

Test Report

Report No. : MTi250107021-0205S1

Date of Issue : 2025-04-27

Applicant : Heltec Automation Technology Co., Ltd

Product : MeshPocket

Test Type : Commissioned Inspection

Shenzhen Microtest Co., Ltd.



Test Report Energy Consumption of Battery Chargers		
Report Reference No.....	MTi250107021-0205S1	
Date of issue.....	2025-04-27	
Applicant's name.....	Heltec Automation Technology Co., Ltd	
Address.....	1f, No.54,56,58, Zirui North Street,Gaoxin District, Chengdu	
Test specification:		
Standard.....	☐ U.S.DOE: 10 CFR Part 430.32(z) Battery chargers ☒ CEC: Title 20. Division 2. Chapter 4. Article 4:1605.1 (w) Battery Chargers ☐ NRCAN: CSA-C381.2-17	
Test procedure	☐ U.S.DOE: Appendix Y1 to Subpart B of Part 430 "Uniform Test Method for Measuring the Energy Consumption of Battery Chargers" ☒ CEC: Title 20. Division 2. Chapter 4. Article 4:1604 (w) ☐ NRCAN: CSA-C381.2-17 "Energy Performance Of Battery-charging systems and uninterruptible power supplies"	
Non-standard test method.....	N/A	
Test item description.....	MeshPocket	
Trade Mark.....		
Manufacturer.....	Same as applicant	
Model/Type reference.....	HT-298A, HT-298B, HT-298C, HT-298D, HT-298G, HT-298P, HT-298S, HT-298T, HT-298Z	
Ratings.....	Type-C Input: 5V===3A / 9V===2.22A /12V===1.67A Type-C Output: 5V===3A / 9V===2.22A Wireless Output: 5W /7.5W /10W /15W	
Testing Laboratory.....	Shenzhen Microtest Co., Ltd.	
Testing location/ address.....	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China	
Prepared by (name, signature)	Jakey Jin	
Reviewed by (name, signature)	Derick Dong	
Approved by (name, signature)	Lewis Lian	

For Battery information

Battery manufacture:	HUNAN CHANGHONG JUHEYUAN SCIENCE & TECHNOLOGY CO.,LTD
Type of battery:	Rechargeable Li-ion Cell
Model of battery:	536280HV
Number of battery:	One
Rated Battery Voltage(V):	3.87Vdc
Rated charge capacity of the battery (Ah or mAh):	5000mAh
Rated battery energy of the battery(Wh):	19.35Wh
Product class: 2	

Product class	Product class description	Rated battery energy (Ebatt **)	Special characteristic or battery voltage	Maximum UEC (kWh/yr) (as a function of Ebatt **)
1	Low-Energy	≤5 Wh	Inductive Connection *	3.04
2	Low-Energy, Low-Voltage	<100 Wh	<4 V	$0.1440 * E_{batt} + 2.95$
3	Low-Energy, Medium-Voltage		4-10 V	For $E_{batt} < 10 \text{ Wh}$, 1.42 kWh/yr For $E_{batt} \geq 10 \text{ Wh}$, $0.0255 * E_{batt} + 1.16$
4	Low-Energy, High-Voltage		>10 V	$0.11 * E_{batt} + 3.18$
5	Medium-Energy, Low-Voltage	100-3000 Wh	<20 V	$0.0257 * E_{batt} + .815$
6	Medium-Energy, High-Voltage		≥20 V	$0.0778 * E_{batt} + 2.4$
7	High-Energy	>3000 Wh		$0.0502 * E_{batt} + 4.53$

Copy of marking plate:

The artwork below may be only a draft.

MeshPocket

Model: HT298A

Type-C Input: 5V---3A / 9V---2.22A / 12V---1.67A

Type-C Output: 5V---3A / 9V---2.22A

Wireless Output: 5W / 7.5W / 10W / 15W



Heltec Automation Technology Co., Ltd

date of manufacture: XXXX-XX

Label for main units**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.....: 2025-04-21

Date(s) of performance of tests.....: 2025-04-21 to 2025-04-27

Name and address of factory.....: --

General remarks

The test results presented in this report relate only to the object tested.

