

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFCVRG-WTW-P25050051

FCC ID: TVE-250501

Product: Secured Network Extension Device

Brand: FORTINET

Model No.: FEX-101G, FEX-211G

Series Model: FortiExtender 101Gxxxxxxxxxx, FORTIEXTENDER-101Gxxxxxxxxxx,
FEX-101Gxxxxxxxxxx, FortiExtender 211Gxxxxxxxxxx,
FORTIEXTENDER-211Gxxxxxxxxxx, FEX-211Gxxxxxxxxxx,
(where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or
marketing purposes only) (Refer to item 3.1 for the more details)

Received Date: 2025/5/6

Test Date: 2025/5/15 ~ 2025/6/16

Issued Date: 2025/8/13

Applicant: Fortinet Inc.

Address: 909 Kifer Road, Sunnyvale, CA. 94086 USA

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location(1): No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

Test Location(2): No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

FCC Registration / Test Location:788550 / TW0003 for Test Location(1)

Designation Number: 281270 / TW0032 for Test Location(2)

Approved by:



Jeremy Lin / Project Engineer

Date:

2025/8/13

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Prepared by : Gina Liu / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFCVRG-WTW-P25050051	Original release.	2025/8/13

1 Certificate

Product: Secured Network Extension Device

Brand: FORTINET

Test Model: FEX-101G, FEX-211G

Series Model: FortiExtender 101Gxxxxxxxxx, FORTIEXTENDER-101Gxxxxxxxxx,
FEX-101Gxxxxxxxxx, FortiExtender 211Gxxxxxxxxx,
FORTIEXTENDER-211Gxxxxxxxxx, FEX-211Gxxxxxxxxx,
(where “x” can be used as “A-Z”, or “0-9”, or “-”, or blank for software changes or marketing
purposes only)
(Refer to item 3.1 for the more details)

Sample Status: Engineering sample

Applicant: Fortinet Inc.

Test Date: 2025/5/15 ~ 2025/6/16

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

**Measurement
procedure:** ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02

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

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -9.69 dB at 0.45597 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -5.5 dB at 205.57 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.4 dB at 7320.00 MHz and 7440.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is ipex(MHF) not a standard connector.

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
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.90 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3 dB
	30 MHz ~ 1 GHz	2.92 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 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	Secured Network Extension Device
Brand	FORTINET
Test Model	FEX-101G, FEX-211G
Series Model	FortiExtender 101Gxxxxxxxxxx, FORTIEXTENDER-101Gxxxxxxxxxx, FEX-101Gxxxxxxxxxx, FortiExtender 211Gxxxxxxxxxx, FORTIEXTENDER-211Gxxxxxxxxxx, FEX-211Gxxxxxxxxxx, (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only)
Status of EUT	Engineering sample
Power Supply Rating	12.0Vdc from adapter 54.0Vdc from PoE
Modulation Type	GFSK
Modulation Technology	DTS
Transfer Rate	Up to 2 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	40
Output Power	5.875 mW (7.69 dBm)

Note:

1. All models are listed as below. Model: FEX-101G is representative for the final tests.

Model	FEX-101G	FEX-211G
Contain WWAN Module	Telit / LN920A6-WW	Telit / LN920A12-WW
Contain WWAN Module FCC ID	RI7LN920	
Contain WWAN Module IC ID	5131A-LN920	

Model	Difference
FEX-101G	All models are electrically identical, different model names are for marketing purpose.
FortiExtender 101Gxxxxxxxxxx	
FORTIEXTENDER-101Gxxxxxxxxxx	
FEX-101Gxxxxxxxxxx	

Model	Difference
FEX-211G	All models are electrically identical, different model names are for marketing purpose.
FortiExtender 211Gxxxxxxxxxx	
FORTIEXTENDER-211Gxxxxxxxxxx	
FEX-211Gxxxxxxxxxx	

2. The EUT contains following accessory devices.

Product	Brand	Model	Description
PoE Injector	LITEON	PA-1300-86	Input: 100-240Vac, 50-60Hz, 1.0A Max. Output: 54.0Vdc, 0.555A, 30.0W
Adapter	APD	WA-36W12R	Input: 100-240Vac, 50-60Hz, 0.9A Max. Output: 12.0Vdc, 3.0A, 36.0W
Console Cable	N/A	N/A	Nonshielded without core, 1.7m

3. Simultaneously transmission combination.

Combination	Technology	
1	BT	WWAN

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

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

Antenna NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	*Cable Length
1	Dongguan RF Electronic Technology Co., Ltd	U00T02S000N07587	3.74	2.4~2.4835GHz	PIFA	ipex(MHF)	75mm

* 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:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. X-axis/ Y-axis/ Z-axis Worst Condition: Z-axis (antenna is 90 degrees) 2. For Adapter and PoE Worst Condition: Adapter

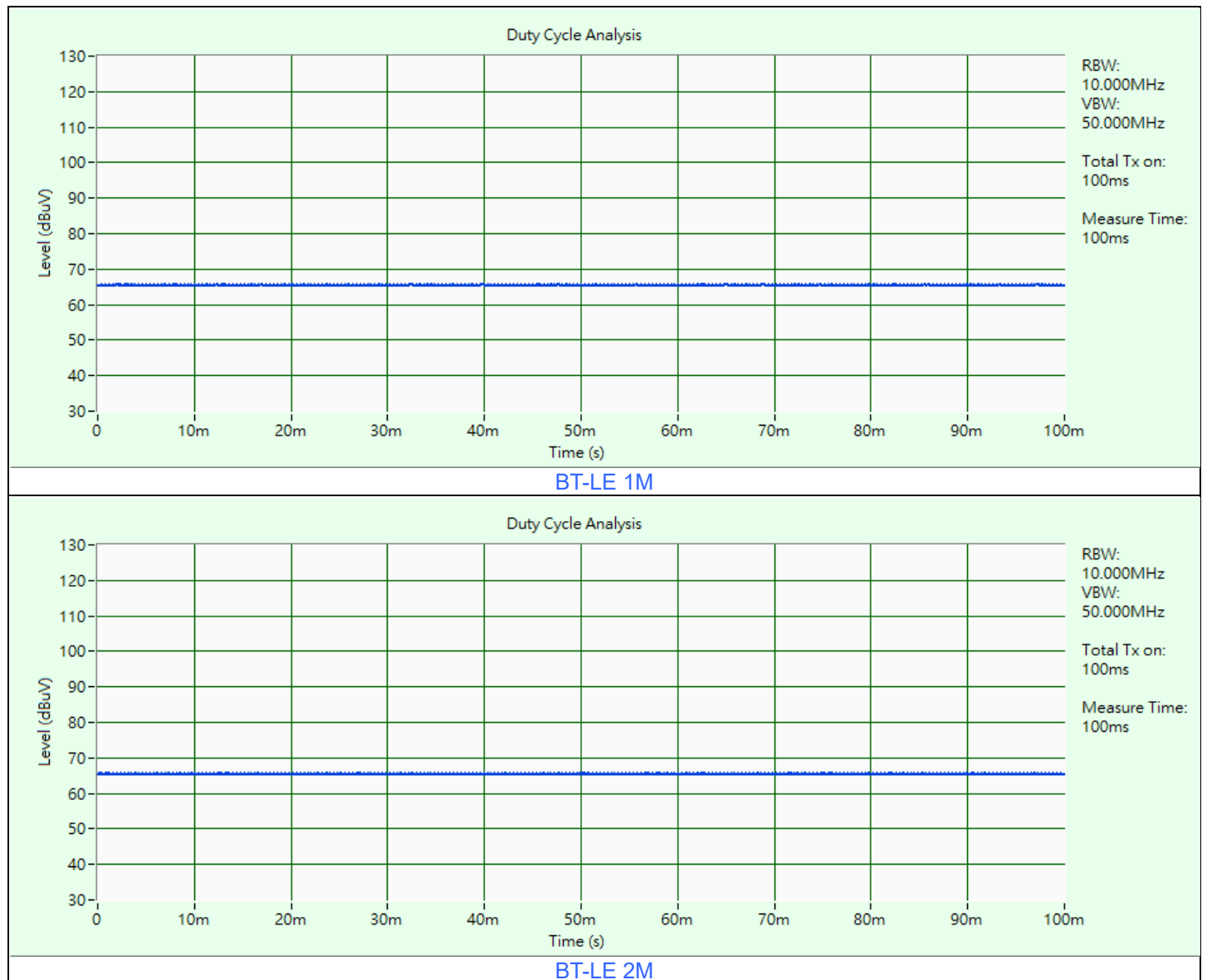
Following channel(s) was (were) selected for the final test as listed below:

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
Power Spectral Density	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/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
AC Power Conducted Emissions	BT-LE 1M	39	GFSK	1Mb/s
Unwanted Emissions below 1 GHz	BT-LE 1M	39	GFSK	1Mb/s
Unwanted Emissions above 1 GHz	BT-LE 1M	0, 19, 39	GFSK	1Mb/s
	BT-LE 2M	0, 19, 39	GFSK	2Mb/s

3.5 Duty Cycle of Test Signal

BT-LE 1M: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

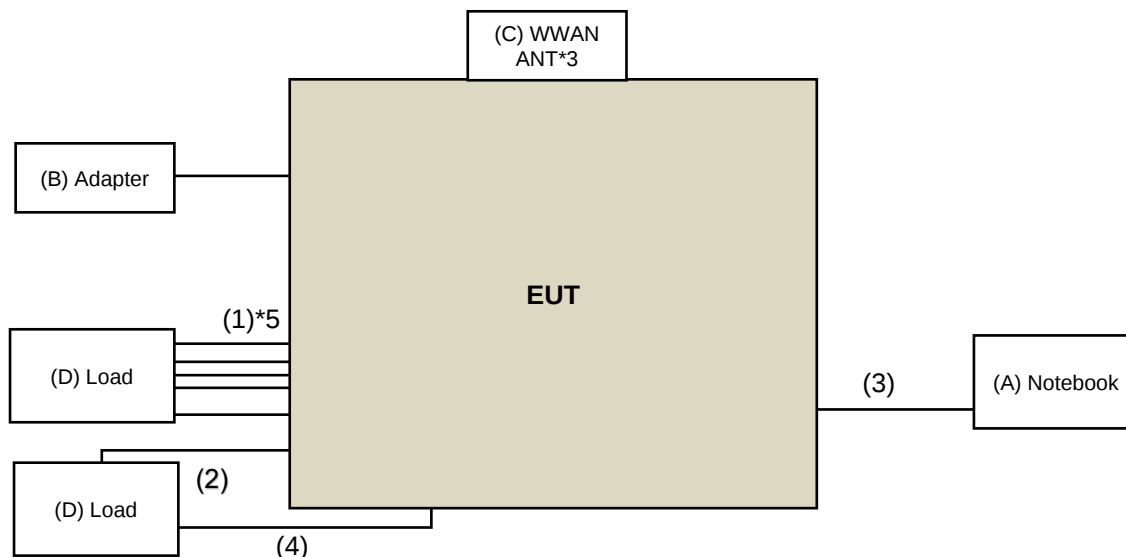
BT-LE 2M: Duty cycle = 100 ms / 100 ms x 100% = 100.0%



3.6 Test Program Used and Operation Descriptions

Controlling software Tera Term _4.98 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



Under Table

3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	HP	15s-du0xxx	N/A	N/A	Provided by Lab
B	Adapter	APD	WA-36W12R	N/A	N/A	Supplied by applicant
C	WWAN ANT	N/A	N/A	N/A	N/A	Supplied by applicant
D	Load	N/A	N/A	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	5	1.5	N	0	Provided by Lab
2	RJ-45 Cable	1	1.5	N	0	Provided by Lab
3	Console Cable	1	0.5	N	0	Supplied by applicant
4	Console Cable	1	1.7	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	MY51000485	2025/1/20	2026/1/19
Wideband Power Sensor Keysight	N1923A	MY58020002	2025/1/21	2026/1/20
		MY58140009	2025/1/21	2026/1/20

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/6/16

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	2024/6/18	2025/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/6/16

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 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	E1-011279	04	2024/11/28	2025/11/27
	E1-011280	05	2024/11/28	2025/11/27
	E1-011311	09	2024/11/28	2025/11/27
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2024/11/5	2025/11/4
EMI Test Receiver R&S	ESR3	102783	2024/12/17	2025/12/16
Fixed Attenuator STI	BNC5W10dB	PAD-COND2-01	2024/8/25	2025/8/24
LISN R&S	ESH2-Z5	100100	2025/3/5	2026/3/4
	ESH3-Z5	100312	2024/9/9	2025/9/8
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2024/8/25	2025/8/24
Software BVADT	BVADT_Cond_ V7.4.1.0	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2024/8/28	2025/8/27

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2025/6/2

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower KaiTuo	N/A	N/A	N/A	N/A
Antenna Tower Controller KaiTuo	KT-2000	N/A	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-995	2024/10/9	2025/10/8
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Agilent	N9038A	MY52260177	2024/9/19	2025/9/18
Preamplifier EMCI	EMC330N	980783	2025/1/14	2026/1/13
PXA Signal Analyzer Keysight	N9030B	MY57140488	2025/3/11	2026/3/10
RF Coaxial Cable EMCI	EMCCFD400-NM-NM-500	201245	2025/1/14	2026/1/13
	EMCCFD400-NM-NM-3000	201250	2025/1/14	2026/1/13
	EMCCFD400-NM-NM-9000	201252(with PAD)	2025/1/14	2026/1/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208675	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 7.
2. Tested Date: 2025/6/2

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower KaiTuo	N/A	N/A	N/A	N/A
Antenna Tower Controller KaiTuo	KT-2000	N/A	N/A	N/A
Horn Antenna RFSPIN	DRH18-E	210104A18E	2024/11/10	2025/11/9
Horn Antenna Schwarzbeck	BBHA 9170	9170-1048	2024/11/10	2025/11/9
MXE EMI Receiver Agilent	N9038A	MY52260177	2024/9/19	2025/9/18
Preamplifier EMCI	EMC118A45SE	980810	2024/12/26	2025/12/25
	EMC184045SE	980787	2025/1/14	2026/1/13
PXA Signal Analyzer Keysight	N9030B	MY57140488	2025/3/11	2026/3/10
RF Coaxial Cable EMCI	EMC101G-KM-KM-2000	201254	2025/1/14	2026/1/13
	EMC101G-KM-KM-3000	201258	2025/1/14	2026/1/13
	EMC101G-KM-KM-5000	201261	2025/1/14	2026/1/13
	EMC104-SM-SM-1000	210101	2025/1/14	2026/1/13
	EMC104-SM-SM-3000	201242	2025/1/14	2026/1/13
	EMC104-SM-SM-9000	201230	2025/1/14	2026/1/13
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208675	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 7.
2. Tested Date: 2025/5/15 ~ 2025/6/2

5 Limits of Test Items

5.1 RF Output Power

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

5.2 Power Spectral Density

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

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

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

5.5 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.6 Unwanted Emissions below 1 GHz

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

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

Notes:

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

5.7 Unwanted Emissions above 1 GHz

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

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

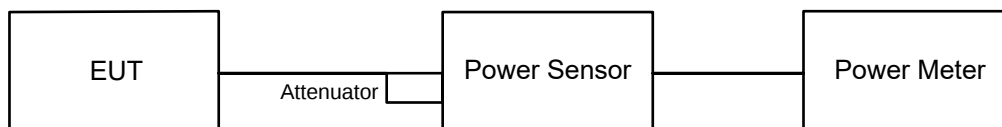
Notes:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

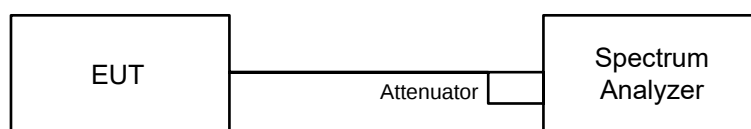
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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

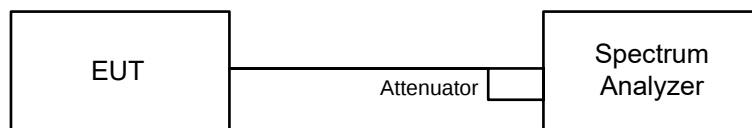


6.2.2 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: 3 kHz.
- Set the VBW $\geq 3 \times$ RBW.
- Detector = peak.
- Sweep time = auto couple.
- 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

