

CEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Report No.: RFBHQZ-WTW-P26040456
FCC ID: UDX-SPACES-CT-UB
Product: Asset Tag
Brand: Cisco
Model No.: SPACES-CT-UB
Received Date: 2026/4/21
Test Date: 2026/4/29 ~ 2026/5/20
Issued Date: 2026/6/22

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FCC Registration / 788550 / TW0003
Designation Number:

Approved by: _____

Jeremy Lin

, Date: _____

2026/6/22

Jeremy Lin / Project Engineer

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Prepared by : Celine Chou / Senior Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBHQZ-WTW-P26040456	Original release.	2026/6/22

1 Certificate

Product: Asset Tag
Brand: Cisco
Test Model: SPACES-CT-UB
Sample Status: Engineering sample
Applicant: Cisco Systems, Inc.
Test Date: 2026/4/29 ~ 2026/5/20
Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure: ANSI C63.10-2020
KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	N/A	Power supply is from battery.
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.5 dB at 53.28 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -3.1 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Specification	Uncertainty (±)
RF Output Power	-	1.371 dB
Power Spectral Density	-	1.017 dB
6 dB Bandwidth	-	206.5 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 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	Asset Tag
Brand	Cisco
Test Model	SPACES-CT-UB
Status of EUT	Engineering sample
Power Supply Rating	3 Vdc from Battery
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	BT-LE 1M: 1 Mbps BT-LE 2M: 2 Mbps BT-LE 125k: 125 kbps, 1 Mbps BT-LE 500k: 500 kbps, 1 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	40
Output Power	8.590 mW (9.34 dBm)

Note:

1. The EUT uses following accessories.

Item	Brand	Model	Specification
Battery	Panasonic	CR2477 Coin Cell (User Replaceable)	Power Rating: 3 Vdc, 1000 mAh
Mounting bracket	Cisco	N/A	-

2. 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 No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Antenna Type	Connector Type
BLE	Cisco	NA	1.71	2.4~2.4835 GHz	Chip	None (like solder)

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

3.3 Channel List

40 channels are provided for BT-LE:

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

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	X-axis/ Y-axis/ Z-axis Worst Condition: Y-axis

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

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/s
	BT-LE 125k	0, 19, 39	GFSK	125kb/s
	BT-LE 500k	0, 19, 39	GFSK	500kb/s
Power Spectral Density	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/s
	BT-LE 125k	0, 19, 39	GFSK	125kb/s
	BT-LE 500k	0, 19, 39	GFSK	500kb/s
6 dB Bandwidth / Conducted Out of Band Emissions	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/s
	BT-LE 125k	0, 19, 39	GFSK	125kb/s
	BT-LE 500k	0, 19, 39	GFSK	500kb/s
Unwanted Emissions below 1 GHz	BT-LE 500k	39	GFSK	500kb/s
Unwanted Emissions above 1 GHz	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/s
	BT-LE 125k	0, 19, 39	GFSK	125kb/s
	BT-LE 500k	0, 19, 39	GFSK	500kb/s

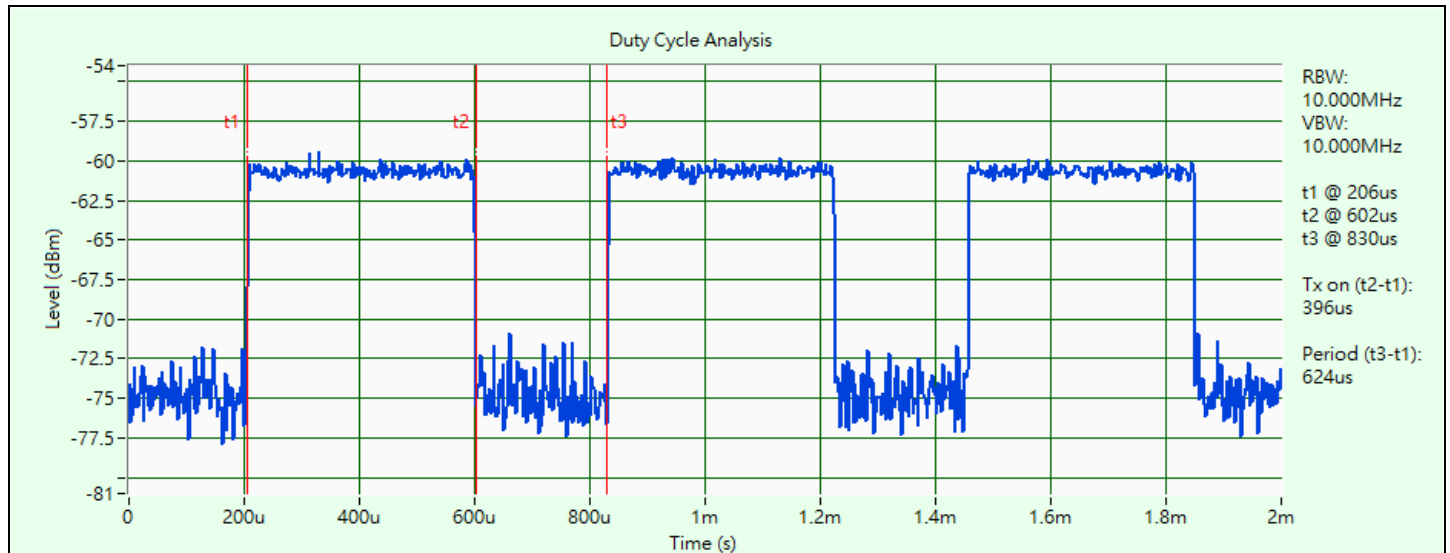
3.5 Duty Cycle of Test Signal

BT-LE 1M: Duty cycle = $0.396 \text{ ms} / 0.624 \text{ ms} \times 100\% = 63.5\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 1.97 \text{ dB}$

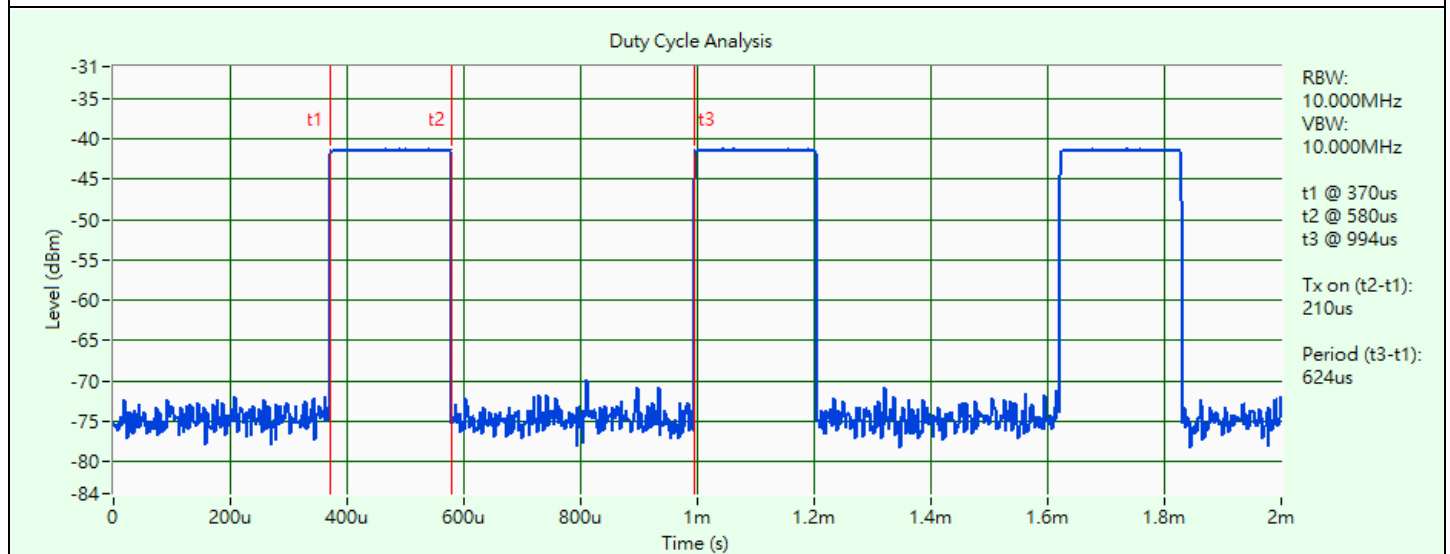
BT-LE 2M: Duty cycle = $0.21 \text{ ms} / 0.624 \text{ ms} \times 100\% = 33.7\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 4.73 \text{ dB}$

BT-LE 125k: Duty cycle = $3.11 \text{ ms} / 3.74 \text{ ms} \times 100\% = 83.2\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.80 \text{ dB}$

BT-LE 500k: Duty cycle = $1.08 \text{ ms} / 1.87 \text{ ms} \times 100\% = 57.8\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 2.38 \text{ dB}$

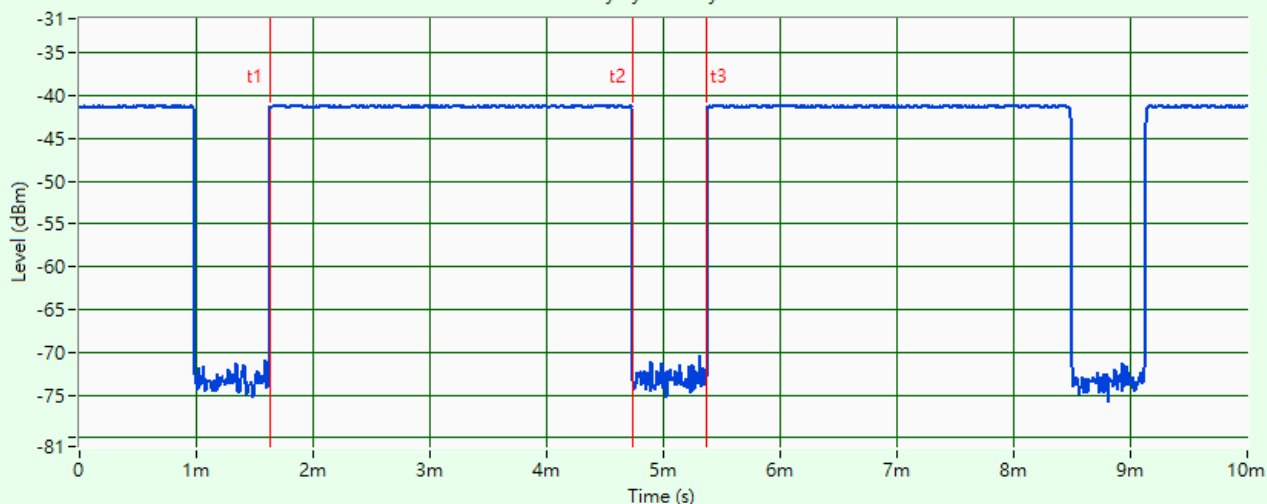


BT-LE 1M



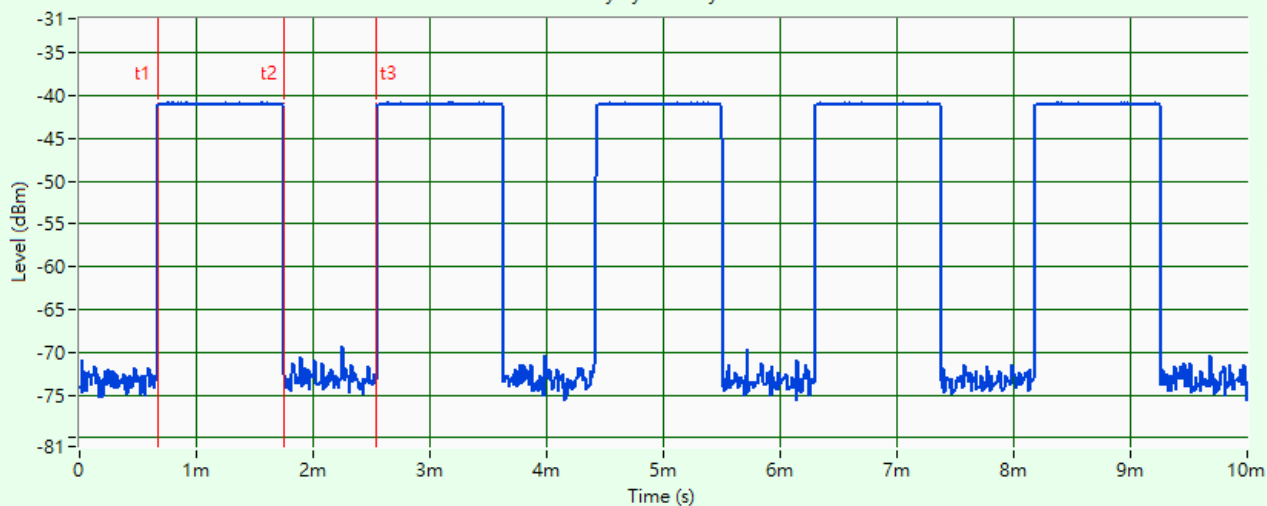
BT-LE 2M

Duty Cycle Analysis



BT-LE 125k

Duty Cycle Analysis

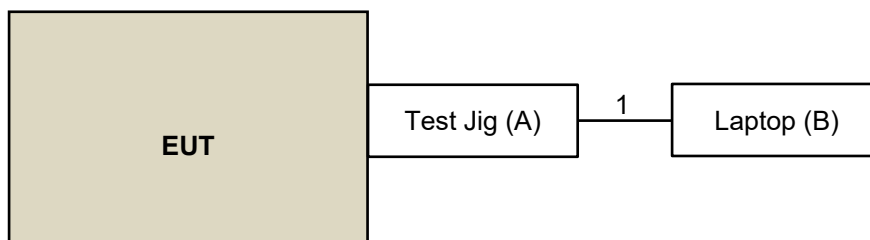


BT-LE 500k

3.6 Test Program Used and Operation Descriptions

Controlling software Tera Term_V4.79 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

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	Test Jig	N/A	N/A	N/A	N/A	Supplied by applicant
B	Laptop	DELL	Inspiron 14R	8LRKKW1	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Console Cable	1	0.15	N	0	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
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Peak Power Analyzer Keysight	8990B	MY51000538	2025/5/23	2026/5/22
USB Power Sensor Anritsu	MA24408A	12994	2025/12/5	2026/12/4
Wideband Power Sensor Keysight	N1923A	MY58200003	2025/5/29	2026/5/28

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/5/16

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in HY - Oven room(Hwaya).
2. Tested Date: 2026/5/16

4.3 6 dB Bandwidth

Refer to section 4.2 to get the tested date and information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get the tested date and information of the instruments.

