



EMC TEST REPORT

For

Dongguan onesport Technology Co., Ltd.

Electric Bicycle

Model No. : BK5、BK1、BK1S、BK1M、BK2、BK2S、BK2M、BK3、BK3S、
BK3M、BK5S、BK5M、BK6、BK6S、BK6M、BK7、BK7S、
BK7M、BK8、BK8S、BK8M、BK9、BK9S、BK9M、BK10、
BK11、BK12、BK13、BK15、BK16、BK17、BK18、BK19、
BK20

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Report No. : STL2022S0524121C-Y1

Date of Test : May 17-24, 2022

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TEST REPORT DECLARATION

Applicant : Dongguan onesport Technology Co., Ltd.
 Manufacturer : Dongguan onesport Technology Co., Ltd.
 EUT Description : Electric Bicycle

(A) Model No. : BK5、BK1、BK1S、BK1M、BK2、BK2S、BK2M、BK3、BK3S、BK3M、
 BK5S、BK5M、BK6、BK6S、BK6M、BK7、BK7S、BK7M、BK8、BK8S、
 BK8M、BK9、BK9S、BK9M、BK10、BK11、BK12、BK13、BK15、BK16、
 BK17、BK18、BK19、BK20
 (B) Serial No. : N/A
 (C) Power Supply : DC 36V

Test Procedure Used:

EMI: BS EN 55014-1:2017+A11:2020
EMS: BS EN 55014-2:2015 (BS EN 61000-4-2: 2009)

The device described above has been tested by **Shenzhen STL Testing Technology Co., Ltd** to determine the maximum emission levels emanating from the device, the severe levels that the device can endure and EUT'S performance criterion. The test results are contained in this test report. **Shenzhen STL Testing Technology Co., Ltd** is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the EUT is technically compliant with the BS EN55014-1 and BS EN55014-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of **Shenzhen STL Testing Technology Co., Ltd.**

Date of Test: May 17-24, 2022

Prepared by: Eris
 Project Engineer

Reviewed by: Jawis
 Project Manager

Approved by: Jawis
 Technical Director





1. GENERAL INFORMATION

1.1. Description of Device (EUT)

- Description : Electric Bicycle
- Model Number : BK5、BK1、BK1S、BK1M、BK2、BK2S、BK2M、BK3、BK3S、BK3M、BK5S、BK5M、BK6、BK6S、BK6M、BK7、BK7S、BK7M、BK8、BK8S、BK8M、BK9、BK9S、BK9M、BK10、BK11、BK12、BK13、BK15、BK16、BK17、BK18、BK19、BK20
- Applicant : Dongguan onesport Technology Co., Ltd.
Address : No. 6, East Second Street, Gedi Xinnan Road, Nancheng Street, Dongguan City, Guangdong Province
- Manufacturer : Dongguan onesport Technology Co., Ltd.
Address : No. 6, East Second Street, Gedi Xinnan Road, Nancheng Street, Dongguan City, Guangdong Province
- Date of Test : May 17-24, 2022

1.2. Test Summary

Test Items	Standards	Status
Power line conducted emission test	BS EN 55014-1:2017+A11:2020	N/A
Radiated emission test	BS EN 55014-1:2017+A11:2020	Complied
Harmonic Current Emission test	BS EN IEC 61000-3-2:2019	N/A
Voltage fluctuations & flicker test	BS EN 61000-3-3:2013+A1:2019	N/A
Electrostatic discharge Test	BS EN 61000-4-2: 2009	Complied
RF Field strength susceptibility Test	BS EN 61000-4-3: 2006+A1:2008+A2:2010	N/A
Electrical fast transient/Burst Test	BS EN 61000-4-4: 2012	N/A
Surge Test	BS EN 61000-4-5:2014+A1:2017	N/A
Injected currents susceptibility test	BS EN 61000-4-6:2014+AC:2015	N/A
Magnetic field immunity test	BS EN 61000-4-8: 2010	N/A
Voltage dips and interruptions test	BS EN 61000-4-11:2004+A1:2017	N/A

