# FCC REPORT
## (BLE)

| | |
|---|---|
| **Applicant:** | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD |
| **Address of Applicant:** | A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN CHINA |

**Equipment Under Test (EUT)**

| | |
|---|---|
| Product Name: | Smart Phone |
| Model No.: | WP15 S |
| Trade mark: | OUKITEL |
| **FCC ID:** | 2ANMU-WP15S |
| **Applicable standards:** | FCC CFR Title 47 Part 15 Subpart C Section 15.247 |
| **Date of sample receipt:** | 03 Dec., 2021 |
| **Date of Test:** | 04 Dec., 2021 to 21 Jan., 2022 |
| **Date of report issued:** | 24 Jan., 2022 |
| **Test Result:** | PASS * |

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

# 2 Version

| Version No. | Date | Description |
|---|---|---|
| *00* | *24 Jan., 2022* | *Original* |
| | | |
| | | |
| | | |
| | | |

***Tested by:*** Mike.ou ***Date:*** *24 Jan., 2022*

***Test Engineer***

***Reviewed by:*** Winner Zhang ***Date:*** *24 Jan., 2022*

***Project Engineer***

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# 4 Test Summary

| Test Items | Section in CFR 47 | Test Data | Result |
|---|---|---|---|
| Antenna requirement | 15.203 & 15.247 (b) | See Section 6.1 | Pass |
| AC Power Line Conducted Emission | 15.207 | See Section 6.2 | Pass |
| Conducted Peak Output Power | 15.247 (b)(3) | Appendix A - BLE | Pass |
| 6dB Emission Bandwidth<br>99% Occupied Bandwidth | 15.247 (a)(2) | Appendix A - BLE | Pass |
| Power Spectral Density | 15.247 (e) | Appendix A - BLE | Pass |
| Conducted Band Edge | 15.247 (d) | Appendix A - BLE | Pass |
| Radiated Band Edge | | See Section 6.6.2 | Pass |
| Conducted Spurious Emission | 15.205 & 15.209 | Appendix A - BLE | Pass |
| Radiated Spurious Emission | | See Section 6.7.2 | Pass |

***Remark:***

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *N/A: Not Applicable.*
3. *The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).*

| | |
|---|---|
| ***Test Method:*** | *ANSI C63.10-2013*<br>*KDB 558074 D01 15.247 Meas Guidance v05r02* |

# 5 General Information

## 5.1 Client Information

| | |
|---|---|
| Applicant: | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD |
| Address: | A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN CHINA |
| Manufacturer: | SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD |
| Address: | A2 2F BUILDING ENET NEW INDUSTRIAL PARK, DAFU INDUSTRIAL ZONE, GUANLAN, LONGHUA SHENZHEN CHINA |

## 5.2 General Description of E.U.T.

| | |
|---|---|
| Product Name: | Smart Phone |
| Model No.: | WP15 S |
| Operation Frequency: | 2402-2480 MHz |
| Channel numbers: | 40 |
| Channel separation: | 2 MHz |
| Modulation technology: | GFSK |
| Data speed : | 1Mbps & 2Mbps & 500Kbps & 125Kbps |
| Antenna Type: | Internal Antenna |
| Antenna gain: | 0.95 dBi |
| Power supply: | Rechargeable Li-Polymer Battery DC3.87V, 15600mAh |
| AC adapter: | Model: HJ-FC017K7-US<br>Input: AC100-240V, 50/60Hz, 0.6A<br>Output: DC 5.0V/ 7.0V/ 9V, 2.0A, or DC 12.0V, 1.5A |
| Test Sample Condition: | The test samples were provided in good working order with no visible defects. |

**Operation Frequency each of channel**

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|---|---|
| 0 | 2402MHz | 10 | 2422MHz | 20 | 2442MHz | 30 | 2462MHz |
| 1 | 2404MHz | 11 | 2424MHz | 21 | 2444MHz | 31 | 2464MHz |
| 2 | 2406MHz | 12 | 2426MHz | 22 | 2446MHz | 32 | 2466MHz |
| 3 | 2408MHz | 13 | 2428MHz | 23 | 2448MHz | 33 | 2468MHz |
| 4 | 2410MHz | 14 | 2430MHz | 24 | 2450MHz | 34 | 2470MHz |
| 5 | 2412MHz | 15 | 2432MHz | 25 | 2452MHz | 35 | 2472MHz |
| 6 | 2414MHz | 16 | 2434MHz | 26 | 2454MHz | 36 | 2474MHz |
| 7 | 2416MHz | 17 | 2436MHz | 27 | 2456MHz | 37 | 2476MHz |
| 8 | 2418MHz | 18 | 2438MHz | 28 | 2458MHz | 38 | 2478MHz |
| 9 | 2420MHz | 19 | 2440MHz | 29 | 2460MHz | 39 | 2480MHz |

*Note:*
*In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test. Channel No. 0, 20 & 39 were selected as Lowest, Middle and Highest channel.*

## 5.3 Test environment and mode

| Operating Environment: | |
|---|---|
| Temperature: | 24.0 °C |
| Humidity: | 54 % RH |
| Atmospheric Pressure: | 1010 mbar |
| **Test mode:** | |
| Transmitting mode | Keep the EUT in continuous transmitting with modulation |
| Radiated Emission: The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations. | |

## 5.4 Description of Support Units

The EUT has been tested as an independent unit.

## 5.5 Measurement Uncertainty

| Parameter | Expanded Uncertainty (Confidence of 95%) |
|---|---|
| Conducted Emission (9kHz ~ 150KHz) for V-AMN | 3.11 dB |
| Conducted Emission (150kHz ~ 30MHz) for V-AMN | 2.62 dB |
| Conducted Emission (150kHz ~ 30MHz) for AAN | 3.54 dB |
| Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC | 3.13 dB |
| Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC | 3.13 dB |
| Radiated Emission (30MHz ~ 1GHz) for 3m SAC | 4.45 dB |
| Radiated Emission (1GHz ~ 18GHz) for 3m SAC | 5.34 dB |
| Radiated Emission (18GHz ~ 40GHz) for 3m SAC | 5.34 dB |
| Radiated Emission (30MHz ~ 1GHz) for 10m SAC | 4.32 dB |

## 5.6 Additions to, deviations, or exclusions from the method

No

## 5.7 Laboratory Facility

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

- **FCC - Designation No.: CN1211**

JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.

- **ISED – CAB identifier.: CN0021**

The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L15527**

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

## 5.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.
Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info-JYTee@lets.com, Website: http://jyt.lets.com

## 5.9 Test Instruments list

**Radiated Emission:**

| Test Equipment | Manufacturer | Model No. | Serial No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|---|---|---|---|---|---|
| 3m SAC | ETS | RFD-100 | Q1984 | 04-14-2021 | 04-13-2024 |
| BiConiLog Antenna | SCHWARZBECK | VULB9163 | 9163-1246 | 03-07-2021 | 03-06-2022 |
| Biconical Antenna | SCHWARZBECK | VUBA 9117 | 9117#359 | 06-17-2021 | 06-17-2022 |
| Horn Antenna | SCHWARZBECK | BBHA9120D | 912D-916 | 03-07-2021 | 03-06-2022 |
| Broad-Band Horn Antenna | SCHWARZBECK | BBHA9170 | 1067 | 04-02-2021 | 04-01-2022 |
| Broad-Band Horn Antenna | SCHWARZBECK | BBHA9170 | 1068 | 04-02-2021 | 04-01-2022 |
| EMI Test Receiver | Rohde & Schwarz | ESRP7 | 101070 | 03-03-2021 | 03-02-2022 |
| Spectrum analyzer | Rohde & Schwarz | FSP30 | 101454 | 03-03-2021 | 03-02-2022 |
| Spectrum analyzer | Keysight | N9010B | MY60240202 | 10-27-2021 | 10-26-2022 |
| Simulated Station | Anritsu | MT8820C | 6201026545 | 03-03-2021 | 03-02-2022 |
| Low Pre-amplifier | SCHWARZBECK | BBV9743B | 00305 | 03-07-2021 | 03-06-2022 |
| High Pre-amplifier | SKET | LNPA_0118G-50 | MF280208233 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-1G-NN-8M | JYT3M-1 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-18G-NN-8M | JYT3M-2 | 03-07-2021 | 03-06-2022 |
| Cable | Qualwave | JYT3M-1G-BB-5M | JYT3M-3 | 03-07-2021 | 03-06-2022 |
| Cable | Bost | JYT3M-40G-SS-8M | JYT3M-4 | 04-02-2021 | 04-01-2022 |
| EMI Test Software | Tonscend | TS+ | Version:3.0.0.1 | | |
| 10m SAC | ETS | RFSD-100-F/A | Q2005 | 04-28-2021 | 04-27-2024 |
| BiConiLog Antenna | SCHWARZBECK | VULB 9168 | 1249 | 04-02-2021 | 04-01-2022 |
| BiConiLog Antenna | SCHWARZBECK | VULB 9168 | 1250 | 04-02-2021 | 04-01-2022 |
| EMI Test Receiver | R&S | ESR 3 | 102800 | 04-08-2021 | 04-07-2022 |
| EMI Test Receiver | R&S | ESR 3 | 102802 | 04-08-2021 | 04-07-2022 |
| Low Pre-amplifier | Bost | LNA 0920N | 2016 | 04-06-2021 | 04-05-2022 |
| Low Pre-amplifier | Bost | LNA 0920N | 2019 | 04-06-2021 | 04-05-2022 |
| Cable | Bost | JYT10M-1G-NN-10M | JYT10M-1 | 04-02-2021 | 04-01-2022 |
| Cable | Bost | JYT10M-1G-NN-10M | JYT10M-2 | 04-02-2021 | 04-01-2022 |
| Test Software | R&S | EMC32 | Version: 10.50.40 | | |

**Conducted Emission:**

| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | ESCI 3 | 101189 | 03-03-2021 | 03-02-2022 |
| LISN | Schwarzbeck | NSLK 8127 | QCJ001-13 | 03-18-2021 | 03-17-2022 |
| LISN | Rohde & Schwarz | ESH3-Z5 | 843862/010 | 06-18-2020 | 06-17-2022 |
| RF Switch | TOP PRECISION | RSU0301 | N/A | 03-03-2021 | 03-02-2022 |
| Cable | Bost | JYTCE-1G-NN-2M | JYTCE-1 | 03-03-2021 | 03-02-2022 |
| Cable | Bost | JYTCE-1G-BN-3M | JYTCE-2 | 03-03-2021 | 03-02-2022 |
| EMI Test Software | AUDIX | E3 | Version: 6.110919b | | |

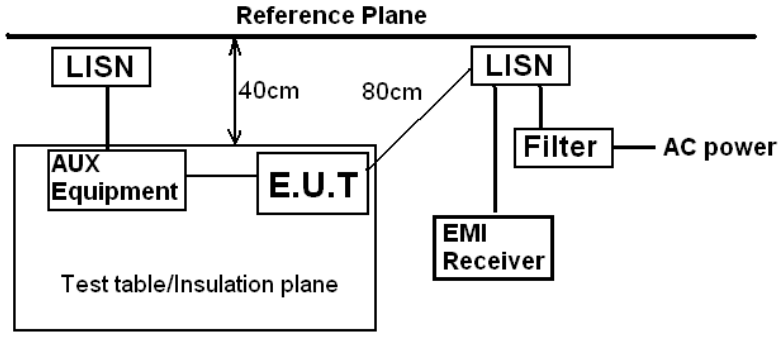
| Conducted method: | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Cal. Date (mm-dd-yy)** | **Cal. Due date (mm-dd-yy)** |
| Spectrum Analyzer | Keysight | N9010B | MY60240202 | 10-27-2021 | 10-26-2022 |
| Vector Signal Generator | Keysight | N5182B | MY59101009 | 10-27-2021 | 10-26-2022 |
| Analog Signal Generator | Keysight | N5173B | MY59100765 | 10-27-2021 | 10-26-2022 |
| Power Detector Box | MWRF-test | MW100-PSB | MW201020JYT | 11-19-2021 | 11-18-2022 |
| Simulated Station | Rohde & Schwarz | CMW270 | 102335 | 10-27-2021 | 10-26-2022 |
| RF Control Box | MWRF-test | MW100-RFCB | MW200927JYT | N/A | N/A |
| PDU | MWRF-test | XY-G10 | N/A | N/A | N/A |
| DC Power Supply | Keysight | E3642A | MY60296194 | 11-27-2020 | 11-26-2023 |
| Temperature Humidity Chamber | Deli | 8840 | N/A | 03-08-2021 | 03-07-2022 |
| Test Software | MWRF-tes | MTS 8310 | Version: 2.0.0.0 | | |

