



FCC TEST REPORT FCC PART 15 SUBPART C 15.249

Test report On Behalf of Shenzhen XinHuaMei Electronics Limited Company For Bluetooth Speaker Model No.: BTS-538

FCC ID: R8HBTS-538

Prepared for : Shenzhen XinHuaMei Electronics Limited Company Bldg 5, Taifeng Industrial Park, No.10, Jianan Road, Shajing Sub-district, Baoan District, Shenzhen, China

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 Date of Test:
 Feb. 21, 2019 ~ Mar. 04, 2019

 Date of Report:
 Mar. 11, 2019

 Report Number:
 HK1902200283E



TEST RESULT CERTIFICATION

| Applicant's name | Shenzhen XinHuaMei Electronics Limited Company |
|-------------------------------|---|
| Address | Bldg 5, Taifeng Industrial Park, No.10, Jianan Road, Shajing Sub-district, Baoan District, Shenzhen, China |
| | Shenzhen XinHuaMei Electronics Limited Company |
| Address | Bldg 5, Taifeng Industrial Park, No.10, Jianan Road, Shajing Sub-district, Baoan District, Shenzhen, China |
| Factory's Name | Shenzhen XinHuaMei Electronics Limited Company |
| Address | Bldg 5, Taifeng Industrial Park, No.10, Jianan Road, Shajing Sub-district, Baoan District, Shenzhen, China |
| Product description | |
| Trade Mark | N/A |
| Product name | Bluetooth Speaker |
| Model and/or type reference . | BTS-538 |
| Series Model | PB-6-1326 |
| Difference Description | All the same except for the model name |
| Standards | FCC Rules and Regulations Part 15 Subpart C Section 15.249 ANSI C63.10: 2013 |

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| Date of Test | : |
|----------------------------------|---|
| Date (s) of performance of tests | : |
| Date of Issue | : |
| Test Result | : |

Feb. 21, 2019 ~ Mar. 04, 2019 Mar. 11, 2019 Pass

Testing Engineer

5

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y Bian (Gary Qian)

Technical Manager

Edon Hu

(Eden Hu)

Authorized Signatory:

(Jason Zhou)



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1. TEST SUMMARY

1.1TEST PROCEDURES AND RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|----------------|---------------------|-----------|
| §15.249&15.209 | Radiated Emission | Compliant |
| §15.249&15.209 | Band Edges Emission | Compliant |
| §15.215 | 20dB bandwidth | Compliant |
| §15.207 | Conducted Emission | Compliant |

1.2 TEST FACILITY

| Test Firm | : | Shenzhen HUAK Testing Technology Co., Ltd. |
|------------------------|----|--|
| Address | : | 1F, B2 Building, JunfengZhongchengZhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China |
| Designation Number: | : | CN1229 |
| Test Firm Registration | Nu | mber : 616276 |

1.3 MEASUREMENT UNCERTAINTY

| Measurement Uncertainty | | |
|---|---|-------------|
| Conducted Emission Expanded Uncertainty | = | 2.23dB, k=2 |
| Radiated emission expanded uncertainty(9kHz-30MHz) | = | 3.08dB, k=2 |
| Radiated emission expanded uncertainty(30MHz-1000MHz) | = | 4.42dB, k=2 |
| Radiated emission expanded uncertainty(Above 1GHz) | = | 4.06dB, k=2 |



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| Operation Frequency | 2.402 GHz to 2.480GHz | | | |
|--|---|--|--|--|
| Maximum field strength | 88.46dBuV/m(Peak)@3m | | | |
| Bluetooth Version | V4.2 | | | |
| Modulation | GFSK, π /4-DQPSKfor BR/EDR | | | |
| Number of channels | 79 for BR/EDR | | | |
| Antenna Gain | -0.58dBi | | | |
| Antenna Designation | PCBAntenna (Met 15.203 Antenna requirement) | | | |
| Hardware Version | V1.0 | | | |
| Software Version | V4.2 | | | |
| Power Supply | DC 3.7V by battery | | | |
| Note: 1. The USB port only used for charging and can't be used to transfer data with PC. | | | | |
| 2. The EUT doesn't support 8DPSK and BLE. | | | | |

BR/EDR channel List

| Frequency Band | Channel Number | Frequency | | |
|----------------|----------------|-----------|--|--|
| | 0 | 2402MHZ | | |
| | 1 | 2403MHZ | | |
| | ••• | · | | |
| | 38 | 2440 MHZ | | |
| 2400~2483.5MHZ | 39 | 2441 MHZ | | |
| | 40 | 2442 MHZ | | |
| | | : | | |
| | 77 | 2479 MHZ | | |
| | 78 | 2480 MHZ | | |



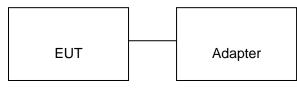
2.2 OPERATION OF EUT DURING TESTING

| NO. | TEST MODE DESCRIPTION | | | |
|---|---------------------------|--|--|--|
| 1 | Low channel GFSK | | | |
| 2 | Middle channel GFSK | | | |
| 3 | High channel GFSK | | | |
| 4 | Low channel π /4-DQPSK | | | |
| 5 | Middle channel π /4-DQPSK | | | |
| 6 | High channel π /4-DQPSK | | | |
| Note: Onlythe data of the worst case recorded in the test report. | | | | |



2.3 DESCRIPTION OF TEST SETUP

Configure 1: (Normal hopping)



Note: Owing to the EUT has own battery, and testing may be performed while adapter removed.

Configure 2: (Control continuous TX)

| EUT | Control box | PC |
|-----|-------------|----|

| Item | Equipment | Mfr/Brand Model/Type No. | | Remark |
|------|-----------------------------|--------------------------|---------------|-----------|
| 1 | Bluetooth Speaker | XinHuaMei | BTS-538 | EUT |
| 2 | Battery | JDY | 18650 | Accessory |
| 3 | IPOD | IPOD APPLE A1367 | | A.E |
| 4 | Control box | N/A | N/A | A.E |
| 5 | USB Cable N/A 1m unshielded | | 1m unshielded | Accessory |
| 6 | Adapter | OenWell | CW0501000 | A.E |



2.4 MEASUREMENT INSTRUMENTS LIST

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

| ltem | Equipment | Manufacturer | Model No. | Lab Equipment No. | Last Cal. | Cal. Interval |
|------|---|--------------|-----------|-------------------------|---------------|------------------|
| 1. | L.I.S.N. Artificial Mains Network | R&S | ENV216 | HKE-002 | Dec. 27, 2018 | 1 Year |
| 2. | Receiver | R&S | ESCI 7 | HKE-010 | Dec. 27, 2018 | 1 Year |

