TCT 通测检测 TESTING CENTRE TECHNOLOGY

# Test Report

| | |
|---|---|
| **Test Report No..... :** | TCT240614E017 |
| **Date of issue..... :** | Jul. 26, 2024 |
| **Testing laboratory ..... :** | Shenzhen TCT Testing Technology Co., Ltd. |
| **Testing location/ address:** | 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China |
| **Applicant's name..... :** | Shenzhen Huafurui Technology Co., Ltd. |
| **Address..... :** | Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China |
| **Manufacturer's name ... :** | Shenzhen Huafurui Technology Co., Ltd. |
| **Address..... :** | Unit 601-03, 6/F, Block A, Building 1, Ganfeng Technology Building, No. 993 Jiaxian Road, Xiangjiaotang Community, Bantian Street, Longgang District, Shenzhen, P.R. China |
| **Standard(s) ..... :** | ETSI EN 300 440 V2.2.1 (2018-07) |
| **Product Name..... :** | Smartphone |
| **Trade Mark ..... :** | CUBOT |
| **Model/Type reference..... :** | KINGKONG POWER 3 |
| **Rating(s)..... :** | Refer to EUT description of page 3 |
| **Date of receipt of test item ..... :** | Jun. 14, 2024 |
| **Date (s) of performance of test..... :** | Jun. 14, 2024 ~ Jul. 26, 2024 |
| **Tested by (+signature) ... :** | Rleo LIU |
| **Check by (+signature).... :** | Beryl ZHAO |
| **Approved by (+signature):** | Tomsin |

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# 1. General Product Information

## 1.1. EUT description

| | |
|---|---|
| **Product Name.....:** | Smartphone |
| **Model/Type reference.....:** | KINGKONG POWER 3 |
| **Hardware Version.....:** | E388_MAIN_PCB_V1.1 |
| **Software Version.....:** | CUBOT_E071C_KINGKONG POWER 3_V01 |
| **Receiver Category.....:** | 3 |
| **Operation Frequency.....:** | 5725MHz~5875MHz |
| **Channel Separation .....:** | 20MHz, 40MHz, 80MHz |
| **Modulation Technology .....: (IEEE802.11a/802.11n)** | Orthogonal Frequency Division Multiplexing(OFDM) |
| **Modulation Type.....:** | 256QAM, 64QAM, 16QAM, BPSK, QPSK |
| **Data speed.....:** | 802.11a: 6Mbps-54Mbps<br>802.11n: 6.5Mbps-150Mbps<br>802.11ac: 6.5Mbps-433.3Mbps |
| **Antenna Type.....:** | FPC Antenna |
| **Antenna Gain.....:** | 0.37dBi |
| **Rating(s).....:** | Adapter Information:<br>Model: HJ-PD33W-EU<br>Input: AC 100-240V, 50/60Hz, 0.8A<br>Output: DC 5.0V, 3.0A/ DC 9.0V, 3.0A, 27.0W<br>DC 12.0V, 2.75A, 33.0W MAX<br>Rechargeable Li-polymer Battery DC 3.87V |

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

## 1.2. Model(s) list

None.



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## 1.3. Operation Frequency

**For 802.11a/n(HT20)/ac(VHT20), 802.11n(VHT40)/ac(HT40) and 802.11ac(VHT80)**

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 149 | 5745MHz | 161 | 5805MHz | | |
| 151 | 5755MHz | 165 | 5825MHz | | |
| 153 | 5765MHz | | | | |
| 155 | 5775MHz | | | | |
| 157 | 5785MHz | | | | |
| 159 | 5795MHz | | | | |

*The EUT operation in above frequency list, and used test software to control the EUT for staying in continuous transmitting and receiving mode. So test frequency is below:*

**Band IV (5725MHz-5875MHz)**

| Test channel | Frequency (MHz) | | |
|---|---|---|---|
| | 802.11a/802.11n(HT20)/ 802.11ac(VHT20) | 802.11n(HT40)/ 802.11ac(VHT40) | 802.11ac(VHT80) |
| Lowest channel | 5745MHz | 5755MHz | |
| Middle channel | 5785MHz | ---- | 5775MHz |
| Highest channel | 5825MHz | 5795MHz | |