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

General information:

The tests have been carried out in accordance with the test programme, and as such, the results are only applicable to the sample tested and the conditions of the test. Sample variability and changes in test conditions could influence some results, and the result(s) as stated may not be representative of the mean result if a number of different samples were tested under a variety of test conditions.

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

The test was conducted using model HT298A. The differences between the test model and the series models are provided by the client, and the laboratory assumes no responsibility for the accuracy of this information.

The variations between the models are limited to differences in model naming, exterior color, all other specifications remain identical, and these differences do not impact the test items in this evaluation.

Test condition

Inductive charger systems	No
Battery backup or uninterruptible power supply	No
Ambient temperature	20°C±5°C
Air speed	≤0.5 m/s
Test voltage	5Vdc
Total harmonic distortion (THD) (Voltage)	N/A
Power measurement instrument resolution	≤ 0.01W (Power < 10W) ≤ 0.1W (10W < Power < 100W) ≤ 1W (100W < Power)
Minimum resolution of power meter	0.001W

Test parameter	Test sample	
	Sample 1	Sample 2
Duration of the charge and maintenance mode test (t_{cd})	24 hours	24 hours
Battery capacity of tested battery (if more than 1 charger port report the total of all battery capacities connected during test) (E_{batt})	18.978 Wh	19.122 Wh
Battery Maintenance Mode Power (P_m)	0.010W	0.010W
Standby Mode Power (P_{sb})	0.010W	0.010W
Off Mode Power(P_{off})	N/A	N/A
No-Battery Mode Power (P_{nb})	N/A	N/A
24 Hour charge and maintenance energy (E_{24})	23.563 Wh	23.712 Wh
Energy consumption (UEC)	1.1483 kWh/yr	1.1496 kWh/yr
$t_{a\&m}$ = Time per day spent in active and maintenance mode	7.82	
n = Number of charges per day	0.54	
t_{sb} = Time per day spent in standby mode	5.29	
t_{off} = Time per day spent in off mode	0	

$t_{a\&m}$, n , t_{sb} , and t_{off} evaluated by following table:

Table 3.3.3—Battery Charger Usage Profiles

Product class				Hours per day ***			Charges (n)	Threshold charge time *
Number	Description	Measured battery energy (measured E_{batt}) **	Special characteristic or highest nameplate battery voltage	Active + maintenance ($t_{a\&m}$)	Standby (t_{sb})	Off (t_{off})	Number per day	Hours
1	Low-Energy	≤ 5 Wh	Inductive Connection ****	20.66	0.10	0.00	0.15	137.73
2	Low-Energy, Low-Voltage	< 100 Wh	< 4 V	7.82	5.29	0.00	0.54	14.48
3	Low-Energy, Medium-Voltage		4–10 V	6.42	0.30	0.00	0.10	64.20
4	Low-Energy, High-Voltage		> 10 V	16.84	0.91	0.00	0.50	33.68
5	Medium-Energy, Low-Voltage	100–3000 Wh	< 20 V	6.52	1.16	0.00	0.11	59.27
6	Medium-Energy, High-Voltage		≥ 20 V	17.15	6.85	0.00	0.34	50.44
7	High-Energy	> 3000 Wh		8.14	7.30	0.00	0.32	25.44

Unit energy consumption equation:

☐ $(t_{cd}-5) * n \leq t_{a\&m}$	Equation (i) $(i) UEC = 365(n(E_{24} - 5P_m - E_{batt})\frac{24}{t_{cd}} + (P_m(t_{a\&m} - (t_{cd} - 5)n) + (P_{sb}t_{sb}) + (P_{off}t_{off})))$
☒ $(t_{cd}-5) * n > t_{a\&m}$	Equation (ii) $(ii) UEC = 365(n(E_{24} - 5P_m - E_{batt})\frac{24}{(t_{cd}-5)} + (P_{sb}t_{sb}) + (P_{off}t_{off}))$

