



TEST REPORT

FCC PART 15 B

Test report
On Behalf of
Guangzhou Yongyi Industrial Co., Ltd.
For
Digital Electric Breast Pump
Model No.: BF100

FCC ID: 2AWNY-BF100

Prepared for : **Guangzhou Yongyi Industrial Co., Ltd.**
B3, No.29, Qixin Road, Dongchong Town, Nansha District, Guangzhou
Guangdong China

Prepared By : **Shenzhen HUAK Testing Technology Co., Ltd.**
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Bao'an District, Shenzhen City, China

Date of Test: **Jun. 12, 2020 -- Jun. 24, 2020**
Date of Report: **Jun. 24, 2020**
Report Number: **HK2006181456-E**



TEST RESULT CERTIFICATION

Applicant's name: Guangzhou Yongyi Industrial Co., Ltd.

Address: B3, No.29, Qixin Road, Dongchong Town, Nansha District, Guangzhou
Guangdong China

Manufacturer's Name: Guangzhou Yongyi Industrial Co., Ltd.

Address: B3, No.29, Qixin Road, Dongchong Town, Nansha District, Guangzhou
Guangdong China

Product description

Trade Mark: N/A

Product name: Digital Electric Breast Pump

Model and/or type reference: BF100

Standards: **FCC Part 15 Subpart B**

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Date of Test:

Date (s) of performance of tests: Jun. 12, 2020 -- Jun. 24, 2020

Date of Issue: Jun. 24, 2020

Test Result: **Pass**

Prepared by:

A handwritten signature in black ink that reads "Gary Qian".

Project Engineer

Reviewed by:

A handwritten signature in black ink that reads "Leo Zhang".

Project Supervisor

Approved by:

A handwritten signature in black ink that reads "James Zhou".

Technical Director



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1 Test Summary

1.1 Test Description

| Test Item | Test Requirement | Result |
|--------------------|------------------|--------|
| Conducted Emission | FCC Part 15.107 | PASS |
| Radiated Emissions | FCC Part 15.109 | PASS |

1.2 Test Facility

1.2.1 Address of the test laboratory

Shenzhen HUAK Testing Technology Co., Ltd.

Add.:1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

1.2.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 21210

The 3m alternate test site of Shenzhen HUAK Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 21210 on May 24, 2016.



1.3 Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen HUAK Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for HUAK laboratory is reported:

| No. | Item | MU |
|-----|-------------------------------|---------|
| 1 | Conducted Emission | ±2.56dB |
| 2 | RF power, conducted | ±0.12dB |
| 3 | Spurious emissions, conducted | ±0.11dB |
| 4 | All emissions, radiated(<1G) | ±3.92dB |
| 5 | All emissions, radiated(>1G) | ±4.28dB |
| 6 | Temperature | ±0.1°C |
| 7 | Humidity | ±1.0% |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



2 General Information

2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---------------------|---------|
| Normal Temperature: | 25°C |
| Relative Humidity: | 55 % |
| Air Pressure: | 101 kPa |

2.2 General Description of EUT

| | |
|----------------------|--|
| Product Name | Digital Electric Breast Pump |
| Model/Type reference | BF100 |
| Serial Model | N/A |
| Trade Mark | N/A |
| FCC ID | 2AWNY-BF100 |
| Power Supply | DC 6Vdc from Adapter |
| Adapter Information | Model: YMK-12W060200 Input: 100-240Vac, 50/60Hz 0.3A Max Output: 6Vdc 2000mA |

Note: 1. For more detailed features description, please refer to the Manual.



2.3 Equipments Used during the Test

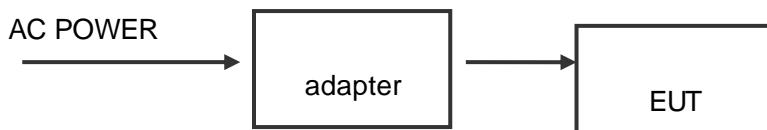
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---|-----------------|---------------------|------------|---------------|---------------|
| 1. | L.I.S.N. Artificial Mains Network | R&S | ENV216 | HKE-002 | Dec. 26, 2019 | 1 Year |
| 2. | Receiver | R&S | ESCI 7 | HKE-010 | Dec. 26, 2019 | 1 Year |
| 3. | RF automatic control unit | Tonscend | JS0806-2 | HKE-060 | Dec. 26, 2019 | 1 Year |
| 4. | Spectrum analyzer | R&S | FSP40 | HKE-025 | Dec. 26, 2019 | 1 Year |
| 5. | Spectrum analyzer | Agilent | N9020A | HKE-048 | Dec. 26, 2019 | 1 Year |
| 6. | Preamplifier | Schwarzbeck | BBV 9743 | HKE-006 | Dec. 26, 2019 | 1 Year |
| 7. | EMI Test Receiver | Rohde & Schwarz | ESCI 7 | HKE-010 | Dec. 26, 2019 | 1 Year |
| 8. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | HKE-012 | Dec. 26, 2019 | 1 Year |
| 9. | Loop Antenna | Schwarzbeck | FMZB 1519 B | HKE-014 | Dec. 26, 2019 | 1 Year |
| 10. | Horn Antenna | Schwarzbeck | 9120D | HKE-013 | Dec. 26, 2019 | 1 Year |
| 11. | Pre-amplifier | EMCI | EMC05184 5SE | HKE-015 | Dec. 26, 2019 | 1 Year |
| 12. | Pre-amplifier | Agilent | 83051A | HKE-016 | Dec. 26, 2019 | 1 Year |
| 13. | EMI Test Software EZ-EMC | Tonscend | JS1120-B Version | HKE-083 | / | N/A |
| 14. | Power Sensor | Agilent | E9300A | HKE-086 | Dec. 26, 2019 | 1 Year |
| 15. | Spectrum analyzer | Agilent | N9020A | HKE-048 | Dec. 26, 2019 | 1 Year |
| 16. | Signal generator | Agilent | N5182A | HKE-029 | Dec. 26, 2019 | 1 Year |
| 17. | Signal Generator | Agilent | 83630A | HKE-028 | Dec. 26, 2019 | 1 Year |
| 18. | Shielded room | Shiel Hong | 4*3*3 | HKE-039 | Dec. 26, 2019 | 3 Year |
| 19. | Power Meter | R&S | NRVD | SEL0069 | Dec. 26, 2019 | 1 Year |
| 20 | High Gain Antenna | Schwarzbeck | LB-180400 KF | HKE-054 | Dec. 26, 2019 | 1 Year |