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## 2. Test Result Summary

| Radio Spectrum Matter (RSM) Part of Tx | | | | |
|---|---|---|---|---|
| **Test Item** | **Test Requirement** | **Test Method** | **Limit/Severity** | **Result** |
| Equivalent isotropically radiated power | Clause 4.2.2 | Clause 4.2.2.3 | Clause 4.2.2.4 | PASS |
| Permitted Range of Operating Frequencies | Clause 4.2.3 | Clause 4.2.3.3 | Clause 4.2.3.5 | PASS |
| Unwanted emissions in the spurious domain | Clause 4.2.4 | Clause 4.2.4.3 | Clause 4.2.4.4 | PASS |
| Duty cycle | Clause 4.2.5 | Clause 4.2.5.3 | Clause 4.2.5.4 | N/A |
| Additional requirements for FHSS equipment | Clause 4.2.6 | Clause 4.2.6.3 | Clause 4.2.6.4 | N/A |

| Radio Spectrum Matter (RSM) Part of Rx | | | | |
|---|---|---|---|---|
| **Test Item** | **Test Requirement** | **Test Method** | **Limit/Severity** | **Result** |
| Adjacent channel selectivity | Clause 4.3.3 | Clause 4.3.3.3 | Clause 4.3.3.4 | N/A |
| Blocking or desensitization | Clause 4.3.4 | Clause 4.3.4.3 | Clause 4.3.4.4 | PASS |
| Spurious Radiations | Clause 4.3.5 | Clause 4.3.5.3 | Clause 4.3.5.4 | PASS |

***Note:***

*1 Pass: Test item meets the requirement.*

*2. N/A: Test case does not apply to the test object.*

*3. The test result judgment is decided by the limit of test standard.*



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# 3. General Information

## 3.1. Test environment and mode

| Item | Normal condition | Extreme condition | | | |
|---|---|---|---|---|---|
| | | HVHT | LVHT | HVLT | LVLT |
| Temperature | +25ºC | +40ºC | +40ºC | -20ºC | -20ºC |
| Voltage | DC 3.87V | DC 4.35V | DC 3.5V | DC 4.35V | DC 3.5V |
| Humidity | 20%-95% | | | | |
| Atmospheric Pressure: | 1008 mbar | | | | |
| **Test Mode:** | | | | | |
| Transmitting mode: | Keep the EUT in transmitting mode with modulation. | | | | |
| Receiving mode: | Keep the EUT in receiving mode. | | | | |

## 3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Equipment | Model No. | Serial No. | FCC ID | Trade Name |
|---|---|---|---|---|
| / | / | / | / | / |

***Note:***

*1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*

*2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*



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## 3.3. Test Instruments List

| Radiated Emission | | | | |
|---|---|---|---|---|
| **Name** | **Model No.** | **Manufacturer** | **Date of Cal.** | **Due Date** |
| EMI Test Receiver | ESCI7 | R&S | Feb. 01, 2024 | Jan. 31, 2025 |
| Spectrum Analyzer | FSQ40 | R&S | Jun. 27, 2024 | Jun. 26, 2025 |
| Pre-amplifier | 8447D | HP | Jun. 27, 2024 | Jun. 26, 2025 |
| Pre-amplifier | LNPA_0118G-45 | SKET | Feb. 01, 2024 | Jan. 31, 2025 |
| Pre-amplifier | LNPA_1840G-50 | SKET | Feb. 01, 2024 | Jan. 31, 2025 |
| Broadband Antenna | VULB9163 | Schwarzbeck | Jun. 29, 2024 | Jun. 28, 2025 |
| Horn Antenna | BBHA 9120D | Schwarzbeck | Jun. 29, 2024 | Jun. 28, 2025 |
| Horn Antenna | BBHA 9170 | Schwarzbeck | Feb. 03, 2024 | Feb. 02, 2025 |
| Coaxial cable | RE-03-D | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Coaxial cable | RE-03-M | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Coaxial cable | RE-03-L | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Coaxial cable | RE-04-D | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Coaxial cable | RE-04-M | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Coaxial cable | RE-04-L | SKET | Jun. 27, 2024 | Jun. 26, 2025 |
| Loop antenna | FMZB1519B | Schwarzbeck | Jun. 27, 2024 | Jun. 26, 2025 |
| Spectrum Analyzer | N9020A | Agilent | Jun. 27, 2024 | Jun. 26, 2025 |
| Signal Generator | N5182A | Agilent | Jun. 27, 2024 | Jun. 26, 2025 |
| EMI Test Software | FA-03A2 RE+ | EZ_EMC | / | / |


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# 4. Facilities and Accreditations

## 4.1. Facilities

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

- FCC - Registration No.: 645098

  SHENZHEN TONGCE TESTING LAB

  Designation Number: CN1205

  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  SHENZHEN TONGCE TESTING LAB

  CAB identifier: CN0031

  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

## 4.2. Location

Shenzhen TCT Testing Technology Co., Ltd.

