

TEST REPORT

CERTIFICATE OF CONFORMITY

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

Report No.: RFBDKG-WTW-P21080178C-1

FCC ID: JNZS00175

Product: Bluetooth Speaker

Brand: ULTIMATE EARS

Model No.: S00175

Received Date: 2024/3/13

Test Date: 2024/3/20 ~ 2024/4/10

Issued Date: 2024/5/17

Applicant: Logitech Far East Ltd.

Address: #2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan, R.O.C.

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

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

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

FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2024/5/17
May Chen / Manager

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Prepared by : Phoenix Huang / Specialist



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Release Control Record

| Issue No. | Description | Date Issued |
|-------------------------|-------------------|-------------|
| RFBDKG-WTW-P21080178C-1 | Original release. | 2024/5/17 |

1 Certificate

Product: Bluetooth Speaker

Brand: ULTIMATE EARS

Test Model: S00175

Sample Status: Engineering sample

Applicant: Logitech Far East Ltd.

Test Date: 2024/3/20 ~ 2024/4/10

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

Measurement ANSI C63.10-2013

procedure: KDB 558074 D01 15.247 Meas Guidance v05r02

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

2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (Section 15.247) | | | |
|--|---------------------------------|--------|--|
| Standard / Clause | Test Item | Result | Remark |
| 15.247(b) | RF Output Power | Pass | Meet the requirement of limit. |
| 15.247(e) | Power Spectral Density | N/A | Refer to Note 1 below |
| 15.247(a)(2) | 6 dB Bandwidth | N/A | Refer to Note 1 below |
| 15.247(d) | Conducted Out of Band Emissions | N/A | Refer to Note 1 below |
| 15.207 | AC Power Conducted Emissions | Pass | Minimum passing margin is -31.01 dB at 0.51328 MHz |
| 15.205 / 15.209 / 15.247(d) | Unwanted Emissions below 1 GHz | Pass | Minimum passing margin is -8.6 dB at 69.19 MHz |
| 15.205 / 15.209 / 15.247(d) | Unwanted Emissions above 1 GHz | N/A | Refer to Note 1 below |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

Note:

1. Only RF Output Power, AC Power Conducted Emissions and Unwanted Emissions below 1 GHz test items were performed for this addendum. The others testing data refer to original test report.
2. 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) (±) |
|--------------------------------|------------------|-----------------------------------|
| RF Output Power | - | 1.1 dB |
| AC Power Conducted Emissions | 150 kHz ~ 30 MHz | 1.9 dB |
| Unwanted Emissions below 1 GHz | 9 kHz ~ 30 MHz | 3.1 dB |
| | 30 MHz ~ 1 GHz | 5.1 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 | Bluetooth Speaker |
| Brand | ULTIMATE EARS |
| Test Model | S00175 |
| Status of EUT | Engineering sample |
| Power Supply Rating | 100-240 Vac or 14.4 Vdc from Battery |
| Modulation Type | GFSK |
| Modulation Technology | DTS |
| Transfer Rate | Up to 2 Mbps (*Note 1) |
| Operating Frequency | 2.402 GHz ~ 2.48 GHz (*Note 1) |
| Number of Channel | 40 (*Note 1) |
| Output Power | BT-LE 1M: 3.936 mW (5.95 dBm) BT-LE 2M: 3.917 mW (5.93 dBm) |

Note:

- BT-LE technique supports 1Mbps and 2Mbps data rates, both have been evaluated in this test report. Refer to “**section 3.3 Channel List**” for more detail specification.
- This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RF190924E01A-1 as the following:
 - ◆ Change to PD circuit.
 - ◆ Change the DC-in Jack and Charge-out port to USB-C.
 - ◆ Charge out change from 5 V/1 A to 5 V/1.5 A.
 - ◆ Sold will come with a 65 W Type-C adapter in final packaging for changing the connector from DC jack to type C. (The original is 90 W DC jack adapter.)
 - ◆ Change antenna gain from 1.62 dBi to 3.83 dBi.
- According to above conditions, only RF Output Power, AC Power Conducted Emissions and Unwanted Emissions below 1 GHz test items need to be performed. All data for meeting the requirement is verified.
- The EUT may have a lot of colors for marketing requirement.
- The EUT uses following accessory.