# 6 Test results and Measurement Data

## 6.1 Antenna requirement:

| Standard requirement: | FCC Part 15 C Section 15.203 /247(b) |
|---|---|
| 15.203 requirement:<br>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, 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.<br>15.247(b) (4) requirement:<br>(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi. | |
| **E.U.T Antenna:** | |
| The BLE antenna is an Internal antenna which cannot replace by end-user, the best-case gain of the antenna is 0.95dBi. | |

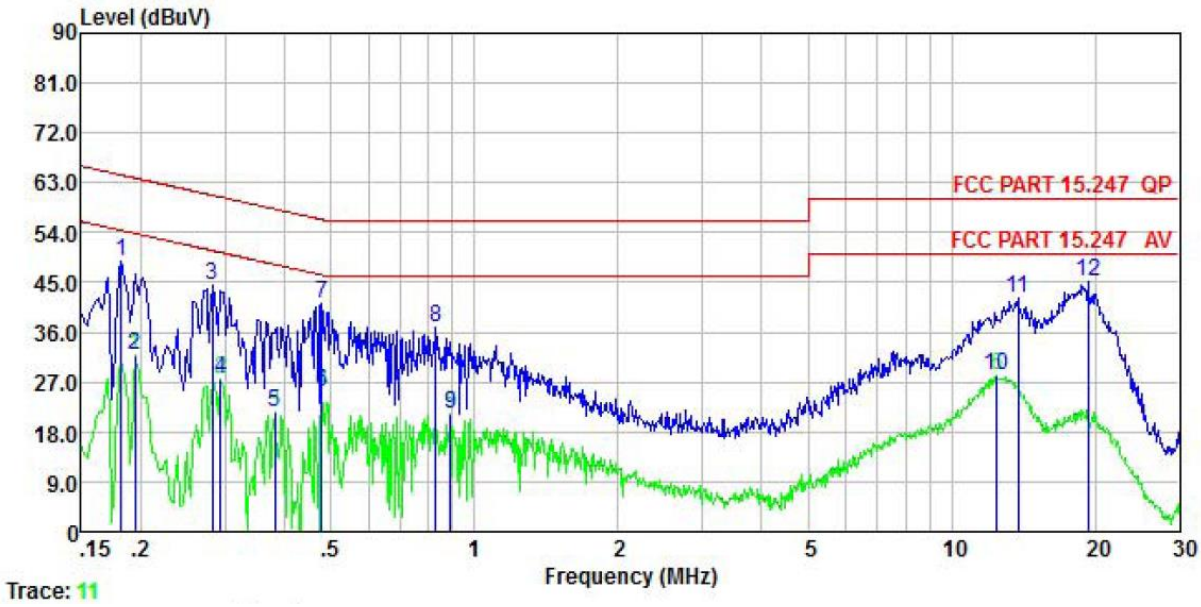
## 6.2 Conducted Emission

<table>
<tr><td>Test Requirement:</td><td colspan="3">FCC Part 15 C Section 15.207</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="3">150 kHz to 30 MHz</td></tr>
<tr><td>Class / Severity:</td><td colspan="3">Class B</td></tr>
<tr><td>Receiver setup:</td><td colspan="3">RBW=9kHz, VBW=30kHz</td></tr>
<tr><td rowspan="5">Limit:</td><td rowspan="2">Frequency range (MHz)</td><td colspan="2">Limit (dBuV)</td></tr>
<tr><td>Quasi-peak</td><td>Average</td></tr>
<tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr>
<tr><td>0.5-5</td><td>56</td><td>46</td></tr>
<tr><td>5-30</td><td>60</td><td>50</td></tr>
<tr><td colspan="3">* Decreases with the logarithm of the frequency.</td></tr>
<tr><td>Test procedure:</td><td colspan="3">1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment.<br>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).<br>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10(latest version) on conducted measurement.</td></tr>
<tr><td>Test setup:</td><td colspan="3"> 

Remark:<br>E.U.T: Equipment Under Test<br>LISN: Line Impedence Stabilization Network<br>Test table height=0.8m</td></tr>
<tr><td>Test Instruments:</td><td colspan="3">Refer to section 5.9 for details</td></tr>
<tr><td>Test mode:</td><td colspan="3">Refer to section 5.3 for details</td></tr>
<tr><td>Test results:</td><td colspan="3">Passed</td></tr>
</table>

**Measurement Data:**

| Product name: | Smart Phone | Product model: | WP15 S |
|---|---|---|---|
| Test by: | Mike | Test mode: | BLE Tx mode |
| Test frequency: | 150 kHz ~ 30 MHz | Phase: | Line |
| Test voltage: | AC 120 V/60 Hz | Environment: | Temp: 22.5℃ Huni: 55% |

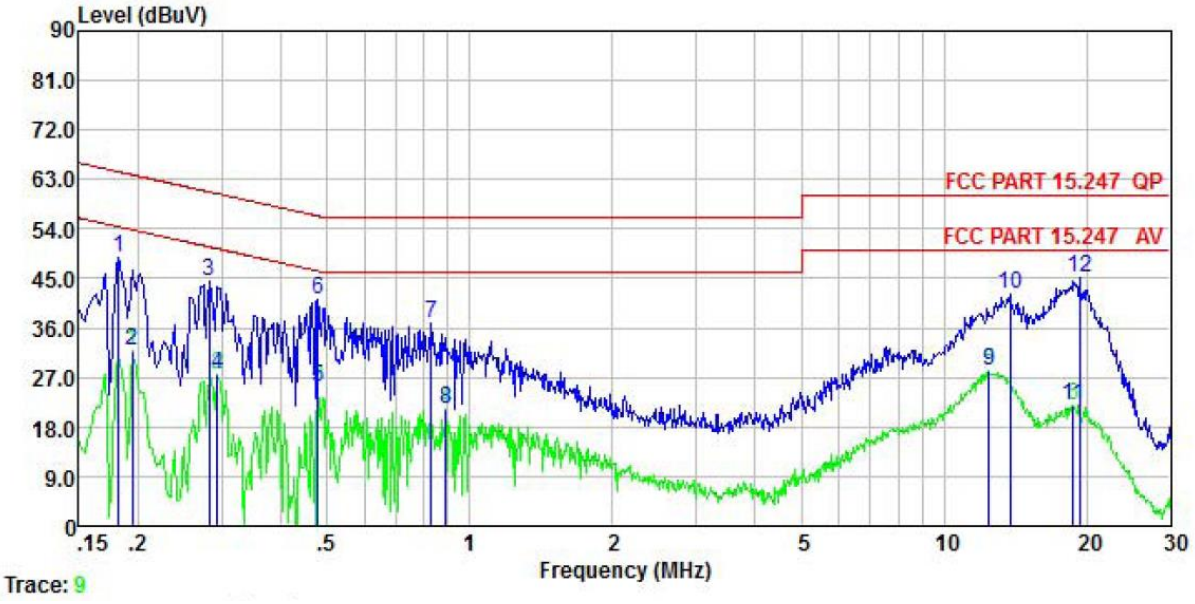



| | Freq | Read Level | LISN Factor | Aux Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.182 | 38.53 | 10.23 | 0.00 | 0.01 | 48.77 | 64.42 | -15.65 | QP |
| 2 | 0.194 | 21.49 | 10.23 | 0.00 | 0.03 | 31.75 | 53.84 | -22.09 | Average |
| 3 | 0.282 | 34.35 | 10.26 | 0.00 | 0.02 | 44.63 | 60.76 | -16.13 | QP |
| 4 | 0.294 | 17.44 | 10.26 | 0.00 | 0.03 | 27.73 | 50.41 | -22.68 | Average |
| 5 | 0.381 | 11.14 | 10.27 | 0.00 | 0.03 | 21.44 | 48.25 | -26.81 | Average |
| 6 | 0.479 | 14.78 | 10.29 | 0.00 | 0.03 | 25.10 | 46.36 | -21.26 | Average |
| 7 | 0.479 | 30.78 | 10.29 | 0.00 | 0.03 | 41.10 | 56.36 | -15.26 | QP |
| 8 | 0.830 | 26.60 | 10.31 | 0.00 | 0.03 | 36.94 | 56.00 | -19.06 | QP |
| 9 | 0.890 | 10.94 | 10.31 | 0.00 | 0.04 | 21.29 | 46.00 | -24.71 | Average |
| 10 | 12.449 | 17.30 | 10.69 | 0.00 | 0.11 | 28.10 | 50.00 | -21.90 | Average |
| 11 | 13.768 | 31.28 | 10.73 | 0.00 | 0.12 | 42.13 | 60.00 | -17.87 | QP |
| 12 | 19.326 | 34.07 | 10.89 | 0.00 | 0.15 | 45.11 | 60.00 | -14.89 | QP |

*Notes:*

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

| Product name: | Smart Phone | Product model: | WP15 S |
|---|---|---|---|
| Test by: | Mike | Test mode: | BLE Tx mode |
| Test frequency: | 150 kHz ~ 30 MHz | Phase: | Neutral |
| Test voltage: | AC 120 V/60 Hz | Environment: | Temp: 22.5℃ Huni: 55% |

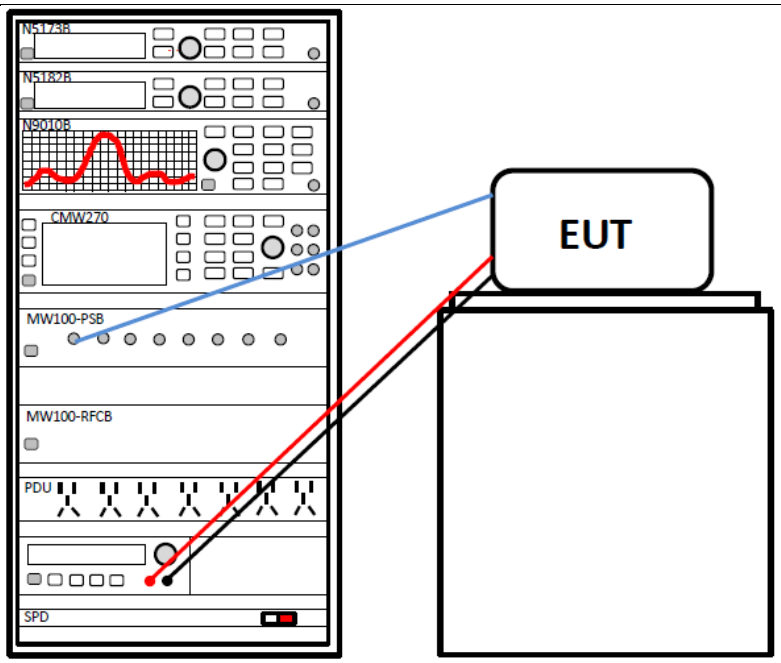



| | Freq | Read Level | LISN Factor | Aux Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.182 | 38.55 | 10.21 | 0.00 | 0.01 | 48.77 | 64.42 | -15.65 | QP |
| 2 | 0.194 | 21.50 | 10.22 | 0.00 | 0.03 | 31.75 | 53.84 | -22.09 | Average |
| 3 | 0.282 | 34.36 | 10.25 | 0.00 | 0.02 | 44.63 | 60.76 | -16.13 | QP |
| 4 | 0.294 | 17.45 | 10.25 | 0.00 | 0.03 | 27.73 | 50.41 | -22.68 | Average |
| 5 | 0.479 | 14.79 | 10.28 | 0.00 | 0.03 | 25.10 | 46.36 | -21.26 | Average |
| 6 | 0.479 | 30.79 | 10.28 | 0.00 | 0.03 | 41.10 | 56.36 | -15.26 | QP |
| 7 | 0.830 | 26.61 | 10.30 | 0.00 | 0.03 | 36.94 | 56.00 | -19.06 | QP |
| 8 | 0.890 | 10.94 | 10.31 | 0.00 | 0.04 | 21.29 | 46.00 | -24.71 | Average |
| 9 | 12.449 | 17.32 | 10.67 | 0.00 | 0.11 | 28.10 | 50.00 | -21.90 | Average |
| 10 | 13.768 | 31.31 | 10.70 | 0.00 | 0.12 | 42.13 | 60.00 | -17.87 | QP |
| 11 | 18.721 | 11.08 | 10.85 | 0.00 | 0.15 | 22.08 | 50.00 | -27.92 | Average |
| 12 | 19.326 | 34.10 | 10.86 | 0.00 | 0.15 | 45.11 | 60.00 | -14.89 | QP |

