

TEST REPORT

Application No.: SHEM2111011633MD
Applicant: SUZHOU I-BIKE TECH CO.,LTD.
Address of Applicant: 333,XINGUO ROAD,GUSU DISTRICT,SUZHOU CITY,JAINGSU,CHINA
Manufacturer: SUZHOU I-BIKE TECH CO.,LTD.
Address of Manufacturer: 333,XINGUO ROAD,GUSU DISTRICT,SUZHOU CITY,JAINGSU,CHINA
Factory: SUZHOU I-BIKE TECH CO.,LTD.
Address of Factory: 333,XINGUO ROAD,GUSU DISTRICT,SUZHOU CITY,JAINGSU,CHINA
Equipment Under Test (EUT):
EUT Name: Electric bicycle motor
Model No.: A128/148
Trade mark: I-BIKE
Standard(s) : EN 61000-6-3:2007 +A1:2011
 EN IEC 61000-6-1:2019
Date of Receipt: 2021-11-01
Date of Test: 2021-11-03
Date of Issue: 2021-11-08

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Parlan Zhan

Parlan Zhan
Laboratory Manager





The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.



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Revision Record			
Version	Description	Date	Remark
00	Original	2021-11-08	/

Authorized for issue by:			
			
		Andy Yang / Project Engineer	
			
		Bruce Tang /Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-3	N/A	Pass

N/A: Not applicable

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN IEC 61000-6-1:2019	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-6GHz)	EN IEC 61000-6-1:2019	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 48V 350W
Test voltage:	DC 48V
Cable:	DC cable 20cm

4.2 Description of Support Units

The EUT has been tested as an independent unit.

Support Units / Associated Equipments:

Description	Manufacturer	Model No.
DC source	KIKUSUI	PAN35-10A
Instrument	By sgs	123
Controller	By sgs	88321

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	2.6dB (9kHz to 150kHz)
		2.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.8 dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.2 dB (150kHz to 30MHz)
4	Radiated Power	3.2dB
5	Radiated Emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
6	Radiated Disturbance (disturbance current in a LLAS)	2.4dB (9kHz to 30MHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

- **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: Working status of EUT.



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5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2020-12-20	2021-12-19
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2021-09-11	2023-09-10
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
Pre-Amplifier	HP	8447D	SHEM236-1	2021-05-27	2022-05-26

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2021-08-13	2022-08-12

Radiated Immunity (80MHz-6GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2021-08-13	2022-08-12
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2021-04-15	2022-04-14
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2021-04-15	2022-04-14
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2020-12-20	2021-12-19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2021-04-15	2022-04-14
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2021-08-06	2022-08-05

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2021-01-22	2024-01-21
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2021-09-07	2022-09-06
Digital Multimeter	FLUKE	17B	SHEM043-3	2021-09-04	2022-09-03
Autofomer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2020-12-20	2021-12-19



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6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 61000-6-3:2007 +A1:2011

Test Method: CISPR 16-2-3

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

Limit:

30MHz-230MHz 40 dB(μV/m) quasi-peak

230MHz-1GHz 47 dB(μV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

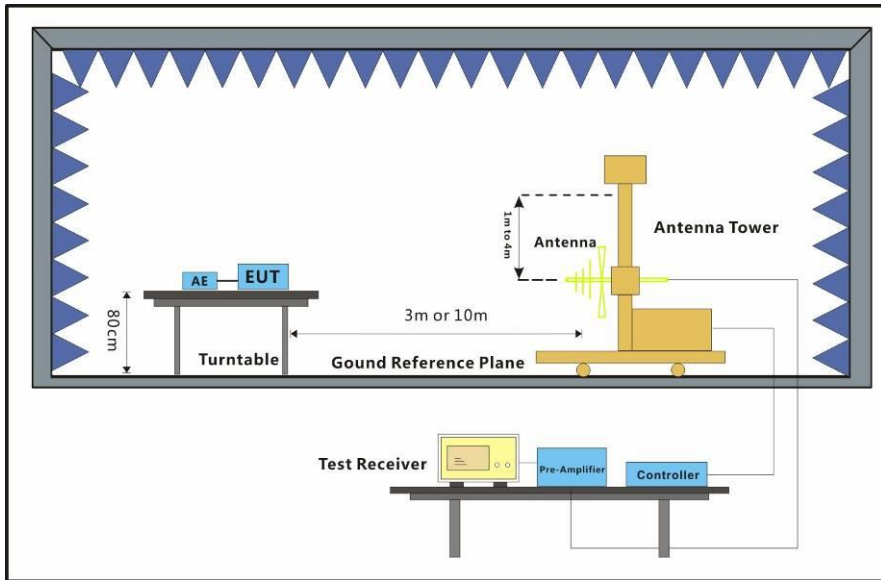
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a: Running mode: Keep EUT running continuously.

