Lithium-Ion Battery Pack, BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments, S - Sinowealth)

Tested under:

CSA C22.2 No. 62133-2:20 / UL 62133-2, MAY 31, 2024, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems

File: E115461

MET Report: 133572

Approved: January 15, 2025

Applicant:
GlobTek, Inc.
186 Veterans Drive Northvale,
NJ 07647
USA

Prepared By:
Eurofins Electrical Testing Service (Shanghai) Co., Ltd.
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Shanghai
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For:
Eurofins Electrical and Electronic Testing North America, Inc.
914 West Patapsco Avenue
Baltimore, Maryland 21230-3432
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☐ NRTL Listing
☐ MET Listing
☒ MET Recognition
☐ MET Classification

☐ MET-C Listing
☐ MET Listing for Canada
☒ MET-C Recognition
☐ MET-C Classification

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Change Record

Change Number	Description	Approval Date	Project Number	Amendment Engineer	Engineer Initials
1	1. Model number change to BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P, 2S3P,2S4P,3S1P,3S2P,3S3P,3S4P, 4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments S - Sinowealth) 2. Change of nameplate 3. Changes to the product description on page 4 4. Modified some component manufacturers and specifications	March 10, 2025	135503	Pengcheng Wang	Pengcheng Wang

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Description

Product(s) Covered:

- Lithium-Ion Battery Pack, BL5000C2170*F*
- (the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments S - Sinowealth)

Product Description:

1. This battery pack is constructed with rechargeable Li-ion cell(s) and a PCB containing over-charge, over-discharge, and short- circuit protection circuits.

2. Test List（Cell: LR2170SD, 03BCEA5）：

There are 32 models covered by this report. All models are constructed in a similar manner and with similar materials. The models differ according to their series and parallel cell connections and corresponding protection PCB.Tested items are recorded below:

Model	With shrink wrap plastic film				
	Clause 7.3.6	Clause 7.3.2	Clause 7.3.8.1	Clause 7.3.8.2	Clause 7.3.3
BL5000C21701S1PFT	•	•			
BL5000C21701S2PFT					
BL5000C21701S3PFT	•	•			
BL5000C21701S1PFS	•	•	•	•	•
BL5000C21701S2PFS					
BL5000C21701S3PFS			•	•	•
BL5000C21701S4PFS	•	•			
BL5000C21701S4PFT	•	•			
BL5000C21702S1PFT	•	•	•	•	•
BL5000C21702S2PFT					
BL5000C21702S3PFT			•	•	•
BL5000C21702S4PFT	•	•			
BL5000C21703S1PFT	•	•			
BL5000C21703S2PFT					
BL5000C21703S3PFT					
BL5000C21703S4PFT	•	•			
BL5000C21704S1PFT	•	•			
BL5000C21704S2PFT			•	•	•
BL5000C21704S3PFT			•	•	•
BL5000C21704S4PFT	•	•			
BL5000C21702S1PFS	•	•			

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BL5000C21702S2PFS			•	•	•
BL5000C21702S3PFS					
BL5000C21702S4PFS	•	•			
BL5000C21703S1PFS	•	•			
BL5000C21703S2PFS					
BL5000C21703S3PFS			•	•	•
BL5000C21703S4PFS	•	•			
BL5000C21704S1PFS	•	•			
BL5000C21704S2PFS					
BL5000C21704S3PFS					
BL5000C21704S4PFS	•	•	•	•	•

3.Products a total of 9 kinds of shells from A ~ I, shells in addition to inconsistent size other than the same, the same 1S1P products a product with buttons without shells, specific tests are as follows:

Model	With Plastic housing					Shrink wrap plastic with positive button top		
	Clause 7.2.2	Clause 7.3.8.1	Clause 7.3.8.2	Clause 7.3.3	Types of housings	Clause 7.3.8.1	Clause 7.3.8.2	Clause 7.3.3
BL5000C21701S1PFT					A	•	•	•
BL5000C21701S2PFT					B			
BL5000C21701S3PFT					C			
BL5000C21701S1PFS	•	•	•	•	A	•	•	•
BL5000C21701S2PFS	•	•	•	•	B			
BL5000C21701S3PFS	•	•	•	•	C			
BL5000C21701S4PFS					D			
BL5000C21701S4PFT	•	•	•	•	D			
BL5000C21702S1PFT					B			
BL5000C21702S2PFT					D			
BL5000C21702S3PFT	•	•	•	•	E			
BL5000C21702S4PFT					F			
BL5000C21703S1PFT					C			
BL5000C21703S2PFT					E			
BL5000C21703S3PFT					G			
BL5000C21703S4PFT					H			
BL5000C21704S1PFT					D			
BL5000C21704S2PFT	•	•	•	•	F			
BL5000C21704S3PFT	•	•	•	•	H			
BL5000C21704S4PFT					I			
BL5000C21702S1PFS					B			
BL5000C21702S2PFS					D			
BL5000C21702S3PFS					E			
BL5000C21702S4PFS					F			
BL5000C21703S1PFS					C			

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BL5000C21703S2PFS					E			
BL5000C21703S3PFS	•	•	•	•	G			
BL5000C21703S4PFS					H			
BL5000C21704S1PFS					D			
BL5000C21704S2PFS					F			
BL5000C21704S3PFS					H			
BL5000C21704S4PFS	•	•	•	•	I			

4.Test List（Alternative Cell: LR2170SZ）:

For the cell model cell LR2170SZ products, the cell has a certificate and the cell model LR2170SD, 03BCEA5 products Clause 7.3.2 and Clause 7.3.6 test current is 0A other are the same, the test content is as follows:

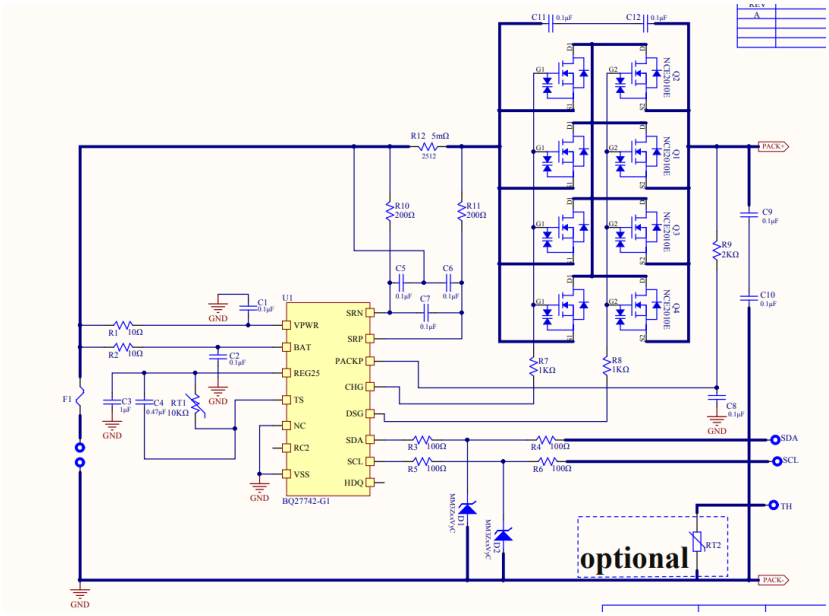
Model	With plastic shrink wrap film					
	Clause 7.2.2	Clause 7.3.6	Clause 7.3.2	Clause 7.3.8.1	Clause 7.3.8.2	Clause 7.3.3
BL5000C21701S3PFT		•	•			
BL5000C21701S4PFS		•	•			
BL5000C21704S4PFT		•	•			
BL5000C21704S4PFS		•	•			

One sample each of Clause 7.3.6 and Clause 7.3.2 was tested in this report model.

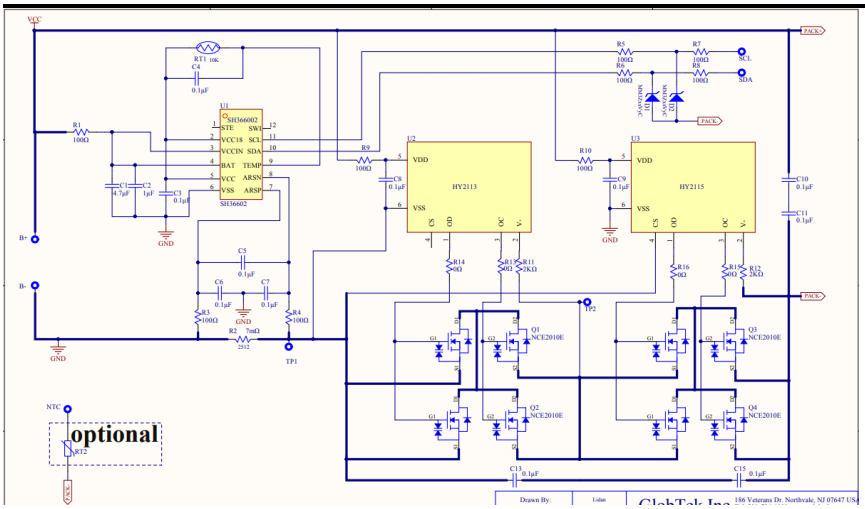
5.Circuit diagram:

In the below circuit diagrams, an optional NTC is shown with the intent of providing an analog temperature signal for external reading . The NTC does not contribute to the functionality of the battery pack. The samples tested in this report did not include the optional NTC. Since the NTC does not impact the testing performed, samples with the NTC included do not need additional testing.

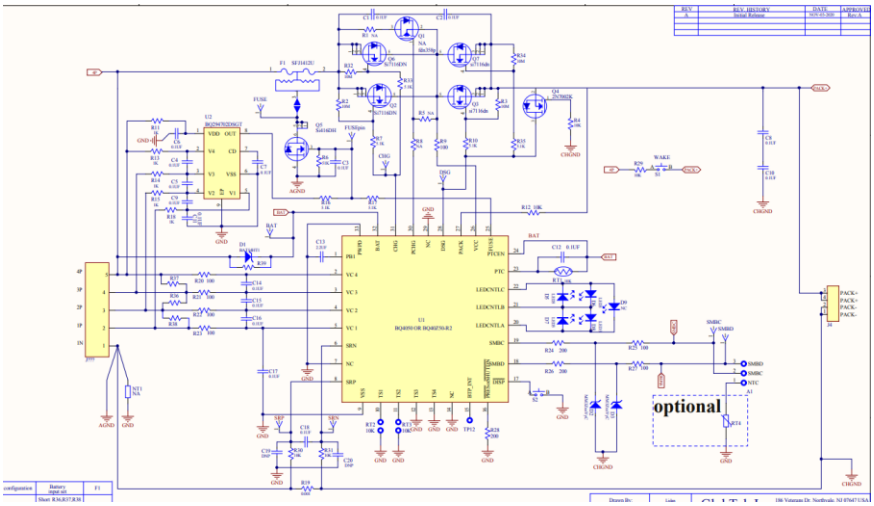
PCB1



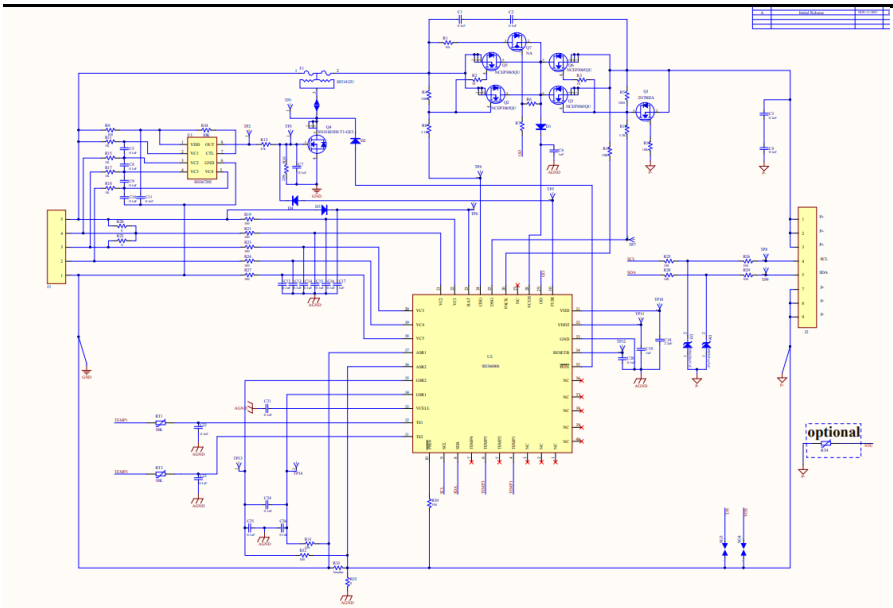
PCB2



PCB3



PCB4



Model Differences:

- BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments S - Sinowealth)

Electrical Ratings:

Table 1

Model	PCB	Ratings	Discharge current (0,2 It A)/mA	Specified final voltage/V	Maximum charging current/A	Config uration	Plastic Housing Type
BL5000C21701S1PFT	PCB1	3.6V, 5000mA, 18Wh	1000	3	1	1S1P	A
BL5000C21701S2PFT	PCB1	3.6V, 10000mA, 36Wh	2000	3	2	1S2P	B
BL5000C21701S3PFT	PCB1	3.6V, 15000mA, 54Wh	3000	3	3	1S3P	C
BL5000C21701S1PFS	PCB2	3.6V, 5000mA, 18Wh	1000	3	1	1S1P	A
BL5000C21701S2PFS	PCB2	3.6V, 10000mA, 36Wh	2000	3	2	1S2P	B
BL5000C21701S3PFS	PCB2	3.6V, 15000mA, 54Wh	3000	3	3	1S3P	C
BL5000C21701S4PFS	PCB2	3.6V, 20000mA, 72Wh	4000	3	4	1S4P	D
BL5000C21701S4PFT	PCB3	3.6V, 20000mA, 72Wh	4000	3	4	1S4P	D
BL5000C21702S1PFT	PCB3	7.2V, 5000mA, 36Wh	1000	6	1	2S1P	B
BL5000C21702S2PFT	PCB3	7.2V, 10000mA, 72Wh	2000	6	2	2S2P	D
BL5000C21702S3PFT	PCB3	7.2V, 15000mA, 108Wh	3000	6	3	2S3P	E
BL5000C21702S4PFT	PCB3	7.2V, 20000mA, 144Wh	4000	6	4	2S4P	F
BL5000C21703S1PFT	PCB3	10.8V, 5000mA, 54Wh	1000	9	1	3S1P	C
BL5000C21703S2PFT	PCB3	10.8V, 10000mA, 108Wh	2000	9	2	3S2P	E
BL5000C21703S3PFT	PCB3	10.8V, 15000mA, 162Wh	3000	9	3	3S3P	G
BL5000C21703S4PFT	PCB3	10.8V, 20000mA, 216Wh	4000	9	4	3S4P	H
BL5000C21704S1PFT	PCB3	14.4V, 5000mA, 72Wh	1000	12	1	4S1P	D
BL5000C21704S2PFT	PCB3	14.4V, 10000mA, 144Wh	2000	12	2	4S2P	F
BL5000C21704S3PFT	PCB3	14.4V, 15000mA, 216Wh	3000	12	3	4S3P	H
BL5000C21704S4PFT	PCB3	14.4V, 20000mA, 288Wh	4000	12	4	4S4P	I
BL5000C21702S1PFS	PCB4	7.2V, 5000mA, 36Wh	1000	6	1	2S1P	B
BL5000C21702S2PFS	PCB4	7.2V, 10000mA, 72Wh	2000	6	2	2S2P	D
BL5000C21702S3PFS	PCB4	7.2V, 15000mA, 108Wh	3000	6	3	2S3P	E
BL5000C21702S4PFS	PCB4	7.2V, 20000mA, 144Wh	4000	6	4	2S4P	F
BL5000C21703S1PFS	PCB4	10.8V, 5000mA, 54Wh	1000	9	1	3S1P	C
BL5000C21703S2PFS	PCB4	10.8V, 10000mA, 108Wh	2000	9	2	3S2P	E
BL5000C21703S3PFS	PCB4	10.8V, 15000mA, 162Wh	3000	9	3	3S3P	G
BL5000C21703S4PFS	PCB4	10.8V, 20000mA, 216Wh	4000	9	4	3S4P	H
BL5000C21704S1PFS	PCB4	14.4V, 5000mA, 72Wh	1000	12	1	4S1P	D
BL5000C21704S2PFS	PCB4	14.4V, 10000mA, 144Wh	2000	12	2	4S2P	F
BL5000C21704S3PFS	PCB4	14.4V, 15000mA, 216Wh	3000	12	3	4S3P	H
BL5000C21704S4PFS	PCB4	14.4V, 20000, 288Wh	4000	12	4	4S4P	I

Engineering Considerations (Not For Field Representative's Use):

- Lithium-Ion Battery Pack, BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments S - Sinowealth) has been

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investigated in accordance with CSA C22.2 No. 62133-2:20 / UL 62133-2, MAY 31, 2024, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems.

- This product must be installed in accordance with all codes applicable to the location of the installation and in accordance with its instructions for use.
- This equipment is for use only in an end-product where the acceptability of the combination is determined by a Nationally Recognized Testing Laboratory.

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Description (Continued)

Note to Field Representative:

- A sample of each component listed below and a purchase order for the work described below at the current hourly rate shall be submitted to:*

Eurofins E&E NA, Inc.
914 West Patapsco Avenue
Baltimore, Maryland 21230-3432

for reassessment processed under job #xxxxx for verification of construction against the associated drawings also listed below. The component(s) shall be subjected to an annual audit for continued compliance. The annual re-verification is a client incurred expense to be assessed at the current hourly rate at the time of the test. The estimated time for re-verification is also listed below.

Figure/ Item #	Component	Controlled Document Number	Re-Verification Type	Re-verification Maximum Estimated time (hours)
83/1	Cell	LISHEN, p/n: LR2170SD, 03BCEA5, Rated: 3,6 Vdc, 4900 mAh, nominal capacity: 5000 mAh	Evaluate to UL 1642	16
84/1	Alternate Cell	LISHEN, p/n: LR2170SZ, rated: Voltage: 3,6 V Rated Capacity: 4900 mAh; Nominal Capacity: 5000 mAh	Evaluate to UL 1642	16
68/2	F1	WAYON, p/n: S20059F-LP600F, rated: 6A/20V	Evaluate to UL 248-14	16
72/2	F1（1S4P)	WAYON, p/n: WPF12A1J, rated: 12A/ 3.0V-4 .5V	Evaluate to UL 248-14	16
72/2	F1 (2S(1-4)P)	Dexerials, p/n: SFJ-0812U, rated: 12A/4.0V-9 .0V	Evaluate to UL 248-14	16
72/2	F1 (3S(1-4)P)	Dexerials, p/n: SFJ-1212U, rated: 12A/7.4V-1 3.8V	Evaluate to UL 248-14	16
72/2	F1 (4S(1-4)P)	Dexerials, p/n: SFJ-1412U, rated: 12A/10.5V-19.6V	Evaluate to UL 248-14	16

73/2	**F1 (2S(1-4)P)**	**Dexerials, p/n: SFJ-0812U, rated: 12A/4.0V-9 .0V**	**Evaluate to UL 248-14**	**16**

*Alternatively: If the evaluation is performed by the Eurofins E&E NA representative's lab other than the location above or by the MET representative during the Follow-up inspection, all data shall be returned to the Baltimore office listed above for surveillance tracking under the assigned job number mentioned above.

- The above inspections are a client incurred cost and will be billed at the hourly rate in place at the time of the inspection.

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General Requirements

Scope of Requirements: The requirements contained within this section apply to all products contained within this Follow-Up Service Report File where applicable.

Definitions: *(as defined or used in the context of the standard)*

Term	Definitions
SELV:	Safety Extra Low Voltage
PCB:	Printed Circuit Board
TNV:	Telecommunications Network Voltage
Listed/Recognized Component:	A component evaluated to the applicable U.S. standards by a Nationally Recognized Testing Laboratory (NRTL).
Certified Component:	A component evaluated to the applicable Canadian standards by a Certification Organization (CO).
Listee:	Applicant

Measurements: All dimensions indicated in the body of this report are approximations unless otherwise indicated.

Corrosion Protection: All corrosive metals shall be provided with a means to protect from corrosion. Acceptable methods include painting, plating and galvanizing. Dissimilar metals shall not be employed where reliable continuity is required.

Soldered Connections: All soldered connections shall be made mechanically secure before soldering. Tack soldering is not acceptable. Acceptable forms of mechanical securement include:

A) Lead is inserted through an eyelet or opening of a terminal block prior to soldering.
B) Lead is inserted into a U or V shaped slot in the terminal prior to soldering.
C) Lead is wrapped around a terminal post prior to soldering.
D) Lead is tied to adjacent lead with wire tie-wrap near termination point.

Electrical Connections: All electrical connections other than soldering shall be provided with positive detent, crimp type insulated Recognized Component connectors suitable for the voltage and temperatures involved. They shall be sized for the wire and mounting terminations. Where hazardous voltage or energy is involved, all wire connections to connectors shall employ a recognized method of double securement. Where fork-type lugs are used, they shall be snap-on or up-turned lug type.

Mechanical Assembly: All parts shall be secured by welding, bolts/nuts with lock or star washers, or thread forming screws.

Creepage and Clearances: Shall be in accordance with the evaluated product standards.

General Requirements (Continued)

Where present, the following items are required.

Internal Plastics: Shall be a Recognized/Certified Component, Plastic, rated minimum 94V-1.

PCB: Shall be a Recognized Component, rated minimum 94V-2 and 105°C.

Tubing and Sleeving: Shall be a Listed/Recognized/Certified Component, rated minimum 300V, 80°C minimum, 94V-2, unless otherwise noted.

Wire Connectors: (Various crimp-type) Shall be Listed/Recognized/Certified Components sized for the wire and mounting terminations. Both the wire insulation and the conductor shall be crimped.

Fuseholder: Operator accessible fuseholders, when provided, are connected to the ungrounded conductor(s) of the primary circuit.

Internal Wiring: All internal wiring and connections are properly jacketed or enclosed within the equipment. Wiring is routed and secured to reduce the possibility of stress being transmitted to electrical connections, as necessary. All internal conductors in the secondary circuits are routed away from primary circuit conductors and from uninsulated live parts. There is no internal wiring subject to contact by the user when the product is employed as intended. The internal wiring is acceptable for conditions of service to which it will be subjected. Internal conductors consist of Recognized Component AWM insulated individual conductors; sized in accordance with the National Electric code and Canadian Electrical code, as may be applicable for the current expected in the conductor, rated VW-1, 300V, 90°C, and signal level ribbon wiring of flammability rating VW-1.

Interconnecting Cords and Cables: Flexible telecommunication cord and cable assemblies employed for interconnection between components are to be rated for and comply with temperatures, exposure to oil or grease and other conditions of service within the environment the product is to be utilized.
.

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Markings

Etching, molding, die-stamping, silk-screening, stamped-, or etched-metal labels secured by rivets or screws are considered permanent. Recognized/Certified Component, Marking and Labeling Systems, and/or labels tested and deemed suitable for the surface to which it is applied is also considered permanent. Each product is to be permanently marked with the following information, Per the Canadian Electrical Code described in CSA C22.2 No. 0 General Requirements, Canadian product certification requires warning/cautionary markings in both English and French languages. It is the Applicant's responsibility to provide the listed Bilingual Markings shown below in accordance with the Canadian regulatory requirements

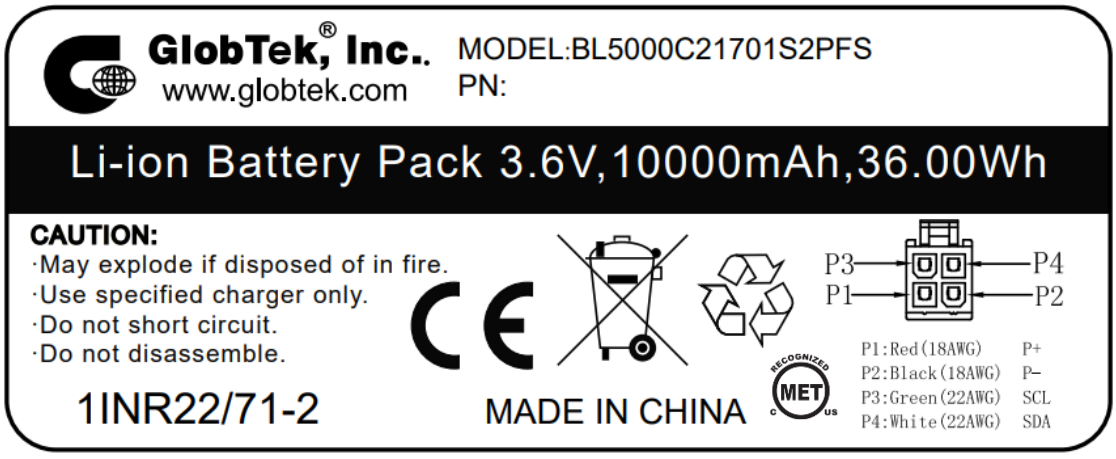
a. The MET Mark, with the applicant/listee name or alternate listee name as identified within this report, trade name or trade mark, product model number, and a date of manufacture or serial number. If the date of manufacture is in a code, it shall not repeat in less than 10 years and it shall not require reference to the manufacturer's records to determine when the product was manufactured.

b. Method of applying the MET Mark:
☒ Direct Imprinting
☐ Purchasing Labels from Eurofins E&E NA
Approved MET Recognition Mark:

RECOGNIZED MET C US	**Complies with UL 62133-2:2020 CSA C22.2 No. 62133-2:20**

c. For DC Equipment, fuse ratings, and fuse rupturing speed is required.

d. Signal words such as "CAUTION" or "WARNING" shall be legible, or size as required in the standard(s) and applied in accordance with the standard.



The above examplenameplate for BL5000C21701S2PFS represents the basic format used by all models in this report.

Nameplate differences for models covered in this report:

1. MODEL: BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P , the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments S - Sinowealth)
2. Ratings: Refer to P.7 Table 1
3. The number of connector pins, which can be 4, 6, 8 or others, and the corresponding pinout.
4. When cell= LR2170SD, battery designation=*INR22/72-*; When cell= LR2170SZ, battery designation=*INR22/71-*; The 1st*part denote the number of series connected cells in the battery;The 2nd*part denote the number of parallel connected cells if 2 or greater (-*not shown if value is 1).

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Manual/Service Instructions

- Operations and Service instructions are provided with the equipment.
- See illustration 1 to illustration 2.

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Alternate Listee Information

Alternate listees and product names or model numbers: None

Applicant's Responsibilities

Product Modifications:

Minor product modifications by the manufacturer may be allowed using the following guidelines:

1. Components identified in this report as "Listed, Recognized, or Certified" and **NOT** identified with a manufacturer name or part number may be exchanged with an alternate "Listed, Recognized, or Certified" component of equivalent value.

   Example: Appliance Inlet Connector - Listed/Certified Component, IEC 320 style male connector, rated 250 volts and 20 amperes. Mechanically secured to the front panel with screws and locking washers.

   - This inlet connector may be replaced with any Listed/Certified inlet connector with the same ratings as stated and where mechanical securement is maintained.

2. Components identified by a manufacturer name, part number, or with specific comments, (such as AC only, indoor use only, approved for use in this product only), may **NOT** be replaced or modified without prior approval from MET Laboratories.

   Example: Circuit Breaker - Recognized/Certified Component, ABCD Co. P/N XYZ123, rated 250 volts maximum, 50/60 Hz, 25 full-load amperes, 31.3 trip amperes. Toggle handle marked with IEC on/off symbols. Mechanically secured to the front panel with screws and locking washers.

   - This circuit breaker can **NOT** be modified or changed without prior approval by Eurofins E&E NA, Inc.

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Applicant's Responsibilities (Continued)

Project Amendments:

For any changes related to product construction, manufacturing locations, if the product is intended to be marketed/sold under an alternate name or model number than that originally listed, or any issues which would require notification or change in the status of this file, please complete the form and return to Eurofins E&E NA following the instructions provided on the form.

For your convenience a Project Amendment Request (PAR) form is available for download at http://corp.metlabs.com/safetyreq/ Alternatively, please provide it to your local Eurofins office or Eurofins Partner Representative.

If you are terminating or temporarily suspending production of this product for an extended period, please send a letter on company letterhead to:

Eurofins E&E NA, Inc.
Attn: Follow Up Services Department
914 West Patapsco Avenue
Baltimore, Maryland 21230
USA
Fax: (410) 354-3313

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Applicant's Responsibilities (Continued)

Manufacturing and Production-Line Tests and Documentation

This product is exempt from production line testing.

