

FCC Test Report

For

Shenzhen SQT Electronics Co., Ltd.

2.4GHz Wireless receiver

Model No.: SMK-626382AG

Prepared For : Shenzhen SQT Electronics Co., Ltd.
Address : ZhengChengFeng TechnologyZone Xinsha Road, ShaYi Village,Sha jing
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Report Number : SZAWW180911004-01

Date of Receipt : Sept. 11, 2018

Date of Test : Sept. 11~25, 2018

Date of Report : Sept. 25, 2018

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TEST REPORT

Applicant : Shenzhen SQT Electronics Co., Ltd.

Manufacturer : Shenzhen SQT Electronics Co., Ltd.

Product Name : 2.4GHz Wireless receiver

Model No. : SMK-626382AG

Trade Mark : N.A.

Rating(s) : Input: DC 5V, 25mA

Test Standard(s) : FCC Rules and Regulations Part 15 Subpart B: 2017**Test Method(s) : ANSI C63.4-2014**

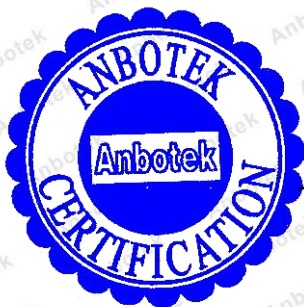
The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited

Date of Test

Sept. 11~25, 2018

Prepared By



(Engineer / Oliay Yang)

Reviewer

(Supervisor / Snowy Meng)

Approved & Authorized Signer

(Manager / Sally Zhang)

1. General Information

1.1. Client Information

| | | |
|--------------|---|--|
| Applicant | : | Shenzhen SQT Electronics Co., Ltd. |
| Address | : | ZhengChengFeng TechnologyZone Xinsha Road, ShaYi Village,Sha jing Town, Baoan Area, Shenzhen, China 518104 |
| Manufacturer | : | Shenzhen SQT Electronics Co., Ltd. |
| Address | : | ZhengChengFeng TechnologyZone Xinsha Road, ShaYi Village,Sha jing Town, Baoan Area, Shenzhen, China 518104 |
| Factory | : | Shenzhen SQT Electronics Co., Ltd. |
| Address | : | ZhengChengFeng TechnologyZone Xinsha Road, ShaYi Village,Sha jing Town, Baoan Area, Shenzhen, China 518104 |

1.2. Description of Device (EUT)

| | | |
|---|---|---|
| Product Name | : | 2.4GHz Wireless receiver |
| Model No. | : | SMK-626382AG |
| Trade Mark | : | N.A. |
| Test Power Supply | : | DC 5V by USB Port |
| Test Sample No. | : | S1(Normal Sample), S2(Engineering Sample) |
| Product Description | : | Adapter: N/A |
| Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. | | |

1.3. Auxiliary Equipment Used During Test

| | | |
|----------|---|---|
| Notebook | : | Manufacturer: FUJITSU LIMITED |
| | : | M/N: LH531 S/N: 518127-01R2300775 DC Rating: DC 19V, 4.22A CE , FCC DOC, CCC |
| | : | Adapter: |
| | : | M/N: ADP-602HA Input: 100V-240V~ 50/60Hz, 1.5A Output: DC 19V, 3.16A |

1.4. Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description |
|--------------|-------------|
| Mode 1 | On Mode |

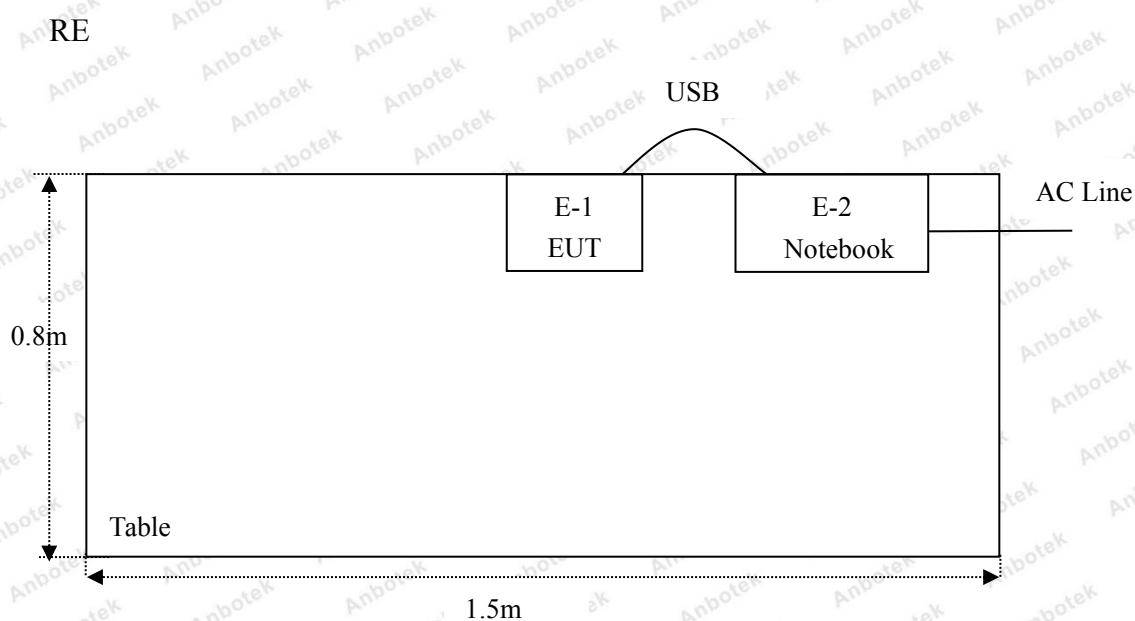
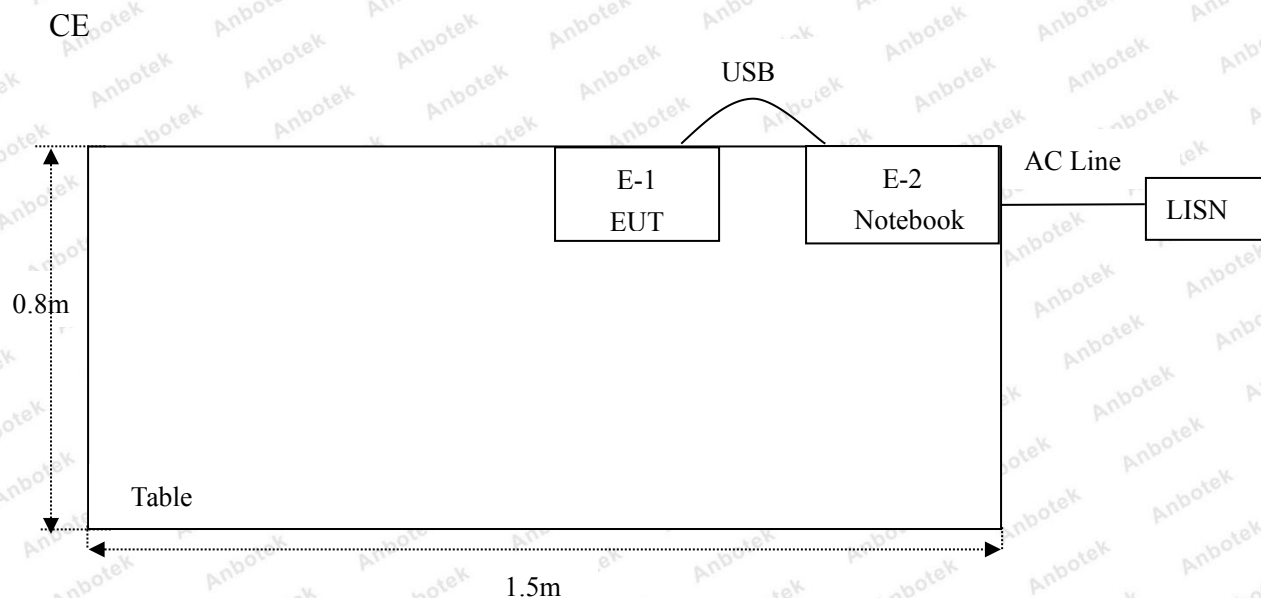
| For Conducted Emission | |
|------------------------|-------------|
| Final Test Mode | Description |
| Mode 1 | On Mode |