4.5 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2025/9/16	2026/9/15
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 330H	980112	2025/9/21	2026/9/20
	EMC001340	980201	2025/9/21	2026/9/20
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2025/9/21	2026/9/20
Signal & Spectrum Analyzer R&S	FSVA3044	100904	2025/7/1	2026/6/30
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5(Hwaya).
2. Tested Date: 2026/4/30

4.6 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2025/11/9	2026/11/8
	BBHA 9170	148	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 184045	980116	2025/9/21	2026/9/20
	EMC118A45SE	980809	2026/4/18	2027/4/17
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2025/6/30	2026/6/29
	EMC102-KM-KM-3000	150929	2025/6/30	2026/6/29
	EMC104-SM-SM- 8000+3000	171005	2025/9/21	2026/9/20
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2025/9/21	2026/9/20
Signal & Spectrum Analyzer R&S	FSVA3044	100904	2025/7/1	2026/6/30
Software BV ADT	ADT_Radiated_ V7.7.1.1.1	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5(Hwaya).
2. Tested Date: 2026/4/29 ~ 2026/5/20

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

5.2 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.6 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

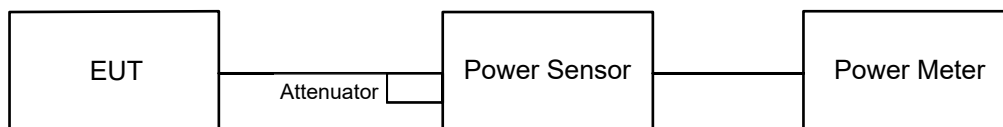
Notes:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

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

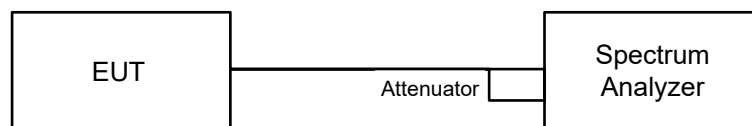
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

Average Power:

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

6.2 Power Spectral Density

6.2.1 Test Setup

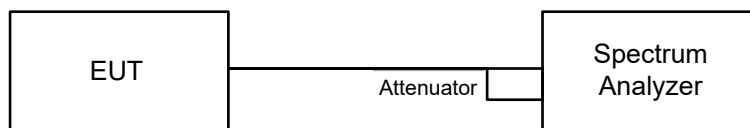


6.2.2 Test Procedure

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

6.3 6 dB Bandwidth

6.3.1 Test Setup

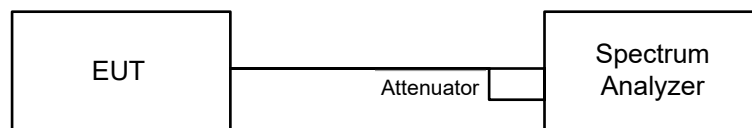


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

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

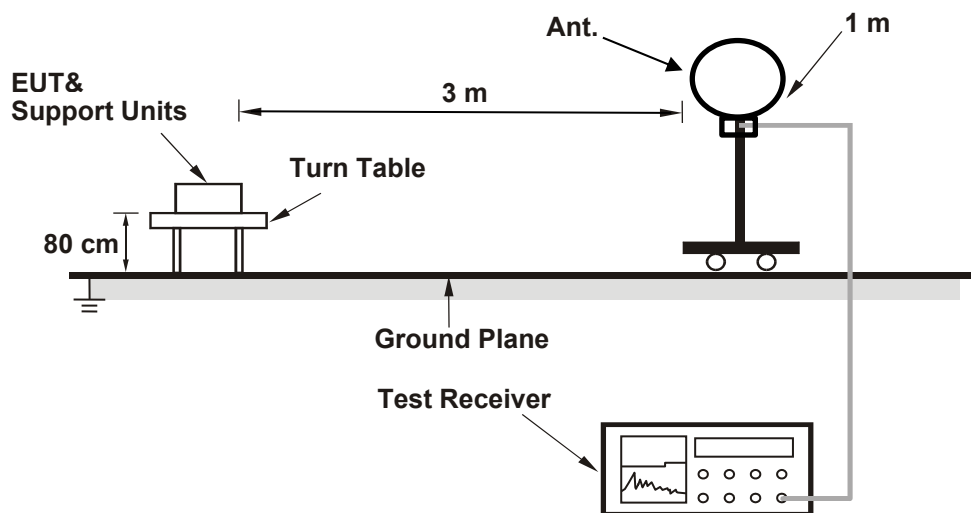
MEASUREMENT PROCEDURE OOB

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

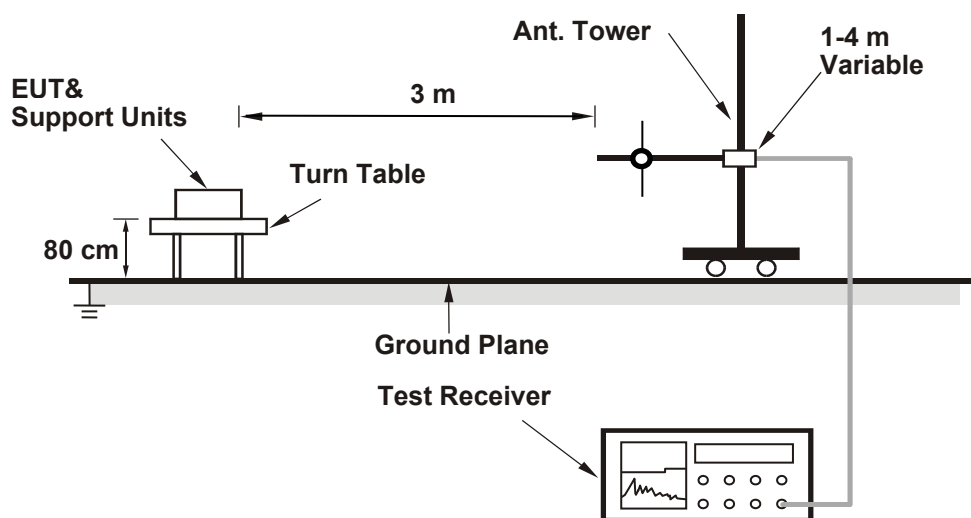
6.5 Unwanted Emissions below 1 GHz

6.5.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.5.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode (however, peak detector measurements may be used to determine compliance with QP requirements), except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

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

For Radiated emission above 30 MHz

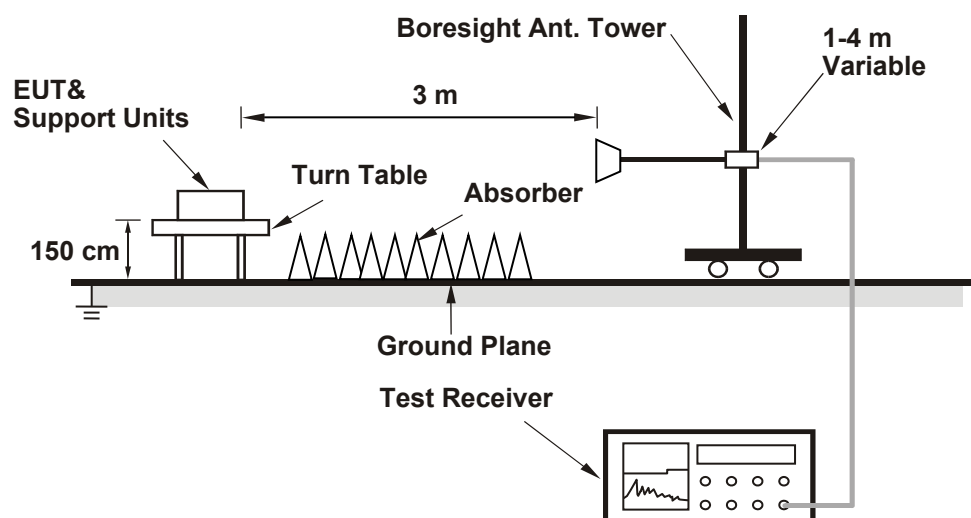
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the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

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz (however, peak detector measurements may be used to determine compliance with QP requirements).
2. All modes of operation were investigated and the worst-case emissions are reported.

6.6 Unwanted Emissions above 1 GHz

6.6.1 Test Setup



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

6.6.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver/spectrum analyzer was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3 Vdc	Environmental Conditions:	25°C, 64% RH	Tested By:	Tim Chen / Match Tsui
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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	8.551	9.32	30	Pass
19	2440	8.375	9.23	30	Pass
39	2480	8.375	9.23	30	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	8.299	9.19	30	Pass
19	2440	8.531	9.31	30	Pass
39	2480	8.204	9.14	30	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

BT-LE 125k

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	8.57	9.33	30	Pass
19	2440	8.318	9.20	30	Pass
39	2480	8.26	9.17	30	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

BT-LE 500k

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	8.299	9.19	30	Pass
19	2440	8.531	9.31	30	Pass
39	2480	8.59	9.34	30	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

For Average Power

BT-LE 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	8.414	9.25
19	2440	8.222	9.15
39	2480	8.241	9.16

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	8.147	9.11
19	2440	8.395	9.24
39	2480	8.054	9.06

BT-LE 125k

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	8.414	9.25
19	2440	8.185	9.13
39	2480	8.128	9.10

BT-LE 500k

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	8.147	9.11
19	2440	8.395	9.24
39	2480	8.433	9.26

7.2 Power Spectral Density

Input Power:	3 Vdc	Environmental Conditions:	25°C, 64% RH	Tested By:	Tim Chen / Match Tsui
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BT-LE 1M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-7.51	8	Pass
19	2440	-7.68	8	Pass
39	2480	-7.82	8	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

BT-LE 2M

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-8.90	8	Pass
19	2440	-9.09	8	Pass
39	2480	-9.01	8	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

BT-LE 125k

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	1.84	8	Pass
19	2440	1.57	8	Pass
39	2480	1.40	8	Pass

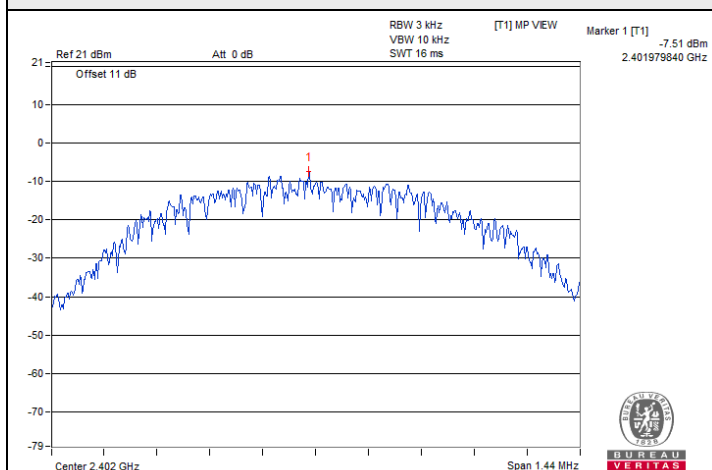
Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

BT-LE 500k

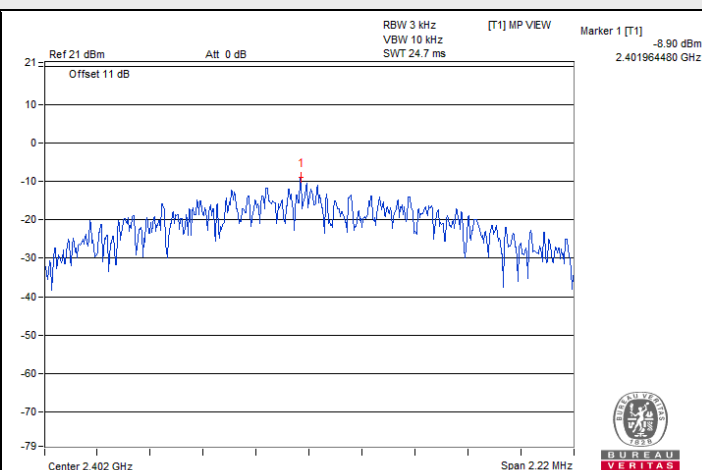
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	1.53	8	Pass
19	2440	1.31	8	Pass
39	2480	1.19	8	Pass

Note: The antenna gain is 1.71 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.