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

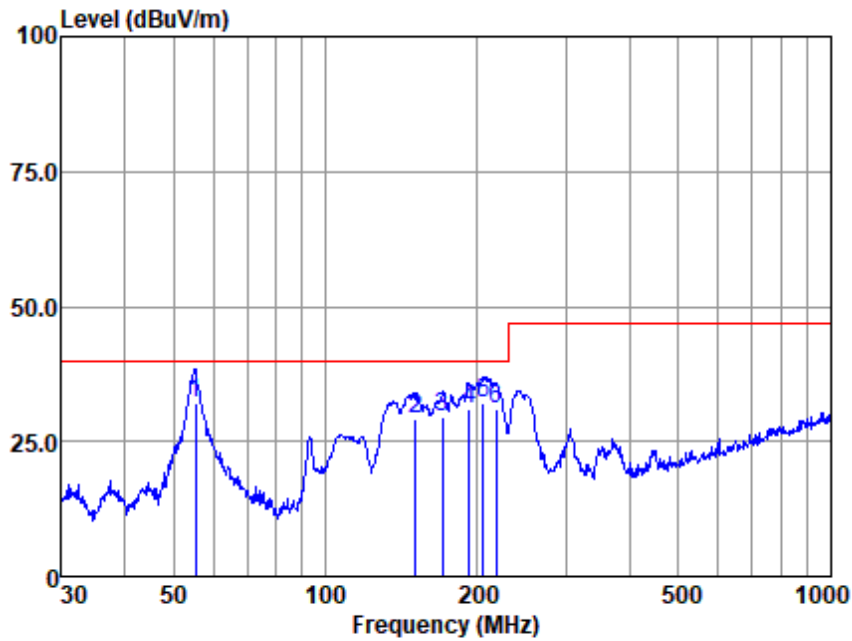
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



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Mode:a; Polarization:Horizontal



Antenna Polarity :HORIZONTAL
 EUT/Project :11633MD
 Test mode :a

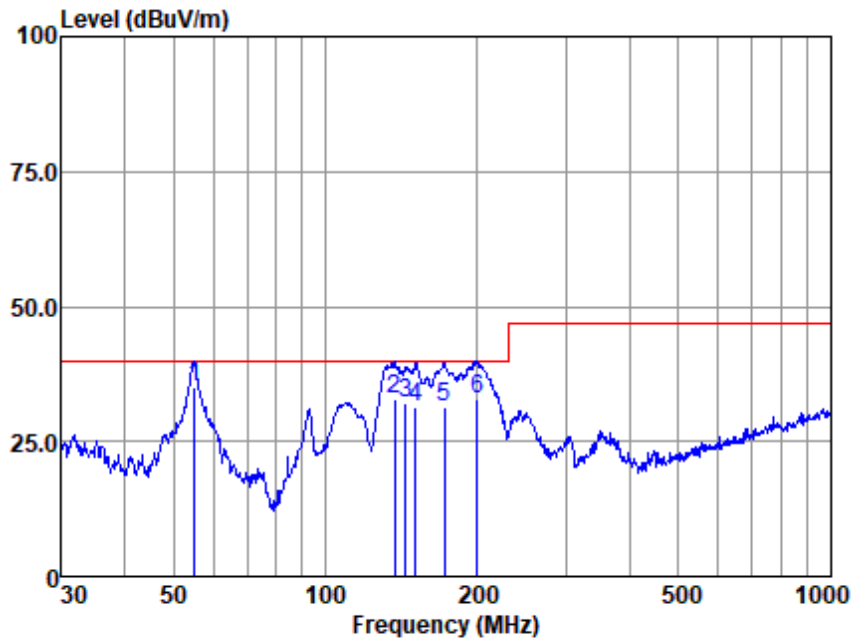
	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	55.221	59.87	13.65	1.06	42.30	32.28	40.00	-7.72 QP
2	150.538	56.31	13.15	1.86	42.20	29.12	40.00	-10.88 QP
3	170.793	56.73	12.87	2.00	42.20	29.40	40.00	-10.60 QP
4	192.419	60.40	10.47	2.18	42.20	30.85	40.00	-9.15 QP
5	205.675	61.95	9.90	2.29	42.19	31.95	40.00	-8.05 QP
6	217.544	60.81	9.81	2.38	42.16	30.84	40.00	-9.16 QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL
 EUT/Project :11633MD
 Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	55.122	62.73	13.66	1.06	42.30	35.15	40.00	-4.85 QP
2	136.939	60.65	12.48	1.77	42.22	32.68	40.00	-7.32 QP
3	144.335	59.34	12.98	1.82	42.21	31.93	40.00	-8.07 QP
4	150.538	58.56	13.15	1.86	42.20	31.37	40.00	-8.63 QP
5	171.995	58.82	12.77	2.00	42.20	31.39	40.00	-8.61 QP
6	199.986	62.56	10.11	2.24	42.20	32.71	40.00	-7.29 QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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7 Immunity Test Results

7.1 Performance Criteria Description in EN IEC 61000-6-1:2019

- Criterion A** The EUT 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 EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- Criterion B** The EUT 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 EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- Criterion C** Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.