TEST EQUIPMENT OF RADIATED EMISSION TEST

| ltem | Equipment | Manufacturer | Model No. | Lab Equipment No. | Last Cal. | Cal. Interval |
|------|----------------------------|--------------------|--------------|-------------------------|---------------|------------------|
| 1. | Spectrum analyzer | Agilent | N9020A | HKE-048 | Dec. 27, 2018 | 1 Year |
| 2. | Preamplifier | Schwarzbeck | BBV 9743 | HKE-006 | Dec. 27, 2018 | 1 Year |
| 3. | EMI Test Receiver | Rohde & Schwarz | ESCI 7 | HKE-010 | Dec. 27, 2018 | 1 Year |
| 4. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | HKE-012 | Dec. 27, 2018 | 1 Year |
| 5. | Loop Antenna | Schwarzbeck | FMZB 1519 B | HKE-014 | Dec. 27, 2018 | 1 Year |
| 6. | Horn Antenna | Schewarzbeck | 9120D | HKE-013 | Dec. 27, 2018 | 1 Year |
| 7. | Broad-band Horn Antenna | A-INFOMW | LB-180400-KF | HKE-031 | Dec. 27, 2018 | 1 Year |
| 8. | Pre-amplifier | EMCI | EMC051845SE | HKE-015 | Dec. 27, 2018 | 1 Year |
| 9. | Pre-amplifier | Agilent | 83051A | HKE-016 | Dec. 27, 2018 | 1 Year |
| 10. | Filter (2.4-2.483GHz) | Micro-tronics | 087 | | N/A | N/A |
| 11. | Radiation Cable 1 | MXT | HK1 | R05 | N/A | N/A |
| 12. | Radiation Cable 2 | MXT | HK1 | R06 | N/A | N/A |



3. RADIATED EMISSION

3.1. 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 VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.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/RBW 200Hz for QP | | |
| Start ~Stop Frequency | 150KHz~30MHz/RBW 9KHz for QP | | |
| Start ~Stop Frequency | 30MHz~1000MHz/RBW 120KHz for QP | | |
| Start ~Stop Frequency | 1GHz~26.5GHz | | |
| Cian - Ciop Trequency | 1.5MHz/5MHz for Peak, 1.5MHz/10Hz for Average | | |

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

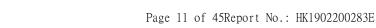
Test limit for Standard FCC15.249

| Fundamental Frequency | Field Strength of Fundamental | Field Strength of Harmonics |
|-----------------------|-------------------------------|-----------------------------|
| | (millivolts/meter) | (microvolts/meter) |
| 900-928MHz | 50 | 500 |
| 2400-2483.5MHz | 50 | 500 |
| 5725-5875MHz | 50 | 500 |
| 24.0-24.25GHz | 250 | 2500 |

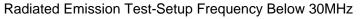
Test limit for Standard FCC 15.209

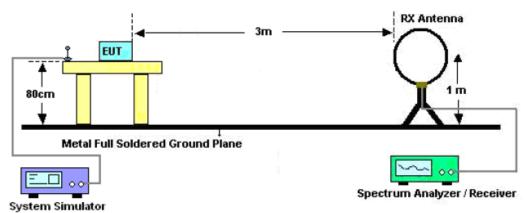
| Frequency | Distance | Field Strengths Limit | | | | |
|----------------------|---------------------------------|-----------------------------|---------------------------|--|--|--|
| (MHz) | Meters | μ V/m | dB(µV)/m | | | |
| 0.009 ~ 0.490 | 300 | 2400/F(kHz) | | | | |
| 0.490 ~ 1.705 | 30 | 24000/F(kHz) | | | | |
| 1.705 ~ 30 | 30 | 30 | | | | |
| 30 ~ 88 | 3 | 100 | 40.0 | | | |
| 88 ~ 216 | 3 | 150 | 43.5 | | | |
| 216 ~ 960 | 3 | 200 | 46.0 | | | |
| 960 ~ 1000 | 3 | 500 | 54.0 | | | |
| Above 1000 | 3 | Other:74.0 dB(µV)/m | (Peak) 54.0 dB(µV)/m | | | |
| | | (Average) | | | | |
| Remark: (1) Emission | level dB μ V = 20 log Emiss | ion level µV/m | | | | |
| (2) The small | er limit shall apply at the cro | oss point between two frequ | ency bands. | | | |
| (3) Distance | is the distance in meters b | petween the measuring ins | strument, antenna and the | | | |

closest point of any part of the device or system.

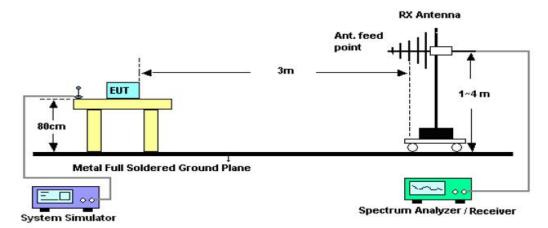


3.2. TEST SETUP

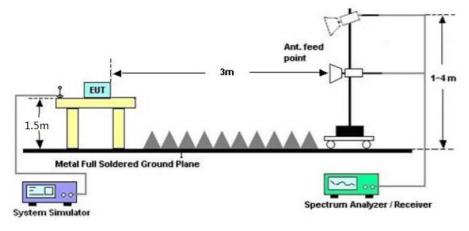




RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



RADIATED EMISSION BELOW 30MHZ

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

RADIATED EMISSION 30MHz- 1GHZ FOR BR/EDR

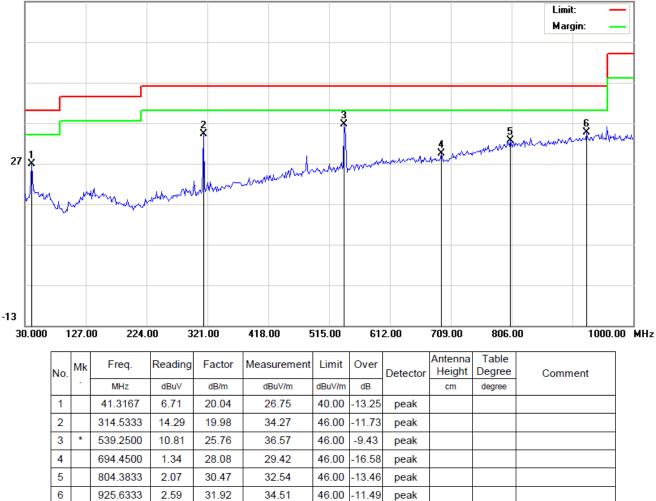
| EUT : | T: Bluetooth Speaker | | Model Name. : | | BTS-538 | | |
|---------------|----------------------|--------------|---------------|----------|--------------|------------|-----------------------|
| Temperature : | 20 ℃ | | | Relative | Humidity : | 48% | |
| Pressure : | 1010 hPa | | | Test Vol | tage : | DC 3.7V | |
| Test Mode : | Mode 1 | | | Polariza | tion : | Horizontal | |
| 6.9 dBuV/m | | | | | | | Limit: — Margin: — |
| 7 ¥ | | hunderhander | 2 X | 3 Mmh | warne warden | mm | 6 mm |
| human | hardward | hunderstand | | | | | |

| 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 | 6.91 | 20.04 | 26.95 | 40.00 | -13.05 | peak | | | |
| 2 | | 479.4333 | 8.72 | 24.58 | 33.30 | 46.00 | -12.70 | peak | | | |
| 3 | * | 539.2500 | 14.25 | 25.76 | 40.01 | 46.00 | -5.99 | peak | | | |
| 4 | | 660.5000 | 5.30 | 27.68 | 32.98 | 46.00 | -13.02 | peak | | | |
| 5 | | 848.0333 | 2.75 | 31.03 | 33.78 | 46.00 | -12.22 | peak | | | |
| 6 | | 930.4833 | 3.19 | 31.96 | 35.15 | 46.00 | -10.85 | peak | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 1 | Polarization : | Vertical |

66.9 dBu¥/m



RESULT: PASS

Note:Measurement= Reading + Factor,Factor=Antenna Factor+ Cable loss, Over= Measurement-Limit.