2.4 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted testing:



Operation of EUT during Radiation testing:



2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Description | Information | Manufacturer | Remark | Certificate |
|------------------|--|---|-------------------------|-------------|
| AC-DC ADAPTER | Model: YMK-12W060200 Input: 100-240Vac, 50/60Hz 0.3A Max Output: 6Vdc 2000mA | Guangzhou Yongyi Industrial Co., Ltd. | Provide by applicant | SDOC |
| / | / | / | / | / |



3 TEST CONDITIONS AND RESULTS

3.1 Conduction Emissions Measurement

Limit

According to FCC CFR Title 47 Part 15 Subpart B Section 15.107, Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

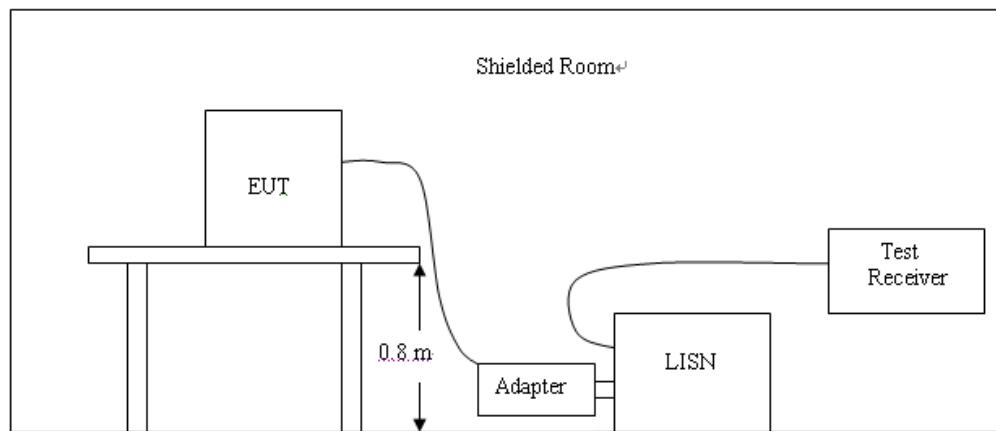
| Frequency range (MHz) | Limit (dBuV) | |
|-----------------------|--------------|-----------|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

Test procedure

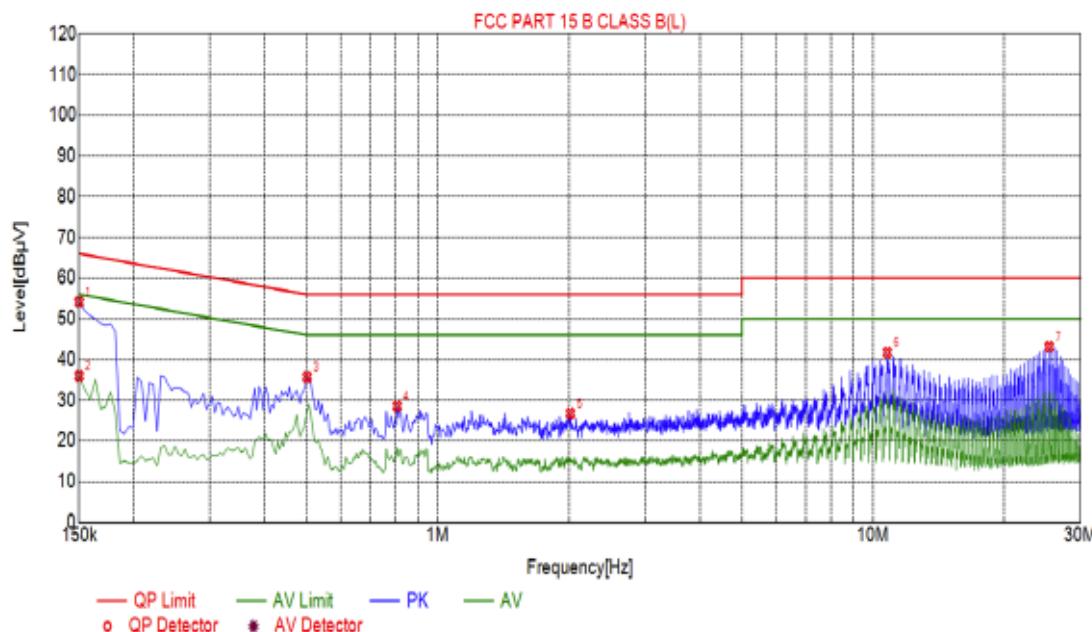
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4:2014.
2. Support equipment, if needed, was placed as per ANSI C63.4:2014. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4:2014.
3. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
4. All support equipments received AC power from a second LISN, if any.
5. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
6. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
7. During the above scans, the emissions were maximized by cable manipulation.