| AC Adapter | | | |
|---------------|-----------------|-------------|--|
| Brand | Model | Part Number | Specification |
| ULTIMATE EARS | A330-200325W-M3 | 534-000992 | AC Input : 100-240 V, 50/60 Hz, 1.7 A DC Output : 5 Vdc, 3 A, 15 W or 9 Vdc, 3 A, 27 W or 12 Vdc, 3 A, 36 W or 15 Vdc, 3 A, 45 W or 20 Vdc, 3.25 A, 65 W Manufacturer : Dongguan Aohai Technology Co., Ltd. Second Branch |

- The EUT must be supplied with a battery as the following table:

| Brand | Model | Specification |
|----------|------------|--|
| Logitech | 533-000170 | Power Rating : 14.4 V, 3060 mAh, 44 Wh |

- The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

| Antenna Net Gain (dBi) | Frequency Range (GHz) | Antenna Type | Connector Type |
|------------------------|-----------------------|--------------|----------------|
| 3.83 | 2.4~2.4835 | Monopole | None |

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



3.3 Channel List

40 channels are provided for BT-LE:

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

3.4 Test Mode Applicability and Tested Channel Detail

| | |
|-----------|---|
| Pre-Scan: | 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). |
|-----------|---|

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 | 1, 19, 38 | GFSK | 2Mb/s |
| AC Power Conducted Emissions | BT-LE 1M | 0 | GFSK | 1Mb/s |
| Unwanted Emissions below 1 GHz | BT-LE 1M | 0 | GFSK | 1Mb/s |

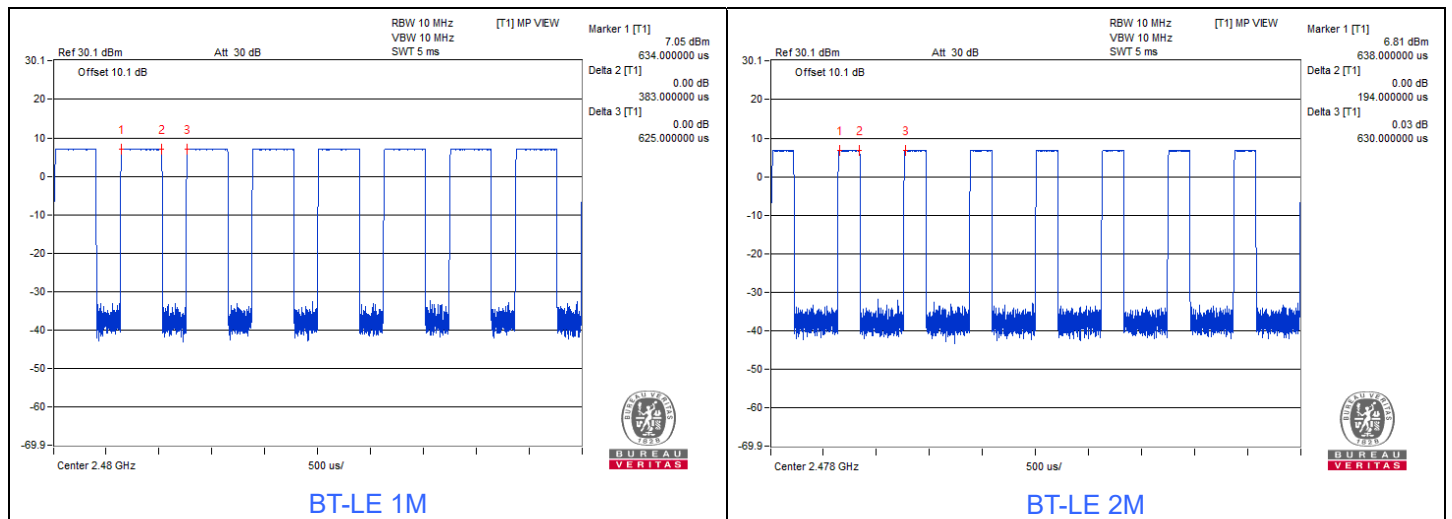
Note: In the original report

For Unwanted Emissions below 1 GHz item the worst case of the power supply mode: AC Adapter