| For Radiated Emission | |
|-----------------------|-------------|
| Final Test Mode | Description |
| Mode 1 | On Mode |

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The data rate was set in 1Mbps for radiated emission due to the highest RF output power.

1.5. Description Of Test Setup



1.5. Test Equipment List

Conducted Emission Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---|----------------------|-----------|------------|---------------|---------------|
| 1. | L.I.S.N. Artificial Mains Network | Rohde & Schwarz | ENV216 | 100055 | Nov. 17, 2017 | 1 Year |
| 2. | EMI Test Receiver | Rohde & Schwarz | ESCI | 100627 | Nov. 17, 2017 | 1 Year |
| 3. | RF Switching Unit | Compliance Direction | RSU-M2 | 38303 | Nov. 17, 2017 | 1 Year |
| 4. | Software Name EZ-EMC | Ferrari Technology | ANB-03A | N/A | N/A | N/A |

Radiated Emission Measurement

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|----------------------------|--------------------|-----------|------------------|---------------|---------------|
| 1. | EMI Test Receiver | Rohde & Schwarz | ESCI | 100627 | Nov. 17, 2017 | 1 Year |
| 2. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | VULB 9163-289 | Nov. 20, 2017 | 1 Year |
| 3. | Pre-amplifier | SONOMA | 310N | 186860 | Nov. 17, 2017 | 1 Year |
| 4. | Software Name EZ-EMC | Ferrari Technology | ANB-03A | N/A | N/A | N/A |

1.6. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been Registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, July 31, 2017.

ISED-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A-1, June 13, 2016.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

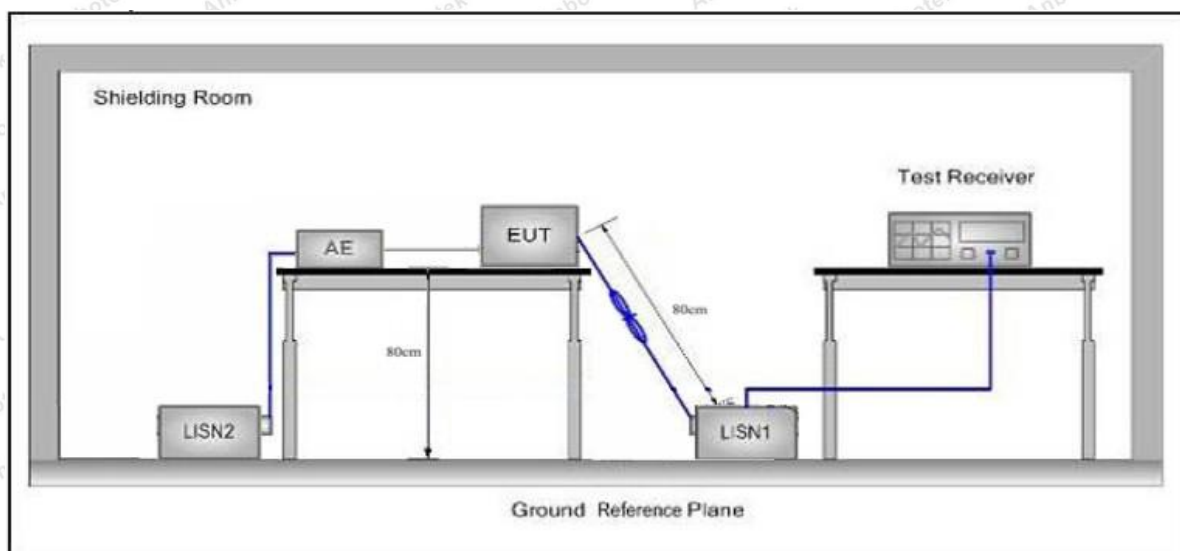
| Test Items | Test Mode | Status |
|---|-----------|--------|
| Power Line Conducted Emission Test (150KHz To 30MHz) | Mode 1 | P |
| Radiated Emission Test (30MHz To 1000MHz) | Mode 1 | P |
| P) Indicates that the through the test. N) Don't test. | | |

