

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDWM-WTW-P24050507A-1

FCC ID: 2AUWW-HALOWA2

Product: Halo Collar 5

Brand: Halo

Model No.: Halo 5

Received Date: 2025/6/12

Test Date: 2025/6/25 ~ 2025/6/27

Issued Date: 2025/7/18

Applicant: Protect Animals with Satellites, LLC

Address: 5465 Legacy Dr., Suite 650, Plano, Texas 75024, United States

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

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FCC Registration / (1) 788550 / TW0003

Designation Number: (2) 281270 / TW0032

Approved by: _____



, **Date:** _____

2025/7/18

Jeremy Lin / Project Engineer

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Prepared by : Vera Huang / Specialist



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Release Control Record

| Issue No. | Description | Date Issued |
|-------------------------|------------------|-------------|
| RFBDWM-WTW-P24050507A-1 | Original Release | 2025/7/18 |

1 Certificate

Product: Halo Collar 5

Brand: Halo

Test Model: Halo 5

Sample Status: Engineering sample

Applicant: Protect Animals with Satellites, LLC

Test Date: 2025/6/25 ~ 2025/6/27

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 | N/A | Refer to Note |
| 15.247(e) | Power Spectral Density | N/A | Refer to Note |
| 15.247(a)(2) | 6 dB Bandwidth | N/A | Refer to Note |
| 15.247(d) | Conducted Out of Band Emissions | N/A | Refer to Note |
| 15.207 | AC Power Conducted Emissions | Pass | Minimum passing margin is -9.62 dB at 0.57800 MHz |
| 15.205 / 15.209 / 15.247(d) | Unwanted Emissions below 1 GHz | Pass | Minimum passing margin is -4.8 dB at 424.79 MHz |
| 15.205 / 15.209 / 15.247(d) | Unwanted Emissions above 1 GHz | N/A | Refer to Note |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

Note:

- Only test item of AC power conducted emissions and unwanted emissions below 1 GHz were performed for this report. Others testing data please refer to original report.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

| Measurement | Specification | Expanded Uncertainty (k=2) (\pm) |
|--------------------------------|----------------|---|
| 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 | 2.93 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 | Halo Collar 5 |
| Brand | Halo |
| Test Model | Halo 5 |
| Status of EUT | Engineering sample |
| Power Supply Rating | 5 Vdc from adapter |
| Modulation Type | GFSK |
| Modulation Technology | DTS |
| Transfer Rate | <p>Module: RS9116W 1 Mbps / 2 Mbps / 125 kbps / 500 kbps</p> <p>Module: NRF52840 2 Mbps</p> |
| Operating Frequency | 2.402 GHz ~ 2.48 GHz |
| Number of Channel | 40 |

Note:

1. This report is issued as a supplementary report of BV CPS report no.: RFBDWM-WTW-P24050507-1. The difference compared to the original report is listed as below. Therefore, only test item of AC power conducted emissions and unwanted emissions below 1 GHz were verified and recorded in this report. Others testing data please refer to original report.
 - a. Change the model name to Halo 5
 - b. Change the product name to Halo Collar 5
 - c. Remove logo LED FPC
 - d. Increase charging speed via software
2. The following modules can be configured in the EUT.

| Item | Brand | Model | Specification |
|------------------|--------------|-----------|---------------|
| WWAN module | Quectel | BG770A-GL | Cat-M1 |
| BT + WiFi module | Silicon labs | RS9116W | b/g/n+BT LE |
| BT module | Nordic | NRF52840 | BT LE |

3. The EUT uses following accessories.

| | | |
|---------------|-------------|---------------------|
| Charging dock | Brand | VSO |
| | Model | N-841-079-05000002 |
| Type C cable | Brand | VSO |
| | Model | N801-000-00025635 |
| | Signal Line | 1.2M with shielding |

4. WWAN, WLAN, BT function cannot transmission at the same time.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

| Antenna No. | RF Chain No. | Antenna Net Gain (dBi) | Frequency range | Antenna Type | Connector Type | Remark |
|-------------|--------------|------------------------|-----------------|--------------|--------------------|----------------------|
| 1 | BT0 | -0.9 | 2.4~2.4835GHz | Chip | None (like solder) | For Module: RS9116W |
| 2 | BT1 | 2.3 | 2.4~2.4835GHz | Chip | None (like solder) | For Module: NRF52840 |