Conditions of Acceptability

When installed in the end product, consideration shall be given to the following:

1. A suitable fire enclosure shall be provided in the end product.

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Critical Components

Figure /item No.	Object/ Parts No.	Manufacturer/Trade mark	Type/ Model	Technical Data	Standard (Edition / year)	Mark(s) of Conformity	Secured Method
83/1	Cell	LISHEN	LR2170SD, 03BCEA5	Ratings: 3,6 Vdc, Rated capacity: 4900 mAh, nominal capacity: 5000 mAh	IEC 62133-2:2017/AMD 1:2021	BE-44800	--
84/1	Alternative Cell	LISHEN	LR2170SZ	Rated Voltage: 3,6 V Rated Capacity: 4900 mAh Nominal Capacity: 5000 mAh	IEC 62133-2:2017/AMD 1:2021	NL-100631	--
67/1	Connector (Optional)	Molex L L C	39-01-2040	Min.V-2	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
67/2	Alternative Connector (Optional)	Molex L L C	39-01-2060	Min.V-2	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
67/3	Alternative Connector (Optional)	Interchangea ble	Interchangea ble	Min.V-2	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
67/4	Alternative Connector (Optional)	Molex L L C	39-01-2080	Min.V-2	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
31/1	Plastic housing (Optional)	SABIC INNOVATIVE PLASTICS B V	945（GG）	Min. V-0, Min. 120°C, Min. 2.0mm thickness	UL 764	UL E45329	Soldered With PCB
31/2	Alternative Plastic housing (Optional)	SABIC JAPAN L L C	945（GG）	Min. V-0, Min. 120°C, Min. 2.0mm thickness	UL 764	UL E207780	Soldered With PCB
31/3	Alternative Plastic housing (Optional)	SABIC INNOVATIVE PLASTICS B V	C2950	Min. V-0, Min. 75°C Min. 2.0mm thickness	UL 764	UL E45329	Soldered With PCB
31/4	Alternative Plastic housing (Optional)	SABIC JAPAN L L C	C2950	Min. V-0, Min. 75°C Min. 2.0mm thickness	UL 764	UL E207780	Soldered With PCB
72/1	Internal	Interchangea	Interchangea	Min. 24AWG,	UL 758	UL	Soldered With

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	Wire	ble	ble	Min.300V, Min.80°C		approved	PCB
30/1	positve tip cap	Suzhou Industrial Park ZTNY New Energy Technology Co.,Ltd.	Positive Button/tip	diameter 4.8mm，height 2.25mm，	IEC 62133-2：2017/AMD1:2021	Tested with battery	Soldered With battery
PCB1							
68/1	PCB	SHUANG MING INDUSTRY CO LTD	T005V0	V-0, 130 ºC	UL 796	UL E78017	Soldered With battery
68/2	Alternative PCB	Interchange able	Interchange able	V-0, 130 ºC	UL 796	UL approved	Soldered With battery
--	F1	WAYON	S20059F-LP600F	6A/20V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	IC (U1)	TEXAS INSTRUME NTS	BQ27742-G1	V_{VPWR}：-0.3~20V T_A：-40~85℃	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q1Q3	VBsemi	VBC6N2014	VDS：20V VGS：±12V TJ：-55~150℃ ID：0~6.2A（25℃）	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
PCB2							
69/1	PCB	Shenzhen Jia Li Chuang Technology Developmen t Co LTD	JLC-2	V-0, 130 ºC	UL 796	UL E479892	Soldered With battery
69/2	Alternative PCB	Interchange able	Interchange able	V-0, 130 ºC	UL 796	UL approved	Soldered With battery
--	IC (U1)	Sino Wealth	SH366002	Vcc：1.7~2V VBAT：2.5~5.5V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	IC (U2)	HYCON	HY2113-FB2B	VDD-VSS：1.5~8V VDD-VCS：1.5~20V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	IC (U3)	HYCON	HY2115-OB9D	VDSOP1：1.5~8V VDSOP2：1.5~20V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q1,Q2，Q3，Q4	VBsemi	VBC6N2014	VDS：20V VGS：±12V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB

				TJ：-55~150℃ ID：0~6.2A（25℃）			
PCB3							
71/1	PCB	GUANGDE BOYA XINXING ELECTRONI CTECHNOL OGY CO LTD	BY-1	V-0, 130 ºC	UL 796	UL E475783	Soldered With battery
72/2	Alternative PCB	Interchange able	Interchange able	V-0, 130 ºC	UL 796	UL approved	Soldered With battery
--	IC (U1)	TEXAS INSTRUME NTS	BQ40Z50-R2	Vcc：2.2~26V Topr：-40~85℃	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	IC (U2)	TEXAS INSTRUME NTS	BQ294702	Vcc：2.2~26V Topr：-40~85℃	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1（1S4P)	WAYON	WPF12A1J	12A/3.0V-4 .5V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (2S(1-4)P)	Dexerials	SFJ-0812U	12A/4.0V-9 .0V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (3S(1-4)P)	Dexerials	SFJ-1212U	12A/7.4V-1 3.8V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (4S(1-4)P)	Dexerials	SFJ-1412U	12A/10.5V-19.6V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q2,Q3, Q6，Q7 (1S4P&(2-4)S（2-4）P)	NCEPOWER	NCEP3065QU	65A 30V 2mΩ	IEC 62133-2：2017/AMD1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q2,Q3, ((2-4)S1P)	NCEPOWER	NCEP3065QU	65A 30V 2mΩ	IEC 62133-2：2017/AMD1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q5	vishay	SI1416EDH-T1-GE3	3.9A 30V 58mΩ	IEC 62133-2：2017/AMD1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q4	KEC	2N7002A	115mA/60V	IEC 62133-2：	Tested with battery	Soldered With PCB

					2017/AMD1: 2021		
PCB4							
73/1	PCB	Shenzhen Jia Li Chuang Technology Developmen t Co LTD	JLC-2	V-0, 130 ºC	UL 796	UL E479892	Soldered With battery
73/2	Alternative PCB	Interchange able	Interchange able	V-0, 130 ºC	UL 796	UL approved	Soldered With battery
--	IC (U1)	SinoWealth	SH367202I/008IY-ACA00	VDD：2.5~30V ICC:7μA	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	IC (U2)	SinoWealth	SH366006	VDD:-0.3~7V VBAT：5~25V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (2S(1-4)P)	Dexerials	SFJ-0812U	12A/4.0V-9 .0V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (3S(1-4)P)	Dexerials	SFJ-1212U	12A/7.4V-1 3.8V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	F1 (4S(1-4)P)	Dexerials	SFJ-1412U	12A/10.5V-19.6V	IEC 62133-2:2017/AMD 1:2021	Tested with battery	Soldered With PCB
--	MOSFET Q2,Q3, Q5 ,Q6 ((2-4)S（2-4）P)	NCEPOWER	NCEP3065QU	65A 30V 2mΩ	IEC 62133-2：2017/AMD1: 2021	Tested with battery	Soldered With PCB
--	MOSFET Q2,Q3, ((2-4)S1P)	NCEPOWER	NCEP3065QU	65A 30V 2mΩ	IEC 62133-2：2017/AMD1: 2021	Tested with battery	Soldered With PCB
--	MOSFET Q4	vishay	SI1416EDH-T1-GE3	3.9A 30V 58mΩ	IEC 62133-2：2017/AMD1: 2021	Tested with battery	Soldered With PCB
--	MOSFET Q1	KEC	2N7002A	115mA/60V	IEC 62133-2：2017/AMD1: 2021	Tested with battery	Soldered With PCB

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Figures

Figure 1

Overview of battery for 1S1P

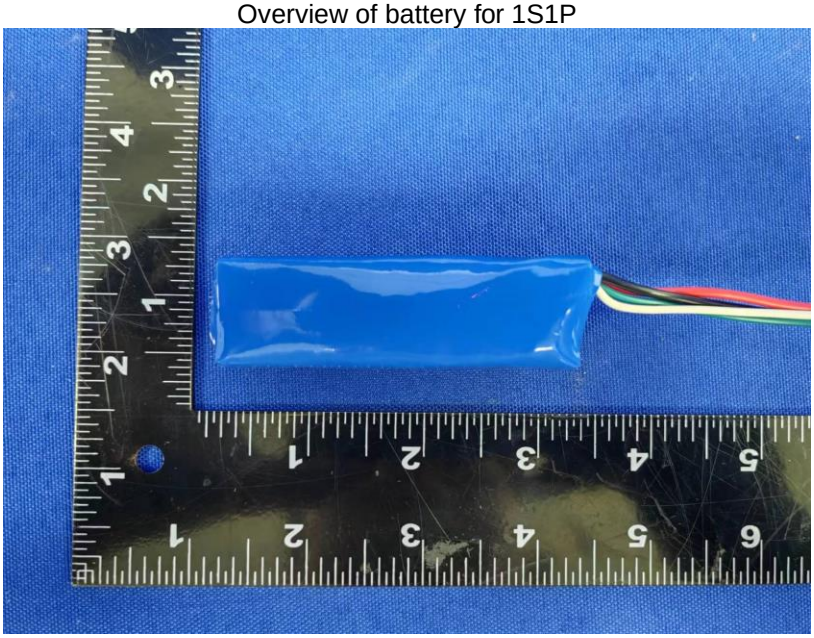


Figure 2

Overview of battery for 1S1P



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Figure 3

Overview of battery for 1S3P

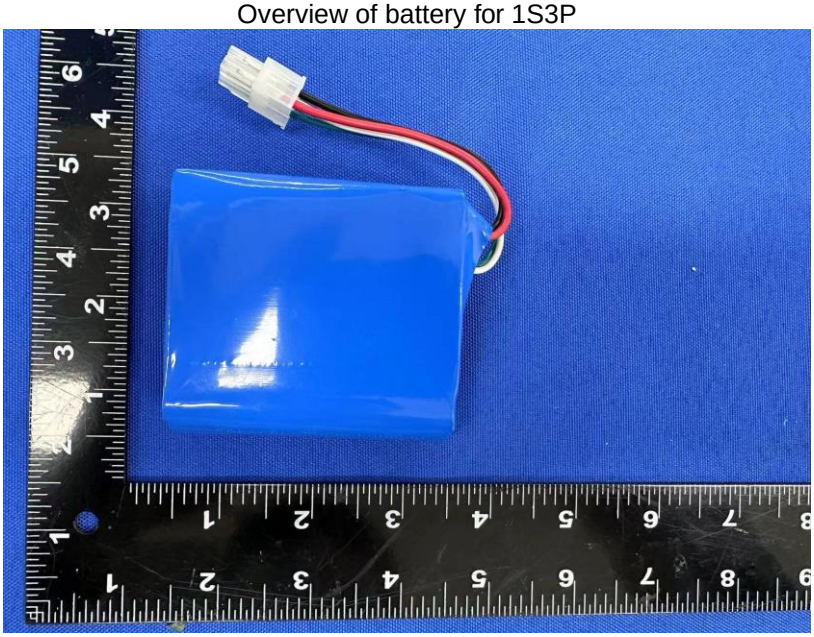
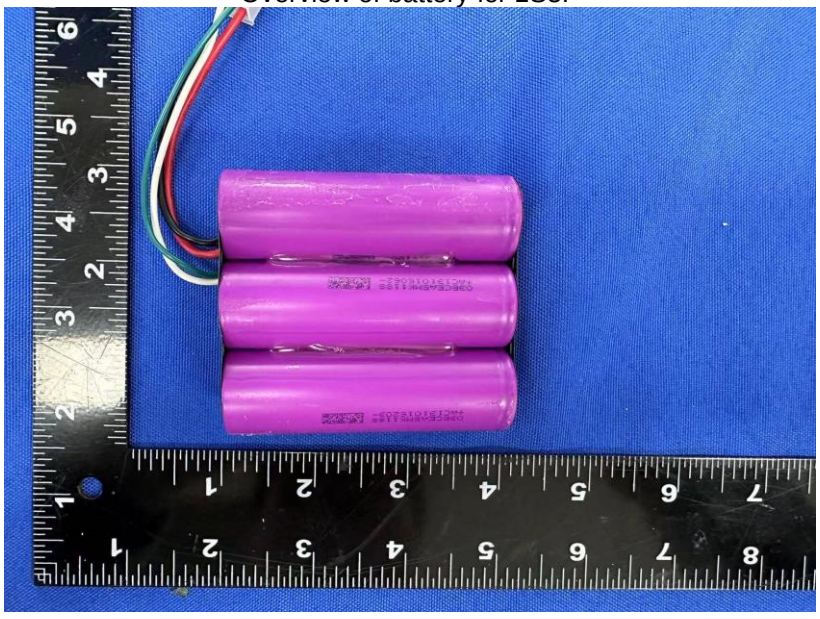


Figure 4

Overview of battery for 1S3P



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Figure 5

Overview of battery for 1S4P

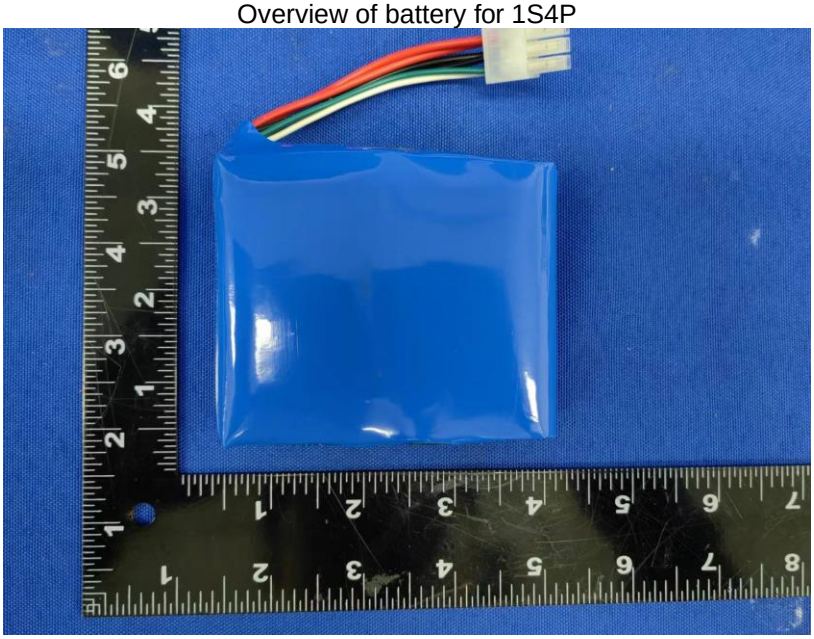
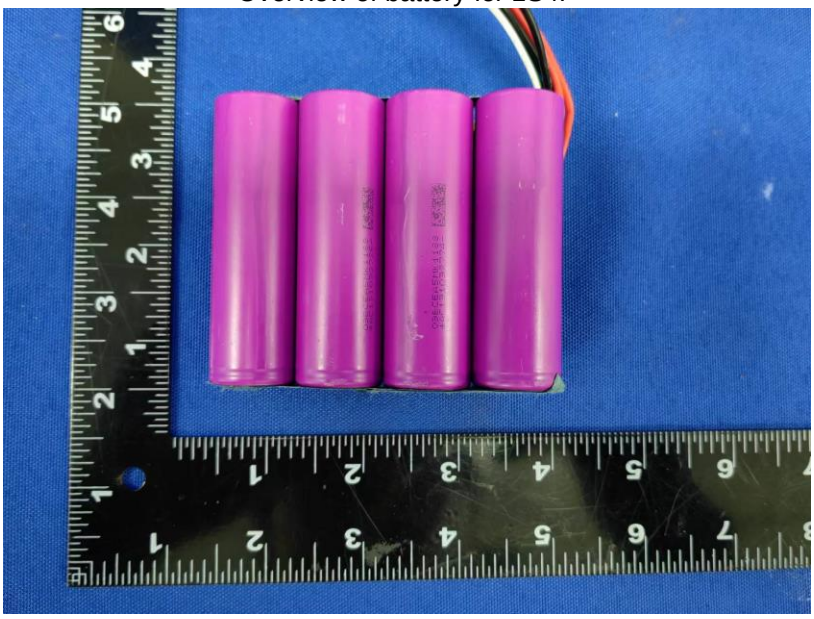


