CE/EMC TEST REPORT

For

e-4motion B.V.

Product Name:	Electric bicycle
Trademark:	N/A
Model :	maxi plus
Prepared For : Address：	e-4motion B.V. Omloop 36, 2771 NL Boskoop
Prepared By : Address：	Shenzhen BCTC Technology Co., Ltd. NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong P. R. China
Test Date:	Mar. 21 - Mar. 28, 2017
Date of Report :	Mar. 28, 2017
Report No.:	BCTC-LH161212930E

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TEST REPORT DECLARATION

Applicant	:	e-4motion B.V.
	:	Omloop 36, 2771 NL Boskoop
Manufacturer	:	Ningbo Lvkang Vehicle Co., Ltd.
	:	NO.19, Shaozhu Road, Chengdong Development Zone, Yuyao, Zhejiang, China.
EUT	:	Electric bicycle
Model No	:	maxi plus
Rating(s)	:	Main unit: DC 42V⎓ 2A External adaptor: Input: AC100-240V~ 47-63Hz 1.8A MAX Output: DC 42V 2A DC 36V From battery

Test Procedure Used:
EN 15194: 2009+A1:2011

The device described above is tested by Shenzhen BCTC Technology Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and EUT is performance criterion. The test results are contained in this test report. BCTC Testing Service 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 EN15194.
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen BCTC Technology Co., Ltd.

Prepared by(Engineer):	Snowy Yang	
Reviewer(Supervisor):	Jade Yang	
Approved(Manager):	Carson Zhang	

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen BCTC Technology Co., Ltd.

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Electric bicycle
Model Number	:	maxi plus
Applicant	:	e-4motion B.V.
Address	:	Omloop 36, 2771 NL Boskoop
Manufacturer	:	Ningbo Lvkang Vehicle Co., Ltd.
Address	:	NO.19, Shaozhu Road, Chengdong Development Zone, Yuyao, Zhejiang, China.
Date of report	:	Mar. 28, 2017
Date of Test	:	Mar. 21 - Mar. 28, 2017

1.2 Test Facility

Site Description

Name of Firm	:	Shenzhen BCTC Technology Co., Ltd.
Site Location	:	NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong P. R. China

1.3 Tested System Details

Host Personal Computer	:	HP	Monitor	:	SONY
M/N	:	A1580TW	M/N	:	MNT1
Printer	:	EPSON STYLUS	Keyboard (USB)	:	Genuine
M/N	:	P320A	M/N	:	N/A
Modem	:	ACEEX	Mouse	:	DETROIS
M/N	:	DM-1414	M/N	:	CM309

1.4 Test Uncertainty

Conducted Emission Uncertainty : ±2.66dB

1.5 Test Summary

EPCA

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1000MHz)	EN 15194: 2009+A1:2011	CISPR 12: 2009+A1: 2010	N/A	PASS
ESD	EN 15194: 2009+A1:2011	EN 61000-4-2:2009	Contact ±4 kV Air ±8 kV	PASS
Radiated immunity	EN 15194: 2009+A1:2011	ISO 11451-1: 2005+A1:2008	20MHz to 2000MHz	PASS

ESA

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1000MHz)	EN 15194: 2009+A1:2011	CISPR 12: 2009+A1: 2010	N/A	PASS
Stripline test	EN 15194: 2009+A1:2011	ISO 11452-5: 2002	48V/m for 150mm & 12V/m for 800mm 0.01MHz to 400MHz	N/A
TEM cell	EN 15194: 2009+A1:2011	ISO 11452-3: 2001	60V/m 0.01MHz to 200MHz	N/A
Bulk Current Injection	EN 15194: 2009+A1:2011	ISO 11452-4: 2011	48mA 1MHz to 400MHz	N/A
Absorber lined Chamber test	EN 15194: 2009+A1:2011	ISO 11452-2: 2004	24V/m 20MHz to2GHz	PASS

Battery charger

Test	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission on Main Terminal (150K to 30MHz)	EN 15194: 2009+A1:2011	EN 55014-1: 2016	N/A	PASS
Disturbance Power 30MHz to 300MHz	EN 15194: 2009+A1:2011	EN 55014-1: 2016	N/A	PASS
Discontinuous Disturbance	EN 15194: 2009+A1:2011	EN 55014-1: 2016	N/A	N/A
Radiated Emission 30MHz to 1000MHz	EN 15194: 2009+A1:2011	EN 55014-1: 2016	N/A	N/A

Harmonic Current Emission on AC, up to 2kHz	EN 15194: 2009+A1:2011	EN 61000-3-2: 2014	Clause 5 of EN61000-3-2	PASS
Voltage Fluctuation and Flicker on AC	EN 15194: 2009+A1:2011	EN 61000-3-3:2013	Clause 6 of EN61000-3-3	PASS
ESD	EN 15194: 2009+A1:2011	EN 61000-4-2:2009	Contact ±4 kV Air ±8 kV	PASS
Radio frequency electromagnetic fields,80MHz to 1GHz	EN 15194: 2009+A1:2011	EN 61000-4-3: 2006 +A1: 2008+A2:2010	3V/m 80%, 1kHz, AM	PASS
Electrical Fast Transients (EFT) on AC	EN 15194: 2009+A1:2011	EN 61000-4-4:2012	AC ± 1.0kV	PASS
Surges Immunity on AC	EN 15194: 2009+A1:2011	EN 61000-4-5:2014	1kV D.M.† ±2kV C.M.†	PASS
Injected Currents on AC, 150kHz to 80MHz(230MHz)	EN 15194: 2009+A1:2011	EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	PASS
Voltage Dips and Interruptions on AC	EN 15194: 2009+A1:2011	EN 61000-4-11:2004	0 % UT* for 0.5per 40 % UT* for10per 70 % UT* for 25per	PASS

Note: Selected test(s) as requested by applicant:
Category I apparatus which containing no electronic control circuitry, for example motor operated appliances, toys, tools, heating appliances and similar electric apparatus, is deemed to fulfil the relevant immunity requirements without testing. shall be deemed to fulfil the requirement.
Radiated emission limits only toy is applicable.

