SAFETY AND COMPLIANCE REPORT FOR RAZOR USA

Tested Sample(s)	**:** Electric Quad
Brand	**:** Razor
Model	**:** Dirt Quad
Color	**:** Red/Black
Size	**:** Not Specified
Stock / Model Number	**:** 25143060(25143058),25143001, 25143002(25186501) (25143099), 25143059, 25143061, 25143000, 25143003, 25143042, 25143030, 25143099
Country of Origin	**:** China
Age Grading	**:** 8+ years
Children's Product	**:** Yes

Prepared For:

RAZOR USA, LLC. SHANGHAI OFFICE
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Qingpu District, Shanghai
China

Issue Date: 03 June 2020

<u>Final Report</u>: 248.02762.001.UL2272

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009.) The Joint Communiqué is available on publications and resources page of the ILAC website at http://www.ilac.org. Accreditation listing and certificate can be found at http://www.iasonline.org.

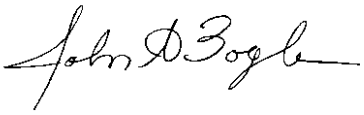
Contract File No.: 248.02762.001
T:\ACT Testing\Razor – 248.02762
Control Document Rev. 20 Dec. 2016

Technician: Fisher Yan

CONCLUSION

Razor, Dirt Quad (Red/Black) 25143060(25143058), 25143001, 25143002 (25186501) (25143099), 25143059, 25143061, 25143000, 25143003, 25143042, 25143030, 25143099		
Purpose of Test - Each test performed is intended to check compliance with the following:	**Result**	**Comment**
UL 2272 Personal e-Mobility Devices Compliance Testing	C	See results within.

President,



John A. Bogler

SAMPLE IDENTIFICATION

Brand:	Razor	**Job No.:**	248.02762.001
Model:	Dirt Quad	**Type:**	Electric Quad
Factory:	Zhejiang Feishen Vehicle Industry Co., Ltd.	**Size:**	Not Specified
Alternative Factory:	Roolley Sports Products (Kunshan) CO., LTD.	**Color(s):**	Red/Black
Battery：	CP1270AC	**Weight (kg):**	40.55
Alternative Battery*:	Kaiying(Longway) 6FM7 Xiongtao(Vision) CP1270A Xiangrui (OD) 6-DW-7	**Country of Origin:**	China
Stock No.:	25143060(25143058), 25143001, 25143002(25186501) (25143099), 25143059, 25143061, 25143000, 25143003, 25143042, 25143030, 25143099	**Serial No.:**	BA1K3001237

*the product was tested with the battery indicated in the Battery field

248.02762.001 – Dirt Quad (Red/Black)

Test results apply to the following additional model:

Sample ID	Model
248.02762	Dirt Quad 500

DATE AND PLACE OF TEST

Sample(s) received : 06 May 2019
Testing was initiated on : 22 May 2019
Retest sample received on : 30 April 2020
Testing was completed on : 08 May 2020
Testing was performed at : Taicang ACT Sporting Goods Testing Company, LTD.
Taicang City, Jiangsu Province, China
Testing was performed at : Shanghai Lelangtek
2nd Floor, Building 1, No.158 Jinfeng Road, Pudong District, Shanghai
Testing was performed at : Guangdong Inspection &Quarantine Technology Center (IQTC)
Tower B, No.66 Huacheng Avenue
Zhujiang Xincheng, Guangzhou, China 510623

TEST METHODS

Method for each test conducted is as follows:

- UL2272 testing was performed utilizing the test methods from the UL2272: Investigation for Electrical Systems for Self-Balancing Scooter.

TEST RESULTS

C: Compliant; Product meets specified standard **NC:** Non-Compliant; Product does not meet specified standard **NA:** Not Applicable to this design **NR:** Not Requested by the Applicant **NP:** Not Present	**ND:** None Detected **IC:** Inconclusive **NT:** Not Tested **FTR:** Further Testing Recommended **PPM:** Parts Per Million ***:** See Comments