*Notes:*

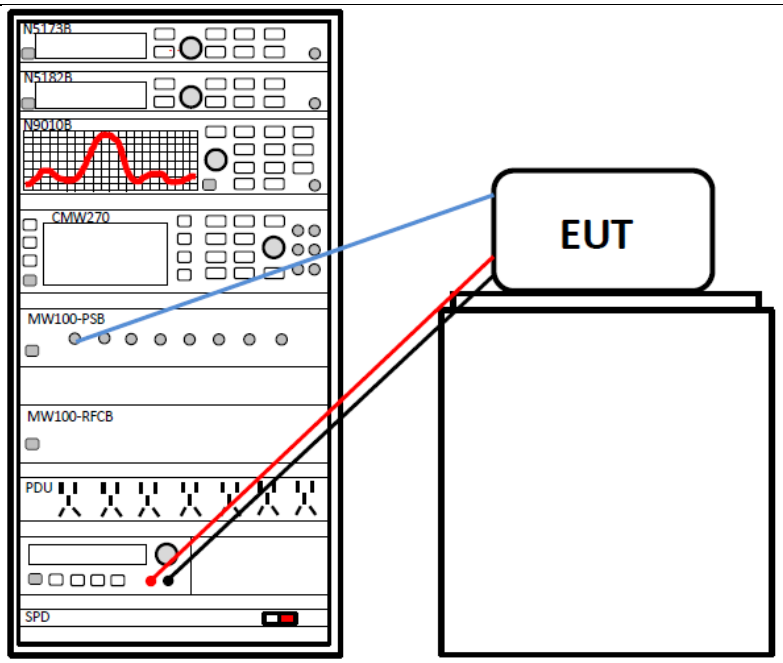
1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level = Receiver Read level + LISN Factor + Aux Factor + Cable Loss.*

## 6.3 Conducted Output Power

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (b)(3) |
| Limit: | 30dBm |
| Test setup: |  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

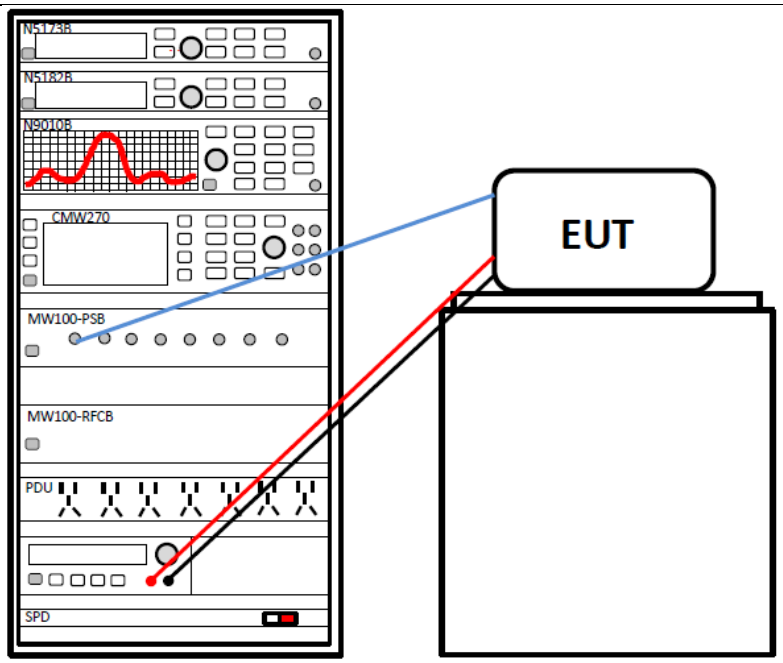
**Measurement Data:** Refer to Appendix A - BLE

## 6.4 Occupy Bandwidth

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (a)(2) |
| Limit: | >500kHz |
| Test setup: |  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** Refer to Appendix A - BLE

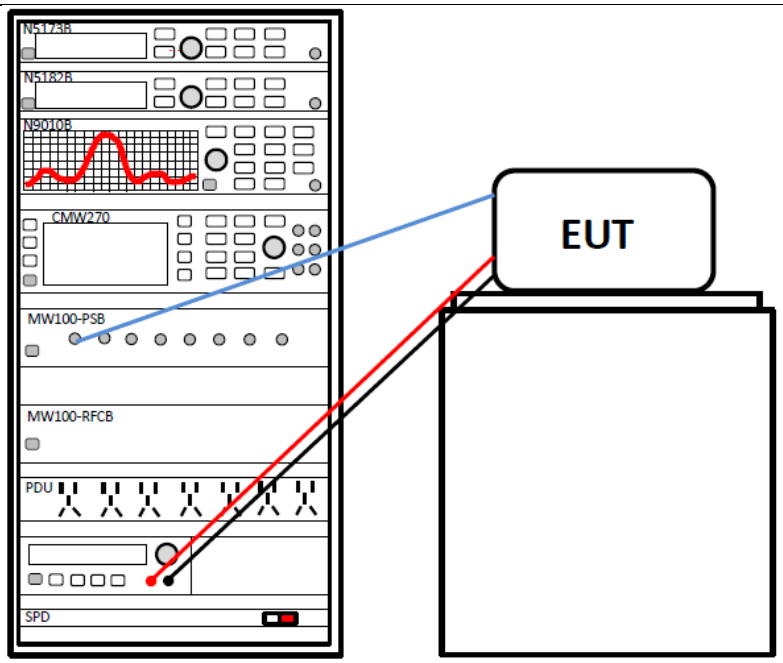
## 6.5 Power Spectral Density

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (e) |
| Limit: | 8 dBm/3kHz |
| Test setup: |  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** Refer to Appendix A - BLE

## 6.6 Band Edge

### 6.6.1 Conducted Emission Method

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d) |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test setup: |  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** Refer to Appendix A - BLE

### 6.6.2 Radiated Emission Method

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.205 and 15.209 |
| Test Frequency Range: | 2310 MHz to 2390 MHz and 2483.5MHz to 2500 MHz |
| Test Distance: | 3m |

Receiver setup:

| Frequency | Detector | RBW | VBW | Remark |
|---|---|---|---|---|
| Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| | RMS | 1MHz | 3MHz | Average Value |

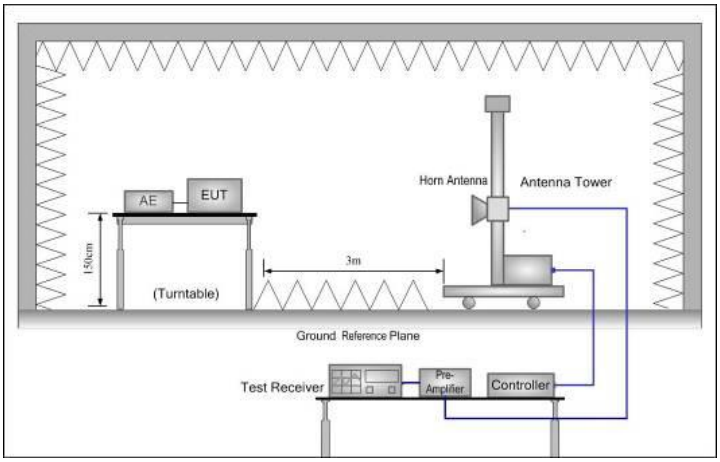
Limit:

| Frequency | Limit (dBuV/m @3m) | Remark |
|---|---|---|
| Above 1GHz | 54.00 | Average Value |
| | 74.00 | Peak Value |

Test Procedure:

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

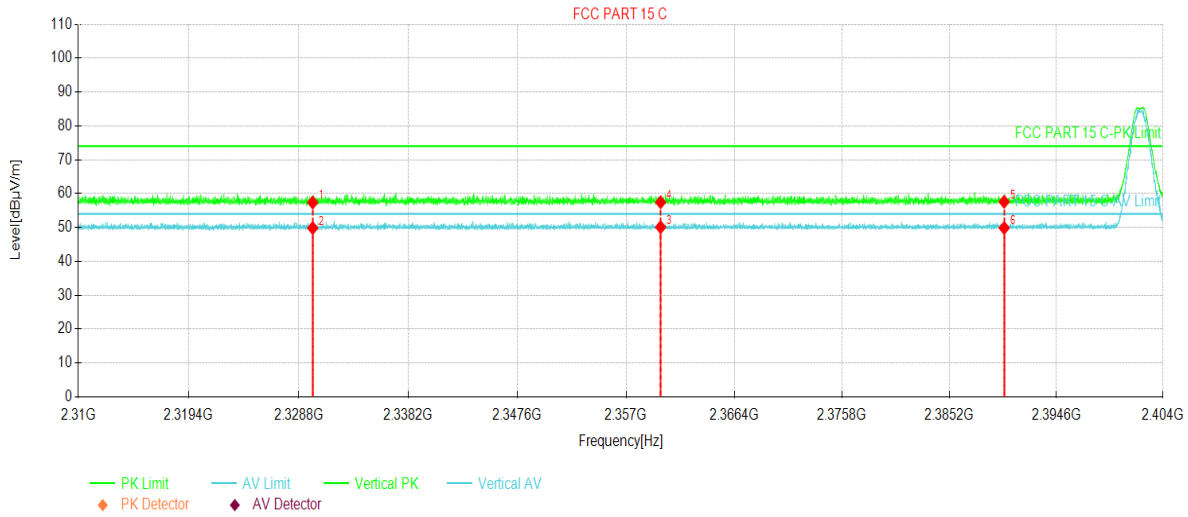
Test setup:




| | |
|---|---|
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**PHY: 1MHz**

| | | | |
|---|---|---|---|
| **Product Name:** | Smart Phone | **Product Model:** | WP15 S |
| **Test By:** | Mike | **Test mode:** | BLE Tx mode |
| **Test Channel:** | Lowest channel | **Polarization:** | Vertical |
| **Test Voltage:** | AC 120/60Hz | **Environment:** | Temp: 22.9℃ Huni: 56% |