2. TEST INSTRUMENT USED

2.1 For Conducted Emission Test

Conducted Emission Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
EMI Receiver	Schwarzbeck	ESHS30	828985/018	Aug. 25,2016	Aug. 24,2017
LISN	Kyoritsu	KNW407	8-1789-4	Aug. 25,2016	Aug. 24,2017
Spectrum Analyzer	ADVANTENT	R3132	160400093	Aug. 25,2016	Aug. 24,2017
50Ω coaxial switch	Anritsu	MP59B	6200264417	Aug. 25,2016	Aug. 24,2017
Pulse Limiter	R&S	ESH3-Z2	100681	Aug. 25,2016	Aug. 24,2017

2.2 For Disturbance Power Test

Radiation Emission Test (966 chamber)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
EMI Receiver	Schwarzbeck	ESHS30	828985/018	Aug. 25,2016	Aug. 24,2017
Power Clamp	Schwarzbeck	MDS21	833711/025	Aug. 25,2016	Aug. 24,2017
50Ω coaxial switch	Anritsu	MP59B	6200264416	Aug. 25,2016	Aug. 24,2017

2.3 For Harmonic & Flicker Test

For Harmonic / Flicker Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Harmonic / Flicker Tester	Schaffner	CCN 1000-1	72472	Aug. 25,2016	Aug. 24,2017
Power source	Schaffner	NSG 1maxi plus -5-208-413	57227	Aug. 25,2016	Aug. 24,2017

2.4 For Electrostatic Discharge Immunity Test

For Electrostatic Discharge Immunity Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
ESD Simulator	SCHAFFNER	NSG 435	5866	Aug. 25,2016	Aug. 24,2017

2.5 For Electrical Fast Transient /Burst Immunity Test

For Electrical Fast Transient/Burst Immunity Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Burst Tester	HAEFELY	PEFT4010	080981-16	Aug. 25,2016	Aug. 24,2017
Coupling Clamp	HAEFELY	IP-4A	147147	Aug. 25,2016	Aug. 24,2017

2.6 For Surge Test

For Surge Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Surge Tester	HAEFELY	PSURGE4.1	080107-04	Aug. 25,2016	Aug. 24,2017

2.7 For Injected Currents Susceptibility Test

For Injected Currents Susceptibility Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Simulator	EMTEST	CWS500C	0900-12	Aug. 25,2016	Aug. 24,2017

CDN	EMTEST	CDN-M2	5100100100	Aug. 25,2016	Aug. 24,2017
VDN	EMTEST	CDN-M3	0900-11	Aug. 25,2016	Aug. 24,2017
Injection Clamp	EMTEST	F-2031-23MM	368	Aug. 25,2016	Aug. 24,2017
Attenuator	EMTEST	ATT6	0010222A	Aug. 25,2016	Aug. 24,2017

2.8 For Voltage Dips Interruptions Test

For Voltage Dips Interruptions Test (A --- site)					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Dips Tester	HEAFELY	PLINE 1610	083732-18	Aug. 25,2016	Aug. 24,2017

2.9 Absorber Line Chamber test

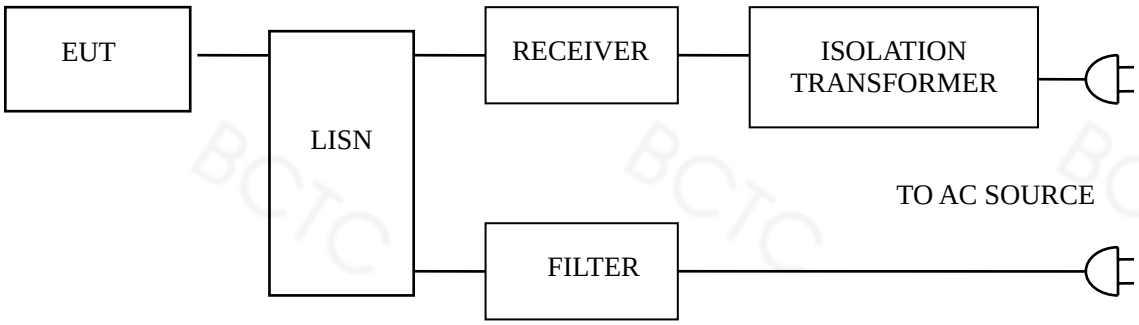
Absorber Line Chamber test					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Generator	Schwarzbeck	SML03	838503/018	Aug. 25,2016	Aug. 24,2017
Log-periodic antenna	Schwarzbeck	HL 046	100001	Aug. 25,2016	Aug. 24,2017
High Gain Log-Periodic	AR	HL 046	020-02	Aug. 25,2016	Aug. 24,2017
Power amplifier	AR	500W 1000A	302108	Aug. 25,2016	Aug. 24,2017
Power amplifier	AR	30S1G3	302240	Aug. 25,2016	Aug. 24,2017
Electric Field Probe	AR	500W 1000A	020-01	Aug. 25,2016	Aug. 24,2017
High Gain Hom Antenna	AR	AT 4002A	002-15	Aug. 25,2016	Aug. 24,2017
Single path vehicle LISN	Schwarzbeck	NNBM 8126-D	010-14	Aug. 25,2016	Aug. 24,2017
Single path vehicle LISN	Schwarzbeck	NNBM 8126-D	010-15	Aug. 25,2016	Aug. 24,2017
Field monitor mainframe 4SLORS	AR	FM 5004	300546	Aug. 25,2016	Aug. 24,2017

2.10 Radiated Immunity

Radiated Immunity					
Equipment	**Manufacturer**	**MODEL#**	**SERIAL#**	**LASTCAL.**	**NEXT CAL.**
Ultra broadband antenna	Schwarzbeck	HL562	100227	Aug. 25,2016	Aug. 24,2017
Amplifier	AR	30W1000B	0327284	-	-
Amplifier	AR	30S1G3	0324978	-	-
Power meter	Schwarzbeck	NRP	101641	Aug. 25,2016	Aug. 24,2017
Single generator	Schwarzbeck	SMR40	100555	Aug. 25,2016	Aug. 24,2017

3. POWER LINE CONDUCTED EMISSION TEST

3.1 Block Diagram of Test Setup



3.2 Test Standard

EN 15194: 2009+A1:2011
(Test method:EN 55014-1: 2016)

3.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4 EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN55014-1 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1 Electric bicycle(EUT)

Model Number : maxi plus

Manufacturer : e-4motion B.V.

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 modes (On) and test it.