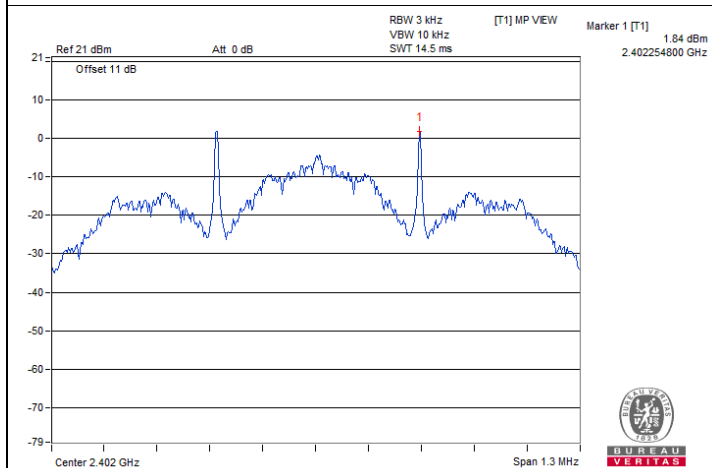
Spectrum Plot of Maximum Value



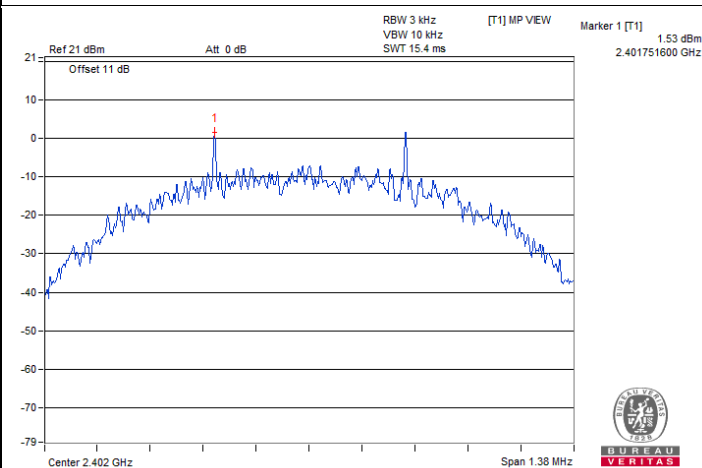
BT-LE 1M: CH 0



BT-LE 2M: CH 0



BT-LE 125k: CH 0



BT-LE 500k: CH 0

7.3 6 dB Bandwidth

Input Power:	3 Vdc	Environmental Conditions:	25°C, 64% RH	Tested By:	Tim Chen / Match Tsui
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BT-LE 1M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.72	0.5	Pass
19	2440	0.7	0.5	Pass
39	2480	0.7	0.5	Pass

BT-LE 2M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.11	0.5	Pass
19	2440	1.11	0.5	Pass
39	2480	1.11	0.5	Pass

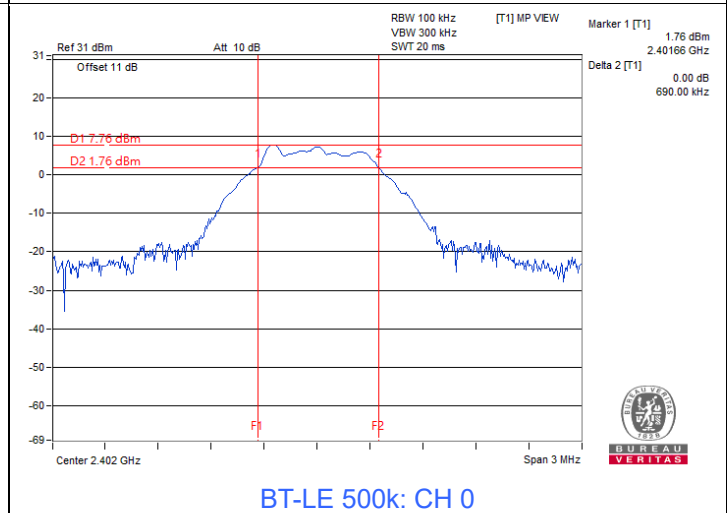
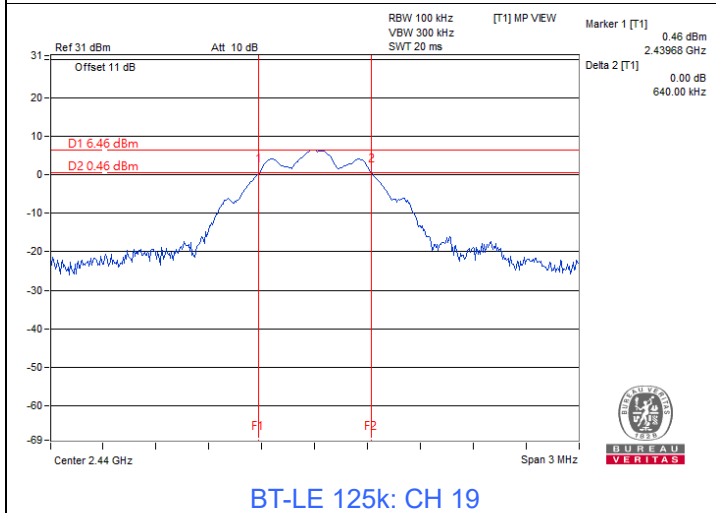
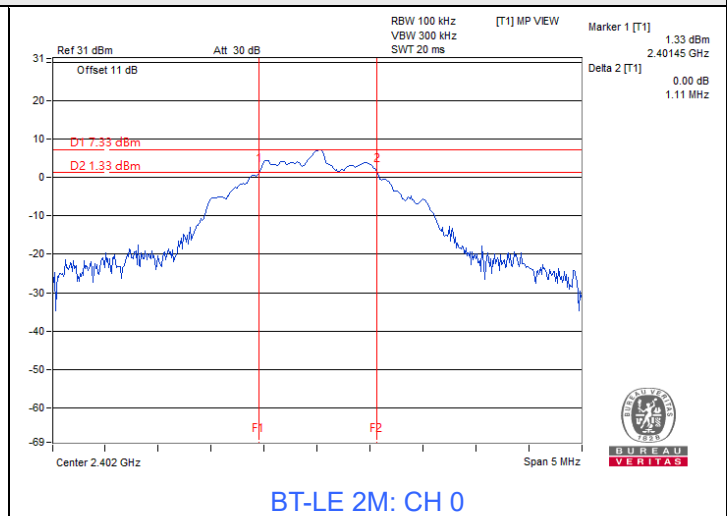
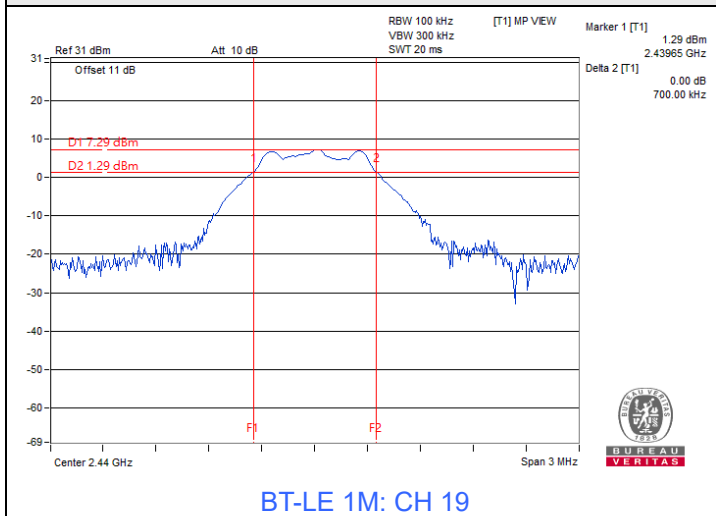
BT-LE 125k

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	0.65	0.5	Pass
19	2440	0.64	0.5	Pass
39	2480	0.64	0.5	Pass