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

## 4.3. Measurement Uncertainty

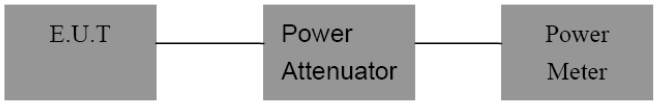
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

| No. | Item | MU |
|---|---|---|
| 1 | Conducted Emission | ± 3.10 dB |
| 2 | RF power, conducted | ± 0.12 dB |
| 3 | Spurious emissions, conducted | ± 0.11 dB |
| 4 | All emissions, radiated(<1 GHz) | ± 4.56 dB |
| 5 | All emissions, radiated(1 GHz - 18 GHz) | ± 4.22 dB |
| 6 | All emissions, radiated(18 GHz- 40 GHz) | ± 4.36 dB |
| 7 | Temperature | ± 0.1°C |
| 8 | Humidity | ± 1.0% |

# 5. Transmit Requirement

## 5.1. Equivalent Isotropically Radiated Power

### 5.1.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | EN 300 440 clause 4.2.2 |
| **Test Method:** | EN 300 440 clause 4.2.2.3 |
| **Limit:** | 13.98dBm |
| **Test Setup:** |  |
| **Test Procedure:** | 1. According clause 4.2.3.0, The -6 dB bandwidth should be tested first;<br>2. Base on step 1, the clause 4.2.2.3.2 was selected, The test procedure shall be as follows:<br>Step 1:<br>• using a suitable means, the output of the transmitter shall be connected to a spectrum analyser;<br>• setting spectrum analyser, reading the transmitting time Tx on and off time Tx off;<br>• the observed duty cycle of the transmitter (Tx on/(Tx on + Tx off)) shall be noted as x, (0 < x < 1) and recorded.<br>Step 2:<br>• the average output power of the transmitter shall be determined using a wideband, calibrated RF power meter. The observed value shall be recorded as "A" (in dBm);<br>• the e.i.r.p. shall be calculated from the above measured power output A, the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:<br>- P = A + G + 10 log (1/x);<br>3. The measurement shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range. |
| **Test Instrument:** | Refer to Item 3.3 for details |
| **Test Mode:** | Transmitting with modulation mode |
| **Test Result:** | PASS |

### 5.1.2. Test Data

**For 802.11a:**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5745MHz | 9.80 | 0.37 | 10.17 | 13.98 | PASS |
| 5785MHz | 9.21 | 0.37 | 9.58 | | |
| 5825MHz | 9.73 | 0.37 | 10.10 | | |

***Note:*** *this factors have been set in test software.*

**For 802.11n(HT20):**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5745MHz | 9.65 | 0.37 | 10.02 | 13.98 | PASS |
| 5785MHz | 9.13 | 0.37 | 9.50 | | |
| 5825MHz | 9.42 | 0.37 | 9.79 | | |

***Note:*** *this factors have been set in test software.*

**For 802.11ac(VHT20):**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5745MHz | 9.75 | 0.37 | 10.12 | 13.98 | PASS |
| 5785MHz | 9.21 | 0.37 | 9.58 | | |
| 5825MHz | 9.49 | 0.37 | 9.86 | | |

***Note:*** *this factors have been set in test software.*

**For 802.11n(HT40):**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5755MHz | 9.04 | 0.37 | 9.41 | 13.98 | PASS |
| 5795MHz | 9.18 | 0.37 | 9.55 | | |

***Note:*** *this factors have been set in test software.*

**For 802.11ac(VHT40):**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5755MHz | 9.03 | 0.37 | 9.40 | 13.98 | PASS |
| 5795MHz | 9.24 | 0.37 | 9.61 | | |

***Note:*** *this factors have been set in test software.*

**For 802.11ac(VHT80):**

| Channel | Output power (dBm) | Antenna Gain(dBi) | Max EIRP (dBm EIRP) | Limit (dBm EIRP) | Result |
|---|---|---|---|---|---|
| 5775MHz | 8.70 | 0.37 | 9.07 | 13.98 | PASS |

***Note:*** *this factors have been set in test software.*



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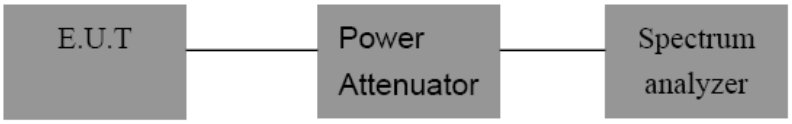
## 5.2. Permitted Range of Operating Frequencies

