



Test Report

| | | |
|---------------------------------------|--|---|
| Test Report No.: | TCT240815E028 | |
| Date of issue | Sep. 14, 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. | |
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| 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 303 413 V1.2.1 (2021-04) | |
| Product Name | Smartphone | |
| Trade Mark | CUBOT | |
| Model/Type reference | A30 | |
| Rating(s) | Refer to EUT description of page 3 | |
| Date of receipt of test item | Aug. 15, 2024 | |
| Date (s) of performance of test | Aug. 15, 2024 ~ Sep. 14, 2024 | |
| Tested by (+signature) | Aaron MO |  |
| Check by (+signature) | Beryl ZHAO |  |
| Approved by (+signature): | Tomsin |  |

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TABLE OF CONTENTS

| | |
|---|-----------|
| 1. General Product Information | 3 |
| 1.1. EUT description | 3 |
| 1.2. Model(s) list..... | 3 |
| 2. Test Result Summary | 4 |
| 3. General Information..... | 5 |
| 3.1. Test environment and mode..... | 5 |
| 3.2. Description of Support Units..... | 5 |
| 3.3. Test Instruments List | 6 |
| 4. Facilities and Accreditations | 7 |
| 4.1. Facilities | 7 |
| 4.2. Location | 7 |
| 4.3. Measurement Uncertainty..... | 7 |
| 5. Receiver Requirement..... | 8 |
| 5.1. GUE adjacent frequency band selectivity performance..... | 9 |
| 5.2. Receiver Spurious Radiation..... | 11 |
| 6. Photographs of Test Configuration..... | 15 |
| 7. Photographs of EUT | 16 |

1. General Product Information

1.1. EUT description

| | |
|-----------------------------|---|
| Product Name.....: | Smartphone |
| Model/Type reference.....: | A30 |
| Hardware Version.....: | G3320G-UF-Y1.1 |
| Software Version | CUBOT_E093C_A30_V01 |
| Operation Frequency | GPS: 1.57542GHz Galileo: 1.561098 GHz GLONASS: 1.602GHz |
| Modulation Technology | GPS: BPSK Galileo: BPSK GLONASS: FDMA |
| Antenna Type.....: | PIFA Antenna |
| Antenna Gain.....: | 2.78dBi |
| Rating(s).....: | Adapter 1 Information: Model: HJ-0502000W2-EU Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2.0A, 10.0W Adapter 2 Information: Model: QZ-01001EA00 Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2.0A, 10.0W 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.

2. Test Result Summary

| Radio Spectrum Matter (RSM) Part | | | | |
|--|------------------|--------------|----------------|--------|
| Test Item | Test Requirement | Test Method | Limit/Severity | Result |
| Adjacent signal selectivity | Clause 4.2.1 | Clause 5.4.3 | Clause 4.2.1.2 | PASS |
| Spurious Radiations | Clause 4.2.2 | Clause 5.5 | Clause 4.2.2.2 | 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. | | | | |

3. General Information

3.1. Test environment and mode

| Item | Normal condition | Extreme condition | | | |
|-----------------------|------------------|---------------------------------|---------|----------|---------|
| | | HVHT | LVHT | HVLT | LVLT |
| Temperature | +25°C | +40°C | +40°C | -20°C | -20°C |
| Voltage | DC 3.87V | DC 4.35V | DC 3.5V | DC 4.35V | DC 3.5V |
| Humidity | 20%-75% | | | | |
| Atmospheric Pressure: | 1008 mbar | | | | |
| Test Mode: | | | | | |
| 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.