1.3. Test Facility

Test Firm	: Shenzhen STL Testing Technology Co., Ltd.
Address	: Unit C, 4F, Building A, ShengHengji Industrial Park, No. 137 FuYuan 1 Road, Heping Community, Fuyong Street, Baoan District, Shenzhen, China
Tel	: (86) 755-82593673
Fax	: (86) 755-82593673

1.4. Uncertainty

Radiated Emission Uncertainty = $\pm 4.26\text{dB}$

2. TEST INSTRUMENT USED

No.	Equipment	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
1	ESD TESTER	HAEFELY	PESD1610	H401552	2021.09.16	2022.09.15
2	MAGNETIC FIELD TESTER	HAEFELY	MAG100	150577	2021.09.16	2022.09.15
3	5kVA AC POWER SOURCE	CALIFORNIA INSTRUMENTS	5001ix-400	55692	2021.09.16	2022.09.15
4	HARMONICS/FLICKER TEST ANALYZER	CALIFORNIA INSTRUMENTS	PACS-1	72254	2021.09.16	2022.09.15
5	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200283933	2021.09.16	2022.09.15
6	CONICAL HOUSING	ATC	N/A	N/A	N/A	N/A
7	VOLTAGE PROBE	SCHWARZBECK	TK9416	N/A	2021.09.16	2022.09.15
8	RF CURRENT PROBE	ROHDE& SCHWARZ	EZ-17	100048	2021.09.16	2022.09.15
9	BILOG ANTENNA	SCHWARZBECK	VULB9163	194	2021.09.16	2022.09.15
10	SPECTRUM ANALYZER	ANRITSU	MS2651B	N/A	2021.09.16	2022.09.15
11	PRE-AMPLIFIER	AGILENT	8447D	294A10619	2021.09.16	2022.09.15
12	RF COAXIAL CABLE(844 CHAMBER)	SCHWARZBECK	N-5m	NO.1	2021.09.16	2022.09.15
13	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS004	2021.09.16	2022.09.15
14	1# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
15	2# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
16	3m Semi-ANECHOIC CHAMBER	CHANGZHOU ZHONGYU	844	N/A	N/A	N/A
17	ANTENNA/TURNTABLE CONTROLLER	INNCO	CO2000	CO2000/077/7301203/L	N/A	N/A
18	101 LCR METER	YANGZHI	YD2810B	20101170	2021.09.16	2022.09.15
19	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.6	2021.09.16	2022.09.15
20	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.7	2021.09.16	2022.09.15
21	AUDIO GENERATOR	GW	GAG-809	EG835424	N/A	N/A
22	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS002	2021.09.16	2022.09.15

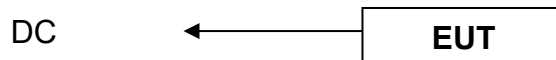


No.	Equipment	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
23	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	PRO-BASE	0403271	2021.09.16	2022.09.15
24	CAPACITIVE CLAMP (EFT)	THERMO	PRO-CCL	0403272	2021.09.16	2022.09.15
25	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	2021.09.16	2022.09.15
26	L.I.S.N.	ROHDE& SCHWARZ	ESH3-Z5	100305	2021.09.16	2022.09.15
27	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	100396/003	2021.09.16	2022.09.15
28	SIGNAL GENERATOR	ROHDE& SCHWARZ	SML01	101161	2021.09.16	2022.09.15
29	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	101526/003	2021.09.16	2022.09.15
30	SPECTRUM ANALYZER	AGILENT	E7405A	MY45115511	2021.09.16	2022.09.15
31	L.I.S.N.	SCHWARZBECK	NSLK8126	8126431	2021.09.16	2022.09.15
32	PULSE LIMITER (FOR ESPI3)	ROHDE& SCHWARZ	ESH3-Z2	100815	2021.09.16	2022.09.15
33	PRE-AMPLIFIER	ROHDE& SCHWARZ	CBLU1183540-0 1	3791	2021.09.16	2022.09.15
34	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200506474	2021.09.16	2022.09.15
35	BILOG ANTENNA	SCHWARZBECK	VULB9163	9163-323	2021.09.16	2022.09.15
36	HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-655	2021.09.16	2022.09.15
37	HORN ANTENNA	SCHWARZBECK	BBHA9170	9170-359	N/A	N/A
38	LOOP ANTENNA	SCHWARZBECK	FMZB1516	1516131	2021.09.16	2022.09.15
39	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	2021.09.16	2022.09.15
40	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	2021.09.16	2022.09.15
41	Transformer	EM TEST	V4780S2	0109-44	N/A	N/A
42	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	2021.09.16	2022.09.15
43	CDN	FRANKONIA	CDN-M2/3	A3027020	2021.09.16	2022.09.15
44	EM Injection Clamp	FCC	F-2031-23mm	091824	2021.09.16	2022.09.15
45	LISN	AFJ	LS16C	16010946249	2021.09.16	2022.09.15
46	CLICK METER	AFJ	CL55C	55040947164	2021.09.16	2022.09.15