* 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) |
|---------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 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. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). 2. 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 for Mode A & B |

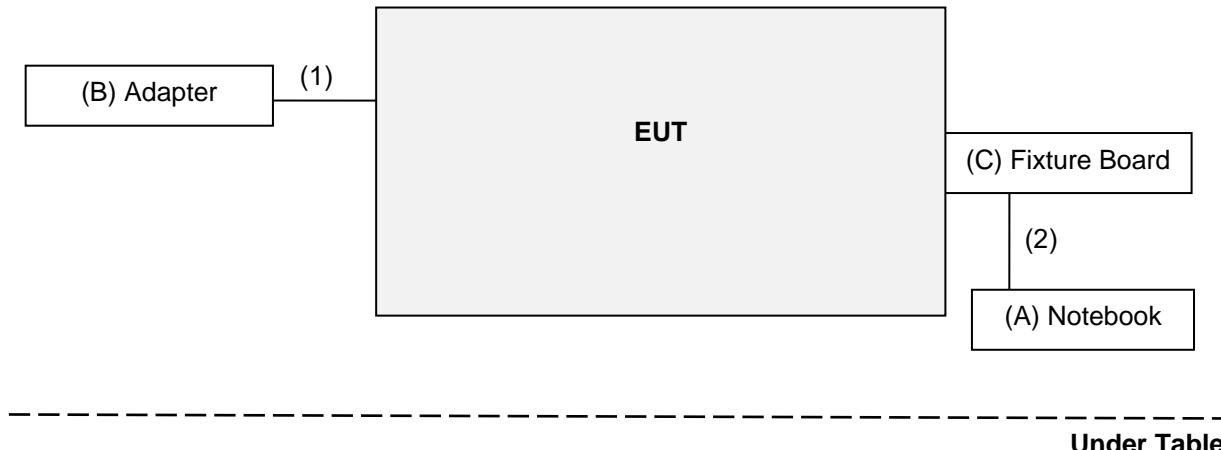
Following channel(s) was (were) selected for the final test as listed below:

| Test Item | EUT Configure Mode | Mode | Tested Channel | Modulation | Data Rate Parameter |
|--------------------------------|--------------------|------------------|----------------|------------|---------------------|
| AC Power Conducted Emissions | A | BT-LE 125k | 19 | GFSK | 125kb/s |
| | B | BT-LE 2M | 19 | GFSK | 2Mb/s |
| Unwanted Emissions below 1 GHz | A | BT-LE 125k | 19 | GFSK | 125kb/s |
| | B | BT-LE 2M | 19 | GFSK | 2Mb/s |
| EUT Configure Mode | A | Module: RS9116W | | | |
| | B | Module: NRF52840 | | | |

3.5 Test Program Used and Operation Descriptions

Controlling software SSCOM V5.13.1 (for Module: RS9116W) and Tera Term version 4.105 (for Module: NRF52840) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.6 Connection Diagram of EUT and Peripheral Devices



3.7 Configuration of Peripheral Devices and Cable Connections

| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|----|---------------|-------|-------------|------------|--------|---|
| A. | Notebook | ACER | MS2392 | N/A | N/A | Provided by Lab (for RF Setup) |
| B. | Adapter | halo | RH-050100US | N/A | N/A | Provided by Lab |
| C. | Fixture Board | N/A | N/A | N/A | N/A | Supplied by applicant (for RF Setup) |

| No. | Cable Descriptions | Qty. | Length (m) | Shielded (Yes/ No) | Cores (Qty.) | Remark |
|-----|--------------------|------|------------|-----------------------|-----------------|--|
| 1. | Type C Cable | 1 | 1.2 | Yes | 0 | Accessory of the EUT (for RF Setup) |
| 2. | USB typeC Cable | 1 | 1 | No | 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 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: 2025/6/27