3.6 Test Procedure

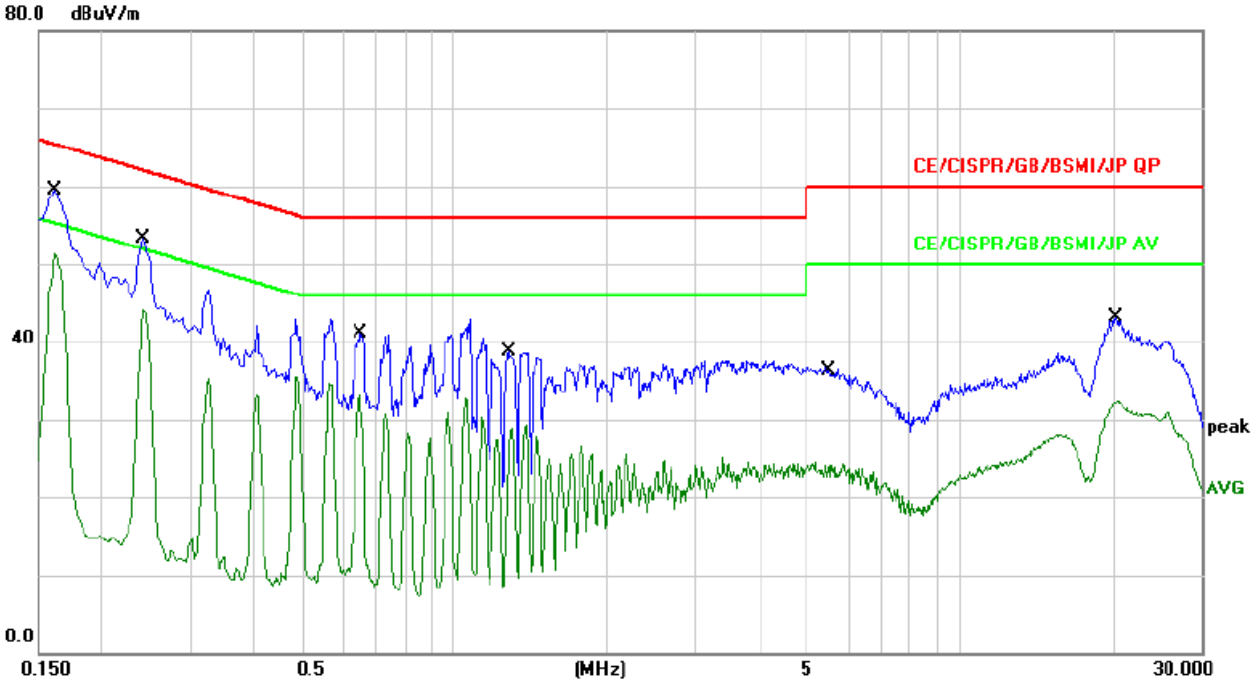
The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **EN55014-1** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.

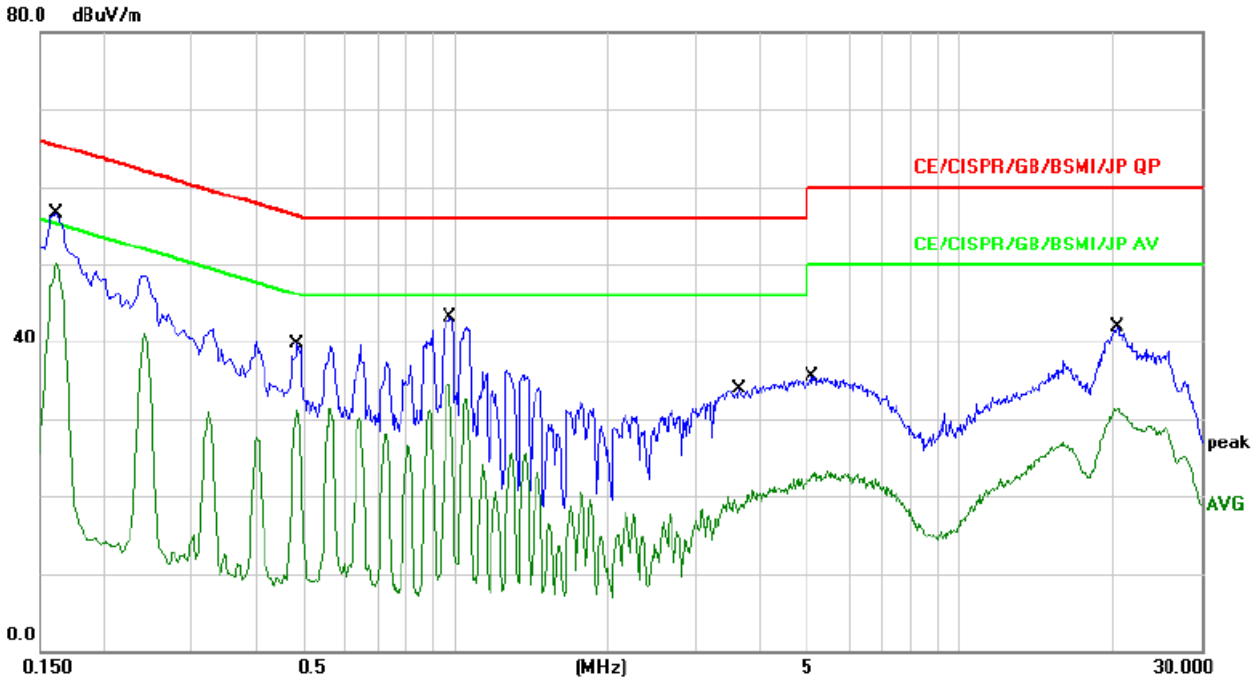
The frequency range from 150 KHz to 30 MHz is investigated.

3.7 Test Result

PASS
Please refer to the following page.



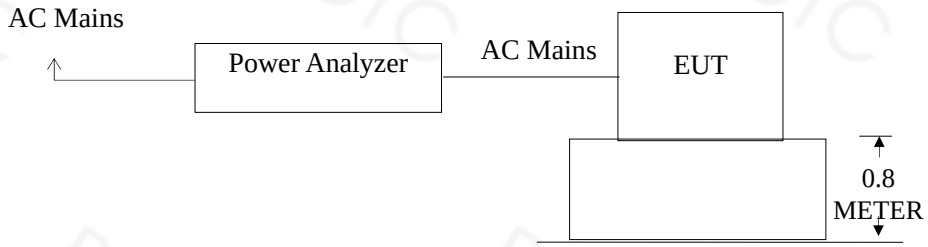
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1620	49.41	10.05	59.46	65.36	-5.90	QP	
2	*	0.1620	41.28	10.05	51.33	55.36	-4.03	AVG	
3		0.2420	43.12	10.08	53.20	62.02	-8.82	QP	
4		0.2420	34.08	10.08	44.16	52.02	-7.86	AVG	
5		0.6500	31.04	10.13	41.17	56.00	-14.83	QP	
6		0.6500	22.88	10.13	33.01	46.00	-12.99	AVG	
7		1.2820	28.46	10.17	38.63	56.00	-17.37	QP	
8		1.2820	18.76	10.17	28.93	46.00	-17.07	AVG	
9		5.5140	26.33	10.12	36.45	60.00	-23.55	QP	
10		5.5140	14.08	10.12	24.20	50.00	-25.80	AVG	
11		20.3020	32.95	10.17	43.12	60.00	-16.88	QP	
12		20.3020	22.15	10.17	32.32	50.00	-17.68	AVG	



