RF Test Report

Report No.: AGC00552190801EE06

PRODUCT DESIGNATION	:	Smart Phone
BRAND NAME	:	CUBOT
MODEL NAME	:	R15 PRO
APPLICANT	:	Shenzhen Huafurui Technology Co., Ltd.
DATE OF ISSUE	:	Aug. 22, 2019
STANDARD(S)	:	ETSI EN 303 413 V1.1.1 2017-06
REPORT VERSION	:	V1.0

*A*ttestation of *G*lobal *C*ompliance (Shenzhen) Co., Ltd

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 22, 2019	Valid	Initial release

TABLE OF CONTENTS

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	R15 PRO
Date of test	Aug. 06, 2019~Aug. 22, 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)	Aug. 22, 2019
Reviewed By	Max Zhang (Reviewer)	Aug. 22, 2019
Approved By	Forrest Lei Authorized Officer	Aug. 22, 2019

2. GENERAL INFORMATION

Details of technical specification refer to the description in follows:

Test Mode	GPS Mode(Only receive)
Hardware Version	V625_MB_V2.0
Software Version	CUBOT_R15_PRO_9031C-1_V01_20190730
Receiver Frequency	(GPS)1575.42MHz
Modulation Type	BPSK
Antenna Gain	1.0dBi
Power Supply	DC 3.8V

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	±1*10^{-7}
Radiated emission of receiver, valid to 26.5GHz	±6dB
Radiated emission of receiver, valid between 26.5GHz and 66GHz	±8dB
Temperature	±1℃
Humidity	±5%
Voltage (DC)	±1%
Voltage (AC, < 10kHz)	±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

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

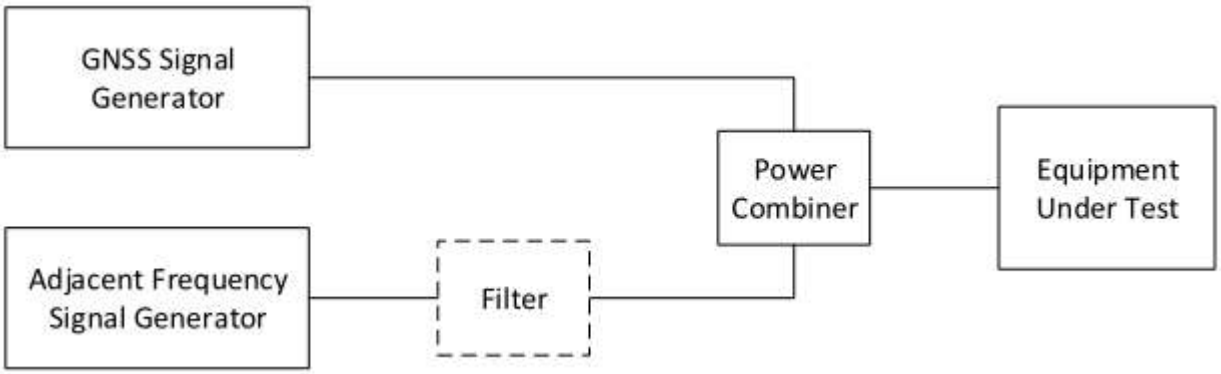
LIST OF EQUIPMENTS USED

Description	Manufacturer	Model No.	S/N	Calibration Date	Calibration Due.
EMI TEST RECEIVER	R&S	ESCI	100694	June 12, 2019	June 11, 2020
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	D69250	Mar.01, 2018	Feb.28, 2020
Amplifier	Schwarzbeck	BBV 9718	9718-162	June 12, 2019	June 11, 2020
Double-Ridged Waveguide Horn Antenna	ETS LINDGREN	3117	00034609	Mar.01,2018	Feb.28, 2020
Climate Chamber	ESPEC	EL-10KA	/	June 25, 2019	June 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

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

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".

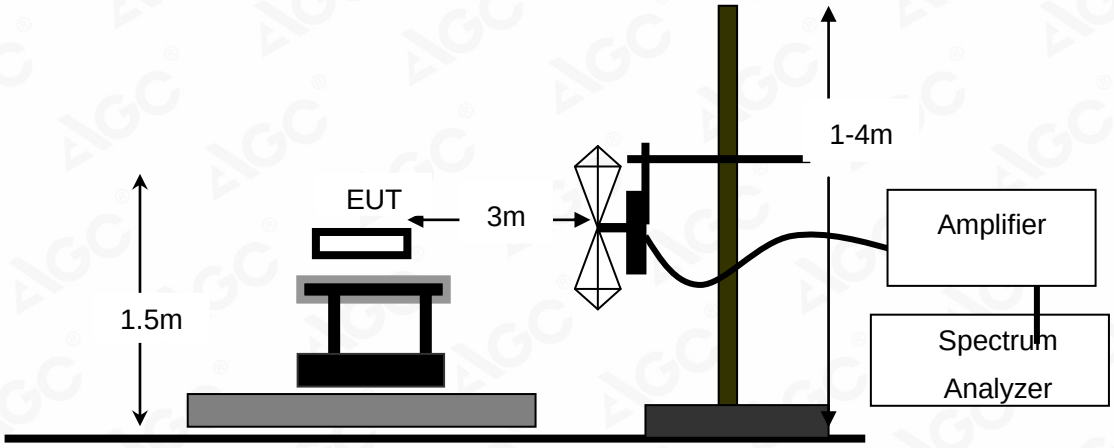
TEST RESULT:

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	39.58	39.39	Decrease ≤ 1 dB	0.19	Pass
1 615MHz	-105 dBm	39.58	39.43	Decrease ≤ 1 dB	0.15	Pass
1 548MHz	-95 dBm	39.58	39.54	Decrease ≤ 1 dB	0.04	Pass
1 627MHz	-85 dBm	39.58	39.46	Decrease ≤ 1 dB	0.12	Pass
1 524MHz	-65 dBm	39.58	39.5	Decrease ≤ 1 dB	0.08	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:



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	-83.65	12.59	-71.06	-57
1458.206	H	-82.16	12.04	-70.12	-47
3863.007	H	-76.32	11.84	-64.48	-47
358.037	V	-81.99	12.56	-69.43	-57
1817.392	V	-76.99	11.55	-65.44	-47
3152.986	V	-69.98	11.72	-58.26	-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----