4.2 Unwanted Emissions below 1 GHz

| Description Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|-----------------------------------|--------------------------|------------------|--------------------|---------------------|
| Antenna Tower Max-Full | MFT-151SS-0.5T | N/A | N/A | N/A |
| Bi_Log Antenna Schwarzbeck | VULB 9168 | 9168-1213 | 2024/10/14 | 2025/10/13 |
| EXA Signal Analyzer Agilent | N9010A | MY52220207 | 2024/12/30 | 2025/12/29 |
| Loop Antenna TESEQ | HLA 6121 | 45745 | 2024/8/21 | 2025/8/20 |
| MXE EMI Receiver Keysight | N9038B | MY60180019 | 2025/1/15 | 2026/1/14 |
| Preamplifier EMCI | EMC330N | 980782 | 2025/1/14 | 2026/1/13 |
| RF Coaxial Cable EMCI | EMCCFD400-NM-NM-500 | 201233 | 2025/1/14 | 2026/1/13 |
| | EMCCFD400-NM-NM-3000 | 201235 | 2025/1/14 | 2026/1/13 |
| | EMCCFD400-NM-NM-9000 | 201236(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 | MF-7802BS | N/A | N/A | N/A |
| Turn Table Controller Max-Full | MF-7802BS | MF780208674 | N/A | N/A |

Notes:

1. The test was performed in WM - 966 chamber 8.
2. Tested Date: 2025/6/25

5 Limits of Test Items

5.1 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:

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

5.2 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 |

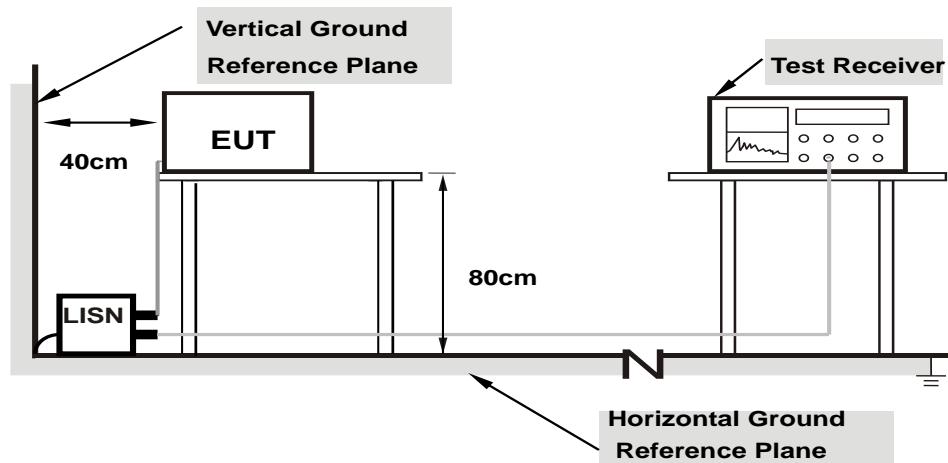
Notes:

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

6 Test Arrangements

6.1 AC Power Conducted Emissions

6.1.1 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).

6.1.2 Test Procedure

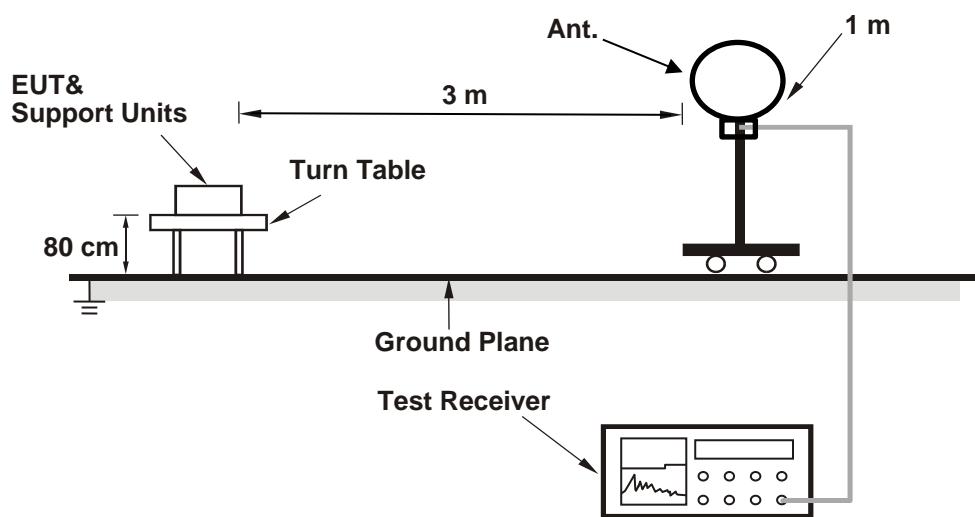
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The 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.