3.5 Duty Cycle of Test Signal

BT-LE 1M: Duty cycle = $0.383 \text{ ms} / 0.625 \text{ ms} \times 100\% = 61.3\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 2.13 \text{ dB}$

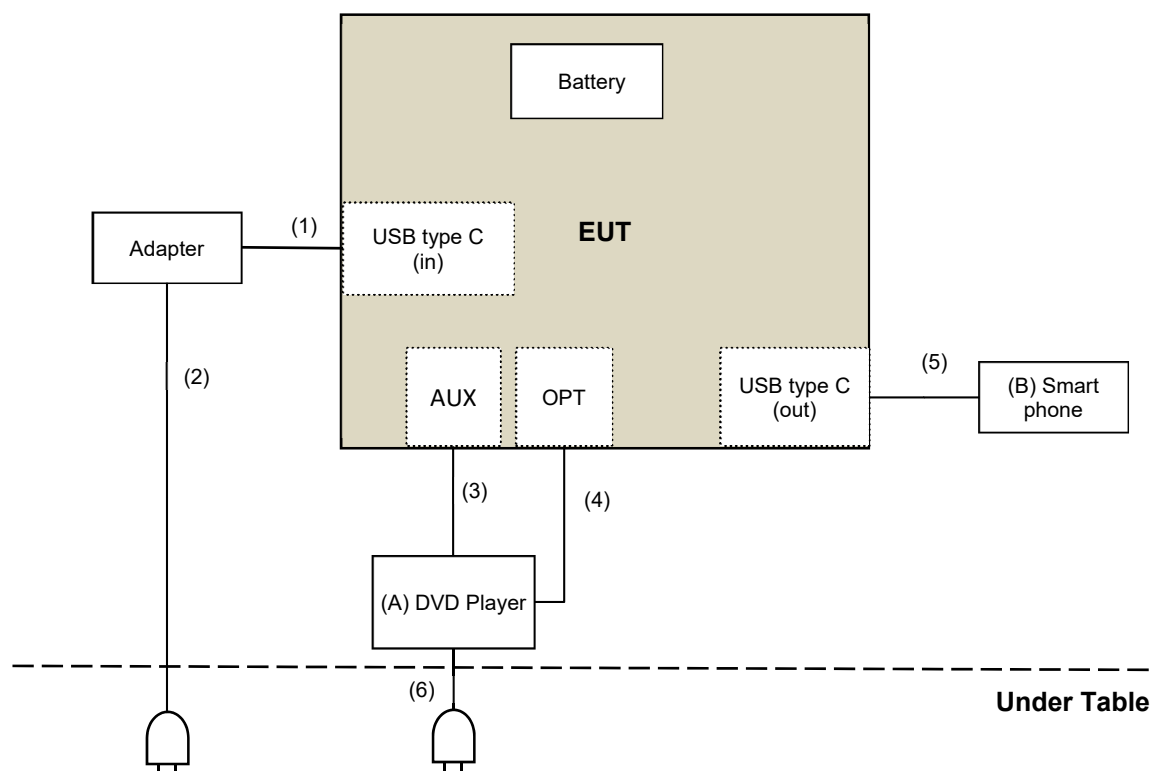
BT-LE 2M: Duty cycle = $0.194 \text{ ms} / 0.630 \text{ ms} \times 100\% = 30.8\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 5.12 \text{ dB}$



3.6 Test Program Used and Operation Descriptions

Controlling software (BlueSuite.WIN.3.3 Installer_3.3.13.1423) 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 | DVD Player | Pioneer | DV-600AV-S | HCKD011979LS | DoC | Provided by Lab |
| B | Smart Phone | Samsung | Galaxy S24 Ultra | SM-59280 | N/A | Provided by Lab |

| ID | Cable Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|----|--------------------|------|------------|--------------------|--------------|-----------------------|
| 1 | DC Cable | 1 | 1.4 | No | 0 | Supplied by applicant |
| 2 | AC Cable | 1 | 1 | No | 0 | Supplied by applicant |
| 3 | Audio Cable | 1 | 1.8 | No | 0 | Provided by Lab |
| 4 | optical cable | 1 | 1.5 | No | 0 | Provided by Lab |
| 5 | Type C to C | 1 | 1 | Yes | 0 | Provided by Lab |
| 6 | AC Cable | 1 | 1.8 | No | 0 | Provided by Lab |