BT-LE 500k

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

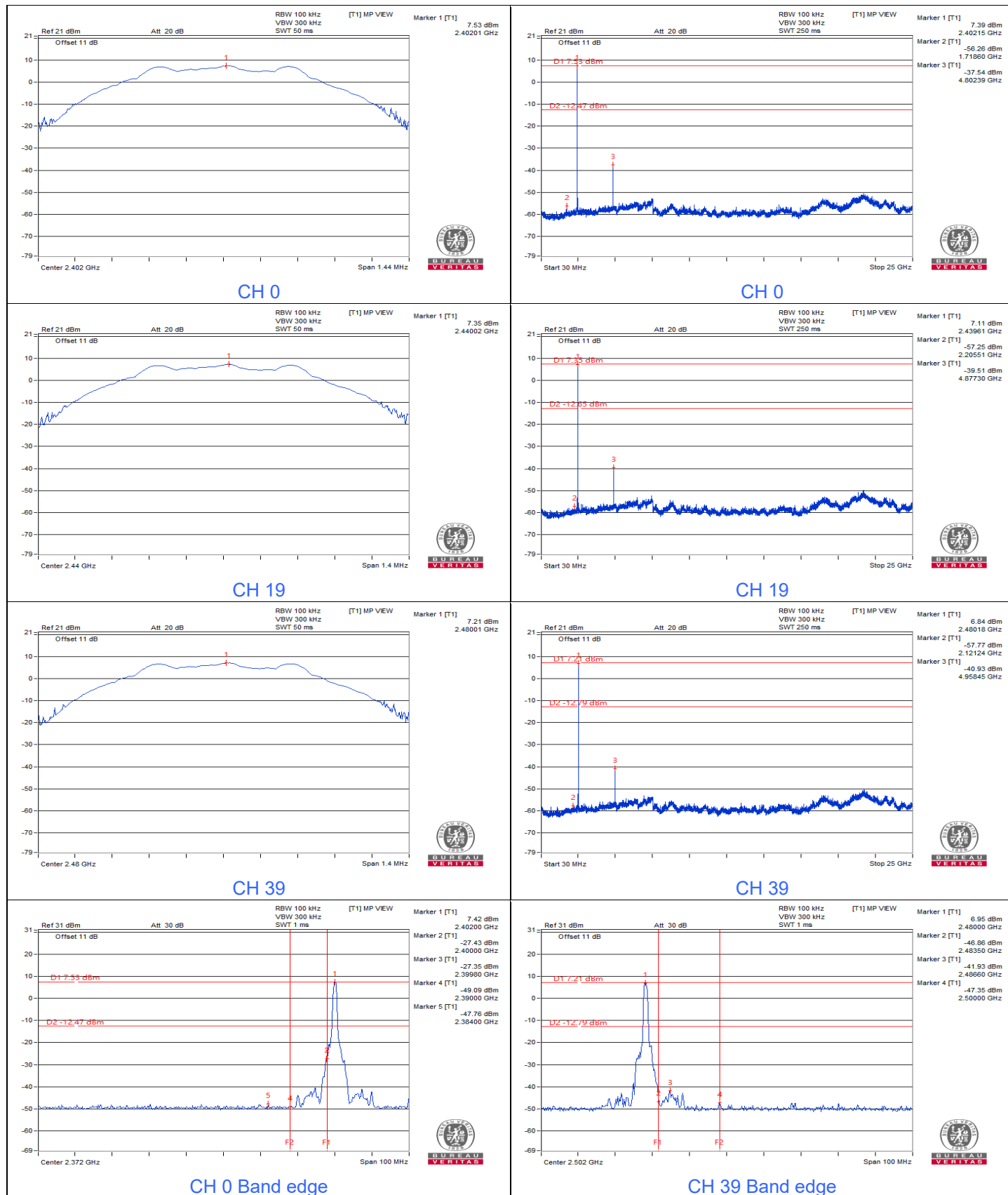
Spectrum Plot of Minimum Value



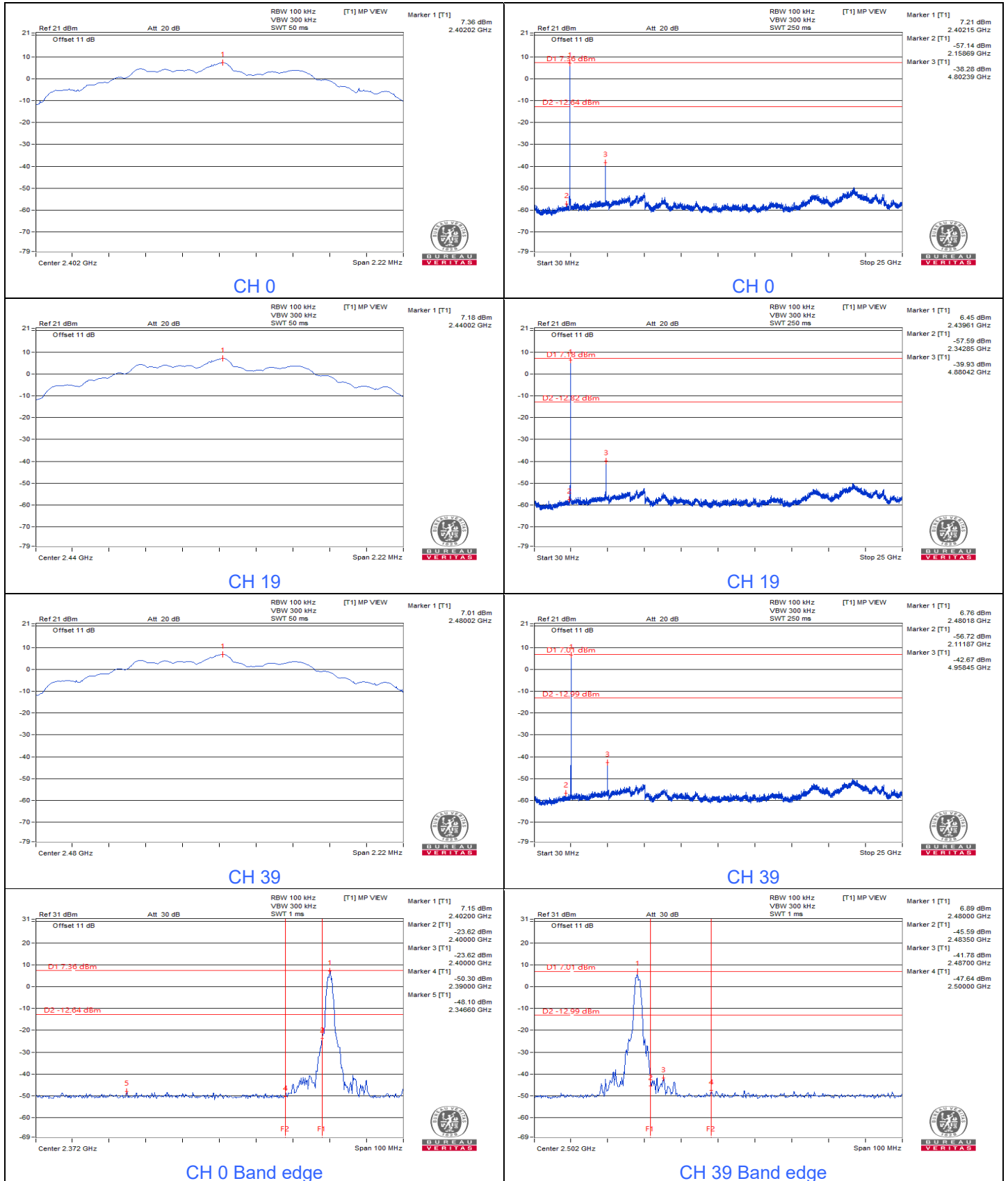
7.4 Conducted Out of Band Emissions

Input Power:	3 Vdc	Environmental Conditions:	25°C, 64% RH	Tested By:	Tim Chen / Match Tsui
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BT-LE 1M



BT-LE 2M



BT-LE 125k



BT-LE 500k



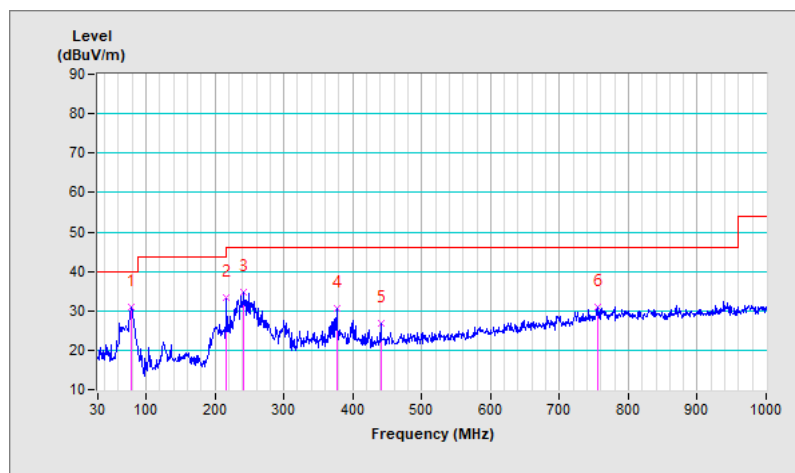
7.5 Unwanted Emissions below 1 GHz

RF Mode	BT-LE 500k	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	78.50	30.9 QP	40.0	-9.1	1.00 H	260	47.5	-16.6
2	216.26	33.2 QP	46.0	-12.8	2.00 H	150	48.5	-15.3
3	241.48	34.8 QP	46.0	-11.2	1.50 H	93	48.4	-13.6
4	376.33	30.7 QP	46.0	-15.3	1.50 H	353	40.3	-9.6
5	440.35	26.9 QP	46.0	-19.1	1.50 H	3	34.6	-7.7
6	755.63	30.9 QP	46.0	-15.1	2.00 H	294	31.3	-0.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

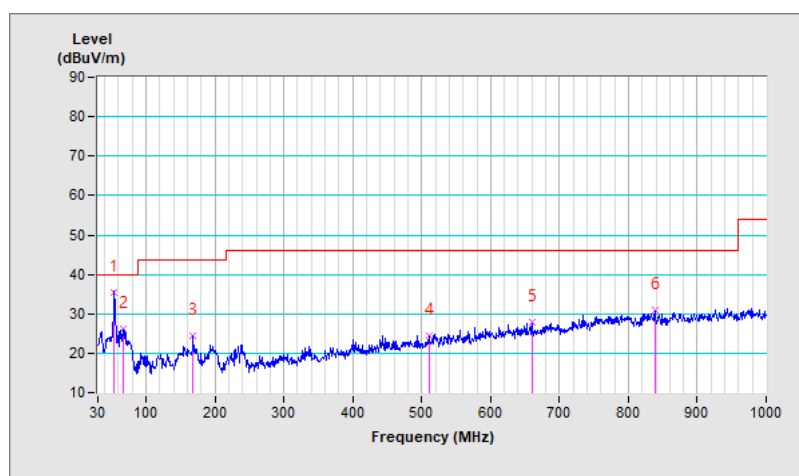


RF Mode	BT-LE 500k	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	53.28	35.5 QP	40.0	-4.5	2.00 V	313	47.6	-12.1
2	65.89	26.1 QP	40.0	-13.9	1.50 V	111	39.8	-13.7
3	167.75	24.3 QP	43.5	-19.2	1.00 V	125	36.8	-12.5
4	510.20	24.5 QP	46.0	-21.5	1.50 V	123	30.2	-5.7
5	659.59	27.7 QP	46.0	-18.3	2.00 V	87	30.9	-3.2
6	838.09	30.9 QP	46.0	-15.1	1.00 V	179	30.9	0.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.6 Unwanted Emissions above 1 GHz

RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	60.9 PK	74.0	-13.1	1.32 H	16	24.6	36.3
2	2390.00	48.8 AV	54.0	-5.2	1.32 H	16	12.5	36.3
3	*2402.00	102.8 PK			1.32 H	16	66.6	36.2
4	*2402.00	101.7 AV			1.32 H	16	65.5	36.2
5	4804.00	56.8 PK	74.0	-17.2	1.67 H	3	44.4	12.4
6	4804.00	47.9 AV	54.0	-6.1	1.67 H	3	35.5	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.1 PK	74.0	-12.9	2.81 V	107	24.8	36.3
2	2390.00	49.0 AV	54.0	-5.0	2.81 V	107	12.7	36.3
3	*2402.00	103.9 PK			2.81 V	107	67.7	36.2
4	*2402.00	102.8 AV			2.81 V	107	66.6	36.2
5	4804.00	58.1 PK	74.0	-15.9	2.46 V	75	45.7	12.4
6	4804.00	48.6 AV	54.0	-5.4	2.46 V	75	36.2	12.4

Remarks:

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

RF Mode	BT-LE 1M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	103.0 PK			1.33 H	18	66.7	36.3
2	*2440.00	101.9 AV			1.33 H	18	65.6	36.3
3	4880.00	57.3 PK	74.0	-16.7	3.14 H	204	44.7	12.6
4	4880.00	47.9 AV	54.0	-6.1	3.14 H	204	35.3	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	104.2 PK			2.82 V	108	67.9	36.3
2	*2440.00	103.1 AV			2.82 V	108	66.8	36.3
3	4880.00	58.0 PK	74.0	-16.0	1.39 V	176	45.4	12.6
4	4880.00	49.0 AV	54.0	-5.0	1.39 V	176	36.4	12.6

Remarks:

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

RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	101.4 PK			1.00 H	14	65.1	36.3
2	*2480.00	100.3 AV			1.00 H	14	64.0	36.3
3	2483.50	62.5 PK	74.0	-11.5	1.00 H	14	26.2	36.3
4	2483.50	50.2 AV	54.0	-3.8	1.00 H	14	13.9	36.3
5	4960.00	57.3 PK	74.0	-16.7	2.83 H	314	44.9	12.4
6	4960.00	47.9 AV	54.0	-6.1	2.83 H	314	35.5	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	102.8 PK			2.74 V	115	66.5	36.3
2	*2480.00	101.7 AV			2.74 V	115	65.4	36.3
3	2483.50	62.7 PK	74.0	-11.3	2.74 V	115	26.4	36.3
4	2483.50	50.5 AV	54.0	-3.5	2.74 V	115	14.2	36.3
5	4960.00	57.8 PK	74.0	-16.2	2.83 V	314	45.4	12.4
6	4960.00	48.7 AV	54.0	-5.3	2.83 V	314	36.3	12.4

Remarks:

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

RF Mode	BT-LE 2M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	61.4 PK	74.0	-12.6	1.32 H	16	25.1	36.3
2	2390.00	50.7 AV	54.0	-3.3	1.32 H	16	14.4	36.3
3	*2402.00	104.2 PK			1.32 H	16	68.0	36.2
4	*2402.00	102.1 AV			1.32 H	16	65.9	36.2
5	4804.00	57.2 PK	74.0	-16.8	1.96 H	353	44.8	12.4
6	4804.00	47.7 AV	54.0	-6.3	1.96 H	353	35.3	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.6 PK	74.0	-12.4	2.80 V	110	25.3	36.3
2	2390.00	50.8 AV	54.0	-3.2	2.80 V	110	14.5	36.3
3	*2402.00	105.3 PK			2.80 V	110	69.1	36.2
4	*2402.00	103.4 AV			2.80 V	110	67.2	36.2
5	4804.00	58.1 PK	74.0	-15.9	2.49 V	24	45.7	12.4
6	4804.00	49.1 AV	54.0	-4.9	2.49 V	24	36.7	12.4

Remarks:

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

RF Mode	BT-LE 2M	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	104.3 PK			1.28 H	12	68.0	36.3
2	*2440.00	102.2 AV			1.28 H	12	65.9	36.3
3	4880.00	57.2 PK	74.0	-16.8	2.70 H	337	44.6	12.6
4	4880.00	48.1 AV	54.0	-5.9	2.70 H	337	35.5	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	105.3 PK			2.81 V	108	69.0	36.3
2	*2440.00	103.2 AV			2.81 V	108	66.9	36.3
3	4880.00	58.6 PK	74.0	-15.4	2.34 V	166	46.0	12.6
4	4880.00	48.6 AV	54.0	-5.4	2.34 V	166	36.0	12.6