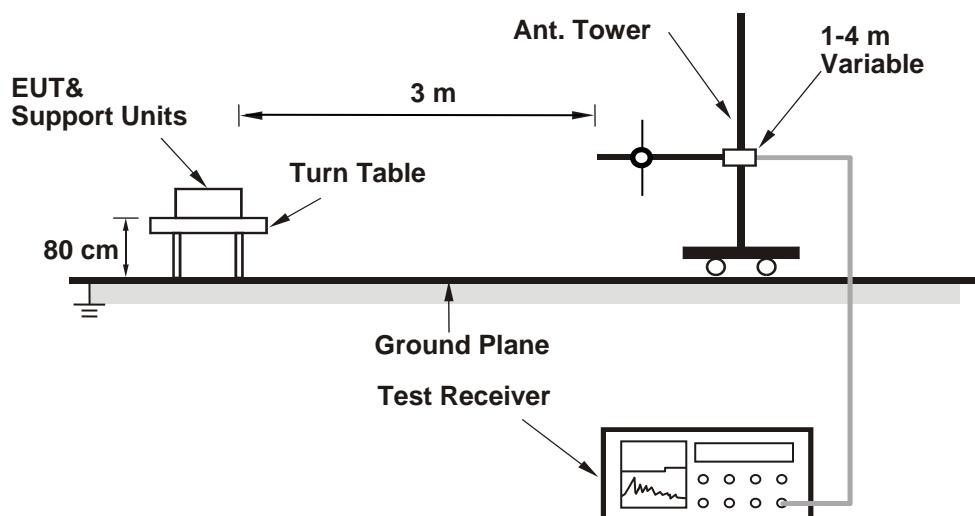
6.2 Unwanted Emissions below 1 GHz

6.2.1 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).

6.2.2 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.

7 Test Results of Test Item

7.1 AC Power Conducted Emissions

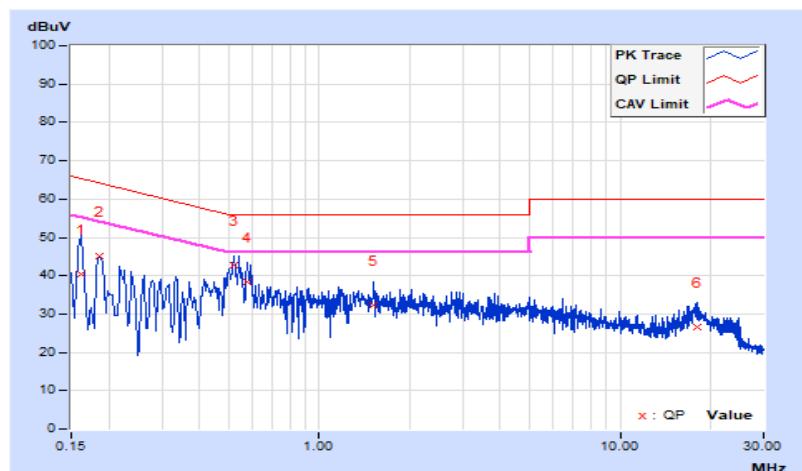
Mode A

| | | | |
|-----------------|------------------|--|---------------------------------------|
| RF Mode | BT-LE 125K | Channel | CH 19 : 2440 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 | Thomas Cheng | | |

| 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 | 0.16190 | 10.25 | 30.05 | 13.62 | 40.30 | 23.87 | 65.37 | 55.37 | -25.07 | -31.50 |
| 2 | 0.18568 | 10.26 | 34.97 | 21.08 | 45.23 | 31.34 | 64.23 | 54.23 | -19.00 | -22.89 |
| 3 | 0.52200 | 10.30 | 32.55 | 25.16 | 42.85 | 35.46 | 56.00 | 46.00 | -13.15 | -10.54 |
| 4 | 0.57400 | 10.30 | 27.97 | 16.78 | 38.27 | 27.08 | 56.00 | 46.00 | -17.73 | -18.92 |
| 5 | 1.51400 | 10.35 | 21.91 | 11.88 | 32.26 | 22.23 | 56.00 | 46.00 | -23.74 | -23.77 |
| 6 | 17.95800 | 10.59 | 15.85 | 7.97 | 26.44 | 18.56 | 60.00 | 50.00 | -33.56 | -31.44 |