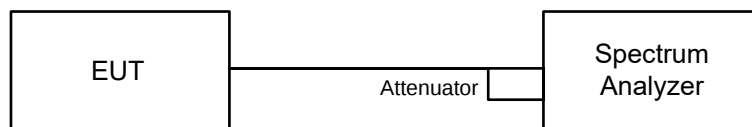


6.3.2 Test Procedure

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

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

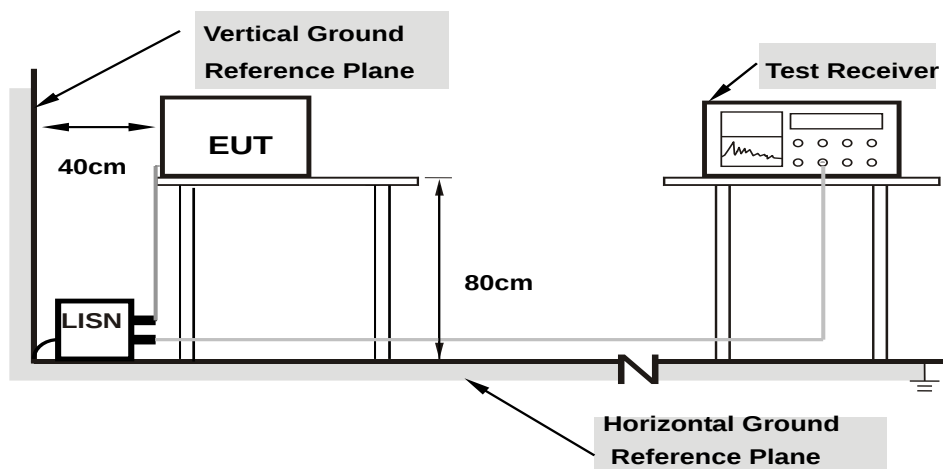
- Set the RBW = 100 kHz.
- Set the VBW ≥ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

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

6.5 AC Power Conducted Emissions

6.5.1 Test Setup



Note: 1.Support units were connected to second LISN.

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

6.5.2 Test Procedure

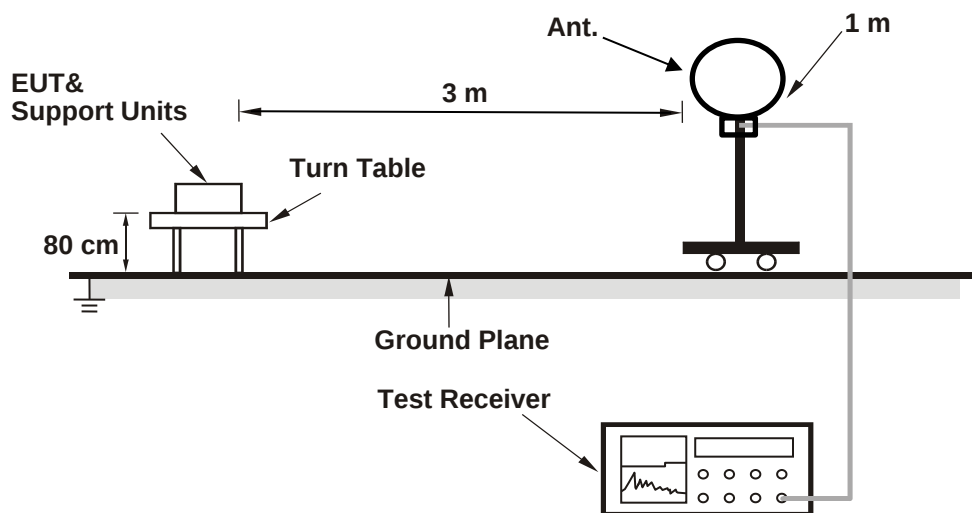
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

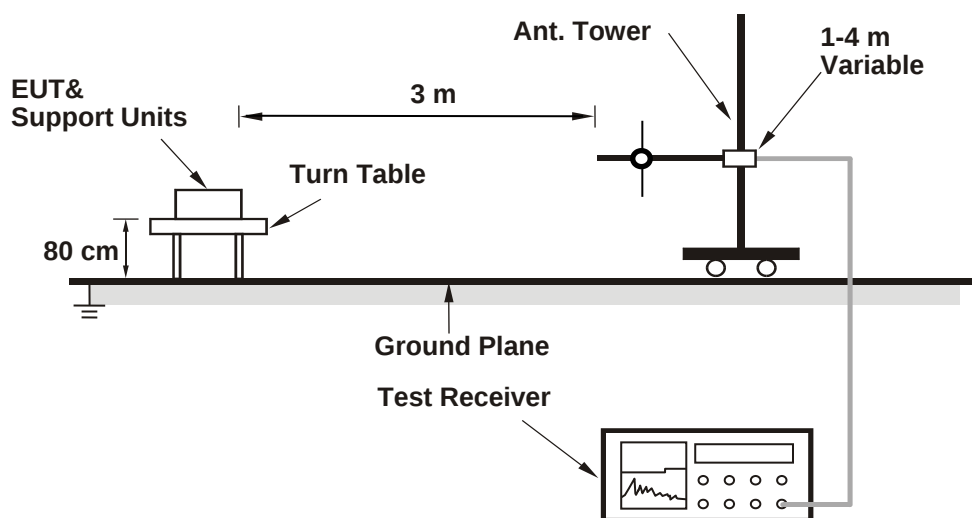
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.6.2 Test Procedure

For Radiated emission below 30 MHz

- 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, 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

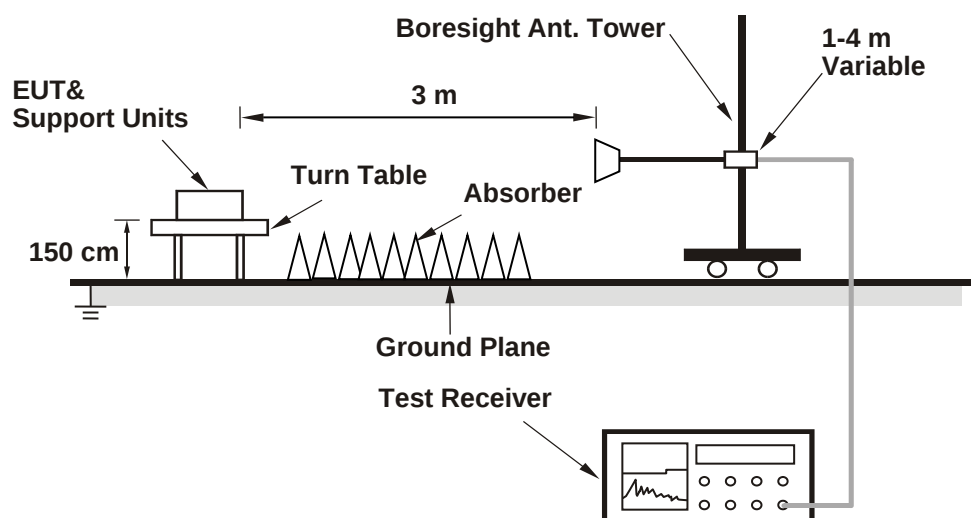
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the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

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



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

6.7.2 Test Procedure

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

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, 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:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyoung Wang
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For Peak Power

BT-LE 1M

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	3.811	5.81	30	Pass
19	2440	4.169	6.20	30	Pass
39	2480	5.875	7.69	30	Pass

Note: The antenna gain is 3.74 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	4.355	6.39	30	Pass
19	2440	4.246	6.28	30	Pass
39	2480	4.775	6.79	30	Pass

Note: The antenna gain is 3.74 dBi $\leq$ 6 dBi, so the output power limit shall not be reduced.