### 5.2.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | EN 300 440 clause 4.2.3. |
| **Test Method:** | EN 300 440 clause 4.2.3.3 |
| **Limit:** | Within the band 5725MHz to 5875MHz |
| **Test Setup:** |  |
| **Test Procedure:** | 1. Put the spectrum analyser in video averaging mode with a minimum of 50 sweeps selected;<br>2. Select the lowest operating frequency of the equipment under test and activate the transmitter with modulation applied. The RF emission of the equipment shall be displayed on the spectrum analyser;<br>3. Using the marker of the spectrum analyser, find the lowest frequency below the operating frequency at which the spectral power density drops below the level given in clause 4.2.3. This frequency shall be recorded in the test report;<br>4. Select the highest operating frequency of the equipment under test and find the highest frequency at which the spectral power density drops below the value given in clause 4.2.3. This frequency shall be recorded in the test report;<br>5. The difference between the frequencies measured in steps 3) and 4) is the operating frequency range. It shall be recorded in the test report.<br>This measurement shall be repeated for each frequency range declared by the manufacturer. |
| **Test Instrument:** | Refer to Item 3.3 for details |
| **Test Mode:** | Transmitting mode |
| **Test Result:** | PASS |

### 5.2.2. Test Data

**For 802.11a:**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5736.20 | 5833.68 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5736.17 | 5833.63 | | |
| 4.35 | -20℃ | 5736.12 | 5833.66 | | |
| 3.5 | 40℃ | 5736.19 | 5833.60 | | |
| 3.5 | -20℃ | 5736.14 | 5833.65 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |

**For 802.11n(HT20):**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5735.56 | 5834.16 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5735.53 | 5834.10 | | |
| 4.35 | -20℃ | 5735.48 | 5834.13 | | |
| 3.5 | 40℃ | 5735.50 | 5834.07 | | |
| 3.5 | -20℃ | 5735.54 | 5834.12 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |

**For 802.11ac(VHT20):**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5735.64 | 5834.16 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5735.58 | 5834.12 | | |
| 4.35 | -20℃ | 5735.63 | 5834.09 | | |
| 3.5 | 40℃ | 5735.55 | 5834.15 | | |
| 3.5 | -20℃ | 5735.60 | 5834.10 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |



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**For 802.11n(HT40):**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5736.58 | 5813.30 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5736.52 | 5813.27 | | |
| 4.35 | -20℃ | 5736.57 | 5813.22 | | |
| 3.5 | 40℃ | 5736.50 | 5813.28 | | |
| 3.5 | -20℃ | 5736.55 | 5813.24 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |

**For 802.11ac(VHT40):**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5736.46 | 5813.30 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5736.42 | 5813.24 | | |
| 4.35 | -20℃ | 5736.37 | 5813.27 | | |
| 3.5 | 40℃ | 5736.40 | 5813.21 | | |
| 3.5 | -20℃ | 5736.45 | 5813.26 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |

**For 802.11ac(VHT80):**

| Test conditions | | FL(MHz) | FH (MHz) | Limit | Result |
|---|---|---|---|---|---|
| Volt.(DC) | Temp. | | | | |
| 3.87 | 25℃ | 5736.66 | 5813.30 | 5725MHz - 5875MHz | PASS |
| 4.35 | 40℃ | 5736.62 | 5813.24 | | |
| 4.35 | -20℃ | 5736.57 | 5813.29 | | |
| 3.5 | 40℃ | 5736.63 | 5813.22 | | |
| 3.5 | -20℃ | 5736.60 | 5813.27 | | |
| Remark: Volt= Voltage, Temp= Temperature | | | | | |



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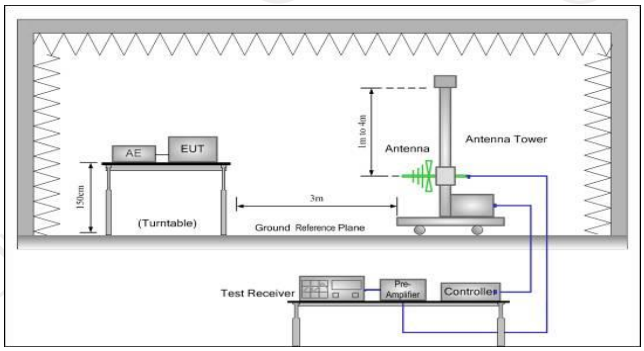
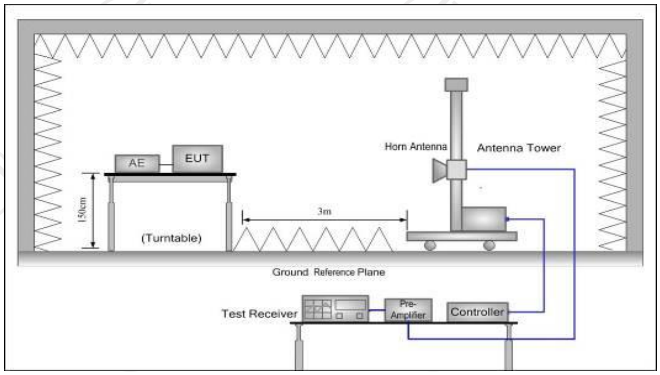
## 5.3. Unwanted emissions in the spurious domain

