

TEST REPORT

Reference No...... : WTF16S0859560-1E
FCC ID : 2AJTC- P3999
Applicant..... : HIGHLIGHTS FOR CHILDREN
Address..... : 1800 WATERMARK DR. COLUMBUS, OH 43215, USA
Manufacturer : Golden Synergy Ltd
Address..... : Rm. 1602, Tower C, Huangdou Square, 3008 Yitian Road, Futian District, Shenzhen, China
Product Name..... : SMART WATCH U8 PLUS
Model No..... : P3999
Brand..... : N/A
Standards..... : FCC CFR47 Part 15 Section 15.247:2015
Date of Receipt sample : Aug. 30, 2016
Date of Test : Sep. 01 – 12 ,2016
Date of Issue..... : Sep. 23, 2016
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Services (Shenzhen) Co., Ltd.

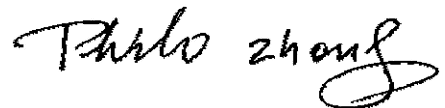
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Approved by:



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3 Revision History

| Test report No. | Date of Receipt sample | Date of Test | Date of Issue | Purpose | Comment | Approved |
|------------------|------------------------|--------------------|---------------|-----------|----------------------------|----------|
| WTF16S0859560-1E | Aug. 30, 2016 | Sep. 01 – 12, 2016 | Sep. 18, 2016 | original | - | Replaced |
| WTF16S0859560-1E | Aug. 30, 2016 | Sep. 01 – 12, 2016 | Sep. 23, 2016 | Revision1 | Revised RF Exposure Report | Valid |

4 General Information

4.1 General Description of E.U.T.

| | |
|------------------------|---|
| Product Name: | SMART WATCH U8 PLUS |
| Model No.: | P3999 |
| Model Difference: | N/A |
| Bluetooth Version: | V4.0 |
| Operation Frequency: | 2402-2480MHz, 79(EDR)/40(BLE) Channels in total |
| Type of Modulation: | GFSK, Pi/4DQPSK, 8DPSK |
| The lowest oscillator: | 26MHz |
| Antenna Gain: | 0 dBi |
| Antenna installation: | Fixed Antenna |

4.2 Details of E.U.T.

| | |
|-----------------|----------------------------|
| Technical Data: | DC 3.7V, 230mAh by battery |
|-----------------|----------------------------|

4.3 Channel List

BLE mode

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|-------------|-----------------|-------------|-----------------|-------------|-----------------|-------------|-----------------|
| 0 | 2402 | 1 | 2404 | 2 | 2406 | 3 | 2408 |
| 4 | 2410 | 5 | 2412 | 6 | 2414 | 7 | 2416 |
| 8 | 2418 | 9 | 2420 | 10 | 2422 | 11 | 2424 |
| 12 | 2426 | 13 | 2428 | 14 | 2430 | 15 | 2432 |
| 16 | 2434 | 17 | 2436 | 18 | 2438 | 19 | 2440 |
| 20 | 2442 | 21 | 2444 | 22 | 2446 | 23 | 2448 |
| 24 | 2450 | 25 | 2452 | 26 | 2454 | 27 | 2456 |
| 28 | 2458 | 29 | 2460 | 30 | 2462 | 31 | 2464 |
| 32 | 2466 | 33 | 2468 | 34 | 2470 | 35 | 2472 |
| 36 | 2474 | 37 | 2476 | 38 | 2478 | 39 | 2480 |

4.4 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Table 1 Tests Carried Out Under FCC part 15.247

| Test mode | Low channel | Middle channel | High channel |
|--------------|-------------|----------------|--------------|
| Transmitting | 2402MHz | 2440MHz | 2480MHz |

4.5 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A-1, October 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. 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 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) Co., Ltd. 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 328995, December 3, 2014.

5 Equipment Used during Test

5.1 Equipments List

| Conducted Emissions Test Site 1# | | | | | | |
|---|----------------------------|----------------------------------|--------------|-----------------|-----------------------|----------------------|
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Calibration Date | Calibration Due Date |
| 1 | EMI Test Receiver | R&S | ESCI | 100947 | Sep.14, 2015 | Sep.13, 2016 |
| 2 | LISN | R&S | ENV216 | 100115 | Sep.14, 2015 | Sep.13, 2016 |
| 3 | Cable | Top | TYPE16(3.5M) | - | Sep.14, 2015 | Sep.13, 2016 |
| Conducted Emissions Test Site 2# | | | | | | |
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Calibration Date | Calibration Due Date |
| 1 | EMI Test Receiver | R&S | ESCI | 101155 | Sep.14, 2015 | Sep.13, 2016 |
| 2 | LISN | SCHWARZBECK | NSLK 8128 | 8128-289 | Sep.14, 2015 | Sep.13, 2016 |
| 3 | Limiter | York | MTS-IMP-136 | 261115-001-0024 | Sep.14, 2015 | Sep.13, 2016 |
| 4 | Cable | Laplace | RF300 | - | Sep.14, 2015 | Sep.13, 2016 |
| 3m Semi-anechoic Chamber for Radiation Emissions Test site 1# | | | | | | |
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Calibration Date | Calibration Due Date |
| 1 | EMC Analyzer | Agilent | E7405A | MY45114943 | Sep.15,2015 | Sep.14,2016 |
| 2 | Active Loop Antenna | Beijing Dazhi | ZN30900A | - | Sep.15,2015 | Sep.14,2016 |
| 3 | Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 336 | Apr.19,2016 | Apr.18,2017 |
| 4 | Coaxial Cable (below 1GHz) | Top | TYPE16(13M) | - | Sep.15,2016 | Sep.14,2016 |
| 5 | Broad-band Horn Antenna | SCHWARZBECK | BBHA 9120 D | 667 | Apr.19,2016 | Apr.18,2017 |
| 6 | Broad-band Horn Antenna | SCHWARZBECK | BBHA 9170 | 335 | Apr.19,2016 | Apr.18,2017 |
| 7 | Broadband Preamplifier | COMPLIANCE DIRECTION | PAP-1G18 | 2004 | Mar.17,2016 | Mar.16,2017 |
| 8 | Coaxial Cable (above 1GHz) | Top | 1GHz-25GHz | EW02014-7 | Apr.10,2016 | Apr.09,2017 |
| 3m Semi-anechoic Chamber for Radiation Emissions Test site 2# | | | | | | |
| Item | Equipment | Manufacturer | Model No. | Serial No | Last Calibration Date | Calibration Due Date |
| 1 | Test Receiver | R&S | ESCI | 101296 | Sep.15,2015 | Sep.14,2016 |
| 2 | Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3325 | Sep.15,2015 | Sep.14,2016 |
| 3 | Amplifier | Compliance pirection systems inc | PAP-0203 | 22024 | Sep.15,2015 | Sep.14,2016 |
| 4 | Cable | HUBER+SUHNER | CBL2 | 525178 | Sep.15,2015 | Sep.14,2016 |

| RF Conducted Testing | | | | | | |
|----------------------|---------------------------------|--------------|-----------|------------|-----------------------|----------------------|
| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Calibration Date | Calibration Due Date |
| 1. | EMC Analyzer (9k~26.5GHz) | Agilent | E7405A | MY45114943 | Sep.15,2015 | Sep.14,2016 |
| 2. | Spectrum Analyzer (9k-6GHz) | R&S | FSL6 | 100959 | Sep.15,2015 | Sep.14,2016 |
| 3. | Signal Analyzer (9k~26.5GHz) | Agilent | N9010A | MY50520207 | Sep.15,2015 | Sep.14,2016 |

5.2 Measurement Uncertainty

| Parameter | Uncertainty |
|-----------------------------------|---|
| Radio Frequency | $\pm 1 \times 10^{-6}$ |
| RF Power | ± 1.0 dB |
| RF Power Density | ± 2.2 dB |
| Radiated Spurious Emissions test | ± 5.03 dB (Bilog antenna 30M~1000MHz) |
| | ± 4.74 dB (Horn antenna 1000M~25000MHz) |
| Conducted Spurious Emissions test | ± 3.64 dB (AC mains 150KHz~30MHz) |

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Test Summary

| Test Items | Test Requirement | Result |
|---|------------------------|--------|
| Radiated Emissions | 15.205(a) 15.209(a) | C |
| Conducted Emissions | 15.207(a) | C |
| Bandwidth | 15.247(a)(2) | C |
| Maximum Peak Output Power | 15.247(b)(3),(4) | C |
| Power Spectral Density | 15.247(e) | C |
| Band Edge | 15.247(d) | C |
| Antenna Requirement | 15.203 | C |
| Maximum Permissible Exposure (Exposure of Humans to RF Fields) | 1.1307(b)(1) | C |
| Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable. | | |