4 Test Instruments

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

4.1 RF Output Power

| Description Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|-------------------------------|-----------|------------|--------------------|---------------------|
| Pulse Power Sensor Anritsu | MA2411B | 1726434 | 2023/6/19 | 2024/6/18 |
| RF Power Meter Anritsu | ML2495A | 1529002 | 2023/6/17 | 2024/6/16 |

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/4/10

4.2 AC Power Conducted Emissions

| Description Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|---------------------|------------|--------------------|---------------------|
| 50 ohm terminal resistance Telegartner | 50 ohm | 3 | 2023/10/20 | 2024/10/19 |
| EMI Test Receiver R&S | ESCS 30 | 847124/029 | 2023/10/18 | 2024/10/17 |
| Fixed Attenuator STI | STI02-2200-10 | 005 | 2024/2/19 | 2025/2/18 |
| LISN R&S | ESH3-Z5 | 835239/001 | 2023/4/6 | 2024/4/5 |
| | | 848773/004 | 2023/10/13 | 2024/10/12 |
| RF Coaxial Cable JYEBAO | 5D-FB | COCCAB-001 | 2024/2/19 | 2025/2/18 |
| Software BVADT | BVADT_Cond_V7.3.7.4 | N/A | N/A | N/A |

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2024/3/20

4.3 Unwanted Emissions below 1 GHz

| Description Manufacturer | Model No. | Serial No. | Calibrated Date | Calibrated Until |
|---|----------------------|-------------|--------------------|---------------------|
| Bi_Log Antenna Schwarzbeck | VULB 9168 | 9168-0842 | 2023/10/12 | 2024/10/11 |
| Boresight Antenna Tower & Turn Table Max-Full | MF-7802BS | MF780208530 | N/A | N/A |
| EMI Test Receiver R&S | ESR7 | 102026 | 2023/4/6 | 2024/4/5 |
| Fixed Attenuator Mini-Circuits | UNAT-5+ | PAD-ATT5-02 | 2023/12/12 | 2024/12/11 |
| Loop Antenna Electro-Metrics | EM-6879 | 264 | 2024/2/23 | 2025/2/22 |
| Preamplifier EMCI | EMC330N | 980538 | 2023/4/6 | 2024/4/5 |
| | EMC001340 | 980142 | 2024/2/19 | 2025/2/18 |
| PXA Signal Analyzer Keysight | N9030B | MY57141948 | 2023/5/19 | 2024/5/18 |
| RF Coaxial Cable JYBAO | 5D-FB | LOOPCAB-001 | 2024/2/19 | 2025/2/18 |
| | | LOOPCAB-002 | 2024/2/19 | 2025/2/18 |
| RF Coaxial Cable PEWC | 8D | 966-5-1 | 2023/4/6 | 2024/4/5 |
| | | 966-5-2 | 2023/4/6 | 2024/4/5 |
| | | 966-5-3 | 2023/4/6 | 2024/4/5 |
| Software | ADT_Radiated_V8.7.08 | N/A | N/A | N/A |

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2024/3/20

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 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.

5.3 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 |

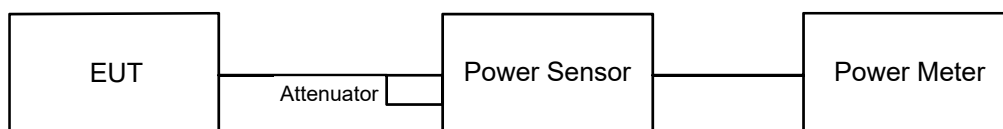
Notes:

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

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

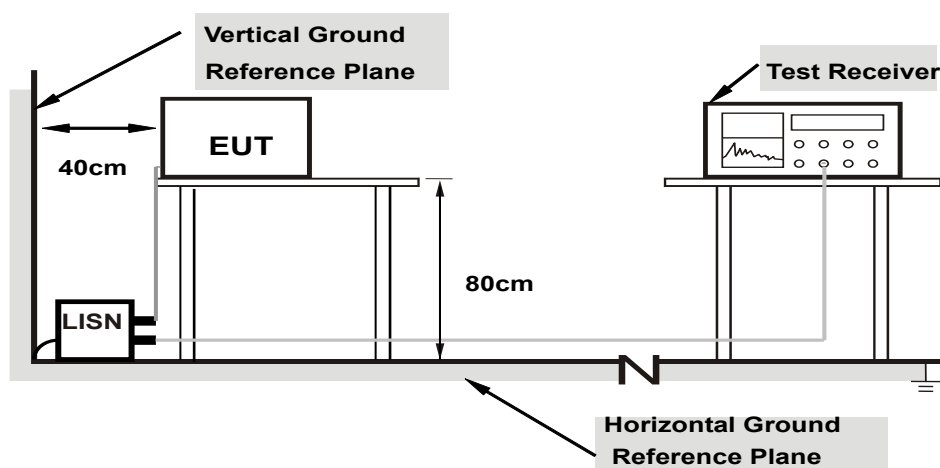
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

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 AC Power Conducted Emissions

6.2.1 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).

6.2.2 Test Procedure

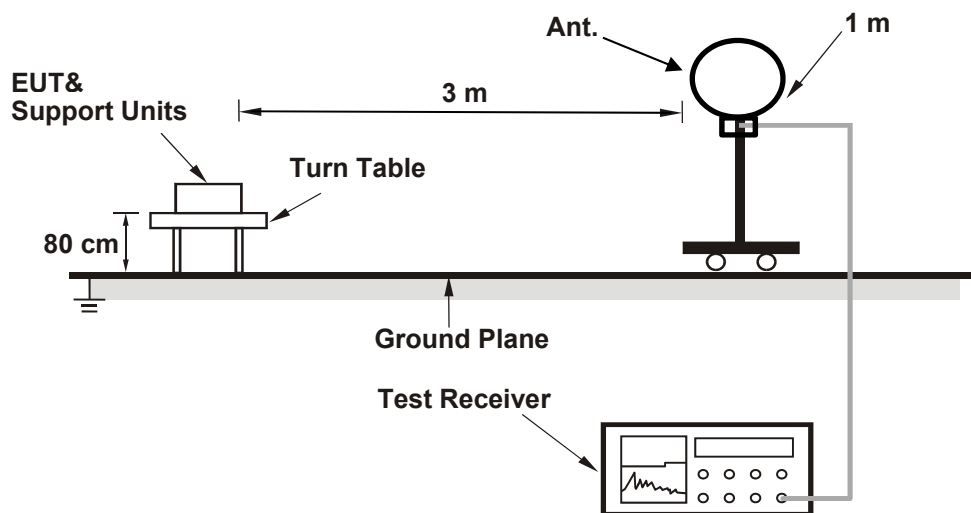
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The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

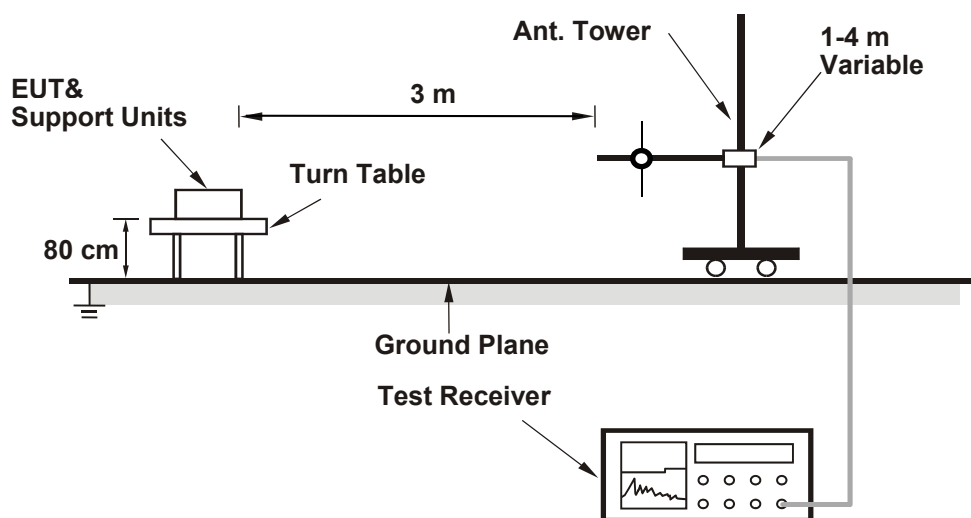
6.3 Unwanted Emissions below 1 GHz

6.3.1 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).