### 5.3.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>EN 300 440 clause 4.2.4</td></tr>
<tr><td>Test Method:</td><td>EN 300 440 clause 4.2.4.4</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency ranges<br>State</th><th>47 MHz to 74 MHz<br>87,5 MHz to 108 MHz<br>174 MHz to 230 MHz<br>470 MHz to 862 MHz</th><th>Other frequencies<br>≤ 1 000 MHz</th><th>Frequencies<br>> 1 000 MHz</th></tr>
<tr><td>Operating</td><td>4 nW</td><td>250 nW</td><td>1 µW</td></tr>
<tr><td>Standby</td><td>2 nW</td><td>2 nW</td><td>20 nW</td></tr>
</table>
</td></tr>
<tr><td>Test Setup:</td><td>Below 1GHz<br> 

<br>Above 1GHz<br> 

</td></tr>
<tr><td>Test Procedure:</td><td>Substitution method was performed to determine the actual ERP emission levels of the EUT.<br>The following test procedure as below:<br>Below 1GHz test procedure:<br>1. On the test site as test setup graph above, the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider.<br>2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter. The output of the test antenna shall be connected to the measuring receiver.<br>3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.<br>4. The test antenna shall be raised and lowered from 1m to</td></tr>
</table>

| | |
|---|---|
| | 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.<br>5. Repeat step 4 for test frequency with the test antenna polarized horizontally.<br>6. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The centre of the substitution antenna should be approximately at the same location as the centre of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.<br>7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non radiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.<br>8. Repeat step 7 with both antennas horizontally polarized for each test frequency.<br>9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd) where: Pg is the generator output power into the substitution antenna.<br>**Above 1GHz test procedure:**<br>Different between above is the test site, change from Semi-Anechoic Chamber to fully Anechoic Chamber, and the test antenna do not need to raise from 1 to 4m, just test in 1.5m height. |
| **Test Instruments:** | Refer to Item 3.3 for details |
| **Test Mode:** | Transmitting mode |
| **Test Result:** | PASS |

### 5.3.2. Test Data

**20MHzBW**

**Low channel**

| Operation mode: | Tx mode | | Channel | Lowest |
|---|---|---|---|---|
| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
| | Polarization | Level dBm(EIRP) | | |
| 103.45 | Vertical | -73.41 | -54.00 | PASS |
| 11490.00 | V | -50.68 | -30.00 | |
| 17235.00 | V | -54.73 | -30.00 | |
| 114.35 | Horizontal | -76.87 | -54.00 | |
| 11490.00 | H | -47.71 | -30.00 | |
| 17235.00 | H | -52.25 | -30.00 | |

**High channel**

| Operation mode: | Tx mode | | Channel | Highest |
|---|---|---|---|---|
| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
| | Polarization | Level dBm(EIRP) | | |
| 105.62 | Vertical | -73.27 | -54.00 | PASS |
| 11650.00 | V | -54.16 | -30.00 | |
| 17475.00 | V | -55.34 | -30.00 | |
| 115.34 | Horizontal | -76.05 | -54.00 | |
| 11650.00 | H | -46.94 | -30.00 | |
| 17475.00 | H | -53.82 | -30.00 | |

***Note:*** *1. All the 802.11a/n/ac modes are tested and only the data of 802.11n mode presented which is the worst case.*
*2. Test Frequency range is up to 40GHz, and the test data above 18000MHz is too lower than the limit, so not show in this report.*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**40MHzBW**

**Low channel**

| Operation mode: | Tx mode | | Channel | Lowest |
|---|---|---|---|---|
| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
| | Polarization | Level dBm(EIRP) | | |
| 103.52 | Vertical | -73.35 | -54.00 | PASS |
| 11510.00 | V | -54.64 | -30.00 | |
| 17265.00 | V | -58.76 | -30.00 | |
| 117.37 | Horizontal | -74.95 | -54.00 | |
| 11510.00 | H | -54.24 | -30.00 | |
| 17265.00 | H | -58.22 | -30.00 | |