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



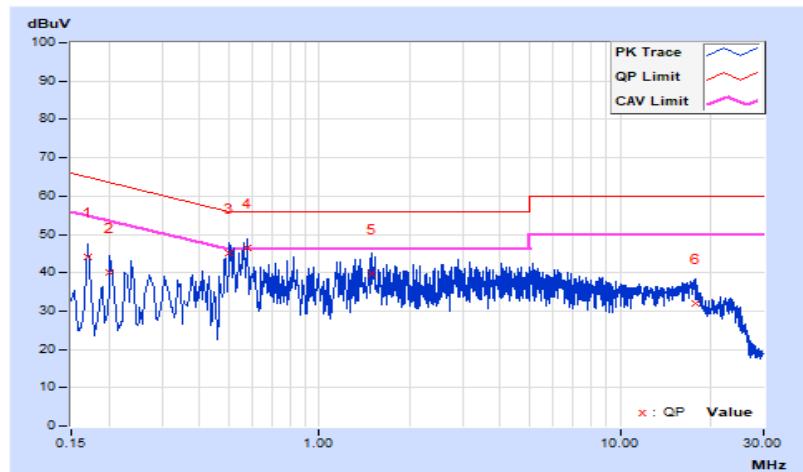
| | | | |
|-----------------|------------------|--|---------------------------------------|
| RF Mode | BT-LE 125K | Channel | CH 19 : 2440 MHz |
| Frequency Range | 150 kHz ~ 30 MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9 kHz |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 25 °C, 75% RH |
| Tested By | Thomas Cheng | | |

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 | 0.17000 | 10.30 | 33.97 | 21.37 | 44.27 | 31.67 | 64.96 | 54.96 | -20.69 | -23.29 |
| 2 | 0.20200 | 10.30 | 29.91 | 17.61 | 40.21 | 27.91 | 63.53 | 53.53 | -23.32 | -25.62 |
| 3 | 0.50200 | 10.33 | 34.82 | 23.63 | 45.15 | 33.96 | 56.00 | 46.00 | -10.85 | -12.04 |
| 4 | 0.57800 | 10.33 | 36.05 | 24.91 | 46.38 | 35.24 | 56.00 | 46.00 | -9.62 | -10.76 |
| 5 | 1.49400 | 10.38 | 29.45 | 18.73 | 39.83 | 29.11 | 56.00 | 46.00 | -16.17 | -16.89 |
| 6 | 17.91000 | 10.77 | 21.19 | 10.68 | 31.96 | 21.45 | 60.00 | 50.00 | -28.04 | -28.55 |

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



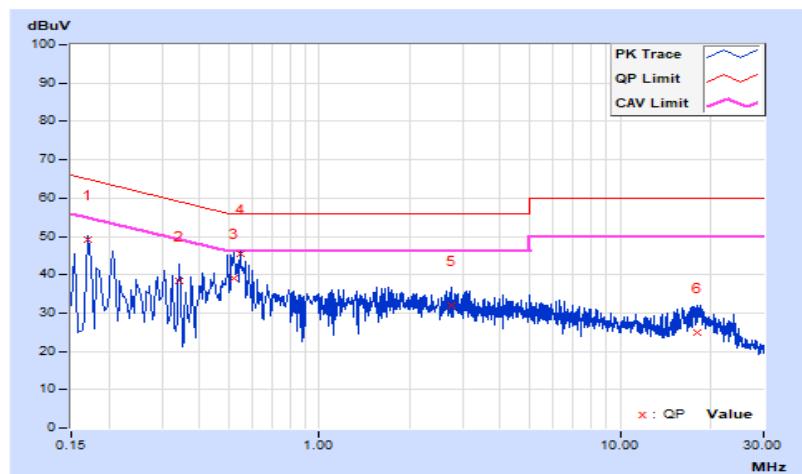
Mode B

| | | | |
|-----------------|------------------|--|---------------------------------------|
| RF Mode | BT-LE 2M | Channel | CH 19 : 2440 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 | Thomas Cheng | | |