Remarks:

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

RF Mode	BT-LE 2M	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	102.4 PK			1.00 H	8	66.1	36.3
2	*2480.00	100.3 AV			1.00 H	8	64.0	36.3
3	2483.50	62.3 PK	74.0	-11.7	1.00 H	8	26.0	36.3
4	2483.50	50.6 AV	54.0	-3.4	1.00 H	8	14.3	36.3
5	4960.00	57.0 PK	74.0	-17.0	3.33 H	193	44.6	12.4
6	4960.00	47.8 AV	54.0	-6.2	3.33 H	193	35.4	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	103.9 PK			2.74 V	115	67.6	36.3
2	*2480.00	101.8 AV			2.74 V	115	65.5	36.3
3	2483.50	62.5 PK	74.0	-11.5	2.74 V	115	26.2	36.3
4	2483.50	50.9 AV	54.0	-3.1	2.74 V	115	14.6	36.3
5	4960.00	57.9 PK	74.0	-16.1	3.87 V	335	45.5	12.4
6	4960.00	49.0 AV	54.0	-5.0	3.87 V	335	36.6	12.4

Remarks:

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

RF Mode	BT-LE 125k	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	62.4 PK	74.0	-11.6	1.32 H	15	26.1	36.3
2	2390.00	49.2 AV	54.0	-4.8	1.32 H	15	12.9	36.3
3	*2402.00	104.3 PK			1.32 H	15	68.1	36.2
4	*2402.00	103.1 AV			1.32 H	15	66.9	36.2
5	4804.00	57.2 PK	74.0	-16.8	2.60 H	261	44.8	12.4
6	4804.00	48.0 AV	54.0	-6.0	2.60 H	261	35.6	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.6 PK	74.0	-11.4	2.80 V	109	26.3	36.3
2	2390.00	49.4 AV	54.0	-4.6	2.80 V	109	13.1	36.3
3	*2402.00	105.3 PK			2.80 V	109	69.1	36.2
4	*2402.00	104.1 AV			2.80 V	109	67.9	36.2
5	4804.00	58.4 PK	74.0	-15.6	3.87 V	35	46.0	12.4
6	4804.00	48.5 AV	54.0	-5.5	3.87 V	35	36.1	12.4

Remarks:

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

RF Mode	BT-LE 125k	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	104.2 PK			1.35 H	14	67.9	36.3
2	*2440.00	103.0 AV			1.35 H	14	66.7	36.3
3	4880.00	57.5 PK	74.0	-16.5	2.46 H	50	44.9	12.6
4	4880.00	48.4 AV	54.0	-5.6	2.46 H	50	35.8	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	105.3 PK			2.80 V	105	69.0	36.3
2	*2440.00	104.1 AV			2.80 V	105	67.8	36.3
3	4880.00	58.3 PK	74.0	-15.7	1.93 V	162	45.7	12.6
4	4880.00	49.0 AV	54.0	-5.0	1.93 V	162	36.4	12.6

Remarks:

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

RF Mode	BT-LE 125k	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	100.9 PK			1.18 H	8	64.6	36.3
2	*2480.00	99.7 AV			1.18 H	8	63.4	36.3
3	2483.50	62.3 PK	74.0	-11.7	1.18 H	8	26.0	36.3
4	2483.50	49.6 AV	54.0	-4.4	1.18 H	8	13.3	36.3
5	4960.00	57.3 PK	74.0	-16.7	2.23 H	292	44.9	12.4
6	4960.00	47.6 AV	54.0	-6.4	2.23 H	292	35.2	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	102.3 PK			2.74 V	115	66.0	36.3
2	*2480.00	101.1 AV			2.74 V	115	64.8	36.3
3	2483.50	62.5 PK	74.0	-11.5	2.74 V	115	26.2	36.3
4	2483.50	49.9 AV	54.0	-4.1	2.74 V	115	13.6	36.3
5	4960.00	58.0 PK	74.0	-16.0	1.90 V	351	45.6	12.4
6	4960.00	49.1 AV	54.0	-4.9	1.90 V	351	36.7	12.4

Remarks:

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

RF Mode	BT-LE 500k	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	62.1 PK	74.0	-11.9	1.32 H	15	25.8	36.3
2	2390.00	49.2 AV	54.0	-4.8	1.32 H	15	12.9	36.3
3	*2402.00	104.3 PK			1.32 H	15	68.1	36.2
4	*2402.00	103.2 AV			1.32 H	15	67.0	36.2
5	4804.00	57.0 PK	74.0	-17.0	2.18 H	23	44.6	12.4
6	4804.00	48.2 AV	54.0	-5.8	2.18 H	23	35.8	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.3 PK	74.0	-11.7	2.80 V	109	26.0	36.3
2	2390.00	49.4 AV	54.0	-4.6	2.80 V	109	13.1	36.3
3	*2402.00	105.3 PK			2.80 V	109	69.1	36.2
4	*2402.00	104.2 AV			2.80 V	109	68.0	36.2
5	4804.00	58.1 PK	74.0	-15.9	3.95 V	184	45.7	12.4
6	4804.00	48.9 AV	54.0	-5.1	3.95 V	184	36.5	12.4

Remarks:

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

RF Mode	BT-LE 500k	Channel	CH 19 : 2440 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	104.4 PK			1.29 H	14	68.1	36.3
2	*2440.00	103.3 AV			1.29 H	14	67.0	36.3
3	4880.00	57.3 PK	74.0	-16.7	1.30 H	153	44.7	12.6
4	4880.00	48.1 AV	54.0	-5.9	1.30 H	153	35.5	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	105.5 PK			2.76 V	113	69.2	36.3
2	*2440.00	104.4 AV			2.76 V	113	68.1	36.3
3	4880.00	58.3 PK	74.0	-15.7	2.94 V	33	45.7	12.6
4	4880.00	49.0 AV	54.0	-5.0	2.94 V	33	36.4	12.6

Remarks:

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

RF Mode	BT-LE 500k	Channel	CH 39 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	3 Vdc	Environmental Conditions	22 °C, 68% RH
Tested By	Thomas Cheng		

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	102.5 PK			1.00 H	5	66.2	36.3
2	*2480.00	101.4 AV			1.00 H	5	65.1	36.3
3	2483.50	62.3 PK	74.0	-11.7	1.00 H	5	26.0	36.3
4	2483.50	49.6 AV	54.0	-4.4	1.00 H	5	13.3	36.3
5	4960.00	57.0 PK	74.0	-17.0	2.07 H	158	44.6	12.4
6	4960.00	47.5 AV	54.0	-6.5	2.07 H	158	35.1	12.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	103.9 PK			2.74 V	115	67.6	36.3
2	*2480.00	102.8 AV			2.74 V	115	66.5	36.3
3	2483.50	62.6 PK	74.0	-11.4	2.74 V	115	26.3	36.3
4	2483.50	49.8 AV	54.0	-4.2	2.74 V	115	13.5	36.3
5	4960.00	58.4 PK	74.0	-15.6	2.89 V	139	46.0	12.4
6	4960.00	48.9 AV	54.0	-5.1	2.89 V	139	36.5	12.4

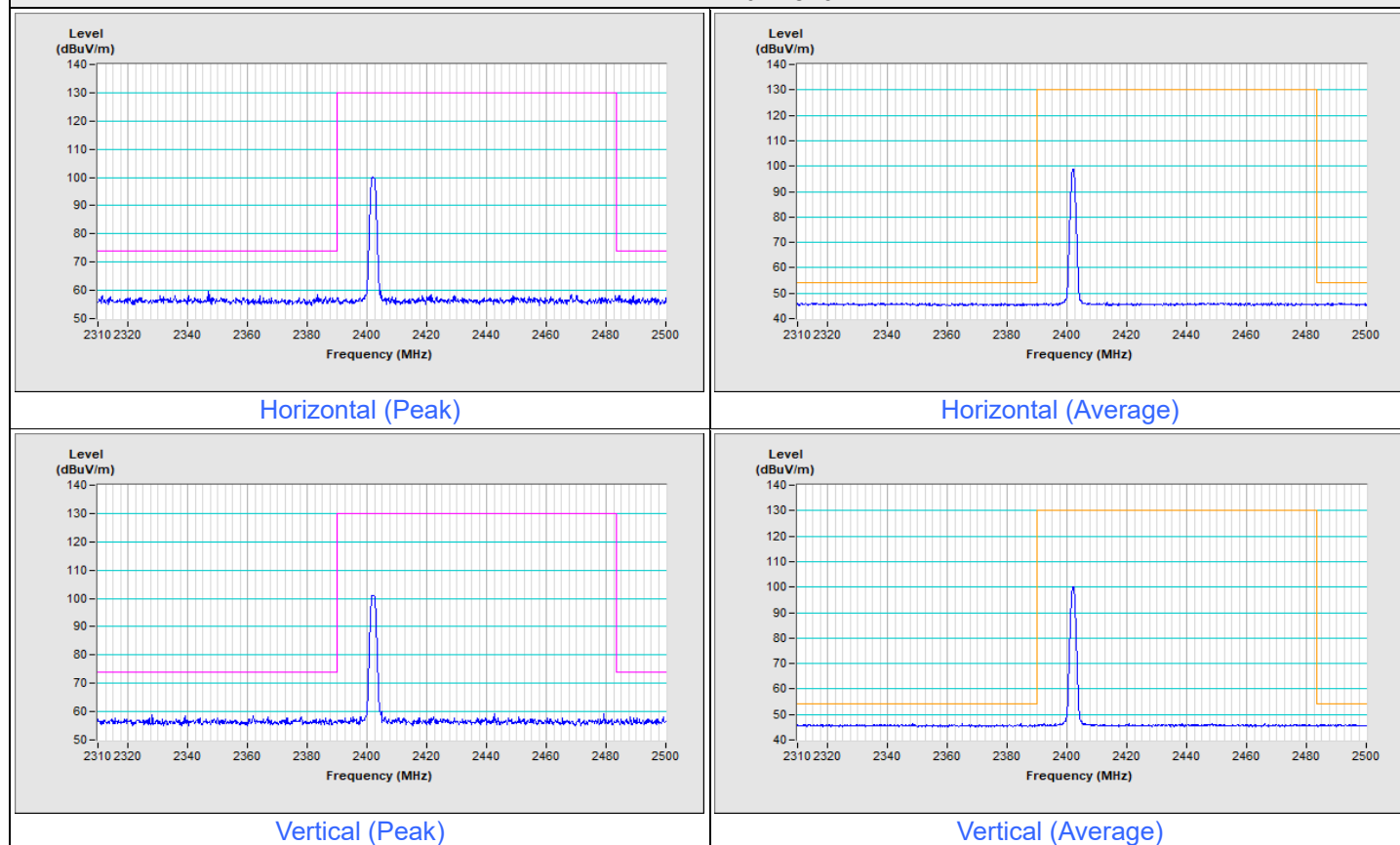
Remarks:

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

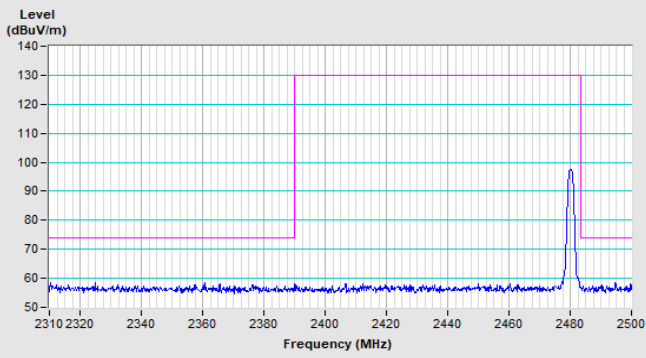
Plot of Band Edge

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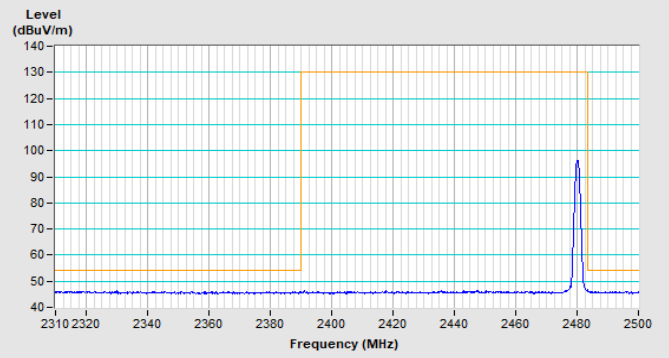
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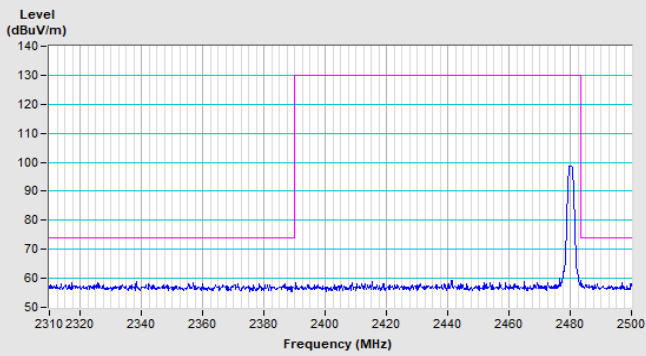
BT-LE 1M Channel 39