3. Conducted Emission Test

3.1. Test Standard and Limit

| Test Standard | FCC Part 15 Subpart B | | |
|--|-----------------------|--------------------------------|---------------|
| Test Limit | Frequency | Maximum RF Line Voltage (dBuV) | |
| | | Quasi-peak Level | Average Level |
| | 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * |
| | 500kHz~5MHz | 56 | 46 |
| | 5MHz~30MHz | 60 | 50 |
| Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency. | | | |

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

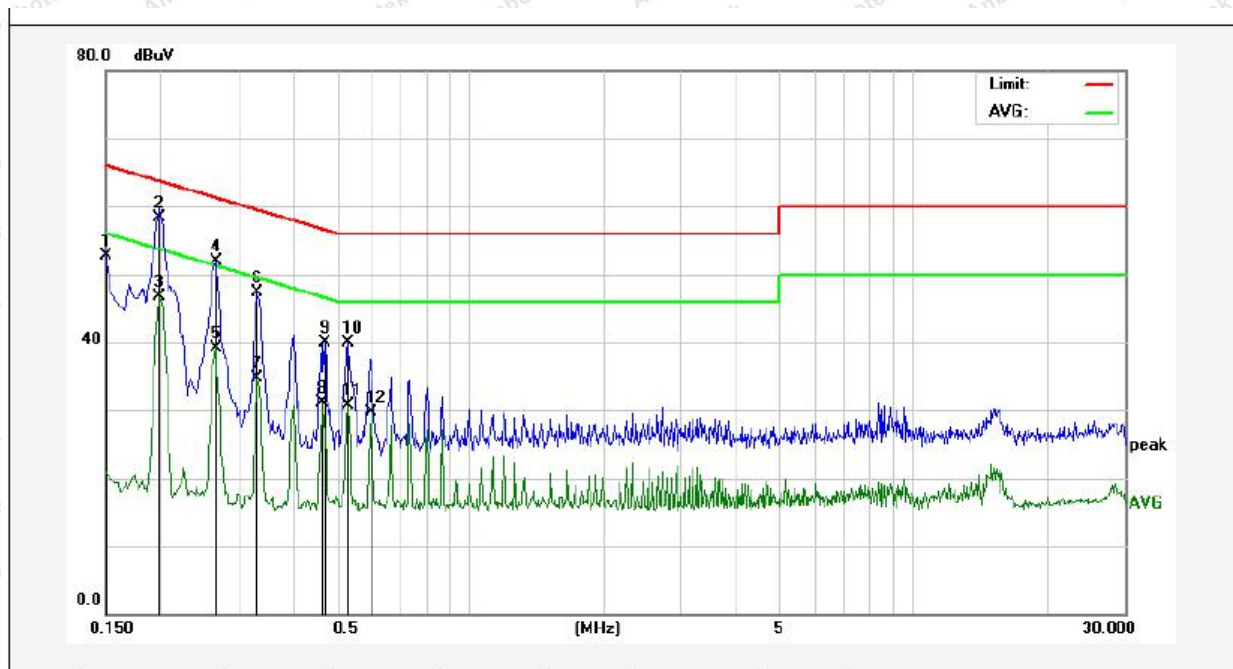
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

Please to see the following pages.

Conducted Emission Test Data

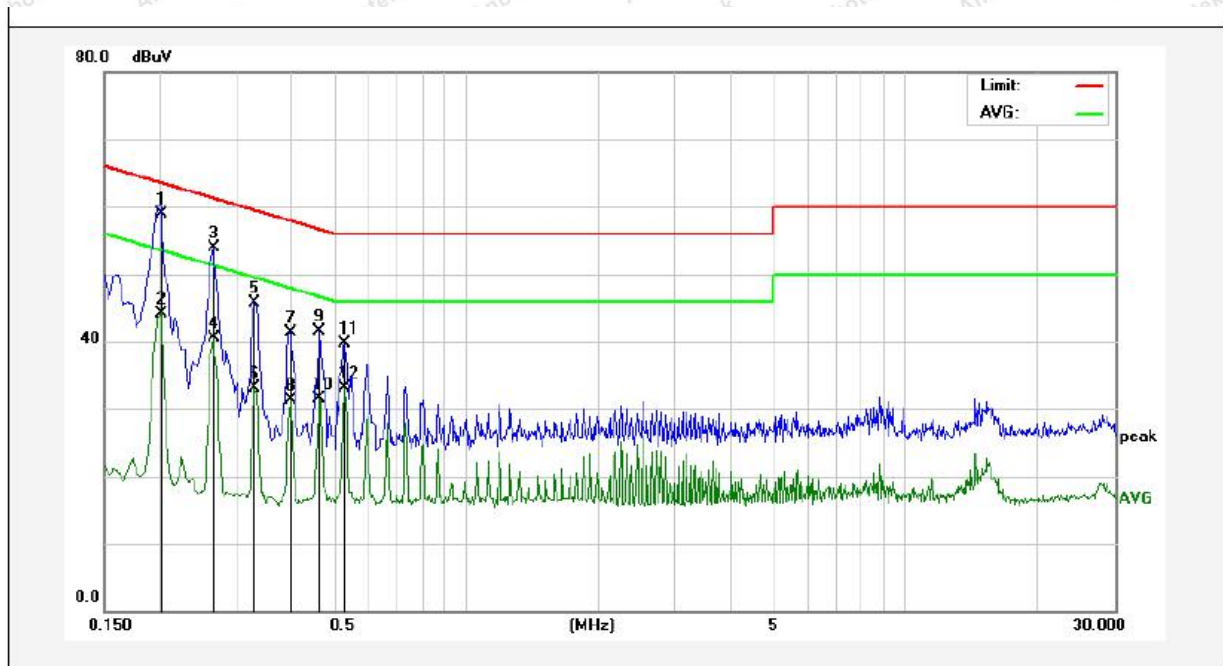
Test Site: 1# Shielded Room
Test Specification: DC 5V by USB Port
Comment: Live Line
Tem.: 24.3℃ Hum.: 47%



