
FCC Test Report

Report No.: AGC08073200202FE06

FCC ID : 2AOXY-BH425A
APPLICATION PURPOSE : Original Equipment
PRODUCT DESIGNATION : Bluetooth FM Transmitter
BRAND NAME : N/A
MODEL NAME : BH425A, BH425B, BH425C
APPLICANT : Shenzhen Qianhai Patuoxun Network&Technology co.,
ltd
DATE OF ISSUE : Apr. 09, 2020
STANDARD(S) : FCC Part 15.239
REPORT VERSION : V1.0

Attestation of Global Compliance(Shenzhen) Co., Ltd

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Report Revise Record

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | / | Apr. 09, 2020 | Valid | Original Report |



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1. VERIFICATION OF CONFORMITY

| | |
|---------------------------------|---|
| Applicant | Shenzhen Qianhai Patuoxun Network&Technology co., ltd |
| Address | Wuhe RD 49#, Bantian District B-202, 6th Building Shenzhen Guangdong CN |
| Manufacturer | Shenzhen Qianhai Patuoxun Network&Technology co., ltd |
| Address | Wuhe RD 49#, Bantian District B-202, 6th Building Shenzhen Guangdong CN |
| Factory | SHENZHEN LEADINWAY TECHNOLOGY CO.,LTD |
| Address | Block 29, Baotian Industrial Zone, Chentian, Xixiang Town, Baoan District, Shenzhen China |
| Product Designation | Bluetooth FM Transmitter |
| Brand Name | N/A |
| Test Model | BH425A |
| Series Model | BH425B, BH425C |
| Difference Description | All the same except for the model name |
| Date of test | Mar. 17, 2020 to Apr. 09, 2020 |
| Deviation | No any deviation from the test method |
| Condition of Test Sample | Normal |
| Test Result | Pass |
| Report Template | AGCRT-US-BR/RF (2013-03-01) |

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC part 15.239.

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Apr. 09, 2020

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Apr. 09, 2020

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Apr. 09, 2020



2. GENERAL INFORMATION

2.1.PRODUCT DESCRIPTION

A major technical description of EUT is described as following

| | |
|----------------------------|---|
| Operation Frequency | 88.1MHz-107.9MHz |
| Field Strength(3m) | 45.76dBuV/m(AVG)@3m |
| Modulation | FM |
| Number of channels | 199(Channel spacing 100kHz) |
| Hardware Version | BC58-2819-V1_20200107 |
| Software Version | 2819_YHW_BC58_20200401_V1.5_LY |
| Antenna Designation | Integral Antenna (Met 15.203 Antenna requirement) |
| Antenna Gain | 0dBi |
| Power Supply | DC 12/24V by car battery |

NOTE: About the EUT, please refer to User's Manual.

3. MEASUREMENT UNCERTAINTY

- Uncertainty of Radiated Emission below 1GHz, $U_c = \pm 3.9$ dB
- Uncertainty of Radiated Emission above 1GHz, $U_c = \pm 4.8$ dB

4. DESCRIPTION OF TEST MODES

| NO. | TEST MODE DESCRIPTION |
|-----|---|
| 1 | Sim TX BT Low channel GFSK + FM Low channel |
| 2 | Sim TX BT Middle channel GFSK+ FM Low channel |
| 3 | Sim TX BT High channel GFSK+ FM Low channel |
| 4 | Sim TX BT Low channel $\pi/4$ -DQPSK+ FM Low channel |
| 5 | Sim TX BT Middle channel $\pi/4$ -DQPSK+ FM Low channel |
| 6 | Sim TX BT High channel $\pi/4$ -DQPSK+ FM Low channel |
| 7 | Sim TX BT Low channel 8DPSK + FM Low channel |
| 8 | Sim TX BT Middle channel 8DPSK + FM Low channel |
| 9 | Sim TX BT High channel 8DPSK + FM Low channel |
| 10 | Sim TX BT Low channel GFSK + FM Middle channel |
| 11 | Sim TX BT Middle channel GFSK+ FM Middle channel |
| 12 | Sim TX BT High channel GFSK+ FM Middle channel |



| | |
|----|--|
| 13 | Sim TX BT Low channel $\pi/4$ -DQPSK+ FM Middle channel |
| 14 | Sim TX BT Middle channel $\pi/4$ -DQPSK+ FM Middle channel |
| 15 | Sim TX BT High channel $\pi/4$ -DQPSK+ FM Middle channel |
| 16 | Sim TX BT Low channel 8DPSK + FM Middle channel |
| 17 | Sim TX BT Middle channel 8DPSK + FM Middle channel |
| 18 | Sim TX BT High channel 8DPSK + FM Middle channel |
| 19 | Sim TX BT Low channel GFSK + FM High channel |
| 20 | Sim TX BT Middle channel GFSK+ FM High channel |
| 21 | Sim TX BT High channel GFSK+ FM High channel |
| 22 | Sim TX BT Low channel $\pi/4$ -DQPSK+ FM High channel |
| 23 | Sim TX BT Middle channel $\pi/4$ -DQPSK+ FM High channel |
| 24 | Sim TX BT High channel $\pi/4$ -DQPSK+ FM High channel |
| 25 | Sim TX BT Low channel 8DPSK + FM High channel |
| 26 | Sim TX BT Middle channel 8DPSK + FM High channel |
| 27 | Sim TX BT High channel 8DPSK + FM High channel |

Note: 1. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
 2. All the requirements have been tested by modulating the transmitter with a 2.5 kHz tone at a fixed level which set to the manufacturer's maximum rated input to the modulator.
 3. Only the result of the worst case was recorded in the report, if no other cases.
 4. Tuning-Range confirmed 88.1 ~ 107.9 MHz



5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

| Item | Equipment | Model No. | ID or Specification | Remark |
|------|--------------------------|----------------------|---------------------|--------|
| 1 | Bluetooth FM Transmitter | BH425A | 2AOXY-BH425A | EUT |
| 2 | Smart phone | P8 | N/A | A.E |
| 3 | U-disk | DataTraveler SE9 16G | N/A | A.E |
| 4 | Battery | N300 | N/A | A.E |
| 5 | TF card | M203 | N/A | A.E |
| 6 | USB line | 2375 | 1m | A.E |

5.2. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|-----------|---|-----------|
| 15.239 | Field Strength of Fundamental and Spurious Emission | Compliant |
| 15.215 | Bandwidth | Compliant |
| 15.209 | Line Conducted Emission | N/A |

Note: The EUT was supplied by car battery.



