



TEST REPORT

No. I19D00005-SAR01

For

Client : Bright Box Europe SA

Production : ZCC RB4

Model Name : RB 4.0.0.LTECM1

FCC ID: 2AR3JRB4

Hardware Version: 4

Software Version: 4.4.10

Issued date: 2019-03-19

NOTE

1. The test results in this test report relate only to the devices specified in this report.
2. This report shall not be reproduced except in full without the written approval of East China Institute of Telecommunications.
3. For the test results, the uncertainty of measurement is not taken into account when judging the compliance with specification, and the results of measurement or the average value of measurement results are taken as the criterion of the compliance with specification directly.

Test Laboratory:

East China Institute of Telecommunications

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Revision Version

Report Number	Revision	Date	Memo
I19D00005-SAR01	00	2019-03-13	Initial creation of test report
I19D00005-SAR01	01	2019-03-19	Second creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
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FCC Registration NO.:	489729

1.2. Project Data

Project Leader:	Xu Yuting
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1.3. Signature



Yan Hang
(Prepared this test report)



Fu Erliang
(Reviewed this test report)



Zheng Zhongbin
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Bright Box Europe SA
Address /Post: Voie du Chariot, 3, 1003, Lausanne, Vaud, Switzerland
Telephone: 00852 9634 8252

2.2. Manufacturer Information

Company Name: Tradezone HK Limited
Address /Post: F,3/F,BLK6,VILLA CONCERTO,SYMPHONYBAY,530 SAI SHA
RD,SAI KUNG,N.T.HONG KONG
Telephone: 00852 9634 8252

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

EUT Description	ZCC RB4
Model name	RB 4.0.0.LTECM1
GSM Frequency Band	N/A
WCDMA Frequency Band	N/A
CAT M1 Frequency Band	Band 2/4/12/13
Wifi Frequency Band	802.11 b/g/n
BT Frequency Band	BT4.2
Antenna Type	Internal Antenna

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version:
N01	N/A	4	4.4.10

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
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*AE ID: is used to identify the test sample in the lab internally.

4. Reference Documents For FCC

4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

FCC CFR 47, Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

Section 1.1310 Radiofrequency radiation exposure limits

4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

Limits for Occupational / Controlled Exposure

Frequency Range [MHz]	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density (S) [mW/cm ²]	Averaging Times E ² , H ² or S [minutes]
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6

Limits for General Population / Uncontrolled Exposure

Frequency Range [MHz]	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density (S) [mW/cm ²]	Averaging Times E ² , H ² or S [minutes]
0.3 – 1.34	614	1.63	(100)*	30
1.34 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1.0	30

Note: f=frequency in MHz; *Plane-wave equivalent power density

For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.

5. Test Results

5.1. RF Power Output

Frequency range	Max power(dBm)	Highest Frame-Averaged Output Power (dBm)	Antenna Gain (dBi)
CAT M1 Band 2	25.7	25.7	3.5
CAT M1 Band 4	25.7	25.7	3.5
CAT M1 Band 12	25.7	25.7	3.5
CAT M1 Band 13	25.7	25.7	3.5
WiFi 802.11b	17	17	2.5
WiFi 802.11g	13	13	2.5
WiFi 802.11n20	13	13	2.5
WiFi 802.11n40	11	11	2.5
Bluetooth	5	5	2.5

5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$\text{Given } S = \frac{P \times G}{4\pi d^2} \quad \text{Equation 1}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

5.3. Power density calculations

Band	Highest Output Power (dBm)	Antenna Gain (dBi)	Numeric antenna gain	Power density at 20cm	Limit mW/cm ²	Power density/ Limit
CAT M1 Band 2	25.7	3.5	2.239	0.165	1.0	0.165
CAT M1 Band 4	25.7	3.5	2.239	0.165	1.0	0.165
CAT M1 Band 12	25.7	3.5	2.239	0.165	0.477	0.346
CAT M1 Band 13	25.7	3.5	2.239	0.165	0.525	0.314
WiFi 802.11b	17	2.5	1.778	0.018	1.0	0.018
WiFi 802.11g	13	2.5	1.778	0.007	1.0	0.007
WiFi 802.11n20	13	2.5	1.778	0.007	1.0	0.007
WiFi 802.11n40	11	2.5	1.778	0.004	1.0	0.004
Bluetooth	5	2.5	1.778	0.001	1.0	0.001

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band

5.4. Calculations

Power density/ Limit			Σ (Power density/ Limit)
1	2	3	
WWAN	WiFi	Bluetooth	1+2+3
0.346	0.018	0.001	0.365

The product is under the MPE limits. All is pass.

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