
RF Test Report

Report No.: AGC00552190802EE06

PRODUCT DESIGNATION : Smart Phone
BRAND NAME : CUBOT
MODEL NAME : X20 PRO
APPLICANT : Shenzhen Huafurui Technology Co., Ltd.
DATE OF ISSUE : Sep. 20, 2019
STANDARD(S) : ETSI EN 303 413 V1.1.1 2017-06
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0 | / | Sep. 20, 2019 | Valid | Initial release |



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1. TEST REPORT CERTIFICATION

| | |
|---------------------------------|--|
| Applicant | Shenzhen Huafurui Technology Co., Ltd. |
| Address | Unit 1401 & 1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China |
| Manufacturer | Shenzhen Huafurui Technology Co., Ltd. |
| Address | Unit 1401 & 1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China |
| Factory Name | Shenzhen Huafurui Technology Co., Ltd. |
| Address | Unit 1401 & 1402, 14/F, Jin qi zhi gu mansion (No. 4 building of Chong wen Garden), Crossing of the Liu xian street and Tang ling road, Tao yuan street, Nan shan district, Shenzhen, P.R. China |
| Product Designation | Smart Phone |
| Brand Name | CUBOT |
| Test Model | X20 PRO |
| Date of test | Aug. 20, 2019 to Sep. 18, 2019 |
| Deviation | None |
| Condition of Test Sample | Normal |
| Report Template | AGCRT-EC-SRD1/RF |

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the European Standard ETSI EN 303 413. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

The test results of this report relate only to the tested sample identified in this report.

Prepared By



Donjon Huang
(Project Engineer)

Sep. 18, 2019


Reviewed By



Max Zhang
(Reviewer)

Sep. 20, 2019

Approved By



Forrest Lei
(Authorized Officer)

Sep. 20, 2019

2. GENERAL INFORMATION

Details of technical specification refer to the description in follows:

| | |
|---------------------|----------------------------------|
| Test Mode | GPS Mode(Only receive) |
| Hardware Version | E966_MAIN_PCB_V1.0 |
| Software Version | CUBOT_X20 PRO_9071C_V01_20190807 |
| Receiver Frequency | (GPS)1575.42MHz |
| Modulation Type | BPSK |
| Antenna designation | Hardware antenna |
| Antenna Gain | 1.0dBi |
| Power Supply | DC 3.85V |

Note: For more details, please refer to the user's manual.



3. MEASUREMENT UNCERTAINTY

All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

| Parameters | Uncertainty |
|--|-----------------------|
| Radio frequency | $\pm 1 \cdot 10^{-7}$ |
| Radiated emission of receiver, valid to 26.5GHz | $\pm 6\text{dB}$ |
| Radiated emission of receiver, valid between 26.5GHz and 66GHz | $\pm 8\text{dB}$ |
| Temperature | $\pm 1^\circ\text{C}$ |
| Humidity | $\pm 5\%$ |
| Voltage (DC) | $\pm 1\%$ |
| Voltage (AC, < 10kHz) | $\pm 2\%$ |

Note: For radiated emissions above 26.5GHz it may not be possible to achieve measurement uncertainties complying with the levels specified in this table. In these cases alone it is acceptable to employ the alternative interpretation procedure specified in clause 10.1

For the test methods, according to the present document the uncertainty figures shall be calculated according to the methods described in the TR 100 028 [i.4] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

4. TEST MODE

| NO. | TEST MODE DESCRIPTION |
|-----|------------------------|
| 1 | RX(Operating Channel) |
| 2 | Standby |



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5. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

| | |
|-----------------|---|
| Site | Attestation of Global Compliance (Shenzhen) Co., Ltd |
| Location | 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China |