7 Conducted Emission

| | |
|-------------------|--|
| Test Requirement: | FCC CFR 47 Part 15 Section 15.207 |
| Test Method: | ANSI C63.10:2013&ANSI C63.4:2014 |
| Test Result: | PASS |
| Frequency Range: | 150kHz to 30MHz |
| Class/Severity: | Class B |
| Limit: | 66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz |
| Detector: | Peak for pre-scan (9kHz Resolution Bandwidth) |

7.1 E.U.T. Operation

Operating Environment :

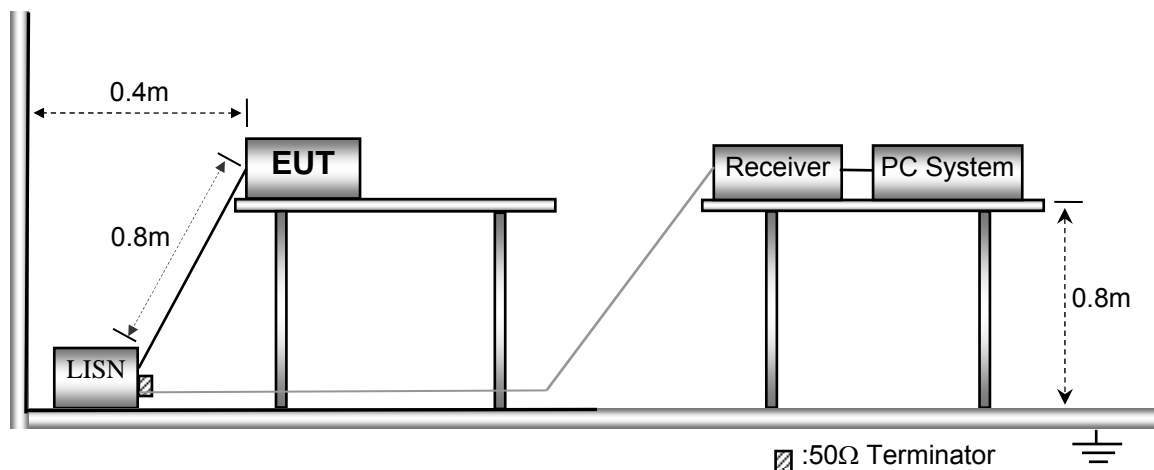
| | |
|-----------------------|----------|
| Temperature: | 25.5 °C |
| Humidity: | 51 % RH |
| Atmospheric Pressure: | 101.2kPa |

EUT Operation :

The test was performed in transmitting mode, the test data were shown in the report.

7.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.

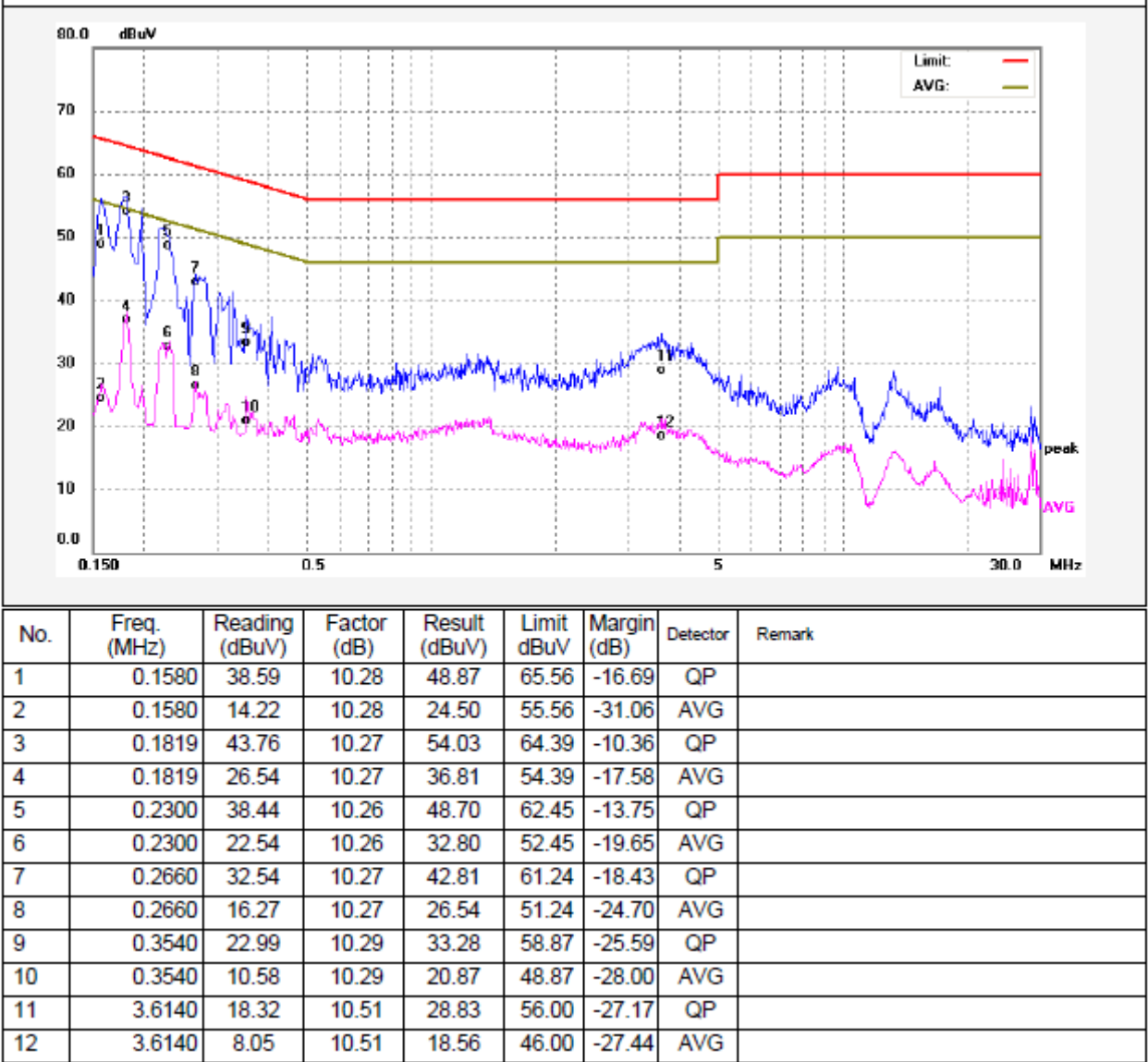


7.3 Measurement Description

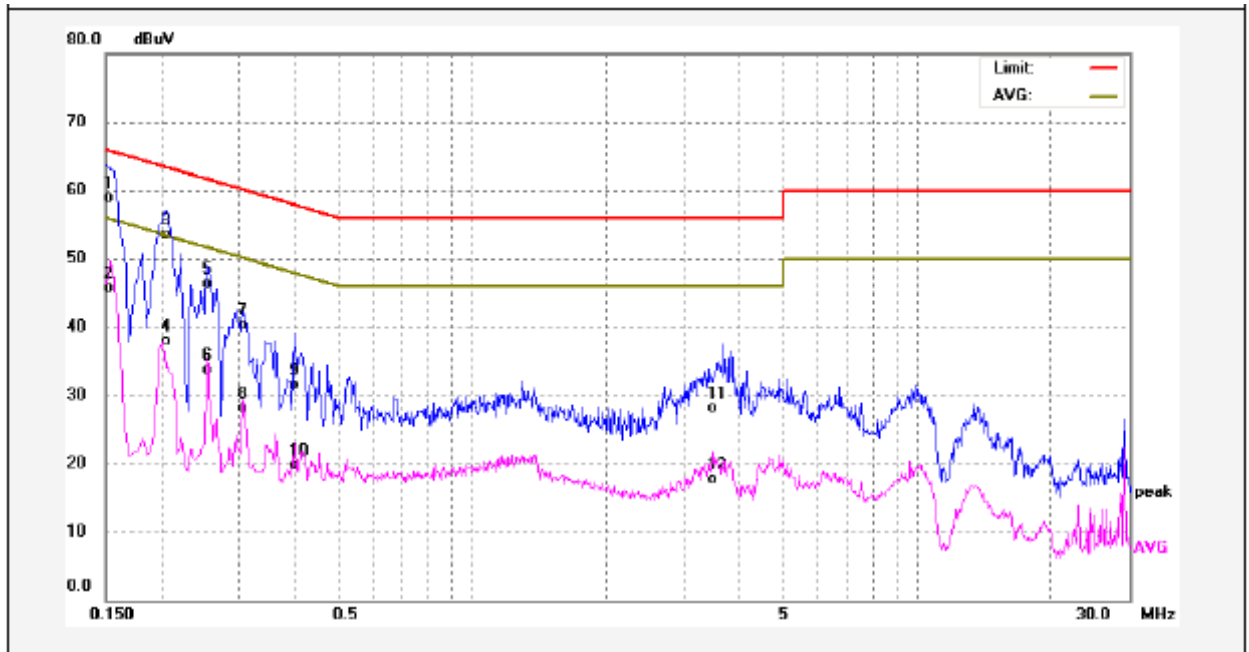
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