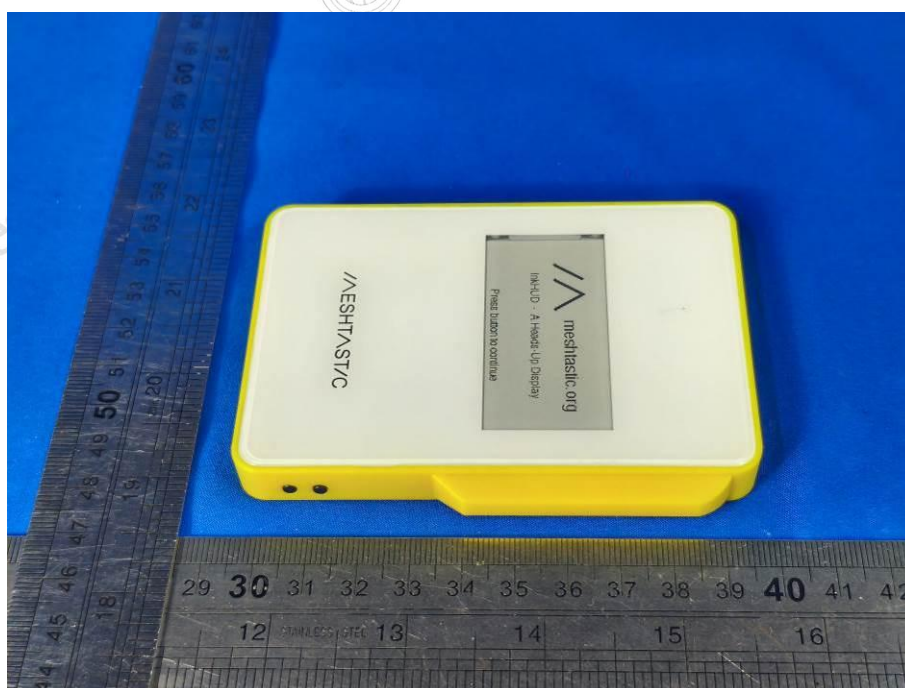
	E_{batt} (Wh)	P_m (W)	P_{SB} (W)	P_{off} (W)	E_{24} (Wh)	UEC(kWh/yr)	t_{cd} (hrs)
Sample 1	18.978	0.010	0.010	N/A	23.563	1.1483	24
Sample 2	19.122	0.010	0.010	N/A	23.712	1.1496	24
Sampling Size	2	2	2	2	2	2	2
Mean of Sample	19.05	0.010	0.010	N/A	23.6375	1.14895	24
Declarable Value	19.050	0.01	0.01	N/A	23.64	1.149	/

Requirements				
Product class description	Rated battery energy (E_{batt})	Special characteristic or battery voltage	Standard Limit and Test Result UEC (kWh/yr)	Verdict
Low-Energy	≤ 5 Wh	Inductive Connection	3.04	N/A
Low-Energy, Low-Voltage	< 100 Wh	< 4 V	$0.1440 \times E_{batt} + 2.95 = 5.6932 \text{ kWh/yr}$ Test result: 1.149 kWh/yr	P
Low-Energy, Medium-Voltage	< 100 Wh	4-10 V	$E_{batt} < 10$ Wh, 1.42 kWh/yr	N/A
			$E_{batt} \geq 10$ Wh, $0.0255 \times E_{batt} + 1.16$	N/A
Low-Energy, High-Voltage	< 100 Wh	> 10 V	$0.11 \times E_{batt} + 3.18$	N/A
Medium-Energy, Low-Voltage	100-3000 Wh	< 20 V	$0.0257 \times E_{batt} + 0.815$	N/A
Medium-Energy, High-Voltage	100-3000 Wh	≥ 20 V	$0.0778 \times E_{batt} + 2.4$	N/A
High-Energy	> 3000 Wh	--	$0.0502 \times E_{batt} + 4.53$	N/A