For Average Power

BT-LE 1M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	3.741	5.73
19	2440	4.083	6.11
39	2480	5.781	7.62

BT-LE 2M

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.276	6.31
19	2440	4.169	6.20
39	2480	4.71	6.73

7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang
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BT-LE 1M

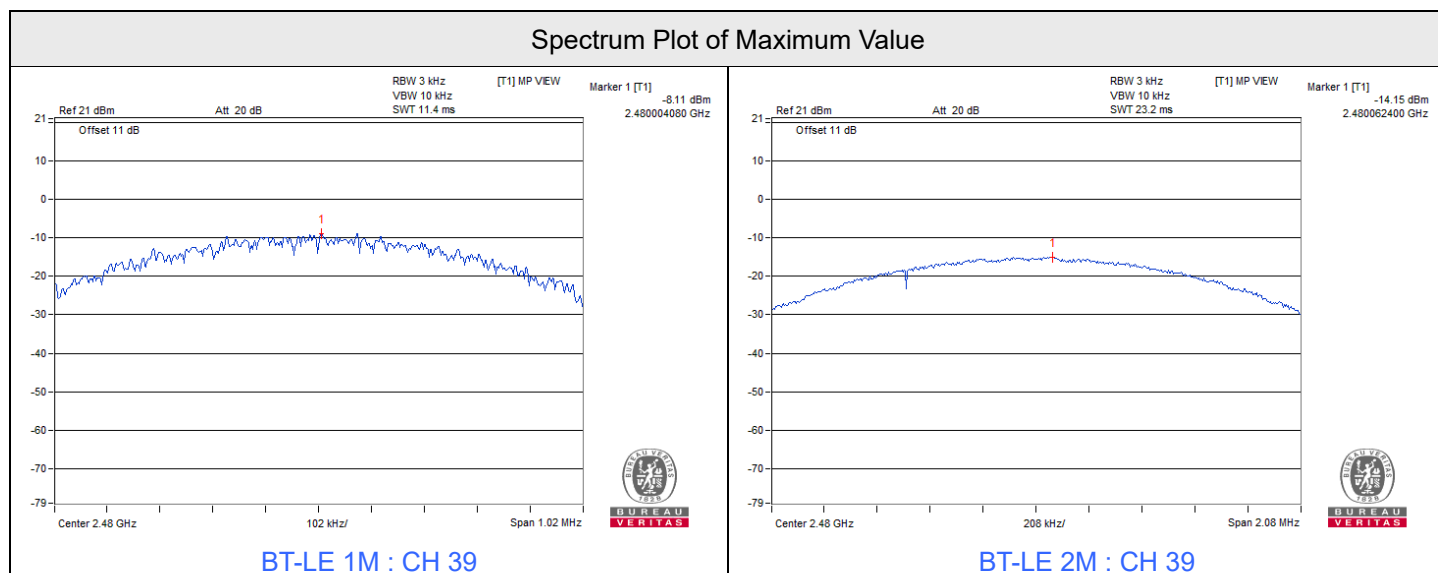
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
0	2402	-8.90	8	Pass
19	2440	-8.60	8	Pass
39	2480	-8.11	8	Pass

Note: The antenna gain is 3.74 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	-14.37	8	Pass
19	2440	-14.66	8	Pass
39	2480	-14.15	8	Pass

Note: The antenna gain is 3.74 dBi $\leq$ 6 dBi, so the power density limit shall not be reduced.



7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang
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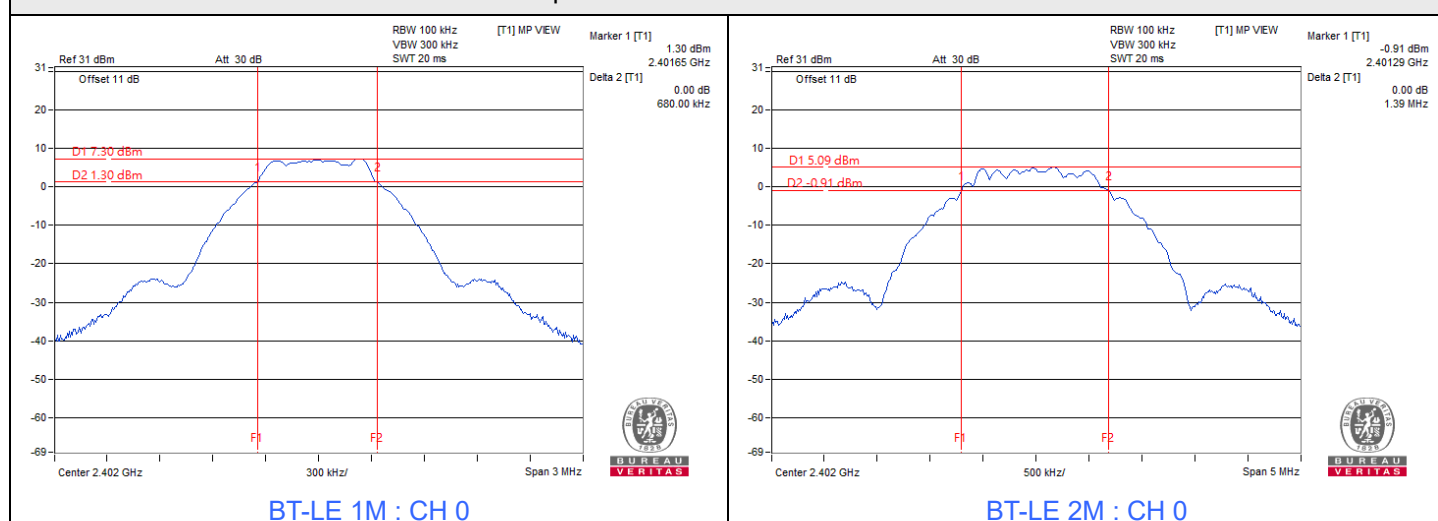
BT-LE 1M

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

BT-LE 2M

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.39	0.5	Pass
19	2440	1.39	0.5	Pass
39	2480	1.39	0.5	Pass

Spectrum Plot of Minimum Value



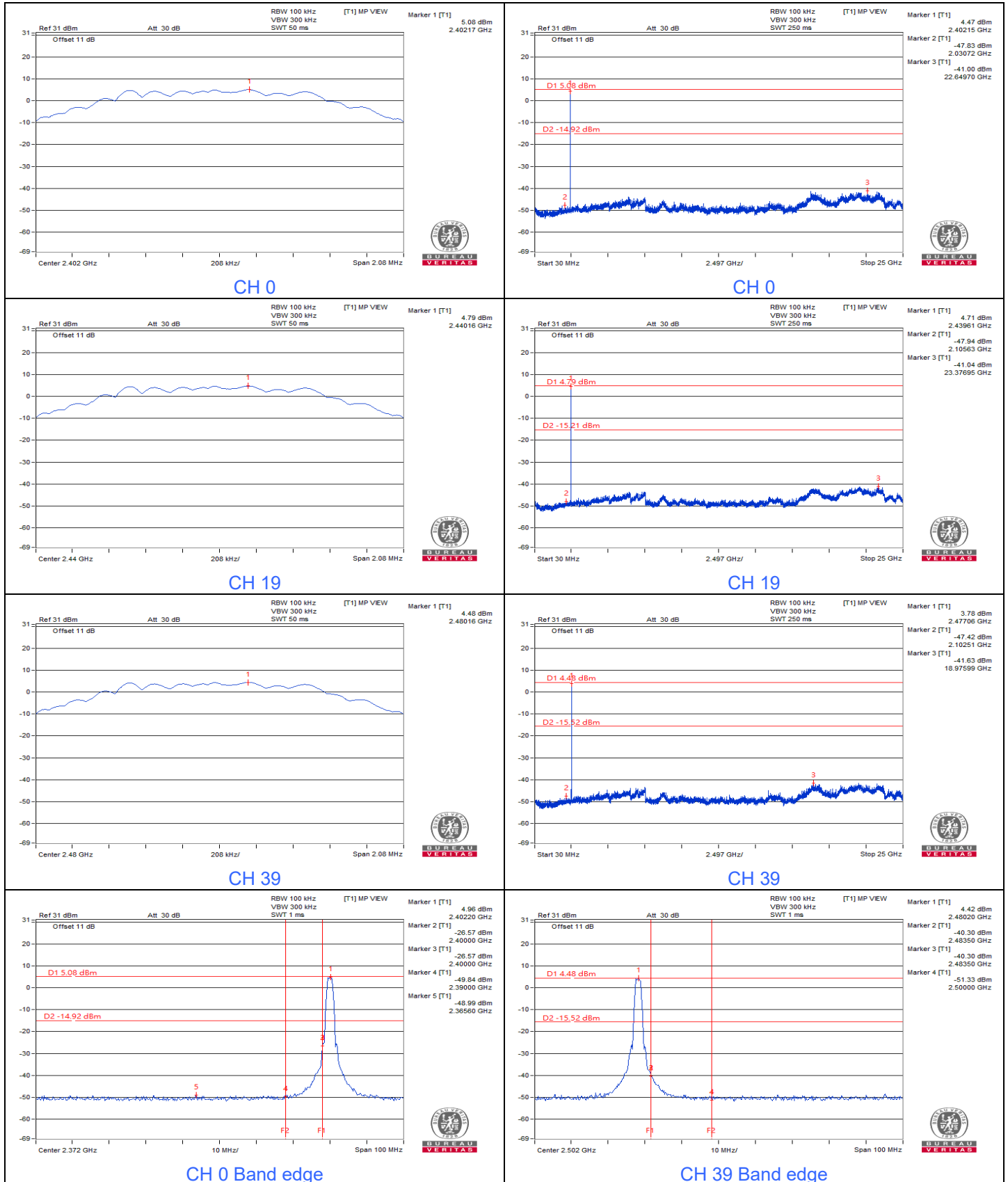
7.4 Conducted Out of Band Emissions

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyoung Wang
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BT-LE 1M