Live line:



Neutral line:



| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|-----|-------------|----------------|-------------|---------------|------------|-------------|----------|--------|
| 1 | 0.1500 | 48.53 | 10.29 | 58.82 | 65.99 | -7.17 | QP | |
| 2 | 0.1500 | 35.47 | 10.29 | 45.76 | 55.99 | -10.23 | AVG | |
| 3 | 0.2065 | 43.15 | 10.26 | 53.41 | 63.34 | -9.93 | QP | |
| 4 | 0.2065 | 27.68 | 10.26 | 37.94 | 53.34 | -15.40 | AVG | |
| 5 | 0.2540 | 36.10 | 10.26 | 46.36 | 61.62 | -15.26 | QP | |
| 6 | 0.2540 | 23.47 | 10.26 | 33.73 | 51.62 | -17.89 | AVG | |
| 7 | 0.3060 | 30.01 | 10.28 | 40.29 | 60.08 | -19.79 | QP | |
| 8 | 0.3060 | 17.77 | 10.28 | 28.05 | 50.08 | -22.03 | AVG | |
| 9 | 0.4020 | 21.33 | 10.27 | 31.60 | 57.81 | -26.21 | QP | |
| 10 | 0.4020 | 9.44 | 10.27 | 19.71 | 47.81 | -28.10 | AVG | |
| 11 | 3.4900 | 17.62 | 10.50 | 28.12 | 56.00 | -27.88 | QP | |
| 12 | 3.4900 | 7.13 | 10.50 | 17.63 | 46.00 | -28.37 | AVG | |

8 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05 & ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|--------------------|-----------------------|-----------------|---|---------------------------------------|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | $2400/F(\text{kHz})$ | 300 | $10000 * 2400/F(\text{kHz})$ | $20\log^{(2400/F(\text{kHz}))} + 80$ |
| 0.490 ~ 1.705 | $24000/F(\text{kHz})$ | 30 | $100 * 24000/F(\text{kHz})$ | $20\log^{(24000/F(\text{kHz}))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | $100 * 30$ | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

8.1 EUT Operation

Operating Environment:

Temperature: 25.5 °C

Humidity: 51 % RH

Atmospheric Pressure: 1016 mbar

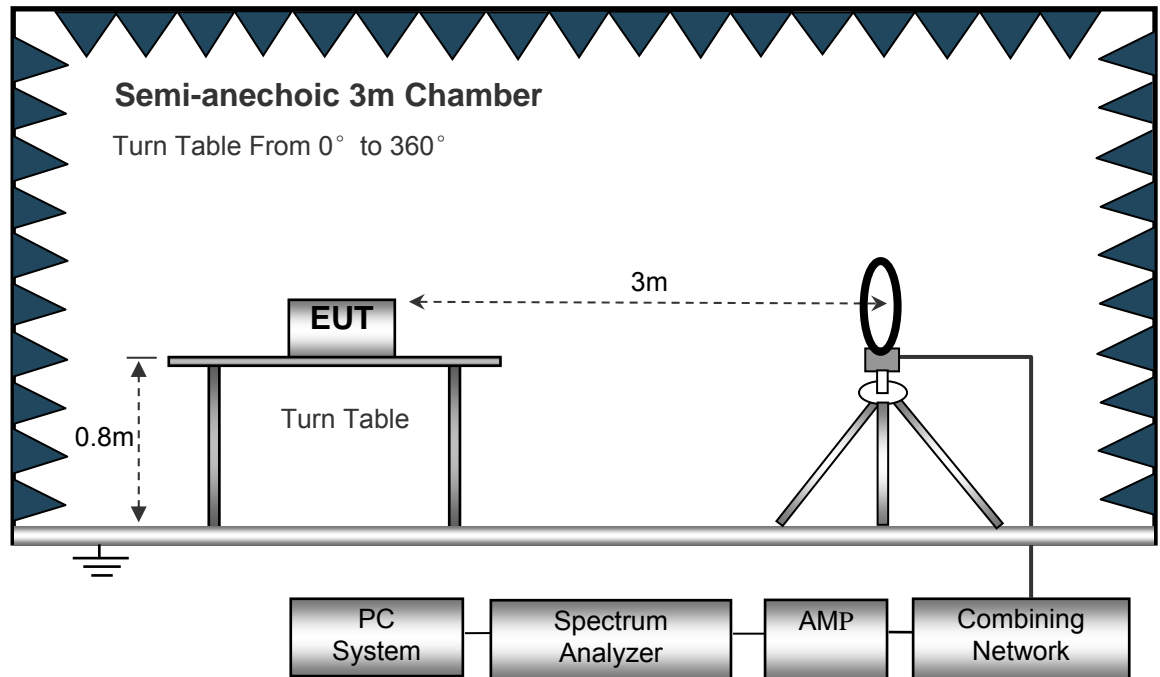
EUT Operation:

The test was performed in transmitting mode, the test data were shown in the report.

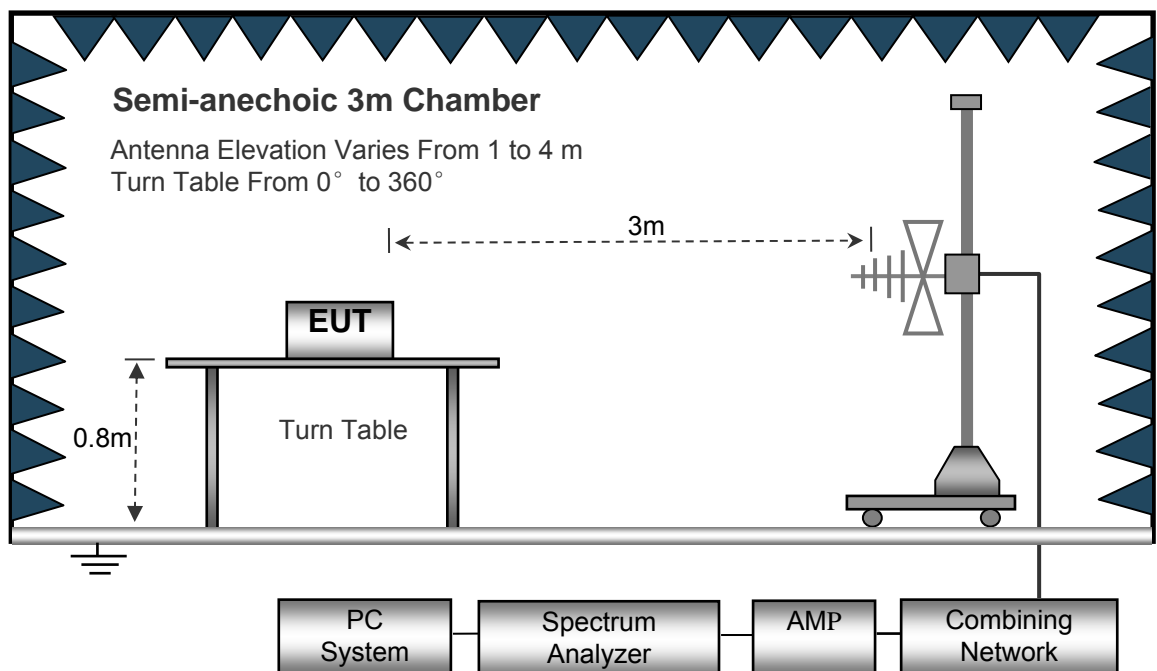
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

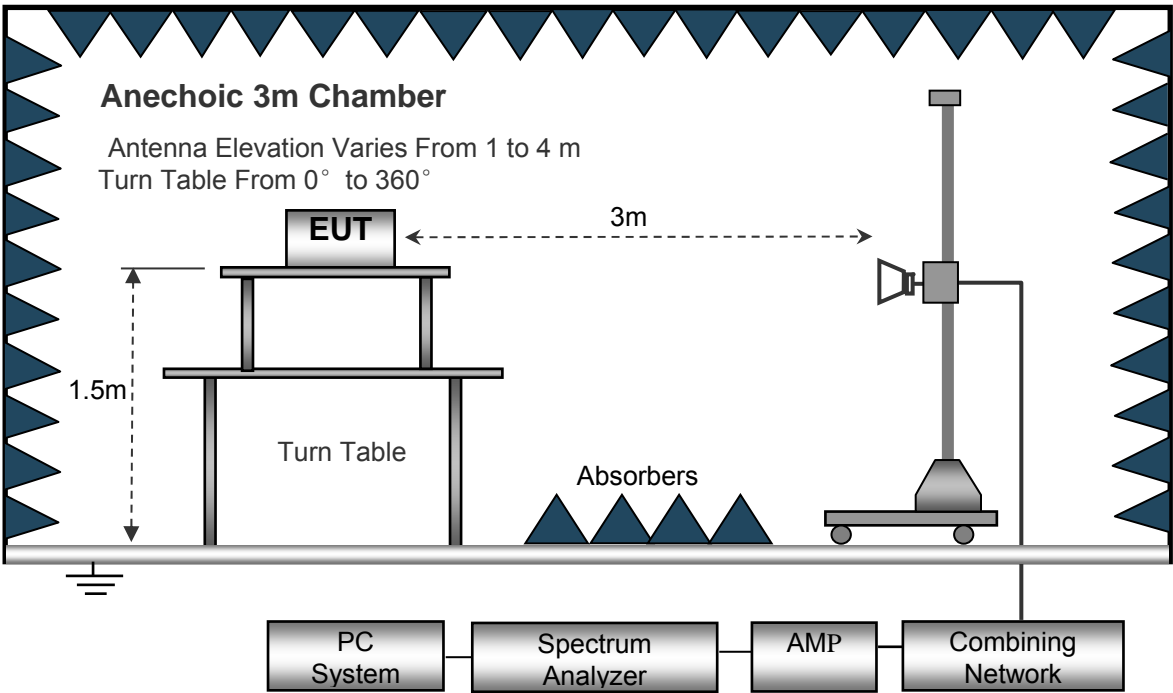
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth.....10kHz
Video Bandwidth.....10kHz
Resolution Bandwidth.....10kHz