3. RADIATED EMISSION TEST

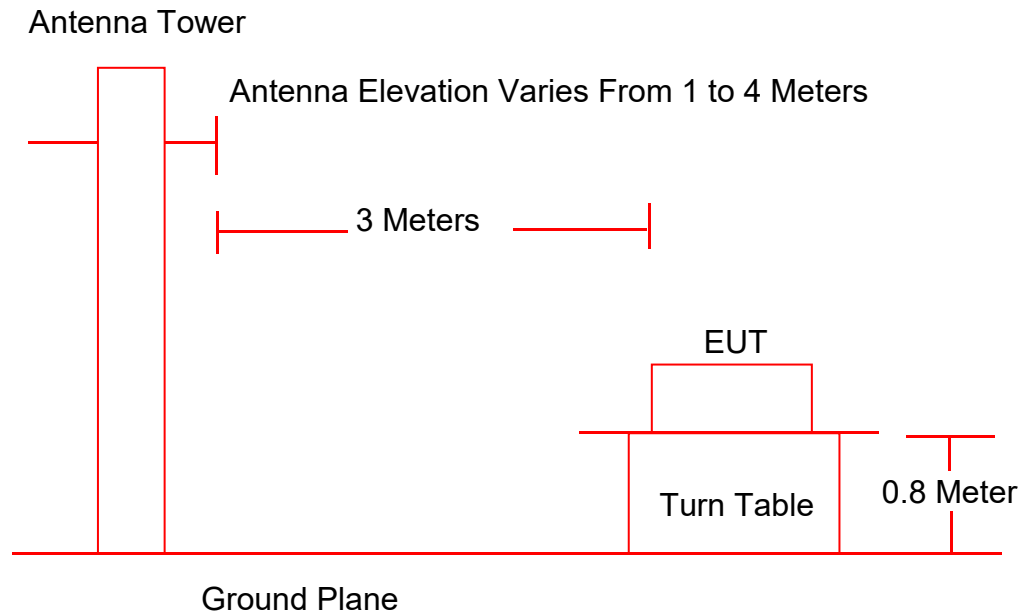
3.1. Block Diagram of Test Setup

3.1.1. Block Diagram of EUT Test Setup



(EUT:Electric Bicycle)

3.1.2. Anechoic Chamber Setup Diagram



(EUT:Electric Bicycle)

3.2. Test Standard

BS EN 55014-1:2017+A11:2020

3.3.Radiated Emission Limit

Frequency MHz	Distance (Meter/s)	Field Strengths Limits dB(μ V)/m
30 ~ 230	3	40.0
230 ~ 1000	3	47.0

Remark: (1) Emission level (dB (μ V)/m) = 20 log Emission level (μ V/m)

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

3.4.EUT Configuration on Test

The BS EN 55014-1 regulations test method must be used to find the maximum emission during radiated emission test.