BT-LE 2M



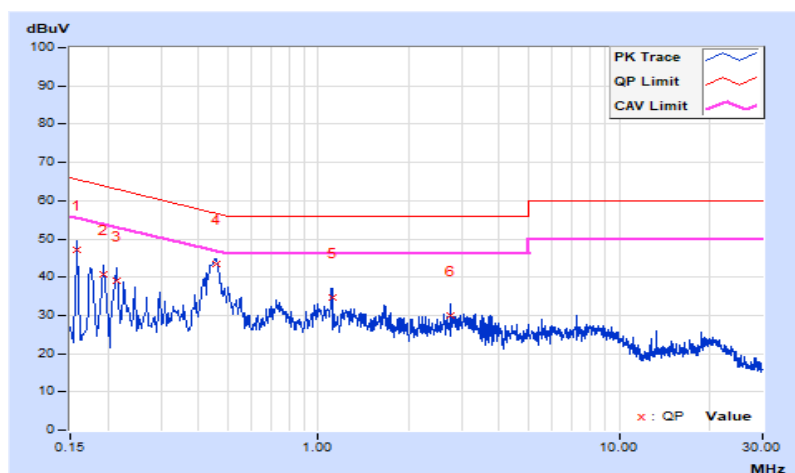
7.5 AC Power Conducted Emissions

RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Wade Huang		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	10.29	36.87	19.71	47.16	30.00	65.57	55.57	-18.41	-25.57
2	0.19400	10.32	30.44	14.77	40.76	25.09	63.86	53.86	-23.10	-28.77
3	0.21400	10.33	28.77	14.29	39.10	24.62	63.05	53.05	-23.95	-28.43
4	0.45597	10.37	32.97	26.71	43.34	37.08	56.77	46.77	-13.43	-9.69
5	1.11000	10.44	24.40	22.02	34.84	32.46	56.00	46.00	-21.16	-13.54
6	2.76600	10.54	19.59	15.42	30.13	25.96	56.00	46.00	-25.87	-20.04

Remarks:

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

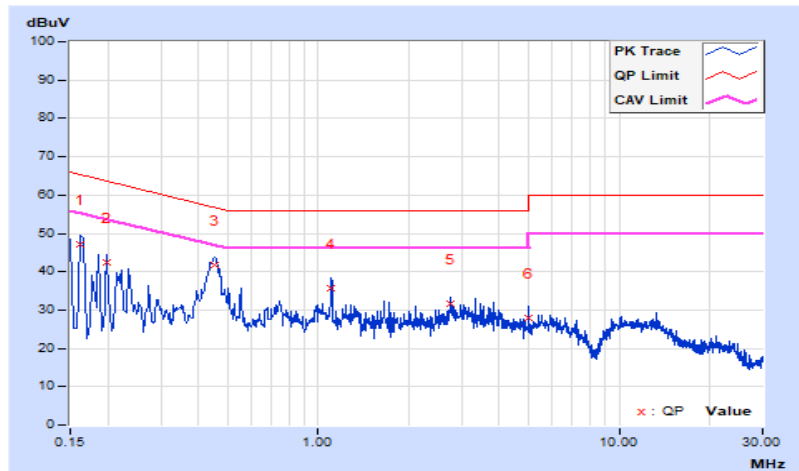


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Wade Huang		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	10.34	36.80	18.10	47.14	28.44	65.36	55.36	-18.22	-26.92
2	0.19800	10.36	31.99	16.54	42.35	26.90	63.69	53.69	-21.34	-26.79
3	0.45119	10.40	31.39	23.95	41.79	34.35	56.85	46.85	-15.06	-12.50
4	1.10600	10.47	25.25	23.42	35.72	33.89	56.00	46.00	-20.28	-12.11
5	2.77000	10.56	21.18	17.34	31.74	27.90	56.00	46.00	-24.26	-18.10
6	4.98600	10.65	17.39	13.20	28.04	23.85	56.00	46.00	-27.96	-22.15

Remarks:

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



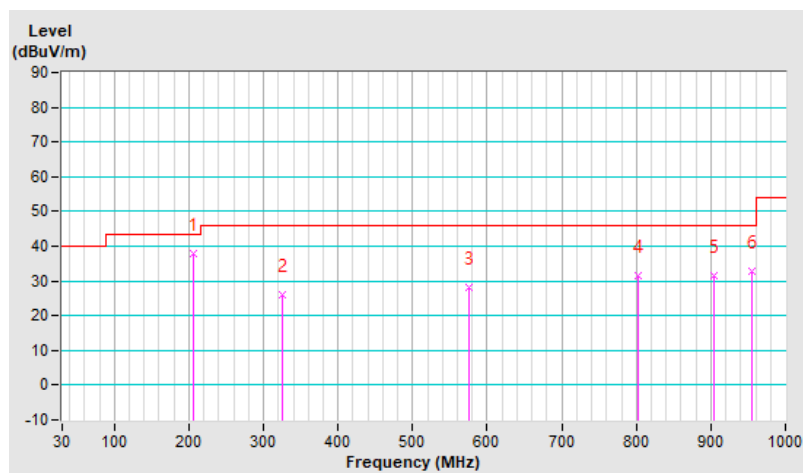
7.6 Unwanted Emissions below 1 GHz

RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

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	205.57	38.0 QP	43.5	-5.5	1.51 H	346	54.5	-16.5
2	324.88	26.1 QP	46.0	-19.9	1.01 H	99	37.3	-11.2
3	576.11	28.3 QP	46.0	-17.7	1.01 H	18	33.7	-5.4
4	803.09	31.7 QP	46.0	-14.3	2.00 H	14	33.2	-1.5
5	904.94	31.5 QP	46.0	-14.5	1.01 H	18	31.5	0.0
6	955.38	32.9 QP	46.0	-13.1	1.51 H	113	32.5	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.

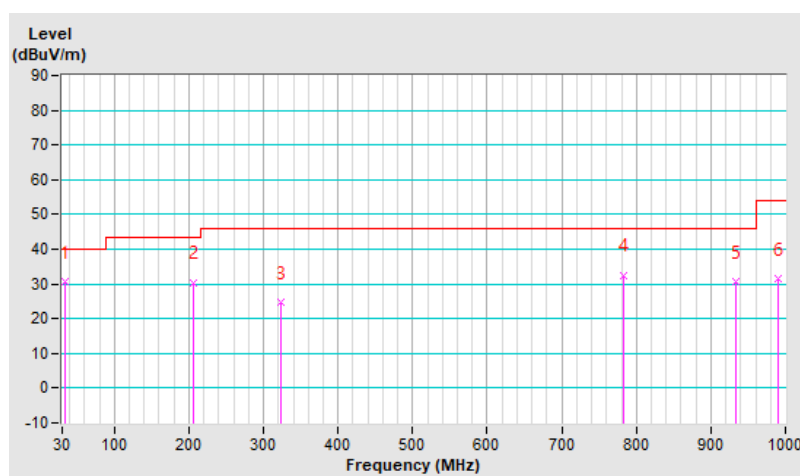


RF Mode	BT-LE 1M	Channel	CH 39 : 2480 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

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	34.85	30.8 QP	40.0	-9.2	1.49 V	317	44.8	-14.0
2	205.57	30.5 QP	43.5	-13.0	1.99 V	82	47.0	-16.5
3	322.94	24.7 QP	46.0	-21.3	1.49 V	171	36.0	-11.3
4	783.69	32.6 QP	46.0	-13.4	1.00 V	293	34.1	-1.5
5	934.04	30.8 QP	46.0	-15.2	1.99 V	238	30.7	0.1
6	990.30	31.4 QP	54.0	-22.6	1.99 V	341	30.7	0.7