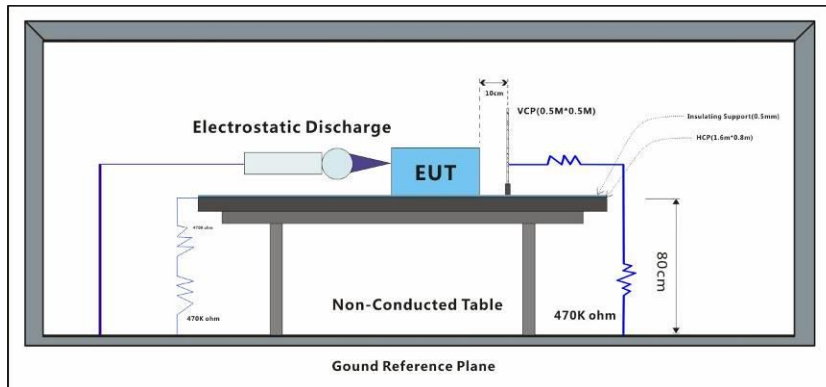
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7.2 Electrostatic Discharge

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-2:2009
 Performance Criterion: B
 Discharge Impedance: 330Ω/150pF
 Number of Discharge: Minimum 10 times at each test point
 Discharge Mode: Single Discharge
 Discharge Period: 1 second minimum

7.2.1 Test Setup Diagram



7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: Running mode: Keep EUT running continuously.

7.2.3 Test Results:

Observations: Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Results:

A: No degradation in the performance of the EUT was observed.

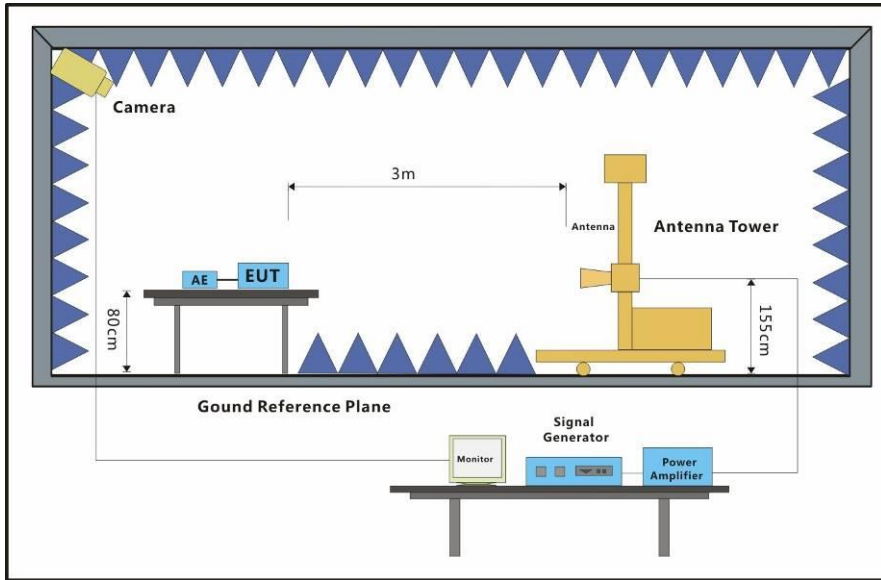


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7.3 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN IEC 61000-6-1:2019
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
 Performance Criterion: A
 Frequency Range: 80MHz to 1GHz, 1.4GHz to 6GHz
 Antenna Polarisation: Vertical and Horizontal
 Modulation: 1kHz,80% Amp. Mod,1% increment

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar
 Test mode: a: Running mode: Keep EUT running continuously.

7.3.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
1.4GHz-6GHz	3	Front	3s	A
1.4GHz-6GHz	3	Back	3s	A
1.4GHz-6GHz	3	Left	3s	A
1.4GHz-6GHz	3	Right	3s	A

Results:

A: No degradation in the performance of the EUT was observed.



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8 Photographs

8.1 Radiated Emissions (30MHz-1GHz) Test Setup



8.2 Electrostatic Discharge Test Setup



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8.3 Radiated Immunity (80MHz-6GHz) Test Setup



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8.4 EUT Constructional Details (EUT Photos)



- End of the Report -



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