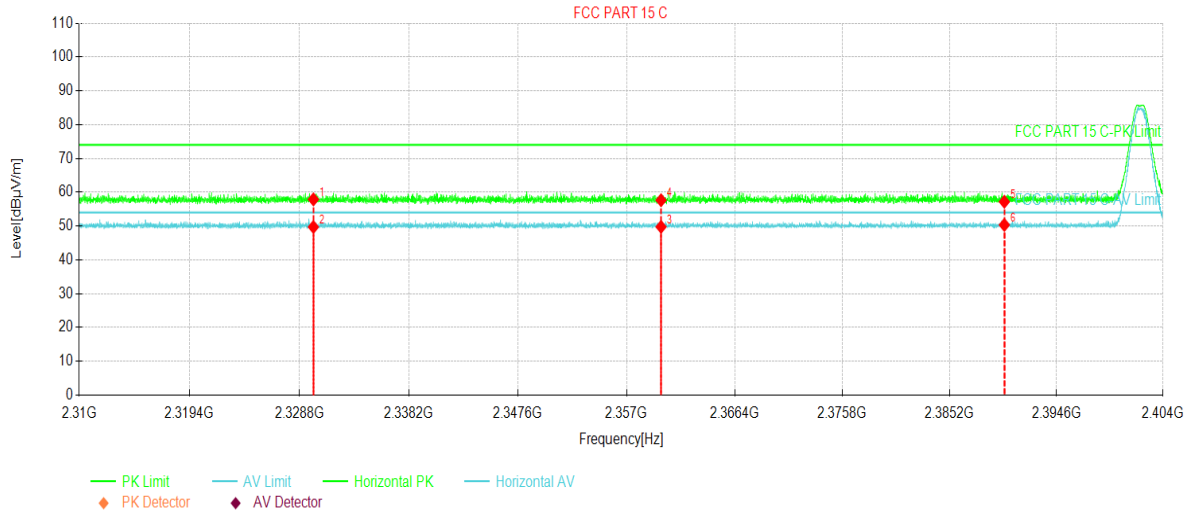

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 21.98 | 57.39 | 35.41 | 74.00 | 16.61 | PK | Vertical |
| 2 | 2330.00 | 14.42 | 49.83 | 35.41 | 54.00 | 4.17 | AV | Vertical |
| 3 | 2360.00 | 14.48 | 50.11 | 35.63 | 54.00 | 3.89 | AV | Vertical |
| 4 | 2360.00 | 21.83 | 57.46 | 35.63 | 74.00 | 16.54 | PK | Vertical |
| 5 | 2390.00 | 21.77 | 57.61 | 35.84 | 74.00 | 16.39 | PK | Vertical |
| 6 | 2390.00 | 14.03 | 49.87 | 35.84 | 54.00 | 4.13 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



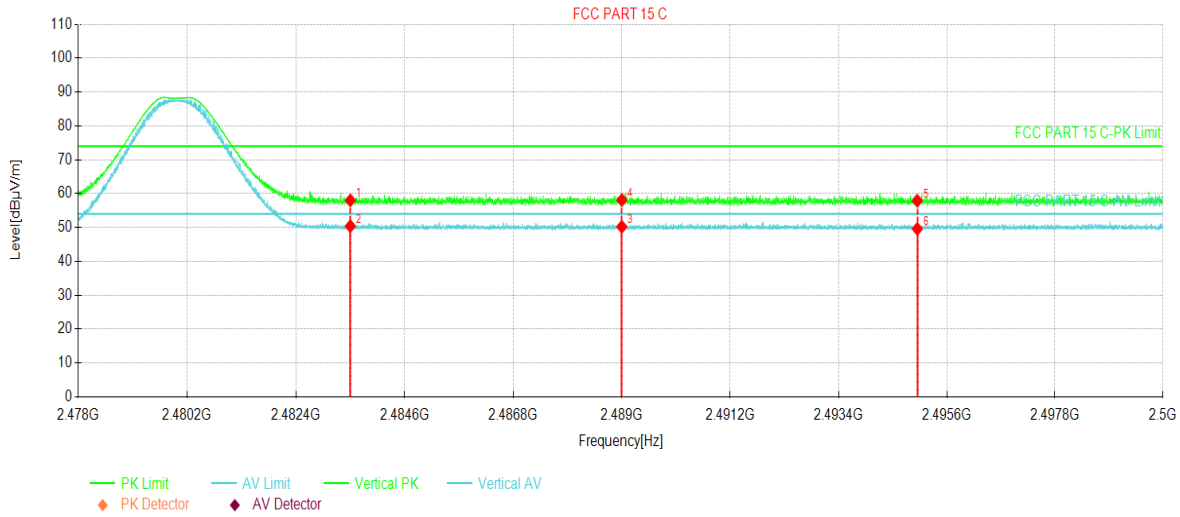

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 22.48 | 57.89 | 35.41 | 74.00 | 16.11 | PK | Horizontal |
| 2 | 2330.00 | 14.31 | 49.72 | 35.41 | 54.00 | 4.28 | AV | Horizontal |
| 3 | 2360.00 | 14.13 | 49.76 | 35.63 | 54.00 | 4.24 | AV | Horizontal |
| 4 | 2360.00 | 22.01 | 57.64 | 35.63 | 74.00 | 16.36 | PK | Horizontal |
| 5 | 2390.00 | 21.35 | 57.19 | 35.84 | 74.00 | 16.81 | PK | Horizontal |
| 6 | 2390.00 | 14.51 | 50.35 | 35.84 | 54.00 | 3.65 | AV | Horizontal |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



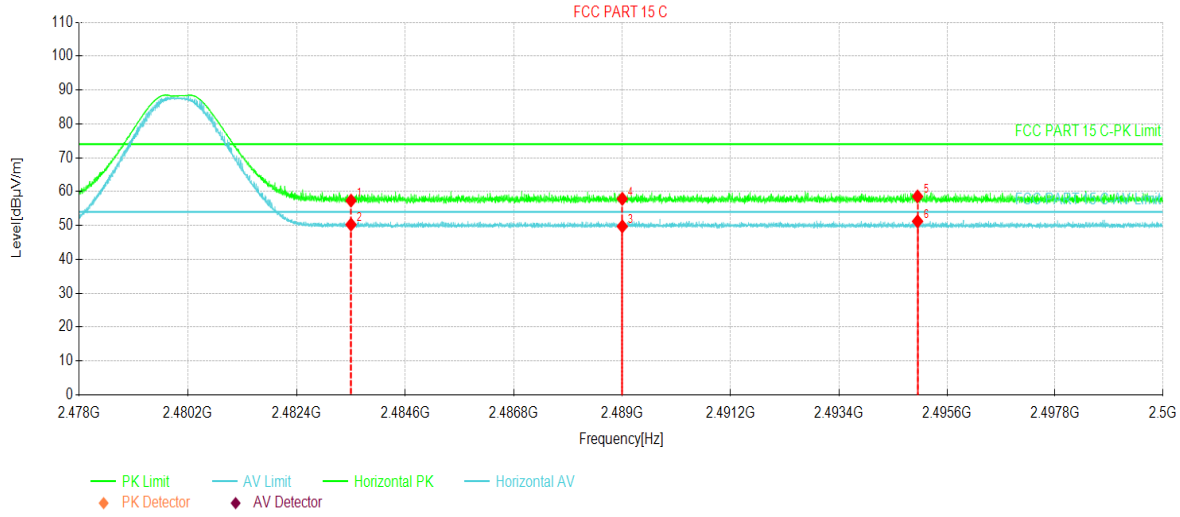

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 22.27 | 57.99 | 35.72 | 74.00 | 16.01 | PK | Vertical |
| 2 | 2483.50 | 14.68 | 50.40 | 35.72 | 54.00 | 3.60 | AV | Vertical |
| 3 | 2489.00 | 14.51 | 50.22 | 35.71 | 54.00 | 3.78 | AV | Vertical |
| 4 | 2489.00 | 22.39 | 58.10 | 35.71 | 74.00 | 15.90 | PK | Vertical |
| 5 | 2495.00 | 22.21 | 57.90 | 35.69 | 74.00 | 16.10 | PK | Vertical |
| 6 | 2495.00 | 13.89 | 49.58 | 35.69 | 54.00 | 4.42 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



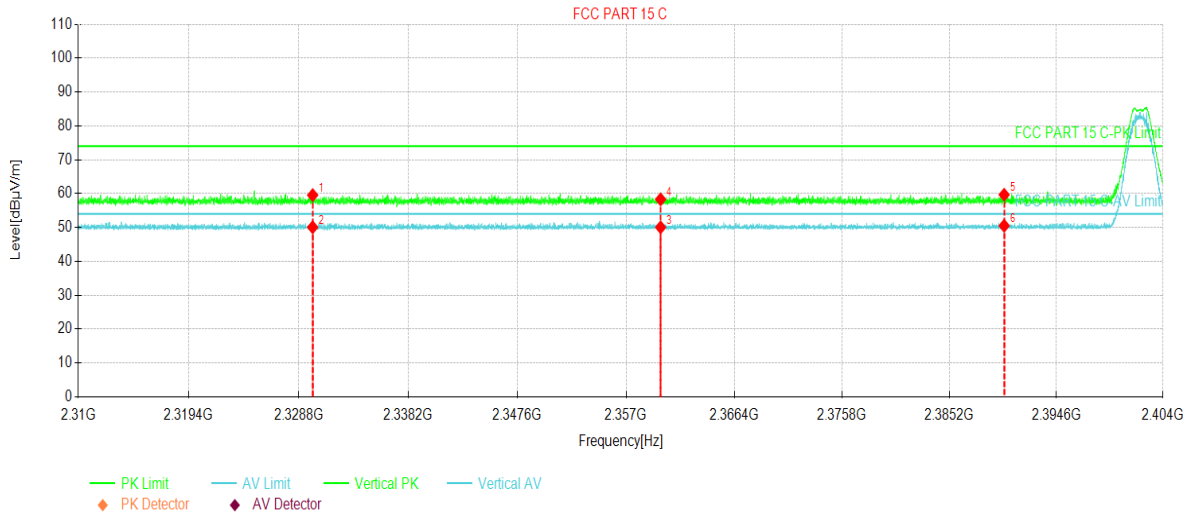

| Suspected Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
| 1 | 2483.50 | 21.63 | 57.35 | 35.72 | 74.00 | 16.65 | PK | Horizontal |
| 2 | 2483.50 | 14.55 | 50.27 | 35.72 | 54.00 | 3.73 | AV | Horizontal |
| 3 | 2489.00 | 14.04 | 49.75 | 35.71 | 54.00 | 4.25 | AV | Horizontal |
| 4 | 2489.00 | 22.16 | 57.87 | 35.71 | 74.00 | 16.13 | PK | Horizontal |
| 5 | 2495.00 | 22.89 | 58.58 | 35.69 | 74.00 | 15.42 | PK | Horizontal |
| 6 | 2495.00 | 15.55 | 51.24 | 35.69 | 54.00 | 2.76 | AV | Horizontal |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**PHY: 2MHz**

| | | | |
|---|---|---|---|
| **Product Name:** | Smart Phone | **Product Model:** | WP15 S |
| **Test By:** | Mike | **Test mode:** | BLE Tx mode |
| **Test Channel:** | Lowest channel | **Polarization:** | Vertical |
| **Test Voltage:** | AC 120/60Hz | **Environment:** | Temp: 22.9℃ Huni: 56% |