The "Factor" valuecan be calculated automatically by software of measurement system.

The mode 1 is the worst case, and only the data of the worst case recorded in this test report.



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|-------------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Modulation : | GFSK | Polarization : | Horizontal |

FIELD STRENGTH OF FUNDAMENTAL FOR BR/EDR

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type | | | |
|-------------|---|--------|----------------|----------|--------|------------|--|--|--|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | | | | |
| 2402.021 | 78.14 | 10.32 | 88.46 | 114 | -25.54 | peak | | | |
| 2402.021 | 72.06 | 10.32 | 82.38 | 94 | -11.62 | AVG | | | |
| 2441.021 | 77.00 | 10.36 | 87.36 | 114 | -26.64 | peak | | | |
| 2441.021 | 72.09 | 10.36 | 82.45 | 94 | -11.55 | AVG | | | |
| 2480.021 | 77.32 | 10.41 | 87.73 | 114 | -26.27 | peak | | | |
| 2480.021 | 72.37 | 10.41 | 82.78 | 94 | -11.22 | AVG | | | |
| Remark: | | | | | | | | | |
| Factor = Ar | Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | | | |

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|-------------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Modulation : | GFSK | Polarization : | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type | |
|-------------|-----------------|--------------|----------------|----------|--------|------------|--|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | | |
| 2402.021 | 77.12 | 10.32 | 87.44 | 114 | -26.56 | peak | |
| 2402.021 | 71.04 | 10.32 | 81.36 | 94 | -12.64 | AVG | |
| 2441.021 | 75.98 | 10.36 | 86.34 | 114 | -27.66 | peak | |
| 2441.021 | 71.07 | 10.36 | 81.43 | 94 | -12.57 | AVG | |
| 2480.021 | 76.30 | 10.41 | 86.71 | 114 | -27.29 | peak | |
| 2480.021 | 71.35 | 10.41 | 81.76 | 94 | -12.24 | AVG | |
| Remark: | | | | | | | |
| Factor = Ar | ntenna Factor + | Cable Loss - | Pre-amplifier. | | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|-------------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Modulation : | π /4-DQPSK | Polarization : | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 2402.021 | 77.48 | 10.32 | 87.80 | 114 | -26.2 | peak |
| 2402.021 | 71.40 | 10.32 | 81.72 | 94 | -12.28 | AVG |
| 2441.021 | 76.34 | 10.36 | 86.70 | 114 | -27.3 | peak |
| 2441.021 | 71.43 | 10.36 | 81.79 | 94 | -12.21 | AVG |
| 2480.021 | 76.66 | 10.41 | 87.07 | 114 | -26.93 | peak |
| 2480.021 | 71.71 | 10.41 | 82.12 | 94 | -11.88 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|-------------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Modulation : | π /4-DQPSK | Polarization : | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type | |
|-------------|---|--------|----------------|----------|--------|------------|--|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | | |
| 2402.021 | 77.61 | 10.32 | 87.93 | 114 | -26.07 | peak | |
| 2402.021 | 71.53 | 10.32 | 81.85 | 94 | -12.15 | AVG | |
| 2441.021 | 76.47 | 10.36 | 86.83 | 114 | -27.17 | peak | |
| 2441.021 | 71.56 | 10.36 | 81.92 | 94 | -12.08 | AVG | |
| 2480.021 | 76.79 | 10.41 | 87.20 | 114 | -26.8 | peak | |
| 2480.021 | 71.84 | 10.41 | 82.25 | 94 | -11.75 | AVG | |
| Remark: | | | | | | | |
| Factor = Ar | Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 1 | Polarization : | Horizontal |

RADIATED EMISSION ABOVE 1GHZ FOR BR/EDR

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 4804.026 | 43.87 | 7.12 | 50.99 | 74 | -23.01 | peak |
| 4804.026 | 39.78 | 7.12 | 46.90 | 54 | -7.1 | AVG |
| 7206.039 | 38.47 | 9.84 | 48.31 | 74 | -25.69 | peak |
| 7206.039 | 36.26 | 9.84 | 46.10 | 54 | -7.9 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 1 | Polarization : | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type | |
|-------------|---|--------|----------------|----------|--------|------------|--|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | value rype | |
| 4804.026 | 43.75 | 7.12 | 50.87 | 74 | -23.13 | peak | |
| 4804.026 | 40.71 | 7.12 | 47.83 | 54 | -6.17 | AVG | |
| 7206.039 | 37.10 | 9.84 | 46.94 | 74 | -27.06 | peak | |
| 7206.039 | 35.44 | 9.84 | 45.28 | 54 | -8.72 | AVG | |
| Remark: | | | | | | | |
| Factor = Ar | Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 2 | Polarization : | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 4882.032 | 43.07 | 7.12 | 50.19 | 74 | -23.81 | peak |
| 4882.032 | 40.88 | 7.12 | 48.00 | 54 | -6 | AVG |
| 7323.048 | 37.58 | 9.84 | 47.42 | 74 | -26.58 | peak |
| 7323.048 | 35.76 | 9.84 | 45.60 | 54 | -8.4 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 2 | Polarization : | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---------------|--------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 4882.032 | 43.05 | 7.12 | 50.17 | 74 | -23.83 | peak |
| 4882.032 | 39.90 | 7.12 | 47.02 | 54 | -6.98 | AVG |
| 7323.048 | 37.58 | 9.84 | 47.42 | 74 | -26.58 | peak |
| 7323.048 | 35.75 | 9.84 | 45.59 | 54 | -8.41 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 3 | Polarization : | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|--|-----------------|--------------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 4960.042 | 42.87 | 7.12 | 49.99 | 74 | -24.01 | peak |
| 4960.042 | 39.68 | 7.12 | 46.80 | 54 | -7.2 | AVG |
| 7440.063 | 37.05 | 9.84 | 46.89 | 74 | -27.11 | peak |
| 7440.063 36.32 9.84 46.16 54 -7.84 AVG | | | | | | |
| Remark: | | | | | | |
| Factor = Ar | ntenna Factor + | Cable Loss – | Pre-amplifier. | | | |

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidity : | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 3 | Polarization : | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|--|-----------------|--------------|----------------|----------|--------|------------|
| (MHz) | (dBµV) | (dB) | (dBµV/m) | (dBµV/m) | (dB) | |
| 4960.042 | 42.78 | 7.12 | 49.90 | 74 | -24.1 | peak |
| 4960.042 | 39.45 | 7.12 | 46.57 | 54 | -7.43 | AVG |
| 7440.063 | 36.88 | 9.84 | 46.72 | 74 | -27.28 | peak |
| 7440.063 35.12 9.84 44.96 54 -9.04 AVG | | | | | | |
| Remark: | | | | | | |
| Factor = Ar | ntenna Factor + | Cable Loss – | Pre-amplifier. | | | |

Note: Other emissions from 8G to 25 GHz are considered as ambient noise. No recording in the test report. Factor=Antenna Factor+ Cable loss-Amplifier gain, Margin=Measurement-Limit.