UL 2272: Personal e-Mobility Devices Compliance Testing

UL 2272 Standard for Electrical Systems for Self-Balancing Scooters			
Ref. #	**Test Description**	**Result**	**Observations and Notes**
	CONSTRUCTION		
7	Non-Metallic Materials		
7.1	Enclosure Materials Comply with UL746C, Path III of Enclosure Requirements in Table 4.1 (or CAN/CSA-C22.2 No. 0.17)	C	
7.2	Polymeric Materials – Minimum Flame Rating of 94V-1 (UL 94 or CAN/CSA-C22.2 No. 017)	C	
7.3	Resistance to impact, crush resistance, abnormal operations, sever conditions, mold-stress relief distortion	C	
7.4	Polymeric Materials – Enclosure w/ Insulation shall have Relative Thermal Index ≥ 80°C (176°F) (UL 746B or CAN/CSA-C22.2 No. 017)	C	
7.5	Enclosure Materials Exposed to Sun/Rain Meet UV Resistance and Water Exposure/Immersion Tests (UL 746C or CAN/CSA-C22.2 No. 017)	NA	
7.6	Electrical Insulation shall be resistant to deterioration	C	
7.7	Gaskets and Seals Relied Upon for Safety Meet Environmental Requirements.	C	
8	Metallic Pasts Resistance to Corrosion		
8.1	Metal Enclosures – Corrosion Resistant (UL 50E or CAN/CSA-C22.2 No. 94.2)	C	
8.2	Insulation of Metal Enclosures – Non-Moisture Absorbent Materials w/ Suitable Temperature Rating.	C	
8.3	Conductive parts at terminals and connections shall not be subject to corrosion due to electrochemical action.	C	
9	Enclosures		
9.1	General		
9.1.1	Enclosure Strength and Rigidity	C	
9.1.2	Minimum Tool Requirement for Access to Enclosure (pliers, screwdriver, wrench…)	C	
9.1.3	Inadvertent Access to Hazardous Parts/Situations	C	
9.1.4	Openings in the enclosure shall be designed to prevent ingress of water (IPX4)	C	
9.2	Battery Components		
9.2.1	Cell vents shall not be obstructed	C	
9.2.2	Battery Compartments – Proper Venting and Security from Excessive Movement/Stress	C	
10	Wiring and Terminals		
10.1	Wiring shall be insulated properly	C	
10.2	Internal Wiring Strain Relief – no loosening of connections or damage of insulation	C	
10.3	External Terminals – designed to prevent inadvertent shorting, misalignment, or disconnection when scooter is in use	C	
10.4	Removable Battery Packs – Terminals not readily accessible	NA	
10.5	Removable Battery Packs – Endurance Test (UL 2251 or CAN/CSA C22.2 No. 282)	NA	
10.6	Holes for Wiring – smooth surface, free of burrs, fins, sharp edges, etc..	C	
10.7	Hazardous Voltage Warning Label (ISO 7010, No. W012 – i.e. lightning bolt within triangle)	NA	
11	Charges		

UL 2272 Standard for Electrical Systems for Self-Balancing Scooters			
Ref. #	**Test Description**	**Result**	**Observations and Notes**
11.1	Charger meets Standard for Class 2 Outputs (UL 1310) and is compatible w/ battery	C	
11.2	Charger Connector – shall be designed to prevent misalignment and reverse polarity.	C	
12	Fuses		
12.1	Fuses shall be acceptable for the current and voltage of the circuit they protect.	C	
12.2	Replaceable Fuses – Replacement properly/obviously marked adjacent to holder	C	
13	Lighting – correctly rated bulbs. Replacement care.	NA	
14	Electrical Spacings and Separation of Circuits		
14.1	Circuits w/ reverse polarity shall have enough spacing (or insulated properly) to prevent inadvertent shorting.	C	
14.2	Electrical Spacings – Minimum over surface and through air spacing from Table 13.1	C	
14.4	Conductors of Circuits operating at different voltages shall be reliably separated (space or insulation)	C	
15	Insulation Levels and Protective Grounding		
15.1	Hazardous Voltage Circuits – Insulated from accessible conduction parts and safety extra low voltage circuits (60 Vdc or 48 Vrms)	C	
15.4	Protective Ground System – Max Resistance of 0.1 Ω	NA	
15.5	Ground Terminal Identification	NA	
15.6	Conductor shall be properly sized – shall be green or green & yellow striped in color	NA	
16	Protective Circuits and Safety Analysis		
16.2	Analysis of potential electrical and energy hazards (FMEA)	C	
16.4	Critical Safety Circuits – provided with redundant passive protection,	C	
16.5	Electronic and Software Protection Scheme (UL 991, UL 60730-1, IEC 61508-1)	C	
16.6	Scooter's Containing Hazardous Voltages – Manual Disconnect	NA	
16.7	Manual Disconnect Requirements (no auto reset, disconnects both poles, capable of full load disconnects, and no hazardous conditions upon automatic actuation)	NA	
16.8	Charger connect-interlock. Unit cannot be activated when charger is plugged in	C	
17	Cells		
17.2	Lithium based Cells – comply w/ UL 2580 (UL 2271, or CAN/ULC-S2271)	NA	
17.4	Nickel Based Cells – comply w/ UL 2580 (UL 2271, or CAN/ULC-S2271)	NA	
17.5	Valve regulated lead acid batteries shall comply with pressure release test from UL 1989	C	
17.6	Electrochemical capacitors shall comply with the capacitor requirements in UL 810A	C	
18	Motors		
18.1	Not Hazardous Under Locked Rotor and Overload Conditions	C	
18.2	Motors shall be capable of carrying max normal anticipated load without exceeding temperatures on insulation and windings.	C	
18.3	Motors in Hazardous voltage Circuits – comply w/ UL 1004-1 or CSA-C22.2 No. 100	C	
19	Manufacturing and Production Line Testing		
19.6	Continuity check of the grounding conductors	NA	
19.7	Documentation of production process	NA	