LIST OF EQUIPMENTS USED

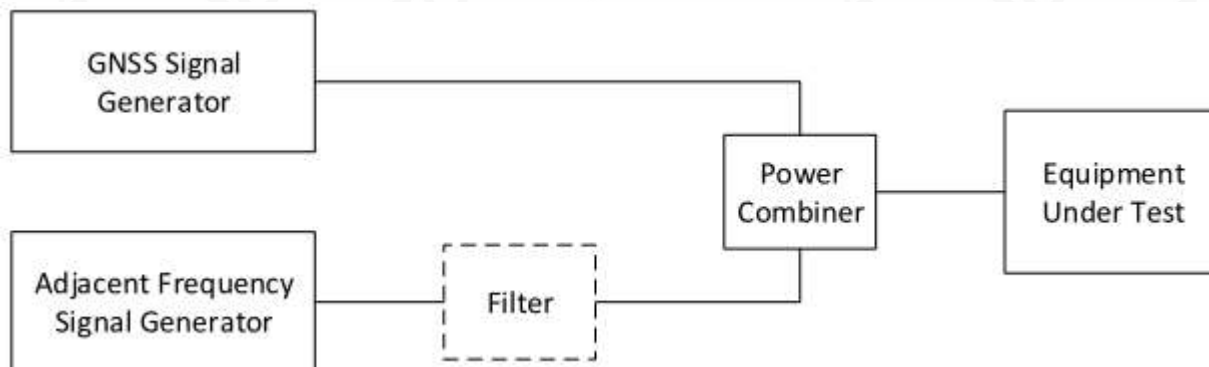
| Description | Manufacturer | Model No. | S/N | Calibration Date | Calibration Due. |
|--------------------------------------|-------------------|-----------|------------|------------------|------------------|
| EMI TEST RECEIVER | R&S | ESCI | 100694 | Jun. 12, 2019 | Jun. 11, 2020 |
| WIDEBAND REQUENCY ANTENNA | SCHWARZBECK | VULB9168 | D69250 | Mar.01, 2018 | Feb.28, 2020 |
| Amplifier | Schwarzbeck | BBV 9718 | 9718-162 | Jun. 12, 2019 | Jun. 11, 2020 |
| Double-Ridged Waveguide Horn Antenna | ETS LINDGREN | 3117 | 00034609 | Mar.01,2018 | Feb.28, 2020 |
| Climate Chamber | ESPEC | EL-10KA | / | Jun. 25, 2019 | Jun. 24, 2020 |
| Horn Antenna | A.H. Systems Inc. | SAS-574 | / | May 17, 2019 | May 16, 2020 |
| Signal Generator | Aglient | N5182B | MY53050647 | Sep. 20 2018 | Sep. 19. 2019 |
| Signal Generator | Aglient | E8257D | MY45141029 | Sep. 20 2018 | Sep. 19. 2019 |



6. REQUIREMENT TO RECEIVER

6.1 ETSI EN 303 413 SUB. 4.2.1: ADJACENT CHANNEL BAND SELECTIVITY

TEST SETUP:



Specifications:

The C/N_0 metric reported by the GUE for all GNSS and GNSS signals given in table 4-1 and supported by the GUE shall not degrade by more than the value given in equation 4-1 when an adjacent frequency signal is applied.

Equation 4-1: Maximum degradation in C/N_0

$$\Delta C/N_0 \leq 1 \text{ dB}$$

Table 4-1: GNSS, GNSS signals and RNSS frequency bands

| GNSS | GNSS Signal Designations | RNSS Frequency Band (MHz) |
|---------|--------------------------|---------------------------|
| BDS | B1I | 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 | 1 559 to 1 610 |
| | L2 | 1 215 to 1 300 |
| | L5 | 1 164 to 1 215 |
| SBAS | L1 | 1 559 to 1 610 |
| | L5 | 1 164 to 1 215 |

TEST PROCEDURE:

1. Configure the GNSS signal generator to simulate those GNSS and GNSS signals from table 4-1 declared as supported by the GUE, with power levels and other details as specified in clause B.2..
2. With the adjacent frequency signal switched off, the EUT shall be given sufficient time to acquire all simulated satellites from the declared GNSS system(s).
3. Record the baseline C/N_0 value(s) reported by the EUT. Sufficient filtering shall be used to obtain a stable value. C/N_0 may be averaged across all the satellites in view for each GNSS constellation. However, C/N_0 shall not be averaged across satellite signals in different GNSS constellations. For a multi-GNSS EUT, there shall be a separate C/N_0 value recorded for each GNSS constellation and each GNSS signal supported.
4. The adjacent frequency signal shall be switched on, and the EUT's C/N_0 value(s) recorded as in step 3) to measure the degradation with respect to the baseline value(s) recorded in step 3).

5. Test point Pass/Fail Criteria: If the C/N_0 degradation from step 5) does not exceed the value in equation 4-1, then this test point is set to "pass". If the C/N_0 degradation exceeds the value in equation 4-1, then this test point is set to "fail." For a multi-GNSS and multi-signal EUT, there shall be a separate pass/fail determination for each GNSS and for each GNSS signal supported. If the C/N_0 degradation exceeds the value in equation 4-1 for any supported GNSS or supported GNSS signal, then this test point is set to "fail".