3.3. Test Instruments List

| Radiated Emission | | | | |
|--------------------------------------|---------------|--------------|---------------|---------------|
| Name | Model No. | Manufacturer | Date of Cal. | Due Date |
| EMI Test Receiver | ESC17 | R&S | Feb. 01, 2024 | Jan. 31, 2025 |
| Spectrum Analyzer | FSQ40 | R&S | Jun. 27, 2024 | Jun. 26, 2025 |
| Signal Generator | N5182A | Agilent | 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 |
| Universal Radio Communication Tester | CMU200 | R&S | Jun. 27, 2024 | Jun. 26, 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 |
| EMI Test Software | FA-03A2 RE+ | EZ EMC | / | / |

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

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Innovation, Science and Economic Development 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 $y \pm U$, where expanded 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 | $\pm 0.1^{\circ}\text{C}$ |
| 8 | Humidity | $\pm 1.0\%$ |

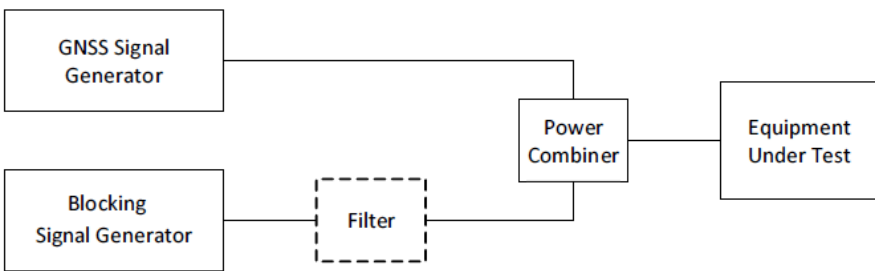
5. Receiver Requirement

Receiver Frequency

| GNSS Constellation | GNSS Signal Designations | RNSS Frequency Band (MHz) |
|--------------------|--------------------------|---------------------------|
| BDS | B1I | 1 559 to 1 610 |
| | B1C | 1 559 to 1 610 |
| Galileo | E1 | 1 559 to 1 610 |
| | E5a | 1 164 to 1 215 |
| | E5b | 1 164 to 1 215 |
| | E6 | 1 215 to 1 300 |
| GLONASS | G1 | 1 559 to 1 610 |
| | G2 | 1 215 to 1 300 |
| GPS | L1 C/A | 1 559 to 1 610 |
| | L1C | 1 559 to 1 610 |
| | L2C | 1 215 to 1 300 |
| | L5 | 1 164 to 1 215 |
| SBAS | L1 | 1 559 to 1 610 |
| | L5 | 1 164 to 1 215 |

5.1. GUE adjacent frequency band selectivity performance

5.1.1. Test Specification

| | |
|--------------------------|--|
| Test Requirement: | EN 303 413 clause 4.2 |
| Test Method: | EN 303 413 clause 5.4 |
| Test Setup: |  <pre> graph LR A[GNSS Signal Generator] --> D[Power Combiner] B[Blocking Signal Generator] --> C[Filter] C --> D D --> E[Equipment Under Test] </pre> |
| Test Procedure: | <p>The following test equipment is recommended for performing the tests:</p> <ol style="list-style-type: none"> 1. GNSS signal generator capable of simulating the GNSS constellations and GNSS signals declared as supported by the EUT. 2. Blocking signal generator capable of generating the adjacent frequency signal specified in table 4-4. 3. Filter for ensuring the test is not adversely affected by OOB from the RF signal generator into the RNSS band if necessary. 4. Power combiner for combining the GNSS signal(s) and the adjacent frequency signal. 5. Recording C/ N0 as reported by the EUT before and after application of the adjacent frequency signal. 6. Establishing the RF power of the test signals at the input to the EUT (this may be accomplished by means of a directional coupler and power meter, or by appropriate calibration prior to the test). |
| Test Instrument: | Refer to Item 3.3 for details |
| Test Mode: | Receiver mode |
| Test Result: | PASS |