6.3.2 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 RF Output Power

| | | | | | |
|--------------|----------|---------------------------|--------------|------------|-----------|
| Input Power: | 14.4 Vdc | Environmental Conditions: | 23°C, 63% RH | Tested By: | Katina Lu |
|--------------|----------|---------------------------|--------------|------------|-----------|

For Peak Power

BT-LE 1M

| Chan. | Chan. Freq. (MHz) | Peak Power (mW) | Peak Power (dBm) | Power Limit (dBm) | Test Result |
|-------|-------------------|-----------------|------------------|-------------------|-------------|
| 0 | 2402 | 3.936 | 5.95 | 30 | Pass |
| 19 | 2440 | 3.648 | 5.62 | 30 | Pass |
| 39 | 2480 | 3.404 | 5.32 | 30 | Pass |

Note: The antenna gain is 3.83 dBi < 6 dBi, so the output power limit shall not be reduced.

BT-LE 2M

| Chan. | Chan. Freq. (MHz) | Peak Power (mW) | Peak Power (dBm) | Power Limit (dBm) | Test Result |
|-------|-------------------|-----------------|------------------|-------------------|-------------|
| 1 | 2404 | 3.917 | 5.93 | 30 | Pass |
| 19 | 2440 | 3.639 | 5.61 | 30 | Pass |
| 38 | 2478 | 3.428 | 5.35 | 30 | Pass |

Note: The antenna gain is 3.83 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

BT-LE 1M

| Chan. | Chan. Freq. (MHz) | Average Power (mW) | Average Power (dBm) |
|-------|-------------------|--------------------|---------------------|
| 0 | 2402 | 3.828 | 5.83 |
| 19 | 2440 | 3.491 | 5.43 |
| 39 | 2480 | 3.034 | 4.82 |

BT-LE 2M

| Chan. | Chan. Freq. (MHz) | Average Power (mW) | Average Power (dBm) |
|-------|-------------------|--------------------|---------------------|
| 1 | 2404 | 3.802 | 5.80 |
| 19 | 2440 | 3.459 | 5.39 |
| 38 | 2478 | 3.055 | 4.85 |

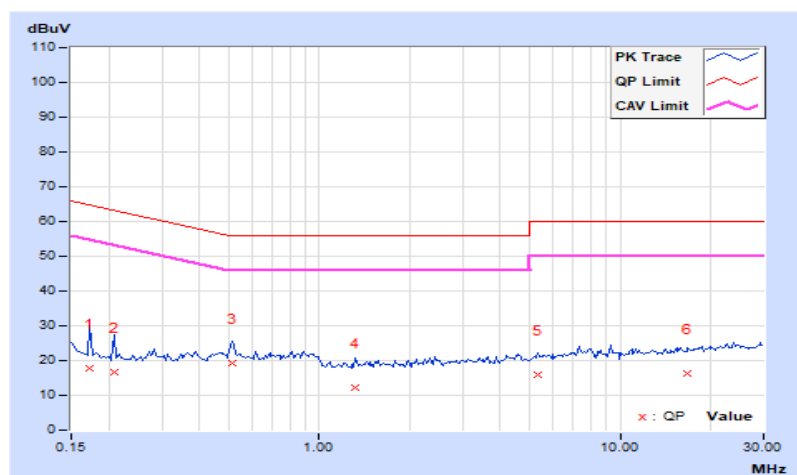
7.2 AC Power Conducted Emissions

| | | | |
|-----------------|------------------|--|---------------------------------------|
| RF Mode | BT-LE 1M | Channel | CH 0 : 2402 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 | 21 °C, 70 % RH |
| Tested By | Willy Lin | | |