Figure 6

Overview of battery for 1S4P



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Figure 7

Overview of battery for 2S1P

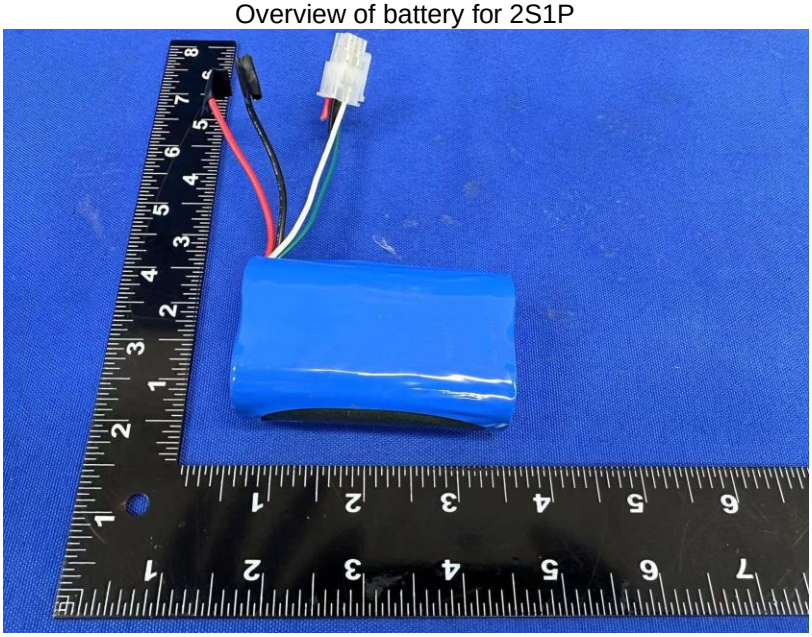
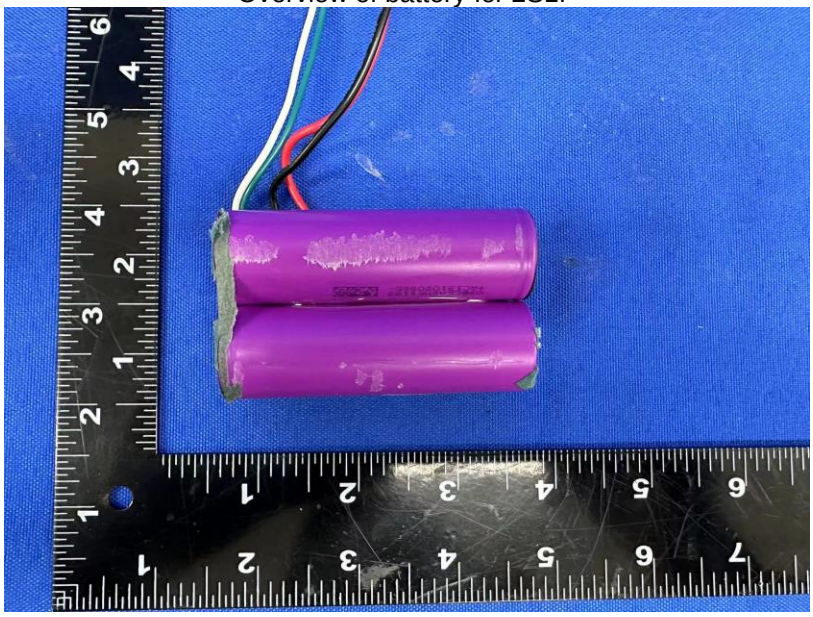


Figure 8

Overview of battery for 2S1P



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Figure 9

Overview of battery for 2S2P

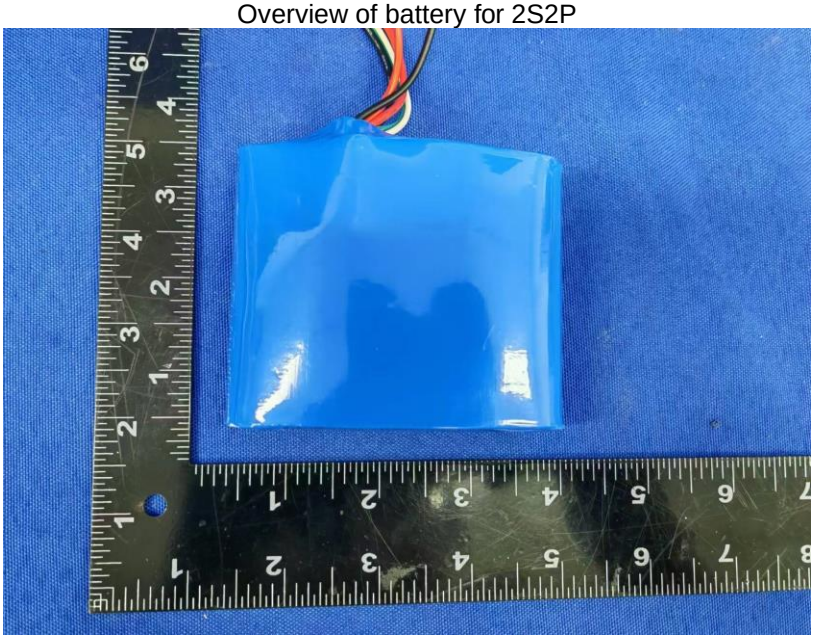
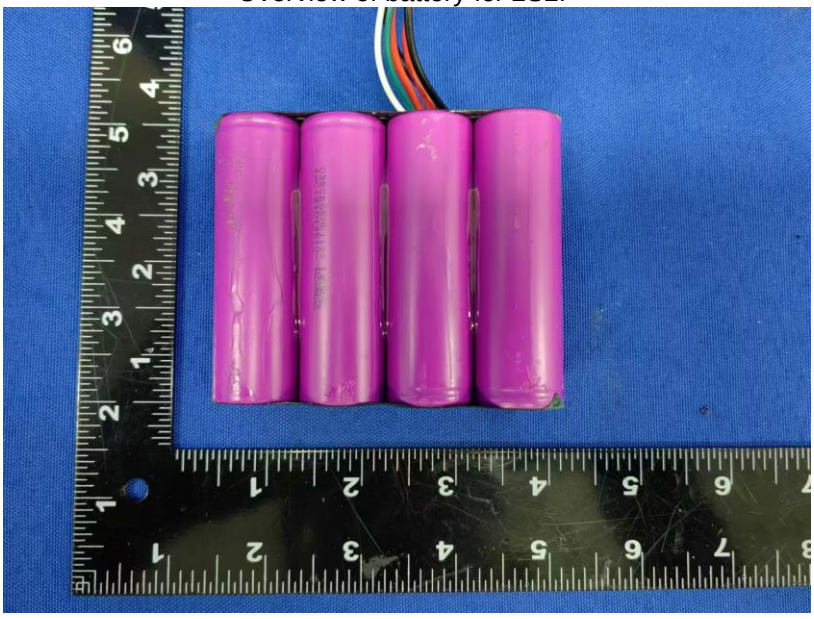


Figure 10

Overview of battery for 2S2P



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Figure 11

Overview of battery for 2S3P

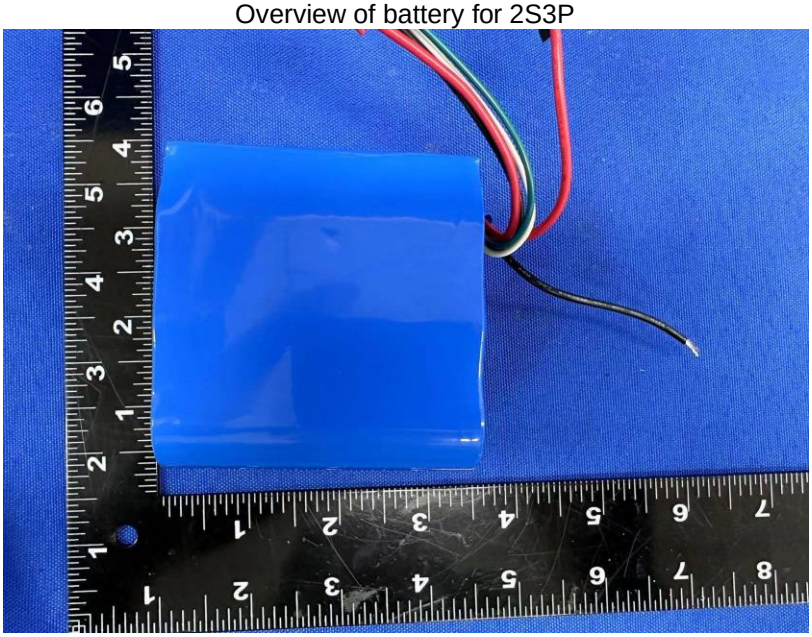
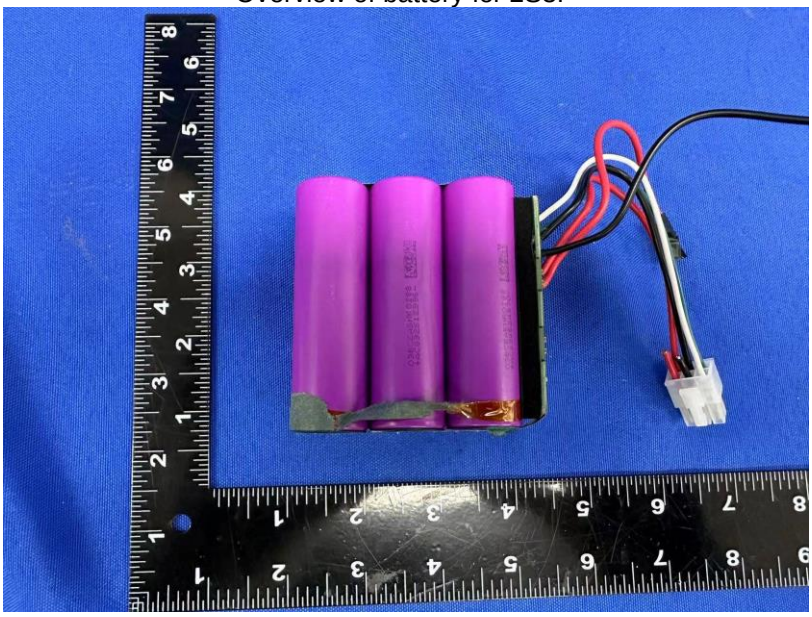


Figure 12

Overview of battery for 2S3P



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Figure 13

Overview of battery for 2S4P

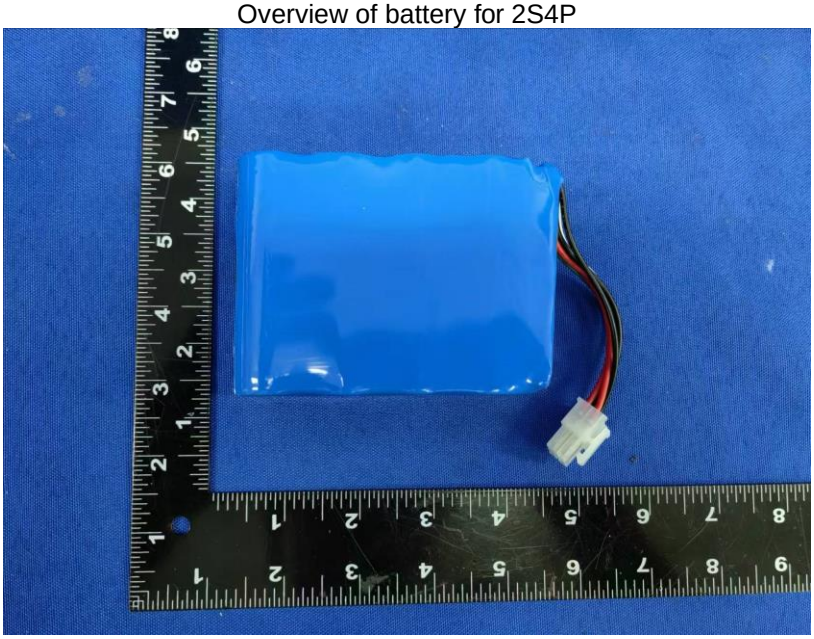
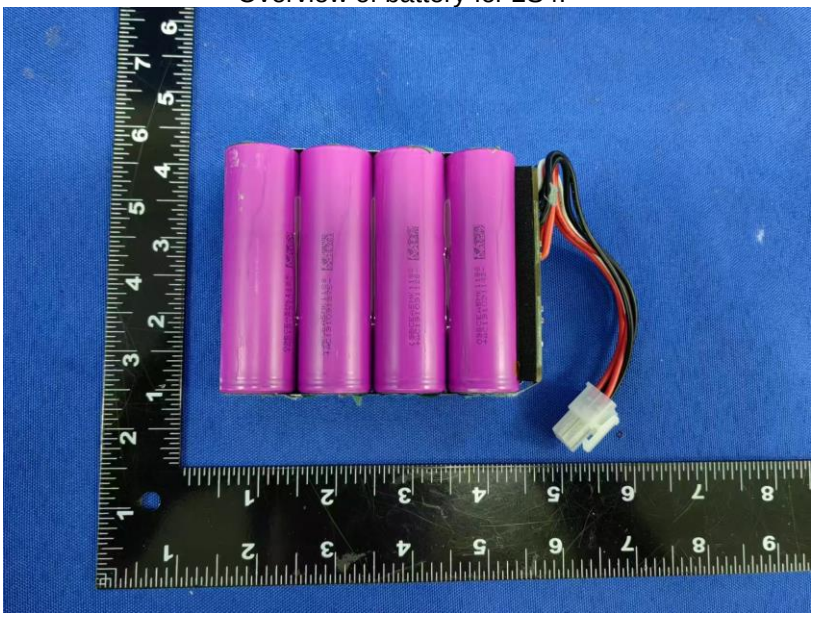


