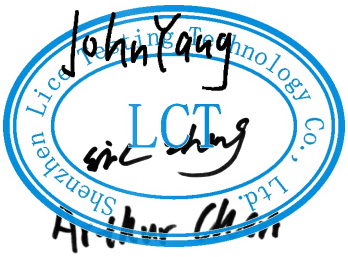
TEST REPORT

UL 2849

Electrical Systems for eBikes

Report Number.....:	LCT-250601244829
Tested By (+signature).....:	John Yang Reviewer
Witnessed by(+ signature).....:	Eric Zhang Project Handler
Approved By (+signature).....:	Arthur Chen Approved
Date of issue.....:	2025-06-26
Total number of pages.....:	20



Name of Testing Laboratory preparing the Report.....:	Shenzhen Lice Testing Technology Co., Ltd.
Applicant's name.....:	Huizhou Jingyan Trade Co., LTD.
Address.....:	601, 6th Floor, No. 34, Yinghu Road, Xianan Village, Yuanzhou Town, Boluo County
Manufacturer's name.....:	Huizhou Jingyan Trade Co., LTD.
Address.....:	601, 6th Floor, No. 34, Yinghu Road, Xianan Village, Yuanzhou Town, Boluo County
Test specification:	
Standard.....:	UL 2849:2022
Test procedure.....:	UL test report
Directive.....:	N/A
Test Report Form No.....:	UL 2849_1.0
Master TRF.....:	Dated 2024-10-18
Test item description.....:	Electric Bike
Trade Mark(s) .....:	N/A
Model/Type reference.....:	G11
Ratings.....:	DC 54.6V, 2A (Adapter Input: AC 110-240V, 100W, 50/60Hz Output: DC 54.6V, 2A)

List of Attachments (including a total number of pages in each attachment):
- Attachment 1: Photos of Product.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
See Report for details.	Shenzhen Lice Testing Technology Co., Ltd. Room 112-113, Building B15, Yintian Industrial Zone, Yantian, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

Copy of marking plate (Representative):

Electric Bike
Model: G11
Ratings: DC 54.6V, 2A
(Adapter Input: AC 110-240V, 100W, 50/60Hz
Output: DC 54.6V, 2A)

Huizhou Jingyan Trade Co., LTD.

YYMDDA

Made in China

Notes:
- Date code “YYMDDA” will change as actual production date.
- Due to similarity of rating labels, only above label is listed.

Possible test case verdicts:	
- test case does not apply to the test object.... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement.... :	F (Fail)
Testing:	
Date of receipt of test item..... :	2025-06-18
Date (s) of performance of tests.....:	2025-06-18 to 2025-06-26

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory.

This report is invalid if it is arbitrarily altered. The report shall be invalid without the signature of the approver. The report without the official seal or special testing seal of Shenzhen Lice Testing Technology Co., Ltd (hereinafter referred to as the unit) is invalid.

The applicant and manufacturer information, product name, model, trademark and other information in the report are provided by the applicant, and the laboratory is not responsible for verifying their authenticity.

The authenticity of this Test Report and its contents can be verified by contacting the Testing Laboratory, responsible for this Test Report.

General product information and other remarks:

1.The product covered in this report is a Electric Bike, which is supplied from battery, these ratings see the label of output rating for details.

2.The product covered by this report is an Electric Bike,having a rating output: 54.6VDC, 2A,

provided with a certified adapter(adapter: input: AC 110-240V, 100W, 50/60Hz, output: DC 54.6V, 2A).

Relevant Technical consideration:

-Maximum ambient temperature: 25°C

Model Difference:
N/A

No.1	Clause(s)	Test(s)	Remark	Comment
	7	General	Maximum altitude of 2000 m ambient temperature range of 0°C to 40°C	Pass
	8	Power Levels	DC54.6V <240VA	Pass
	9	Combination of Battery, Battery Management System, and Charger	UL 2271 UL 62368-1	Pass
	10	User Protection While Charging	UL 2097	Pass
	11	Battery Packs	UL 2271	Pass
	12	Safety Circuits and Safety Analysis	UL 60730-1	Pass
	13	Enclosing and Insulating Hazardous Parts	UL 746C RTI>80°C V-1, UL94 No Sharp Edges	Pass
	14	Mounting	Vibration Test	Pass
	15	Printed Wiring Boards	UL 796	Pass
	16	Spacings and Separation of Circuits	UL 62368-1 for Electric Bike	Pass
	17	Flammability	V-0, UL94 Passed by UL 62368-1 for Electric Bike	Pass
	18	Internal Wiring and Terminals	Cannot touch live part	Pass
	19	Overcurrent Protection	UL 248-1	Pass
	20	Motors and Motor Controllers	UL 1004-1	Pass
	21	Operator Interface and Communication Devices	UL 62368-1	Pass
	22	Grounding and Bonding		N/A
	23	Chargers	UL 62368-1	Pass
	24	Electrical Cables and Connectors Between the eBike and the Equipment		Pass
	25	Supply Connections	UL 62368-1	Pass

	27	Input Test	See the table	Pass
	28	Temperature Test	See the table	Pass
	29	Isolation Resistance Test	See the table	Pass
	30	Dielectric Strength Test	See the table	Pass
	31	Humidity Conditioning	See the table	Pass
	32	Abnormal Operations Tests	See the table	Pass
	33	Impact Test	See the table	Pass
	34	Mold Stress	See the table	Pass
	35	Flexing Test		N/A
	36	Ingress Protection Tests	See the table	Pass
	37	Permanence of Marking	See the table	Pass
	38	Vibration Test	See the table	Pass
	39	Strain Relief	See the table	Pass
	40	Startup Assistance Mode Test		Pass
	41	Motor Assistance Control		Pass
	42-44	MARKINGS		Pass
	45-50	MARKINGS		Pass

Critical components information					
Component Name	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity**
Li-ion Battery Charger	Various	HZ-48V	Input: AC 110-240V, 100W, 50/60Hz, output: DC 54.6V, 2A	UL 62368-1	UL
Frame	Various	Various	Min thickness 1.7mm, V-2, HWI=2, HAI=0, 105ºC, screw for fixing	UL746 UL94	UR
Controller	Various	Various	48V 25A	--	UR
MOTOR	Various	Various	48Vdc 500W	UL 2849	Tested with appliance
Battery	Huizhou baidatong new energy Co., Ltd.	YT-HZQ10C	48V 10Ah	UL 2271	UL
Remark:					

Spacings *(16)*

16	Electrical Spacings					Pass
Clearance (cl) and creepage distance (cr) at/of/between:	U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Opposite polarity of battery	--	54.6	1.7	>2.5	1.7	>2.5
Input to Enclosure	--	--	--	--	--	--
Primary component to accessible enclosure (RI)	--	--	--	--	--	--
Primary trace to secondary trace under transformer (T1) (RI)	--	--	--	--	--	--
Primary winding to secondary winding of transformer (T1) (RI)	--	--	--	--	--	--
Supplementary information						
Note(s): --						

Protection of Users – Accessibility of Terminals *(18)*

18	***Accessibility probe***				Pass
Location	Dimension of opening	Tester	Observations	Pass	Fail
Opening	No opening	Articulate probe	Can’t touch Live parts and dangerous moving parts	√	--

INPUT TEST *(27)*

Method:

EUT is operating at: U=Un, F=Fn.
Load of the EUT is under maximum normal load.
The input current and wattage to the EUT shall be measured.
Multiple rated voltages or rated voltage range, each rated voltage shall be measured.
The current and power shall be taken under steady state conditions.

Result:

27	**TABLE: Electrical data (in normal conditions)**						**Pass**
[X] Max. Available load [ ] All interfaces and wireless max. load transmission [ ] 1/8 of 100% or [ ] Max. available non-clipped output power _____ [ ] _____							
U (V)	F (Hz)	I (A)	I rated (A)	P (W)	Fuse #	I fuse (A)	Condition/status
240	50	0.45	--	91.5	F1	0.45	Charge the battery
100	60	1.15	--	92.0	F1	1.15	Charge the battery
DC54.6V	--	1.52	2.0	83.0	--	--	Charge the battery
Voltage regulator:							

Temperature Test (28)

Method:

EUT primary is U=Un, F=Fn, operated under normal max. load.
Temperatures of parts are measured by thermal couplers, windings are measured by resistance change method.
Measuring place shall be a point close to the heat source.
The test is continued until thermal stable.
Voltage is changed lower or higher tolerance without rest of time.