Test setup



Test results

Test Specification: Line



Suspected List

| NO. | Freq. [MHz] | Level [dB μ V] | Factor [dB] | Limit [dB μ V] | Margin [dB] | Reading [dB μ V] | Detector | Type |
|-----|-------------|--------------------|-------------|--------------------|-------------|----------------------|----------|------|
| 1 | 0.1500 | 54.12 | 10.03 | 66.00 | 11.88 | 44.09 | PK | L |
| 2 | 0.1500 | 35.99 | 10.03 | 56.00 | 20.01 | 25.96 | AV | L |
| 3 | 0.5010 | 35.75 | 10.04 | 56.00 | 20.25 | 25.71 | PK | L |
| 4 | 0.8070 | 28.55 | 10.06 | 56.00 | 27.45 | 18.49 | PK | L |
| 5 | 2.0175 | 26.77 | 10.15 | 56.00 | 29.23 | 16.62 | PK | L |
| 6 | 10.7925 | 41.73 | 10.02 | 60.00 | 18.27 | 31.71 | PK | L |
| 7 | 25.4040 | 43.11 | 10.25 | 60.00 | 16.89 | 32.86 | PK | L |

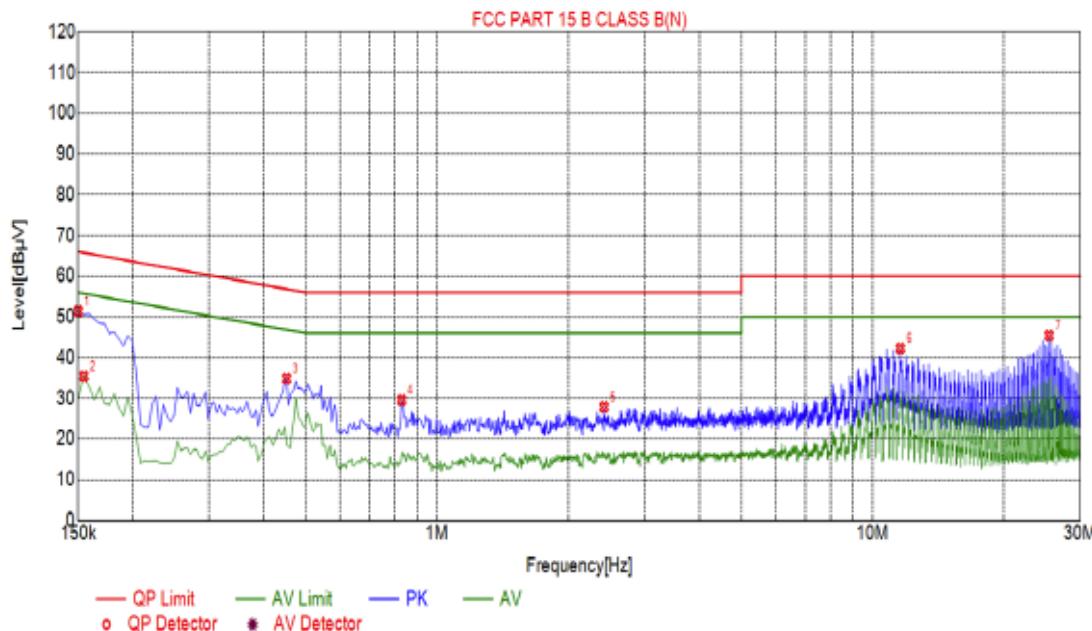
Remark: Margin = Limit – Level

Correction factor = Cable loss + LISN insertion loss

Level=Test receiver reading + correction factor



Test Specification: Neutral



Suspected List

| NO. | Freq. [MHz] | Level [dB μ V] | Factor [dB] | Limit [dB μ V] | Margin [dB] | Reading [dB μ V] | Detector | Type |
|-----|-------------|--------------------|-------------|--------------------|-------------|----------------------|----------|------|
| 1 | 0.1500 | 51.41 | 10.03 | 66.00 | 14.59 | 41.38 | PK | N |
| 2 | 0.1545 | 35.47 | 10.03 | 55.75 | 20.28 | 25.44 | AV | N |
| 3 | 0.4515 | 34.85 | 10.04 | 56.85 | 22.00 | 24.81 | PK | N |
| 4 | 0.8295 | 29.57 | 10.08 | 56.00 | 26.43 | 19.51 | PK | N |
| 5 | 2.4180 | 27.86 | 10.18 | 56.00 | 28.14 | 17.68 | PK | N |
| 6 | 11.5845 | 42.29 | 10.00 | 60.00 | 17.71 | 32.29 | PK | N |
| 7 | 25.4310 | 45.41 | 10.25 | 60.00 | 14.59 | 35.16 | PK | N |