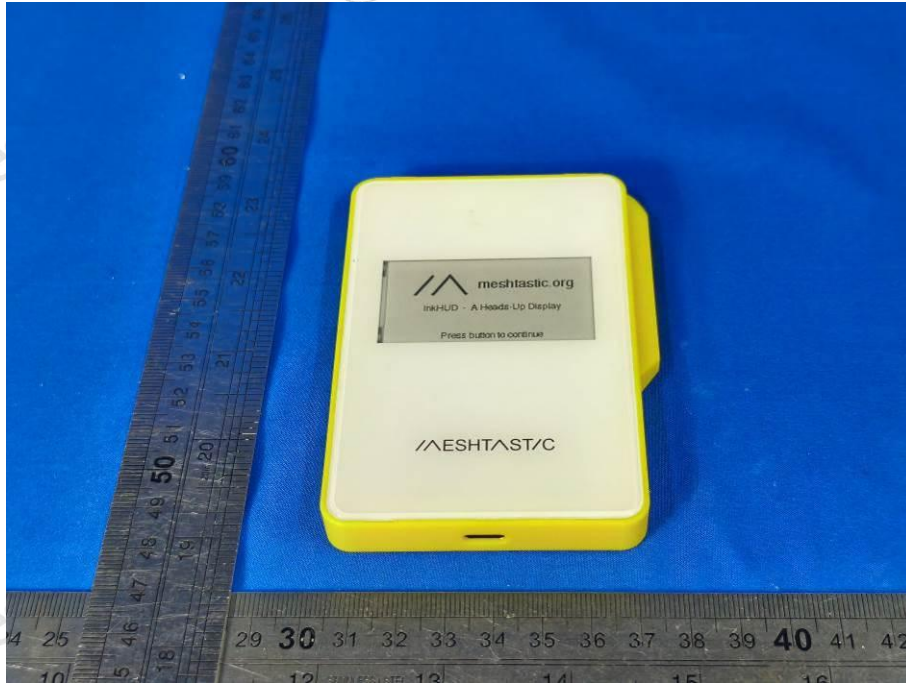
Photo documentation



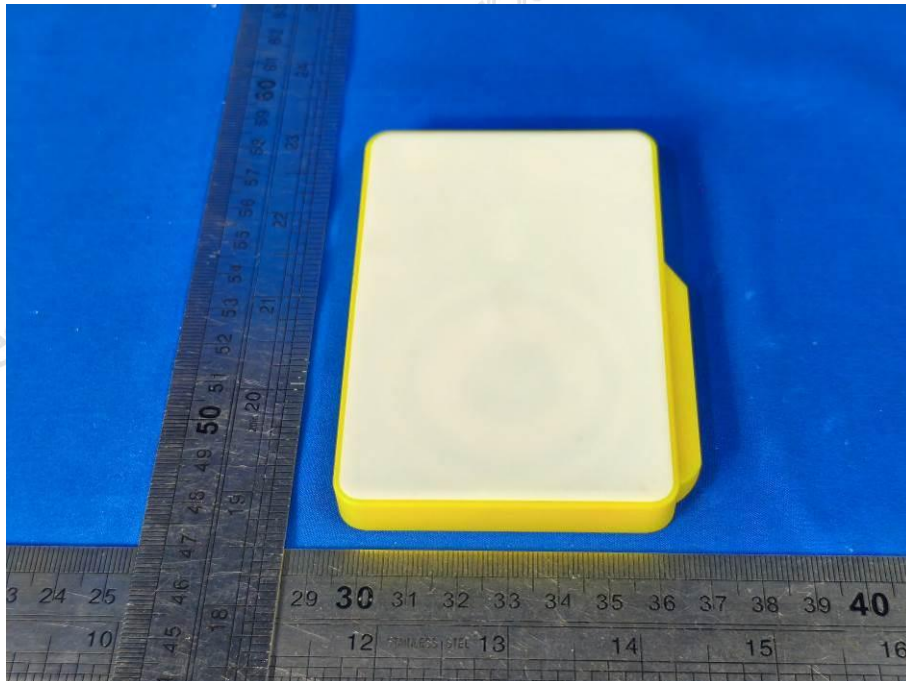
Overview



Overview



Overview



Overview



Battery view

Statement

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2. Client shall be responsible for representativeness of the sample and authenticity of the material.
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***** END OF REPORT *****