Serial Number:

INSPECTION REPORT

Product Name: Electric Scooter Powered by Zinc/Air Battery

Company Examinated: Powerzinc Electric, Inc.

Type of Examination: Performance

No. 21 Electronic Research Institute of
The Ministry of Information Industry of China

Product Name	Electric Scooter Powered by Zinc/Air battery	Specification	Sample
		Trademark	—
Company Examinated	Powerzinc Electric, Inc.	Type of Inspection	Performance
Manufacturer	Powerzinc Electric, Inc.	Rate of Sample	Qualified
Location of Examination	Shenzhen, China	Date of Sample Received	December 30, 1999
Quantity of Sample	One	Sample Sender	—
—	—	No. of Items Inspected	3 Items
Date of Inspection	December 30, 1999 – January 3, 2000	Original Serial No. or Mfg. Date	—
Temperature	18~23℃	Humidity	46~70%RH
Standard of Certification	DB31/200-1997 DB31/202-1997		
Conclusion	Capacity of Climbing: ⩾ 14 degrees Distance of Continual Driving: > 203km (speed: ⩾ 30km per hour) (Inspection Seal) Date of Issue: January 5, 2000		
Remarks	Peak Voltage of the Battery: 66VDC		

Inspection Officer: Yu Wangping Auditor: Hui Fang shen Approved: Shih Chih-How

Inspection Items

1. Discharging Test of the Sample

Items		Speed (km/h)	Current (A)	Voltage (V)	Remarks
1	Highest power when running against wall.	0	60	40	
2	14° Slope	16	55	40 - 42	The degree of the slope is not even. The length of the slope > 200M
3	9° Slope	25	53	42	
4	Even Road	60	48 - 55	42	As the speed was not constant, the recorded current may be somewhat higher.

2. Speed vs. Current and Voltage

Even Road	Speed (km/h)	Current (A)	Voltage (V)	Remarks
1	10	10	50 - 55	As the speed was not constant, the recorded current may be somewhat higher.
2	15	12.5	50 - 55	
3	20	15	50 - 55	
4	30	18	50 - 55	
5	40	20	50	
6	55	45	42	
7	60	48 - 55	42	

3. Continual Driving Test

Overall Distance	> 203 km
Speed	⩾ 30 km/h
Current	12-15A

Notes:

1. Date of testing: From 12-30-1999 to 1-3-2000
2. Sites of testing: Shenzhen Driving Training Field and South District of Shenzhen Hi-tech Park
3. Field Climate: Cloudless; Wind Speed: 2-3 M/sec., Atomospheric Temperature: 18~23^0 C
4. Continual driving distance: > 203km, at an average speed of 30km/h.
5. Weight of the scooter (with batteries): 112 kg
6. Weight of the driver: ~70kg
7. Drivers: Yantao Chang, Yongjian Wu, Yingfeng Wei, Wangping Yu
8. Recorders: Yuqiang Yang, Yongren Lin, Deqian Yang, Huifang Shen
9. Supervisor: Jun Gong
10. After having been driven for over 208km at the speed of 30km/h, PE's zinc-air batteries have spent at most 80% of its energy, i.e. 4,648wh of the total 5,810wh. This means 22.3wh/km of energy consumed. If the shut-off point of the low-voltage protection of the scooter's motor-controller be reduced to 38V according to the performance of zinc-air battery, the driving distance will be much longer.
11. PE's zinc-air batteries weigh 38.2 kg, equivalent to 152wh/kg. The lead-acid batteries previously installed on the scooter weigh 60.8 kg with 1,920wh energy, equivalent to 31.6wh/kg.