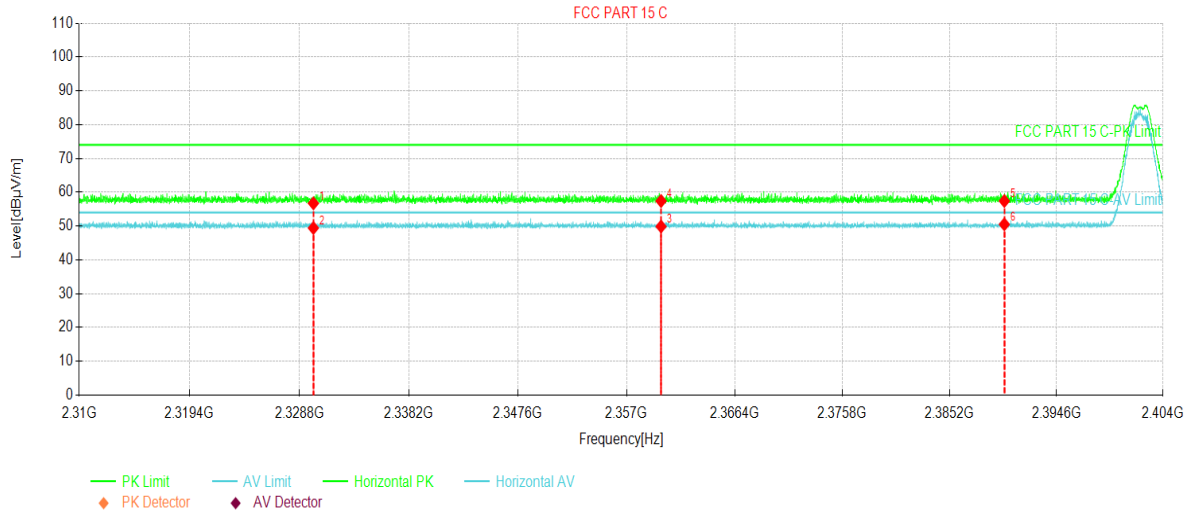

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 24.15 | 59.56 | 35.41 | 74.00 | 14.44 | PK | Vertical |
| 2 | 2330.00 | 14.66 | 50.07 | 35.41 | 54.00 | 3.93 | AV | Vertical |
| 3 | 2360.00 | 14.43 | 50.06 | 35.63 | 54.00 | 3.94 | AV | Vertical |
| 4 | 2360.00 | 22.68 | 58.31 | 35.63 | 74.00 | 15.69 | PK | Vertical |
| 5 | 2390.00 | 23.84 | 59.68 | 35.84 | 74.00 | 14.32 | PK | Vertical |
| 6 | 2390.00 | 14.69 | 50.53 | 35.84 | 54.00 | 3.47 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



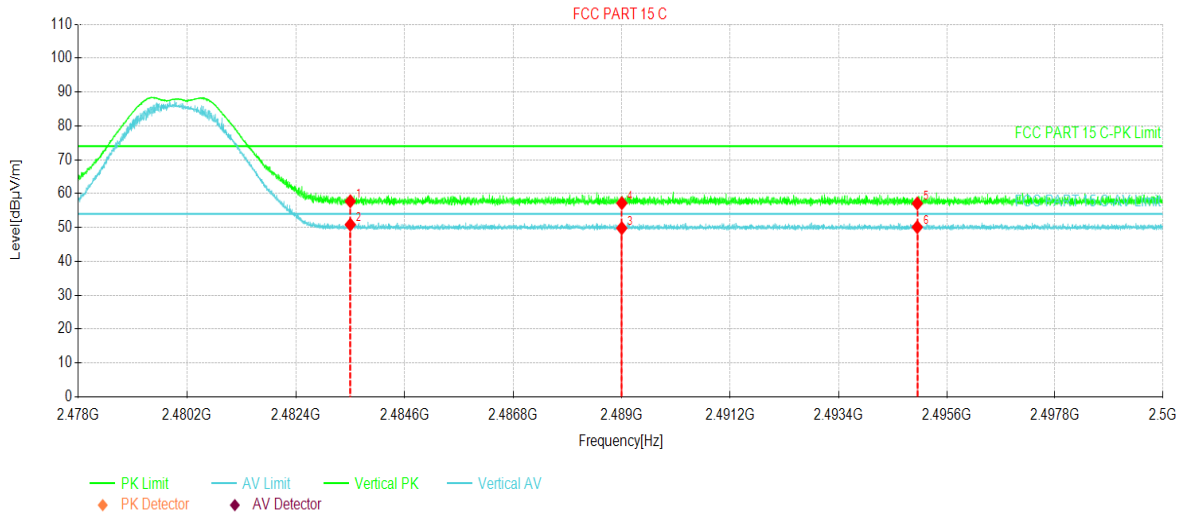

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 21.32 | 56.73 | 35.41 | 74.00 | 17.27 | PK | Horizontal |
| 2 | 2330.00 | 14.01 | 49.42 | 35.41 | 54.00 | 4.58 | AV | Horizontal |
| 3 | 2360.00 | 14.24 | 49.87 | 35.63 | 54.00 | 4.13 | AV | Horizontal |
| 4 | 2360.00 | 21.78 | 57.41 | 35.63 | 74.00 | 16.59 | PK | Horizontal |
| 5 | 2390.00 | 21.56 | 57.40 | 35.84 | 74.00 | 16.60 | PK | Horizontal |
| 6 | 2390.00 | 14.67 | 50.51 | 35.84 | 54.00 | 3.49 | AV | Horizontal |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



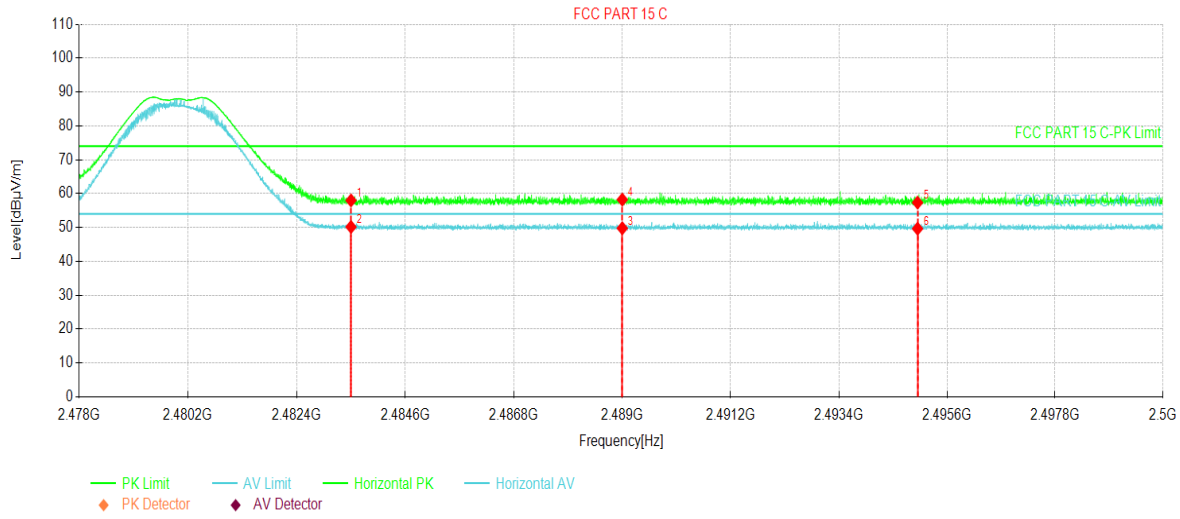

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 22.02 | 57.74 | 35.72 | 74.00 | 16.26 | PK | Vertical |
| 2 | 2483.50 | 15.12 | 50.84 | 35.72 | 54.00 | 3.16 | AV | Vertical |
| 3 | 2489.00 | 14.09 | 49.80 | 35.71 | 54.00 | 4.20 | AV | Vertical |
| 4 | 2489.00 | 21.49 | 57.20 | 35.71 | 74.00 | 16.80 | PK | Vertical |
| 5 | 2495.00 | 21.41 | 57.10 | 35.69 | 74.00 | 16.90 | PK | Vertical |
| 6 | 2495.00 | 14.42 | 50.11 | 35.69 | 54.00 | 3.89 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 22.27 | 57.99 | 35.72 | 74.00 | 16.01 | PK | Horizontal |
| 2 | 2483.50 | 14.45 | 50.17 | 35.72 | 54.00 | 3.83 | AV | Horizontal |
| 3 | 2489.00 | 14.08 | 49.79 | 35.71 | 54.00 | 4.21 | AV | Horizontal |
| 4 | 2489.00 | 22.53 | 58.24 | 35.71 | 74.00 | 15.76 | PK | Horizontal |
| 5 | 2495.00 | 21.65 | 57.34 | 35.69 | 74.00 | 16.66 | PK | Horizontal |
| 6 | 2495.00 | 13.97 | 49.66 | 35.69 | 54.00 | 4.34 | AV | Horizontal |

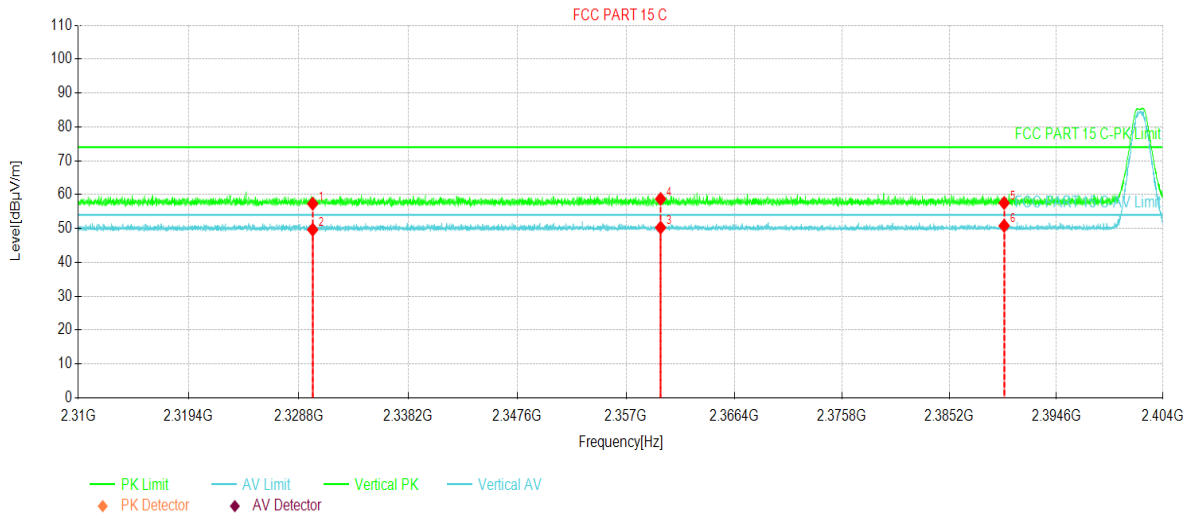
*Remark:*

*1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*

*2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**Coded PHY, S=2**

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



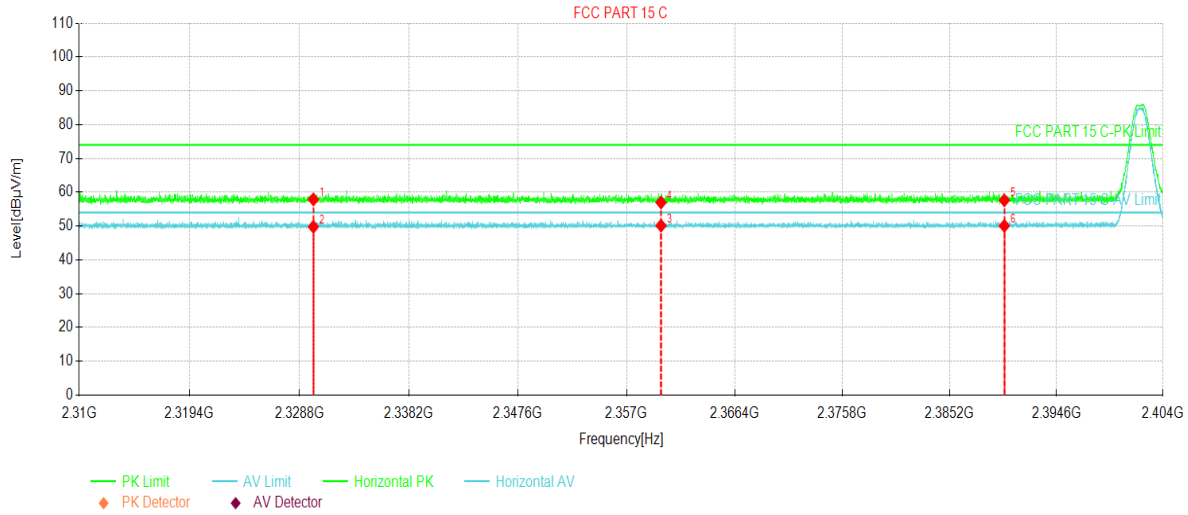

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 21.90 | 57.31 | 35.41 | 74.00 | 16.69 | PK | Vertical |
| 2 | 2330.00 | 14.24 | 49.65 | 35.41 | 54.00 | 4.35 | AV | Vertical |
| 3 | 2360.00 | 14.64 | 50.27 | 35.63 | 54.00 | 3.73 | AV | Vertical |
| 4 | 2360.00 | 23.09 | 58.72 | 35.63 | 74.00 | 15.28 | PK | Vertical |
| 5 | 2390.00 | 21.69 | 57.53 | 35.84 | 74.00 | 16.47 | PK | Vertical |
| 6 | 2390.00 | 14.96 | 50.80 | 35.84 | 54.00 | 3.20 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