6. TEST FACILITY

| | |
|--|---|
| TestSite | Attestation of Global Compliance(Shenzhen) Co., Ltd |
| Location | 1-2/F,Building19,JunfengIndustrialPark,ChongqingRoad,HepingCommunity,Fuhai Street,Bao'anDistrict,Shenzhen,Guangdong,China |
| Designation Number | CN1259 |
| FCC Test Firm Registration Number | 975832 |
| A2LA Cert. No. | 5054.02 |
| Description | Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA |

TEST EQUIPMENT OF RADIATED EMISSION TEST

| Equipment | Manufacturer | Model | S/N | Cal. Date | Cal. Due |
|--------------------------------|----------------|---------------------|------------|---------------|---------------|
| TEST RECEIVER | R&S | ESCI | 10096 | Jun. 12, 2019 | Jun. 11, 2020 |
| EXA Signal Analyzer | Aglient | N9010A | MY53470504 | Dec. 12, 2019 | Dec. 11, 2020 |
| 2.4GHz Fliter | EM Electronics | 2400-2500MHz | N/A | Feb. 26, 2020 | Feb. 25, 2021 |
| Attenuator | ZHINAN | E-002 | N/A | Sep. 09, 2019 | Sep. 08, 2020 |
| Horn antenna | SCHWARZBECK | BBHA 9170 | #768 | Sep.21, 2019 | Sep. 20, 2021 |
| Active loop antenna (9K-30MHz) | ZHINAN | ZN30900C | 18051 | Jun. 13, 2018 | Jun. 12, 2020 |
| Double-Ridged Waveguide Horn | ETS LINDGREN | 3117 | 00034609 | May. 17, 2018 | May. 16, 2020 |
| Broadband Preamplifier | ETS LINDGREN | 3117PA | 00225134 | Oct. 15, 2019 | Oct. 16, 2020 |
| ANTENNA | SCHWARZBECK | VULB9168 | 494 | Sep. 20, 2019 | Sep. 19, 2021 |
| Test software | FARA | EZ-EMC (Ver RA-03A) | N/A | N/A | N/A |



7. RADIATED EMISSION

7.1. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. 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.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

The following table is the setting of spectrum analyzer and receiver.

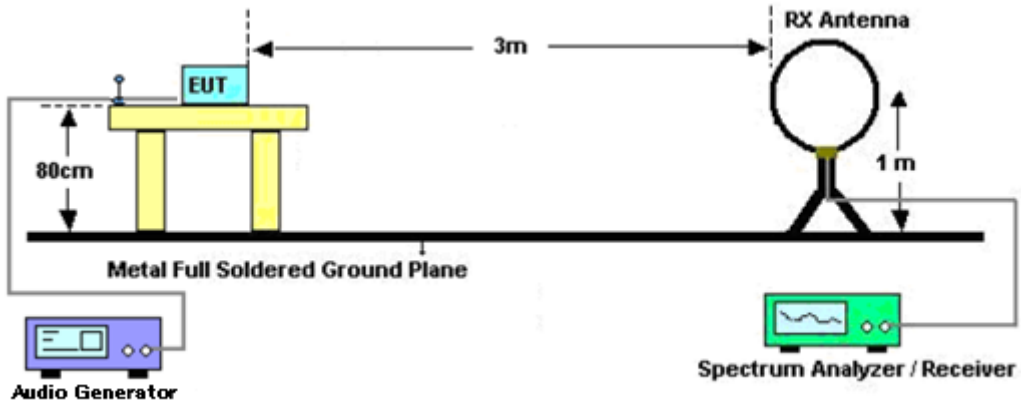
| Spectrum Parameter | Setting |
|-----------------------|---|
| Start ~Stop Frequency | 9KHz~150KHz/RB 200Hz for QP |
| Start ~Stop Frequency | 150KHz~30MHz/RB 9KHz for QP |
| Start ~Stop Frequency | 30MHz~1000MHz/RB 120KHz for QP |
| Start ~Stop Frequency | 1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average |

| Receiver Parameter | Setting |
|-----------------------|--------------------------------|
| Start ~Stop Frequency | 9KHz~150KHz/RB 200Hz for QP |
| Start ~Stop Frequency | 150KHz~30MHz/RB 9KHz for QP |
| Start ~Stop Frequency | 30MHz~1000MHz/RB 120KHz for QP |

