
DOE and CEC Energy Conservation Standards for Battery Chargers

Technical Report No. 68.180.24.0070.01

Dated 2024-07-08

Client: Name: Shenzhen Yunding Information Technology Co., Ltd.
Address: 28G, Building 3, Dachong Business Center(Phase 3), No.18,
Dachong 1st Road, Dachong Community, Yuehai Street, Nanshan District,
518054 Shenzhen City, Guangdong Province, PEOPLE'S REPUBLIC OF
CHINA

Manufacturing place: Manufacturer's name: same as client
Address: same as client

Factory's name: Xiamen Smart Tech Healthcare Co., Ltd.
Address: The East of 4th Floor, Building Four, No.89, Dingshanzhong Road,
Dongfu Street, Haicang District, 361000 Xiamen, Fujian province,
PEOPLE'S REPUBLIC OF CHINA

Test Subject: Product: Oclean X Lite Sonic Electric Toothbrush
Type: N1801


Trade Mark(s): **oclean** (Oclean)

Test Specification: ☒ DOE:
Appendix Y to Subpart B of Part 430, 10 C.F.R.;
10 CFR Part 430 32(z).

☒ CEC:
Appendix Y to Subpart B of Part 430, 10 C.F.R. (Federally Regulated Battery
Chargers);
Appendix Y to Subpart B of Part 430, 10 C.F.R. (Jan. 1, 2017) (State
Regulated Battery Chargers);
California Code of Regulations Title 20, Division 2, Chapter 4, Article 4,
Sections 1601-1605, 1607: Appliance Efficiency Regulations – Battery
Chargers and Battery Charger Systems.

Purpose of examination: Testing and evaluation according to the test specification

Test result: The test results show that the presented product is in compliance with the
specified requirement.

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1.1 Function

Oclean X Lite Sonic Electric Toothbrush

1.2 Model description

Battery charger type:

- ☒ DOE Battery Charger defined in 10 CFR 430.2
☒ CEC Federally Regulated Battery Charger
☐ CEC State Regulated Battery Charger: Small Battery Charger Systems
☐ CEC State Regulated Battery Charger: Inductive Charger Systems
☒ Single-port, Single-voltage, Single-capacity Charger
☐ Multi-port Charger
☐ Multi-voltage Charger
☐ Multi-capacity Charger
☐ Others:

Battery chemistry:

- ☐ Valve-Regulated Lead Acid (VRLA) ☐ Flooded Lead Acid ☐ Nickel Cadmium (NiCd)
☐ Nickel Metal Hydride (NiMH) ☒ Lithium Ion (Li-Ion) ☐ Lithium Polymer
☐ Rechargeable Alkaline ☐ Lithium Iron Phosphate ☐ Silver Zinc
☐ Others, please specify:

Product class:	2
Number of the battery of tested battery charger:	1pcs
The manufacturer of the battery:	Huizhou Highpower Technology Co.,Ltd
The model number of the batteries:	14650

1.3 Consideration of the foreseeable misuse

- ☒ Not applicable
☐ Covered through the applied standard
☐ Covered by the following comment
☐ Covered by attached risk analysis

1.4 Technical Data

- Ratings input:	Input: 5VDC, 0.5A
- Rated voltage of tested battery (V):	3.7
- Rated charge capacity of tested battery (Ah):	1.05
- Rated charge energy of tested battery (Wh):	3.885
- Number of charger ports:	1

2 Order

2.1 Date of Purchase Order, Customer's Reference

2024-06-18

2.2 Receipt of Test Sample, Location

Samples were received on 2024-06-20, TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch, Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, 518052 Shenzhen, China

2.3 Date of Testing

From 2024-06-20 to 2024-07-04

2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch,
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District,
518052 Shenzhen, China