Result:

28	**TABLE: Thermal requirements,**						Pass
	Supply voltage (V) .....:	DC 54.6V	--	--	--	--	—
	Ambient Tmin (°C) .....:	24.2	--	--	--	--	—
	Ambient Tmax (°C) ..... :	24.0	--	--	--	--	—
	Max. load	Charge battery	--	--	--	--	
	Model	--	--	--	--	--	
Maximum measured temperature T of part/at::		T (°C)					Allowed Tmax (°C)
Enclosure of Electric Bike		--	--	--	--	--	95
PCB near IC		56.2	--	--	--	--	130
Internal wire		47.8	--	--	--	--	75
Capacitor		46.5	--	--	--	--	105
Connector		41.5	--	--	--	--	70
Battery		38.8	--	--	--	--	60
Enclosure of battery		43.0	--	--	--	--	95
LCD panel		--	--	--	--	--	95
Switch		38.4	--	--	--	--	85

Supplementary information:

Temperature T of winding:	t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:
- NF: No Fire
- NE: No Explosion
- NL: No Leakage
- NR: No Rupture
- NS: No Electric shock hazard
- Fire: the emission of flames from a cell or battery.
- Explosion: failure that occurs when a cell container or battery case opens violently and major components are forcibly expelled.
- Leakage: visible escape of liquid electrolyte.- Others (please explain)

Result:

28	TABLE: Thermal requirements,						Pass
	Supply voltage (V) .....:	Power by full Battery	--	--	--	--	—
	Ambient Tmin (°C) .....:	23.8	--	--	--	--	—
	Ambient Tmax (°C) ..... :	23.9	--	--	--	--	—
	Max. load	Max. load	--	--	--	--	
	Model	--	--	--	--	--	
Maximum measured temperature T of part/at::		T (°C)					Allowed Tmax (°C)
Enclosure of Electric Bike		47.6	--	--	--	--	95
PCB near IC		66.2	--	--	--	--	130
Internal wire		51.4	--	--	--	--	75
Capacitor		54.0	--	--	--	--	105
Connector		--	--	--	--	--	70
Battery		48.2	--	--	--	--	60
Enclosure of battery		47.6	--	--	--	--	95
Winding of Motor		51.4	--	--	--	--	70
Enclosure of Motor		56.8	--	--	--	--	90
LCD panel		38.8	--	--	--	--	95
Switch		36.5	--	--	--	--	85

Supplementary information:

Temperature T of winding:	t1 (°C)	R1 (Ω)	t2 (°C)	R2 (Ω)	T (°C)	Allowed T_{max} (°C)	Insulation class
--	--	--	--	--	--	--	--

Supplementary information:

- NF: No Fire
- NE: No Explosion
- NL: No Leakage
- NR: No Rupture
- NS: No Electric shock hazard
- Fire: the emission of flames from a cell or battery.
- Explosion: failure that occurs when a cell container or battery case opens violently and major components are forcibly expelled.
- Leakage: visible escape of liquid electrolyte.- Others (please explain)

Isolation Resistance Test *(29)*

Method:

The test is made while the EUT is still in well-heated condition
Make sure the power switch of the EUT is in ON position.
Thin material can be tested in room temperature.
The test voltage is d.c. 500 voltage
Test voltage is applied gradually raised from zero to the specified voltage and held at that value for 60s.

33	TABLE: Insulation resistance measurements		Pass
Insulation resistance R between:		R (MΩ)	Required R (Ω)
DC input and enclosure		>100 MΩ	50000Ω
L/N and enclosure		>100 MΩ	50000Ω
L/N and output		>100 MΩ	50000Ω

Dielectric Strength Test *(30)*

Method:

The test is made while the EUT is still in well-heated condition
Make sure the power switch of the EUT is in ON position.
Thin material can be tested in room temperature.
The test voltage is a.c. of 50 or 60 Hz or d.c. voltage equal to peak value of the a.c. voltage.
Test voltage is applied gradually raised from zero to the specified voltage and held at that value for 60s.
Insulation breakdown is: Current flows through the insulation rapidly increases in an uncontrolled manner; that is the insulation does not restrict the flow of the current.
Corona discharge or a single momentary flashover is not regarded as insulation breakdown.
A test incorporating reinforced insulation and lower grades insulation (BI, SI), care is taken not to overstress BI or SI.
Where capacitors (X or Y capacitors) are across the insulation, d.c. voltage is recommended for the test.
Discharge resistors shall be disconnected before testing.