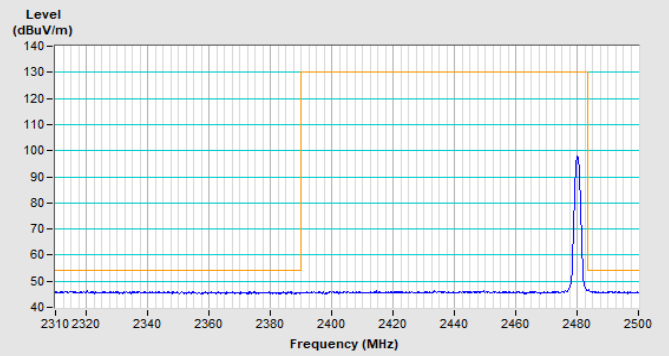
Horizontal (Peak)



Horizontal (Average)



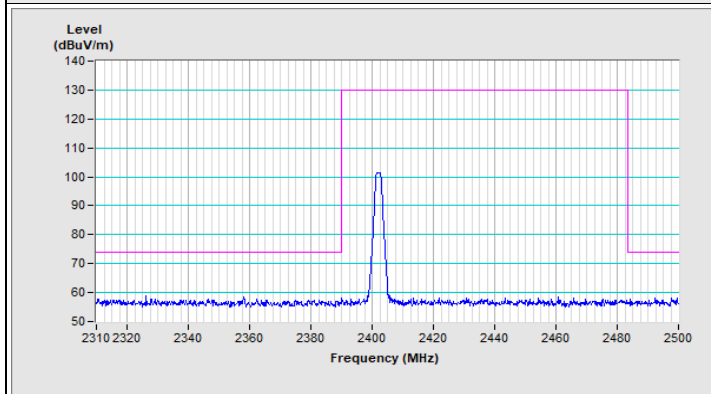
Vertical (Peak)



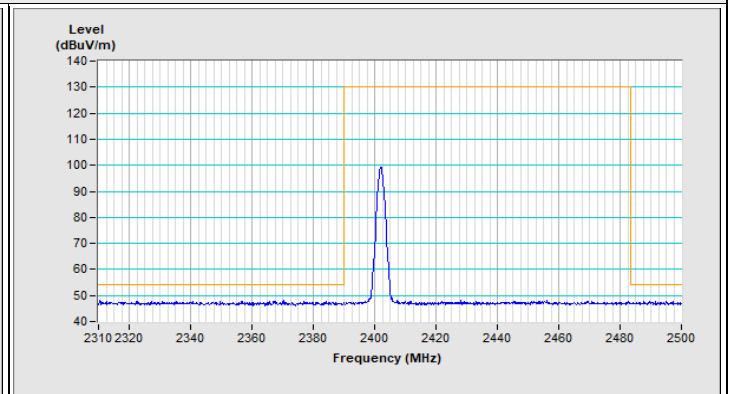
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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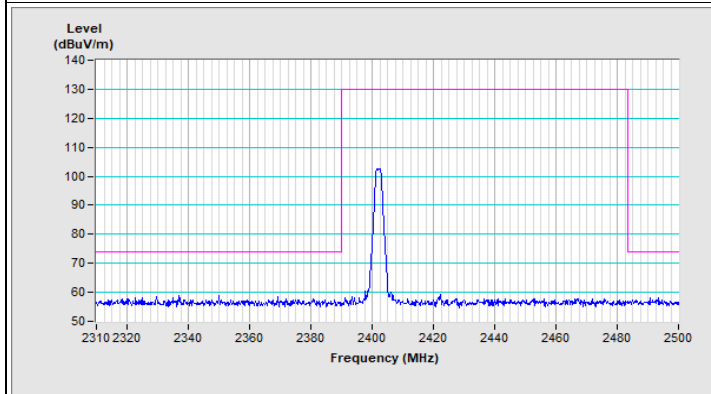
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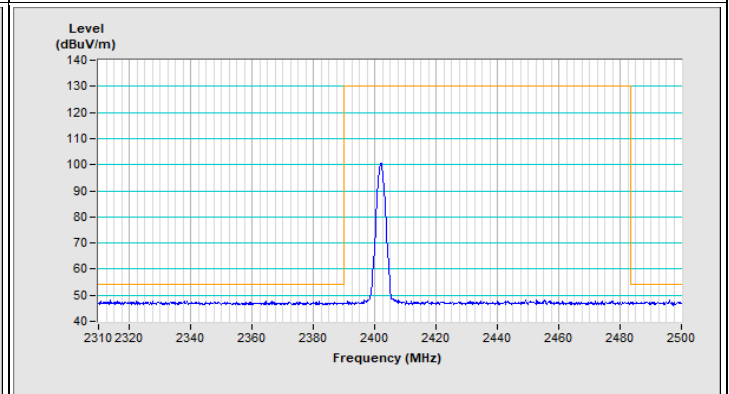
Horizontal (Peak)



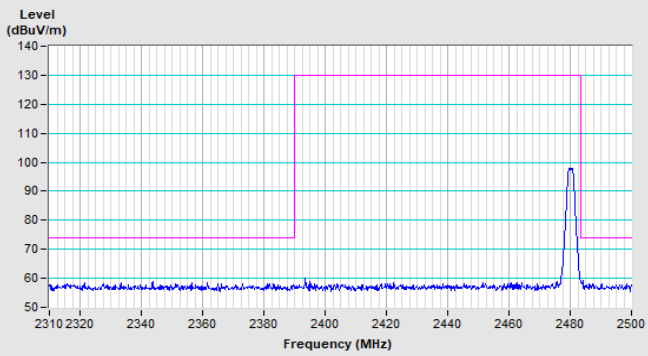
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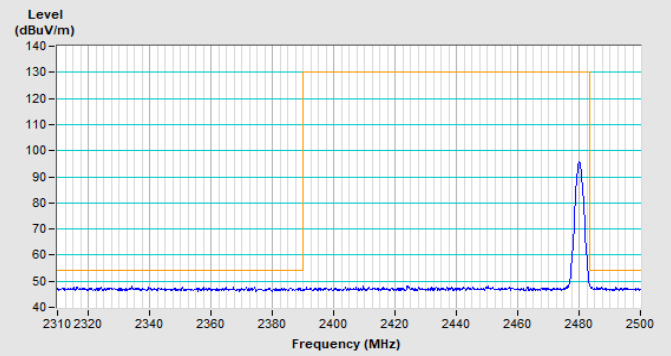
Vertical (Peak)



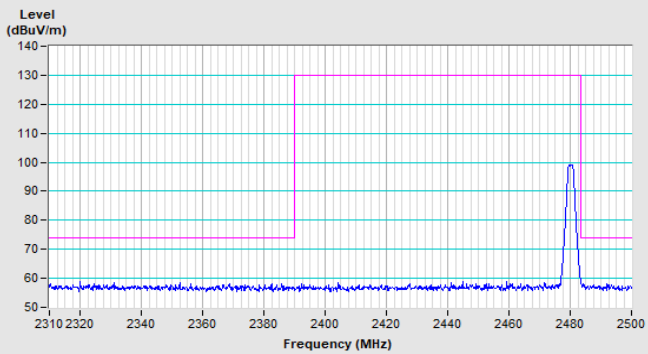
Vertical (Average)

BT-LE 2M Channel 39

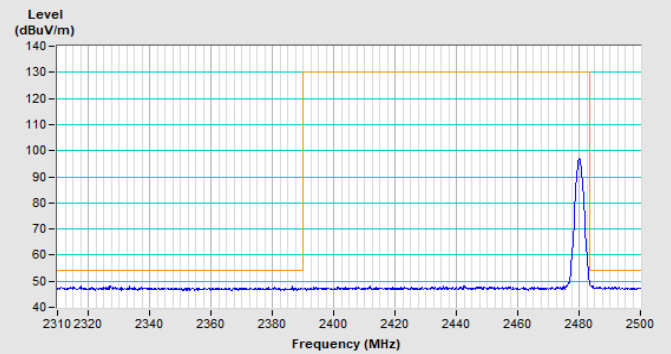
Horizontal (Peak)



Horizontal (Average)



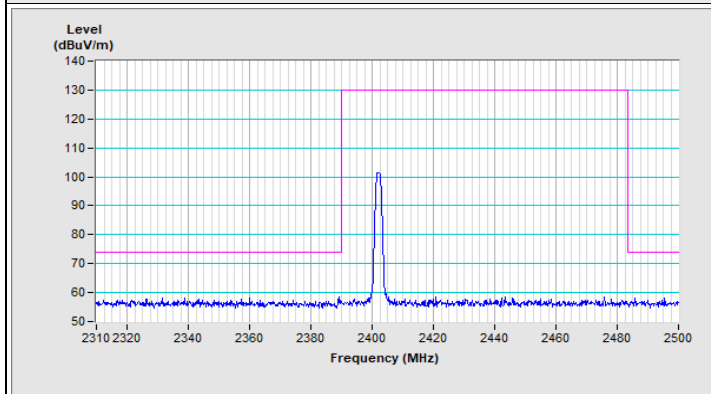
Vertical (Peak)



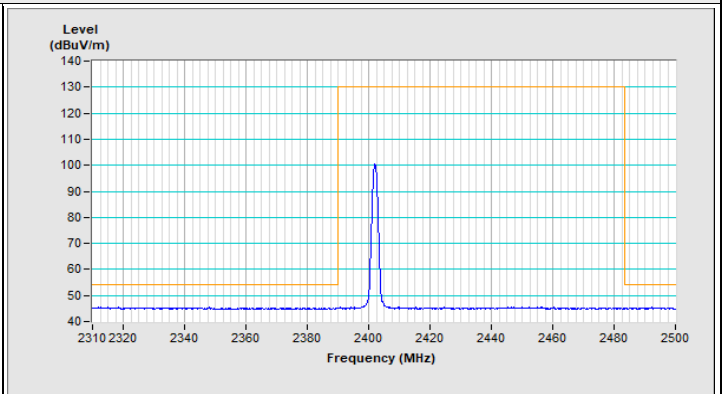
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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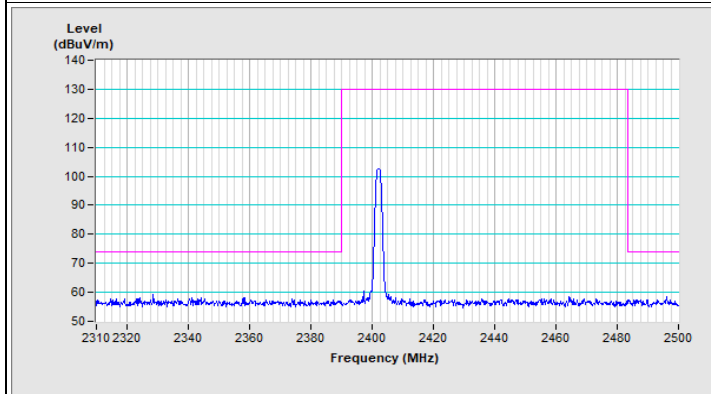
BT-LE 125k Channel 0



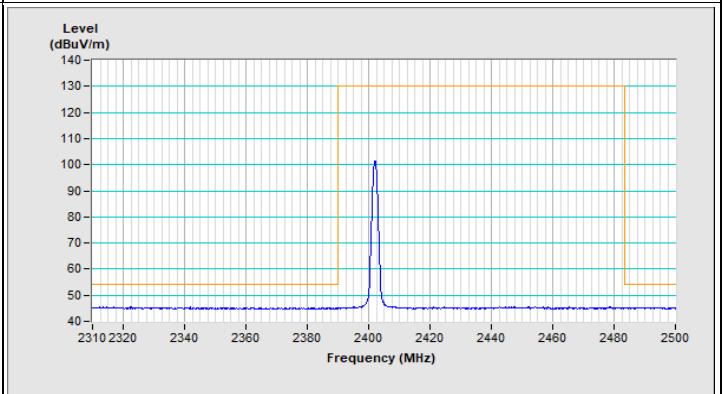
Horizontal (Peak)