Remarks:

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



7.7 Unwanted Emissions above 1 GHz

RF Mode	BT-LE 1M	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.4 PK	74.0	-18.6	1.78 H	339	24.7	30.7
2	2390.00	39.7 AV	54.0	-14.3	1.78 H	339	9.0	30.7
3	*2402.00	100.0 PK			1.78 H	339	69.3	30.7
4	*2402.00	99.2 AV			1.78 H	339	68.5	30.7
5	4804.00	46.4 PK	74.0	-27.6	1.15 H	68	38.5	7.9
6	4804.00	36.8 AV	54.0	-17.2	1.15 H	68	28.9	7.9
7	12010.00	60.8 PK	74.0	-13.2	3.07 H	130	44.0	16.8
8	12010.00	53.0 AV	54.0	-1.0	3.07 H	130	36.2	16.8

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	1.52 V	136	24.5	30.7
2	2390.00	39.4 AV	54.0	-14.6	1.52 V	136	8.7	30.7
3	*2402.00	91.2 PK			1.52 V	136	60.5	30.7
4	*2402.00	90.5 AV			1.52 V	136	59.8	30.7
5	4804.00	46.2 PK	74.0	-27.8	1.37 V	225	38.3	7.9
6	4804.00	36.5 AV	54.0	-17.5	1.37 V	225	28.6	7.9
7	12010.00	60.8 PK	74.0	-13.2	4.00 V	184	44.0	16.8
8	12010.00	52.2 AV	54.0	-1.8	4.00 V	184	35.4	16.8

Remarks:

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

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

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			1.63 H	344	70.5	30.6
2	*2440.00	100.6 AV			1.63 H	344	70.0	30.6
3	4880.00	47.4 PK	74.0	-26.6	1.00 H	303	39.4	8.0
4	4880.00	39.4 AV	54.0	-14.6	1.00 H	303	31.4	8.0
5	7320.00	59.5 PK	74.0	-14.5	1.09 H	328	46.4	13.1
6	7320.00	53.3 AV	54.0	-0.7	1.09 H	328	40.2	13.1
7	12200.00	59.9 PK	74.0	-14.1	2.97 H	129	43.1	16.8
8	12200.00	51.9 AV	54.0	-2.1	2.97 H	129	35.1	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	90.2 PK			1.50 V	111	59.6	30.6
2	*2440.00	90.8 AV			1.50 V	111	60.2	30.6
3	4880.00	47.2 PK	74.0	-26.8	1.28 V	27	39.2	8.0
4	4880.00	38.9 AV	54.0	-15.1	1.28 V	27	30.9	8.0
5	7320.00	59.0 PK	74.0	-15.0	1.08 V	0	45.9	13.1
6	7320.00	52.2 AV	54.0	-1.8	1.08 V	0	39.1	13.1
7	12200.00	60.9 PK	74.0	-13.1	1.47 V	181	44.1	16.8
8	12200.00	52.1 AV	54.0	-1.9	1.47 V	181	35.3	16.8

Remarks:

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

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

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	101.0 PK			1.27 H	345	70.4	30.6
2	*2480.00	100.4 AV			1.27 H	345	69.8	30.6
3	2483.50	56.3 PK	74.0	-17.7	1.27 H	345	25.6	30.7
4	2483.50	40.0 AV	54.0	-14.0	1.27 H	345	9.3	30.7
5	4960.00	48.5 PK	74.0	-25.5	1.00 H	309	40.3	8.2
6	4960.00	40.0 AV	54.0	-14.0	1.00 H	309	31.8	8.2
7	7440.00	59.4 PK	74.0	-14.6	1.54 H	77	46.1	13.3
8	7440.00	52.2 AV	54.0	-1.8	1.54 H	77	38.9	13.3
9	12400.00	60.6 PK	74.0	-13.4	1.52 H	196	43.8	16.8
10	12400.00	51.6 AV	54.0	-2.4	1.52 H	196	34.8	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	91.5 PK			1.42 V	139	60.9	30.6
2	*2480.00	90.7 AV			1.42 V	139	60.1	30.6
3	2483.50	56.4 PK	74.0	-17.6	1.42 V	139	25.7	30.7
4	2483.50	36.9 AV	54.0	-17.1	1.42 V	139	6.2	30.7
5	4960.00	46.5 PK	74.0	-27.5	1.50 V	35	38.3	8.2
6	4960.00	37.7 AV	54.0	-16.3	1.50 V	35	29.5	8.2
7	7440.00	59.8 PK	74.0	-14.2	1.50 V	11	46.5	13.3
8	7440.00	53.6 AV	54.0	-0.4	1.50 V	11	40.3	13.3
9	12400.00	61.5 PK	74.0	-12.5	2.21 V	180	44.7	16.8
10	12400.00	53.2 AV	54.0	-0.8	2.21 V	180	36.4	16.8

Remarks:

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

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.9 PK	74.0	-18.1	1.79 H	340	25.2	30.7
2	2390.00	39.8 AV	54.0	-14.2	1.79 H	340	9.1	30.7
3	*2402.00	98.7 PK			1.79 H	340	68.0	30.7
4	*2402.00	96.7 AV			1.79 H	340	66.0	30.7
5	4804.00	46.7 PK	74.0	-27.3	1.21 H	70	38.8	7.9
6	4804.00	36.5 AV	54.0	-17.5	1.21 H	70	28.6	7.9
7	12010.00	61.8 PK	74.0	-12.2	2.82 H	131	45.0	16.8
8	12010.00	52.8 AV	54.0	-1.2	2.82 H	131	36.0	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.7 PK	74.0	-18.3	1.54 V	143	25.0	30.7
2	2390.00	39.6 AV	54.0	-14.4	1.54 V	143	8.9	30.7
3	*2402.00	89.1 PK			1.54 V	143	58.4	30.7
4	*2402.00	87.1 AV			1.54 V	143	56.4	30.7
5	4804.00	46.4 PK	74.0	-27.6	1.41 V	232	38.5	7.9
6	4804.00	36.2 AV	54.0	-17.8	1.41 V	232	28.3	7.9
7	12010.00	60.2 PK	74.0	-13.8	1.68 V	186	43.4	16.8
8	12010.00	52.0 AV	54.0	-2.0	1.68 V	186	35.2	16.8

Remarks:

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

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	99.1 PK			1.68 H	332	68.5	30.6
2	*2440.00	97.2 AV			1.68 H	332	66.6	30.6
3	4880.00	47.2 PK	74.0	-26.8	1.01 H	300	39.2	8.0
4	4880.00	38.0 AV	54.0	-16.0	1.01 H	300	30.0	8.0
5	7320.00	60.1 PK	74.0	-13.9	1.17 H	332	47.0	13.1
6	7320.00	53.6 AV	54.0	-0.4	1.17 H	332	40.5	13.1
7	12200.00	61.4 PK	74.0	-12.6	3.09 H	129	44.6	16.8
8	12200.00	50.9 AV	54.0	-3.1	3.09 H	129	34.1	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2440.00	89.0 PK			1.51 V	140	58.4	30.6
2	*2440.00	87.1 AV			1.51 V	140	56.5	30.6
3	4880.00	47.0 PK	74.0	-27.0	1.30 V	30	39.0	8.0
4	4880.00	37.8 AV	54.0	-16.2	1.30 V	30	29.8	8.0
5	7320.00	59.0 PK	74.0	-15.0	1.28 V	10	45.9	13.1
6	7320.00	51.1 AV	54.0	-2.9	1.28 V	10	38.0	13.1
7	12200.00	59.8 PK	74.0	-14.2	1.46 V	194	43.0	16.8
8	12200.00	50.0 AV	54.0	-4.0	1.46 V	194	33.2	16.8

Remarks:

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

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 67% RH
Tested By	Wade Huang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	99.2 PK			1.35 H	336	68.6	30.6
2	*2480.00	97.3 AV			1.35 H	336	66.7	30.6
3	2483.50	62.7 PK	74.0	-11.3	1.35 H	336	32.0	30.7
4	2483.50	51.4 AV	54.0	-2.6	1.35 H	336	20.7	30.7
5	4960.00	48.3 PK	74.0	-25.7	1.00 H	306	40.1	8.2
6	4960.00	37.8 AV	54.0	-16.2	1.00 H	306	29.6	8.2
7	7440.00	60.6 PK	74.0	-13.4	1.49 H	298	47.3	13.3
8	7440.00	53.6 AV	54.0	-0.4	1.49 H	298	40.3	13.3
9	12400.00	59.3 PK	74.0	-14.7	1.50 H	128	42.5	16.8
10	12400.00	49.2 AV	54.0	-4.8	1.50 H	128	32.4	16.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480.00	89.2 PK			1.18 V	68	58.6	30.6
2	*2480.00	87.2 AV			1.18 V	68	56.6	30.6
3	2483.50	56.3 PK	74.0	-17.7	1.18 V	68	25.6	30.7
4	2483.50	37.7 AV	54.0	-16.3	1.18 V	68	7.0	30.7
5	4960.00	48.1 PK	74.0	-25.9	1.51 V	46	39.9	8.2
6	4960.00	37.6 AV	54.0	-16.4	1.51 V	46	29.4	8.2
7	7440.00	58.5 PK	74.0	-15.5	1.86 V	17	45.2	13.3
8	7440.00	51.3 AV	54.0	-2.7	1.86 V	17	38.0	13.3
9	12400.00	58.7 PK	74.0	-15.3	1.54 V	196	41.9	16.8
10	12400.00	49.3 AV	54.0	-4.7	1.54 V	196	32.5	16.8

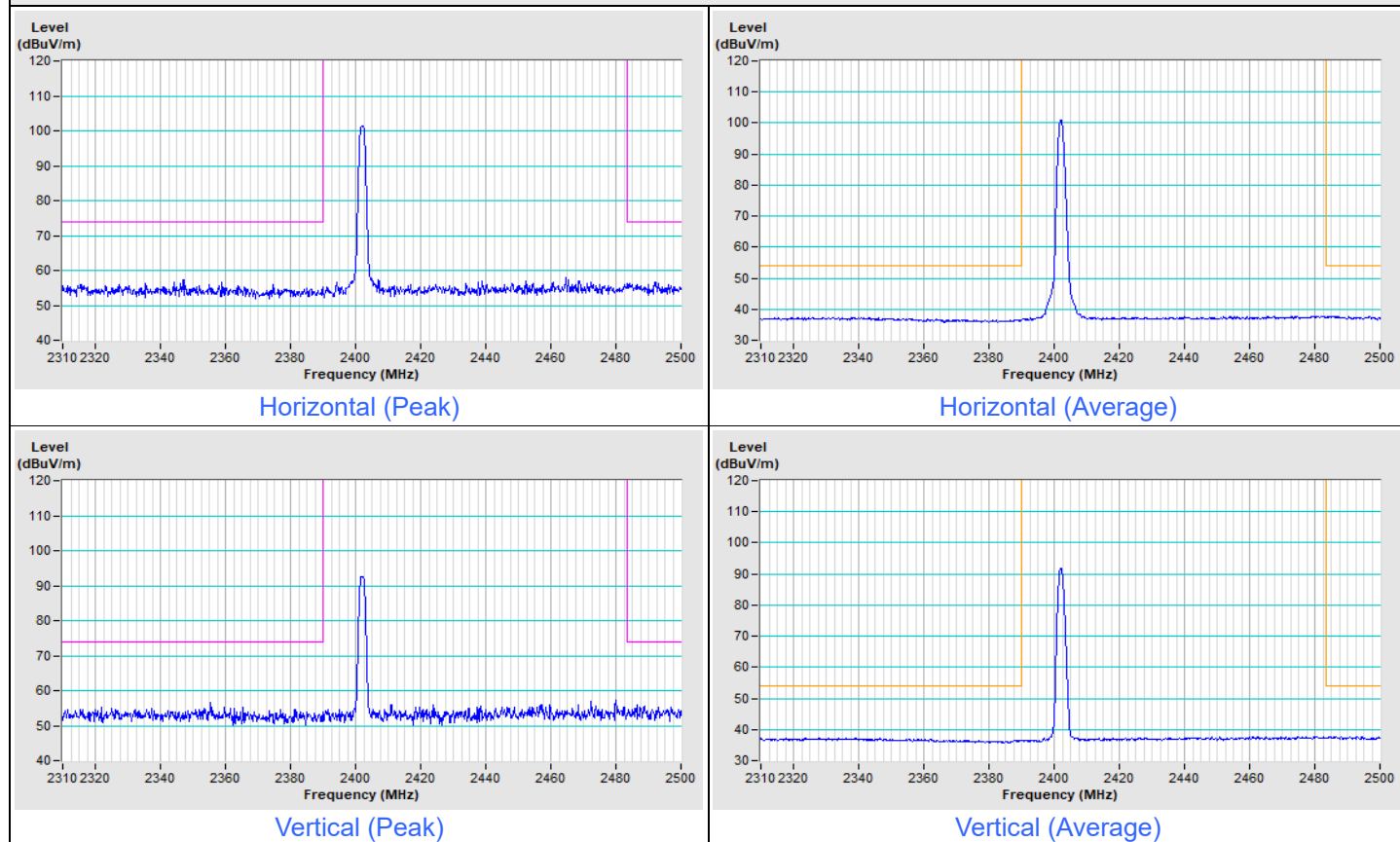
Remarks:

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

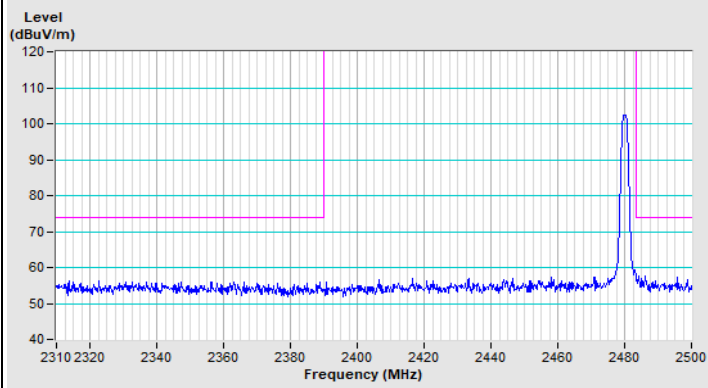
Plot of Band Edge

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=10 Hz, DET=Peak
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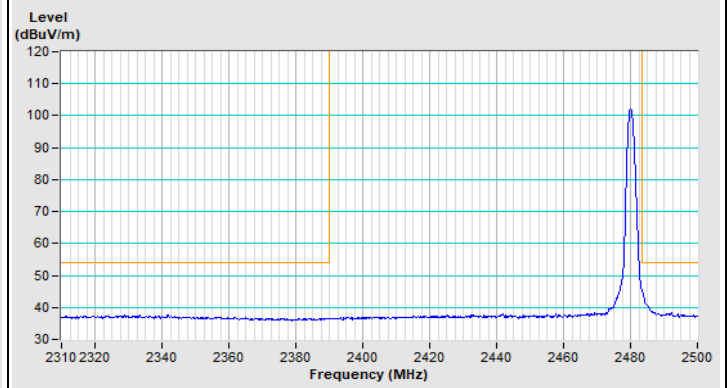
BT-LE 1M Channel 0



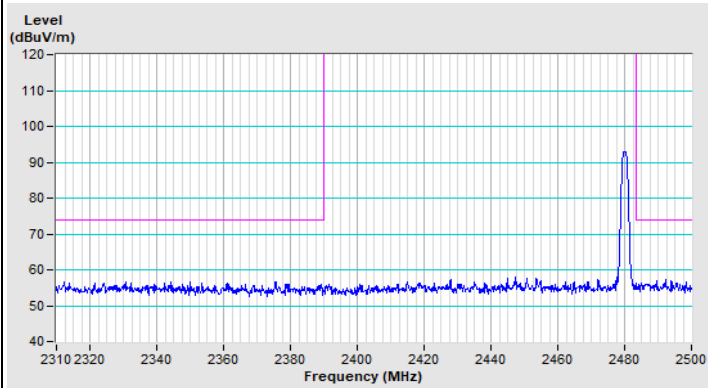
BT-LE 1M Channel 39



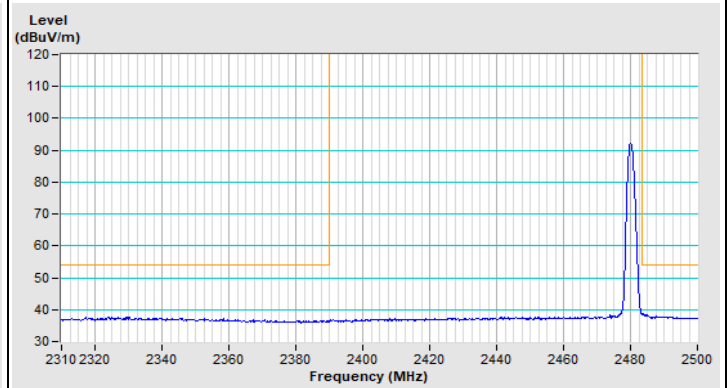
Horizontal (Peak)