Remark: Margin = Limit – Level

Correction factor = Cable loss + LISN insertion loss

Level = Test receiver reading + correction factor

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

3.2 Radiated Emissions Measurement

Limit

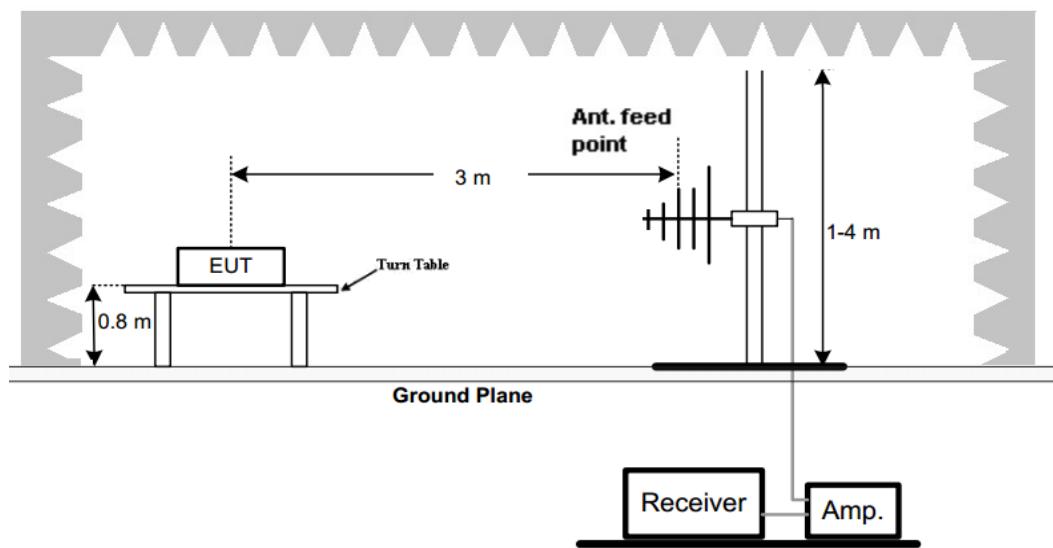
For intentional device, according to § 15.109(a), Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Radiated emission limits

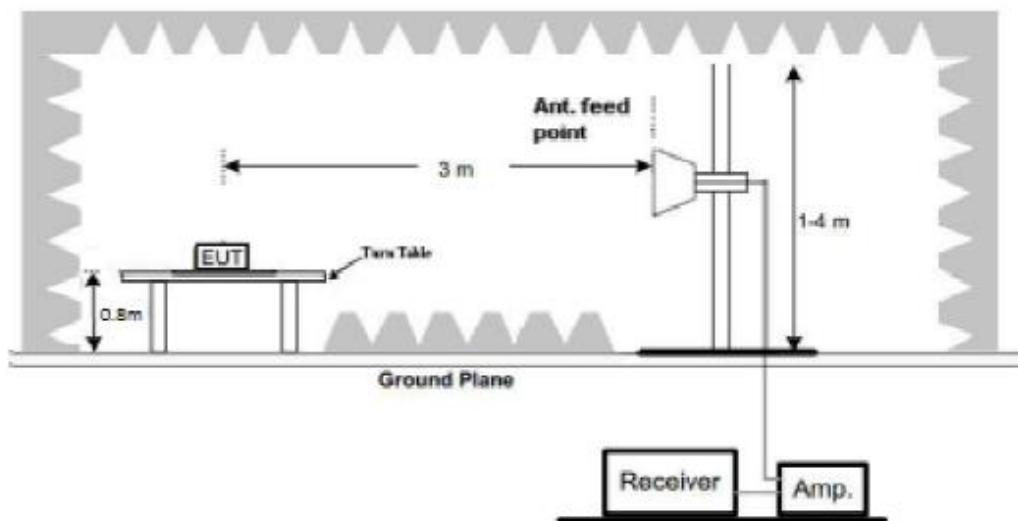
| Frequency (MHz) | Distance (Meters) | Radiated (dB μ V/m) | Radiated (μ V/m) |
|-----------------|-------------------|-------------------------|-----------------------|
| 30-88 | 3 | 40.0 | 100 |
| 88-216 | 3 | 43.5 | 150 |
| 216-960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |

Test setup

30 MHz to 1 GHz emissions:



1 GHz to 25 GHz emissions:





Test Procedure

- 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) Above 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

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 antenna height 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test the EUT in the lowest channel, the middle channel, the Highest channel

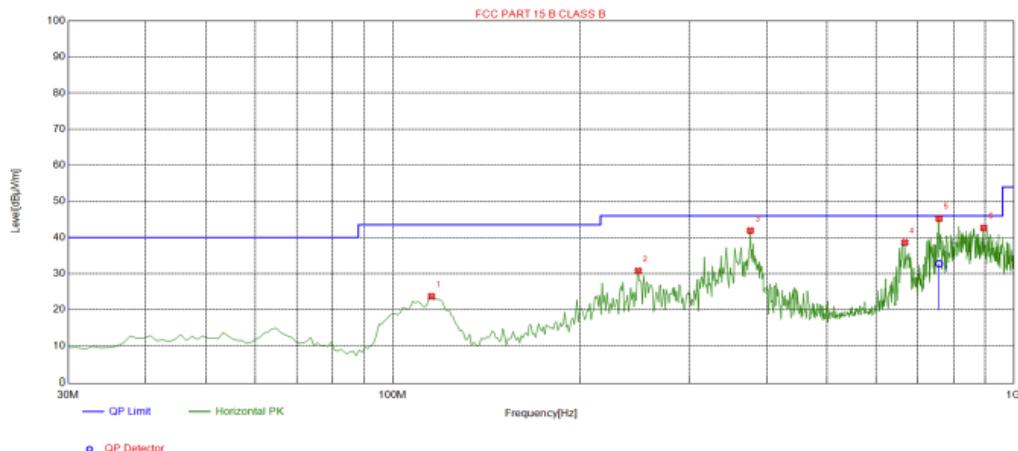
The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. Repeat above procedures until all frequencies measured was complete.