5.1.2. Test Data

| Frequency band (MHz) | Test point centre frequency (MHz) | Adjacent frequency signal power level (dBm) | Measured C/N ₀ (dB-Hz) | | | |
|----------------------|-----------------------------------|---|-----------------------------------|-------------------------|------------------------------|------------------|
| | | | No interfering signal | With interfering signal | Decrease of C/N ₀ | Decrease ≤ 1 dB? |
| 1 518 to 1 525 | 1524 | -65 | / | / | / | BDS N/A |
| | | | 36.1 | 36.0 | 0.1 | Galileo Pass |
| | | | 36.0 | 36.0 | 0 | GLONASS Pass |
| | | | 36.2 | 36.2 | 0 | GPS Pass |
| | | | / | / | / | SBAS N/A |
| 1 525 to 1 549 | 1548 | -95 | / | / | / | BDS N/A |
| | | | 36.1 | 36.0 | 0.1 | Galileo Pass |
| | | | 36.1 | 36.0 | 0.1 | GLONASS Pass |
| | | | 36.2 | 36.1 | 0.1 | GPS Pass |
| | | | / | / | / | SBAS N/A |
| 1 549 to 1 559 | 1554 | -105 | / | / | / | BDS N/A |
| | | | 36.0 | 36.0 | 0 | Galileo Pass |
| | | | 36.3 | 36.2 | 0.1 | GLONASS Pass |
| | | | 36.2 | 36.2 | 0 | GPS Pass |
| | | | / | / | / | SBAS N/A |
| 1 610 to 1 626 | 1615 | -105 | / | / | / | BDS N/A |
| | | | 36.2 | 36.0 | 0.2 | Galileo Pass |
| | | | 36.1 | 36.0 | 0.1 | GLONASS Pass |
| | | | 36.1 | 36.0 | 0.1 | GPS Pass |
| | | | / | / | / | SBAS N/A |
| 1 626 to 1 640 | 1627 | -85 | / | / | / | BDS N/A |
| | | | 36.3 | 36.3 | 0 | Galileo Pass |
| | | | 36.0 | 35.9 | 0.1 | GLONASS Pass |
| | | | 36.1 | 35.9 | 0.2 | GPS Pass |
| | | | / | / | / | SBAS N/A |

5.2. Receiver Spurious Radiation

5.2.1. Test Specification

| Test Requirement: | EN 303 413 clause 5.5 | | | | | | | | | | | | |
|-------------------------------------|---|-------------------------------------|--|--|-----------------|---------------|-----------|-----------------|---------|---------|------------------|---------|-------|
| Test Method: | EN 303 413 clause 5.5.2 | | | | | | | | | | | | |
| Limit: | <table><tr><th colspan="3">Table 4-5: Spurious emission limits</th></tr><tr><th>Frequency range</th><th>Maximum power</th><th>Bandwidth</th></tr><tr><td>30 MHz to 1 GHz</td><td>-57 dBm</td><td>100 kHz</td></tr><tr><td>1 GHz to 8,3 GHz</td><td>-47 dBm</td><td>1 MHz</td></tr></table> | Table 4-5: Spurious emission limits | | | Frequency range | Maximum power | Bandwidth | 30 MHz to 1 GHz | -57 dBm | 100 kHz | 1 GHz to 8,3 GHz | -47 dBm | 1 MHz |
| Table 4-5: Spurious emission limits | | | | | | | | | | | | | |
| Frequency range | Maximum power | Bandwidth | | | | | | | | | | | |
| 30 MHz to 1 GHz | -57 dBm | 100 kHz | | | | | | | | | | | |
| 1 GHz to 8,3 GHz | -47 dBm | 1 MHz | | | | | | | | | | | |
| Test Setup: | <div><div>GNSS Signal Generator</div><div>Equipment Under Test</div><div>Spectrum</div></div> | | | | | | | | | | | | |
| Test Procedure: | <p>In case of conducted measurements, the EUT shall be connected to the measuring equipment via an attenuator. If required, the necessary GNSS signals shall be applied to the EUT.</p> <p>The spectrum in the spurious domain shall be searched for emissions that exceed the limit values given in table 4-5 or that come to within 6 dB below these limits. Each occurrence shall be recorded.</p> <p>The measurement procedure contains 2 parts.</p> <p>4.3.1. Pre-scan</p> <p>The procedure in step 1) to step 4) below shall be used to identify potential unwanted emissions of the EUT:</p> <p>1) The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in table 4-5.</p> <p>2) The emissions over the range 30 MHz to 1 000 MHz shall be identified.</p> <p>Spectrum analyser settings:</p> <ul style="list-style-type: none">• Resolution bandwidth: 100 kHz• Video bandwidth: 300 kHz• Filter type: 3 dB (Gaussian)• Detector mode: Peak• Trace Mode: Max Hold• Sweep Points: ≥ 19 400 (for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented)<ul style="list-style-type: none">• Sweep time: Auto <p>Wait for the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 4.3.2 and</p> | | | | | | | | | | | | |