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit (dBuV) | Over Limit (dB) | Detector | Remark |
|-----|-------------|----------------|-------------|---------------|--------------|-----------------|----------|--------|
| 1 | 0.1500 | 32.86 | 19.90 | 52.76 | 65.99 | -13.23 | QP | |
| 2 | 0.1980 | 38.33 | 19.90 | 58.23 | 63.69 | -5.46 | QP | |
| 3 | 0.1980 | 26.74 | 19.90 | 46.64 | 53.69 | -7.05 | AVG | |
| 4 | 0.2660 | 31.95 | 19.89 | 51.84 | 61.24 | -9.40 | QP | |
| 5 | 0.2660 | 19.31 | 19.89 | 39.20 | 51.24 | -12.04 | AVG | |
| 6 | 0.3300 | 27.35 | 19.90 | 47.25 | 59.45 | -12.20 | QP | |
| 7 | 0.3300 | 14.75 | 19.90 | 34.65 | 49.45 | -14.80 | AVG | |
| 8 | 0.4620 | 11.06 | 19.96 | 31.02 | 46.66 | -15.64 | AVG | |
| 9 | 0.4700 | 19.95 | 19.97 | 39.92 | 56.51 | -16.59 | QP | |
| 10 | 0.5299 | 19.88 | 19.99 | 39.87 | 56.00 | -16.13 | QP | |
| 11 | 0.5299 | 10.72 | 19.99 | 30.71 | 46.00 | -15.29 | AVG | |
| 12 | 0.5980 | 9.77 | 20.01 | 29.78 | 46.00 | -16.22 | AVG | |

Conducted Emission Test Data

Test Site: 1# Shielded Room
Test Specification: DC 5V by USB Port
Comment: Neutral Line
Tem.: 24.3℃ Hum.: 47%



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Over Limit (dB) | Detector | Remark |
|-----|-------------|----------------|-------------|---------------|------------|-----------------|----------|--------|
| 1 | 0.2020 | 39.03 | 19.90 | 58.93 | 63.52 | -4.59 | QP | |
| 2 | 0.2020 | 24.30 | 19.90 | 44.20 | 53.52 | -9.32 | AVG | |
| 3 | 0.2660 | 33.96 | 19.89 | 53.85 | 61.24 | -7.39 | QP | |
| 4 | 0.2660 | 20.68 | 19.89 | 40.57 | 51.24 | -10.67 | AVG | |
| 5 | 0.3300 | 25.81 | 19.90 | 45.71 | 59.45 | -13.74 | QP | |
| 6 | 0.3300 | 13.21 | 19.90 | 33.11 | 49.45 | -16.34 | AVG | |
| 7 | 0.3980 | 21.32 | 19.93 | 41.25 | 57.89 | -16.64 | QP | |
| 8 | 0.3980 | 11.40 | 19.93 | 31.33 | 47.89 | -16.56 | AVG | |
| 9 | 0.4660 | 21.64 | 19.96 | 41.60 | 56.58 | -14.98 | QP | |
| 10 | 0.4660 | 11.57 | 19.96 | 31.53 | 46.58 | -15.05 | AVG | |
| 11 | 0.5299 | 19.76 | 19.99 | 39.75 | 56.00 | -16.25 | QP | |
| 12 | 0.5299 | 13.10 | 19.99 | 33.09 | 46.00 | -12.91 | AVG | |

4. Radiated Emission Test

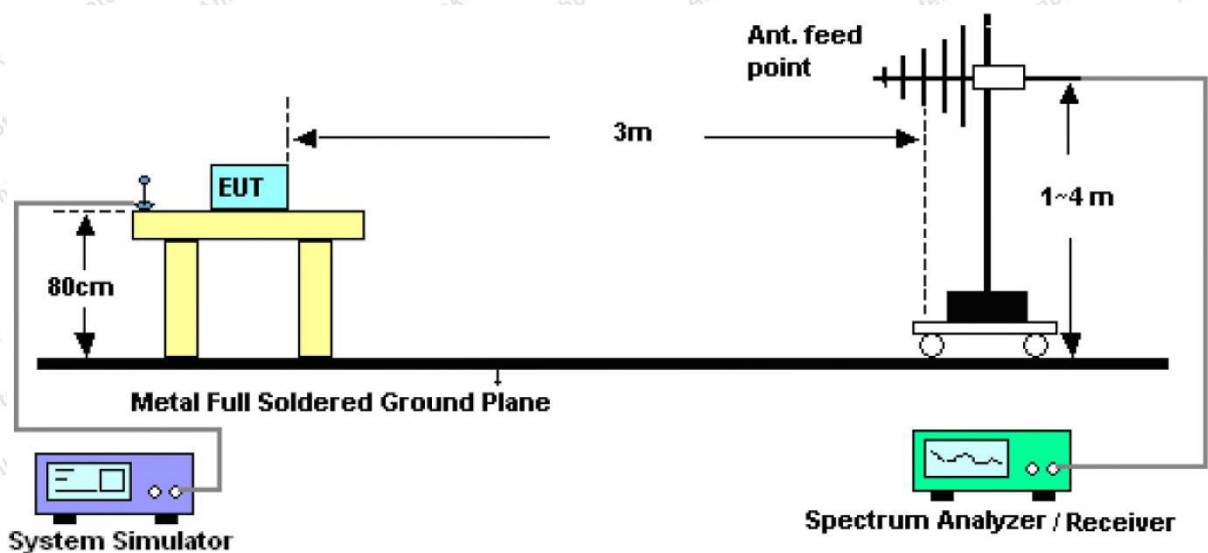
4.1. Test Standard and Limit

| Test Standard | FCC Part 15 Subpart B | | | | |
|---------------|-----------------------|----------------------------------|----------------|------------|--------------------------|
| Test Limit | Frequency (MHz) | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
| | 30MHz~88MHz | 100 | 40.0 | Quasi-peak | 3 |
| | 88MHz~216MHz | 150 | 43.5 | Quasi-peak | 3 |
| | 216MHz~960MHz | 200 | 46.0 | Quasi-peak | 3 |
| | 960MHz~1000MHz | 500 | 54.0 | Quasi-peak | 3 |