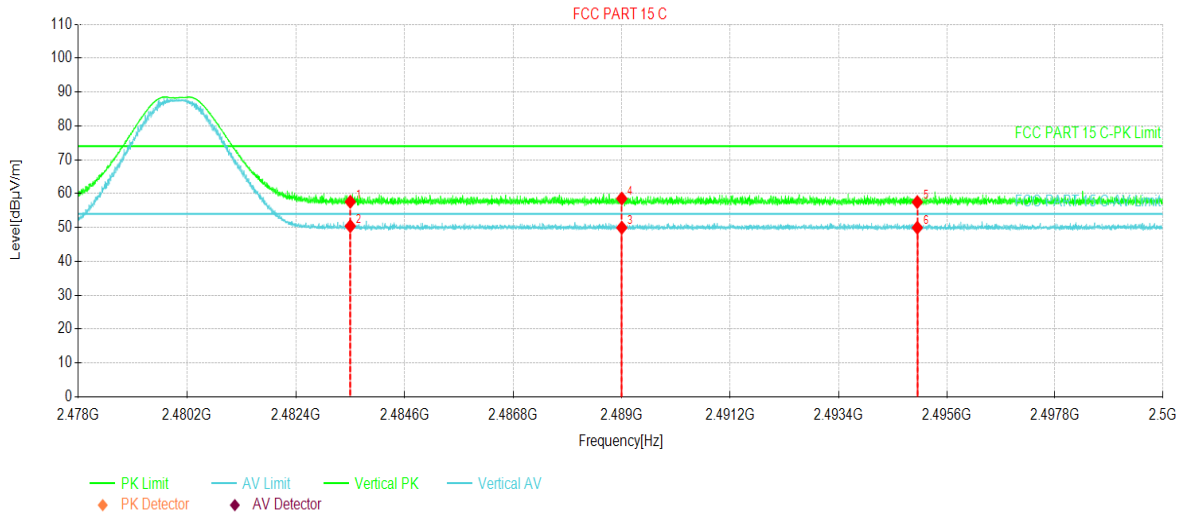

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 22.47 | 57.88 | 35.41 | 74.00 | 16.12 | PK | Horizontal |
| 2 | 2330.00 | 14.37 | 49.78 | 35.41 | 54.00 | 4.22 | AV | Horizontal |
| 3 | 2360.00 | 14.49 | 50.12 | 35.63 | 54.00 | 3.88 | AV | Horizontal |
| 4 | 2360.00 | 21.35 | 56.98 | 35.63 | 74.00 | 17.02 | PK | Horizontal |
| 5 | 2390.00 | 21.78 | 57.62 | 35.84 | 74.00 | 16.38 | PK | Horizontal |
| 6 | 2390.00 | 14.21 | 50.05 | 35.84 | 54.00 | 3.95 | AV | Horizontal |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |

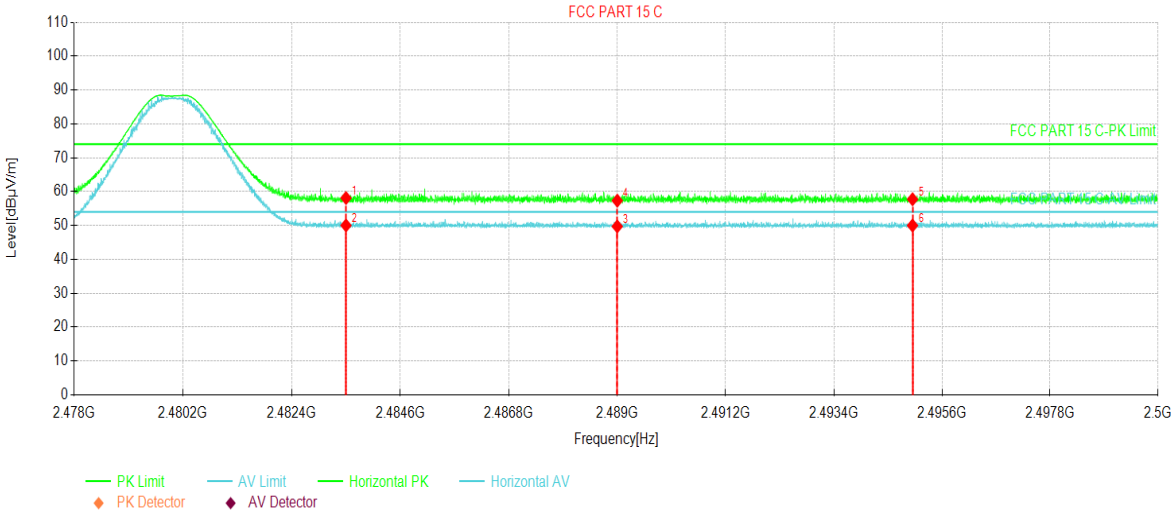



| Suspected Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
| 1 | 2483.50 | 21.88 | 57.60 | 35.72 | 74.00 | 16.40 | PK | Vertical |
| 2 | 2483.50 | 14.68 | 50.40 | 35.72 | 54.00 | 3.60 | AV | Vertical |
| 3 | 2489.00 | 14.23 | 49.94 | 35.71 | 54.00 | 4.06 | AV | Vertical |
| 4 | 2489.00 | 22.83 | 58.54 | 35.71 | 74.00 | 15.46 | PK | Vertical |
| 5 | 2495.00 | 21.82 | 57.51 | 35.69 | 74.00 | 16.49 | PK | Vertical |
| 6 | 2495.00 | 14.26 | 49.95 | 35.69 | 54.00 | 4.05 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 22.40 | 58.12 | 35.72 | 74.00 | 15.88 | PK | Horizontal |
| 2 | 2483.50 | 14.31 | 50.03 | 35.72 | 54.00 | 3.97 | AV | Horizontal |
| 3 | 2489.00 | 14.02 | 49.73 | 35.71 | 54.00 | 4.27 | AV | Horizontal |
| 4 | 2489.00 | 21.63 | 57.34 | 35.71 | 74.00 | 16.66 | PK | Horizontal |
| 5 | 2495.00 | 22.06 | 57.75 | 35.69 | 74.00 | 16.25 | PK | Horizontal |
| 6 | 2495.00 | 14.31 | 50.00 | 35.69 | 54.00 | 4.00 | AV | Horizontal |

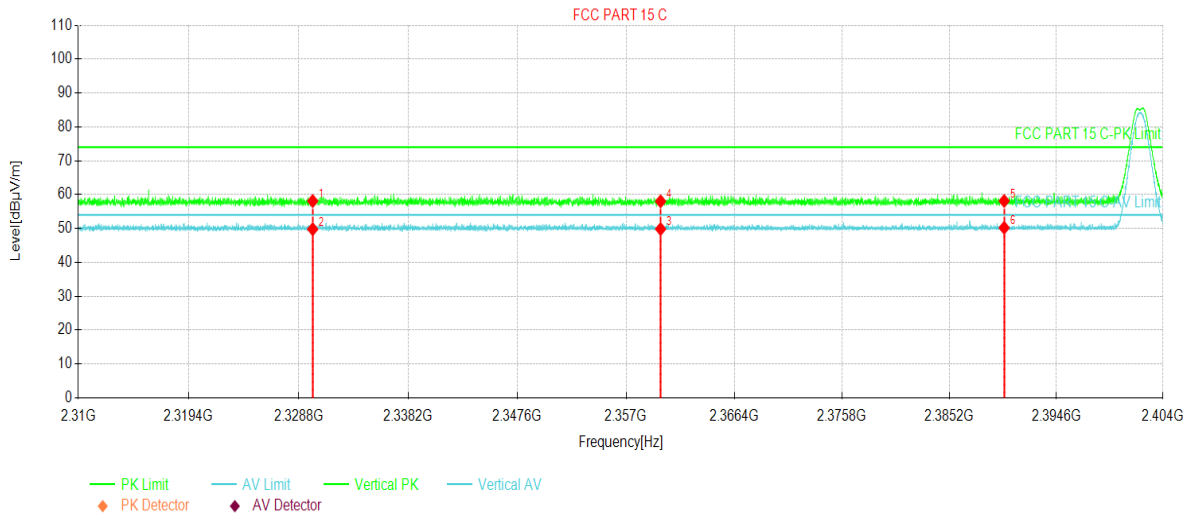
*Remark:*

*1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*

*2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**Coded PHY, S=8**

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |




**Suspected Data List**

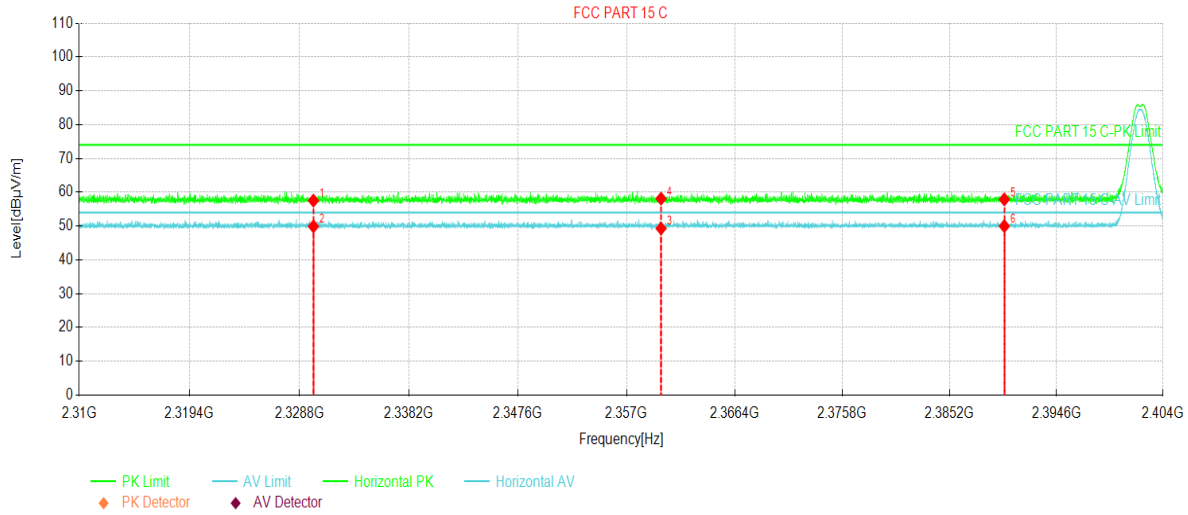
| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 22.69 | 58.10 | 35.41 | 74.00 | 15.90 | PK | Vertical |
| 2 | 2330.00 | 14.40 | 49.81 | 35.41 | 54.00 | 4.19 | AV | Vertical |
| 3 | 2360.00 | 14.23 | 49.86 | 35.63 | 54.00 | 4.14 | AV | Vertical |
| 4 | 2360.00 | 22.39 | 58.02 | 35.63 | 74.00 | 15.98 | PK | Vertical |
| 5 | 2390.00 | 22.28 | 58.12 | 35.84 | 74.00 | 15.88 | PK | Vertical |
| 6 | 2390.00 | 14.38 | 50.22 | 35.84 | 54.00 | 3.78 | AV | Vertical |