Horizontal (Average)



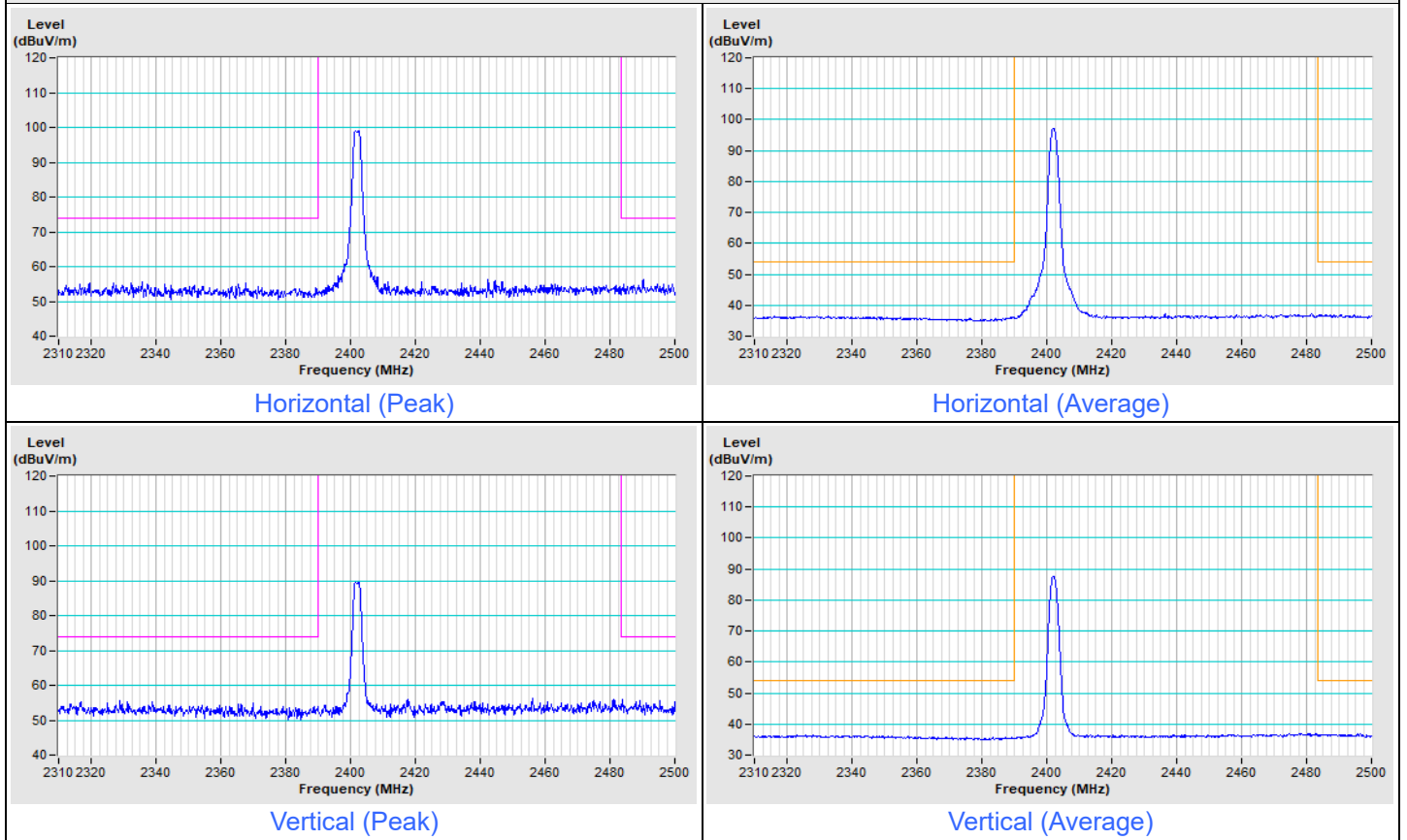
Vertical (Peak)



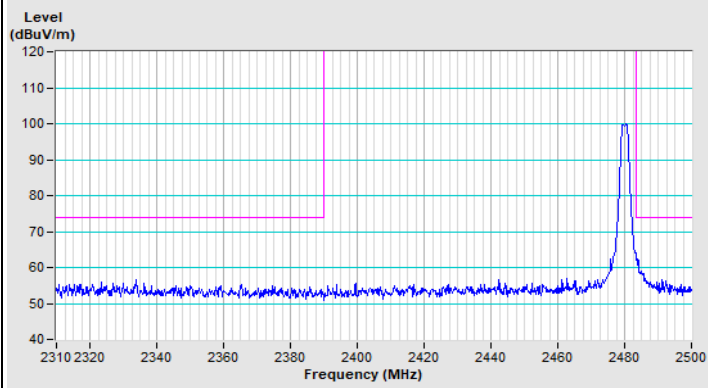
Vertical (Average)

Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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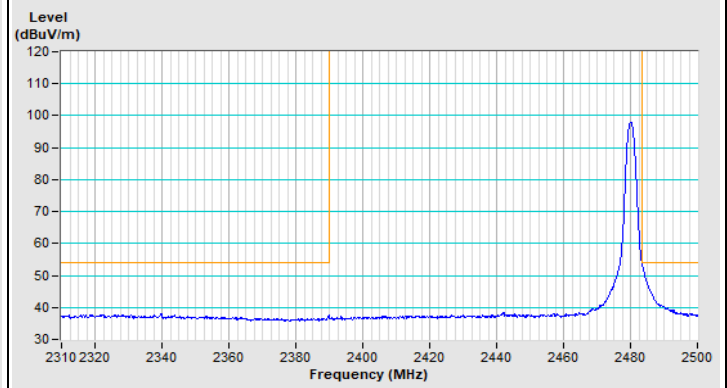
BT-LE 2M Channel 0



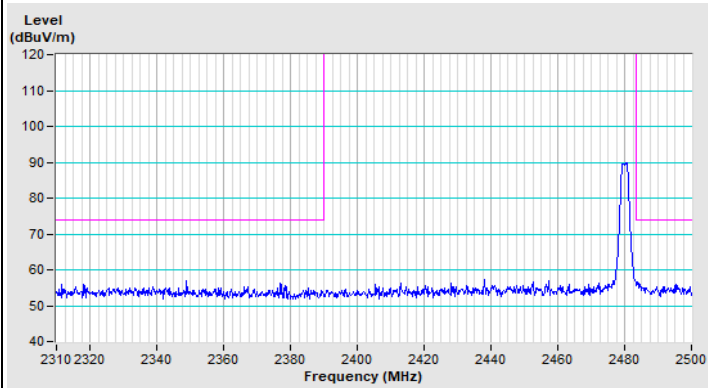
BT-LE 2M Channel 39



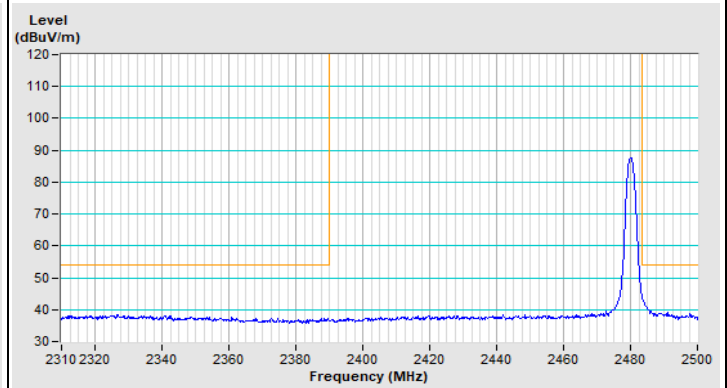
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

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

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