Remark:

- (1) Emission level (dB) μ V = 20 log Emission level μ V/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.2. Test Setup



4.3. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (Trilog Broadband Antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver (ESCI) is set at 120kHz.

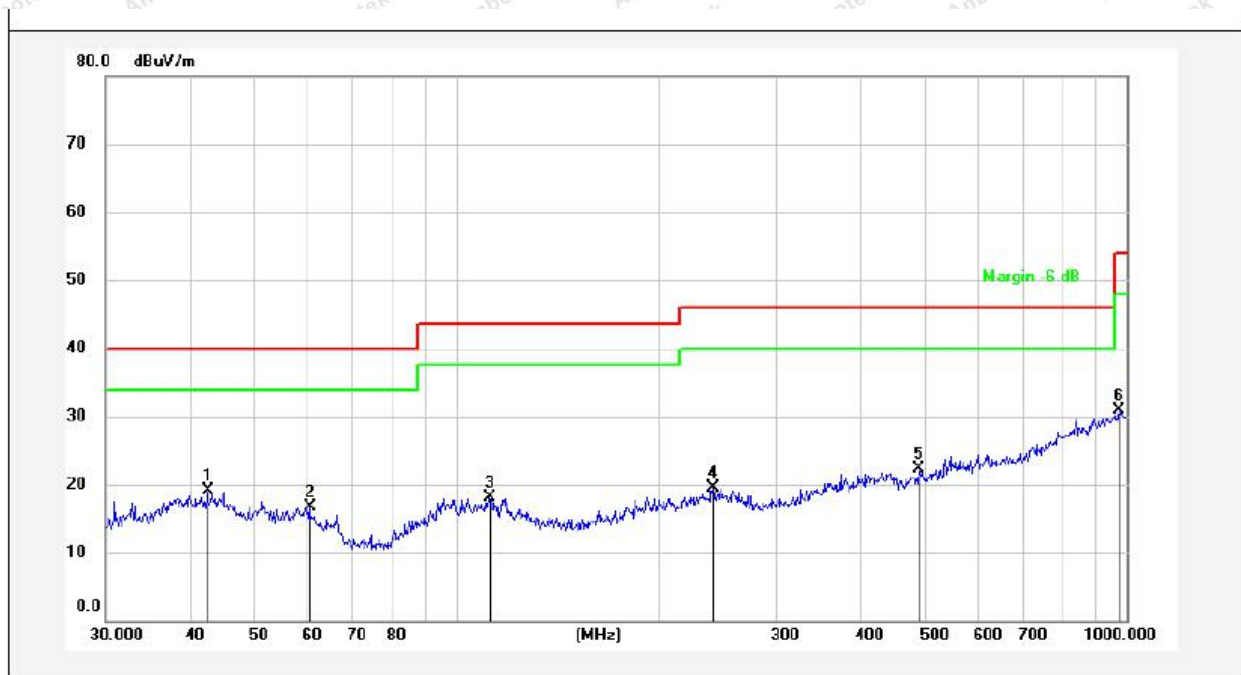
The frequency range from 30MHz to 1000MHz is checked.

4.4. Test Data

Please to see the following pages.

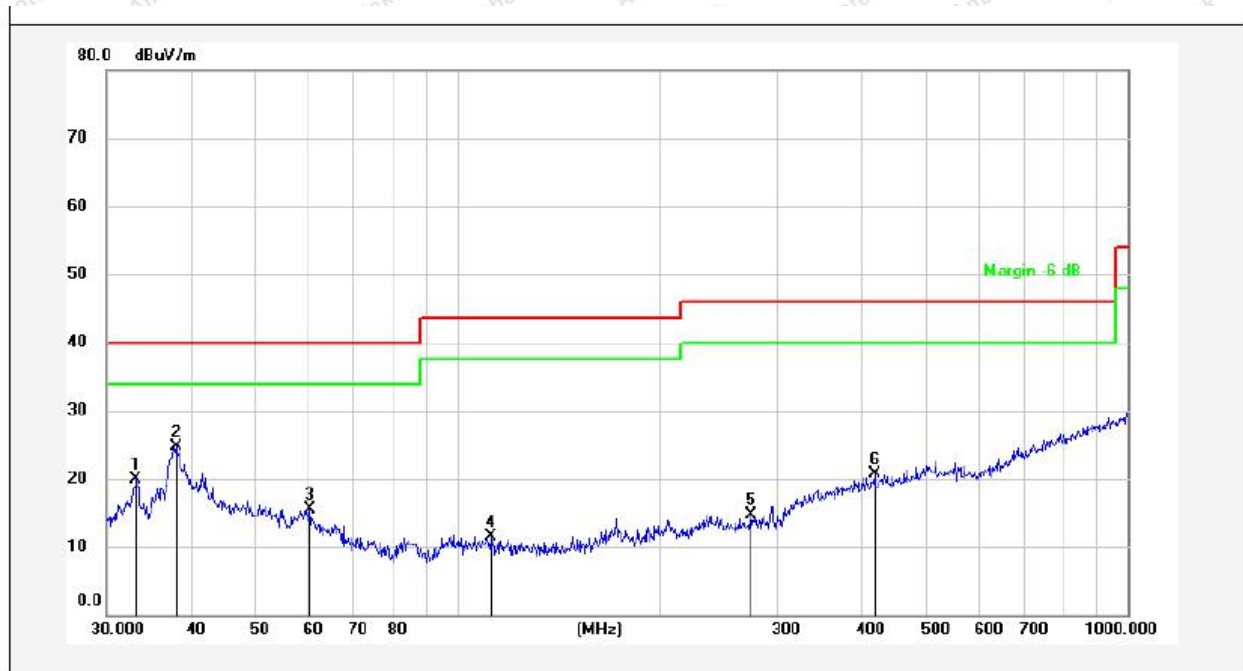
Test Results (30~1000MHz)