Test Result

Below 1GHz Test Results:

Antenna polarity: H



Suspected List

| Suspected List | | | | | | | | | |
|----------------|-------------|-------------|------------------------|----------------------|----------------------|-------------|-------------|-----------|------------|
| NO. | Freq. [MHz] | Factor [dB] | Reading [dB μ V/m] | Level [dB μ V/m] | Limit [dB μ V/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 115.4454 | -16.34 | 40.02 | 23.68 | 43.50 | 19.82 | 100 | 50 | Horizontal |
| 2 | 248.4685 | -13.46 | 44.19 | 30.73 | 46.00 | 15.27 | 100 | 309 | Horizontal |
| 3 | 376.6366 | -10.88 | 52.78 | 41.90 | 46.00 | 4.10 | 100 | 283 | Horizontal |
| 4 | 667.9279 | -4.69 | 43.30 | 38.61 | 46.00 | 7.39 | 100 | 309 | Horizontal |
| 5 | 758.2282 | -3.53 | 48.75 | 45.22 | 46.00 | 0.78 | 100 | 302 | Horizontal |
| 6 | 895.1351 | -1.83 | 44.49 | 42.66 | 46.00 | 3.34 | 100 | 222 | Horizontal |

Final Data List

| Final Data List | | | | | | | | | |
|-----------------|-------------|-------------|---------------------------|-------------------------|-------------------------|----------------|-------------|-----------|------------|
| NO. | Freq. [MHz] | Factor [dB] | QP Reading [dB μ V/m] | QP Value [dB μ V/m] | QP Limit [dB μ V/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 758.2282 | -3.53 | 36.26 | 32.73 | 46.00 | 13.27 | 100 | 302 | Horizontal |

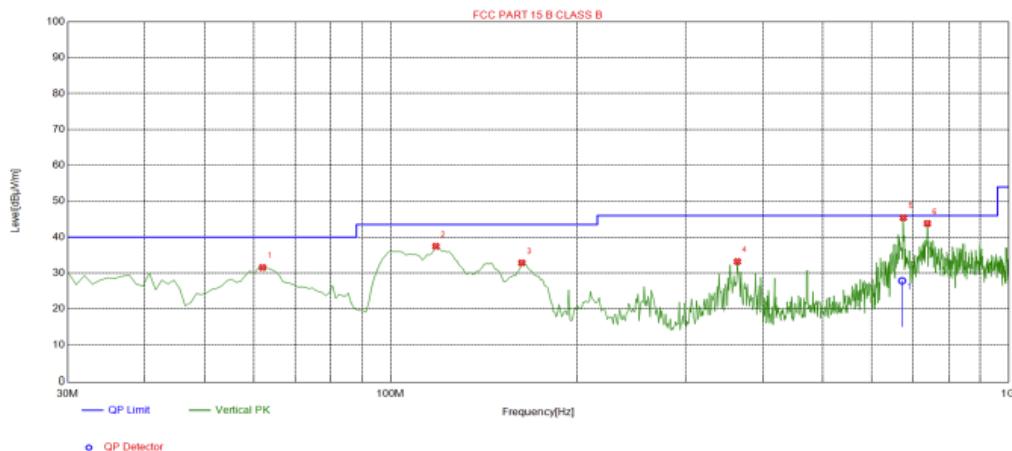
Remark: Margin = Limit – Level

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

Level=Test receiver reading + correction factor



Antenna polarity: V

**Suspected List**

| Suspected List | | | | | | | | | |
|-----------------------|-------------|-------------|------------------|----------------|----------------|-------------|-------------|-----------|----------|
| NO. | Freq. [MHz] | Factor [dB] | Reading [dBµV/m] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 62.0420 | -15.67 | 47.21 | 31.54 | 40.00 | 8.46 | 100 | 108 | Vertical |
| 2 | 118.3584 | -16.83 | 54.27 | 37.44 | 43.50 | 6.06 | 100 | 12 | Vertical |
| 3 | 163.0230 | -17.94 | 50.77 | 32.83 | 43.50 | 10.67 | 100 | 354 | Vertical |
| 4 | 364.0140 | -11.21 | 44.41 | 33.20 | 46.00 | 12.80 | 100 | 50 | Vertical |
| 5 | 675.6957 | -4.75 | 50.16 | 45.41 | 46.00 | 0.59 | 100 | 242 | Vertical |
| 6 | 738.8088 | -4.18 | 47.99 | 43.81 | 46.00 | 2.19 | 100 | 41 | Vertical |

Final Data List

| Final Data List | | | | | | | | | |
|------------------------|-------------|-------------|---------------------|-------------------|-------------------|----------------|-------------|-----------|----------|
| NO. | Freq. [MHz] | Factor [dB] | QP Reading [dBµV/m] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 672.4590 | -4.64 | 32.49 | 27.85 | 46.00 | 18.15 | 150 | 298.9 | Vertical |