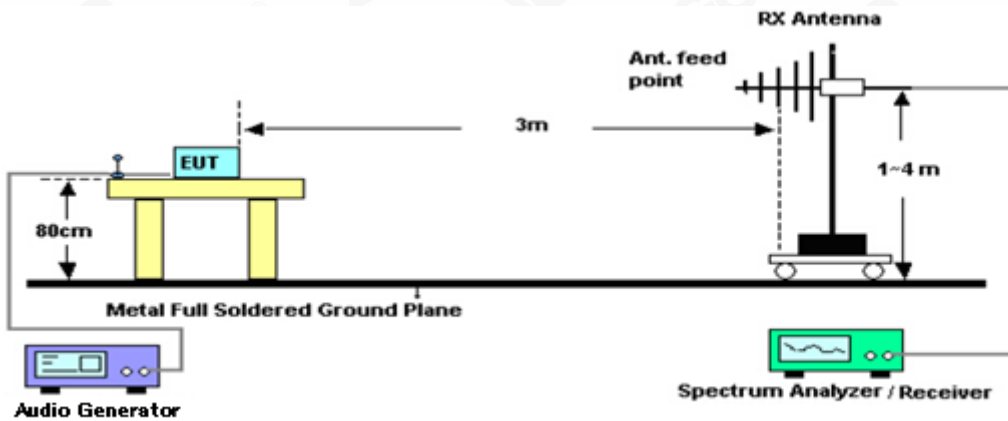


7.2.TEST SETUP

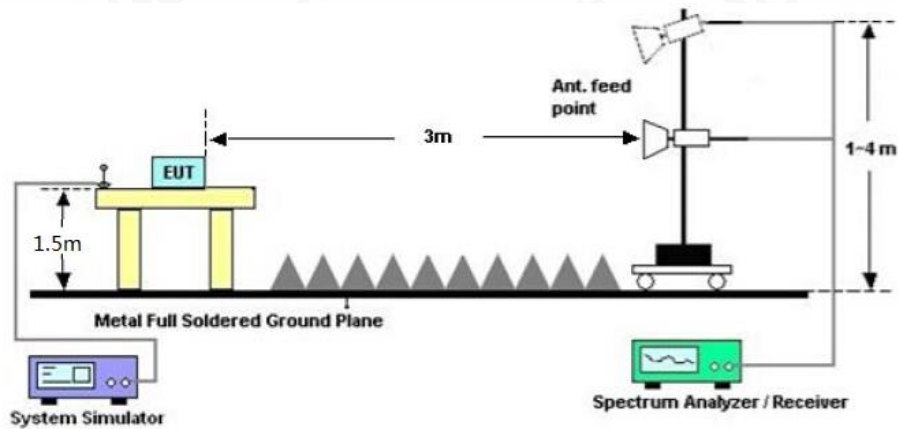
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



7.3. TEST RESULT FOR FIELD STRENGTH OF FUNDAMENTAL

| Frequency MHz | Polarization | Level dB(uV/m) PK | Limit dB(uV/m) PK | Margin dB | Pass/Fail | Detector |
|---------------|--------------|-------------------|-------------------|-----------|-----------|----------|
| 88.100 | H | 42.72 | 67.96 | 25.24 | Pass | PK |
| 88.100 | V | 44.68 | 67.96 | 23.28 | Pass | PK |
| 98.000 | H | 45.71 | 67.96 | 22.25 | Pass | PK |
| 98.000 | V | 46.53 | 67.96 | 21.43 | Pass | PK |
| 107.900 | H | 45.92 | 67.96 | 22.04 | Pass | PK |
| 107.900 | V | 46.02 | 67.96 | 21.94 | Pass | PK |
| Frequency MHz | Polarization | Level dB(uV/m) AV | Limit dB(uV/m) AV | Margin dB | Pass/Fail | Detector |
| 88.100 | H | 41.77 | 47.96 | 6.19 | Pass | AV |
| 88.100 | V | 43.54 | 47.96 | 4.42 | Pass | AV |
| 98.000 | H | 44.85 | 47.96 | 3.11 | Pass | AV |
| 98.000 | V | 45.76 | 47.96 | 2.20 | Pass | AV |
| 107.900 | H | 44.69 | 47.96 | 3.27 | Pass | AV |
| 107.900 | V | 45.34 | 47.96 | 2.62 | Pass | AV |

7.4. TEST RESULT FOR FIELD STRENGTH OF BAND EDGE EMISSION

| Frequency MHz | Polarization | Level dB(uV/m) QP | Limit dB(uV/m) QP | Margin dB | Pass/Fail | Detector |
|---------------|--------------|-------------------|-------------------|-----------|-----------|----------|
| 88.000 | H | 33.48 | 40 | 6.52 | Pass | QP |
| 88.000 | V | 31.19 | 40 | 8.81 | Pass | QP |
| 108.000 | H | 32.84 | 43.5 | 10.66 | Pass | QP |
| 108.000 | V | 30.31 | 43.5 | 13.19 | Pass | QP |

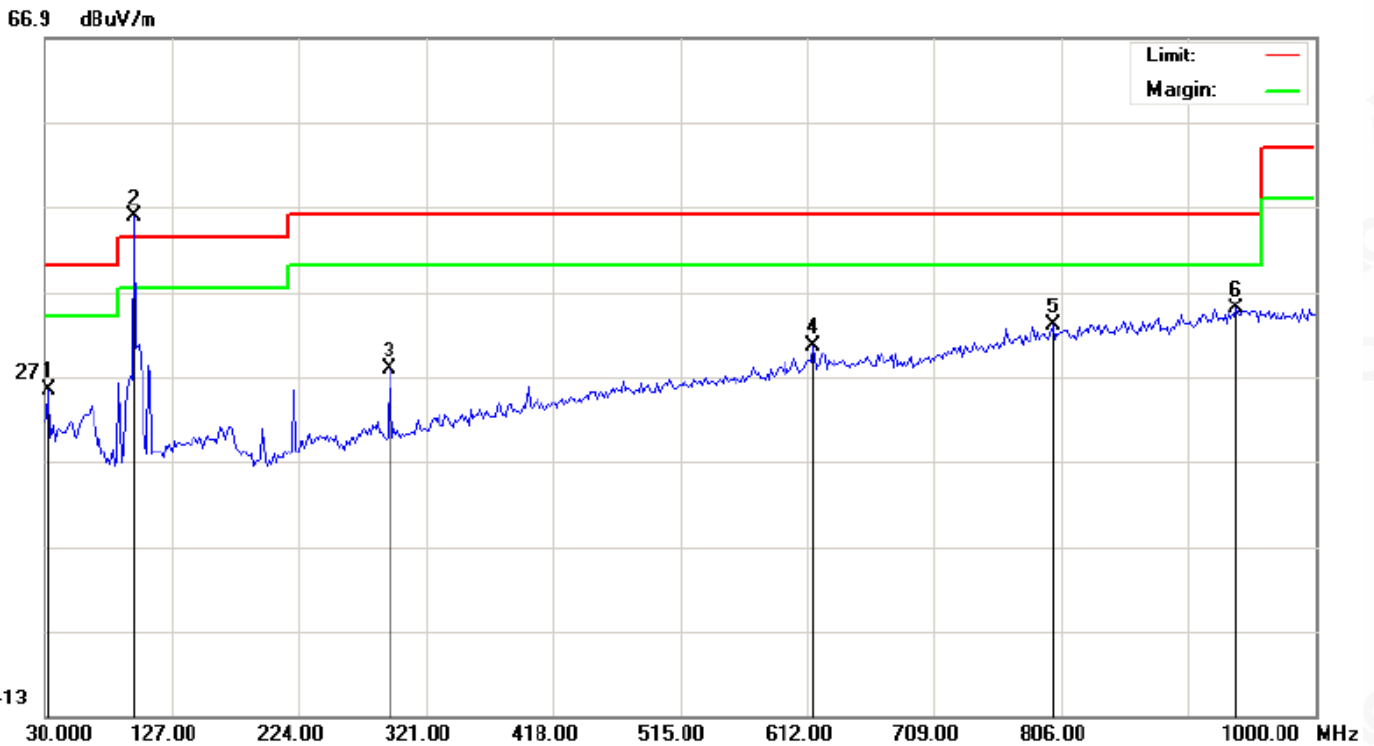
Note: The above two frequencies are the worst case for the band edge emission test.

