TCT 通测检测 TESTING CENTRE TECHNOLOGY

Test Report

Test Report No. .....:	TCT240325E072	
Date of issue .....:	May 11, 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 303 413 V1.2.1 (2021-04)	
Product Name .....:	Smartphone	
Trade Mark.....:	CUBOT	
Model/Type reference .....:	KINGKONG ACE 3	
Rating(s) .....:	Refer to EUT description of page 3	
Date of receipt of test item .....:	Mar. 25, 2024	
Date (s) of performance of test .....:	Mar. 25, 2024 ~ May 11, 2024	
Tested by (+signature)....:	Brews XU	
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 ACE 3
Hardware Version.....:	G2310D-MD-V1.1
Software Version.....:	CUBOT_ACE 3_E011C_V01
Operation Frequency.....:	GPS: 1.57542GHz BDS: 1.561098GHz GLONASS: 1.602GHz Galileo: 1.561098 GHz
Modulation Technology.....:	GPS: BPSK BDS: QPSK GLONASS: FDMA Galileo: BPSK
Antenna Type.....:	FPC Antenna
Antenna Gain.....:	0.88dBi
Rating(s).....:	Adapter Information: Model: HJ-PD33W-EU Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 5.0V, 3.0A, 15.0W or DC 9.0V, 3.0A, 27.0W or DC 12.0V, 2.75A, 33.0W MAX Rechargeable Li-ion 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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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.

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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 4.45V	DC 3.50V	DC 4.45V	DC 3.50V
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.

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3.3. Test Instruments List

Radiated Emission				
Name	**Model No.**	**Manufacturer**	**Date of Cal.**	**Due Date**
EMI Test Receiver	ESIB7	R&S	Jun. 30, 2023	Jun. 29, 2024
Spectrum Analyzer	FSQ40	R&S	Jun. 30, 2023	Jun. 29, 2024
Signal Generator	N5182A	Agilent	Jun. 29, 2023	Jun. 28, 2024
Pre-amplifier	8447D	HP	Jun. 28, 2023	Jun. 27, 2024
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	Jul. 02, 2023	Jul. 01, 2024
Horn Antenna	BBHA 9120D	Schwarzbeck	Jul. 02, 2023	Jul. 01, 2024
Horn Antenna	BBHA 9170	Schwarzbeck	Feb. 03, 2024	Feb. 02, 2025
Universal Radio Communication Tester	CMU200	R&S	Jun. 29, 2023	Jun. 28, 2024
Coaxial cable	RC-18G-N-M	SKET	Feb. 01, 2024	Jan. 31, 2025
Coaxial cable	RC_40G-K-M	SKET	Feb. 01, 2024	Jan. 31, 2025
Loop antenna	FMZB1519B	Schwarzbeck	Jul. 03, 2023	Jul. 02, 2024
Spectrum Analyzer	N9020A	Agilent	Jun. 29, 2023	Jun. 28, 2024

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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. 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

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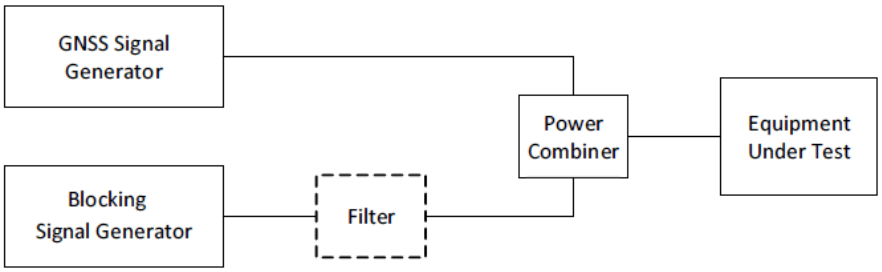
5.1. GUE adjacent frequency band selectivity performance

5.1.1. Test Specification

Test Requirement:	EN 303 413 clause 4.2
Test Method:	EN 303 413 clause 5.4
Test Setup:	
Test Procedure:	The following test equipment is recommended for performing the tests: 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 OOBE 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/N0 (dB-Hz)			
			No interfering signal	With interfering signal	Decrease of C/N0	Decrease ≤ 1 dB
1 518 to 1 525	1524	-65	35.7	35.7	0	BDS Pass
			35.6	35.5	0.1	Galileo Pass
			36.1	36.0	0.1	GLONASS Pass
			36.0	36.0	0	GPS Pass
			35.8	35.7	0.1	SBAS Pass
1 525 to 1 549	1548	-95	35.7	35.6	0.1	BDS Pass
			35.6	35.6	0.1	Galileo Pass
			36.1	36.0	0	GLONASS Pass
			36.0	35.8	0.2	GPS Pass
			35.8	35.7	0.1	SBAS Pass
1 549 to 1 559	1554	-105	35.7	35.6	0.1	BDS Pass
			35.6	35.5	0.1	Galileo Pass
			36.1	36.1	0	GLONASS Pass
			36.0	36.0	0.0	GPS Pass
			35.8	35.6	0.2	SBAS Pass
1 610 to 1 626	1615	-105	35.7	35.7	0	BDS Pass
			35.6	35.6	0	Galileo Pass
			36.1	36.0	0.1	GLONASS Pass
			36.0	35.8	0.2	GPS Pass
			35.8	35.8	0	SBAS Pass
1 626 to 1 640	1627	-85	35.7	35.7	0	BDS Pass
			35.6	35.6	0	Galileo Pass
			36.1	36.0	0.1	GLONASS Pass
			36.0	36.0	0.0	GPS Pass
			35.8	35.7	0.1	SBAS Pass