Remark: Margin = Limit – Level

Correction Factor= Antenna Factor + Cable loss – Pre-amplifier

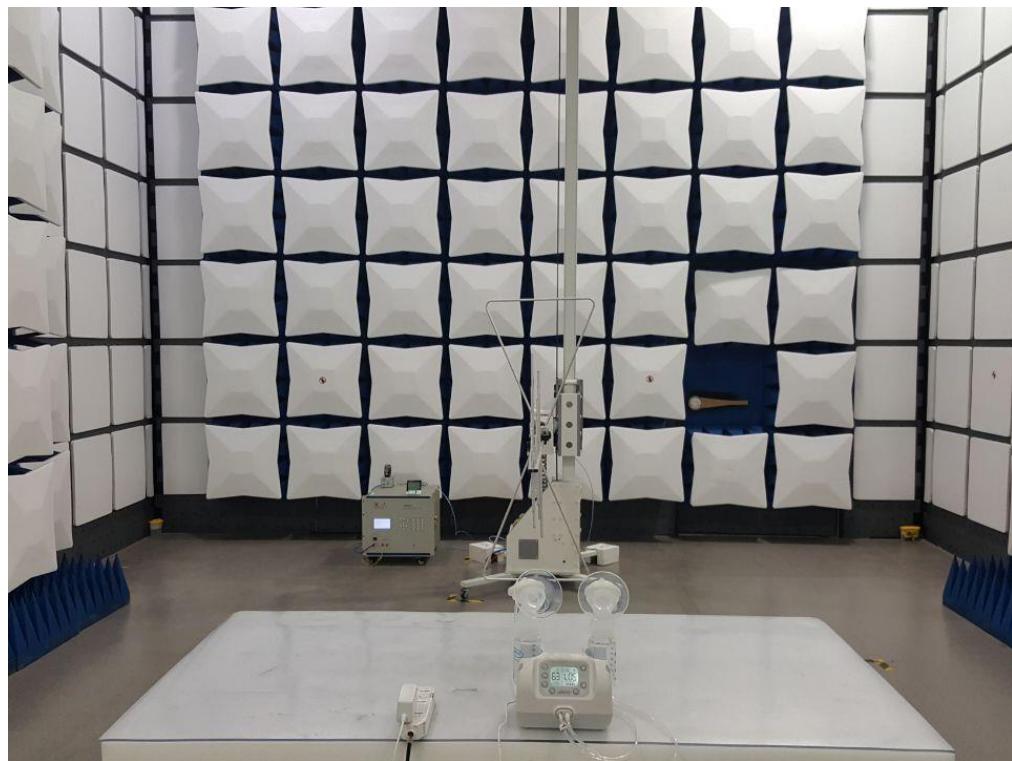
Level=Test receiver reading + correction factor

Note:

The working frequency of the product is much lower than 108MHz, so there is no need to test over 1000MHz frequency