7.5. TEST RESULT FOR SPURIOUS EMISSION

RADIATED EMISSION BELOW 30MHz

No emission found between lowest internal used/generated frequencies to 30MHz.

RADIATED EMISSION BELOW 1GHZ-Horizontal



| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | | 33.2333 | 7.06 | 18.27 | 25.33 | 40.00 | -14.67 | peak | | | |
| 2 | * | 98.0000 | 29.92 | 15.79 | 45.71 | 47.96 | -2.25 | peak | | | |
| 3 | | 293.5167 | 8.26 | 19.62 | 27.88 | 46.00 | -18.12 | peak | | | |
| 4 | | 616.8500 | 3.43 | 27.15 | 30.58 | 46.00 | -15.42 | peak | | | |
| 5 | | 799.5333 | 2.68 | 30.40 | 33.08 | 46.00 | -12.92 | peak | | | |
| 6 | | 940.1833 | 3.02 | 32.05 | 35.07 | 46.00 | -10.93 | peak | | | |

RESULT: PASS



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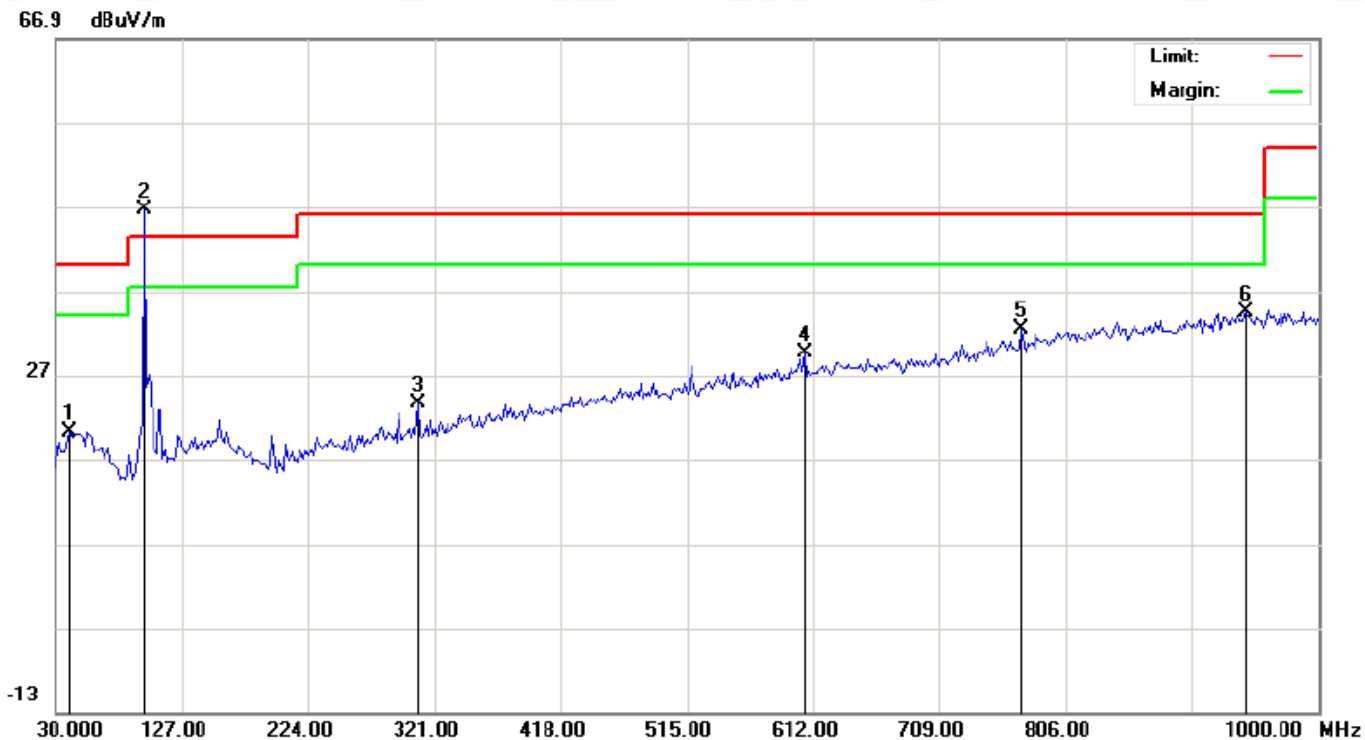
Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,
Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

RADIATED EMISSION BELOW 1GHZ-Vertical



| No. | Mk | Freq. | Reading | Factor | Measurement | Limit | Over | Detector | Antenna Height | Table Degree | Comment |
|-----|----|----------|---------|--------|-------------|--------|--------|----------|----------------|--------------|---------|
| | | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | cm | degree | |
| 1 | | 41.3167 | 0.25 | 20.04 | 20.29 | 40.00 | -19.71 | peak | | | |
| 2 | * | 98.0000 | 30.74 | 15.79 | 46.53 | 47.96 | -1.43 | peak | | | |
| 3 | | 308.0667 | 3.88 | 19.75 | 23.63 | 46.00 | -22.37 | peak | | | |
| 4 | | 605.5333 | 2.61 | 27.02 | 29.63 | 46.00 | -16.37 | peak | | | |
| 5 | | 772.0500 | 2.62 | 29.78 | 32.40 | 46.00 | -13.60 | peak | | | |
| 6 | | 945.0333 | 2.34 | 32.09 | 34.43 | 46.00 | -11.57 | peak | | | |

RESULT: PASS

Note:

1. Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin=Measurement-Limit.
2. The "Factor" value can be calculated automatically by software of measurement system.
3. All test modes had been tested. The Middle channel is the worst case and recorded in the report.
4. Other emissions from 1G to 25GHz are considered as ambient noise. No recording in the test report.

