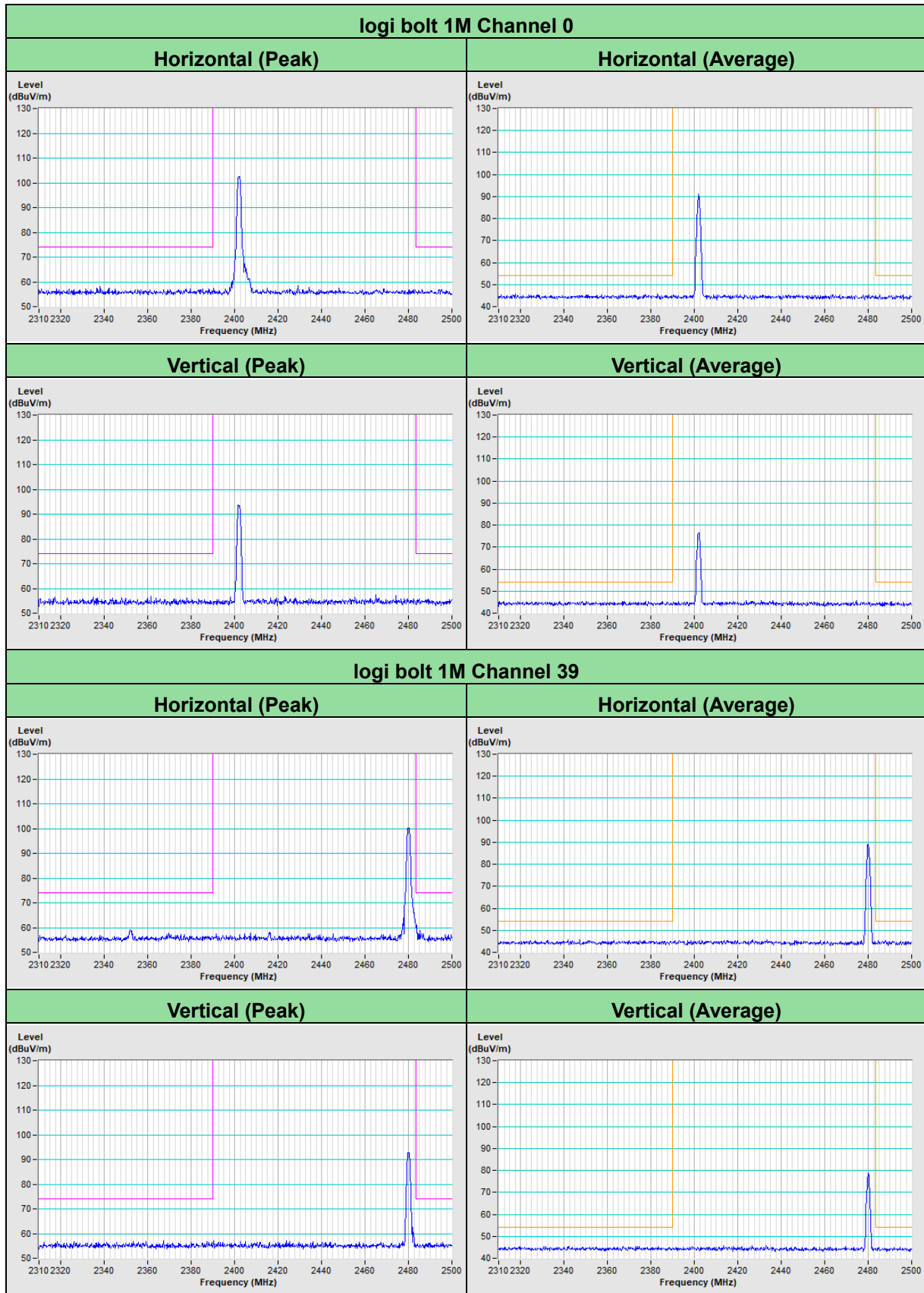
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency.
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:  
 $20 \log(\text{Duty cycle}) = 20 \log(0.172 \text{ ms} / 7.14 \text{ ms}) = -32.4 \text{ dB}$  for plotted duty.