| 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 | 0.17000 | 10.25 | 38.93 | 23.76 | 49.18 | 34.01 | 64.96 | 54.96 | -15.78 | -20.95 |
| 2 | 0.34200 | 10.28 | 28.20 | 15.19 | 38.48 | 25.47 | 59.15 | 49.15 | -20.67 | -23.68 |
| 3 | 0.52155 | 10.30 | 28.68 | 20.30 | 38.98 | 30.60 | 56.00 | 46.00 | -17.02 | -15.40 |
| 4 | 0.54600 | 10.30 | 34.99 | 25.62 | 45.29 | 35.92 | 56.00 | 46.00 | -10.71 | -10.08 |
| 5 | 2.75800 | 10.39 | 21.63 | 10.15 | 32.02 | 20.54 | 56.00 | 46.00 | -23.98 | -25.46 |
| 6 | 18.13800 | 10.59 | 14.44 | 6.57 | 25.03 | 17.16 | 60.00 | 50.00 | -34.97 | -32.84 |

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



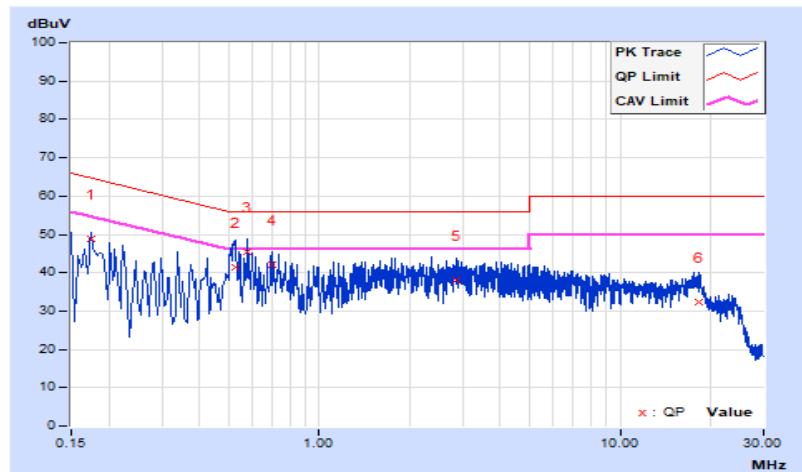
| | | | |
|-----------------|------------------|--|---------------------------------------|
| RF Mode | BT-LE 2M | Channel | CH 19 : 2440 MHz |
| Frequency Range | 150 kHz ~ 30 MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9 kHz |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 25 °C, 75% RH |
| Tested By | Thomas Cheng | | |

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 | 0.17400 | 10.30 | 38.61 | 24.56 | 48.91 | 34.86 | 64.77 | 54.77 | -15.86 | -19.91 |
| 2 | 0.52600 | 10.33 | 31.16 | 18.52 | 41.49 | 28.85 | 56.00 | 46.00 | -14.51 | -17.15 |
| 3 | 0.57798 | 10.33 | 35.12 | 24.93 | 45.45 | 35.26 | 56.00 | 46.00 | -10.55 | -10.74 |
| 4 | 0.69400 | 10.34 | 31.69 | 19.76 | 42.03 | 30.10 | 56.00 | 46.00 | -13.97 | -15.90 |
| 5 | 2.87400 | 10.43 | 27.76 | 17.45 | 38.19 | 27.88 | 56.00 | 46.00 | -17.81 | -18.12 |
| 6 | 18.27000 | 10.78 | 21.50 | 11.40 | 32.28 | 22.18 | 60.00 | 50.00 | -27.72 | -27.82 |