30MHz ~ 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
Detector Ave.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

8.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane; For above 1GHz, the EUT is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8.5 Summary of Test Results

Test Frequency: 26MHz~ 30MHz

The measurements were more than 20 dB below the limit and not reported

Test Frequency: 30MHz ~ 18GHz

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | Limit | Margin |
|------------------------|------------------|-------------|------------------|------------|-------|------------------|---------------------|----------|--------|
| | | | | Height | Polar | | | | |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| GFSK (BLE) Low Channel | | | | | | | | | |
| 254.74 | 22.49 | QP | 74 | 2.0 | H | 10.61 | 33.10 | 46.00 | -12.90 |
| 254.74 | 19.99 | QP | 213 | 1.2 | V | 10.61 | 30.60 | 46.00 | -15.40 |
| 4804.00 | 53.76 | PK | 324 | 1.5 | V | -1.04 | 52.72 | 74.00 | -21.28 |
| 4804.00 | 44.06 | Ave | 324 | 1.5 | V | -1.04 | 43.02 | 54.00 | -10.98 |
| 7206.00 | 52.38 | PK | 243 | 1.6 | H | 1.32 | 53.70 | 74.00 | -20.30 |
| 7206.00 | 41.53 | Ave | 243 | 1.6 | H | 1.32 | 42.85 | 54.00 | -11.15 |
| 2311.67 | 46.43 | PK | 81 | 1.7 | V | -13.25 | 33.18 | 74.00 | -40.82 |
| 2311.67 | 38.43 | Ave | 81 | 1.7 | V | -13.25 | 25.18 | 54.00 | -28.82 |
| 2378.01 | 43.53 | PK | 246 | 1.1 | H | -13.16 | 30.37 | 74.00 | -43.63 |
| 2378.01 | 36.26 | Ave | 246 | 1.1 | H | -13.16 | 23.10 | 54.00 | -30.90 |
| 2485.83 | 44.70 | PK | 51 | 1.0 | V | -13.05 | 31.65 | 74.00 | -42.35 |
| 2485.83 | 36.25 | Ave | 51 | 1.0 | V | -13.05 | 23.20 | 54.00 | -30.80 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | Limit | Margin |
|---------------------------|------------------|-------------|------------------|------------|-------|------------------|---------------------|----------|--------|
| | | | | Height | Polar | | | | |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| GFSK (BLE) Middle Channel | | | | | | | | | |
| 254.74 | 20.16 | QP | 86 | 1.7 | H | 10.61 | 30.77 | 46.00 | -15.23 |
| 254.74 | 19.13 | QP | 254 | 1.4 | V | 10.61 | 29.74 | 46.00 | -16.26 |
| 4882.00 | 54.17 | PK | 55 | 2.0 | V | -0.63 | 53.54 | 74.00 | -20.46 |
| 4882.00 | 44.47 | Ave | 55 | 2.0 | V | -0.63 | 43.84 | 54.00 | -10.16 |
| 7323.00 | 52.82 | PK | 264 | 1.2 | H | 2.22 | 55.04 | 74.00 | -18.96 |
| 7323.00 | 43.06 | Ave | 264 | 1.2 | H | 2.22 | 45.28 | 54.00 | -8.72 |
| 2348.26 | 45.28 | PK | 24 | 1.6 | V | -13.15 | 32.13 | 74.00 | -41.87 |
| 2348.26 | 39.44 | Ave | 24 | 1.6 | V | -13.15 | 26.29 | 54.00 | -27.71 |
| 2366.63 | 43.28 | PK | 333 | 1.7 | H | -13.24 | 30.04 | 74.00 | -43.96 |
| 2366.63 | 38.37 | Ave | 333 | 1.7 | H | -13.24 | 25.13 | 54.00 | -28.87 |
| 2494.64 | 44.05 | PK | 148 | 1.9 | V | -13.12 | 30.93 | 74.00 | -43.07 |
| 2494.64 | 38.27 | Ave | 148 | 1.9 | V | -13.12 | 25.15 | 54.00 | -28.85 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | Limit | Margin |
|-------------------------|------------------|-------------|------------------|------------|-------|------------------|---------------------|----------------|--------|
| | | | | Height | Polar | | | | |
| (MHz) | (dB μ V) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dB μ V/m) | (dB μ V/m) | (dB) |
| GFSK (BLE) High Channel | | | | | | | | | |
| 254.74 | 21.34 | QP | 75 | 1.2 | H | 10.61 | 31.95 | 46.00 | -14.05 |
| 254.74 | 20.52 | QP | 170 | 1.9 | V | 10.61 | 31.13 | 46.00 | -14.87 |
| 4960.00 | 52.05 | PK | 334 | 1.2 | V | -0.25 | 51.80 | 74.00 | -22.20 |
| 4960.00 | 41.18 | Ave | 334 | 1.2 | V | -0.25 | 40.93 | 54.00 | -13.07 |
| 7440.00 | 53.69 | PK | 146 | 1.0 | H | 2.86 | 56.55 | 74.00 | -17.45 |
| 7440.00 | 42.79 | Ave | 146 | 1.0 | H | 2.86 | 45.65 | 54.00 | -8.35 |
| 2321.63 | 46.25 | PK | 5 | 1.4 | V | -13.20 | 33.05 | 74.00 | -40.95 |
| 2321.63 | 39.77 | Ave | 5 | 1.4 | V | -13.20 | 26.57 | 54.00 | -27.43 |
| 2381.46 | 42.79 | PK | 31 | 1.5 | H | -13.15 | 29.64 | 74.00 | -44.36 |
| 2381.46 | 38.69 | Ave | 31 | 1.5 | H | -13.15 | 25.54 | 54.00 | -28.46 |
| 2498.70 | 43.55 | PK | 326 | 1.8 | V | -13.07 | 30.48 | 74.00 | -43.52 |
| 2498.70 | 38.51 | Ave | 326 | 1.8 | V | -13.07 | 25.44 | 54.00 | -28.56 |

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not reported

9 Band Edge Measurement

| | |
|-------------------|---|
| Test Requirement: | Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) and 15.205(c). |
| Test Method: | 558074 D01 DTS Meas Guidance v03r05 |
| Test Mode: | Transmitting |