*Remark:*

*1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*

*2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Lowest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



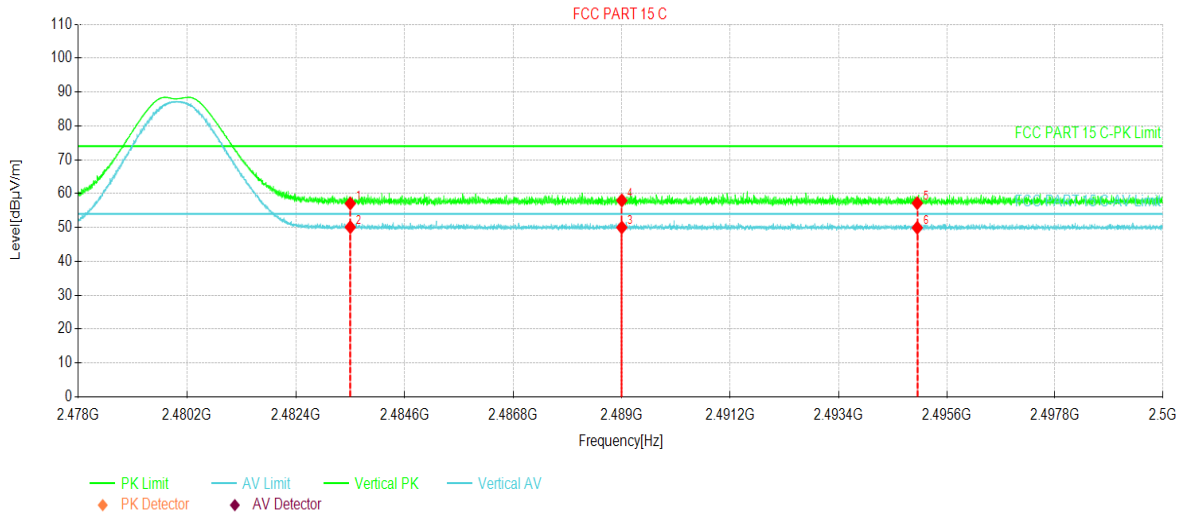

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2330.00 | 22.13 | 57.54 | 35.41 | 74.00 | 16.46 | PK | Horizontal |
| 2 | 2330.00 | 14.50 | 49.91 | 35.41 | 54.00 | 4.09 | AV | Horizontal |
| 3 | 2360.00 | 13.66 | 49.29 | 35.63 | 54.00 | 4.71 | AV | Horizontal |
| 4 | 2360.00 | 22.47 | 58.10 | 35.63 | 74.00 | 15.90 | PK | Horizontal |
| 5 | 2390.00 | 22.05 | 57.89 | 35.84 | 74.00 | 16.11 | PK | Horizontal |
| 6 | 2390.00 | 14.14 | 49.98 | 35.84 | 54.00 | 4.02 | AV | Horizontal |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Vertical |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |



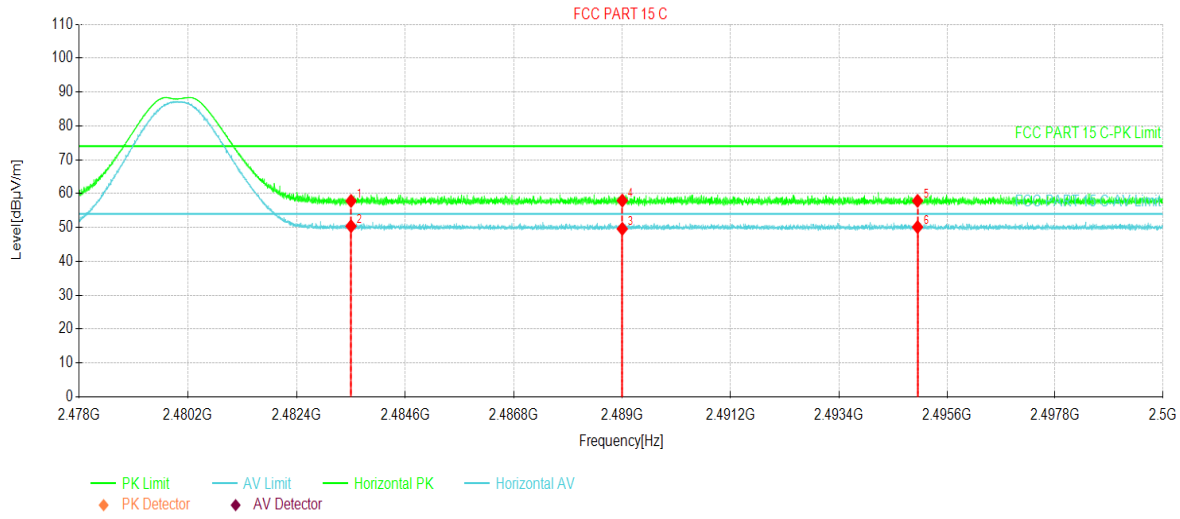

**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 21.37 | 57.09 | 35.72 | 74.00 | 16.91 | PK | Vertical |
| 2 | 2483.50 | 14.38 | 50.10 | 35.72 | 54.00 | 3.90 | AV | Vertical |
| 3 | 2489.00 | 14.30 | 50.01 | 35.71 | 54.00 | 3.99 | AV | Vertical |
| 4 | 2489.00 | 22.27 | 57.98 | 35.71 | 74.00 | 16.02 | PK | Vertical |
| 5 | 2495.00 | 21.50 | 57.19 | 35.69 | 74.00 | 16.81 | PK | Vertical |
| 6 | 2495.00 | 14.24 | 49.93 | 35.69 | 54.00 | 4.07 | AV | Vertical |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

| Product Name: | Smart Phone | Product Model: | WP15 S |
|---|---|---|---|
| Test By: | Mike | Test mode: | BLE Tx mode |
| Test Channel: | Highest channel | Polarization: | Horizontal |
| Test Voltage: | AC 120/60Hz | Environment: | Temp: 22.9℃ Huni: 56% |




**Suspected Data List**

| NO. | Freq. [MHz] | Reading [dBµV/m] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Trace | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.50 | 22.12 | 57.84 | 35.72 | 74.00 | 16.16 | PK | Horizontal |
| 2 | 2483.50 | 14.66 | 50.38 | 35.72 | 54.00 | 3.62 | AV | Horizontal |
| 3 | 2489.00 | 13.89 | 49.60 | 35.71 | 54.00 | 4.40 | AV | Horizontal |
| 4 | 2489.00 | 22.24 | 57.95 | 35.71 | 74.00 | 16.05 | PK | Horizontal |
| 5 | 2495.00 | 22.18 | 57.87 | 35.69 | 74.00 | 16.13 | PK | Horizontal |
| 6 | 2495.00 | 14.45 | 50.14 | 35.69 | 54.00 | 3.86 | AV | Horizontal |

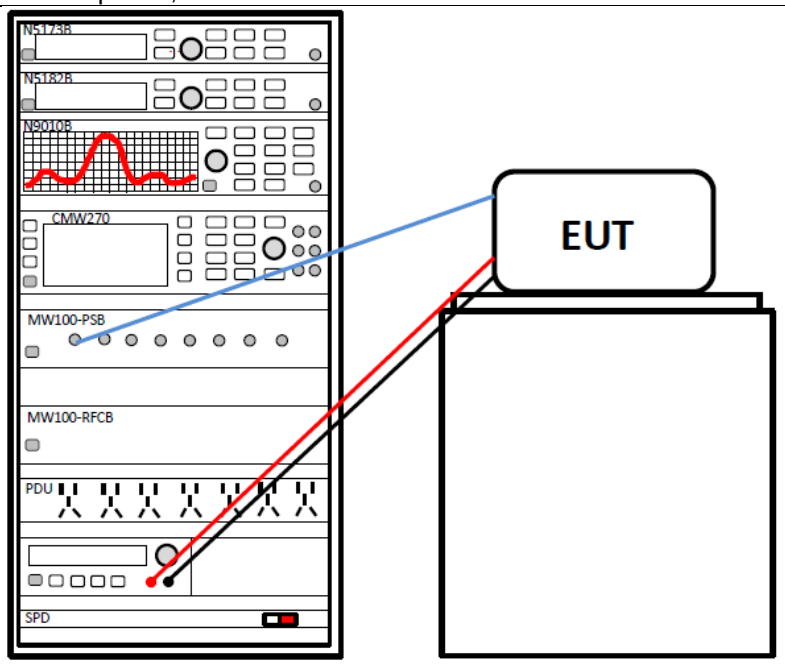
*Remark:*

*1. Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*

*2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

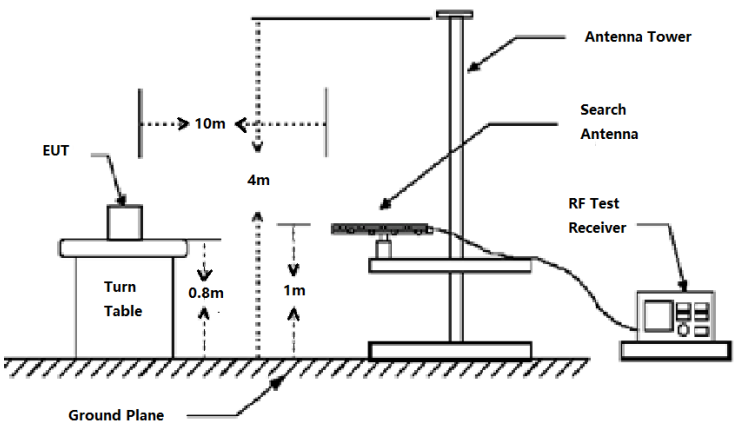
## 6.7 Spurious Emission

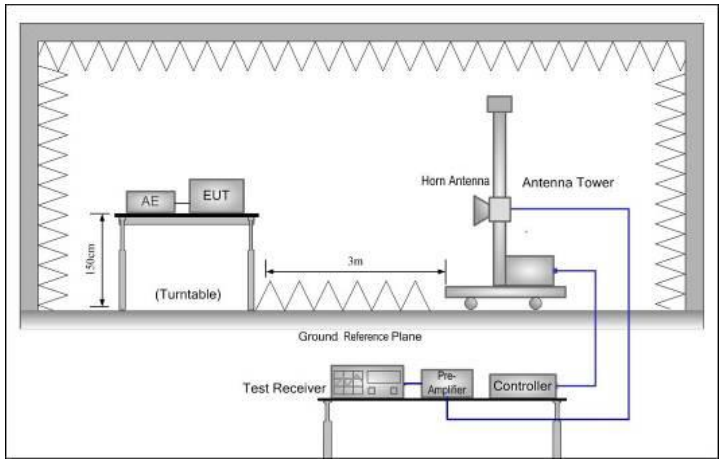
### 6.7.1 Conducted Emission Method

| | |
|---|---|
| Test Requirement: | FCC Part 15 C Section 15.247 (d) |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test setup: |  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |

**Measurement Data:** Refer to Appendix A - BLE

### 6.7.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part 15 C Section 15.205 and 15.209</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">9kHz to 25GHz</td></tr>
<tr><td>Test Distance:</td><td colspan="5">3m or 10m</td></tr>
<tr><td>Receiver setup:</td><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td></td><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td></td><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
<tr><td>Limit:</td><td colspan="2">Frequency</td><td colspan="2">Limit (dBuV/m @10m)</td><td>Remark</td></tr>
<tr><td></td><td colspan="2">30MHz-88MHz</td><td colspan="2">30.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">88MHz-216MHz</td><td colspan="2">33.5</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">216MHz-960MHz</td><td colspan="2">36.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">960MHz-1GHz</td><td colspan="2">44.0</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td colspan="2">Frequency</td><td colspan="2">Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td></td><td colspan="2" rowspan="2">Above 1GHz</td><td colspan="2">54.0</td><td>Average Value</td></tr>
<tr><td></td><td colspan="2">74.0</td><td>Peak Value</td></tr>
<tr><td>Test Procedure:</td><td colspan="5">1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 10 meter chamber (below 1GHz)or 3 meter chamber(above 1GHz). The table was rotated 360 degrees to determine the position of the highest radiation.<br>2. The EUT was set 10 meters(below 1GHz) or 3 meters(above 1GHz) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</td></tr>
<tr><td>Test setup:</td><td colspan="5">Below 1GHz<br> 
</td></tr>
</table>

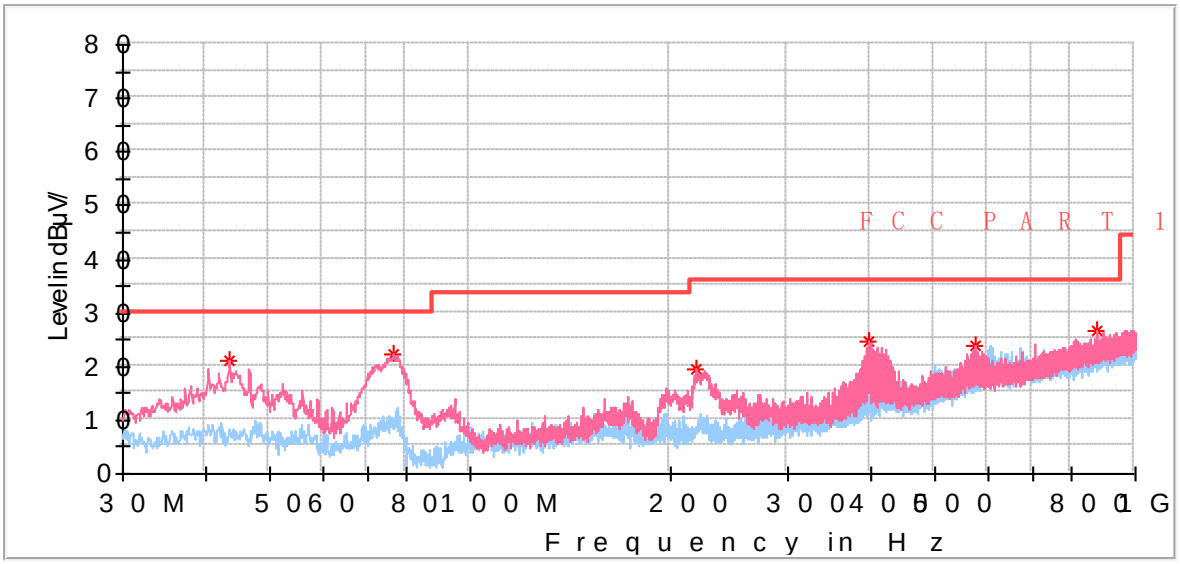
| | |
|---|---|
| | Above 1GHz<br>  |
| Test Instruments: | Refer to section 5.9 for details |
| Test mode: | Refer to section 5.3 for details |
| Test results: | Passed |
| Remark: | 1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.<br>2. 9 kHz to 30MHz is lower than the limit 20dB, so only shows the data of above 30MHz in this report. |

**Measurement Data (worst case):**

**Below 1GHz:**

| | | | |
|---|---|---|---|
| **Product Name:** | Smart Phone | **Product Model:** | WP15 S |
| **Test By:** | Mike | **Test mode:** | BLE Tx mode |
| **Test Frequency:** | 30 MHz ~ 1 GHz | **Polarization:** | Vertical & Horizontal |
| **Test Voltage:** | AC 120/60Hz | **Environment:** | Temp: 22.5℃ Huni: 53% |

Full Spectrum




| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|---|---|---|---|---|---|---|---|
| 43.386000 | 20.90 | 30.00 | 9.10 | 100.0 | V | 0.0 | -15.7 |
| 76.754000 | 22.17 | 30.00 | 7.83 | 100.0 | V | 3.0 | -19.5 |
| 218.762000 | 19.66 | 36.00 | 16.34 | 100.0 | V | 340.0 | -17.2 |
| 398.212000 | 24.55 | 36.00 | 11.45 | 100.0 | V | 0.0 | -11.1 |
| 576.789000 | 23.75 | 36.00 | 12.26 | 100.0 | V | 94.0 | -7.2 |
| 873.997000 | 26.56 | 36.00 | 9.44 | 100.0 | V | 3.0 | -1.2 |

*Remark:*

1. *Final Level = Receiver Read level + Factor(Antenna Factor + Cable Loss – Preamplifier Factor).*
2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**Above 1GHz**

**PHY: 1MHz**

| Test channel: Lowest channel | | | | | | |
|---|---|---|---|---|---|---|
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 56.47 | -9.60 | 46.87 | 74.00 | 27.13 | Vertical |
| 4804.00 | 56.27 | -9.60 | 46.67 | 74.00 | 27.33 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 49.87 | -9.60 | 40.27 | 54.00 | 13.73 | Vertical |
| 4804.00 | 49.88 | -9.60 | 40.28 | 54.00 | 13.72 | Horizontal |
| | | | | | | |
| Test channel: Middle channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 56.51 | -9.04 | 47.47 | 74.00 | 26.53 | Vertical |
| 4884.00 | 56.70 | -9.04 | 47.66 | 74.00 | 26.34 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 49.40 | -9.04 | 40.36 | 54.00 | 13.64 | Vertical |
| 4884.00 | 49.70 | -9.04 | 40.66 | 54.00 | 13.34 | Horizontal |
| | | | | | | |
| Test channel: Highest channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 56.22 | -8.45 | 47.77 | 74.00 | 26.23 | Vertical |
| 4960.00 | 56.04 | -8.45 | 47.59 | 74.00 | 26.41 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 49.78 | -8.45 | 41.33 | 54.00 | 12.67 | Vertical |
| 4960.00 | 49.98 | -8.45 | 41.53 | 54.00 | 12.47 | Horizontal |

*Remark:*

*1. Final Level =Receiver Read level + Factor.*

*2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**PHY: 2MHz**

| Test channel: Lowest channel | | | | | | |
|---|---|---|---|---|---|---|
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 55.62 | -9.60 | 46.02 | 74.00 | 27.98 | Vertical |
| 4804.00 | 55.73 | -9.60 | 46.13 | 74.00 | 27.87 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 48.54 | -9.60 | 38.94 | 54.00 | 15.06 | Vertical |
| 4804.00 | 48.77 | -9.60 | 39.17 | 54.00 | 14.83 | Horizontal |
| | | | | | | |
| Test channel: Middle channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 55.49 | -9.04 | 46.45 | 74.00 | 27.55 | Vertical |
| 4884.00 | 55.91 | -9.04 | 46.87 | 74.00 | 27.13 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 48.17 | -9.04 | 39.13 | 54.00 | 14.87 | Vertical |
| 4884.00 | 49.13 | -9.04 | 40.09 | 54.00 | 13.91 | Horizontal |
| | | | | | | |
| Test channel: Highest channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 55.13 | -8.45 | 46.68 | 74.00 | 27.32 | Vertical |
| 4960.00 | 55.88 | -8.45 | 47.43 | 74.00 | 26.57 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 48.30 | -8.45 | 39.85 | 54.00 | 14.15 | Vertical |
| 4960.00 | 49.24 | -8.45 | 40.79 | 54.00 | 13.21 | Horizontal |

*Remark:*

*1. Final Level =Receiver Read level + Factor.*

2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**Coded PHY, S=2**

| Test channel: Lowest channel | | | | | | |
|---|---|---|---|---|---|---|
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 55.35 | -9.60 | 45.75 | 74.00 | 28.25 | Vertical |
| 4804.00 | 56.31 | -9.60 | 46.71 | 74.00 | 27.29 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 48.76 | -9.60 | 39.16 | 54.00 | 14.84 | Vertical |
| 4804.00 | 48.61 | -9.60 | 39.01 | 54.00 | 14.99 | Horizontal |
| | | | | | | |
| Test channel: Middle channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 55.68 | -9.04 | 46.64 | 74.00 | 27.36 | Vertical |
| 4884.00 | 56.71 | -9.04 | 47.67 | 74.00 | 26.33 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 48.34 | -9.04 | 39.30 | 54.00 | 14.70 | Vertical |
| 4884.00 | 49.00 | -9.04 | 39.96 | 54.00 | 14.04 | Horizontal |
| | | | | | | |
| Test channel: Highest channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 55.67 | -8.45 | 47.22 | 74.00 | 26.78 | Vertical |
| 4960.00 | 56.19 | -8.45 | 47.74 | 74.00 | 26.26 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 48.67 | -8.45 | 40.22 | 54.00 | 13.78 | Vertical |
| 4960.00 | 48.66 | -8.45 | 40.21 | 54.00 | 13.79 | Horizontal |

*Remark:*

*1. Final Level =Receiver Read level + Factor.*

2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

**Coded PHY, S=8**

| Test channel: Lowest channel | | | | | | |
|---|---|---|---|---|---|---|
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 55.49 | -9.60 | 45.89 | 74.00 | 28.11 | Vertical |
| 4804.00 | 56.11 | -9.60 | 46.51 | 74.00 | 27.49 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4804.00 | 48.19 | -9.60 | 38.59 | 54.00 | 15.41 | Vertical |
| 4804.00 | 48.57 | -9.60 | 38.97 | 54.00 | 15.03 | Horizontal |
| | | | | | | |
| Test channel: Middle channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 55.06 | -9.04 | 46.02 | 74.00 | 27.98 | Vertical |
| 4884.00 | 56.38 | -9.04 | 47.34 | 74.00 | 26.66 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4884.00 | 48.16 | -9.04 | 39.12 | 54.00 | 14.88 | Vertical |
| 4884.00 | 48.18 | -9.04 | 39.14 | 54.00 | 14.86 | Horizontal |
| | | | | | | |
| Test channel: Highest channel | | | | | | |
| Detector: Peak Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 55.29 | -8.45 | 46.84 | 74.00 | 27.16 | Vertical |
| 4960.00 | 56.49 | -8.45 | 48.04 | 74.00 | 25.96 | Horizontal |
| Detector: Average Value | | | | | | |
| Frequency (MHz) | Read Level (dBuV) | Factor(dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Margin (dB) | Polarization |
| 4960.00 | 48.10 | -8.45 | 39.65 | 54.00 | 14.35 | Vertical |
| 4960.00 | 48.91 | -8.45 | 40.46 | 54.00 | 13.54 | Horizontal |

*Remark:*

*1. Final Level =Receiver Read level + Factor.*

2. *The emission levels of other frequencies are lower than the limit 20dB and not show in test report.*

# 8 EUT Constructional Details

Reference to the test report No.: JYTSZB-R12-2102717.

-----End of report------