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1620	46.48	10.05	56.53	65.36	-8.83	QP	
2	*	0.1620	40.13	10.05	50.18	55.36	-5.18	AVG	
3		0.4820	29.59	10.11	39.70	56.30	-16.60	QP	
4		0.4820	20.97	10.11	31.08	46.30	-15.22	AVG	
5		0.9660	32.91	10.16	43.07	56.00	-12.93	QP	
6		0.9660	24.32	10.16	34.48	46.00	-11.52	AVG	
7		3.6500	23.76	10.17	33.93	56.00	-22.07	QP	
8		3.6500	10.43	10.17	20.60	46.00	-25.40	AVG	
9		5.0900	25.41	10.14	35.55	60.00	-24.45	QP	
10		5.0900	13.13	10.14	23.27	50.00	-26.73	AVG	
11		20.4260	31.74	10.17	41.91	60.00	-18.09	QP	
12		20.4260	21.19	10.17	31.36	50.00	-18.64	AVG	

4. HARMONIC CURRENT EMISSION TEST

4.1 Block Diagram of Test Setup



(EUT: Electric bicycle)

4.2 Test Standard

EN 61000-3-2:2014

4.3 Operating Condition of EUT

5.3.1 Setup the EUT as shown in Section 5.1.

5.3.2 Turn on the power of all equipments.

5.3.3 Let the EUT work in test mode (ON) and test it.

4.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the Power of the EUT and use the test system to test the harmonic current level.

4.5 Test Results

PASS

Harmonics Current Test Report

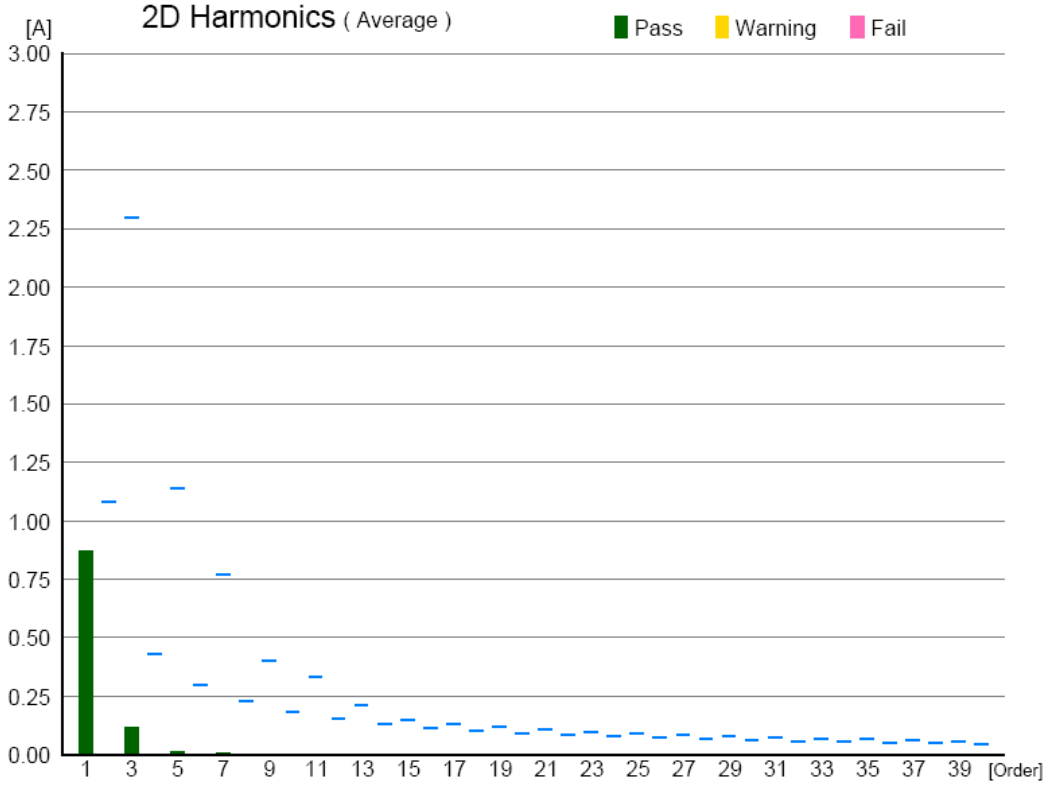
Company	SZ-BCTC	Test Engineer	Jeff Fu
Model Name	Electric bicycle		
Type	maxi plus		
Serial No.		Type of Test	EN61000-3-2(2006)/A2(2009)
			*IEC61000-3-2:Ed3.0/A2(2009)
Operating Mode	Power ON		EN61000-4-7(2002)/A1(2009)
Date of Test	2017/3/29 13:15:04		*IEC61000-4-7(2002)/A1(2008)
Climatic Condition		Classification	Class A
Memo	25'C ; 55%	Power Analyzer	KHA1000 Ver1.82
		Supply Source	AC 230V/50Hz
		Reference Impedance	