**High channel**

| Operation mode: | Tx mode | | Channel | Highest |
|---|---|---|---|---|
| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
| | Polarization | Level dBm(EIRP) | | |
| 102.78 | Vertical | -73.09 | -54.00 | PASS |
| 11590.00 | V | -58.02 | -30.00 | |
| 17385.00 | V | -59.99 | -30.00 | |
| 113.64 | Horizontal | -74.36 | -54.00 | |
| 11590.00 | H | -56.79 | -30.00 | |
| 17385.00 | H | -57.72 | -30.00 | |

***Note:*** *1. All the 802.11/n/ac modes are tested and only the data of 802.11ac mode presented which is the worst case.*
*2. Test Frequency range is up to 40GHz, and the test data above 18000MHz is too lower than the limit, so not show in this report.*



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**80MHzBW**

| Operation mode: | Standby mode | | Channel | Highest |
|---|---|---|---|---|
| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
| | Polarization | Level dBm(EIRP) | | |
| 104.70 | Vertical | -72.94 | -57.00 | PASS |
| 11550.00 | V | -58.52 | -47.00 | |
| 17325.00 | V | -64.38 | -47.00 | |
| 115.67 | Horizontal | -75.83 | -57.00 | |
| 11550.00 | H | -59.37 | -47.00 | |
| 17325.00 | H | -61.65 | -47.00 | |

***Note:*** *Test Frequency range is up to 40GHz, and the test data above 18000MHz is too lower than the limit, so not show in this report.*



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# 6. Receiver Requirement

**Receiver category**

| Category | Relevant Receiver Clauses | Risk Assessment of Receiver Performance |
|---|---|---|
| 1 | 4.3.3, 4.3.4 and 4.3.5 | Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person). |
| 2 | 4.3.4 and 4.3.5 | Medium reliable SRD communication media e.g. causing Inconvenience to persons, which cannot simply be overcome by other means. |
| 3 | 4.3.4 and 4.3.5 | Standard reliable SRD communication media e.g. Inconvenience to persons, which can simply be overcome by other means (e.g. manual). |
| The EUT (Rx part) belong to Class 3 with no LBT function. | | |

## 6.1. Adjacent channel selectivity

### 6.1.1. Test Specification

| | |
|---|---|
| **Test result:** | Since the test applied to class 1 receivers only, so Not applicable. |



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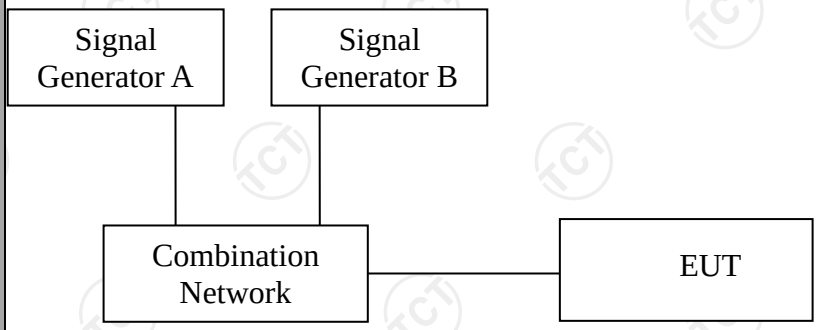
## 6.2. Blocking or Desensitization

### 6.2.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | EN300 440 Clause 4.3.4 |
| **Limit:** | <table><tr><th>Receiver category</th><th>Limit</th></tr><tr><td>1</td><td>-30 dBm + k</td></tr><tr><td>2</td><td>-45 dBm + k</td></tr><tr><td>3</td><td>-60 dBm + k</td></tr></table> $k$ =-20log $f$ -10log$BW$<br>Where:<br>- $f$ is the frequency in GHz;<br>- $BW$ is the channel bandwidth in MHz.<br>The factor $k$ is limited within the following:<br>$-4\ 0 < k < 0$ dB. |
| **Test setup:** |  |
| **Test procedure:** | Reference to Clause 4.3.4.3 |
| **Test Instruments:** | Refer to Item 3.3 for details |
| **Test mode:** | Receiver |
| **Test results:** | Pass |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### 6.2.2. Test data

**802.11a: 5745MHz**

| Modulation | Test Condition | | Sig A Level (dBm) | Channel offset (MHz) | Sig B Level (dBm) | Limit (dBm) |
|---|---|---|---|---|---|---|
| | Temperature (℃) | Voltage (V) | | | | |
| OFDM | 25 | 3.87 | -65 | -1000 | -71.82 | -87.32 |
| | | | | -400 | -70.11 | |
| | | | | -200 | -65.75 | |
| | | | | 200 | -67.67 | |
| | | | | 400 | -69.60 | |
| | | | | 1000 | -72.65 | |
| k = −20log f −10logBW, Where BW=16.36MHz, so k=-27.32 | | | | | | |