The "Factor" valuecan be calculated automatically by software of measurement system.

The GFSK modulation was the worst case and only the data of worst recorded in this report.



4. BAND EDGE EMISSION

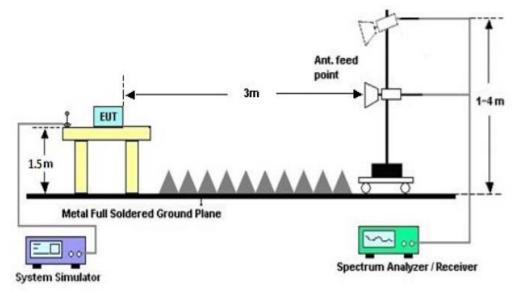
4.1. MEASUREMENT PROCEDURE

- 1. The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2. Max hold the trace of the setup 1, and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.
- 3. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission.

| Start frequency(MHz) | Stop frequency(MHz) |
|----------------------|---------------------|
| 2200 | 2405 |
| 2478 | 2500 |

4.2 TEST SETUP

RADIATED EMISSION TEST SETUP





4.3RADIATED TEST RESULT

FOR BR/EDR

| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidtity: | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 1 | Polarization : | Horizontal |

📕 Agilent Spectrum Analyzer - Swept SA d X Marker 1 2.402200000000 GHz PNO: Fast IFGein:Low Trig: Free Run Atten: 20 dB SENSE:INT Peak Search Avg Type: Log-Pwr Avg|Hold:>100/100 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P NNNN Next Peak Mkr1 2.402 20 GHz 88.455 dBµV 10 dB/div Log Ref 116.99 dBµV Next Pk Right <u>`</u>1 Next Pk Left $\sqrt{2}$ Marker Delta Stop 2.41000 GHz Sweep 1.000 ms (1001 pts) Start 2.37000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Mkr→CF EUNCTION 88.455 dBµV 56.756 dBµV 2.402 20 GHz 2.400 00 GHz 1 f 1 f Ň Mkr→RefLvi More 1 of 2 STATUS

AV Value

| | | | | | um Analyzer - Swept SA | 🎉 Agilent Spec |
|-------------------------|---|-----------------------------|--------------------------------|------------------------|--|----------------------------|
| 1 2 3 4 5 6 Marker | TRACE 1 2 3 4 5 | ALIGN AUTO Avg Type: RMS | SENSE:INT | | RF 50 Ω AC 2.4000000000000000000000000000000000000 | <mark>×</mark> Marker 2 |
| Select Marker | DET A NNNN | Avg Hold:>100/100 | Trig: Free Run Atten: 20 dB | PNO: Fast G | | |
| 0 GHz 2 dBµV | 2 2.400 00 GHz 47.802 dBµV | Mkr | | | Ref 116.99 dBµV | 10 dB/div |
| | · · · | | | | | |
| Norma | | | | | | 97.0 |
| | ¹ ^{−−−−} | ļ(| | | | 87.0 |
| | | | | | | 77.0 |
| Delta | | | | | | 67.0 |
| | | 2= | | | | 57.0 |
| Fixed⊳ | | | | | | 47.0 |
| Fixed | 2 - Carlos - Marine Santon - Marine Santon - Santon - Marine Santon - Marine Santon - Santon | | | | | 37.0 |
| | | | | | | |
| 000 GHZ 001 pts) Off | Stop 2.41000 GHz 000 ms (1001 pts) | Sweep 1 | 3.0 MHz* | #VB\ | | Start 2.37 #Res BW |
| I VALUE | FUNCTION VALUE | CTION FUNCTION WIDTH | | | | MKR MODE TR |
| | | | 82.381 dBµV 47.858 dBµV | 02 00 GHz 00 00 GHz | f 2.40 | 2 N 1 |
| Properties► | | | | | | 3 4 |
| | = | | | | | 6 |
| More | | | | | | 8 |
| 1 of 2 | | | | | | 10 11 |
| | • | | m | | | < [|
| | | STATUS | | | | MSG |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidtity: | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 1 | Polarization : | Vertical |