8. BANDWIDTH

8.1. MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:

Centre frequency = Operation Frequency

RBW=3KHz

VBW=10KHz

Span: 300kHz

Sweep time: Auto

For the occupied bandwidth measurements, the input signal shall be a 2.5 kHz tone.

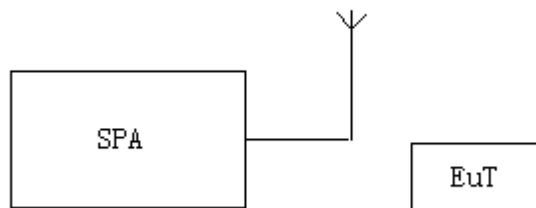
The level of the tone shall be 16 dB higher than that required to produce a frequency deviation of 75 kHz, or 50% of the manufacturer's rated deviation, whichever is less.

Alternatively, in the event that a 16 dB increase cannot be achieved, the level of the tone shall be set to the manufacturer's maximum rated input to the modulator.

2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the "N dB down" function of SPA to define the bandwidth.

3. Record the plots and Reported.

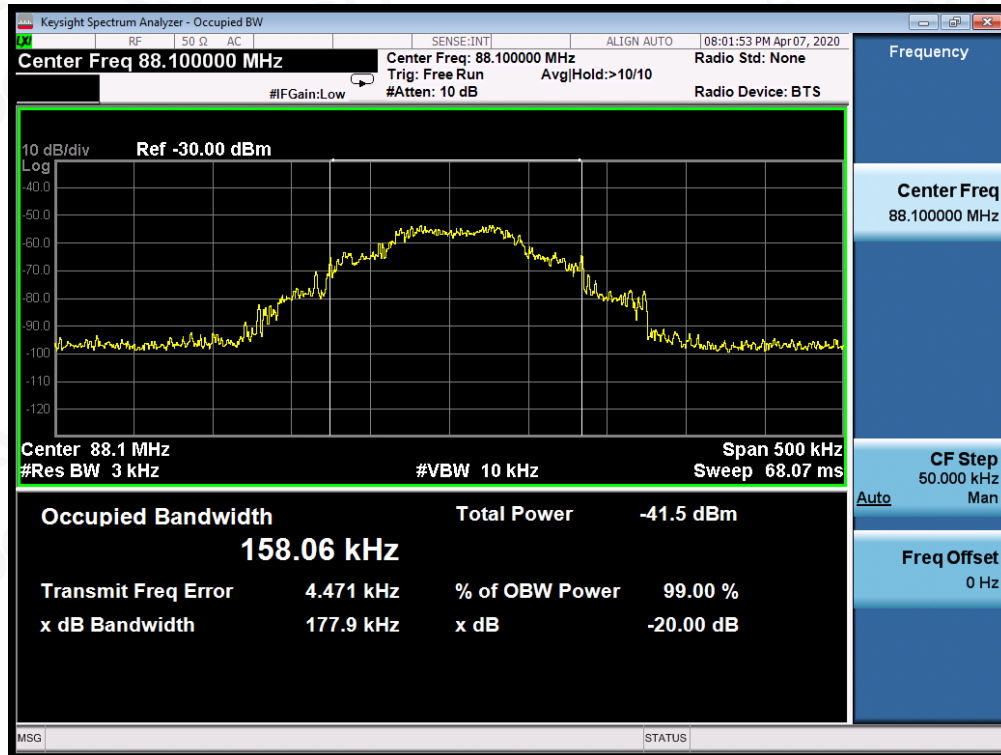
8.2. TEST SETUP



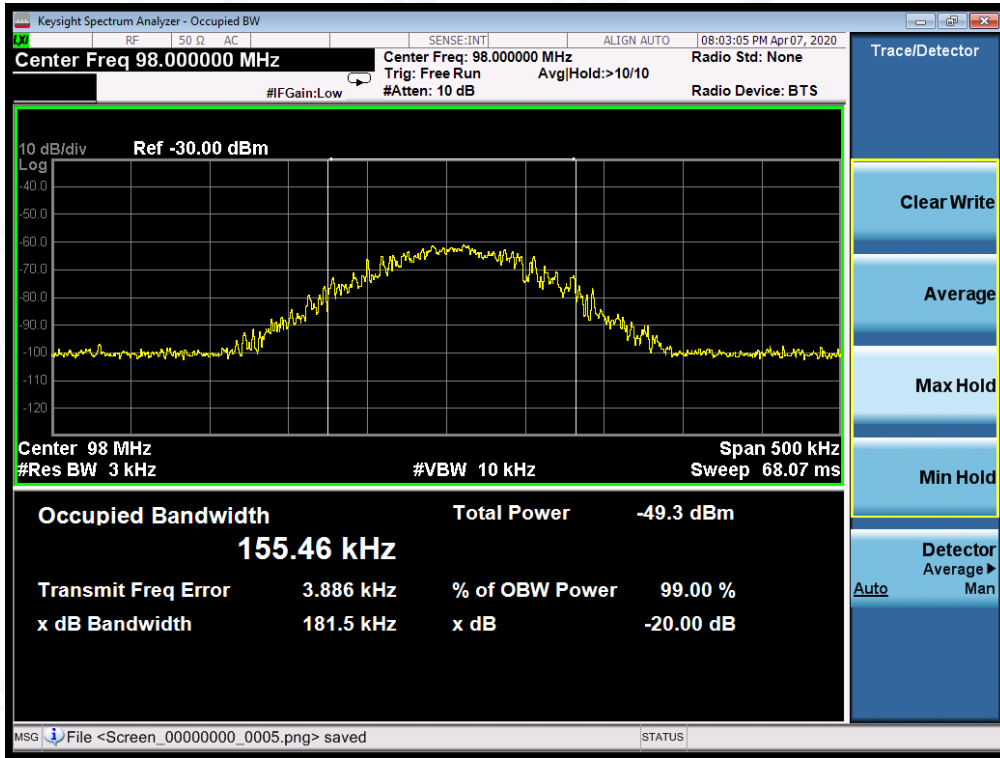
8.3. TEST RESULT

| Channel | Channel Frequency(MHz) | -20dB bandwidth (kHz) | Limit(kHz) |
|---------|------------------------|-----------------------|------------|
| Low | 88.1 | 177.9 | 200 |
| Middle | 98.0 | 181.5 | 200 |
| High | 107.9 | 180.8 | 200 |