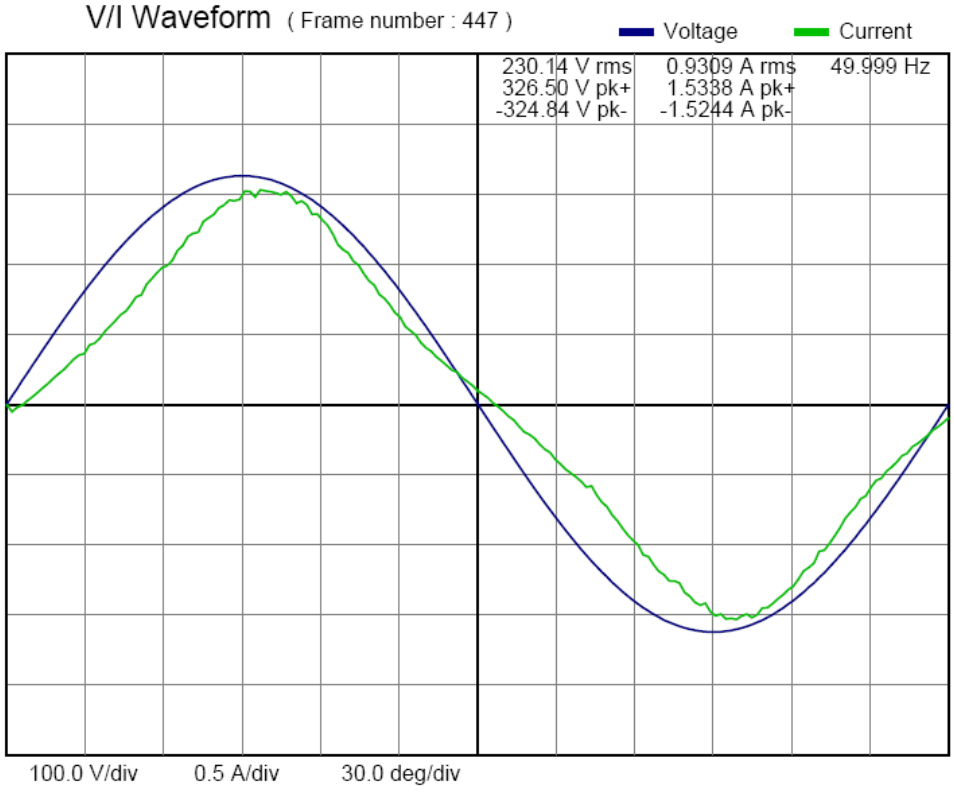
Test Data of Harmonics Current

Final Test Result	Pass	Tobs	Quasi-Stationary
Voltage	230.14 V	THC	0.1262 A
Current	0.9311 A	POHC/Limit	0.0060 A / ---- *4
Power	210.93 W	Nominal	230 V / 50 Hz
Power Factor	0.9867	Fundamental Current	0.9224 A
Apparent Power	214.3 VA	Measuring Period	181 s
THD (max)	13.68 %	Margin	10 %

Order	Limit1(A rms)	Limit2(A rms)	Ave(A rms)	Max(A rms)	Limit Over(s)	Judge
1	-----	-----	0.8708	0.9224	0.0	N/A
2	1.0800	2.1600	0.0014	0.0017	0.0	N/A
3	2.3000	4.6000	0.1135	0.1250	0.0	Pass
4	0.4300	0.8600	0.0009	0.0014	0.0	N/A
5	1.1400	2.2800	0.0133	0.0145	0.0	Pass
6	0.3000	0.6000	0.0009	0.0013	0.0	N/A
7	0.7700	1.5400	0.0049	0.0055	0.0	Pass
8	0.2300	0.4600	0.0009	0.0016	0.0	N/A
9	0.4000	0.8000	0.0028	0.0031	0.0	N/A
10	0.1840	0.3680	0.0020	0.0047	0.0	N/A
11	0.3300	0.6600	0.0032	0.0051	0.0	N/A
12	0.1533	0.3066	0.0018	0.0037	0.0	N/A
13	0.2100	0.4200	0.0025	0.0042	0.0	N/A
14	0.1314	0.2628	0.0010	0.0016	0.0	N/A
15	0.1500	0.3000	0.0011	0.0021	0.0	N/A
16	0.1150	0.2300	0.0013	0.0028	0.0	N/A
17	0.1324	0.2648	0.0017	0.0041	0.0	N/A
18	0.1022	0.2044	0.0018	0.0037	0.0	N/A
19	0.1184	0.2368	0.0016	0.0037	0.0	N/A
20	0.0920	0.1840	0.0009	0.0015	0.0	N/A
21	0.1071	0.2142	0.0012	0.0034	0.0	N/A
22	0.0836	0.1672	0.0022	0.0046	0.0	N/A
23	0.0978	0.1956	0.0013	0.0032	0.0	N/A
24	0.0767	0.1534	0.0014	0.0032	0.0	N/A
25	0.0900	0.1800	0.0011	0.0027	0.0	N/A
26	0.0708	0.1416	0.0006	0.0011	0.0	N/A
27	0.0833	0.1666	0.0008	0.0018	0.0	N/A
28	0.0657	0.1314	0.0006	0.0013	0.0	N/A
29	0.0776	0.1552	0.0009	0.0019	0.0	N/A
30	0.0613	0.1226	0.0006	0.0014	0.0	N/A
31	0.0726	0.1452	0.0008	0.0016	0.0	N/A
32	0.0575	0.1150	0.0005	0.0013	0.0	N/A
33	0.0682	0.1364	0.0010	0.0024	0.0	N/A
34	0.0541	0.1082	0.0009	0.0028	0.0	N/A
35	0.0643	0.1286	0.0015	0.0026	0.0	N/A
36	0.0511	0.1022	0.0009	0.0027	0.0	N/A
37	0.0608	0.1216	0.0013	0.0033	0.0	N/A
38	0.0484	0.0968	0.0006	0.0022	0.0	N/A
39	0.0577	0.1154	0.0009	0.0024	0.0	N/A
40	0.0460	0.0920	0.0006	0.0017	0.0	N/A

N/A : Not Apply


2D Harmonics (Average)
Pass
Warning
Fail
[A]
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 [Order]


V/I Waveform (Frame number : 447)
Voltage
Current
230.14 V rms
326.50 V pk+
-324.84 V pk-
0.9309 A rms
1.5338 A pk+
-1.5244 A pk-
49.999 Hz
100.0 V/div
0.5 A/div
30.0 deg/div

5. VOLTAGE FLUCTUATIONS & FLICKER TEST

5.1 Block Diagram of Test Setup

Same as Section 5.1..

5.2 Test Standard

EN 61000-3-3:2013

5.3 Operating Condition of EUT

Same as Section 5.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

5.4 Test Results

PASS

Flicker Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 230V/50Hz	Test Mode:	ON

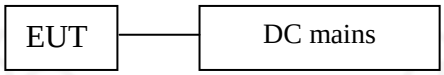
Voltage Fluctuation	Limit	Value
Relative Voltage Change Characteristic Tmax （dc＞3%）	500 ms	0 ms
Maximum Relative Voltage Change dmax	4%	0.00
	6%	/
	7%	/
Relative Steady-state Voltage Change dc	3.3%	0.00

Flicker	Limit	Value
Short-term Flicker Indicator Pst	1.0	0.064
Long-term Flicker Indicator Plt	0.65	/

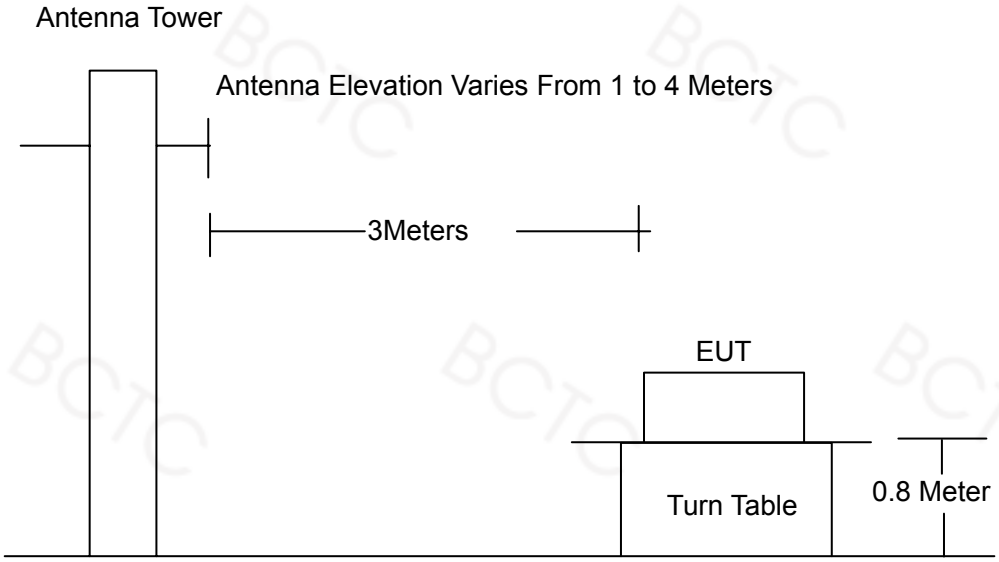
6. RADIATION EMISSION TEST

6.1 Block Diagram of Test Setup

6.1.1.Block Diagram of EUT Test Setup



6.1.2.**Anechoic Chamber Setup Diagram**



Ground Plane

6.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: CISPR 12: 2009+A1: 2010)