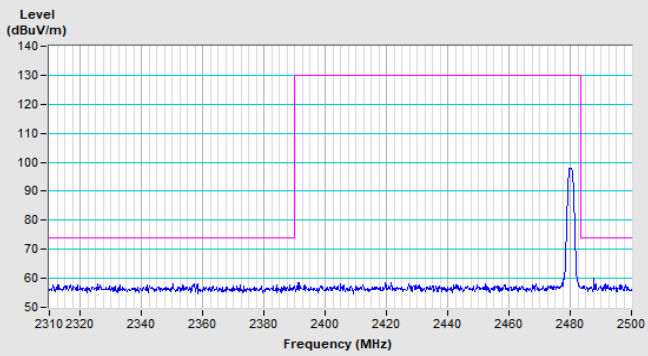
Horizontal (Average)



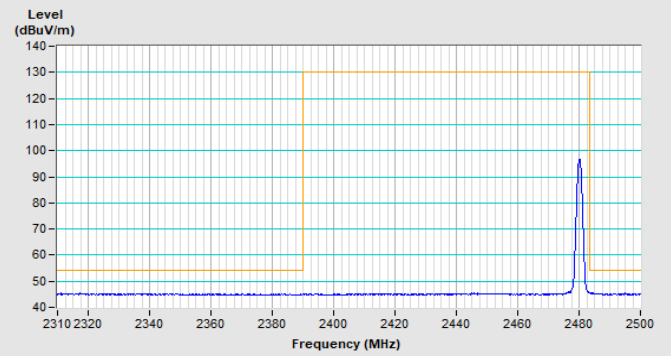
Vertical (Peak)



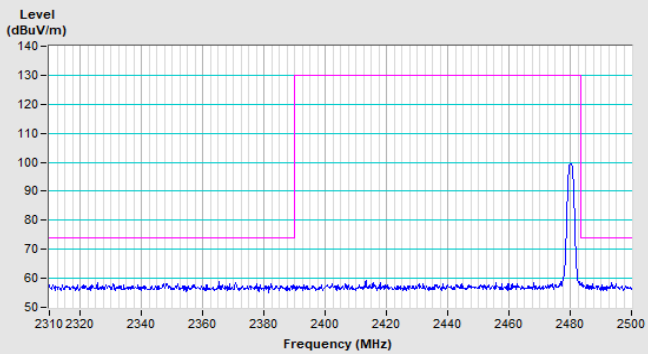
Vertical (Average)

BT-LE 125k Channel 39

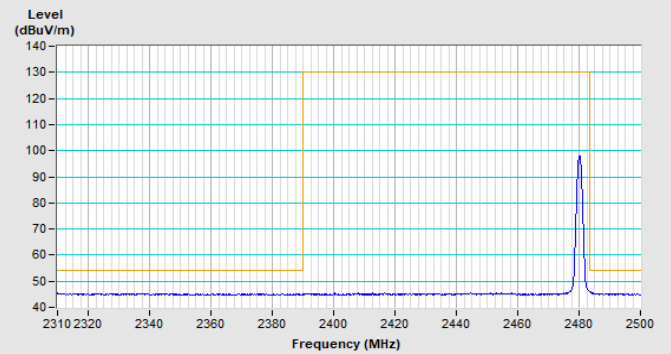
Horizontal (Peak)



Horizontal (Average)



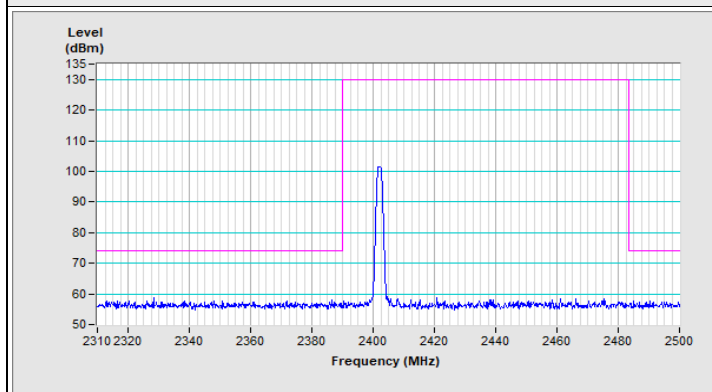
Vertical (Peak)



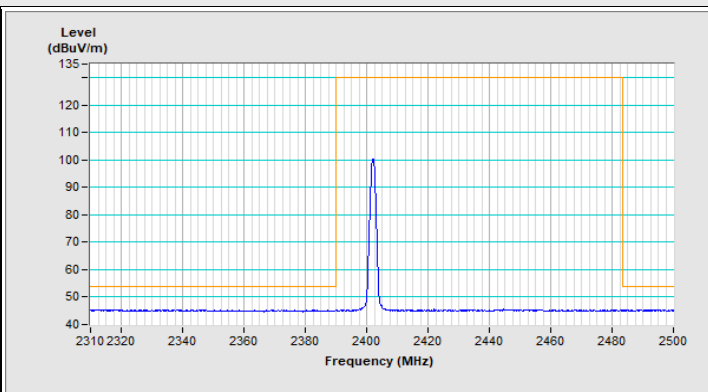
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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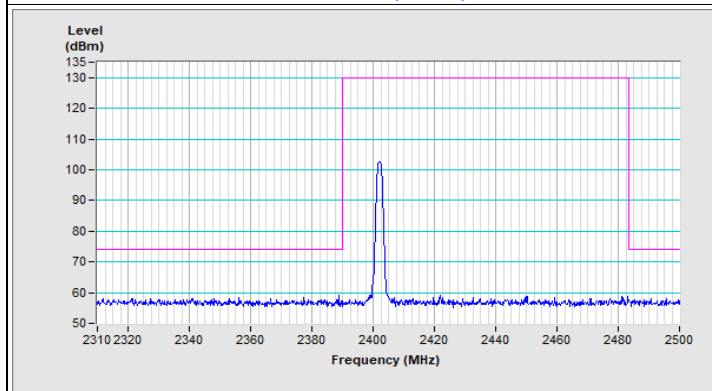
BT-LE 500k Channel 0



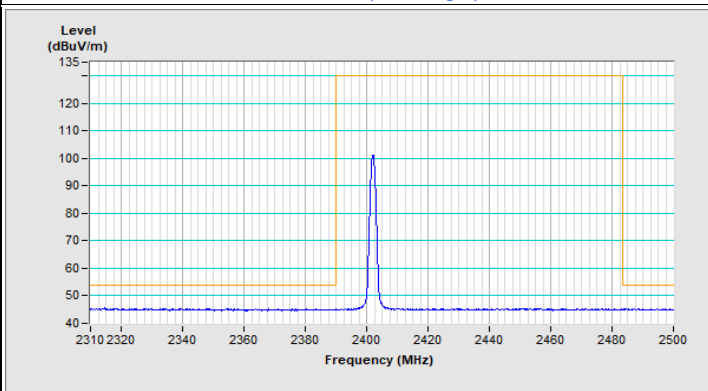
Horizontal (Peak)



Horizontal (Average)

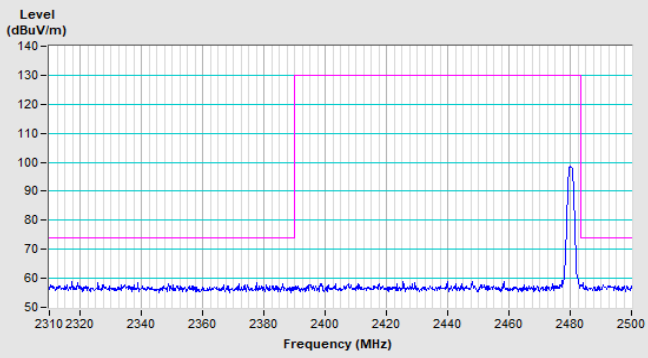


Vertical (Peak)

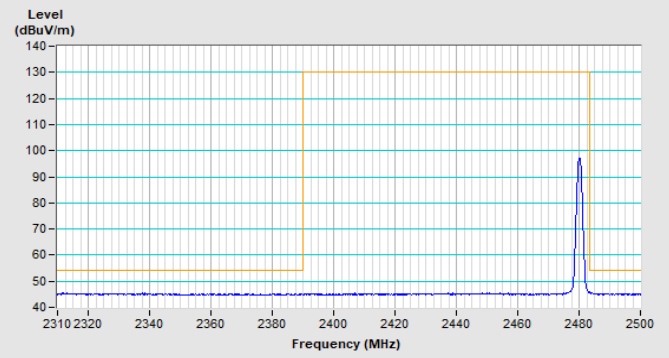


Vertical (Average)

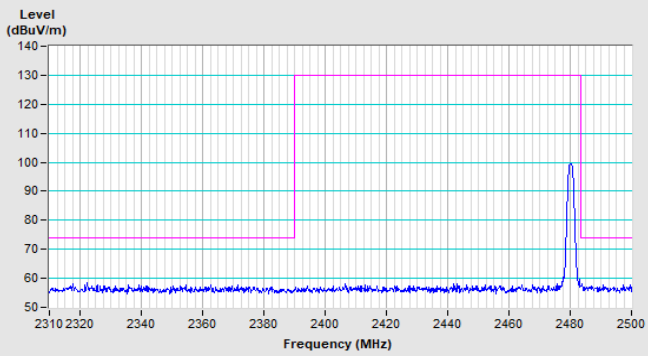
BT-LE 500k Channel 39



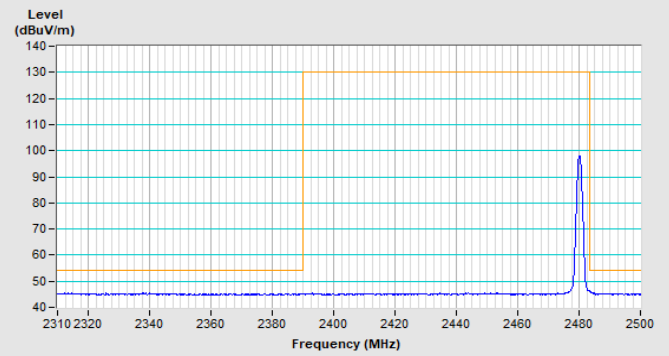
Horizontal (Peak)



Horizontal (Average)



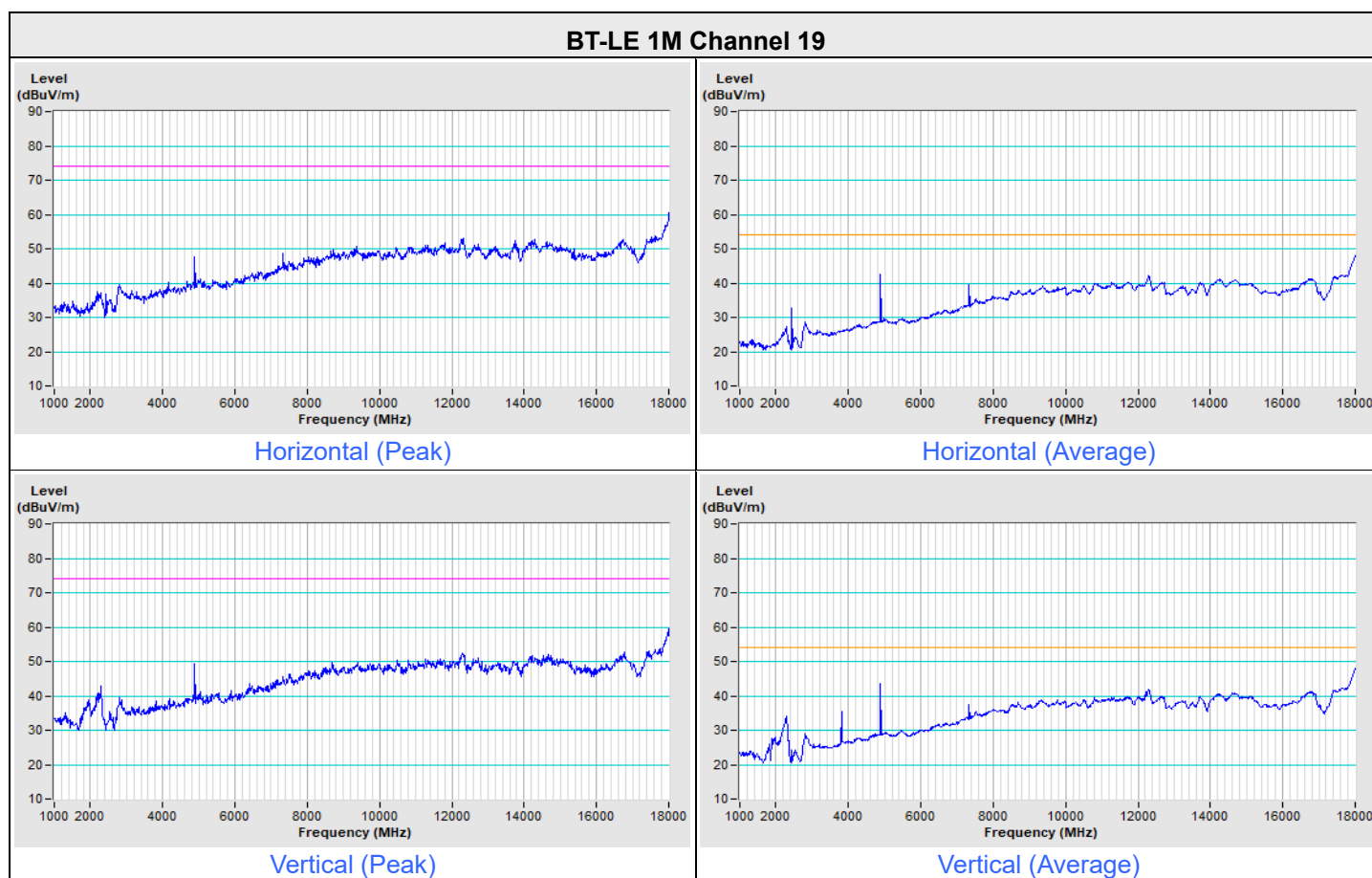
Vertical (Peak)