Result:

30	**Electric strength test**		Pass
Test voltage applied between:		Test voltage (V)	Breakdown
Input and enclosure		AC1480 60Hz	No
Input and output		AC1480 60Hz	No

Humidity Conditioning (31)

31	Humidity Conditioning Test		Pass
Test voltage:	48h, 90%R.H., 32°C		
Measured point:	Test V (V)	Measured	Limit
Input and Enclosure	DC500V	>100MΩ	30000Ω
Neutral and output accessible terminal	DC500V	>100MΩ	30000Ω
Line and accessible enclosure surface	DC500V	>100MΩ	30000Ω
Neutral and accessible enclosure surface	DC500V	>100MΩ	30000Ω
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester			
31	Dielectric Voltage-Withstand Test		Pass
Measured point:	Test V (V)	Breakdown	Limit
Line and output accessible terminal	AC 1480V	No	100mA
Neutral and output accessible terminal	AC 1480V	No	100mA
Line and accessible enclosure surface	AC 1480V	No	100mA
Neutral and accessible enclosure surface	AC 1480V	No	100mA
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester			

Abnormal Operation Test (32)

32	Abnormal Operations and Fault Conditions Test	**Pass**
Requirement	Result	Remarks
During the test:		
Fire propagates beyond the EUT?	~~Yes~~ / No	--
Molten metal emitted?	~~Yes~~ / No	--
Enclosures deform to cause non-compliance with the standard?	~~Yes~~ / No	--
After the test:		
Electric strength test on reinforced insulation breakdown?	~~Yes~~ / No	--
Electric strength test on Basic insulation breakdown?	~~Yes~~ / No	--
SC: Short-circuited; **OC:** Open-circuited; **OL:** Over-load; **BK:** Block; **RP:** Reverse-polarity; **LK:** Lock; **DC:** Disconnect; **OVC:** Overcharging under Max. available charging voltage or 106% rated voltage; **ED:** Excessive discharging		
Voltage regulator, power meter, Data Acquisition/Switch Unit , Oscilloscope, Oscilloscope Probe, Digital Micro-ohmmeter, Withstanding Voltage Tester, DC Electrical load;		

32 Abnormal Operations and Fault Conditions Test			**Pass**
Ambient temperature (°C) ……:		25.0°C	
Comp./ fault		Result / Observation	
U1 Pin 1-8	Test voltage: _DC54.6V_ Duration: _10min_ SC No: __ I/P current (A): _1.3_ I/P power (W): __	☐ Become steady, output power / current _____ ☐ Shut down immediately, and _____ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark: --
U1 Pin 2-6	Test voltage: _DC54.6V_ Duration: _10min_ SC No: __ I/P current (A): _1.12_ I/P power (W): __	☐ Become steady, output power / current _____ ☐ Shut down immediately, and _____ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark: --
U2 Pin 3-2	Test voltage: _DC54.6V_ Duration: _10min_ SC No: __ I/P current (A): _0.25_ I/P power (W): _0_	☐ Become steady, output power / current _____ ☒ Shut down immediately, and ____No_ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark: --
U2 pin 3-4	Test voltage: _DC54.6V_ Duration: _10min_ SC No: __ I/P current (A): _0.15_ I/P power (W): _0_	☐ Become steady, output power / current _____ ☒ Shut down immediately, and __No__ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark: --
Battery	Test voltage: _DC54.6V_ Duration: _10min_ SC No: _ _ I/P current (A): _0_ I/P power (W): _0_	☐ Become steady, output power / current _____ ☒ Shut down immediately, and ___No___ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark:
Electric Bike output	Test voltage: AC120V_ Duration: _10min_ SC No: _ _ I/P current (A): __ I/P power (W): _0.08_	☐ Become steady, output power / current _____ ☒ Shut down immediately, and __No_ damaged, can't be recovered, repeated ____ times. ☐ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Remark: --