6.3 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 CISPR 12 on radiated emission test.

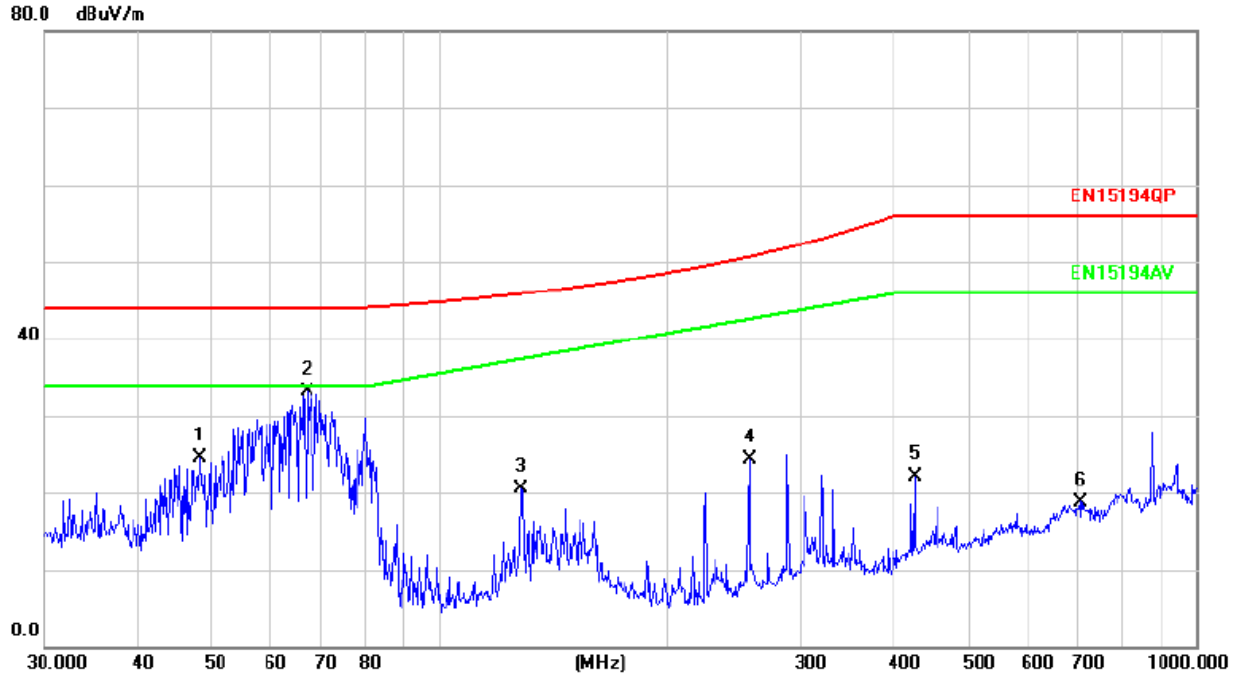
The bandwidth setting on the field strength meter (R&S Test Receiver ESHS30) is set at 120KHz.

The frequency range from 30MHz to 1000MHz is checked.

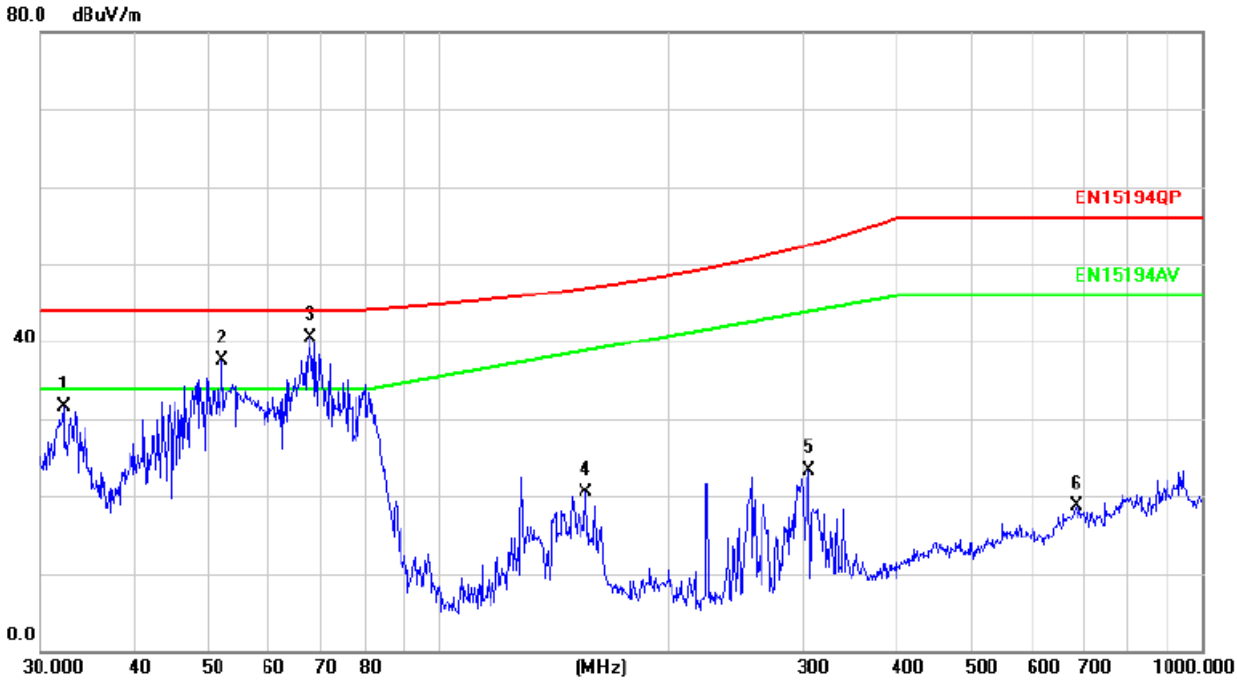
6.4 Test Result

PASS

Please refer to the following page.