Figure 14

Overview of battery for 2S4P



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Figure 15

Overview of battery for 3S1P

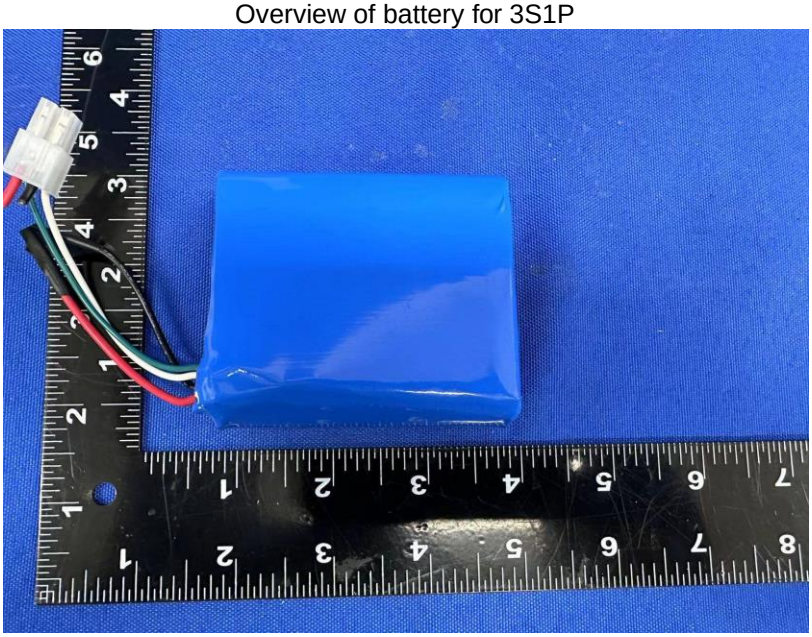
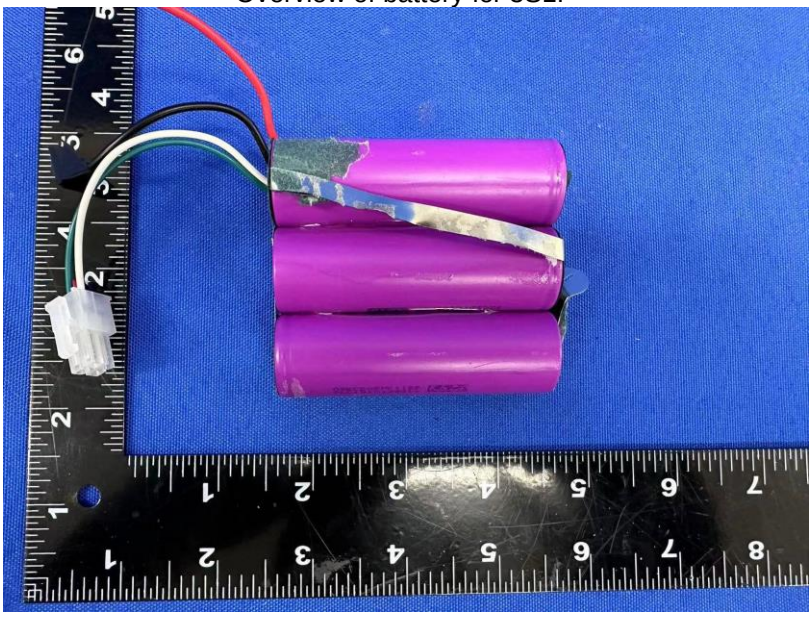


Figure 16

Overview of battery for 3S1P



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Figure 17

Overview of battery for 3S3P

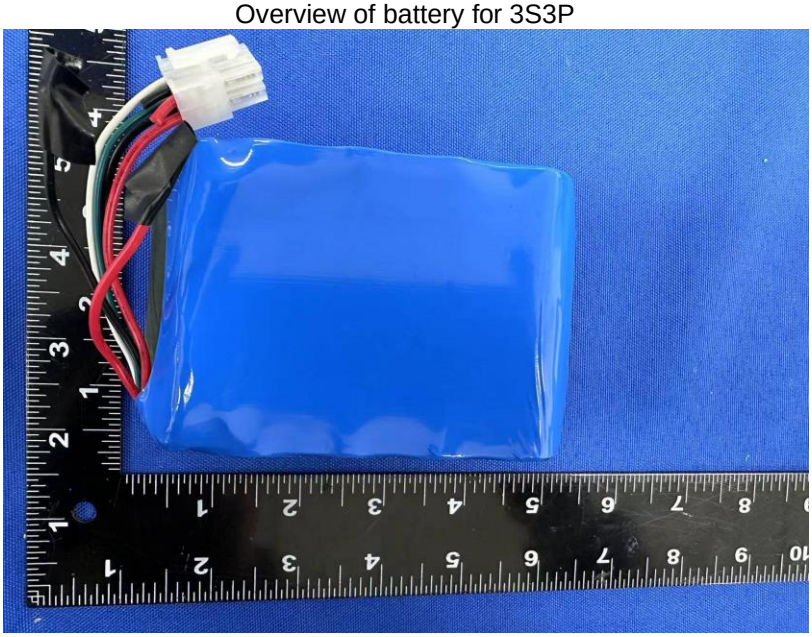


Figure 18

Overview of battery for 3S3P

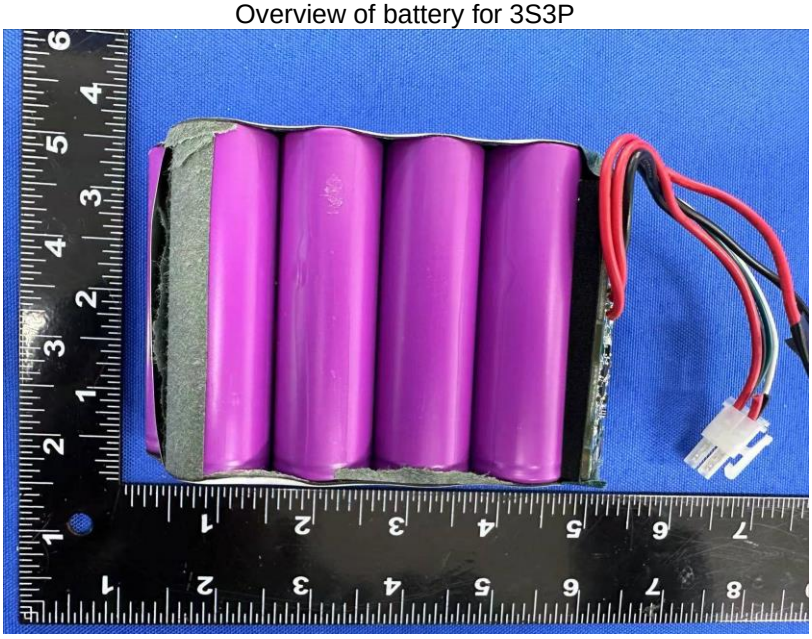


Figure 19

Overview of battery for 3S4P

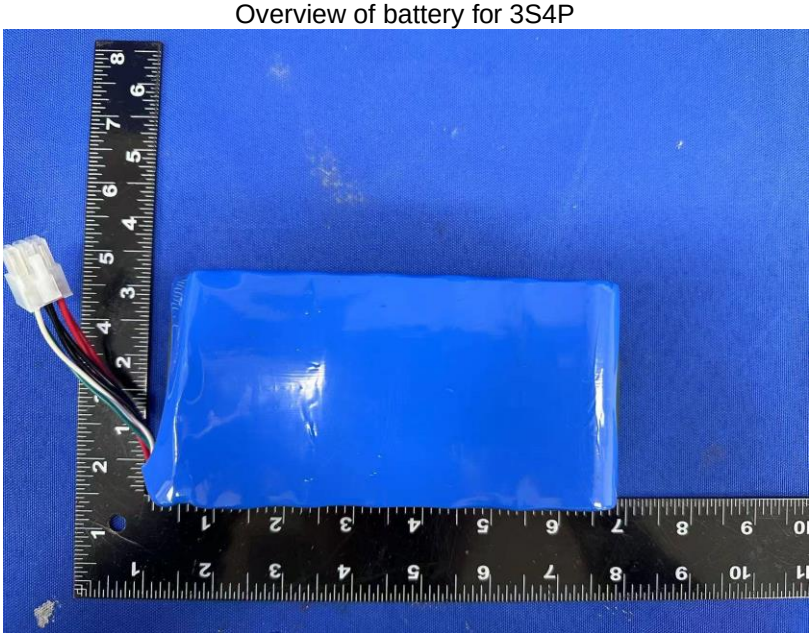
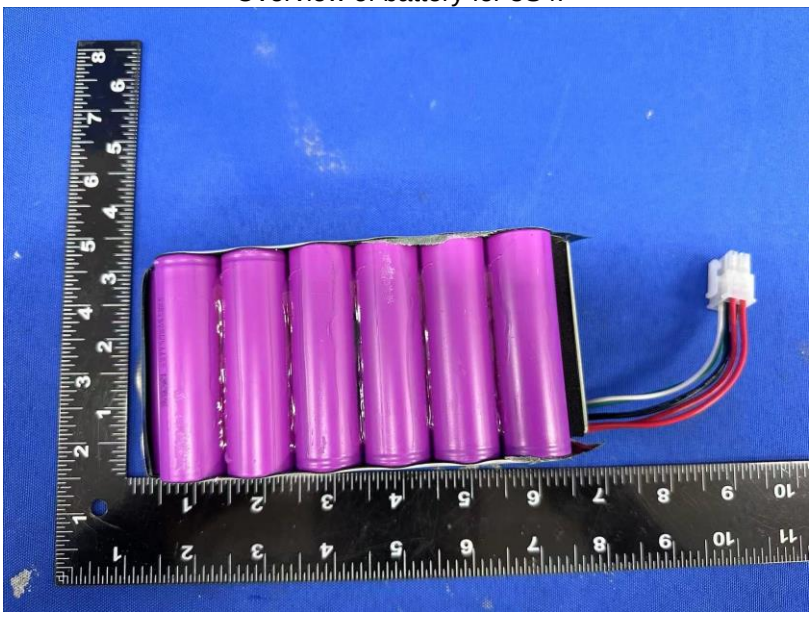


Figure 20

Overview of battery for 3S4P



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Figure 21

Overview of battery for 4S1P

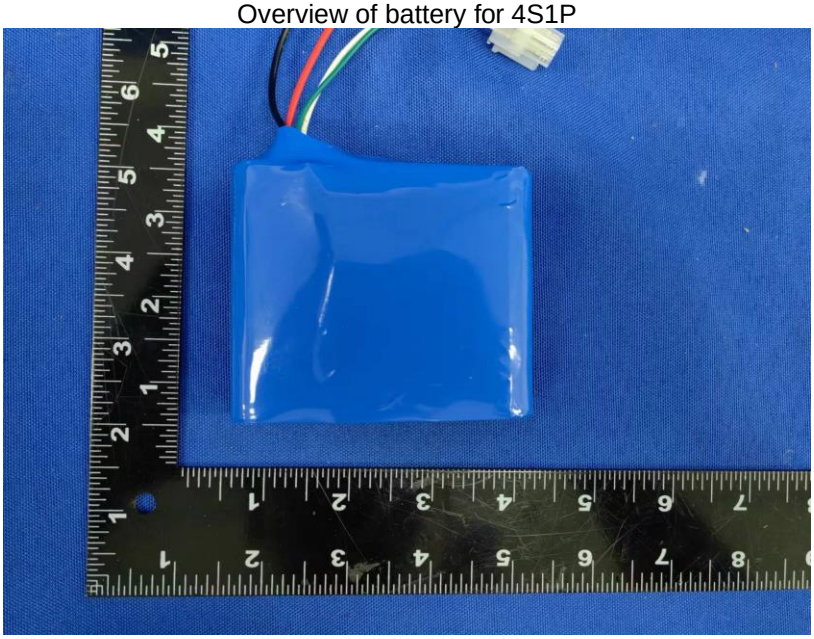
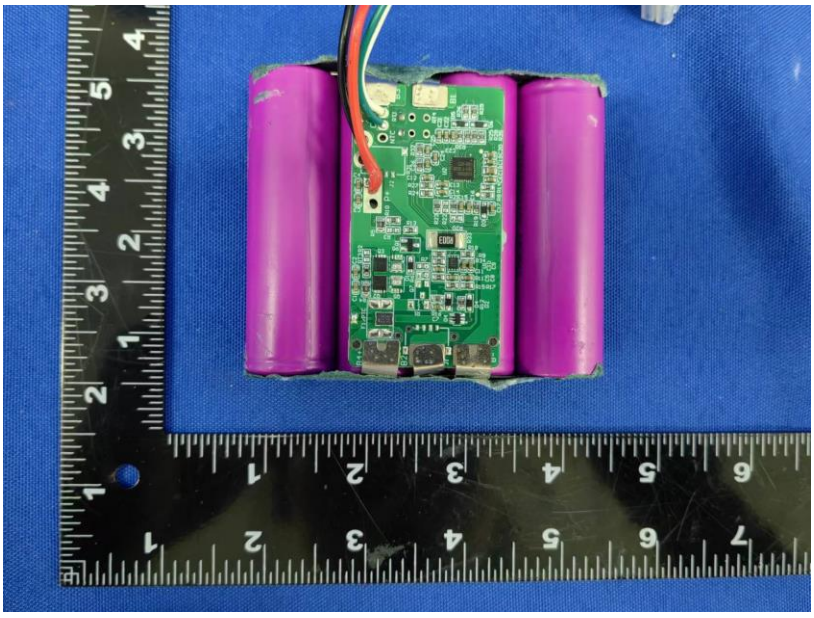