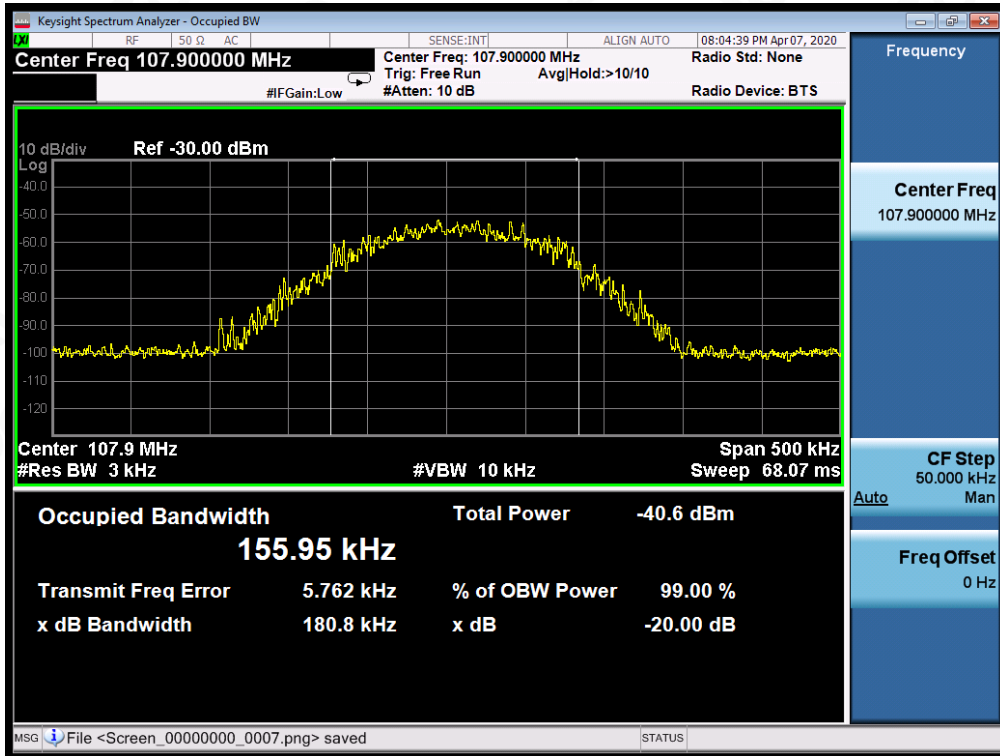
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