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		48.1626	34.46	-9.99	24.47	44.00	-19.53	QP			
2	*	66.9669	46.51	-13.32	33.19	44.00	-10.81	QP			
3		128.1130	34.77	-14.22	20.55	47.51	-26.96	QP			
4		256.5211	38.39	-14.01	24.38	52.69	-28.31	QP			
5		425.0280	31.71	-9.60	22.11	56.00	-33.89	QP			
6		704.2261	23.11	-4.31	18.80	56.00	-37.20	QP			

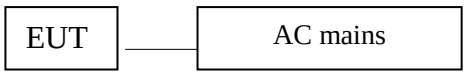


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		32.1794	39.84	-8.33	31.51	44.00	-12.49	peak			
2		52.0251	48.22	-10.63	37.59	44.00	-6.41	peak			
3	*	67.6751	54.08	-13.59	40.49	44.00	-3.51	peak			
4		155.9100	33.42	-12.87	20.55	48.98	-28.43	peak			
5		305.6800	35.67	-12.44	23.23	53.99	-30.76	peak			
6		687.1507	23.30	-4.59	18.71	56.00	-37.29	peak			

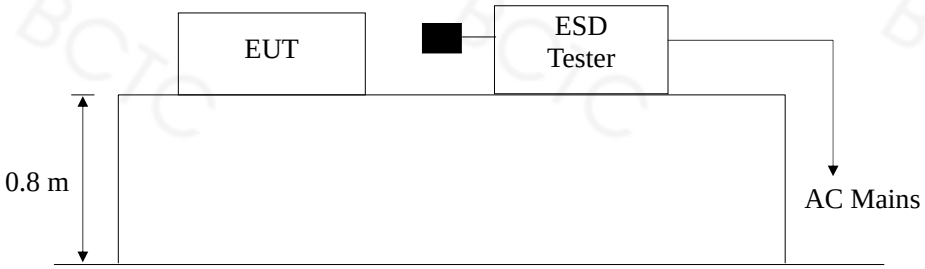
7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1 Block Diagram of Test Setup

7.1.1. Block Diagram of the EUT and the simulators



7.1.2. Test Setup



7.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: EN 61000-4-2:2009)

Severity Level: 3 / Air Discharge:±8K
Level: 2 / Contact Discharge:±4KV

7.3 Severity Levels and Performance Criterion

7.3.1 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

7.3.2 Performance criterion : B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

7.4 EUT Configuration

The following equipments are installed on Electrostatic Discharge Immunity test to meet EN 15194: 2009+A1:2011, EN 61000-4-2:2009, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 2.4.

7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 8.1.2.

7.6 Test Procedure

7.6.1 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.

7.6.2 Contact Discharge:

All the procedure shall be same as Section 8.6.1. Except that the tip of the

discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) 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 complete illuminated.

7.7 Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Results

Shenzhen BCTC Technology Co., Ltd.

Applicant :	e-4motion B.V.	Test Date :	Mar. 28, 2017
EUT :	Electric bicycle	Temperature:	25℃
M/N :	maxi plus	Humidity :	53%
Power Supply :	AC230V/50Hz		
Test Engineer :	Snowy Yang		

Air Discharge: ± 8KV

Contact Discharge: ± 4KV # For each point positive 25 times and negative 25 times discharge

Test Points	Air Discharge	Contact Discharge	Performance Criterion	Result
Others Slot of the EUT	±2,4,8KV	N/A	B	PASS
METAL PART	N/A	±2,4 KV	B	PASS
PLASTIC PART	±2,4,8KV	N/A	B	PASS
BUTTON	N/A	±2,4 KV	B	PASS
SCREW	N/A	±2,4 KV	B	PASS
PORT	N/A	±2,4 KV	B	PASS
VCP	N/A	±2,4 KV	B	PASS
HCP	N/A	±2,4 KV	B	PASS

8. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

8.1 Block Diagram of EUT Test Setup

8.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: EN 61000-4-4:2012)

8.3 Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS
Severity Level:

Open Circuit Output Test Voltage ±10%		
Level	On power ports	On I/O(Input/Output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

Performance criterion: B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

8.4 EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet Emaxi plus 5194: 2009+A1:2011, EN61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 3.4.

8.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.5 except the test setup replaced by Section 9.1.

8.6 Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a min.1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m

8.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

8.6.2. For signal lines and control lines ports:

It’s unnecessary to measure.

8.6.3. For AC input and DC output power ports:

For DC ports .It’s unnecessary to measure

8.7 Test Results

PASS

EFT Test Data			
Temperature:	24.5℃	Humidity:	53%
Power Supply :	AC 230V/50Hz	Test Mode:	On

Coupling Line	Test Voltage		Performance Criterion	Result
	±0.5kV	±1kV		
L	±0.5kV	±1kV	B	PASS
N	±0.5kV	±1kV	B	PASS
L-N	±0.5kV	±1kV	B	PASS
PE	±0.5kV	±1kV	B	PASS
L-PE	±0.5kV	±1kV	B	PASS
N-PE	±0.5kV	±1kV	B	PASS
L-N-PE	±0.5kV	±1kV	B	PASS
DC Line	/	/		/

Note: N/A

9. SURGE TEST

9.1 Block Diagram of EUT Test Setup

9.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: EN61000-4-5:2014)

9.3 Severity Levels and Performance Criterion

Severity Level： Line to Line, Level 2 at 1KV;
Severity Level： Line to Earth, Level 3 at 2KV.

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

Performance criterion: B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

9.4 EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 15194: 2009+A1:2011, EN61000-4-5:2014, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

9.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.6 except the test setup replaced by Section 10.1.

9.6 Test Procedure

1) Set up the EUT and test generator as shown on section 10.1
2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

9.7 Test Result

PASS

Please refer to the following page.