| 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 | 0.17344 | 9.93 | 7.84 | -9.56 | 17.77 | 0.37 | 64.79 | 54.79 | -47.02 | -54.42 |
| 2 | 0.20859 | 9.93 | 6.68 | 1.41 | 16.61 | 11.34 | 63.26 | 53.26 | -46.65 | -41.92 |
| 3 | 0.51328 | 9.95 | 9.49 | 5.04 | 19.44 | 14.99 | 56.00 | 46.00 | -36.56 | -31.01 |
| 4 | 1.32422 | 9.99 | 2.30 | -5.41 | 12.29 | 4.58 | 56.00 | 46.00 | -43.71 | -41.42 |
| 5 | 5.35938 | 10.20 | 5.63 | 1.44 | 15.83 | 11.64 | 60.00 | 50.00 | -44.17 | -38.36 |
| 6 | 16.76172 | 10.93 | 5.55 | 1.67 | 16.48 | 12.60 | 60.00 | 50.00 | -43.52 | -37.40 |

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

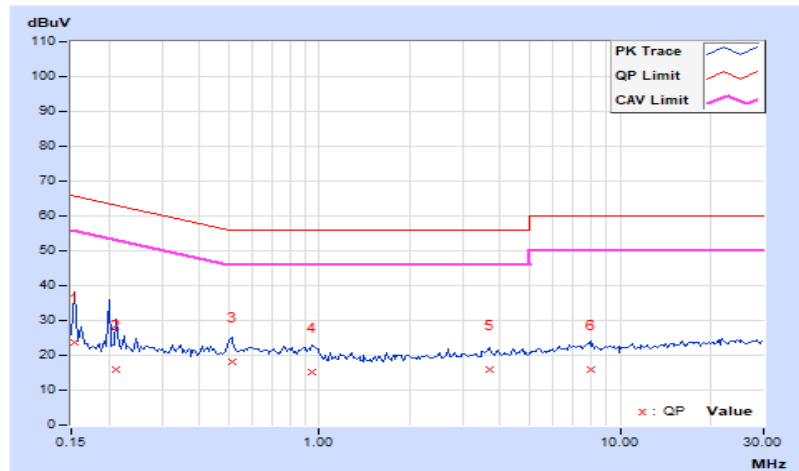


| | | | |
|------------------------|------------------|---|---------------------------------------|
| RF Mode | BT-LE 1M | Channel | CH 0 : 2402 MHz |
| Frequency Range | 150 kHz ~ 30 MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9 kHz |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 21 °C, 70 % RH |
| Tested By | Willy Lin | | |

| 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 | 0.15391 | 9.99 | 13.53 | -5.99 | 23.52 | 4.00 | 65.79 | 55.79 | -42.27 | -51.79 |
| 2 | 0.21250 | 9.99 | 5.91 | 0.00 | 15.90 | 9.99 | 63.11 | 53.11 | -47.21 | -43.12 |
| 3 | 0.51328 | 10.01 | 8.27 | 2.14 | 18.28 | 12.15 | 56.00 | 46.00 | -37.72 | -33.85 |
| 4 | 0.95078 | 10.03 | 5.24 | -3.13 | 15.27 | 6.90 | 56.00 | 46.00 | -40.73 | -39.10 |
| 5 | 3.66797 | 10.15 | 5.68 | 0.65 | 15.83 | 10.80 | 56.00 | 46.00 | -40.17 | -35.20 |
| 6 | 8.00391 | 10.33 | 5.61 | 0.57 | 15.94 | 10.90 | 60.00 | 50.00 | -44.06 | -39.10 |

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



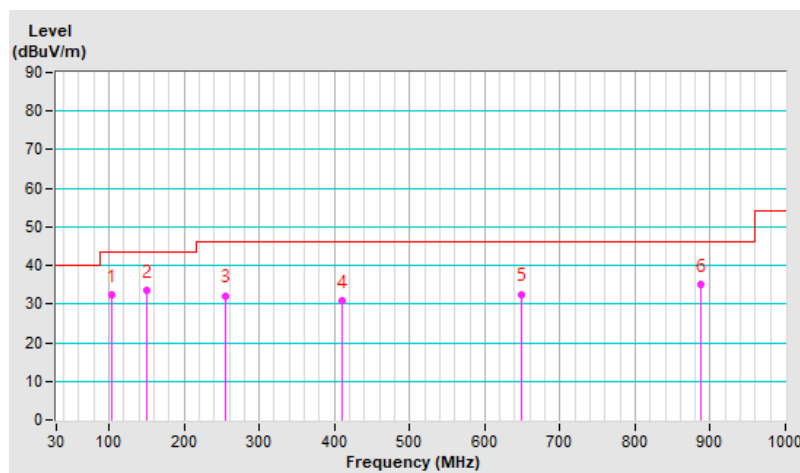
7.3 Unwanted Emissions below 1 GHz

| | | | |
|------------------------|----------------|--|-------------------------------|
| RF Mode | BT-LE 1M | Channel | CH 0 : 2402 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 22.0 °C, 70.0 % RH |
| Tested By | Willy Lin | | |