Test item: Radiation Test **Polarization:** Horizontal
Standard: (RE)FCC Part 15 Subpart B **Power Source:** DC 5V by USB Port
Distance: 3m **Temp.(°C)/Hum.(%RH):** 23.4(°C)/49%RH



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Height (cm) | degree (deg) | Remark |
|-----|-------------|----------------|---------------|-----------------|----------------|-----------------|----------|-------------|--------------|--------|
| 1 | 42.6000 | 33.89 | -14.87 | 19.02 | 40.00 | -20.98 | peak | | | |
| 2 | 60.4919 | 33.81 | -17.18 | 16.63 | 40.00 | -23.37 | peak | | | |
| 3 | 111.7380 | 38.85 | -20.74 | 18.11 | 43.50 | -25.39 | peak | | | |
| 4 | 241.6763 | 37.03 | -17.58 | 19.45 | 46.00 | -26.55 | peak | | | |
| 5 | 489.0269 | 33.56 | -11.27 | 22.29 | 46.00 | -23.71 | peak | | | |
| 6 | 972.3374 | 34.49 | -3.60 | 30.89 | 54.00 | -23.11 | peak | | | |

Test item: Radiation Test **Polarization:** Vertical
Standard: (RE)FCC Part 15 Subpart B **Power Source:** DC 5V by USB Port
Distance: 3m **Temp.(°C)/Hum.(%RH):** 23.4(°C)/49%RH



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Over Limit (dB) | Detector | Height (cm) | degree (deg) | Remark |
|-----|-------------|----------------|---------------|-----------------|----------------|-----------------|----------|-------------|--------------|--------|
| 1 | 33.2111 | 36.52 | -16.61 | 19.91 | 40.00 | -20.09 | peak | | | |
| 2 | 38.0782 | 39.13 | -14.42 | 24.71 | 40.00 | -15.29 | peak | | | |
| 3 | 60.2800 | 31.55 | -16.10 | 15.45 | 40.00 | -24.55 | peak | | | |
| 4 | 112.1304 | 26.34 | -14.77 | 11.57 | 43.50 | -31.93 | peak | | | |
| 5 | 274.1938 | 29.39 | -14.61 | 14.78 | 46.00 | -31.22 | peak | | | |
| 6 | 419.1080 | 32.09 | -11.30 | 20.79 | 46.00 | -25.21 | peak | | | |

APPENDIX I -- TEST SETUP PHOTOGRAPH

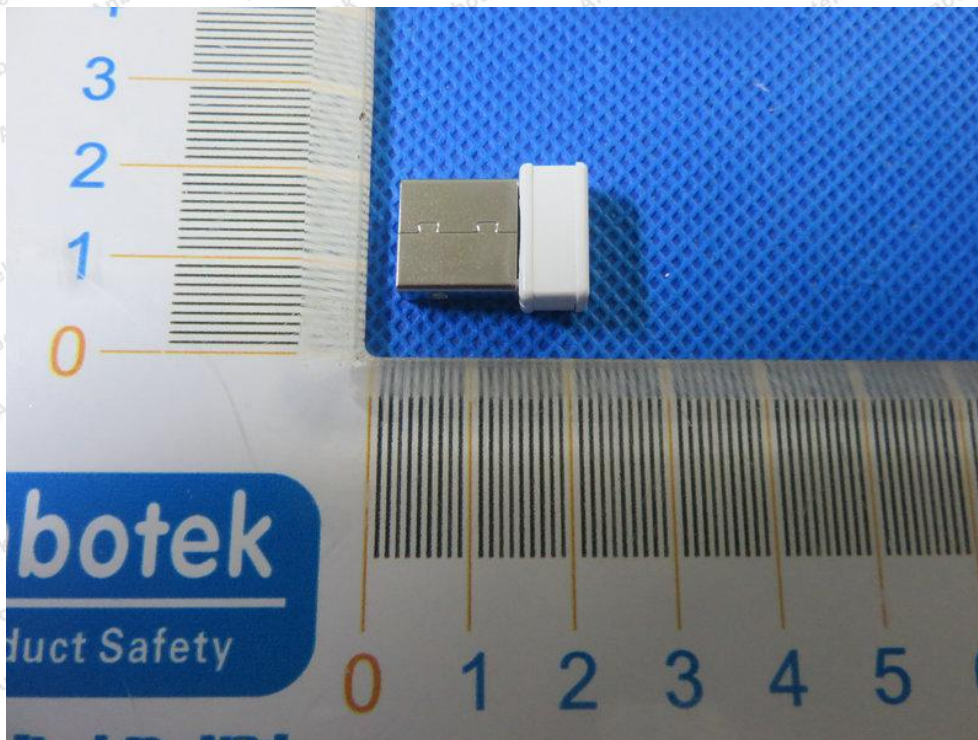
Photo of Power Line Conducted Emission Test