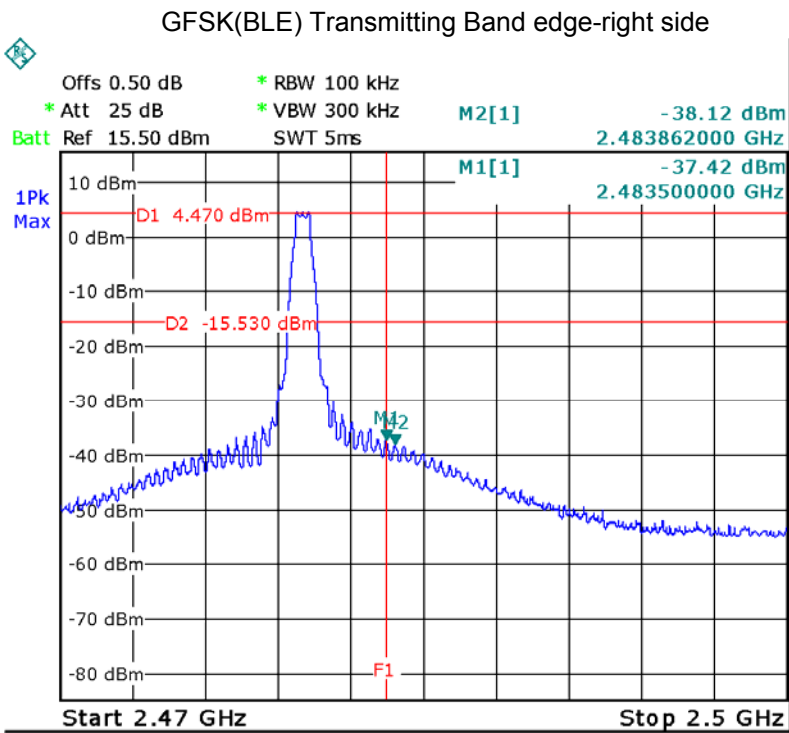
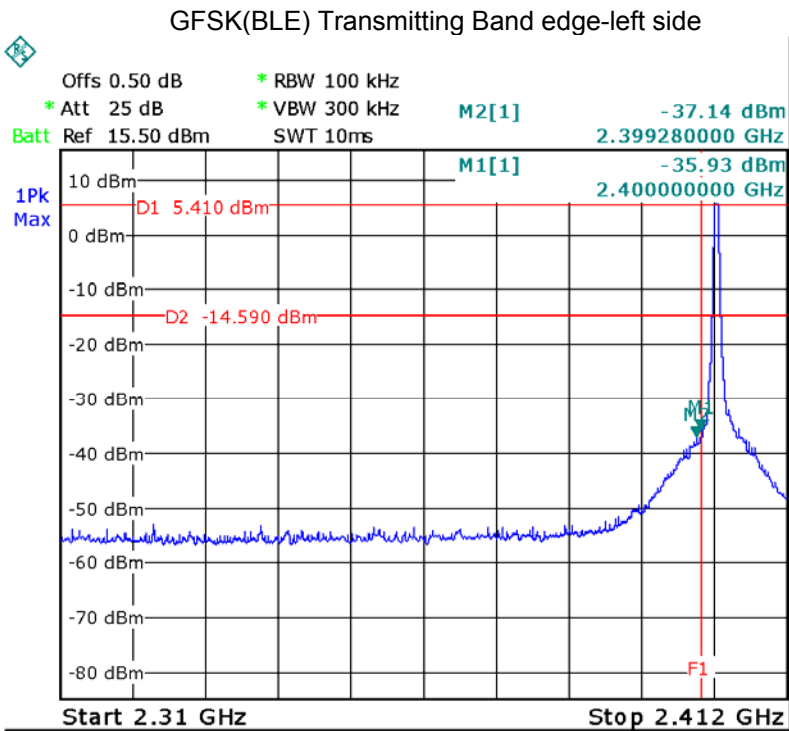
9.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto

Detector function = peak, Trace = max hold
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

9.2 Test Result

Test plots



10 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: 558074 D01 DTS Meas Guidance v03r05

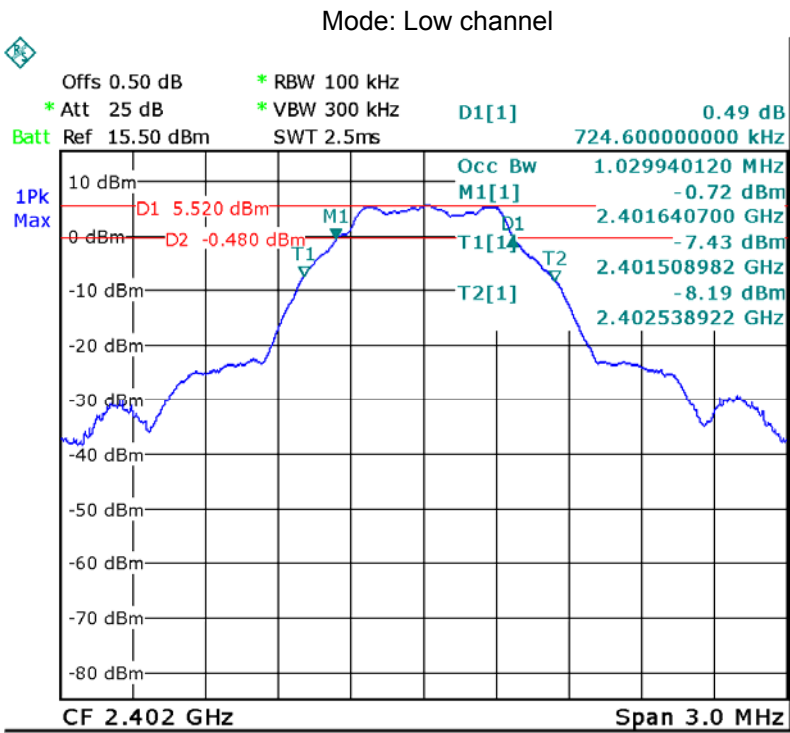
10.1 Test Procedure

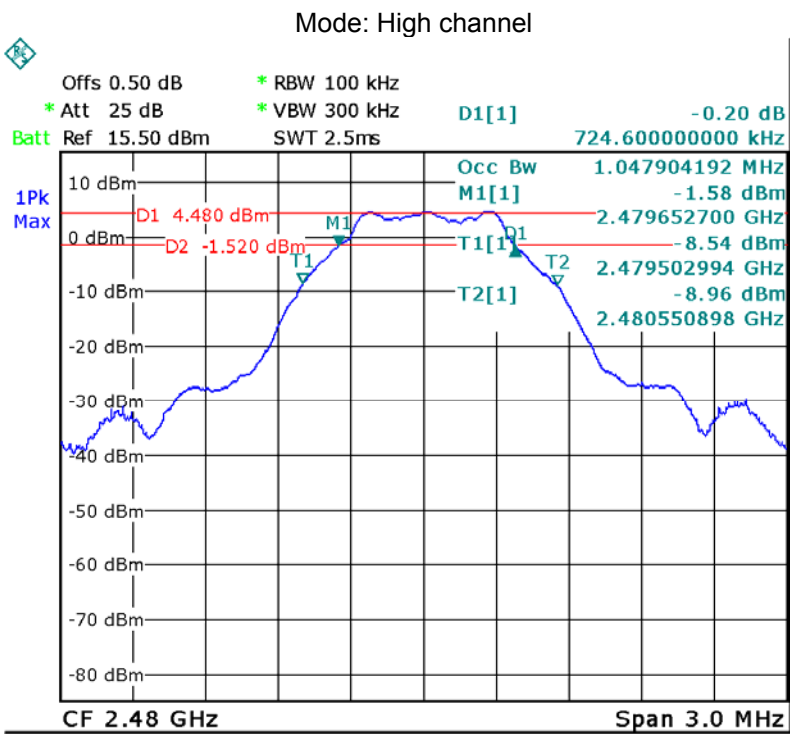
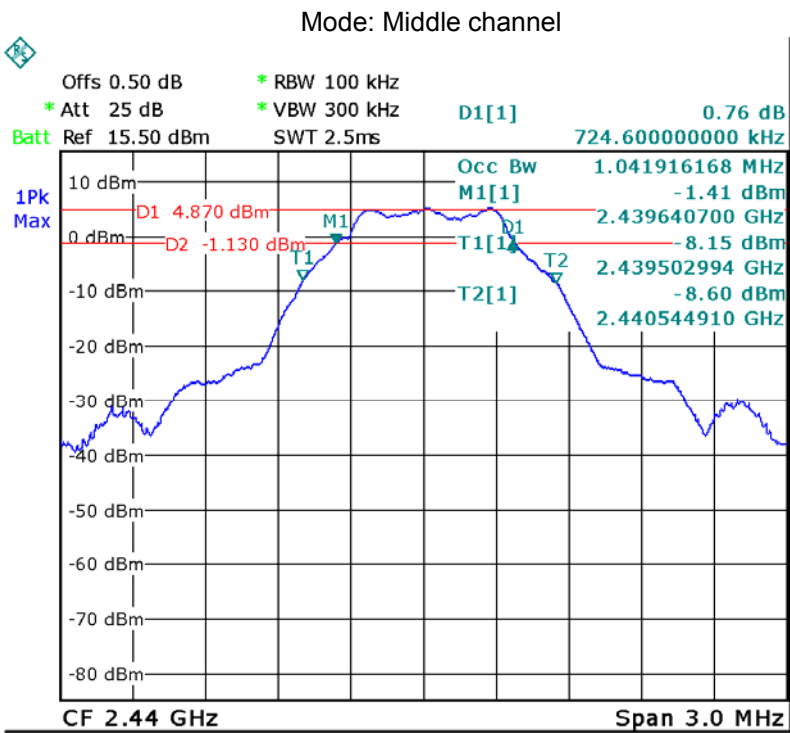
- 1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
- 2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

10.2 Test Result:

| Operation mode | 6dB Bandwidth (KHz) | 99% Bandwidth(MHz) |
|----------------|---------------------|--------------------|
| Low channel | 724.600 | 1.030 |
| Middle channel | 724.600 | 1.042 |
| High channel | 724.600 | 1.048 |

Test result plot as follows:





11 Maximum Peak Output Power

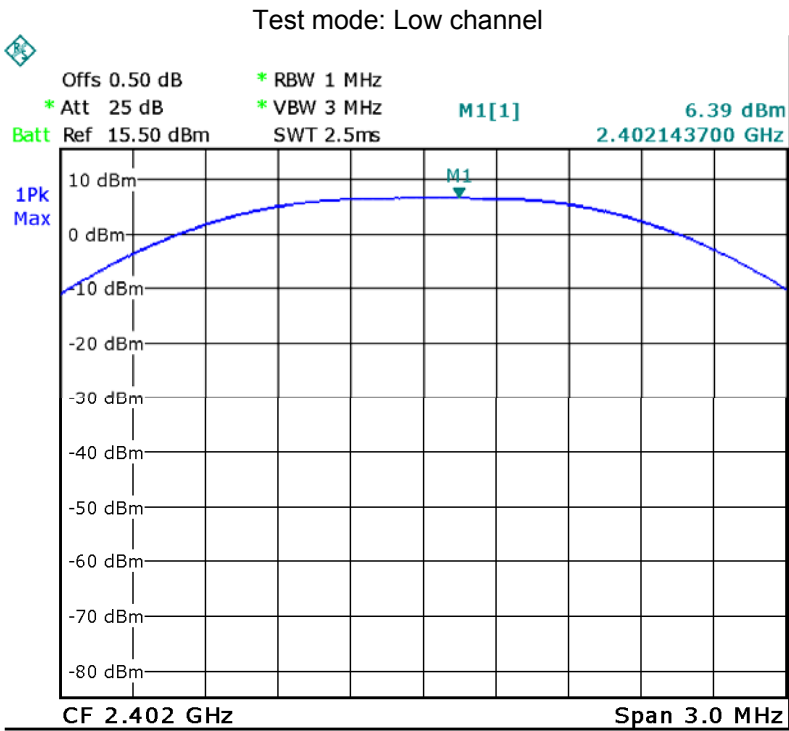
Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: 558074 D01 DTS Meas Guidance v03r05

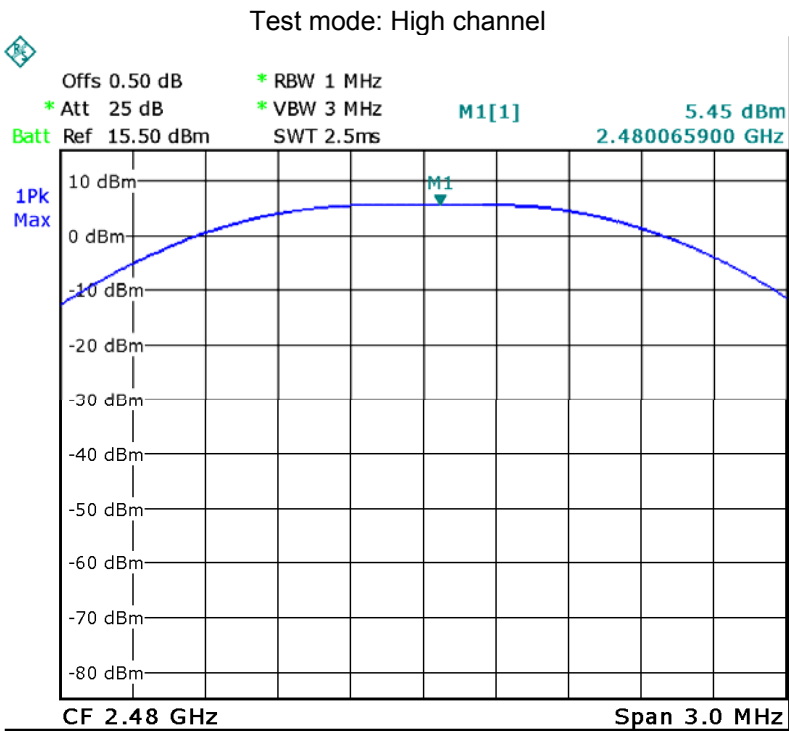
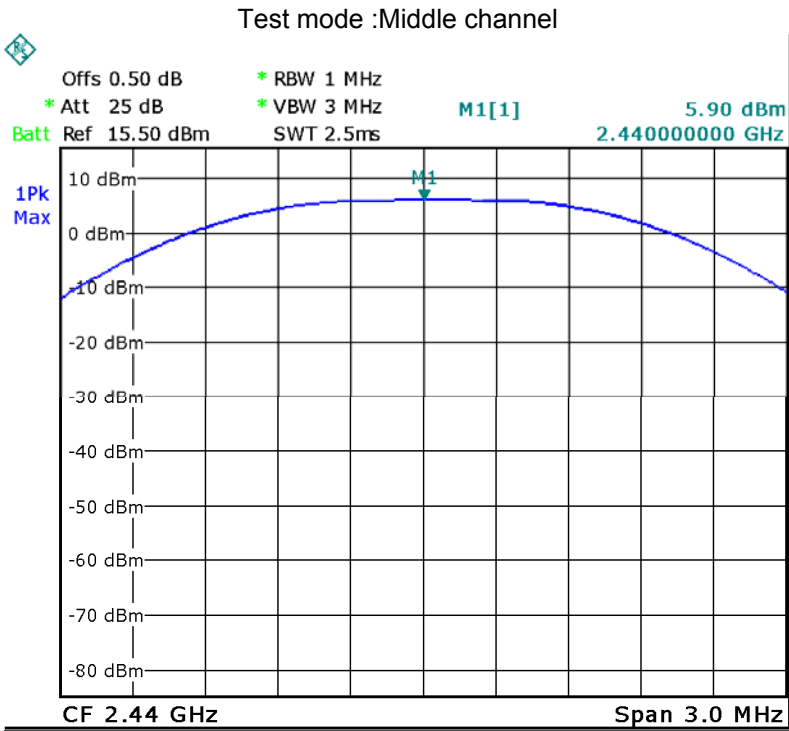
11.1 Test Procedure

- 558074 D01 DTS Meas Guidance v03r05 section 9.1.1
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
 2. Set the spectrum analyzer: RBW = 1MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
 3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

11.2 Test Result

| Maximum Peak Output Power (dBm) | | |
|---------------------------------|----------------|--------------|
| Low channel | Middle channel | High channel |
| 6.39 | 5.90 | 5.45 |
| Limit : 1W/30dBm | | |