UL 2272 Standard for Electrical Systems for Self-Balancing Scooters			
Ref. #	**Test Description**	**Result**	**Observations and Notes**
	PERFORMANCE		
22	Post Test Cycle	C	
	ELECTRICAL TESTS		
24	Overcharge Test	C	IQTC Report #01051900002999
25	Short Circuit Test	C	IQTC Report #01051900002999
26	Over-discharge Test	C	IQTC Report #01051900002999
27	Temperature Test	C	IQTC Report #01051900002999
28	Imbalanced Charging Test	C	IQTC Report #01051900002999
29	Dielectric Voltage Withstand Test	NA	
30	Isolation Resistance Test	NA	
31	Leakage Current Test	NA	
32	Grounding Continuity Test	NA	
	MECHANICAL TESTS		
33	Vibration Test	C	Lelangtek Report AL011905210502EN
34	Shock Test	C	
35	Crush Test	NA	
36	Drop Test	C	
37	Mold Stress Relief Test	C	
38	Handle Loading Test	C	
39	Motor Overload Test	C	
40	Motor Locked Rotor	C	
41	Strain Relief Test (Cord Anchorages)		
41.2	Strain Relief Pull Test	C	
41.3	Push-Back Test	C	
	ENVIRONMENTAL TESTS		
42	Water Exposure Tests		
42.1	IPX4 Code Rating	C	
42.2	Partial Immersion	C	
43	Thermal Cycling Test	C	
44	Label Permanence Test	C	
	MARKINGS		
45.1	Legible and Permanent Markings (adhesive-backed labels must comply w/ UL 969)	C	
45.2	Mandatory Markings: Manufacturer's Name, Part #, Model #, Electric Ratings (Vdc and Ah or Wh), Max Weight (lbs), and Max Speed (mph)	C	

UL 2272 Standard for Electrical Systems for Self-Balancing Scooters			
Ref. #	**Test Description**	**Result**	**Observations and Notes**
45.3	Date of Manufacture or Traceable Date Code	C	
45.4	Charging Instructions ("Use Only (__) Charger")	C	
45.5	External Terminal and Connections – Proper ID and Polarity Markings	C	
45.6	Separable Battery Pack Specs – "Use only (---) battery pack w/ this scooter…"	NA	
45.7	Ground Connection Markings	NA	
45.8	Warning for Hazardous Voltage Circuits	NA	
45.9	Warning about reading instruction manual.	C	
45.10	Marks for IPX4 rating not required. Scooters marked w/ higher IP ratings shall comply with those ratings.	NA	
45.11	Plastic enclosure not evaluated for exposure to UV light and rain per 7.5 shall be marked with the equivalent, "Store Indoors When Not in Use."	NA	
	INSTRUCTIONS		
46.1	Shall Include:		
	Charing Instructions	C	
	Operating Instructions	C	
	Storage and Disposal Instructions	C	
	Temperature Limits	C	
	Appropriate Charger Specs	C	
	Weight Limits (min and max)	C	
	Max Speed	C	
	Instructions for Water and Other Environmental Exposures	C	
	Instructions for Riding Surface/Terrain, Use on Gradients, etc.	C	
	Instructions for Replaceable Fuses and Light Bulbs	C	
46.2	Removable Battery Pack Instructions	NA	
46.3	Warning about Risk of Fire and Electric Shock – No User Serviceable Parts	C	
46.4	Devices not intended for use in high altitude locations shall indicate not intended for use at elevations greater than 2000 m above sea level.	NA	
46.5	Devices intended to be stored indoors to protect against prolonged exposure to UV rays or the elements that may damage enclosure shall have warning in instructions.	NA	