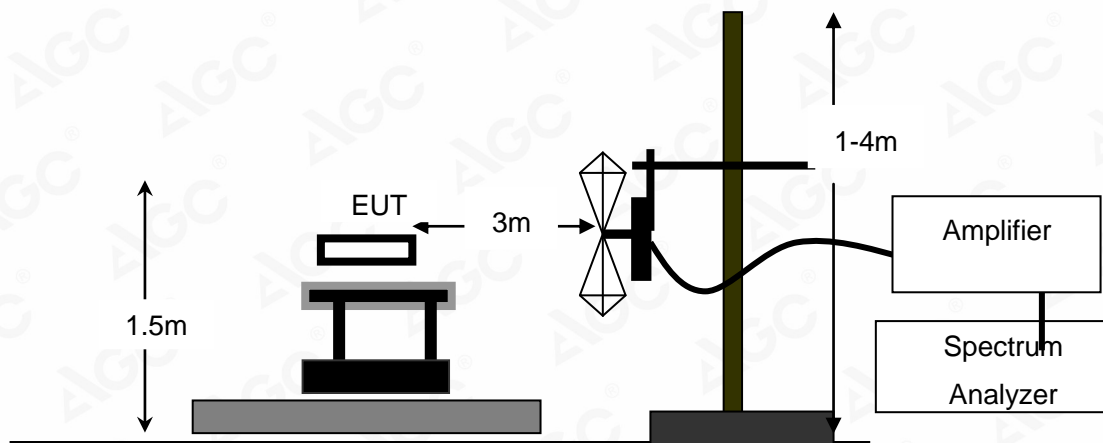
TEST RESULT:

| Test point centre frequency (MHz) | Adjacent frequency signal power level (dBm) | No interfering signal | With interfering signal | Limit | Measurement value (Max Hold) (dB) | Result |
|-----------------------------------|---|-----------------------|-------------------------|----------------------|-----------------------------------|--------|
| 1 554MHz | -105 dBm | 41.7 | 41.2 | Decrease \leq 1 dB | 0.5 | Pass |
| 1 615MHz | -105 dBm | 41.7 | 41.1 | Decrease \leq 1 dB | 0.6 | Pass |
| 1 548MHz | -95 dBm | 41.7 | 41.4 | Decrease \leq 1 dB | 0.3 | Pass |
| 1 627MHz | -85 dBm | 41.7 | 41.3 | Decrease \leq 1 dB | 0.4 | Pass |
| 1 524MHz | -65 dBm | 41.7 | 41.2 | Decrease \leq 1 dB | 0.5 | Pass |

If the EUT passes the C/N_0 degradation test for all test points for all GNSS constellations and all GNSS signals declared as supported from table 4-1, the EUT shall be deemed to "pass".

6.2 ETSI EN 303 413 SUB. 4.2.2: SPURIOUS EMISSIONS TEST SETUP:

Reference: ETSI EN 300 328 V2.2.0.Subclasses Annex B



TEST LIMITS:

The power of any spurious emission shall not exceed 2 nW in the range 25 MHz to 1 GHz and shall not exceed 20 nW on frequencies above 1 GHz.

THE PROCEDURE:

EUT was placed on a 1.5m outdoor wooden table. The search antenna is placed at 3m distances from the EUT and search antenna height is from 1-4m. With the transmitter operating at continuously mode, the turntable was slowly rotated to locate the direction of maximum emission. Once maximum direction is determined, the search antenna was raised and lowered in both vertical and horizontal polarizations.

The EUT was removed from the turntable and replaced with a linearly polarized antenna connected to a calibrated RF signal generator. The RF generator was set to a measured emission frequency and the search antenna was raised and lowered to produce a maximum received reading. The generator output was increased to match the radiated emission reading measured previously, and the result expressed in dB EIRP or ERP, correcting for substitution antenna gain at each frequency.

TEST RESULTS:

| Frequency. (MHz) | Antenna Polarity | Reading (dBm) | Total Factor (dB) | Corrected Power (dBm) | Limit (dBm) |
|---------------------|---------------------|------------------|----------------------|--------------------------|----------------|
| 239.135 | H | -82.07 | 12.42 | -69.65 | -57 |
| 1458.206 | H | -83.43 | 12.57 | -70.86 | -47 |
| 3863.007 | H | -76.87 | 11.82 | -65.05 | -47 |
| 358.037 | V | -83.47 | 12.63 | -70.84 | -57 |
| 1817.392 | V | -75.98 | 12.24 | -63.74 | -47 |
| 3152.986 | V | -70.09 | 12.42 | -57.67 | -47 |
| Other (25-1000) | ~ | ~ | ~ | ~ | -57 |
| Other (1G-26G) | ~ | ~ | ~ | ~ | -47 |

Note:

“~” in the table above means that the emissions are too small to be measured and are at least 20 dB below the limit. The frequency range below 1GHz is 30MHz to 1GHz and the frequency range above 1GHz is 1GHz to 26GHz.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP
RADIATED SPURIOUS EMISSION TEST SETUP



RADIATED SPURIOUS EMISSION-ABOVE 1G TEST SETUP



----END OF REPORT----