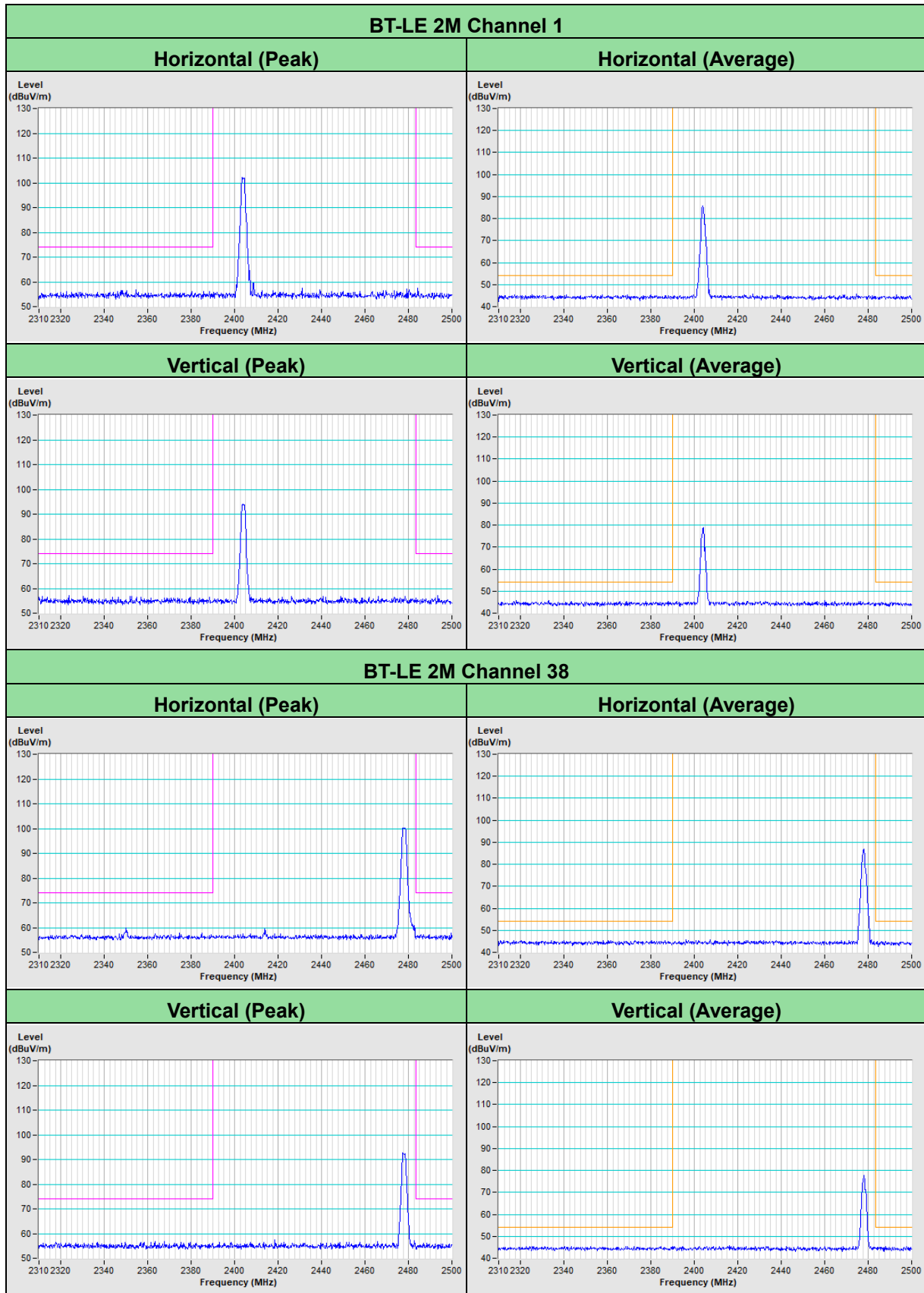
Plot of Band Edge\_BT-LE 1M



Plot of Band Edge\_logi bolt 1M

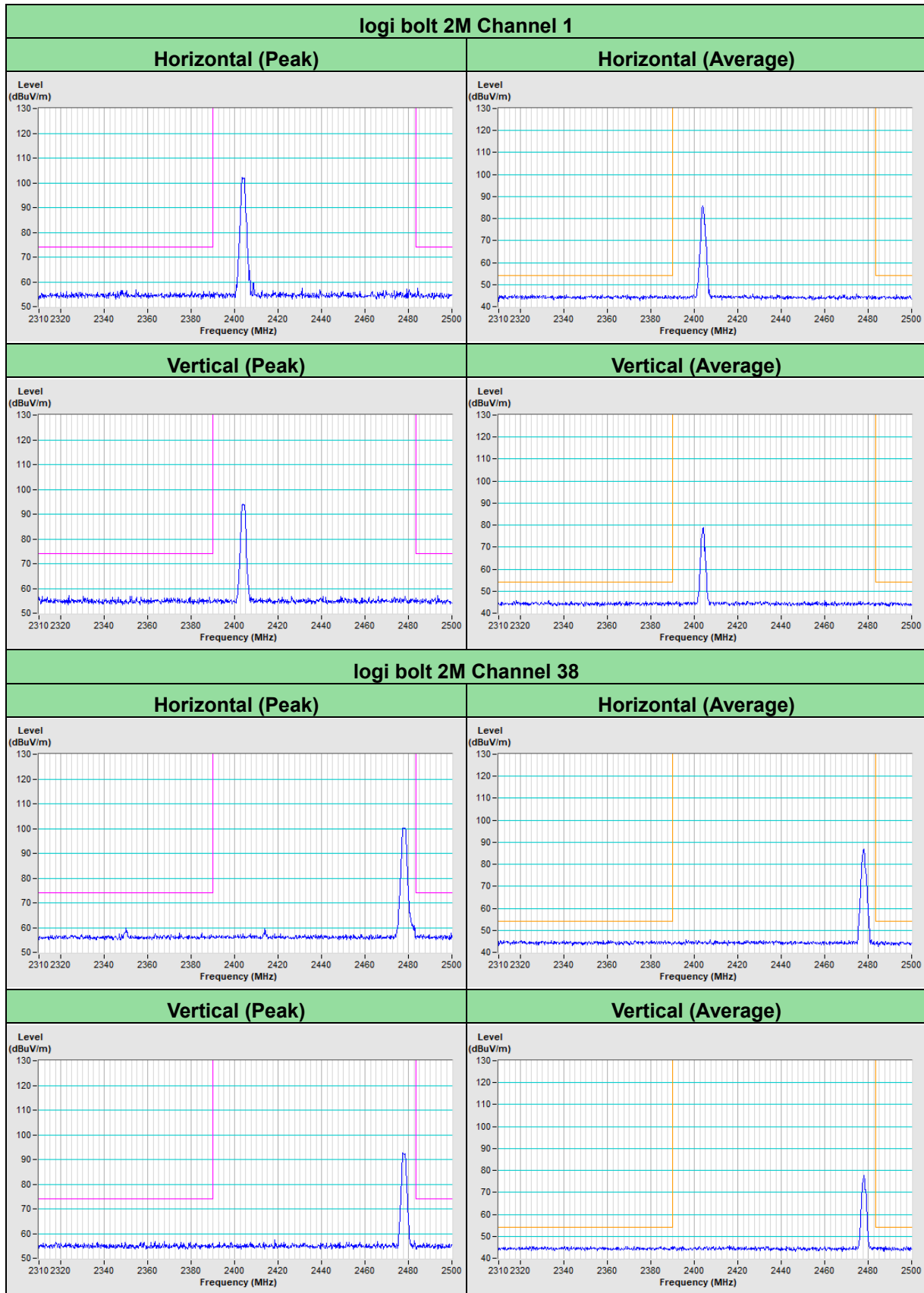


Plot of Band Edge\_BT-LE 2M





### Plot of Band Edge\_logi bolt 2M



## 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.

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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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