compared to the limits given in table 4-5.

3) The emissions over the range 1 GHz to 8,3 GHz shall be identified.

Spectrum analyser settings:

- Resolution bandwidth: 1 MHz
- Video bandwidth: 3 MHz
- Filter type: 3 dB (Gaussian)
- Detector mode: Peak
- Trace Mode: Max Hold
- Sweep Points: $\geq 14\,600$ (for spectrum analysers not supporting this high number of sweep points, the frequency band may be segmented)
- Sweep time: Auto

Wait for the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 4.3.2 and compared to the limits given in table 4-5.

4) In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), step 2) and step 3) shall be repeated for each of the active receive chains, Ach.

The limits used to identify emissions during this pre-scan shall be reduced by $10 \times \log_{10}(Ach)$.

4.3.2. Measurement of the emissions identified during the pre-scan

The procedure in step 1) to step 4) below shall be used to accurately measure the individual unwanted emissions identified during the pre-scan measurements above. This method assumes the spectrum analyser has a Time Domain Power function.

1) The level of the emissions shall be measured using the following spectrum analyser settings:

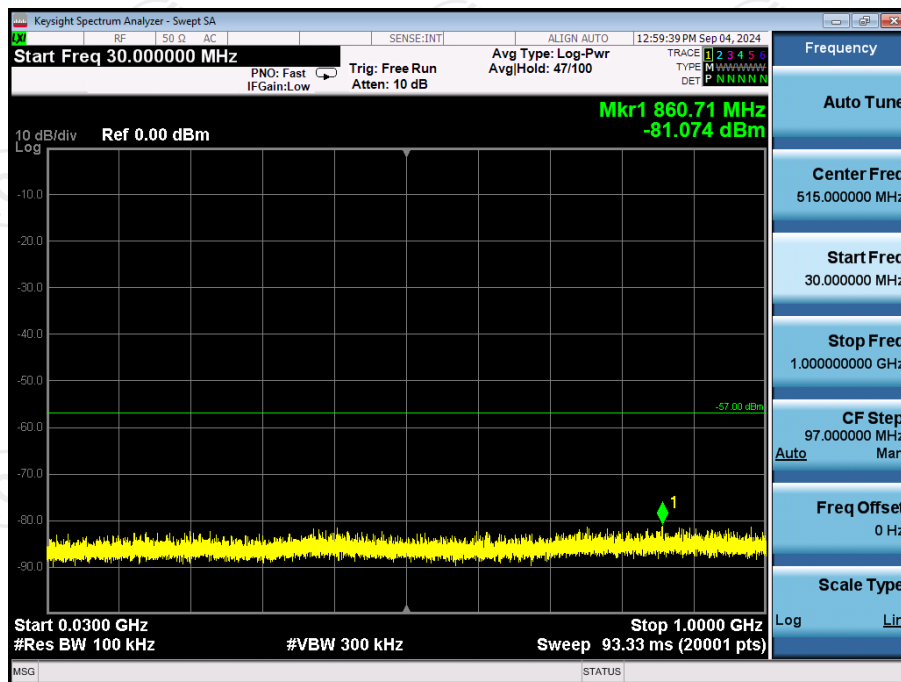
- Measurement Mode: Time Domain Power.
- Centre Frequency: Frequency of the emission identified during the pre-scan.
- Resolution Bandwidth: 100 kHz ($< 1\text{ GHz}$) / 1 MHz ($> 1\text{ GHz}$).
- Video Bandwidth: 300 kHz ($< 1\text{ GHz}$) / 3 MHz ($> 1\text{ GHz}$).
- Frequency Span: Zero Span.
- Sweep mode: Single Sweep.
- Sweep time: 30 ms.
- Sweep points: $\geq 30\,000$.
- Trigger: Video (for burst signals) or Manual (for continuous signals).
- Detector: RMS.