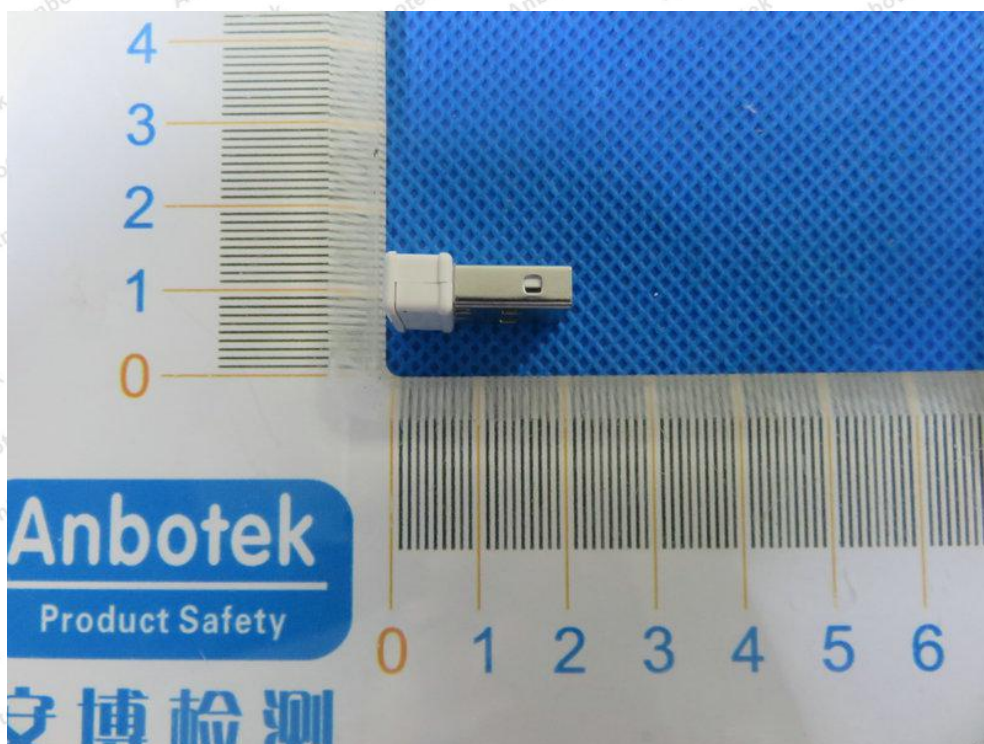


Photo of Radiated Emission Test



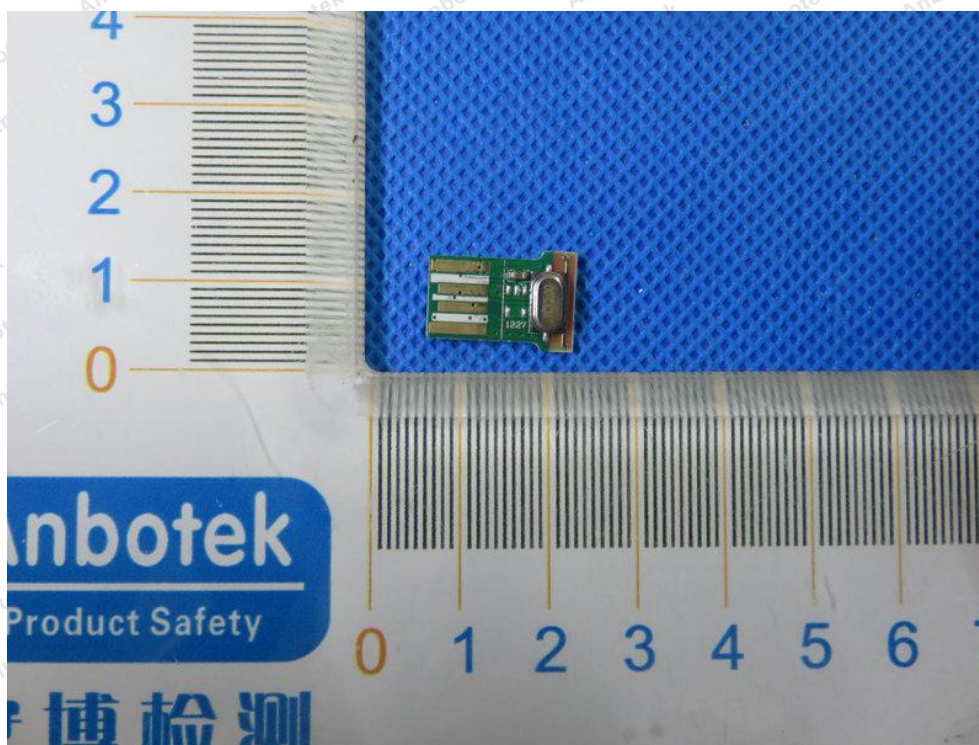
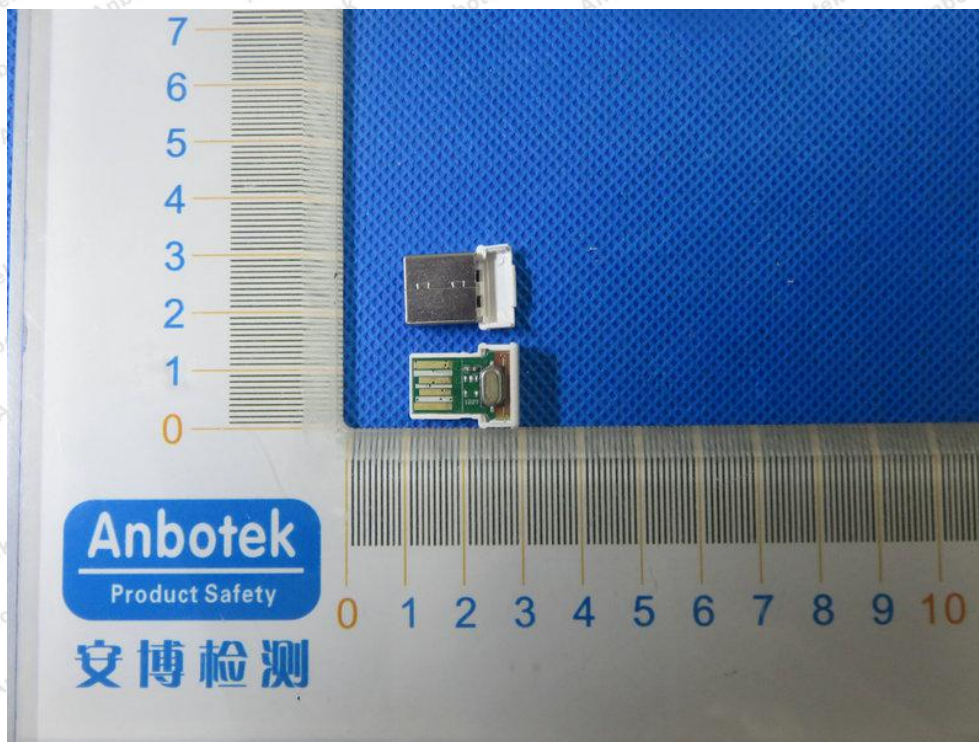
APPENDIX II -- EXTERNAL PHOTOGRAPH