Locked Motor	Test voltage: _54.6V_ Duration: _2h_ Fuse or Fuse resistor No: _ _ I/P current (A): _Max. 5.5A_ I/P power (W): _0_	☐ Become steady, output power / current _____ ☐ Shut down immediately, and _____ damaged, can't be recovered, repeated ____ times. ☒ Protected, can be recovered.	☐ Fuse opened immediately ☐ Fuse opened after __ ☐ T.F opened after __ ☐ see raw data __ ☒ No hazards Winding of motor:88.0°C Remark: --

Impact Test (33)

33	TABLE: Strain relief test			Pass
Test part	Temperature (℃)	Duration (h)	Result	
Enclosure	70	1h	Pass electrical strength	
Notes: Oven temperature shall be 10 K higher than the maximum temperature on the enclosure but not less than 70°C.				
supplementary information: - NF: No Fire - NE: No Explosion - NL: No Leakage - Fire: the emission of flames from a cell or battery. - Explosion: failure that occurs when a cell container or battery case opens violently and major components are forcibly expelled. - Leakage: visible escape of liquid electrolyte.- Others (please explain)				

33	TABLE: Impact test Vertically			Pass
Model	weighing	Test temperature (°C)	Impact energy (J)	Results
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
No damage.				
33	TABLE: Impact test Horizontally			Pass
Model	weighing	Test temperature (°C)	Impact energy (J)	Results
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
Enclosure	0.535kg, D:50.8mm	25	6.8J	P
No damage.				

Mold Stress *(34)*

34	TABLE: Strain relief test			Pass
Test part	Temperature (℃)	Duration (h)	Result	
Enclosure	70	1h	Pass electrical strength	

Notes:

Oven temperature shall be 10 K higher than the maximum temperature on the enclosure but not less than 70°C.

supplementary information:
- NF: No Fire
- NE: No Explosion
- NL: No Leakage
- Fire: the emission of flames from a cell or battery.
- Explosion: failure that occurs when a cell container or battery case opens violently and major components are forcibly expelled.
- Leakage: visible escape of liquid electrolyte.- Others (please explain)

34	TABLE: Insulation resistance measurements			Pass
Measured point:		Test V (V)	Measured	Limit
Input and Enclosure		DC500V	>100MΩ	30000Ω
Neutral and output accessible terminal		DC500V	>100MΩ	30000Ω
Line and accessible enclosure surface		DC500V	>100MΩ	30000Ω
Neutral and accessible enclosure surface		DC500V	>100MΩ	30000Ω
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester				
34	Dielectric Voltage-Withstand Test			Pass
Measured point:		Test V (V)	Breakdown	Limit
Line and output accessible terminal		AC 1480V	No	100mA
Neutral and output accessible terminal		AC 1480V	No	100mA
Line and accessible enclosure surface		AC 1480V	No	100mA
Neutral and accessible enclosure surface		AC 1480V	No	100mA
Oscilloscope, Measuring circuit for touch current according to Annex D, Leakage Current Tester				

Ingress Protection Tests (36)

Test procedure

For IPX4, the sample is positioned under oscillating spray tubes rotating at nearly±180° from the vertical for 10 minutes. The oscillation rate is two cycles of about360° in 12 seconds. Each surface of the enclosure within the spray arch is to be tested for 1 min/m2, with no less than 5 minutes of total test timeThe flow rate again depends upon the tube size, Withstand voltage test is pass, No harmful effects

IPX4	-For IPX4, the sample is positioned under oscillating spray tubes rotating at nearly±180° from the vertical for 10 minutes. The oscillation rate is two cycles of about360° in 12 seconds. Each surface of the enclosure within the spray arch is to be tested for 1 min/m2, with no less than 5 minutes of total test timeThe flow rate again depends upon the tube size, Withstand voltage test is pass, No harmful effects	No harmful effects	Pass
supplementary information: - NF: No Fire - NE: No Explosion - NL: No Leakage - Fire: the emission of flames from a cell or battery. - Explosion: failure that occurs when a cell container or battery case opens violently and major components are forcibly expelled. - Leakage: visible escape of liquid electrolyte.- Others (please explain)			