4 Test Setup Photos of the EUT

Radiated Emissions: 30MHz-1000MHz



Conducted Emission



5 PHOTOS OF THE EUT

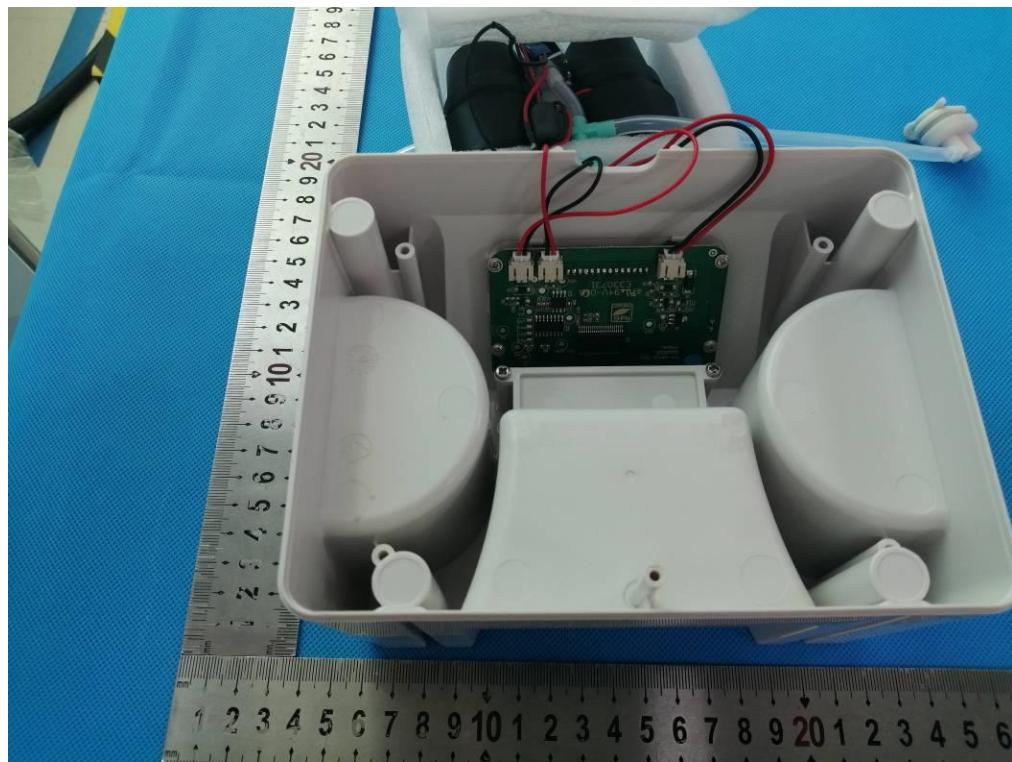
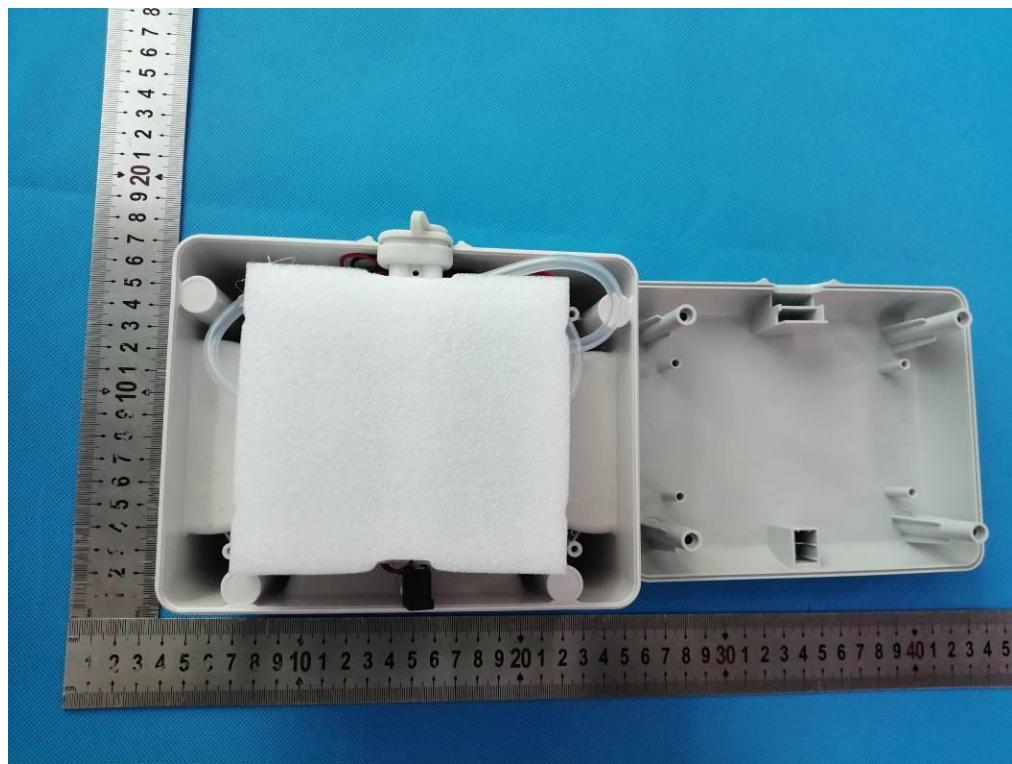
External Photos