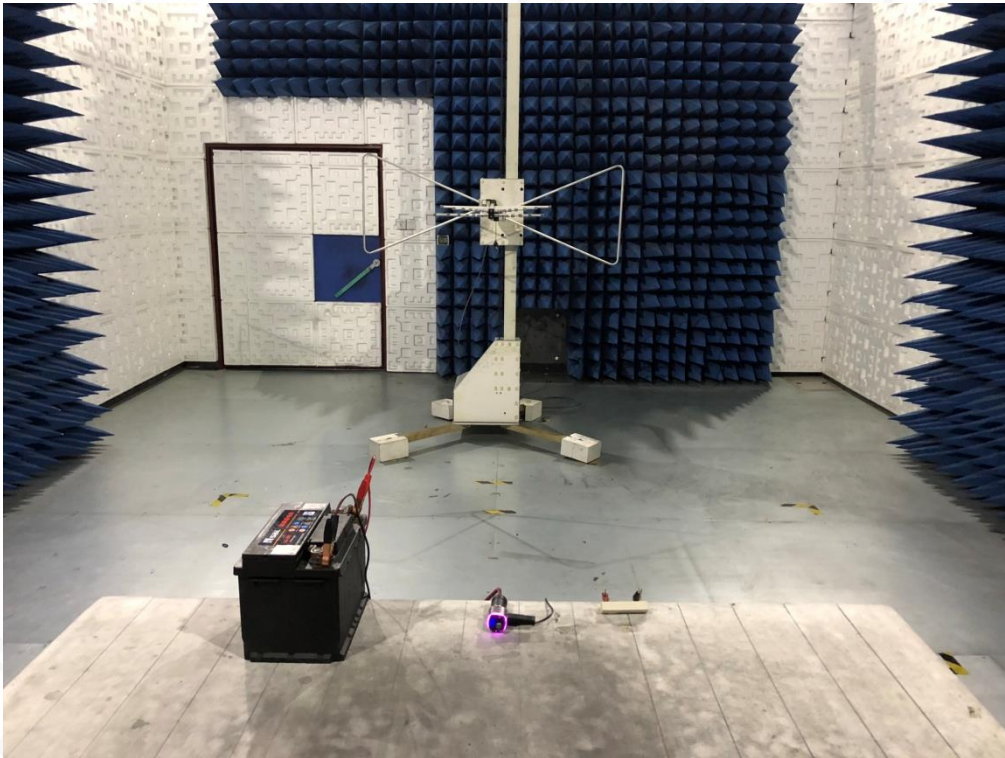


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP BELOW 1G



RADIATED EMISSION TEST SETUP ABOVE 1G



APPENDIX B: PHOTOGRAPHS OF EUT

TOP VIEW OF EUT



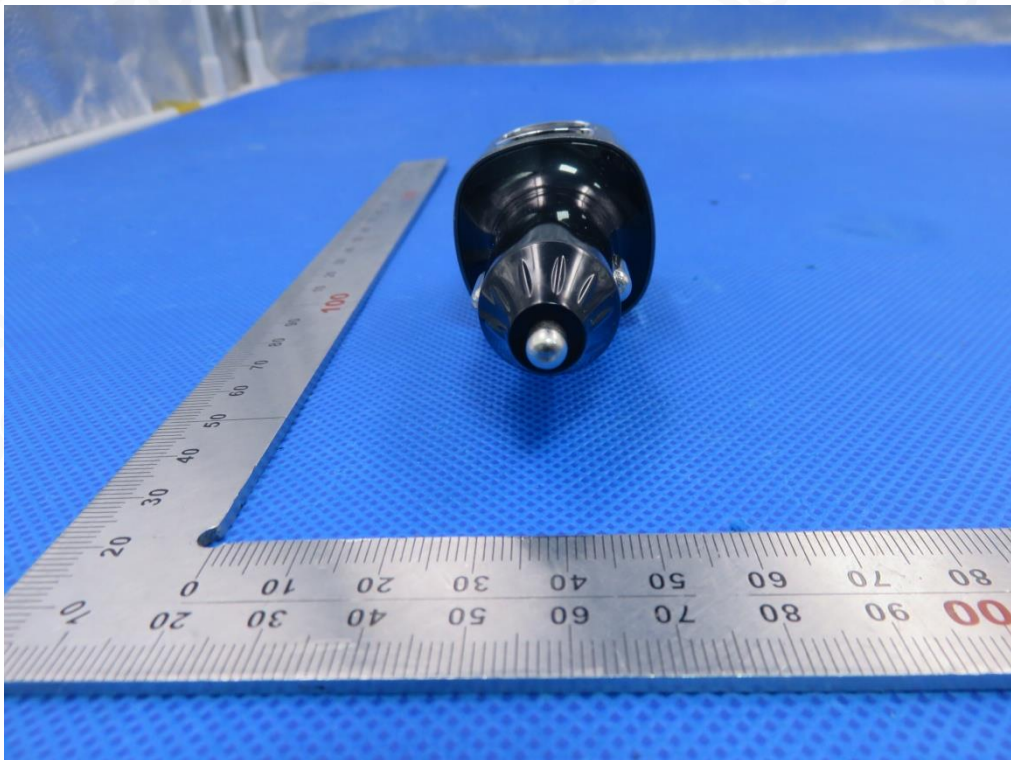
BOTTOM VIEW OF EUT



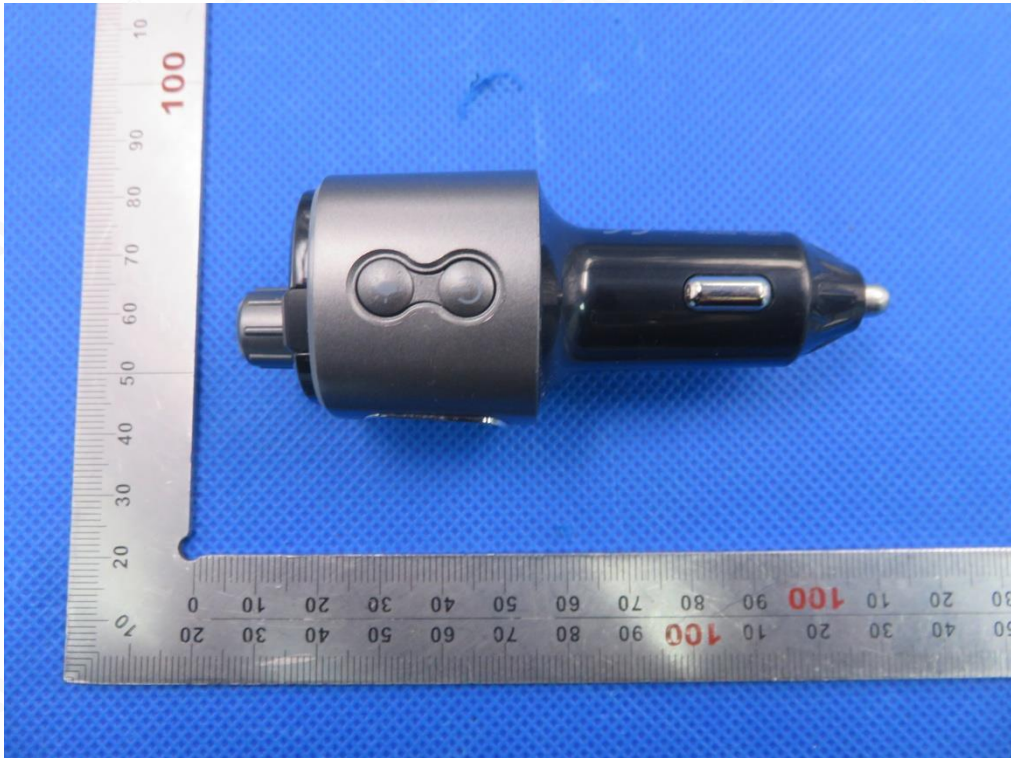