2.5 Points of Non-compliance or Exceptions of the Test Procedure

N/A

3 Test results

3.1 General test condition

Ambient temperature (°C): (20±5)	22.8
Maximum air speed (m/s): ≤0.5m/s	0.3
For AC input:	
Test frequency tolerance: (±1.0%)	N/A
Maximum THD of voltage: (≤2%)	N/A
Crest factor: (1.34-1.49)	N/A
For DC input, the AC ripple voltage (RMS) shall be	
≤ 0.2 V for DC voltages up to 10 V, or	PASS
≤ 2 percent of the DC voltage for DC voltages over 10 V	N/A

3.2 Test results

Table 1	DOE Battery Chargers and CEC Federally Regulated Battery Chargers									PASS
Table 1.1	Power measurement									
Model	Sample No	U _{Input} (V)	F (Hz)	E ₂₄ (Wh)	P _m (W)	E _{Batt} (Wh)	t _{cd} (h)	P _{sb} (W)	P _{off} (h)	UEC _{measured} (kWh/year)
N1801	1	5.0	--	6.6005	0.0040	4.3342	24	--	--	0.559
N1801	2	5.0	--	6.9654	0.0039	4.4803	24	--	--	0.614
Supplementary information:										
- Setting: as shipped - Other Non-Battery-Charger Functions: switch off. - UEC means unit energy consumption.										
Table 1.2	Calculated value									
Represented value of E _{Batt} (Wh):				4.407				--		
Represented value of E ₂₄ (Wh):				6.783				--		
Represented value of P _m (W):				0.004				--		
Represented value of P _{sb} (W):				--				--		
Represented value of P _{off} (W):				--				--		
Represented value of t _{cd} (h):				24				--		
Mean value of UEC (kWh/year):				0.587				--		
UEC _{ULC} /1.05 (kWh/year):				0.889				--		
Represented value of UEC (kWh/year) (greater than or equal to):				0.889				≤UEC _{max}		
UEC _{max} (kWh/year):				3.584				≥UEC _{measured}		

4 Remark

4.1 Appendix I – Product photo

Appendix II – Marking and Label

Appendix III – Equipment list

5 Documentation

N/A

6 Summary

The test specification(s) is (are) met.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch, TÜV SÜD Group

Engineer:

Technical report checked:

Monica Zhao

Monica Zhao
Project Handler

Tom Du
Designated Reviewer

Appendix I – Product photo

Details of: Overall view (blue enclosure)



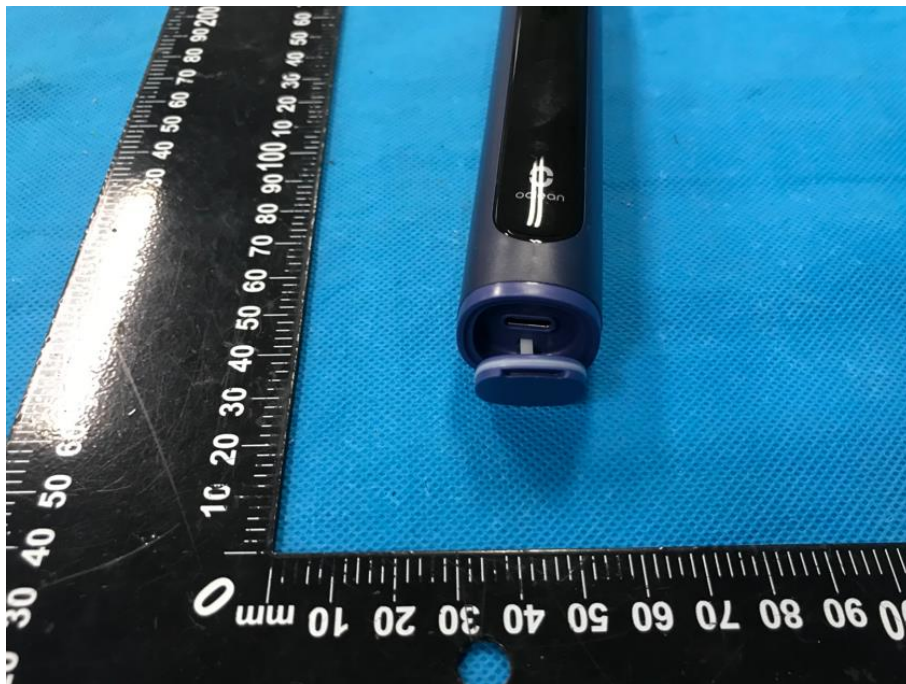
Details of: Overall view (white enclosure)