Figure 22

Overview of battery for 4S1P



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Figure 23

Overview of battery for 4S2P

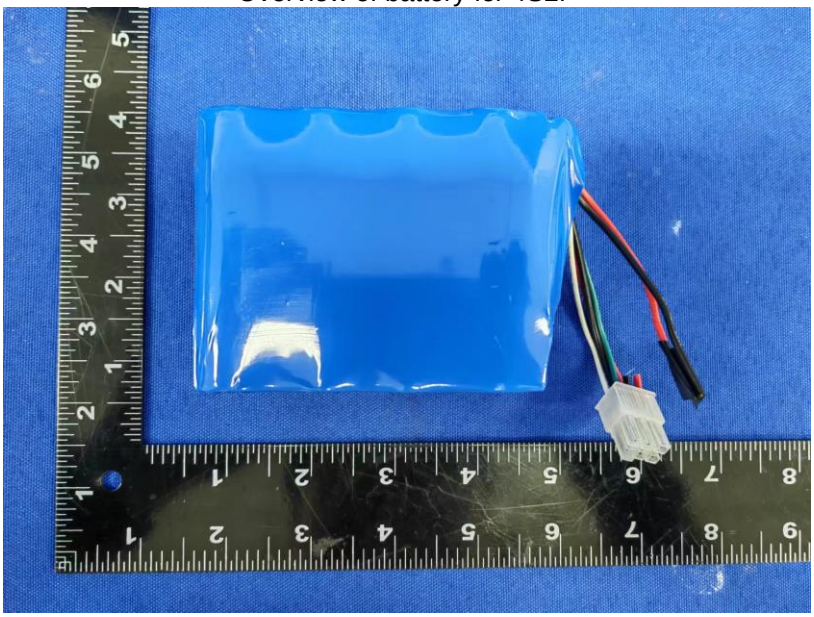
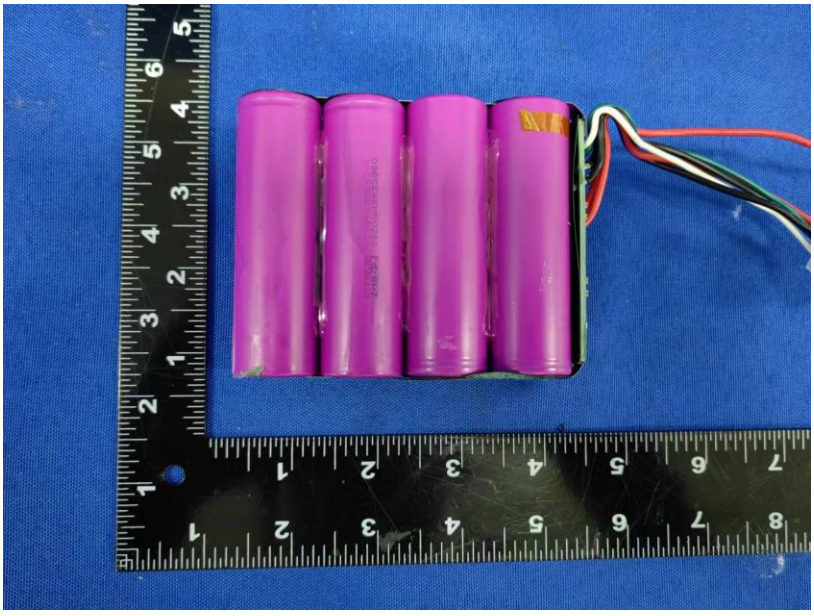


Figure 24

Overview of battery for 4S2P



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Figure 25

Overview of battery for 4S3P

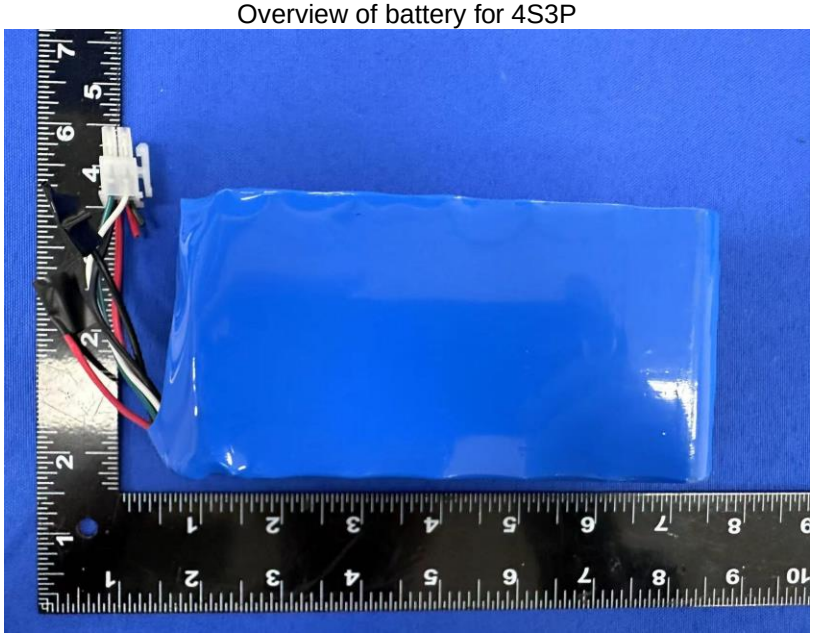


Figure 26

Overview of battery for 4S3P



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Figure 27

Overview of battery for 4S4P

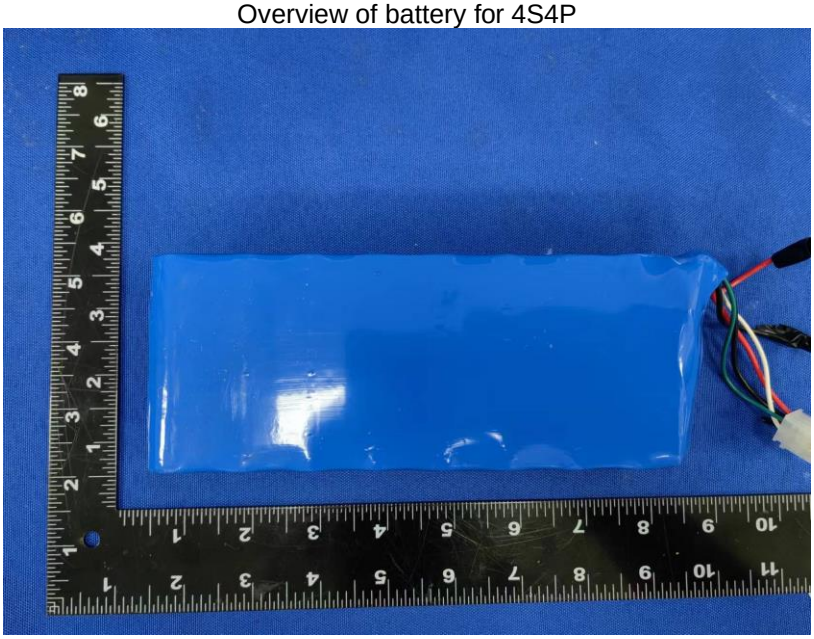
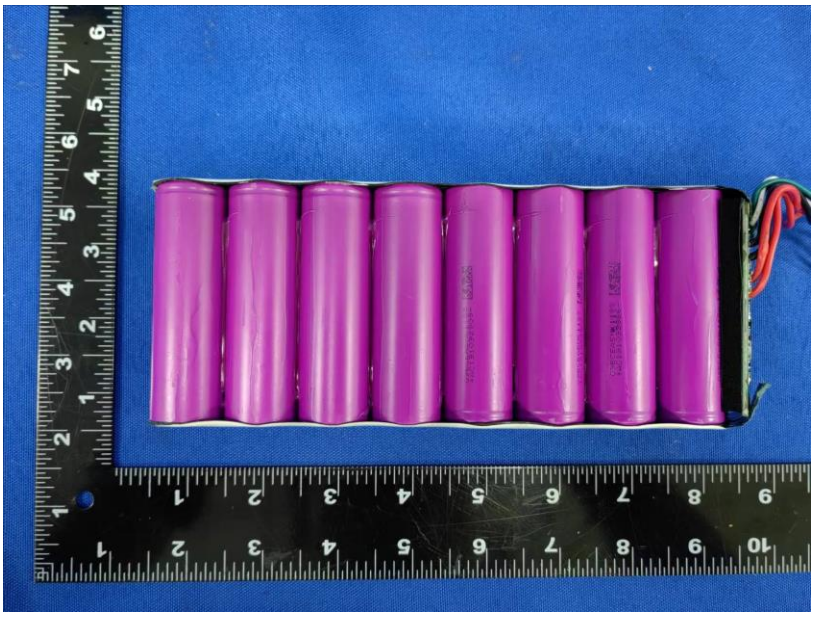