Vertical (Average)

Plot of Other Emission

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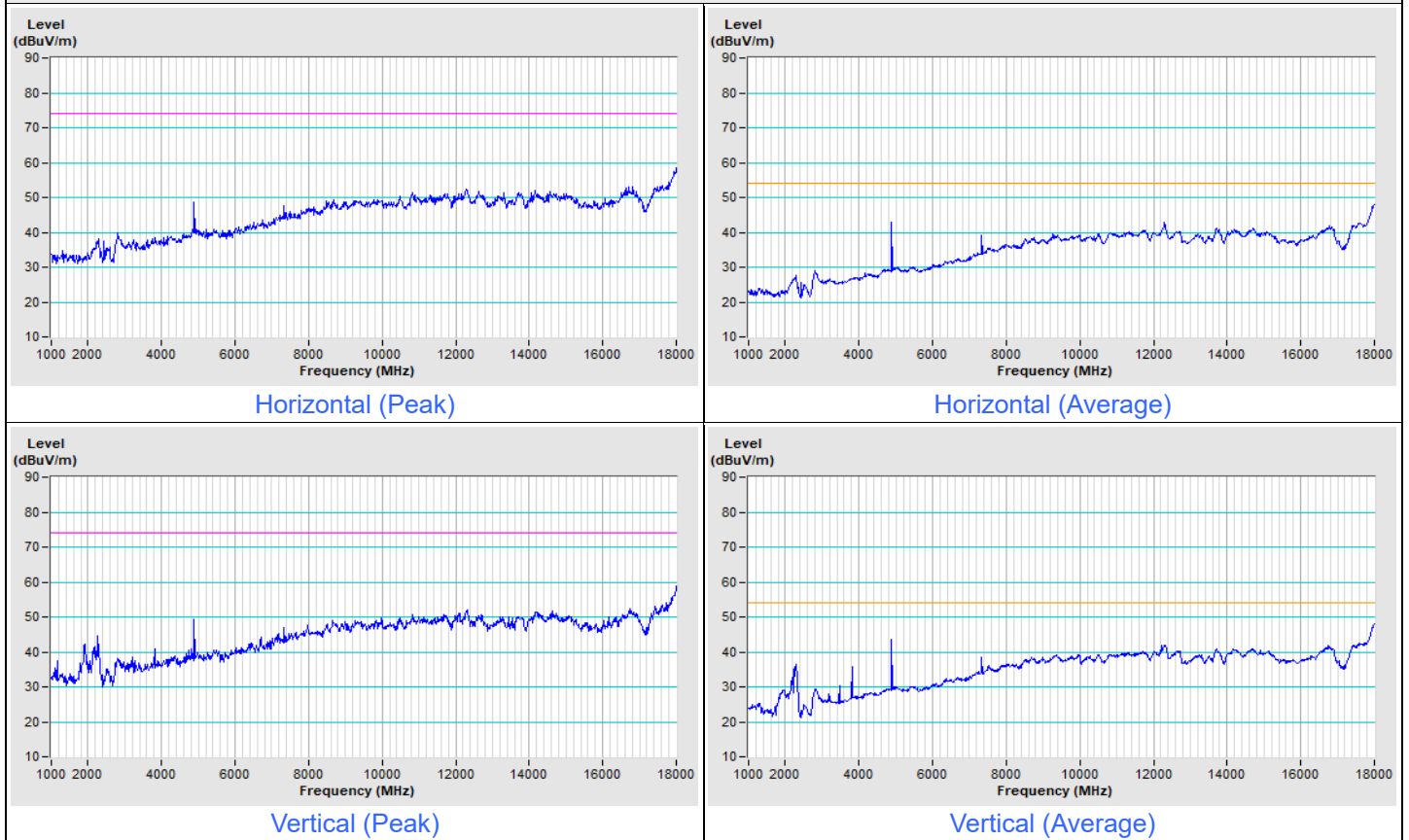


Notes:

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

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
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BT-LE 2M Channel 19

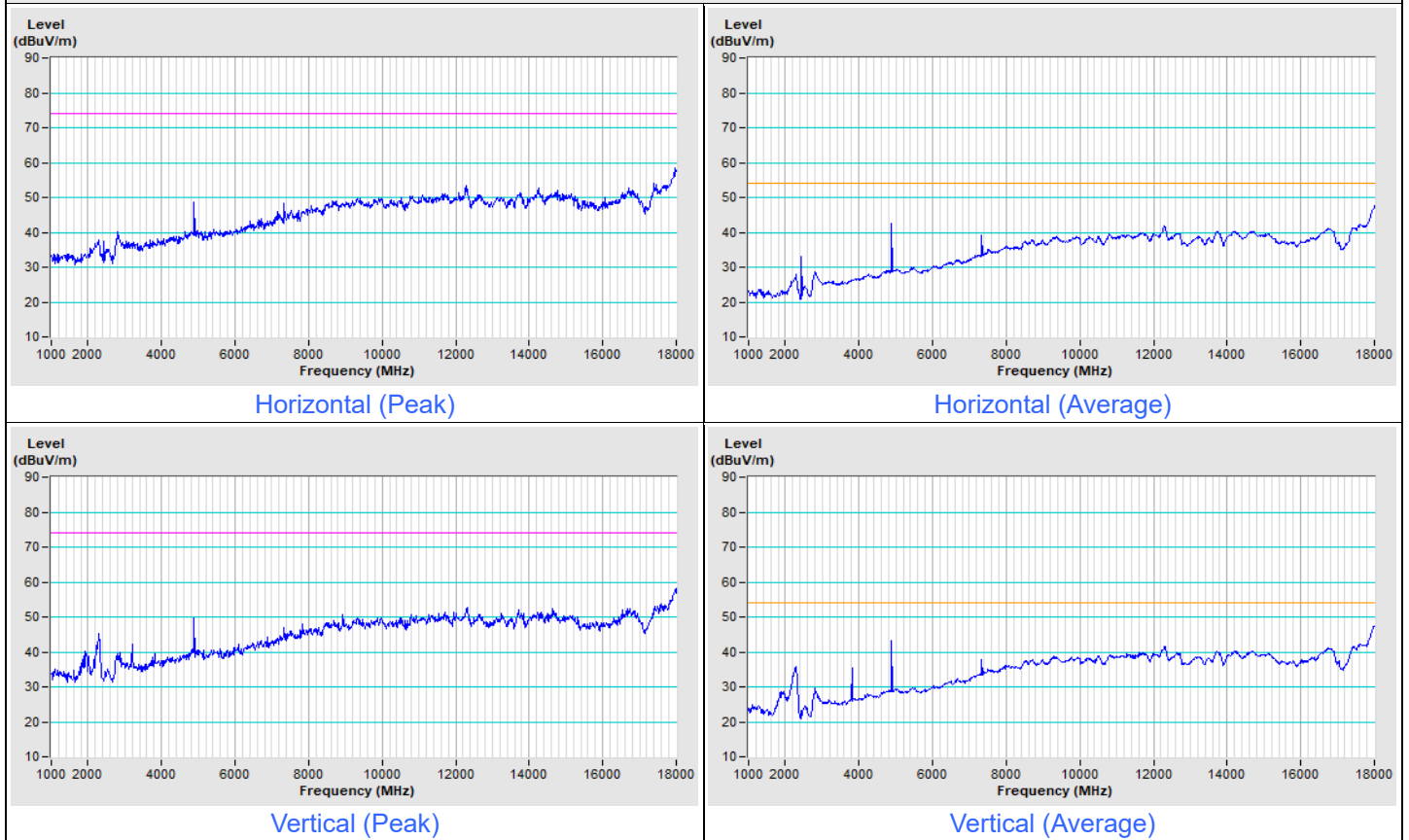


Notes:

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

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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BT-LE 125k Channel 19

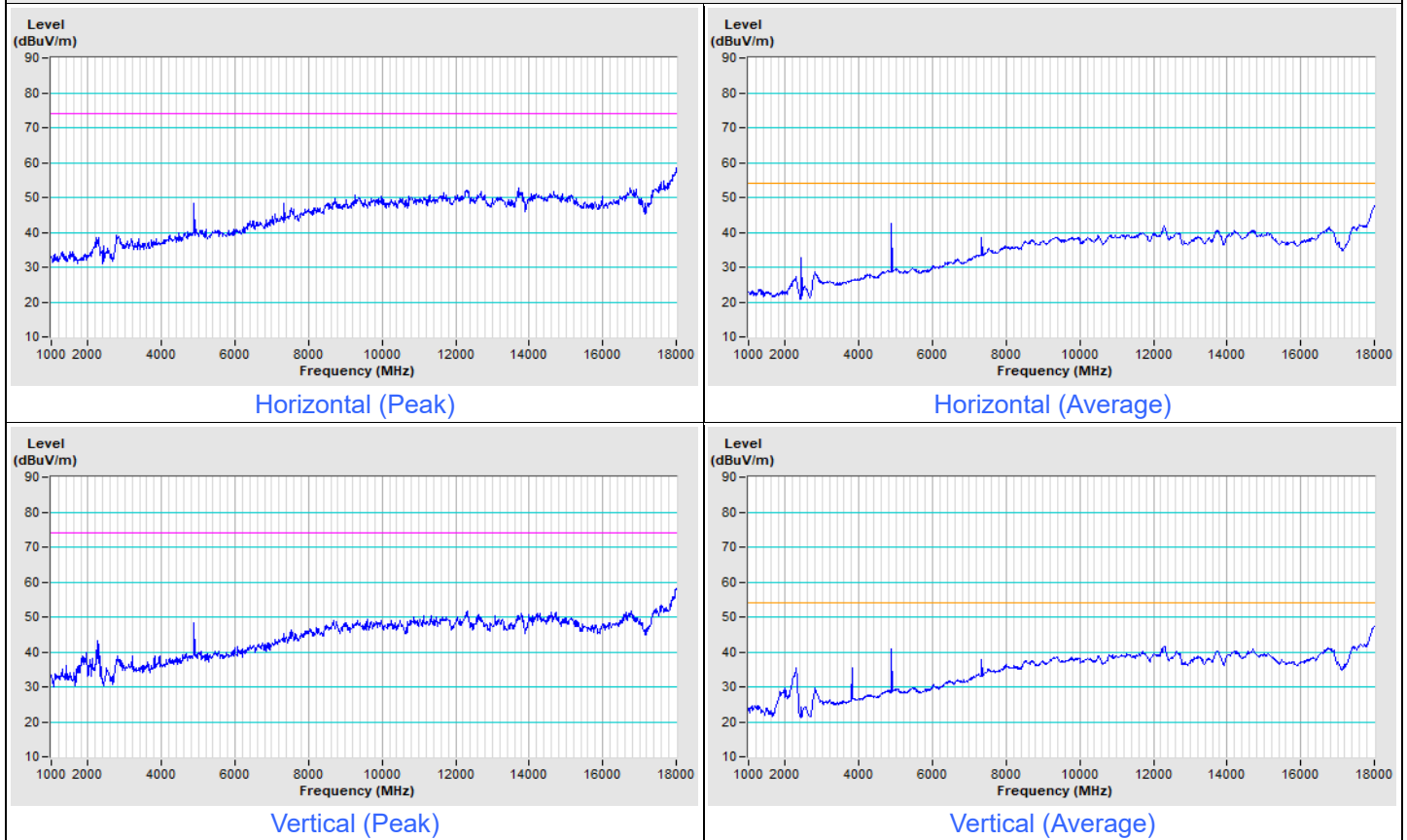


Notes:

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

Frequency Range	1 GHz ~ 18 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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BT-LE 500k Channel 19



Notes:

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

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

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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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