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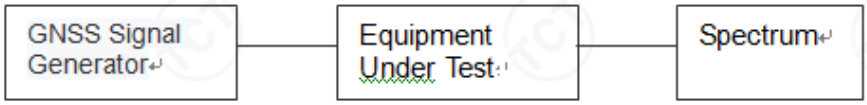
5.2. Receiver Spurious Radiation

5.2.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>EN 303 413 clause 5.5</td></tr>
<tr><td>Test Method:</td><td>EN 303 413 clause 5.5.2</td></tr>
<tr><td>Limit:</td><td>Table 4-5: Spurious emission limits
<table>
<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></td></tr>
<tr><td>Test Setup:</td><td> 
</td></tr>
<tr><td>Test Procedure:</td><td>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.
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.
The measurement procedure contains 2 parts.
4.3.1. Pre-scan
The procedure in step 1) to step 4) below shall be used to identify potential unwanted emissions of the EUT:
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.
2) The emissions over the range 30 MHz to 1 000 MHz shall be identified.
Spectrum analyser settings:
• 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)
• Sweep time: Auto
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</td></tr>
</table>

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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: ≥ 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 × log10(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 GHz) / 1 MHz (> 1 GHz).
- Video Bandwidth: 300 kHz (< 1 GHz) / 3 MHz (> 1 GHz).
- Frequency Span: Zero Span.
- Sweep mode: Single Sweep.
- Sweep time: 30 ms.
- Sweep points: ≥ 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

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	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. 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. 4) The value defined in step 3) shall be compared to the limits defined in table 4-5.
Test Instrument:	Refer to Item 3.3 for details
Test Mode:	Receiver mode
Test Result:	PASS

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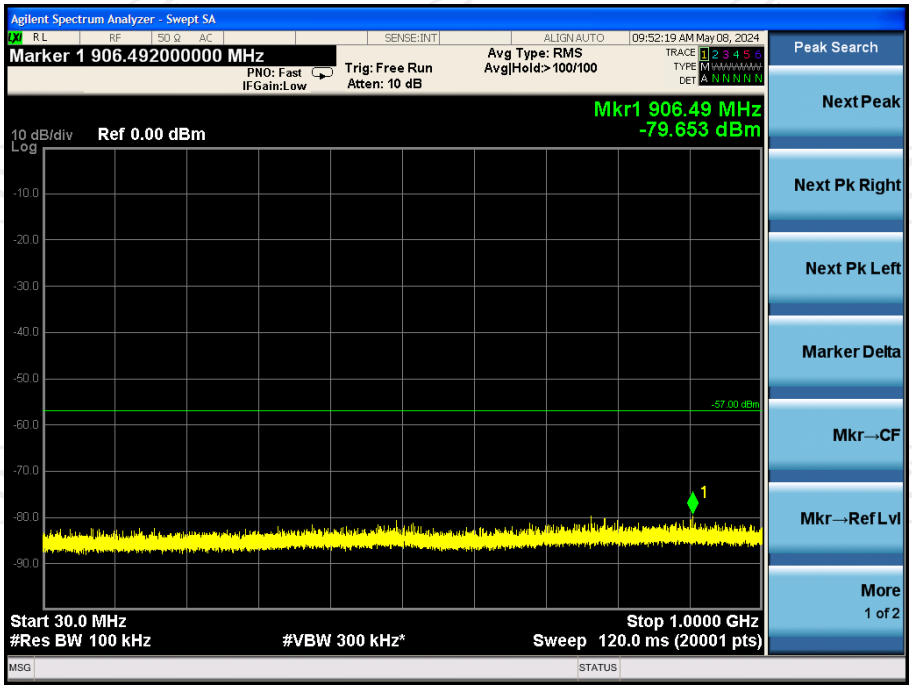
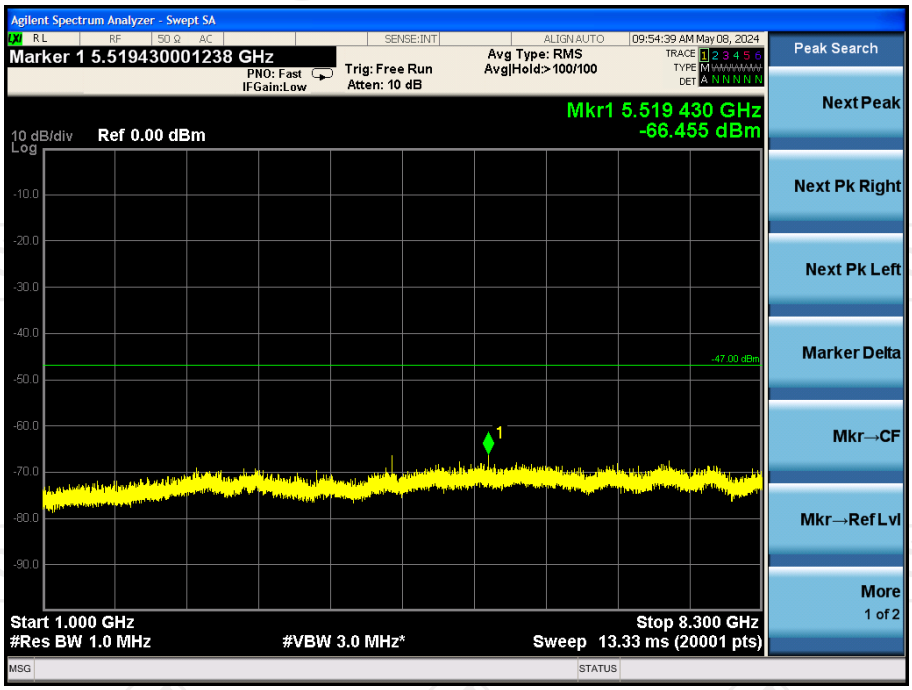
5.2.2. Test Data

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

Refer to the test report No. TCT240325E077

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

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