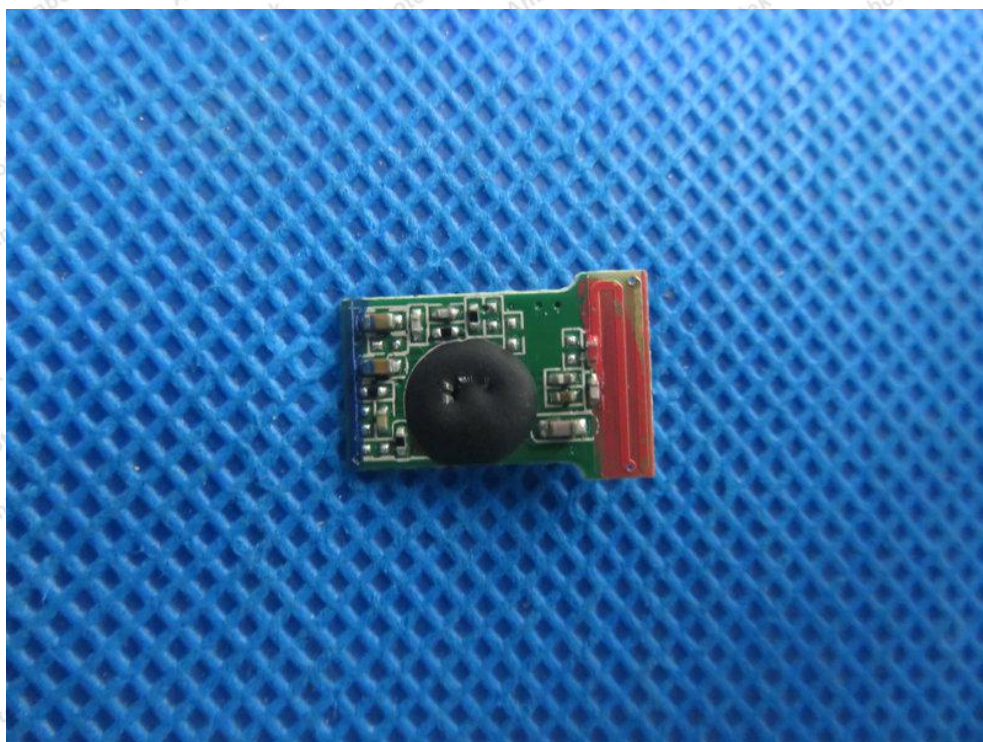
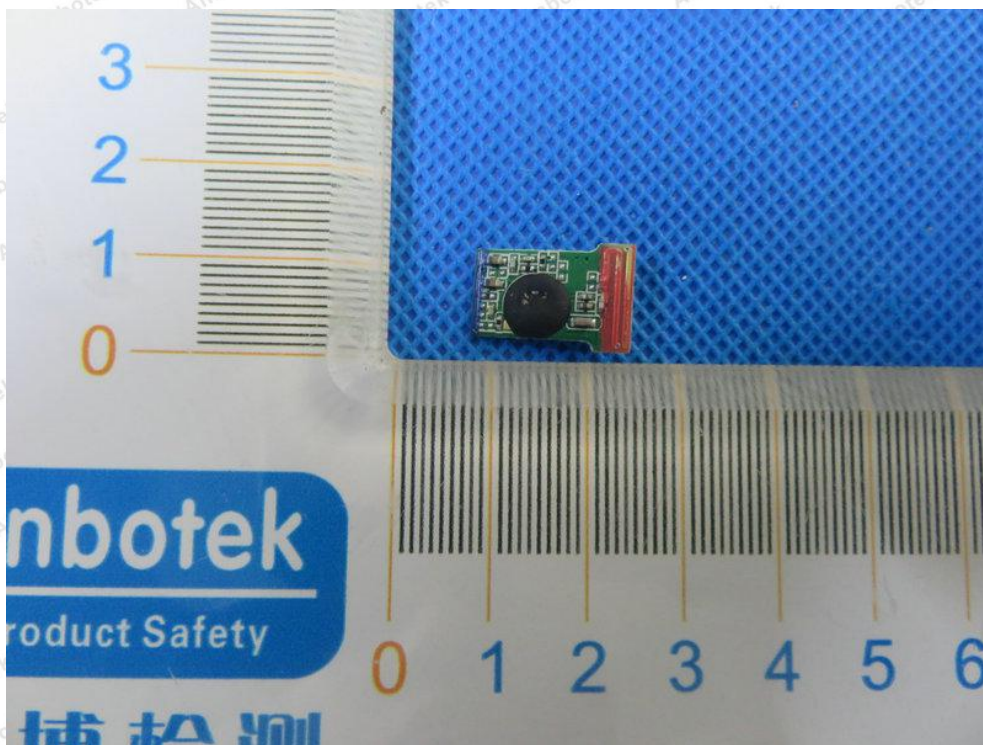






APPENDIX III -- INTERNAL PHOTOGRAPH







----- End of Report -----