| RF 50 Q AC SENSE:INT ALIGN AUTO 2:402240000000 GHz Trig: Free Run HFGain:Low Avg Type: Log-Pwr AvgHoid:>100/100 Trace Type: Log-Pwr AvgHoid:>100/100 Trace Type: Log-Pwr AvgHoid:>100/100 Peak Search Mkr1 2:402 24 GHz 87.439 dBµV Next Peak Next Peak Next Pk Right 1 1 Next Pk Right 1 1 Next Pk Right 1 1 Next Pk Left 1 1 Next Pk Left Marker Delta 00 GHz 3.0 MHz Stop 2.41000 GHz 00 GHz Y 1.000 ms (1001 pts) Stop 2.41000 GHz 55.855 dBµV | | | | | |
|--|--|--|-----------------------|--|---------------|
| Avg Type: Log-Pwr Arten: 20 dB Avg Type: Log-Pwr Avg Hold:>100/100 Trace Peak Search PN0: Fast IFGain:Low Trig: Free Run Atten: 20 dB Avg Type: Log-Pwr Avg Hold:>100/100 Trace 2.3.4.5 Peak Search Mkr1 2.402 24 GHz 87.439 dBµV Mkr1 2.402 24 GHz 87.439 dBµV Next Peak Next Peak Mkr1 2.402 24 GHz 0.0 GHz 0.0 GHz Stop 2.41000 GHz 55.855 dBµV Next Pk Left Marker Delta | 🎉 Agilent Spectrum Analyzer - Swept SA | | | | |
| PN0: Fast Trig: Free Run Avg Hoid:>100/100 Trie Mkr1 2.402 24 GHz Next Peak Ref 116.99 dBµV 87.439 dBµV 87.439 dBµV Next Pk Right Next Pk Right 00 GHz 0 | | | | | Peak Search |
| Ref 116.99 dBµV 87.439 dBµV Image: Stop 2.41000 GHz Image: Stop 2.41000 GHz Image: Stop 2.41000 GHz Image: Stop 2.4100 GHz Image: Stop 2.4100 GHz Image: Stop 2.4100 GHz | Marker 1 2.40224000000 | PNO: Fast 😱 Trig: Free | e Run Avg Hold:>100/1 | 100 TYPE MWWWW DET PNNNN | |
| 00 GHz Stop 2.41000 GHz 00 GHz Stop 2.41000 GHz 0 MHz #VBW 3.0 MHz Stop 2.41000 GHz 1 2 1 2 1 2 1 2 1 2 1 2 2 2 2 2 1 2 2 2 2 2 2 | 10 dB/div Ref 116.99 dBµV | , | I | Wkr1 2.402 24 GHz 87.439 dBμV | Next Peak |
| X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE MkrCF SCL X Y FUNCTION FUNCTION FUNCTION FUNCTION VALUE MkrCF f 2.40000 GHz 55.855 dB ₁ V MkrCF MkrCF | 107 97.0 | | | .1 | Next Pk Right |
| X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE MkrCF SCL X Y FUNCTION FUNCTION FUNCTION FUNCTION VALUE MkrCF f 2.40000 GHz 55.855 dB ₁ V MkrCF MkrCF | 87.0 | | | | |
| OO GHz Stop 2.41000 GHz .0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts) SCL r 2.400 00 GHz 55.855 dBuV | 67.0 | | | 2 | Next Pk Left |
| 00 GHz .0 MHz Stop 2.41000 GHz .0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts) SCL Y f 2.402 24 GHz ST.439 dBµV f 2.400 00 GHz 55.855 dBµV Stop 2.41000 GHz Stop 2.4002 GHZ Stop 2.4002 GHZ Stop 2.4002 GHZ Stop 2.4002 GHZ Stop 2.400 GHZ Stop 2.4002 GHZ Stop 2.400 GHZ | 47.0 | ىرىنى ئىرۇمىتىرىن ئىلغان ھامىرىنى خارىكى ئىلىنى ئىرىكى ئەركى ئەركى ئەركى ئەركى ئەركى ئەركى ئەركى ئەركى ئەركى ئە ئىرىنى ئەركى ئە | | holes a francisco francisco de a | Marker Delta |
| .0 MHz #VBW 3.0 MHz Sweep 1.000 ms (1001 pts) Mkr→CF scl X Y Function Function width Function value | 27.0 | | | | |
| f 2.402 24 GHz 87.439 dBµV f 2.400 00 GHz 55.855 dBµV | Start 2.37000 GHz #Res BW 1.0 MHz | #VBW 3.0 MHz | Swee | Stop 2.41000 GHz p 1.000 ms (1001 pts) | Mkr→CF |
| | 1 N 1 f 2.40 | 02 24 GHz 87.439 dB | βμV | WIDTH FUNCTION VALUE | |
| E MKr→RetLVI | | | | = | Mkr→RefLvl |
| More | 7 | | | | |
| Image: state stat | | m | | | T OF 2 |
| STATUS | MSG | | | TATUS | |

| AV | Va | lue |
|----|----|-----|

| GHz | Ave | Type: RMS | TRACE 1 2 3 4 5 6 | Peak Search |
|-----|--|--|---|---|
| | | Hold:>100/100 | DET A NNNNN | |
| 1 | | Mkr1 | 2.402 00 GHz 82.297 dBµV | Next Peak |
| | | 1 | | Next Pk Right |
| | | 2 | | Next Pk Left |
| | | | | Marker Delta |
| Ŷ | FUNCTION | St Sweep 1.0 | cop 2.41000 GHz 00 ms (1001 pts) FUNCTION VALUE | Mkr→CF |
| | 53 dBµV 25 dBµV | | E | Mkr→RefLvl |
| | | | | More 1 of 2 |
| | PNO: Fast Trig IFGain:Low Att #VBW 3.0 | PNO: Fast IFGain:Low Trig: Free Run Atten: 20 dB #VBW 3.0 MHz* #VBW 3.0 MHz* PNO: Function PNO: Fast Atten: 20 dB | GHz PNO: Fast JFGein:Low Trig: Free Run Atten: 20 dB Avg Type: RMS Avg Hold:>100/100 Mkr1 Mkr1 #VBW 3.0 MHz* Steep 1.00 #VBW 3.0 MHz* Steep 1.00 Y FUNCTION Y FUNCTION Y FUNCTION | GHz PNO: Fast JFGain:Low Trig: Free Run Atten: 20 dB Avg Type: RMS Avg Hold:>100/100 TRACE 12.3.4.56 TYPE 82.297 dBµV Mkr1 2.402 00 GHz 82.297 dBµV 1 1 1 2 1 2 2 2 2 2 2 3.0 MHz* Sweep 1.000 ms (1001 pts) Y FUNCTION Y FUNCTION Y FUNCTION Y FUNCTION Y FUNCTION Y FUNCTION |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|------------|
| Temperature : | 20 ℃ | Relative Humidtity: | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 3 | Polarization : | Horizontal |



| AV | Va | lue |
|----|----|-----|

| | | 7.0 | value | | | | |
|---|--------------------|--------------------------------|----------|-------------------------|---|------------|--------------|
| Magilent Spectrum Analyzer - Swept SA | | | | | | | - đ 🗙 |
| ₩ RF 50 Ω AC Warker 1 2.479975000000 | CH- | SENSE:INT | | ALIGN AUTO Type: RMS | TRACE 12 | 2456 | Peak Search |
| Warker 1 2.479975000000 | PNO: Fast | Trig: Free Run Atten: 20 dB | | Hold:>100/100 | | NNNN | |
| 10 dB/div Ref 116.99 dBµV | | | | Mkr1 | 2.479 975 82.777 d | GHz BµV | Next Peal |
| 107 97.0 87.0 | | | | | | | Next Pk Righ |
| 77.0 67.0 57.0 | | | | | | | Next Pk Lef |
| 47.0 37.0 27.0 | ² | | | | | | Marker Delt |
| Start 2.47500 GHz #Res BW 1.0 MHz | #VBW | 3.0 MHz* | FUNCTION | Sweep 1 | Stop 2.50000 .000 ms (1001 FUNCTION VAL | pts) | Mkr→C |
| 1 N 1 f 2.475 2 N 1 f 2.483 3 3 3 3 4 5 6 6 6 | 975 GHz 500 GHz | 82.734 dBµV 37.272 dBµV | TONCTION | | FORCHOR VAL | | Mkr→RefLv |
| 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | | | | | | | Mor 1 of |
| ISG | | | | STATUS | ; | | |
| | | | | | | | |



| EUT : | Bluetooth Speaker | Model Name. : | BTS-538 |
|---------------|-------------------|---------------------|----------|
| Temperature : | 20 ℃ | Relative Humidtity: | 48% |
| Pressure : | 1010 hPa | Test Voltage : | DC 3.7V |
| Test Mode : | Mode 3 | Polarization : | Vertical |