12 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r05

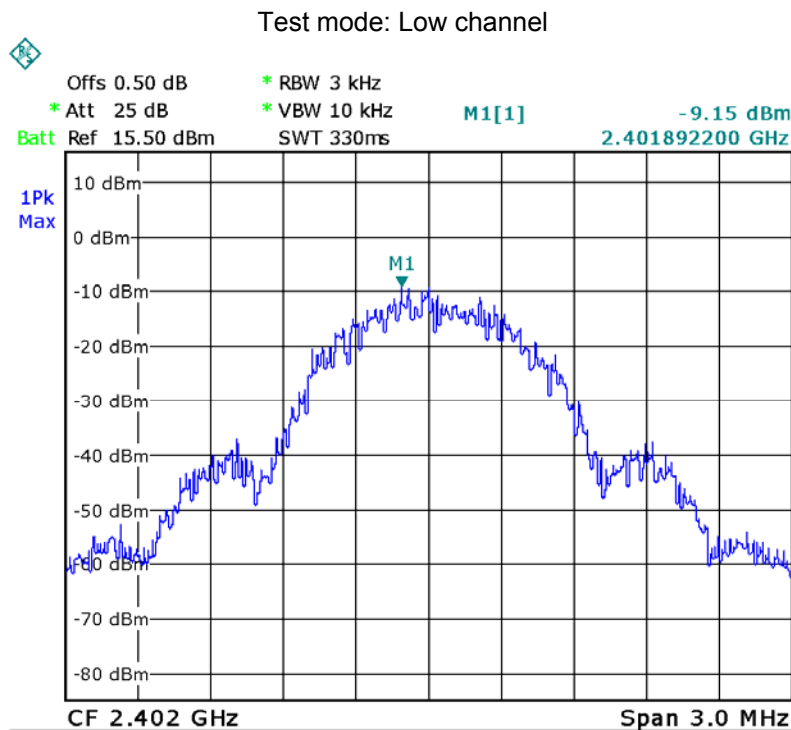
12.1 Test Procedure

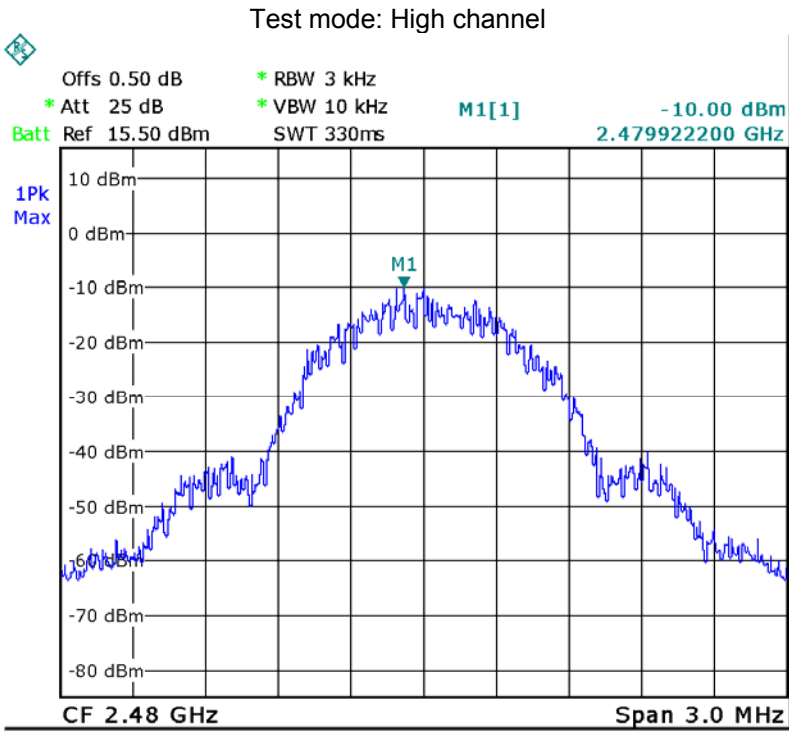
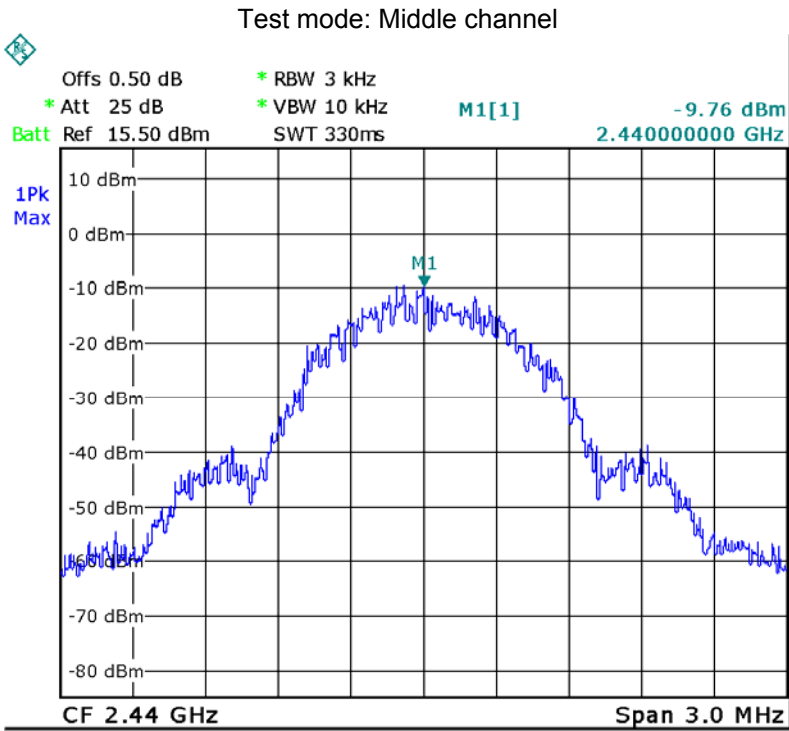
558074 D01 DTS Meas Guidance v03r05 section 10.2

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

12.2 Test Result

| Power Spectral Density | | |
|------------------------|----------------|--------------|
| Low channel | Middle channel | High channel |
| -9.15 | -9.76 | -10.00 |
| Limit : 8dBm per 3kHz | | |





13 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Result:

The EUT has one Fixed Antenna, the gain is 0dBi. meets the requirements of FCC 15.203.



14 RF Exposure

Test Requirement: FCC Part 1.1307

Evaluation Method FCC Part2.1093 & KDB 447498 D01 General RF Exposure Guidance v06

2.1 Requirements

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR where}$$

1. $f(\text{GHz})$ is the RF channel transmit frequency in GHz
2. Power and distance are rounded to the nearest mW and mm before calculation
3. The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2.2 The procedures / limit

| Conducted Peak power(dBm) | Conducted Peak power(mW) | Source-based time-averaged maximum conducted output power(mW) | Minimum test separation distance required for the exposure conditions (mm) | SAR Test Exclusion Thresholds(mW) | Result |
|---------------------------|--------------------------|---|--|-----------------------------------|------------|
| 6.39 | 4.355 | 4.355 | 5 | 10 | Compliance |

Remark: Max. duty factor is 100%

Calculation formula: Source-based time-averaged maximum conducted output power(mW) =Conducted peak power(mW)*Duty factor

For frequency in 2.402GHz: SAR Test Exclusion Thresholds $\leq 3.0 / [\sqrt{f(\text{GHz})}] \cdot (\text{min. test separation distance, mm})=3.0/(\sqrt{2.402}) \cdot 5=9.679 \text{ mW} \approx 10\text{mW}$

For frequency in 2.480GHz: SAR Test Exclusion Thresholds $\leq 3.0 / [\sqrt{f(\text{GHz})}] \cdot (\text{min. test separation distance, mm})=3.0/(\sqrt{2.480}) \cdot 5=9.525 \text{ mW} \approx 10\text{mW}$