Figure 26

Overview of battery for 4S4P



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Figure 29

Overview of battery for 1S1P- Shrink wrap plastic with positive button top

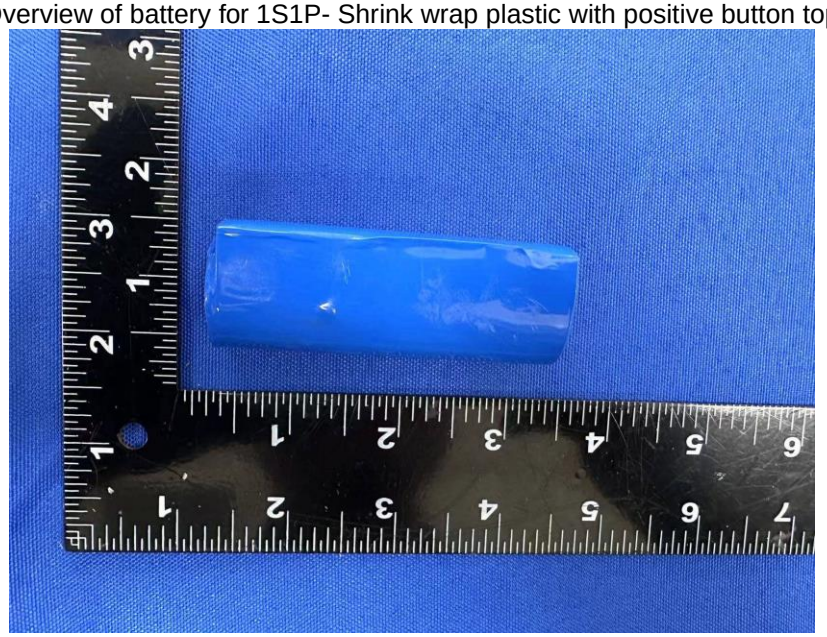


Figure 30

Overview of battery for 1S1P- Shrink wrap plastic with positive button top

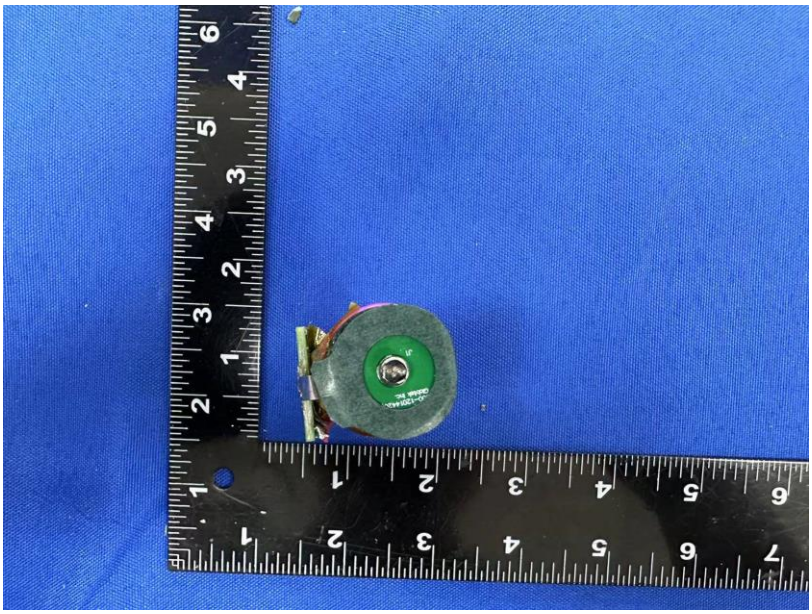


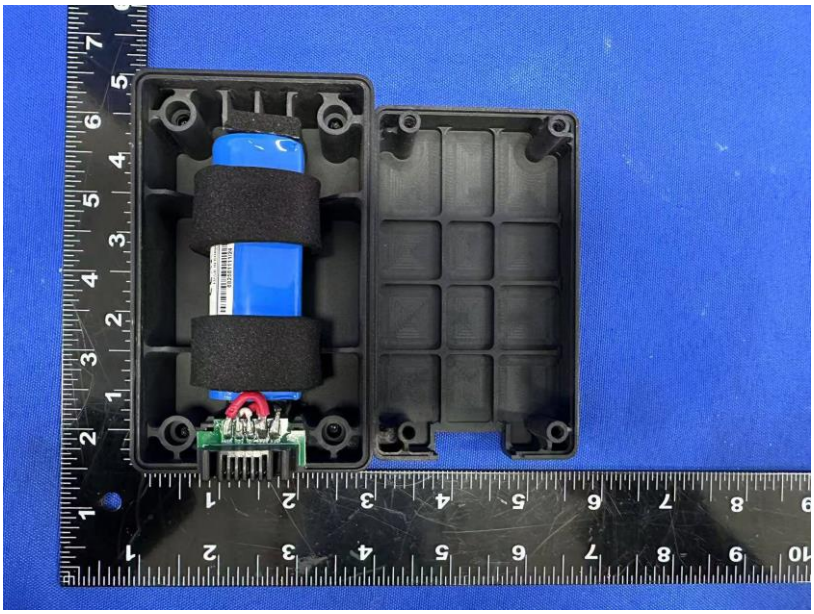
Figure 31

Overview of battery for 1S1P- Battery With Plastic housing



Figure 32

Overview of battery for 1S1P- Battery With Plastic housing



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Figure 33

Overview of battery for 1S1P- Battery With Plastic housing

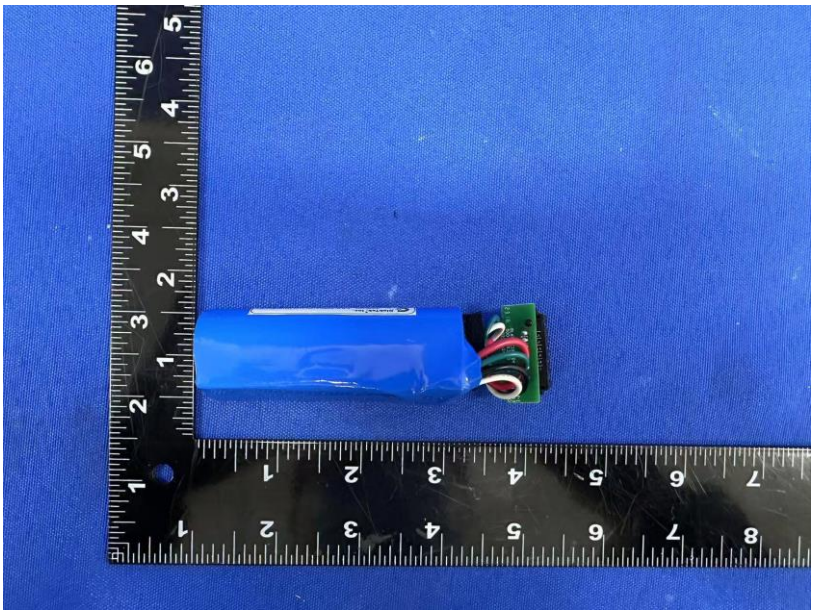
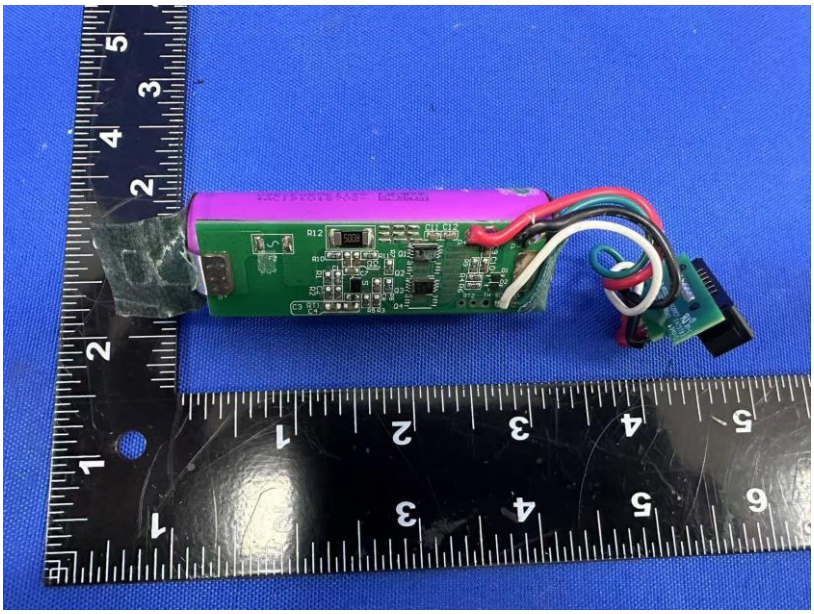


Figure 34

Overview of battery for 1S1P- Battery With Plastic housing



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Figure 35

Overview of battery for 1S3P- Battery With Plastic housing



Figure 36

Overview of battery for 1S3P- Battery With Plastic housing

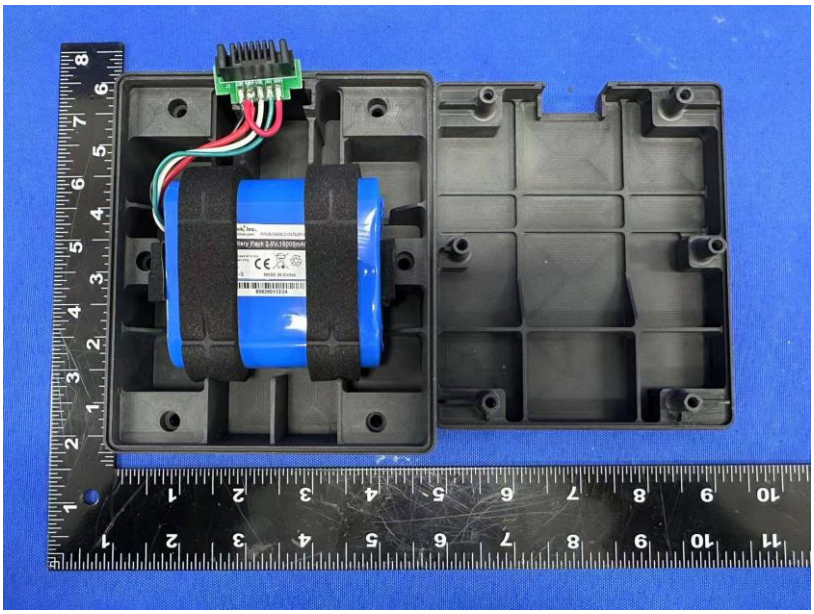


Figure 37

Overview of battery for 1S3P- Battery With Plastic housing

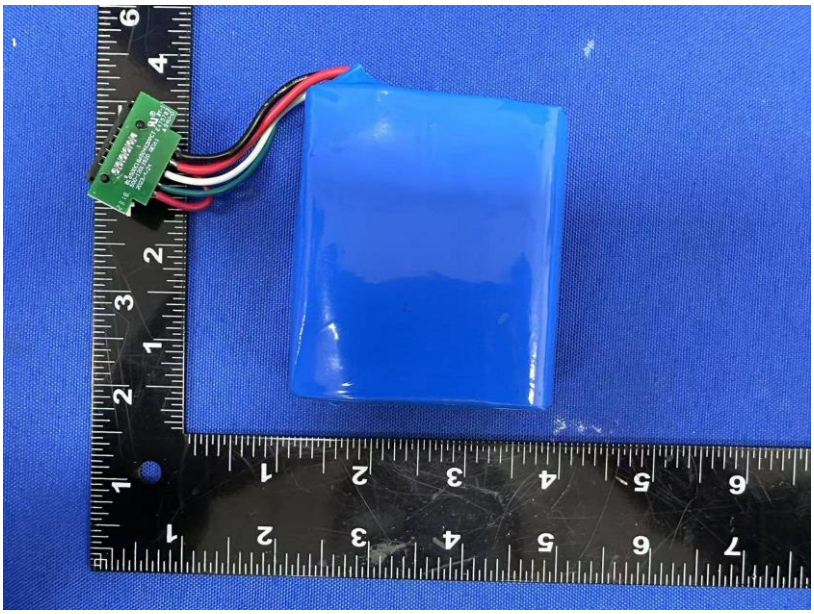
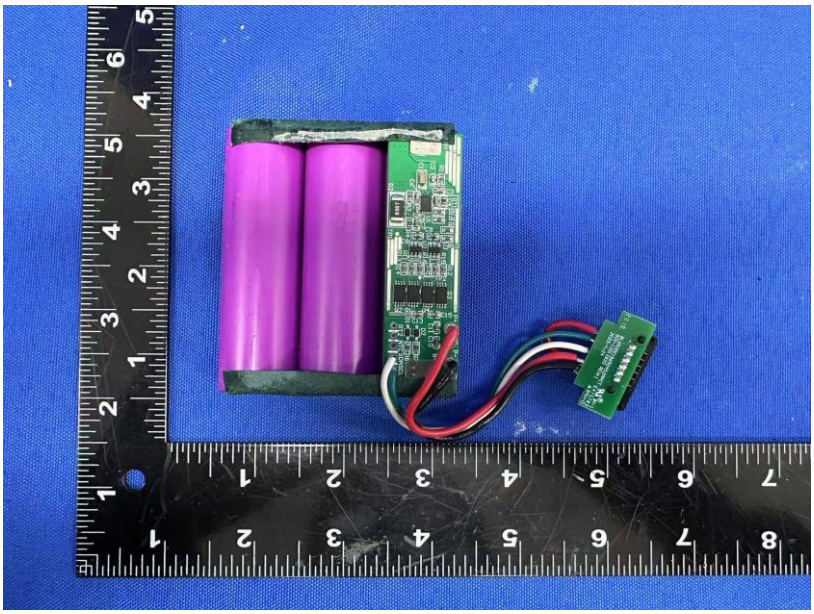


Figure 38

Overview of battery for 1S3P- Battery With Plastic housing



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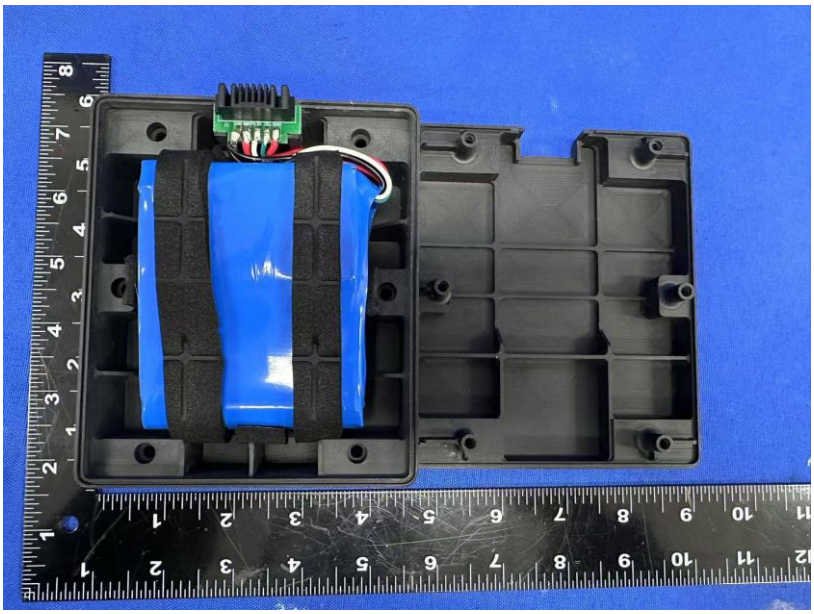
Figure 39