3.4.1.Electric Bicycle (EUT)

(A) Model No. : BK5

(B) Serial No. : N/A

(C) Manufacturer : Dongguan onesport Technology Co., Ltd.

3.5.Operating Condition of EUT

3.5.1.Setup the EUT and simulators as shown in Section 3.1.

3.5.2.Turn on the power of all equipments.

3.5.3.Let the EUT work in test mode and test it.

3.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to BS EN55014-1 on radiated emission test.

The bandwidth setting on the field strength meter (R & S Test Receiver ESPI) is set at 120 KHz.

The frequency range from 30 MHz to 1000 MHz is investigated. The test data are listed in the Section 3.7 and the scanning waveform are attached within Appendix I.

3.7. Radiated Emission Test Result

PASS.

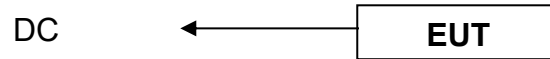
The frequency spectrum from 30 MHz to 1000 MHz is investigated.

Detailed information, please see the appendix (I) file.

4. ELECTROSTATIC DISCHARGE TEST

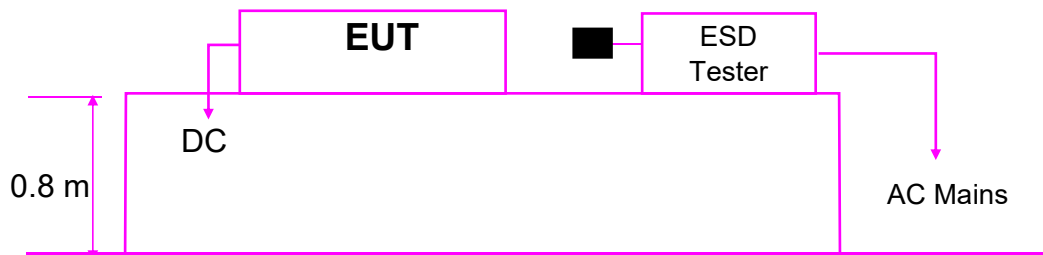
4.1. Block Diagram of Test Setup

4.1.1. Block Diagram of EUT Test Setup



(EUT: Electric Bicycle)

4.1.2. ESD Test Setup



Remark: ■ is Discharge Electrode

(EUT: Electric Bicycle)

4.2. Test Standard

BS EN 55014-2:2015 (BS EN 61000-4-2: 2009)

4.3. Severity Levels and Performance Criterion

Severity Level 3 for Air Discharge at 8KV

Severity Level 2 for Contact Discharge at 4KV

Severity Level:

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: **A**

4.4.EUT Configuration on Test

The following equipments are installed on electrostatic discharge test to meet BS EN55014-1 requirement and operating in a manner.

4.5.Operating Condition of EUT

4.5.1.Setup the EUT as shown in Section 4.1.

4.5.2.Turning on the power of all equipments .

4.5.3.Let the EUT work in test mode and test it.

4.6.Test Procedure

4.6.1.Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

4.6.2.Contact Discharge:

All the procedure shall be same as Section 4.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

4.6.3.Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode position is vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

4.6.4.Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

4.7.Test Results

PASS.

Detailed information, Please refer to the following page.



Electrostatic Discharge Test Results

EUT	: Electric Bicycle	Temperature	: 22°C
M/N	: BK5	Humidity	: 55%
Power Supply	: DC 36V	Test Mode	: ON
Air Discharge: ±8KV For each point positive 10 times and negative 10 times discharge. Contact Discharge: ±4KV			
Location	Kind A-Air Discharge C-Contact Discharge	Result	
Slot	A	PASS	
HCP	C	PASS	
VCP	C	PASS	
Remark: Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).	Test Equipment: See Clause 2.		