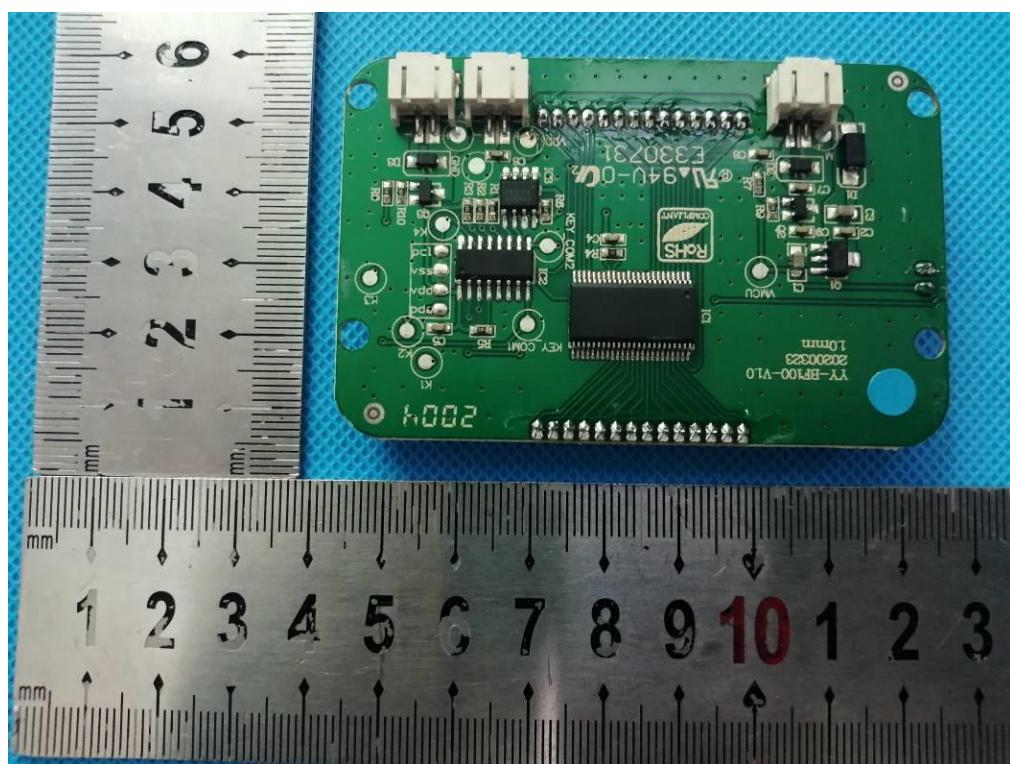
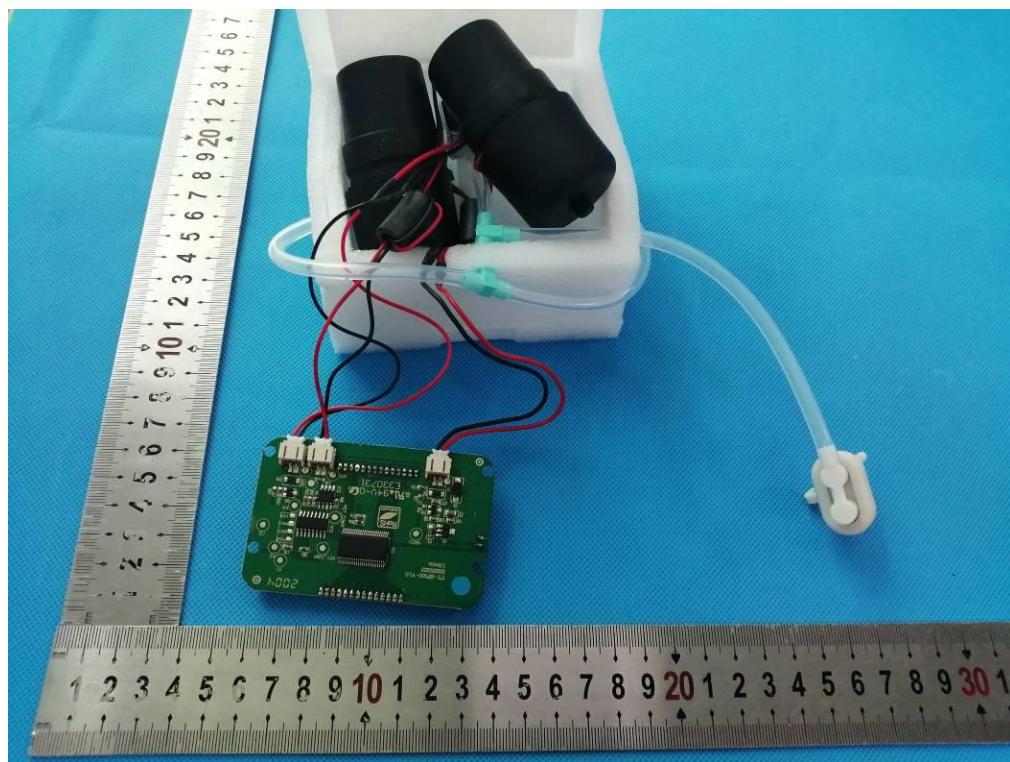


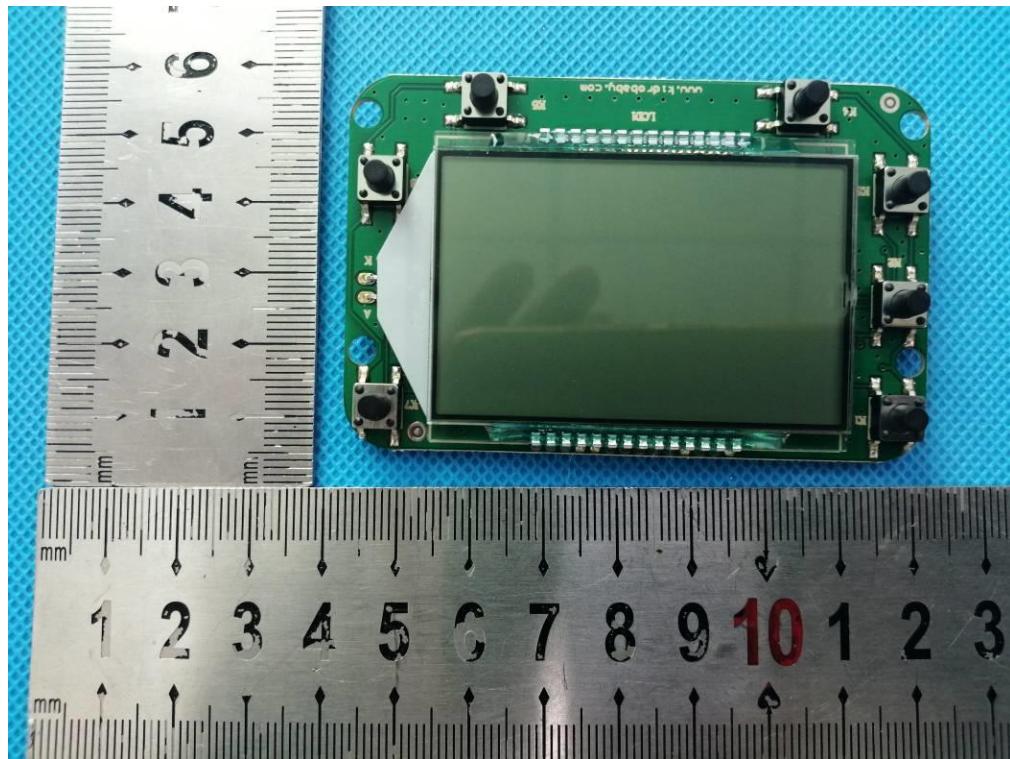






Internal Photos





END