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



7.2 Unwanted Emissions below 1 GHz

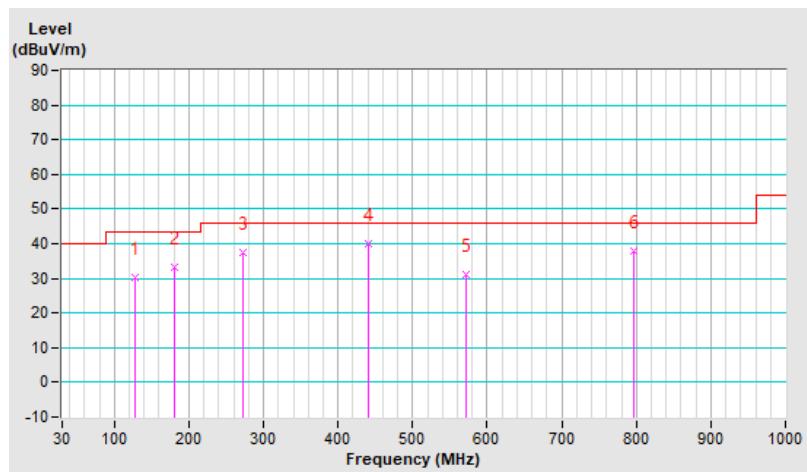
Mode A

| | | | |
|-----------------|----------------|-------------------------------|-------------------------------|
| RF Mode | BT-LE 125K | Channel | CH 19 : 2440 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 23 °C, 67 % RH |
| Tested By | Karl Lee | | |

| 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 | 127.00 | 30.1 QP | 43.5 | -13.4 | 1.04 H | 183 | 44.6 | -14.5 |
| 2 | 181.32 | 33.3 QP | 43.5 | -10.2 | 2.25 H | 196 | 47.8 | -14.5 |
| 3 | 272.50 | 37.4 QP | 46.0 | -8.6 | 1.70 H | 153 | 50.5 | -13.1 |
| 4 | 441.28 | 40.1 QP | 46.0 | -5.9 | 1.84 H | 253 | 48.2 | -8.1 |
| 5 | 572.23 | 30.9 QP | 46.0 | -15.1 | 1.94 H | 112 | 36.4 | -5.5 |
| 6 | 796.30 | 37.8 QP | 46.0 | -8.2 | 1.08 H | 19 | 39.3 | -1.5 |

Remarks:

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



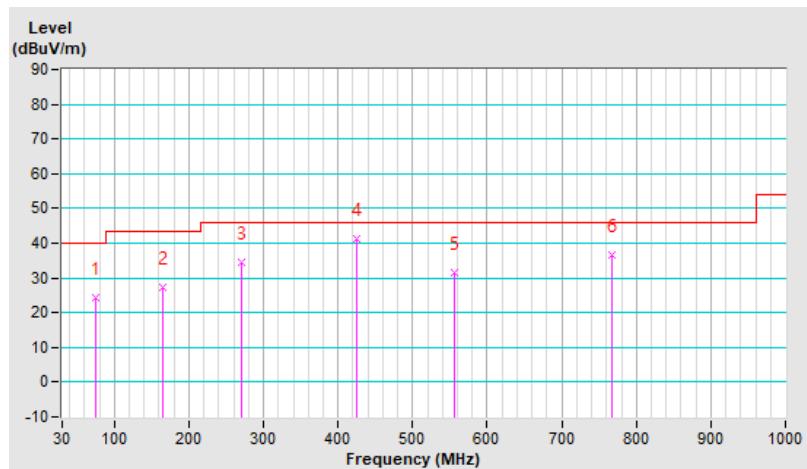
| | | | |
|-----------------|----------------|-------------------------------|-------------------------------|
| RF Mode | BT-LE 125K | Channel | CH 19 : 2440 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 23 °C, 67 % RH |
| Tested By | Karl Lee | | |

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 | 75.59 | 24.4 QP | 40.0 | -15.6 | 1.83 V | 253 | 41.3 | -16.9 |
| 2 | 165.80 | 27.3 QP | 43.5 | -16.2 | 1.22 V | 107 | 40.2 | -12.9 |
| 3 | 269.59 | 34.4 QP | 46.0 | -11.6 | 1.96 V | 283 | 47.7 | -13.3 |
| 4 | 424.79 | 41.2 QP | 46.0 | -4.8 | 1.12 V | 104 | 50.0 | -8.8 |
| 5 | 556.71 | 31.6 QP | 46.0 | -14.4 | 1.86 V | 255 | 37.6 | -6.0 |
| 6 | 767.20 | 36.5 QP | 46.0 | -9.5 | 1.42 V | 109 | 38.1 | -1.6 |

Remarks:

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



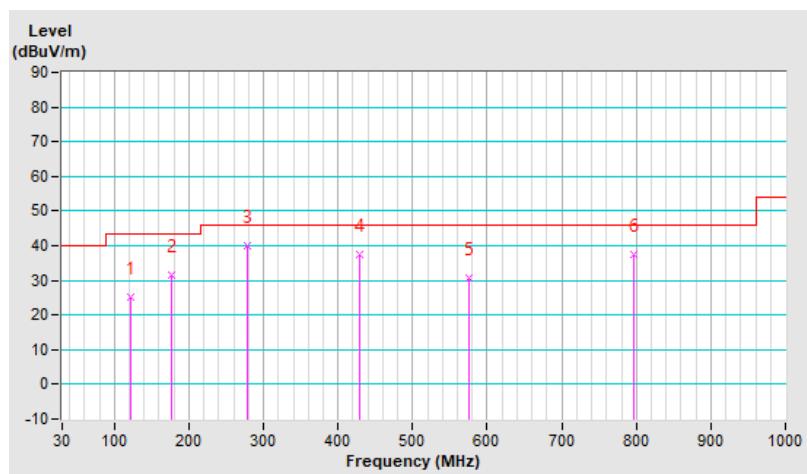
Mode B

| | | | |
|-----------------|----------------|-------------------------------|-------------------------------|
| RF Mode | BT-LE 2M | Channel | CH 19 : 2440 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 23 °C, 67 % RH |
| Tested By | Karl Lee | | |

| 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 | 121.18 | 25.3 QP | 43.5 | -18.2 | 1.72 H | 256 | 40.2 | -14.9 |
| 2 | 176.47 | 31.4 QP | 43.5 | -12.1 | 1.84 H | 105 | 45.2 | -13.8 |
| 3 | 278.32 | 39.8 QP | 46.0 | -6.2 | 2.93 H | 104 | 52.5 | -12.7 |
| 4 | 428.67 | 37.6 QP | 46.0 | -8.4 | 1.52 H | 36 | 46.2 | -8.6 |
| 5 | 576.11 | 30.8 QP | 46.0 | -15.2 | 1.48 H | 112 | 36.2 | -5.4 |
| 6 | 797.27 | 37.5 QP | 46.0 | -8.5 | 1.09 H | 147 | 39.0 | -1.5 |

Remarks:

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

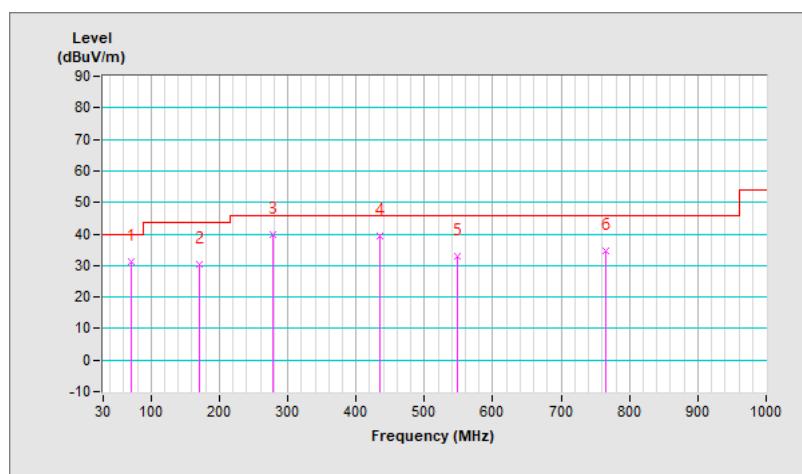


| | | | |
|-----------------|----------------|-------------------------------|-------------------------------|
| RF Mode | BT-LE 2M | Channel | CH 19 : 2440 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 23 °C, 67 % RH |
| Tested By | Karl Lee | | |

| 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 | 71.71 | 31.1 QP | 40.0 | -8.9 | 1.52 V | 176 | 134.0 | -102.9 |
| 2 | 171.62 | 30.4 QP | 43.5 | -13.1 | 1.84 V | 253 | 133.3 | -102.9 |
| 3 | 279.29 | 39.6 QP | 46.0 | -6.4 | 2.26 V | 194 | 142.5 | -102.9 |
| 4 | 435.46 | 39.4 QP | 46.0 | -6.6 | 1.50 V | 28 | 142.3 | -102.9 |
| 5 | 548.95 | 33.0 QP | 46.0 | -13.0 | 1.96 V | 340 | 135.9 | -102.9 |
| 6 | 765.26 | 34.5 QP | 46.0 | -11.5 | 1.22 V | 157 | 137.4 | -102.9 |

Remarks:

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



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

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

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

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Email: service.adt@bureauveritas.com

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

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

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