

RF EVALUATION TEST REPORT

Applicant.....:Shenzhen Z.S.F Technology Co., Ltd

Address.....:Room 101-301, Building HC, Room 101-301, Building HD, beibu Industrial Park,
. Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen, China

Manufacturer.....:Shenzhen Z.S.F Technology Co., Ltd

Address.....:Room 101-301, Building HC, Room 101-301, Building HD, beibu Industrial Park,
. Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen, China

Factory.....:Shenzhen Z.S.F Technology Co., Ltd

Address.....:Room 101-301, Building HC, Room 101-301, Building HD, beibu Industrial Park,
. Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen, China

Product Name.....:Electric Scooter

Brand Name.....:N/A

Model No.:5302, A12 PRO (For model difference refer to section 2.)

FCC ID.....:2AZ3Z-A1200

Measurement Standard..... :47 CFR PART 2, Section 2.1091

Receipt Date of Samples.... :March 23, 2023

Date of Tested..... :March 23, 2023 to May 11, 2023

Date of Report..... :July 11, 2023

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.



Prepared by

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Approved by

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Revision History

Report Number	Description	Issued Date
NTC2303580F01	Initial Issue	2023-07-11

1. General Description of EUT

Product Information	
Product name:	Electric Scooter
Main Model Name:	5302
Additional Model Name:	A12 PRO
Model Difference:	Both models have the same circuit schematic, construction, PCB Layout and critical components. The difference is model number only due to trading purpose.
S/N:	2303-1549
Brand Name:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Rating:	DC 58.8V 4.0A form the adapter DC 52V from internal battery
Classification:	Class B
Typical arrangement:	Floor-standing
I/O Port:	Refer to the user manual
Accessories Information	
Adapter:	Manufacturer: Shenzhen Fuyuandian Power Co., Ltd. Model: FY2475884000 Input: AC 100-240V, 50/60Hz, 3.5A Output: DC 58.8V 4.0A
Cable:	DC line of adapter: 1.2m, unshielded, detachable AC Mains: 1.1m, unshielded, detachable
Other:	N/A
Additional information	
Note:	According to these model differences, all tests were performed on model 5302 according to the manufacturer requirement.
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Bluetooth Version:	V5.0
Frequency Range:	2402-2480MHz
Modulation Type:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Number of Channel:	79 (refer to following channel list for details)
Channel Space:	1MHz
Antenna Type:	PCB Antenna
Antenna Gain:	-0.58 dBi

Technical Specification (BLE)	
Bluetooth Version:	V5.0
Frequency Range:	2402-2480MHz
Modulation Type:	GFSK
Number of Channel:	40 (refer to following channel list for details)
Channel Space:	2MHz
Antenna Type:	PCB Antenna
Antenna Gain:	-0.58 dBi
RF PHY Support:	1Mbps

Note:

This EUT integrated a certified module which named as EG915U-LA, FCC ID: XMR202111EG915ULA. According to the manufacturer, all related test data refer to the module test reports 2203RSU026-U1 V01 & 2204RSU026-U2 V01 which issued by MRT Technology (Suzhou) Co., Ltd.

2. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	<p>The Laboratory has been assessed and proved to be in compliance with CNAS/CL01</p> <p>Listed by CNAS, August 13, 2018</p> <p>The Certificate Registration Number is L5795.</p> <p>The Certificate is valid until August 13, 2024</p> <p>The Laboratory has been assessed and proved to be in compliance with ISO17025</p> <p>Listed by A2LA, November 01, 2017</p> <p>The Certificate Registration Number is 4429.01</p> <p>Listed by FCC, November 06, 2017</p> <p>Test Firm Registration Number: 907417</p> <p>Listed by Industry Canada, June 08, 2017</p> <p>The Certificate Registration Number. Is 46405-9743A</p>
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

3. Applicable Standards and References

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Test Standards:

47 CFR Part 1, 1.1307

47 CFR Part 2, 2.1091

KDB 447498 D04 v01

4. Maximum Permissible Exposure Limit

According to 47 CFR Part 1, 1.1307, for single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if: 47 CFR Part 1, 1.1307

(A) The available maximum time- averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time- averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where,

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

And,

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the minimum separation distance (cm) in any direction from any part of the device antenna(s) or radiating structure(s) to the body of the device user.

For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time- averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).

(B) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Where,

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th} , including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i .

ERP_j = the ERP of fixed, mobile, or portable RF source j .

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j , at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluated_k= the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k= either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from §1.1310 of this chapter.

5. RF Exposure Evaluation Results

Single RF Source								
Mode	Frequency (MHz)	Max. Conducted Power (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. ERP (dBm)	Max. ERP (mW)	Separation Distance (cm)	Part 1.1307 Option (B) P _{th} (mW)
BDR	2402	-3.29	-0.58	-3.870	-6.02	0.25	20	3060
EDR	2402	-3.26	-0.58	-3.840	-5.99	0.25	20	3060
BLE	2402	-3.35	-0.58	-3.930	-6.08	0.25	20	3060

Mode	Frequency (MHz)	Max. Conducted Power (dBm)	Antenna Gain (dBi)	Max. EIRP (dBm)	Max. ERP (dBm)	Max. ERP (mW)	Separation Distance (cm)	Part 1.1307 Option (B) P _{th} (mW)
GSM 850	824-946	27	6	33	30.85	1216.19	20	1680.96
PCS 1900	1850-1910	23	10	33	30.85	1216.19	20	3060
LTE B2	1850-1910	25.7	6.3	32	29.85	966.05	20	3060
LTE B4	1710-1755	25.7	6.3	32	29.85	966.05	20	3060
LTE B5	824-849	25.7	6.3	32	29.85	966.05	20	1680.96
LTE B7	2500-2570	25.7	6.3	32	29.85	966.05	20	3060
LTE B66	1710-1780	25.7	6.3	32	29.85	966.05	20	3060

RF exposure evaluation for simultaneity transmitting condition:

Maximum Bluetooth EIRP Ratio	Maximum WWAN EIRP Ratio	Max. Total EIRP Ratio	Limit
8.17e-5	0.7235	0.7235817	1

Conclusion:

According to 47 CFR §1.1307 (b)(3)(i)(B), the RF exposure analysis concludes that the product is compliant with the FCC RF exposure requirements in mobile exposure condition.

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