| Antenna Polarity & Test Distance : Horizontal at 3 m | | | | | | | | |
|--|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 103.65 | 32.3 QP | 43.5 | -11.2 | 3.00 H | 257 | 53.9 | -21.6 |
| 2 | 149.77 | 33.7 QP | 43.5 | -9.8 | 2.00 H | 66 | 51.0 | -17.3 |
| 3 | 254.24 | 32.2 QP | 46.0 | -13.8 | 1.00 H | 289 | 50.9 | -18.7 |
| 4 | 410.12 | 30.7 QP | 46.0 | -15.3 | 1.50 H | 79 | 45.1 | -14.4 |
| 5 | 648.52 | 32.6 QP | 46.0 | -13.4 | 1.00 H | 223 | 41.8 | -9.2 |
| 6 | 887.87 | 35.2 QP | 46.0 | -10.8 | 3.00 H | 360 | 41.1 | -5.9 |

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.

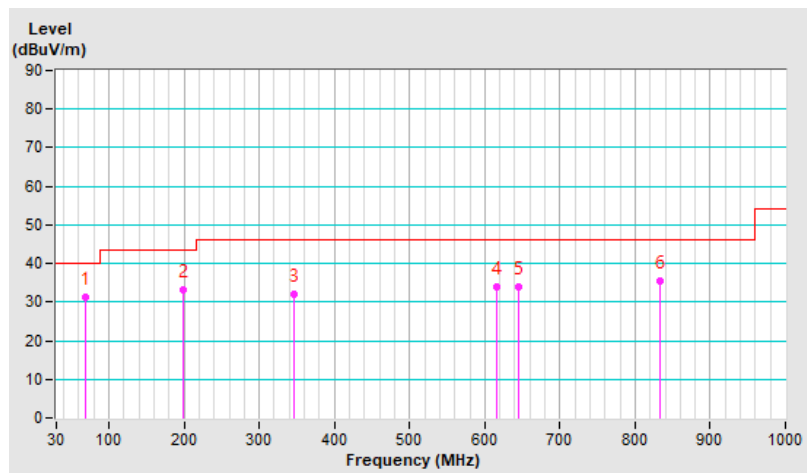


| | | | |
|------------------------|----------------|--|-------------------------------|
| RF Mode | BT-LE 1M | Channel | CH 0 : 2402 MHz |
| Frequency Range | 30 MHz ~ 1 GHz | Detector Function & Bandwidth | QP: RB=120kHz, DET=Quasi-Peak |
| Input Power | 120 Vac, 60 Hz | Environmental Conditions | 22.0 °C, 70.0 % RH |
| Tested By | Willy Lin | | |

| Antenna Polarity & Test Distance : Vertical at 3 m | | | | | | | | |
|--|-----------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No | Frequency (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | 69.19 | 31.4 QP | 40.0 | -8.6 | 1.00 V | 360 | 51.2 | -19.8 |
| 2 | 198.15 | 33.2 QP | 43.5 | -10.3 | 1.00 V | 360 | 54.1 | -20.9 |
| 3 | 346.46 | 31.9 QP | 46.0 | -14.1 | 1.50 V | 190 | 47.9 | -16.0 |
| 4 | 615.71 | 34.0 QP | 46.0 | -12.0 | 1.00 V | 297 | 43.6 | -9.6 |
| 5 | 644.35 | 33.8 QP | 46.0 | -12.2 | 2.00 V | 176 | 43.0 | -9.2 |
| 6 | 832.75 | 35.6 QP | 46.0 | -10.4 | 1.00 V | 293 | 42.1 | -6.5 |

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.



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:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

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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