Razor ELECTRICAL CONTROLLER
ROHS
P/F
Rating Voltage : 24V
Batch No: 0316
Maximun Current : 30A
Version : V03
Under Voltage : 20.6±0.5V
Manufacturer : SZ
Model No : HB2430-TYD6-FS-ROHS
Date : 2019.03.23
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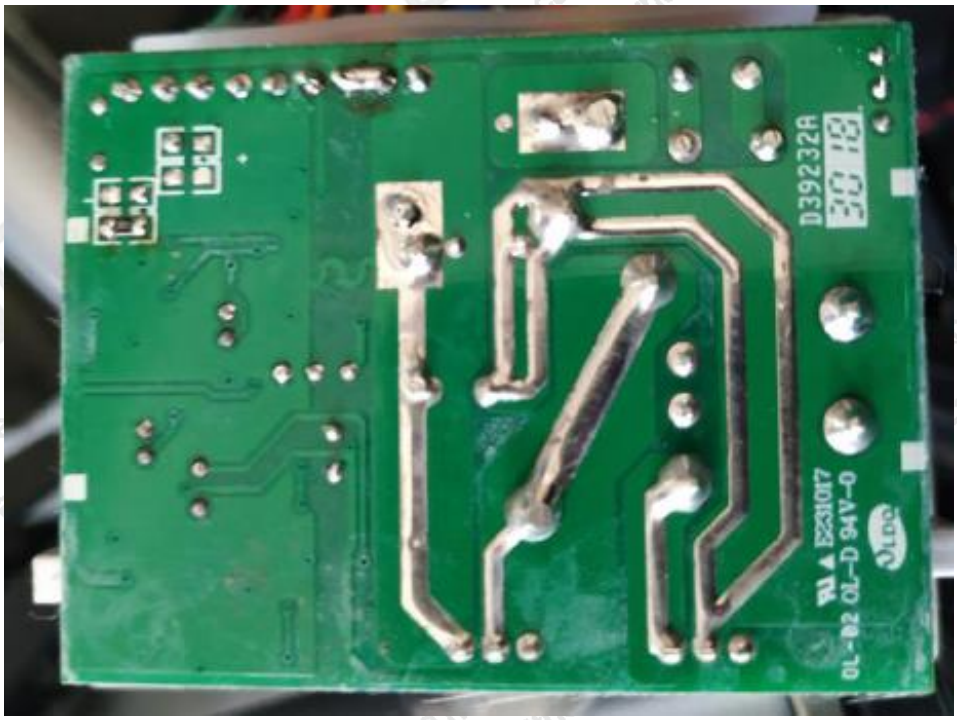
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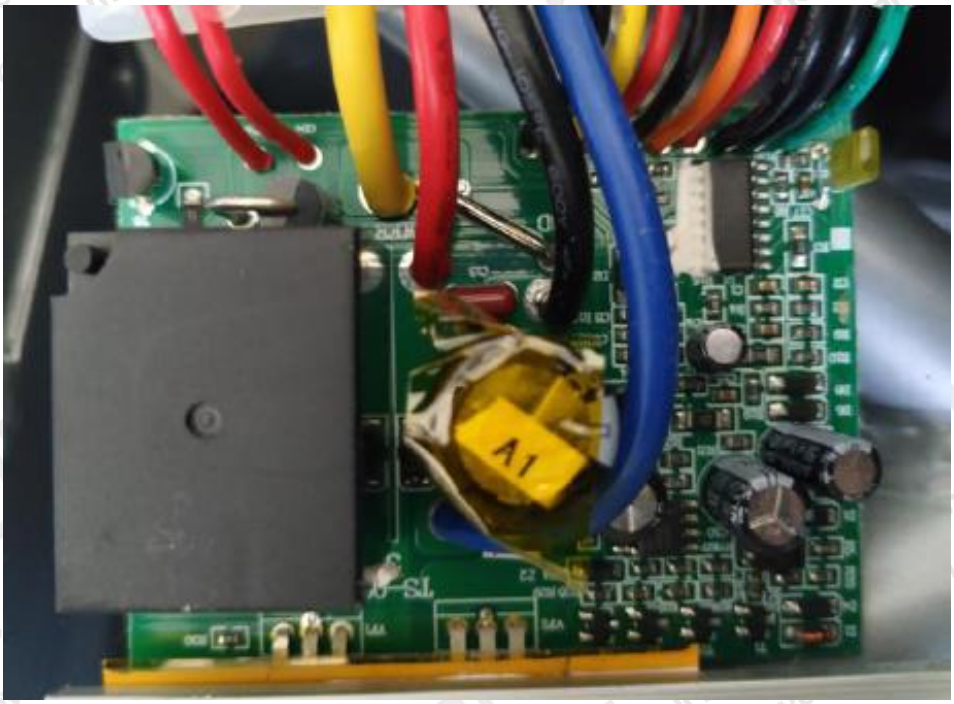

Electrical Controller

Battery

Battery Charger

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END OF REPORT