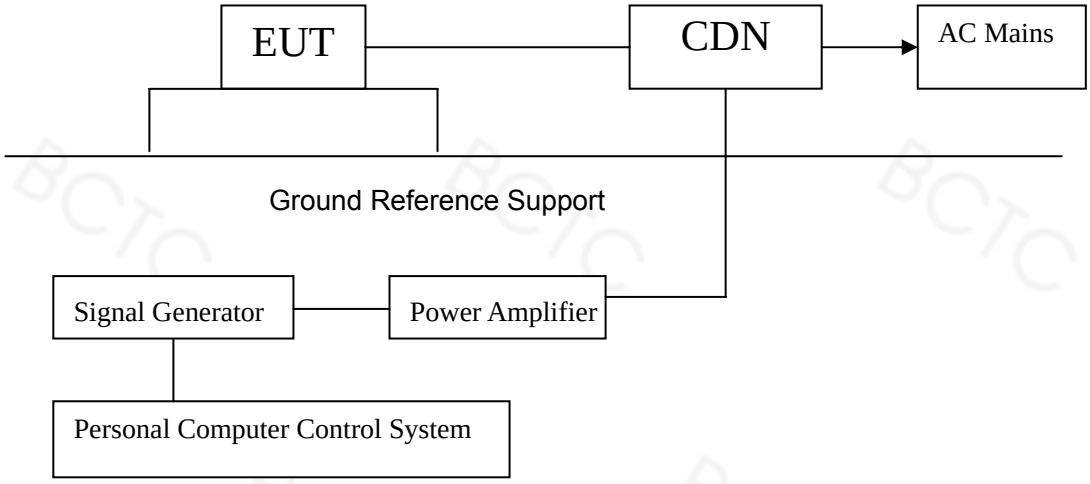
Surge Test Data						
Temperature:	24.5℃		Humidity:	53%		
Power Supply :	AC 230V/50Hz		Test Mode:	On		
Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Performance Criterion	Result
L-N	+	90	5	1	B	Pass
	-	90	5	1		Pass
	+	270	5	1		Pass
	-	270	5	1		Pass
L-PE	+	90	5	2		Pass
	-	90	5	2		Pass
	+	270	5	2		Pass
	-	270	5	2		Pass
N-PE	+	90	5	2		Pass
	-	90	5	2		Pass
	+	270	5	2		Pass
	-	270	5	2		Pass
Note: N/A						

10. INJECTED CURRENTS SUSCEPTIBILITY TEST

10.1 Block Diagram of EUT Test Setup

10.1.1. Block Diagram of EUT Test Setup

10.1.2. Block Diagram of Test Setup



10.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: EN61000-4-6:2014)

10.3 Severity Levels and Performance Criterion

Severity Level 2：3V(rms), 150KHz ～ 80MHz
Severity Level:

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

10.4 EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.7.

10.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.8 except the test set up replaced as Section 11.1.

10.6 Test Procedure

1) Set up the EUT, CDN and test generator as shown on section 11.1

2) Let EUT work in test mode and measure.

3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

4) The disturbance signal described below is injected to EUT through CDN.

5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.

6) The frequency range is swept from 150KHz to 80MHz using 3V signal

level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave

7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7 Test Result

PASS

EUT:	Electric bicycle	Temperature:	25℃
M/N:	maxi plus	Humidity:	53%
Test Mode:	Working Mode	Test Engineer:	Snowy Yang

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 ~ 20	AC Line	3V(rms), Unmodulated	A	PASS
20 ~ 80	AC Line	3V(rms), Unmodulated	A	PASS

11. VOLTAGE DIPS AND INTERRUPTIONS TEST

11.1 Block Diagram of EUT Test Setup

11.2 Test Standard

EN 15194: 2009+A1:2011
(Test method: EN61000-4-11:2004)

11.3 Severity Levels and Performance Criterion

Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	250p
40	60	5p
70	30	0.5p

Performance criterion : C & B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

11.4 EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.8.

11.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.8 except the test set up replaced as Section 12.1.

11.6 Test Procedure

1) Set up the EUT and test generator as shown on section 12.1

2) The interruptions is introduced at selected phase angles with specified duration.

3) Record any degradation of performance.

11.7 Test Result

PASS

EUT:	Electric bicycle	Temperature:	25℃
M/N:	maxi plus	Humidity:	53%
Test Mode:	Working Mode	Test Engineer:	Snowy Yang

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Criterion	Result
0	100	250P	0° ~360°	C	PASS
40	60	5P	0° ~360°	C	PASS
70	30	0.5P	0° ~360°	B	PASS

12. ABSORBER LINE CHAMBER

Test Requirement: EN 15194: 2009+A1:2011

Test Method: ISO 11452-2:2004

Test Date: Mar. 28, 2017

Frequency Range: 20MHz to 2 GHz

Test level: 24V/m on enclosure

Modulation: 80%, 1kHz Amplitude Modulation

Criteria: Refer to ISO 11452-2:2004

12.1 E.U.T. Operation

Operating Environment:
Temperature: 23 ℃
Humidity: 51 % RH
Atmospheric Pressure: 1007 mbar
EUT Operation: The EUT is in representative work mode.

12.2 Test Result

PASS

13. RADIATED IMMUNITY

Test Requirement:	EN 15194: 2009+A1:2011
Test Method:	ISO 11452-1: 2005+A1:2008 & ISO 11452-2:2004
Test Date:	Mar. 28, 2017
Frequency Range:	20MHz to 2 GHz
Test level:	24V/m on enclosure
Modulation:	80%, 1kHz Amplitude Modulation
Criteria:	Refer to ISO 11452-1: 2005+A1:2008 & ISO 11452-2:2004

13.1 E.U.T. Operation

Operating Environment:
Temperature: 23 ℃
Humidity: 51 % RH
Atmospheric Pressure: 1007 mbar
EUT Operation: The EUT is in representative work mode.

13.2 Test Result

PASS

14. EUT PHOTO

EUT Photo 1

EUT Photo 2

EUT Photo 3

EUT Photo 4

EUT Photo 6


SANS ELECTRONIC CO.,LTD
Li-ion Battery Charger
MODEL:SSLC084V42
INPUT:AC100V-240V~1.8A MAX
47-63Hz
OUTPUT:42.0V 2.0A
T3.15A 250V
N23042
CHARGING
CHARGE-FULL OR DISCONNECT
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL
BEFORE CHARGING READ THE INSTRUCTIONS!
MADE IN CHINA
Manufacturer: Wuxi Sans Electronic Co., Ltd.
Address: Industrial WuYi, DongGang Town, Wuxi, Jiangsu, P.R.China

15. EUT TEST PHOTOGRAPHS

Remarks

Model No. Maxi plus

Electric system		Main component	
Motor	High speed brushless geared	Frame	6061 Alloy aluminum
	36V/250W	Tyres	20x1.75
Battery	36V/10Ah Li-polymer battery	Rim	Alloy aluminum double wall
Pas	PAS sensor	Front Fork	Front suspension fork
Light	Front/rear spanning light	Front brake	Front v-brake
Controller	36V Intelligent brushless controller	Rear Brake	Rear v-brake
Throttle	NIL	Spokes	Front wheel 13g, rear wheel 12G
DISPLAY	LCD	Speed Gears	shimano 7 speed gears
		Handle Bar	Alloy aluminum
		Seat post	Alloy Seat post
		Stem	Alloy aluminum
		Brake Level	Alloy aluminum, cut-off when braking
		Chain	KMC Chain

※※※※※ **END OF REPORT** ※※※※※