Permanence of Marking (37)

37	MARKING DURABILITY		Durable and legible	
Type of marking	15 seconds of water	15 seconds of petroleum	Pass	Fail
Rating label	--	--	√	--
Stop watch				

Vibration Test (38)

38	TABLE: Vibration tests			P
Model	OCV at start of test, (Vdc) for battery	Test frequency (Hz)	Vibration time (h)	Results
Electric bicycle	Fully	10Hz~55Hz~10Hz	1h	P
Electric bicycle	Fully	10Hz~55Hz~10Hz	1h	P
Electric bicycle	Fully	10Hz~55Hz~10Hz	1h	P

Supplementary information:
- NF: No Fire
- NE: No Explosion
- NL: No Leakage
- NR: No Rupture
- NS: No Electric shock hazard
- No loosening of parts
- Operate normally.

Strain-Relief Test pull test (39)

Pull Location	Samples	Force	Observations	Pass	
				Pass	Fail
Connector wire	1#	35lbs (156N)	No damaged, no breakage, without displacement	√	
Connector wire	2#	35lbs (156N)	No damaged, no breakage, without displacement	√	
Connector wire	3#	35lbs (156N)	No damaged, no breakage, without displacement	√	

push back test (39)

Pull Location	Samples	Force	Observations	Pass	
				Pass	Fail
Connector wire with switch	1#	6lbs (26.7N)	No damaged, no breakage	√	
Connector wire with switch	2#	6lbs (26.7N)	No damaged, no breakage	√	
Connector wire with switch	3#	6lbs (26.7N)	No damaged, no breakage	√	

Photo 1 Overall view

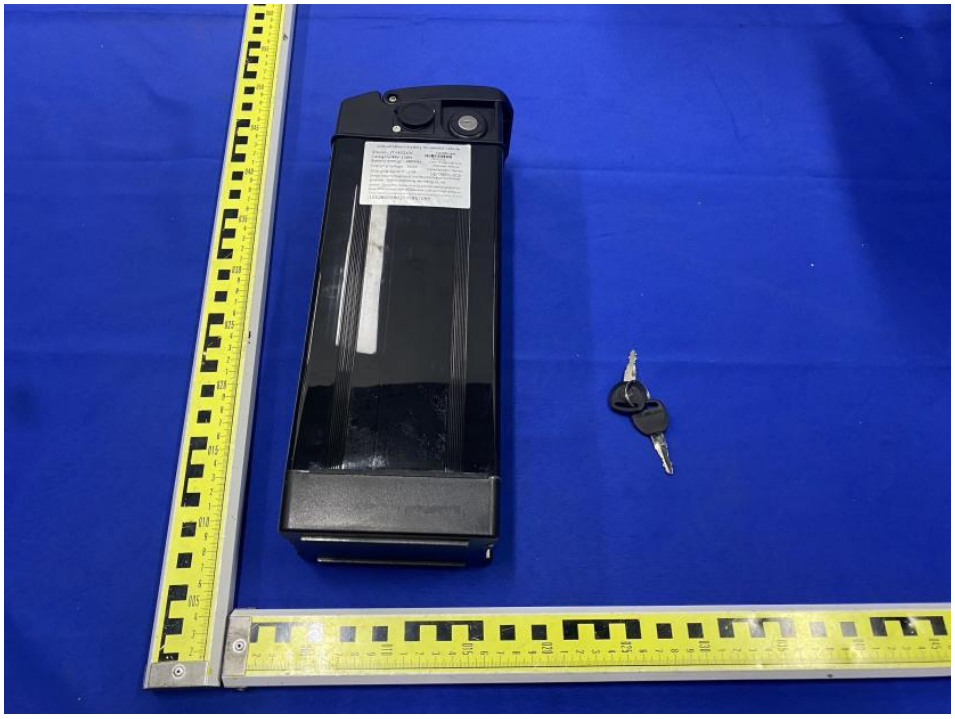
Photo 2 Overall view

Photo 3 Overall view

Photo 4 Overall view

Photo 5 Adapter view

Photo 6 Battery view



End of Report