**Note:** All channels have been tested, and only the worst test data is show in this report.



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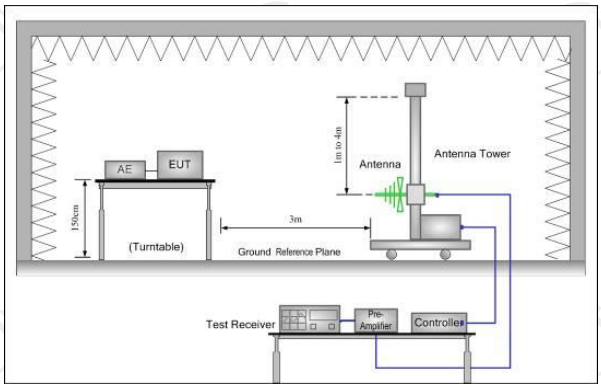
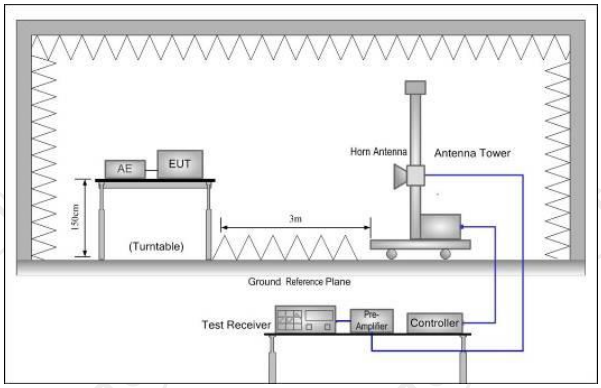
## 6.3. Receiver Spurious Radiation

### 6.3.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | EN 300 440 clause 4.3.5 |
| **Test Method:** | EN 300 440 clause 8.3.4 |
| **Limit:** | Frequency / Limit (dBm)<br>Frequencies ≤1 000 MHz / -57<br>Frequencies > 1 000 MHz / -47 |
| **Test Setup:** | Below 1GHz<br>  <br>Above 1GHz<br>  |
| **Test Procedure:** | Substitution method was performed to determine the actual ERP emission levels of the EUT.<br>The following test procedure as below:<br>**Below 1GHz test procedure:**<br>1. On the test site as test setup graph above, the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider.<br>2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter. The output of the test antenna shall be connected to the measuring receiver.<br>3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.<br>4. The test antenna shall be raised and lowered from 1m to |

| | |
|---|---|
| | 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.<br>5. Repeat step 4 for test frequency with the test antenna polarized horizontally.<br>6. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The centre of the substitution antenna should be approximately at the same location as the centre of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.<br>7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non radiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.<br>8. Repeat step 7 with both antennas horizontally polarized for each test frequency.<br>9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:<br>ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)<br>where: Pg is the generator output power into the substitution antenna.<br>Above 1GHz test procedure:<br>Different between above is the test site, change from Semi-Anechoic Chamber to fully Anechoic Chamber, and the test antenna do not need to raise from 1 to 4m, just test in 1.5m height. |
| **Test Instrument:** | Refer to Item 3.3 for details |
| **Test Mode:** | Receiver mode |
| **Test Result:** | PASS |



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### 6.3.2. Test Data

**Low channel**

| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
|---|---|---|---|---|
| | polarization | Level dBm(EIRP) | | |
| 152.38 | Vertical | -79.23 | 2nW/ -57dBm below 1GHz, 20nW/ -47dBm above 1GHz. | PASS |
| 5714.54 | V | -68.57 | | |
| 6537.45 | V | -70.40 | | |
| 121.34 | Horizontal | -78.08 | | |
| 5715.12 | H | -70.24 | | |
| 6538.61 | H | -72.18 | | |

**High channel**

| Frequency (MHz) | Spurious Emission | | Limit dBm(EIRP) | Test Result |
|---|---|---|---|---|
| | polarization | Level dBm(EIRP) | | |
| 149.45 | Vertical | -78.10 | 2nW/ -57dBm below 1GHz, 20nW/ -47dBm above 1GHz. | PASS |
| 5724.61 | V | -70.98 | | |
| 6540.53 | V | -73.99 | | |
| 119.45 | Horizontal | -77.22 | | |
| 5724.13 | H | -68.59 | | |
| 6539.42 | H | -73.66 | | |