2) Set a window where the start and stop indicators match the start and end of the burst with the highest level and record the RMS value of the power measured within this

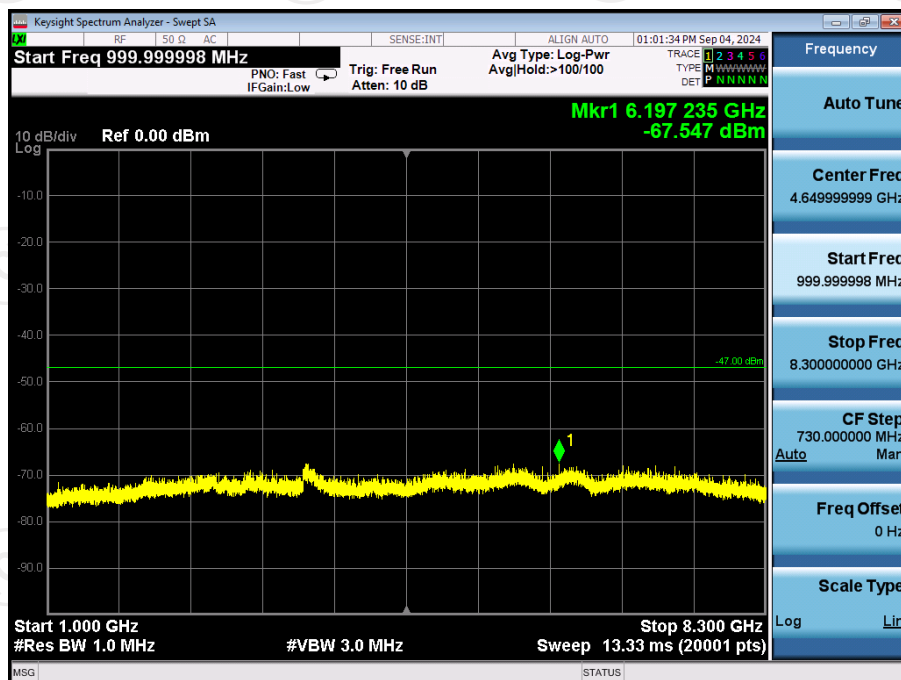
| | |
|-------------------------|---|
| | <p>window. If the spurious emission to be measured is a continuous transmission, the measurement window shall be set to the start and stop times of the sweep.</p> <p>3) In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), step 2) shall be repeated for each of the active receive chains, Ach. Sum the measured power (within the observed window) for each of the active receive chains.</p> <p>4) The value defined in step 3) shall be compared to the limits defined in table 4-5.</p> |
| Test Instrument: | Refer to Item 3.3 for details |
| Test Mode: | Receiver mode |
| Test Result: | PASS |

5.2.2. Test Data

For e.r.p (30 MHz to 1 000 MHz):



For e.i.r.p (1 GHz to 8.3 GHz):



6. Photographs of Test Configuration



7. Photographs of EUT

Please refer to document Appendix No.: TCT240815E021-B & TCT240815E021-C

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