15 Photographs –Model P3999 Test Setup Photos

15.1 Photograph – Conducted Emission Test Setup at Test Site 2#

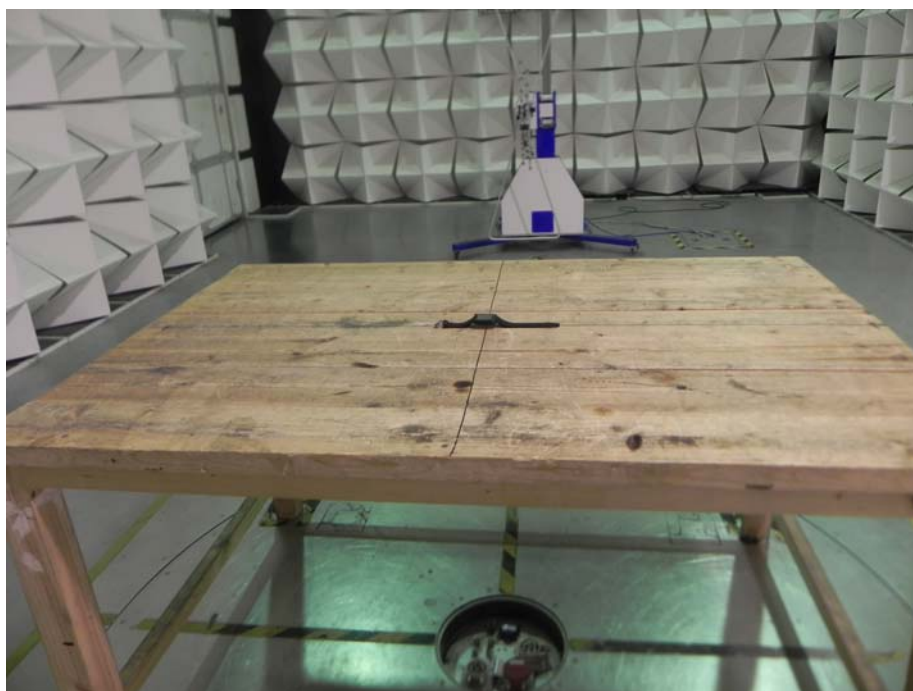


15.2 Photograph – Radiated Emission

Test frequency 26MHz to 30MHz Test Site 2#



Test frequency from 30MHz to 1GHz Test Site 2#



Test frequency above 1GHz Test Site 1#



16 Photographs - Constructional Details

16.1 Model P3999 - External Photos

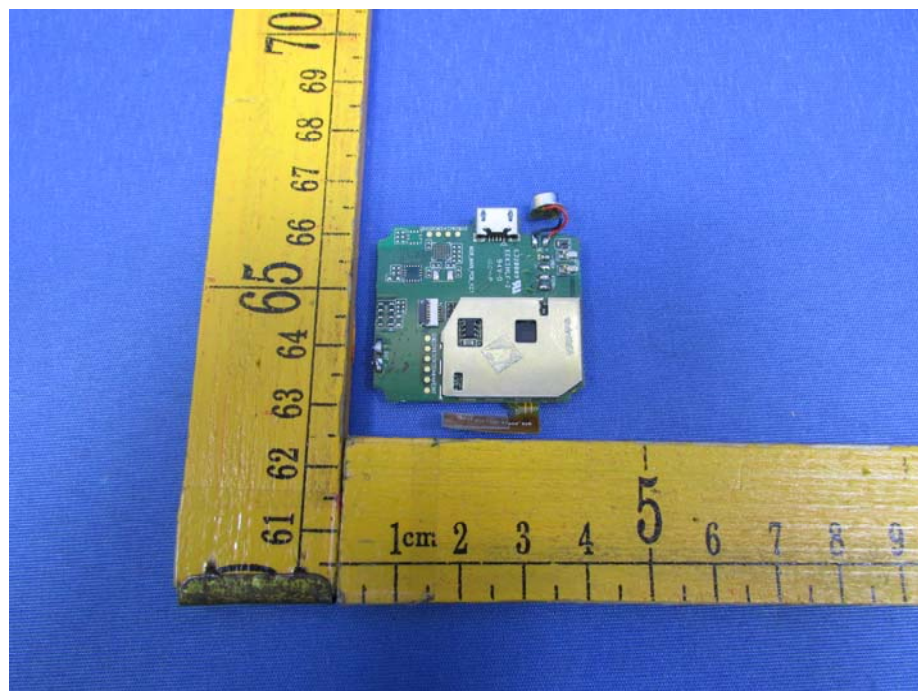


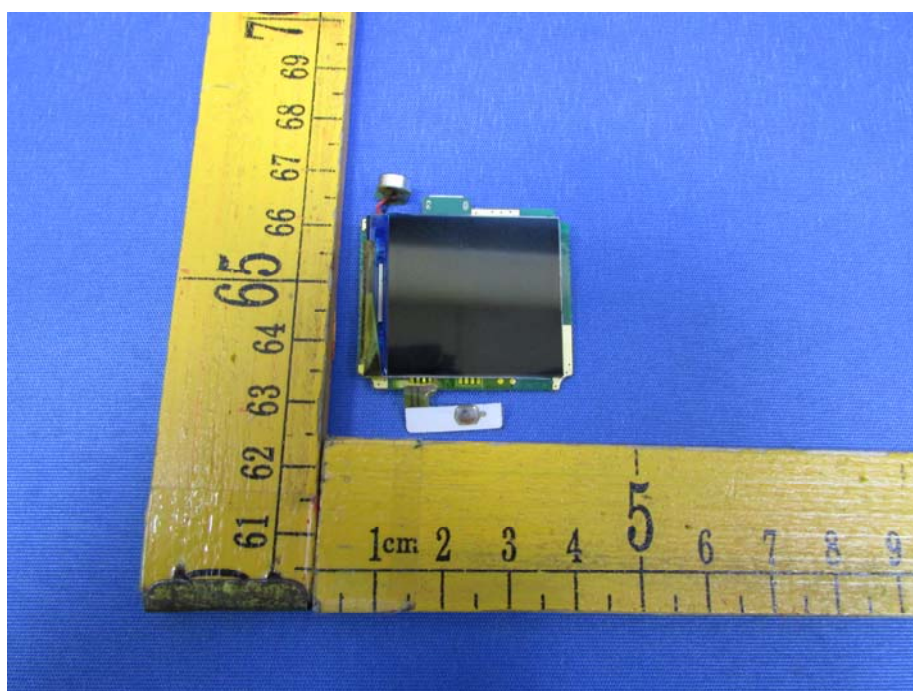
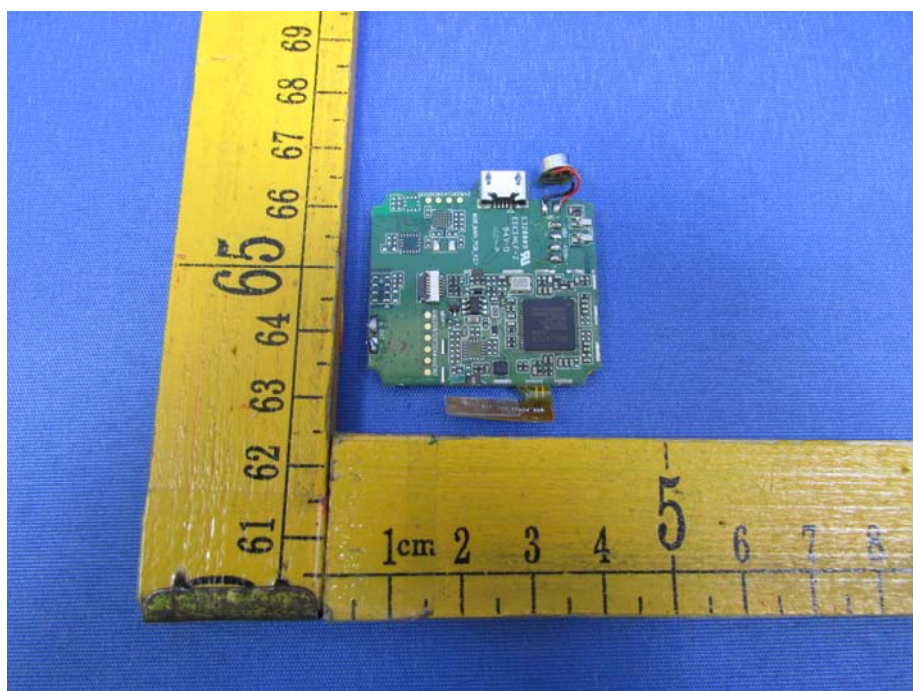


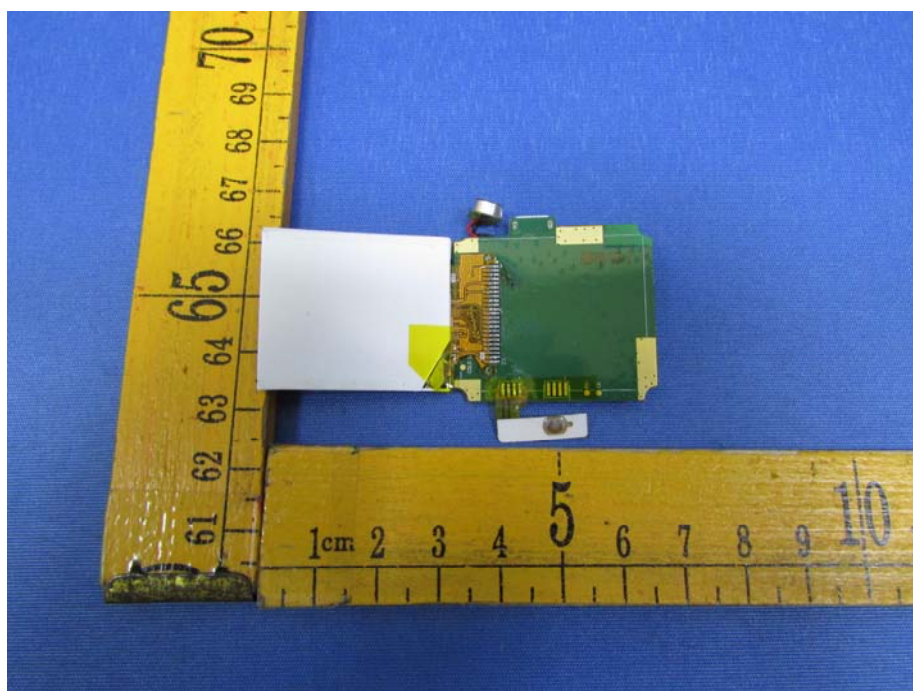


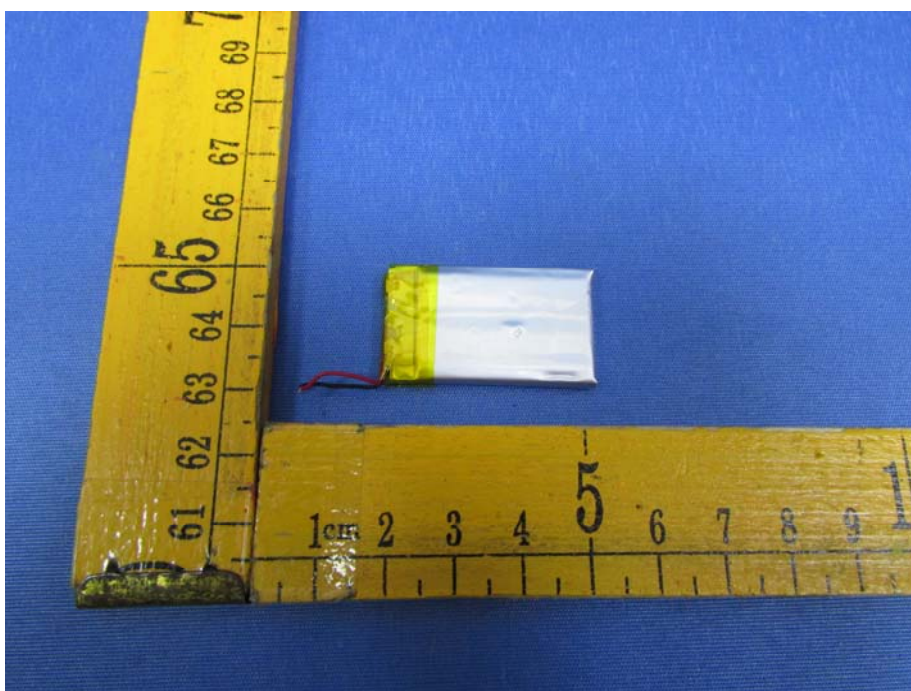


16.2 Model P3999-Internal Photos









=====End of Report=====