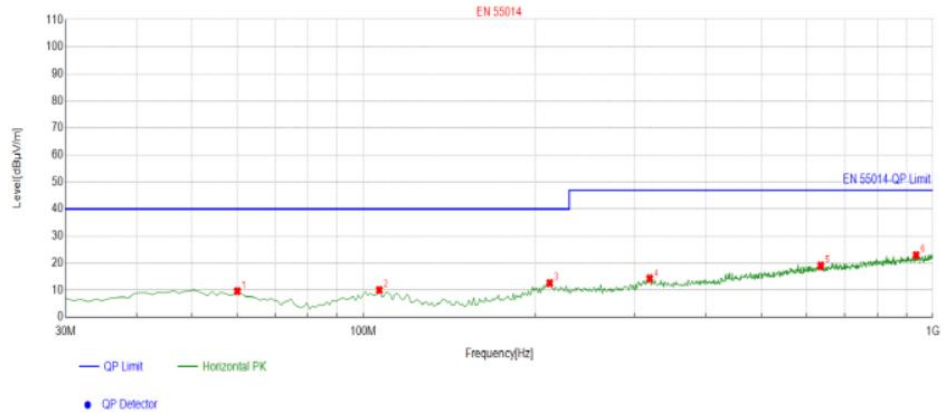
APPENDIX I

Radiated Emission Test Data

Radiated Emission

Engineer : Andy	
EUT :Electric Bicycle	Time : 2022/04/29
Limit : BS EN 55014-1	Comment : 22°C/50 %
MN: BK5	Note : Hor

Test Graph



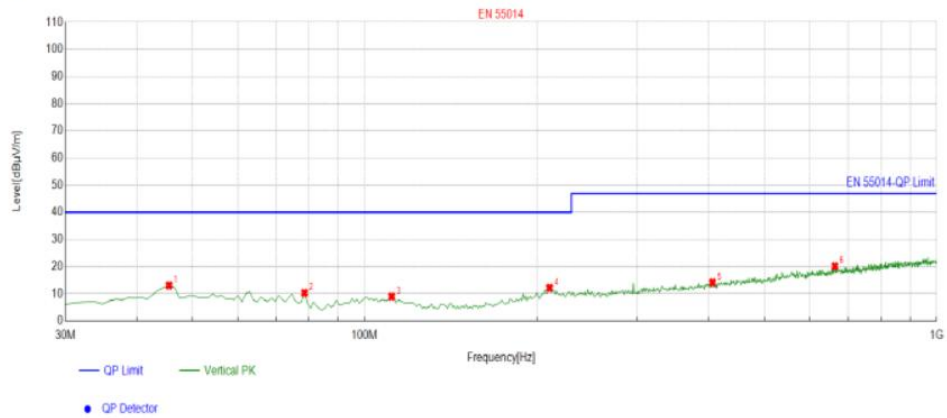
Suspected List

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	60.1001	-15.19	24.71	9.52	40.00	30.48	100	222	Horizontal
2	106.7067	-15.42	25.40	9.98	40.00	30.02	100	347	Horizontal
3	212.5425	-14.74	27.29	12.55	40.00	27.45	100	74	Horizontal
4	318.3784	-12.18	26.42	14.24	47.00	32.76	100	19	Horizontal
5	635.8859	-5.58	24.55	18.97	47.00	28.03	100	222	Horizontal
6	934.9449	-1.69	24.62	22.93	47.00	24.07	100	79	Horizontal

Radiated Emission

Engineer : Andy	
EUT :Electric Bicycle	Time : 2022/04/29
Limit : BS EN 55014-1	Comment : 22°C/55%
MN: BK5	Note : Ver

Test Graph



Suspected List

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.5355	-13.65	26.71	13.06	40.00	26.94	100	1	Vertical
2	78.5485	-19.21	29.48	10.27	40.00	29.73	100	46	Vertical
3	111.5616	-15.69	24.61	8.92	40.00	31.08	100	46	Vertical
4	210.6006	-14.79	26.90	12.11	40.00	27.89	100	313	Vertical
5	405.7658	-10.30	24.46	14.16	47.00	32.84	100	133	Vertical
6	664.0440	-4.94	25.04	20.10	47.00	26.90	100	142	Vertical



APPENDIX II

Photographs of the EUT

FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8



End of Report