| AV | Va | lue |
|----|----|-----|

| | | | Value | | |
|---------------------------------------|-------------------------|--------------------------------|--|------------------------------|-------------|
| 🛿 Agilent Spectrum Analyzer - Swept S | | | | | |
| RF 50 Ω | | SENSE:INT | ALIGN AUTO Avg Type: RMS | TRACE 1 2 3 4 5 6 | Peak Search |
| larker 1 2.479975000 | PNO: Fast IFGain:Low | Trig: Free Run Atten: 20 dB | Avg Hold:>100/100 | TYPE A WWWWW DET A NNNNN | |
| 0 dB/div Ref 116.99 d | Bu\∕ | | Mkr1 | 2.479 975 GHz 81.467 dBµV | NextPea |
| | <u>υμν</u> | | | | |
| 107 | | | | | Next Pk Rig |
| 07.0 | | | | | NEALERKIN |
| 97.0 | | | | | |
| 7.0 | | | | | |
| 57.0 | | | | | Next Pk L |
| 57.0 | | | | | |
| 17.0 | | | | | |
| | \wedge | | | | Marker De |
| 37.0 | | | anten ny se ny polon di typingan di kyana anten antina na sina ya sini di dana sina di k | | MarkerDe |
| 27.0 | | | | | |
| tart 2.47500 GHz | | | | Stop 2.50000 GHz | |
| Res BW 1.0 MHz | #VE | 3W 3.0 MHz* | Sweep 1 | .000 ms (1001 pts) | Mkr→ |
| KR MODE TRC SCL | Х | Y | FUNCTION FUNCTION WIDTH | FUNCTION VALUE | |
| | 2.479 975 GHz | 81.423 dBuV | | | |
| 2 N 1 f | 2.483 500 GHz | 36.761 dBµV | | | Mkr→Refl |
| 4 | | | | | wiki →Kei L |
| 6 | | | | | |
| 8 | | | | | Мс |
| 9 | | | | | |
| | | | | | 1 c |
| | | | | | |
| | | m | | ۰. | |

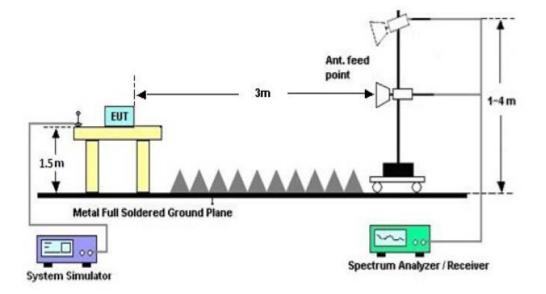
Note: The GFSK modulation was the worst case and only the data of worst recorded in this report.



5.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 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, Set the EUT Work on the operation frequency individually.
- 3. Set Span = approximately 2 to 5 times the OBW, centered on a hoping channel The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately 3* RBW; Sweep = auto; Detector function = peak
- 4. Set SPA Trace 1 Max hold, then View.

5.2. TEST SETUP





5.3. TEST RESULT

| TEST ITEM | 20DB BANDWIDTH |
|-----------------|-----------------|
| TEST MODULATION | GFSK for BR/EDR |

| Test Data (MHz) | Criteria | |
|-----------------|----------|------|
| Low Channel | 0.879 | PASS |
| Middle Channel | 0.877 | PASS |
| High Channel | 0.876 | PASS |

📕 Agilent Spectrum Analyzer - Occupied BW SENSE:INT ALIGN AUTO 08:36:14 PM Feb 22, 2019 Center Freq: 2.402000000 GHz Radio Std: None Trig: Free Run Avg|Hold:>10/10 #FGain:Low #Atten: 10 dB - F X Amptd/Y Scale Ref Value 10.00 dBm **Ref Value** 10.00 dBm 10 dB/div Ref 10.00 dBm Attenuation [10 dB] Scale/Div 10.0 dB Span 3 MHz Sweep 4.133 ms Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz 3.75 dBm **Occupied Bandwidth Total Power** 832.53 kHz Transmit Freq Error 25.729 kHz **OBW Power** 99.00 % x dB Bandwidth 878.8 kHz x dB -20.00 dB More 1 of 2 STATUS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



Agilent Spectrum Analyzer - Occupied BW SENSE:INT ALIGN AUTO Center Freq: 2.441000000 GHz Trig: Free Run Avg|Hold:>10/10 #Atten: 10 dB 08:36:30 PM Feb 22, 2019 Radio Std: None Frequency Center Freg 2.441000000 GHz #IFGain:Low Radio Device: BTS Ref 10.00 dBm 10 dB/div _og **Center Freq** 2.441000000 GHz Center 2.441 GHz #Res BW 30 kHz Span 3 MHz Sweep 4.133 ms CF Step 300.000 kHz #VBW 100 kHz Man <u>Auto</u> 3.83 dBm **Total Power Occupied Bandwidth** 824.95 kHz **Freq Offset** 0 Hz **Transmit Freq Error** 27.238 kHz **OBW Power** 99.00 % x dB Bandwidth 876.5 kHz x dB -20.00 dB

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

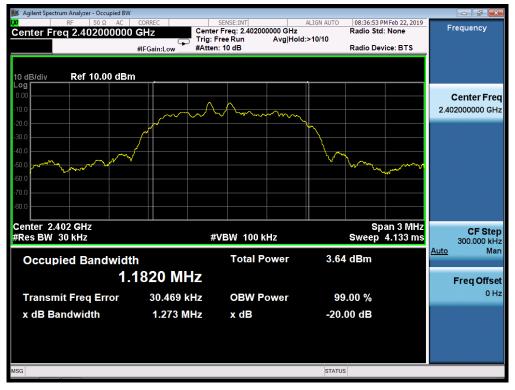
TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





| TEST ITEM | 20DB BANDWIDTH |
|-----------------|-----------------------|
| TEST MODULATION | π /4-DQPSK for BR/EDR |

| Test Data (MHz) | Criteria | |
|-----------------|----------|------|
| Low Channel | 1.273 | PASS |
| Middle Channel | 1.272 | PASS |
| High Channel | 1.272 | PASS |



TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



Agilent Spectrum Analyzer - Occupied BW SENSE:INT ALIGN AUTO Center Freq: 2.441000000 GHz Trig: Free Run Avg|Hold:>10/10 #Atten: 10 dB 08:37:04 PM Feb 22, 2019 Radio Std: None Frequency Center Freg 2.441000000 GHz Ģ Radio Device: BTS #IEGain:Low Ref 10.00 dBm 10 dB/div _og **Center Freq** 2.441000000 GHz Center 2.441 GHz #Res BW 30 kHz Span 3 MHz Sweep 4.133 ms CF Step 300.000 kHz #VBW 100 kHz Man <u>Auto</u> **Total Power** 3.73 dBm **Occupied Bandwidth** 1.1835 MHz **Freq Offset** 0 Hz **Transmit Freq Error** 30.005 kHz **OBW Power** 99.00 % x dB Bandwidth 1.272 MHz x dB -20.00 dB

TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL





6. FCC LINE CONDUCTED EMISSION TEST

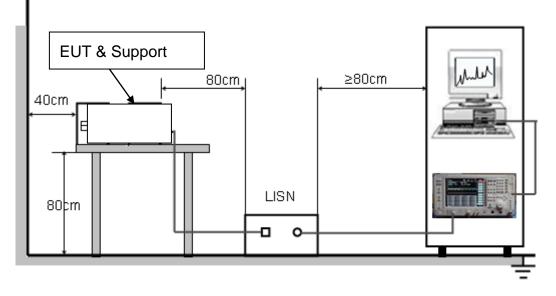
6.1. LIMITS OF LINE CONDUCTED EMISSION TEST

| Fromuonov | Maximum RF Line Voltage | | | | |
|---------------|-------------------------|---------------|--|--|--|
| Frequency | Q.P.(dBuV) | Average(dBuV) | | | |
| 150kHz~500kHz | 66-56 | 56-46 | | | |
| 500kHz~5MHz | 56 | 46 | | | |
| 5MHz~30MHz | 60 | 50 | | | |

Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

6.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





6.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

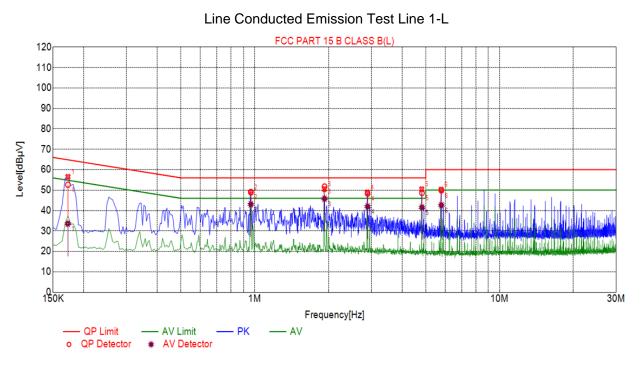
- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipments received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC charging voltage by adapter or PC which received 120V/60Hzpower by a LISN.
- 6. The 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.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

6.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.



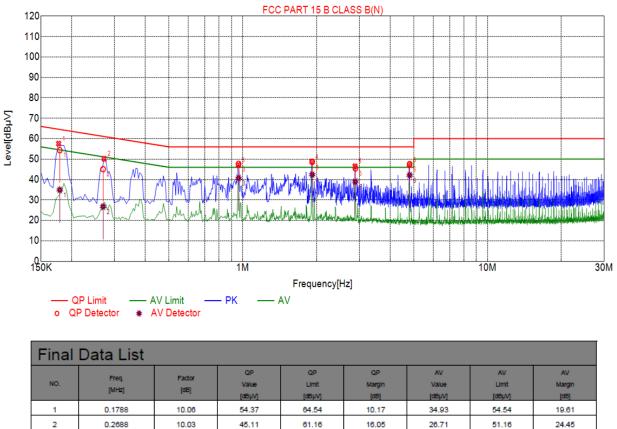


6.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

| Final | Final Data List | | | | | | | | | |
|-------|-----------------|----------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|--|--|
| NO. | Freq. [MHz] | Factor [dB] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | | |
| 1 | 0.1724 | 10.03 | 52.63 | 64.84 | 12.21 | 33.56 | 54.84 | 21.28 | | |
| 2 | 0.9641 | 10.06 | 49.10 | 56.00 | 6.90 | 43.09 | 46.00 | 2.91 | | |
| 3 | 1.9285 | 10.14 | 51.76 | 56.00 | 4.24 | 45.79 | 46.00 | 0.21 | | |
| 4 | 2.8929 | 10.21 | 48.29 | 56.00 | 7.71 | 41.98 | 46.00 | 4.02 | | |
| 5 | 4.8223 | 10.26 | 48.62 | 56.00 | 7.38 | 41.55 | 46.00 | 4.45 | | |
| 6 | 5.7894 | 10.24 | 49.86 | 60.00 | 10.14 | 42.64 | 50.00 | 7.36 | | |



Line Conducted Emission Test Line 2-N



| 2 | 0.2688 | 10.03 | 45.11 | 61.16 | 16.05 | 26.71 | 51.16 | 24.45 |
|---|--------|-------|-------|-------|-------|-------|-------|-------|
| 3 | 0.9615 | 10.06 | 47.67 | 56.00 | 8.33 | 40.70 | 46.00 | 5.30 |
| 4 | 1.9227 | 10.14 | 48.65 | 56.00 | 7.35 | 42.40 | 46.00 | 3.60 |
| 5 | 2.8863 | 10.21 | 45.45 | 56.00 | 10.55 | 38.92 | 46.00 | 7.08 |
| 6 | 4.8091 | 10.26 | 47.59 | 56.00 | 8.41 | 42.14 | 46.00 | 3.86 |

RESULT: PASS

Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.





APPENDIX A: PHOTOGRAPHS OF TEST SETUP





FCC LINE CONDUCTED EMISSION TEST SETUP



APPENDIX B: PHOTOGRAPHS OF EUT

TOTAL VIEW OF EUT

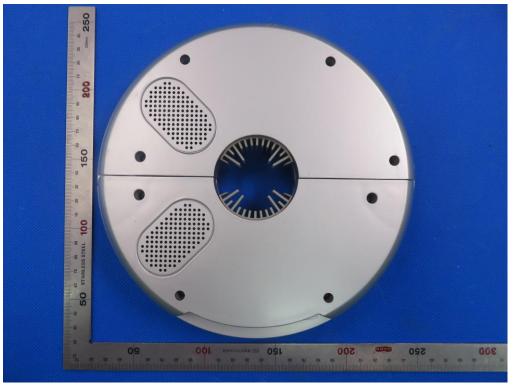


TOP VIEW OF EUT





BOTTOM VIEW OF EUT



FRONT VIEW OF EUT

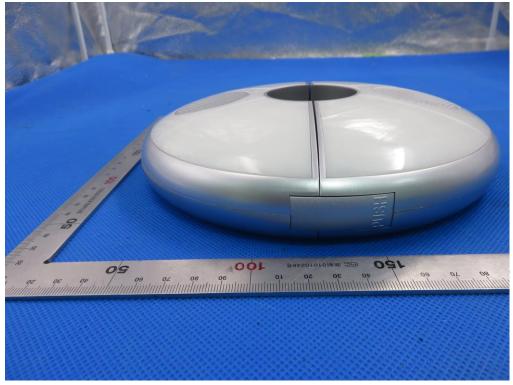




BACK VIEW OF EUT



LEFT VIEW OF EUT





RIGHT VIEW OF EUT



VIEW OF EUT (PORT)