Details of: Overall view



Details of: Input terminal view



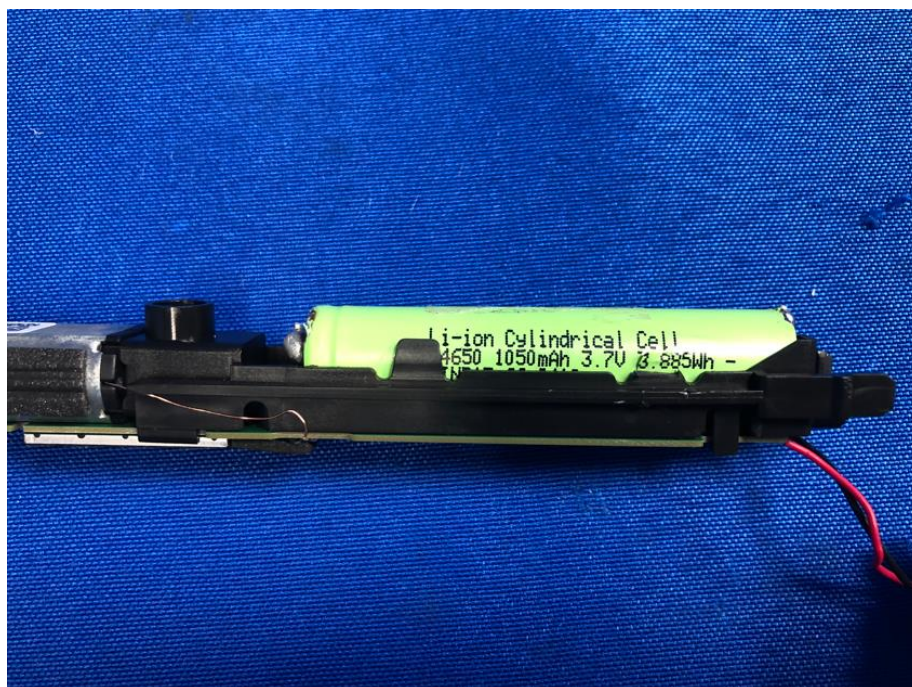
Details of: Internal view



Details of: Internal view



Details of: Battery view



Appendix II – Marking and Label



Remark:

SN: XXXXXXXXXXXX2401XXXXXX

24 stands for year 2024; 01 stands for week 1st.

Appendix III – Equipment list

device no.	T-ID	designation	type	serial-no.	calibrated	calibrat. until
68-1-32-19-040	42640	Power Meter	WT310E-C2-H	C3VG2800 7E	29.01.2024	28.01.2025
68-1-32-20-041	45986	Power Meter	WT310E-C2-H/G5	C3WD2701 3E	31.08.2023	30.08.2024
68-1-53-20-042	46948	Temperature and humidity recorder	L92-1	200929380	13.11.2023	12.11.2024
68-1-39-18-012	38617	Stop Watch	PC894	-	14.09.2023	13.09.2024
68-1-11-15-004	15798	Anemometer	Testo 417	0052945	25.10.2023	24.10.2024
68-1-47-21-015	51353	Digital Balance	I-2000	-	05.09.2023	04.09.2024
68-1-66-15-003	21042	Battery charging system	CT-3024-60V3A-NTA	T1511-089202	31.08.2023	30.08.2024

– End of Report –