***Note:*** *1. All the 802.11a/n/ac modes are tested and only the data of 802.11n mode presented which is the worst case.*
*2. Test Frequency range is up to 40GHz, and the test data above 18000MHz is too lower that the limit, so not show in this report.*


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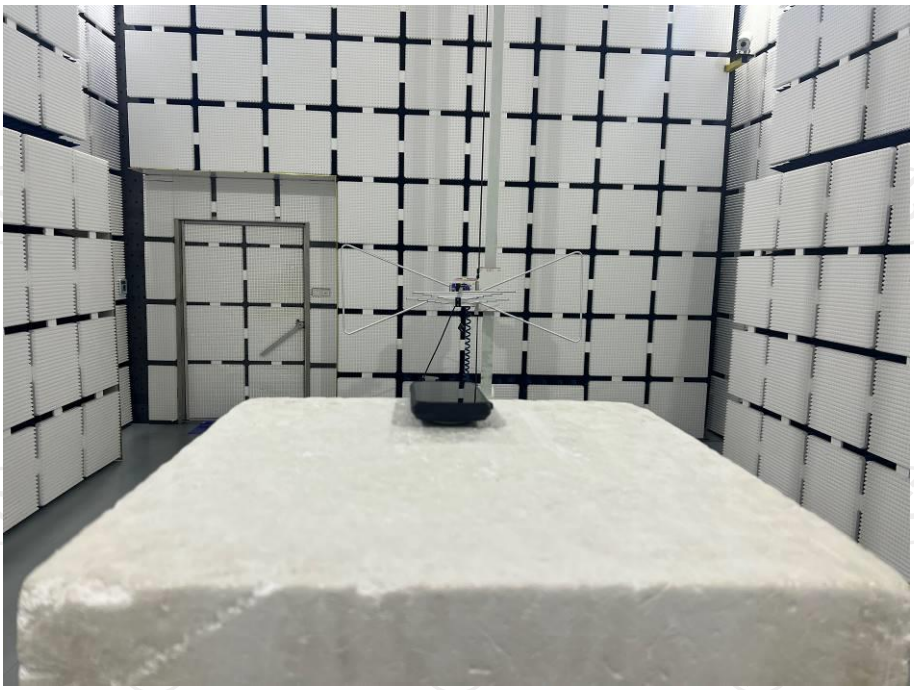
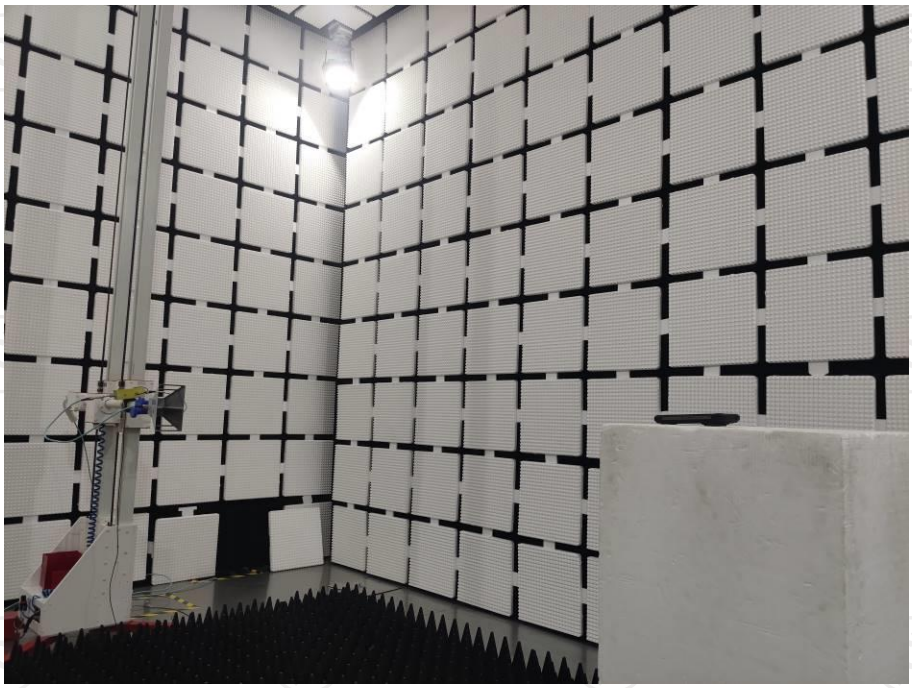
# 7. Photographs of Test Configuration

**Radiated Emission**







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# 8. Photographs of EUT

**Refer to the test report No. TCT240614E023**

********END OF REPORT********



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