OPEN VIEW OF EUT

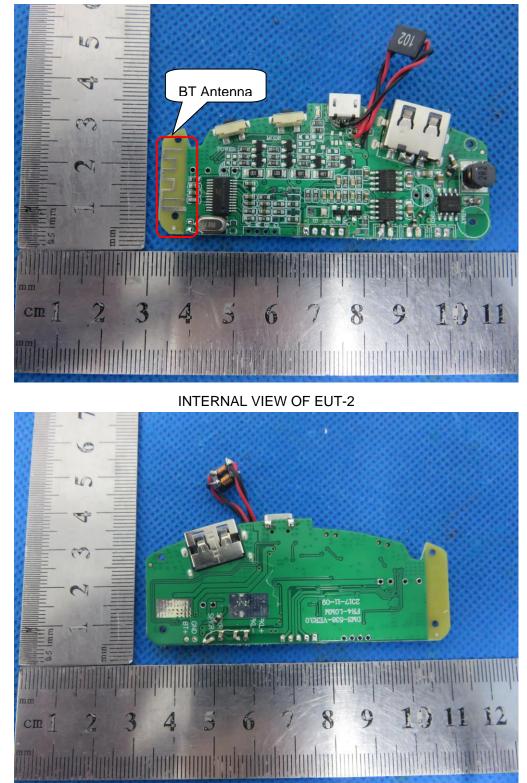


VIEW OF BATTERY



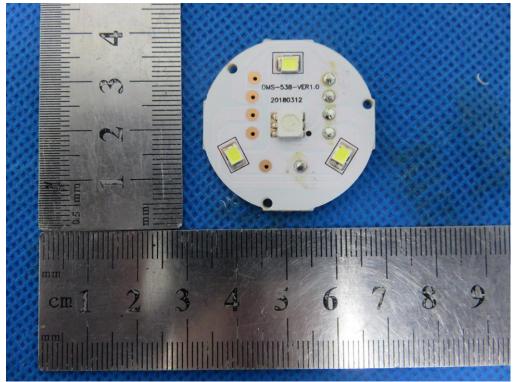


INTERNAL VIEW OF EUT-1

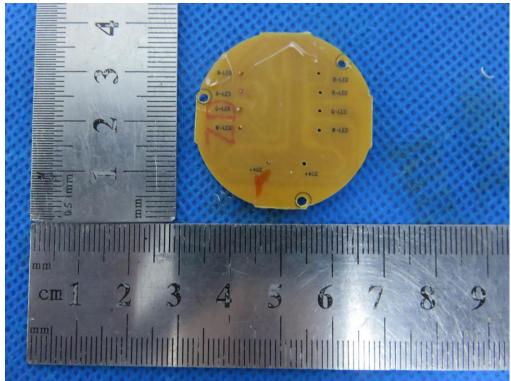




INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



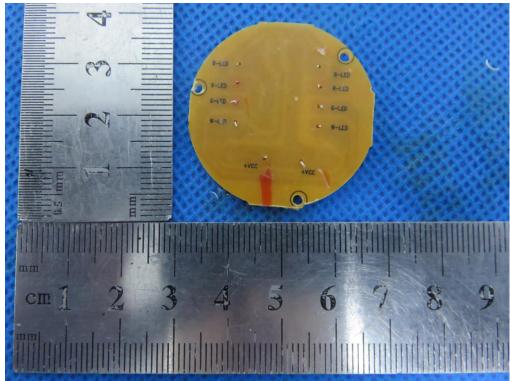


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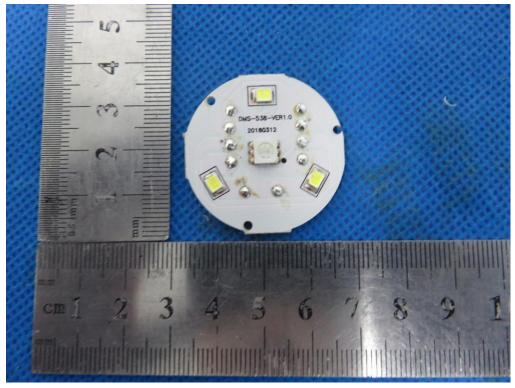
INTERNAL VIEW OF EUT-5

INTERNAL VIEW OF EUT-6

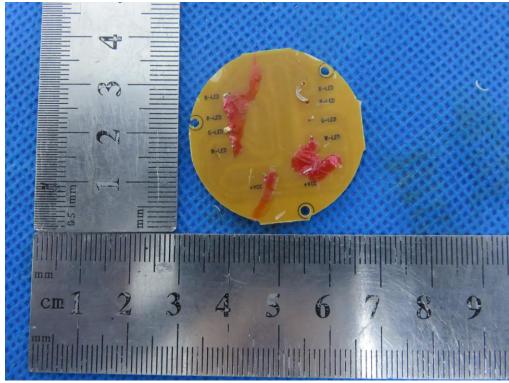




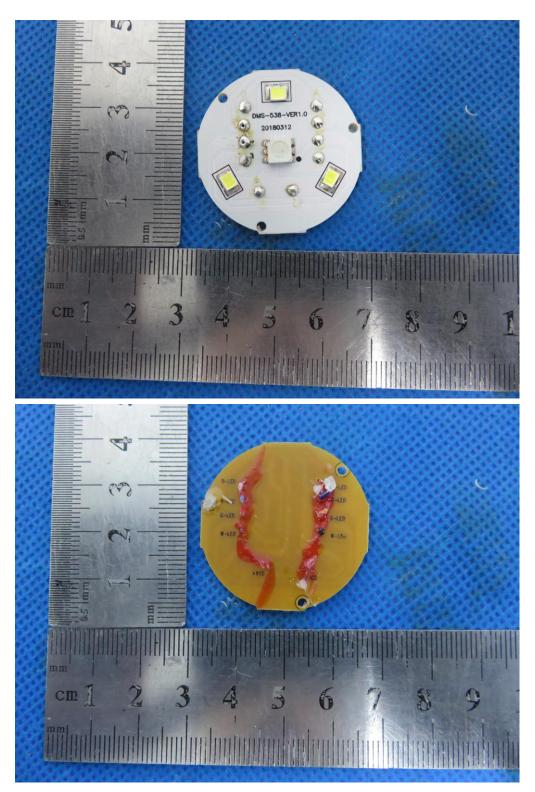
INTERNAL VIEW OF EUT-7



INTERNAL VIEW OF EUT-8

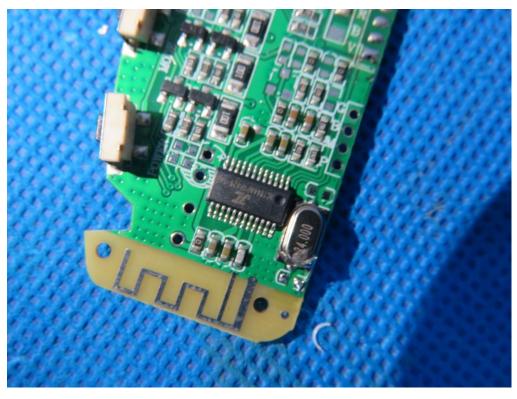








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VIEW OF ADAPTER (AE)



The adapter was supplied by HUAK -----END OF REPORT----