FRONT VIEW OF EUT



BACK VIEW OF EUT



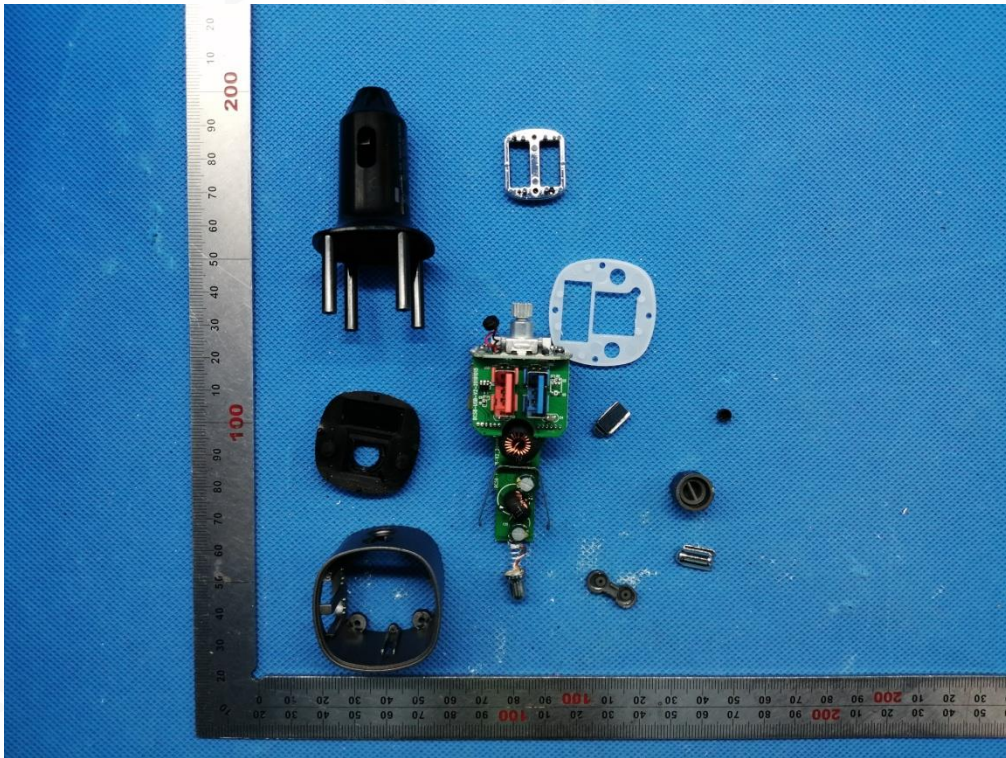
LEFT VIEW OF EUT



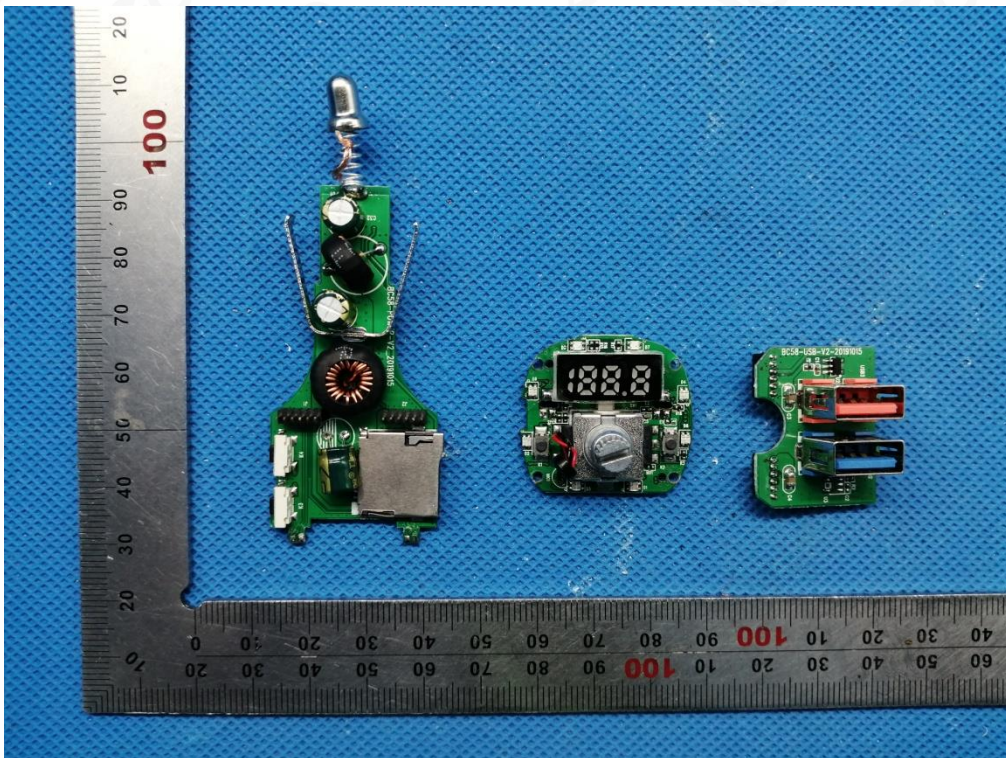
RIGHT VIEW OF EUT



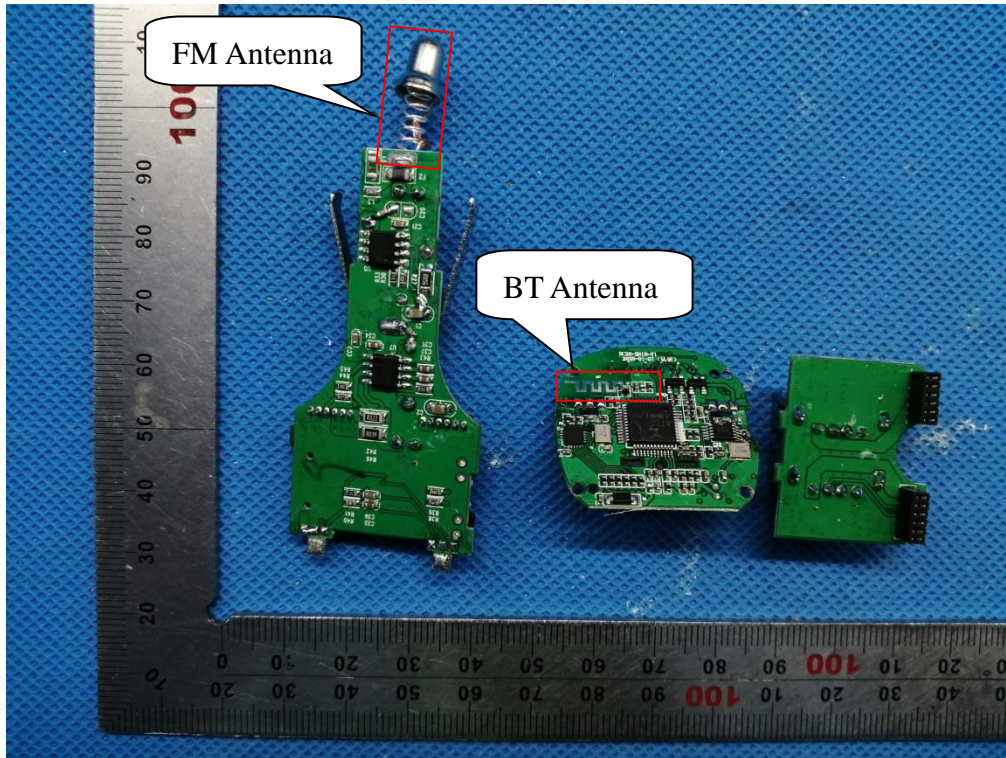
OPEN VIEW OF EUT



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



----END OF REPORT----