Overview of battery for 1S4P- Battery With Plastic housing



Figure 40

Overview of battery for 1S4P- Battery With Plastic housing



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Figure 41

Overview of battery for 1S4P- Battery With Plastic housing

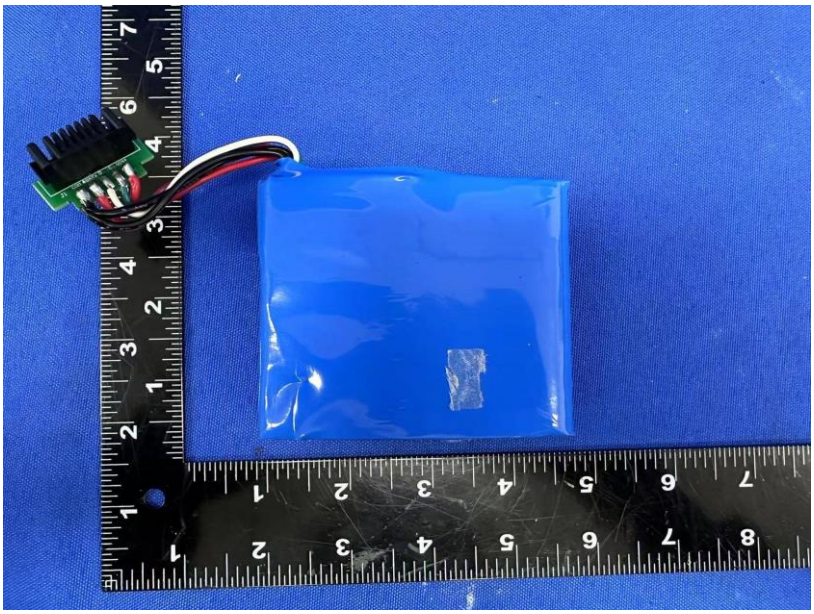


Figure 42

Overview of battery for 1S4P- Battery With Plastic housing

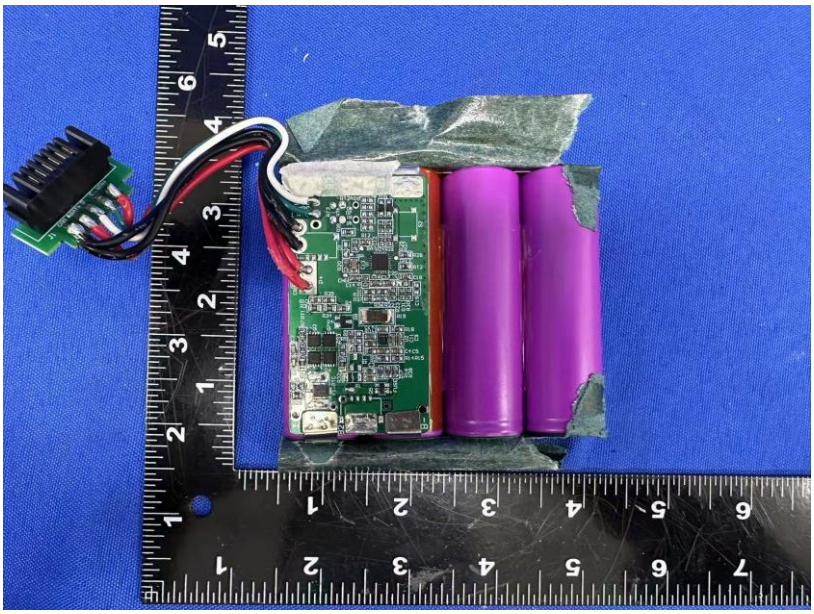


Figure 43

Overview of battery for 2S3P- Battery With Plastic housing



Figure 44

Overview of battery for 2S3P- Battery With Plastic housing

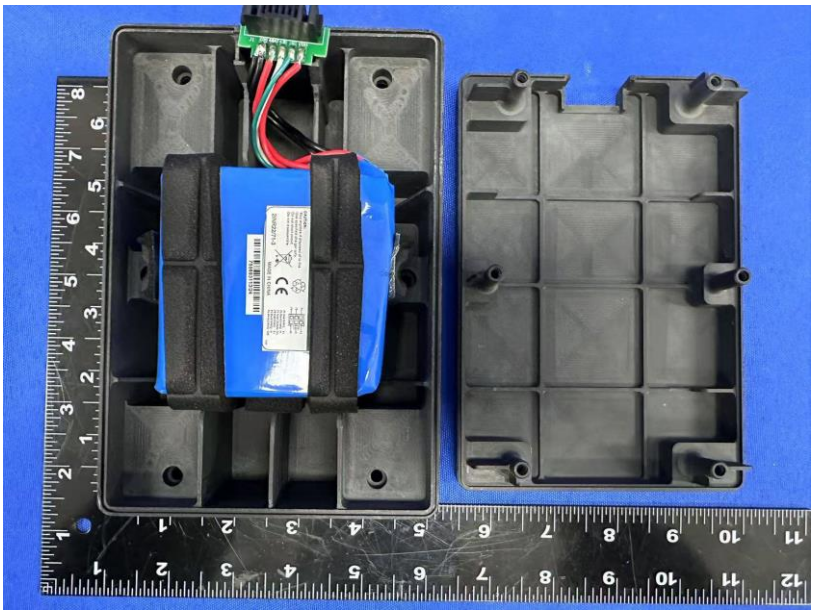


Figure 45

Overview of battery for 2S3P- Battery With Plastic housing

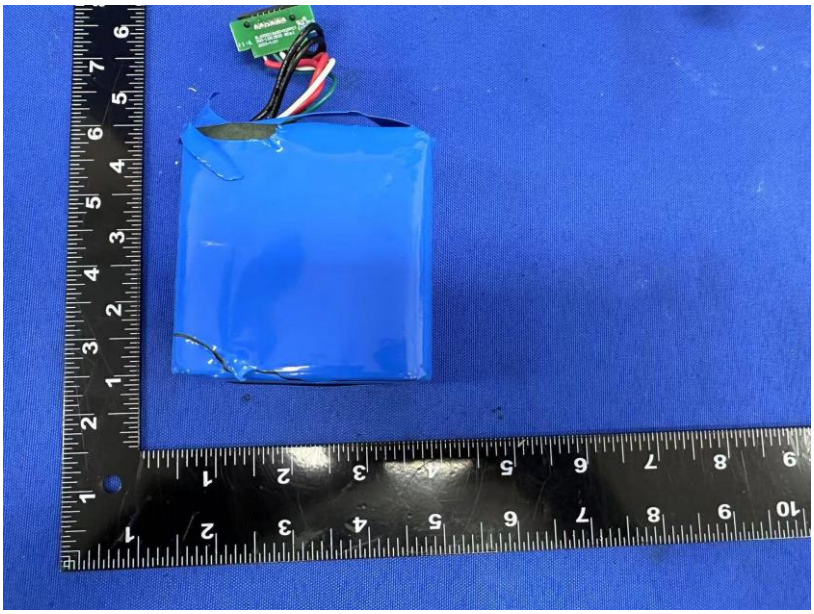


Figure 46

Overview of battery for 2S3P- Battery With Plastic housing

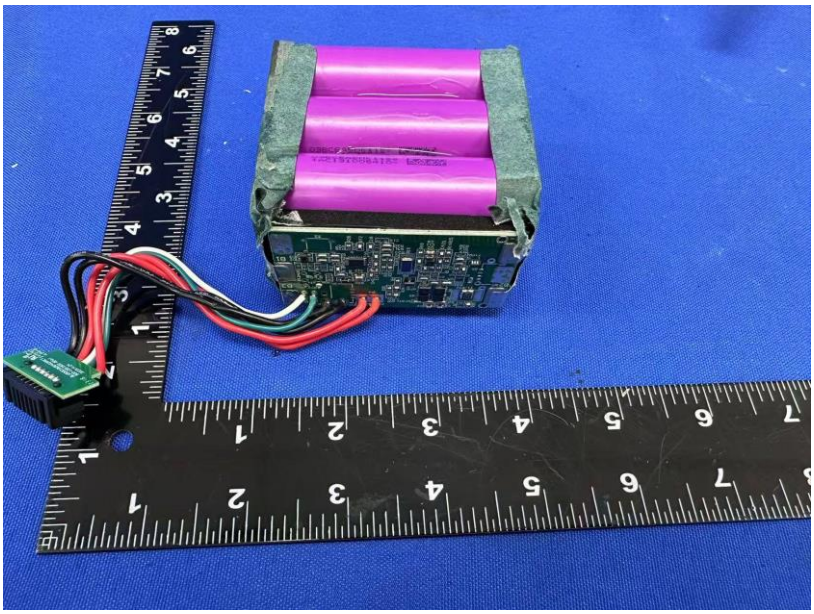


Figure 47

Overview of battery for 3S3P- Battery With Plastic housing



Figure 48

Overview of battery for 3S3P- Battery With Plastic housing

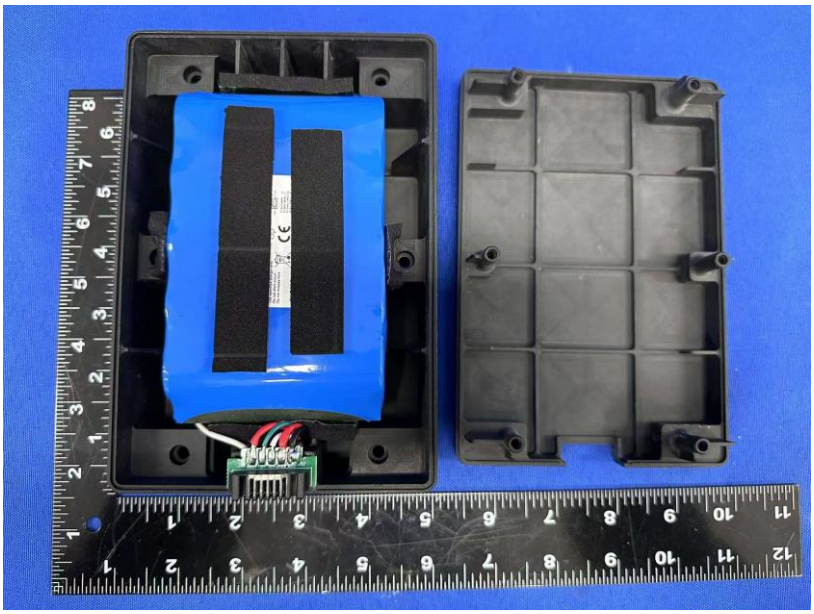


Figure 49

Overview of battery for 3S3P- Battery With Plastic housing

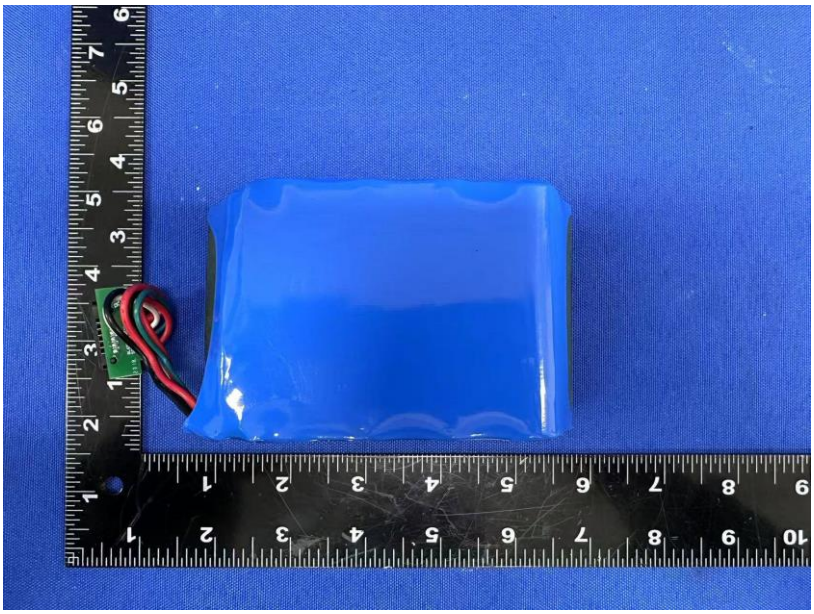


Figure 50

Overview of battery for 3S3P- Battery With Plastic housing

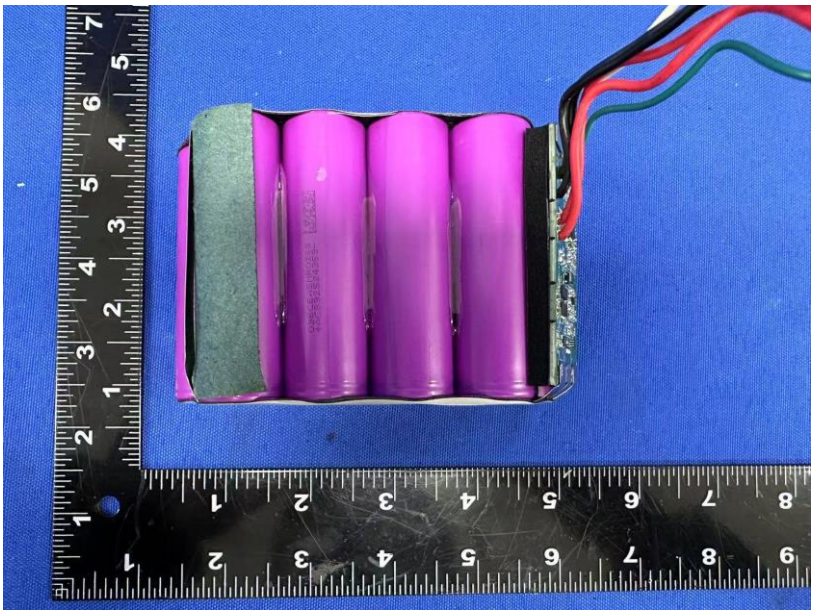


Figure 51

Overview of battery for 4S2P- Battery With Plastic housing



Figure 52

Overview of battery for 4S2P- Battery With Plastic housing

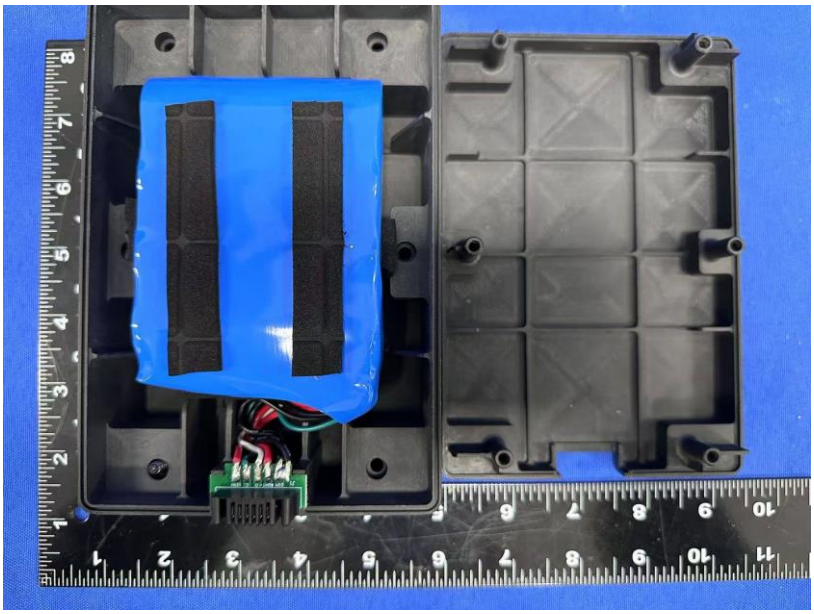


Figure 53

Overview of battery for 4S2P- Battery With Plastic housing

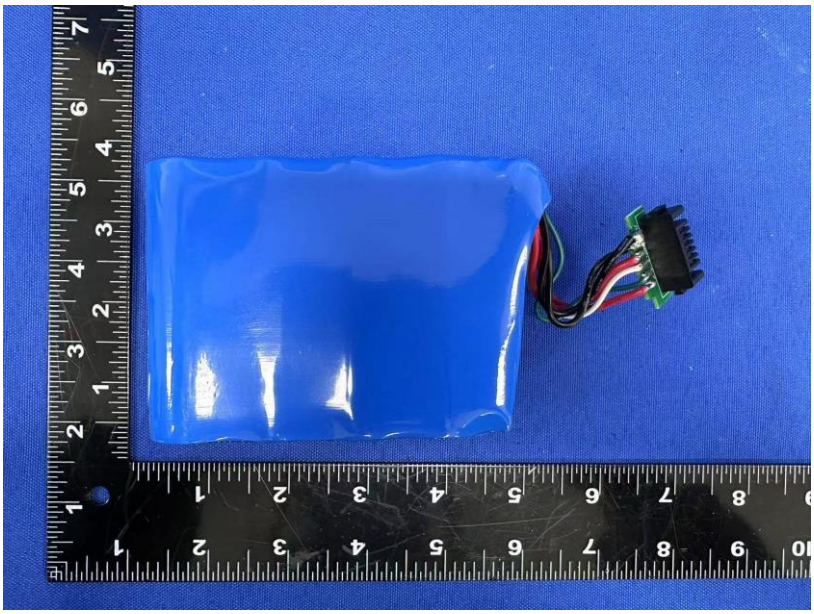


Figure 54

Overview of battery for 4S2P- Battery With Plastic housing

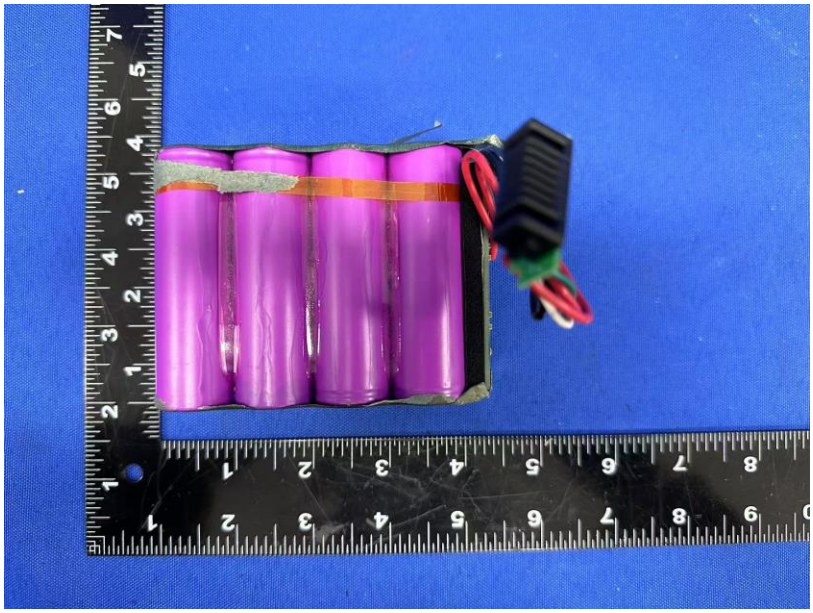


Figure 55

Overview of battery for 4S3P- Battery With Plastic housing



Figure 56

Overview of battery for 4S3P- Battery With Plastic housing

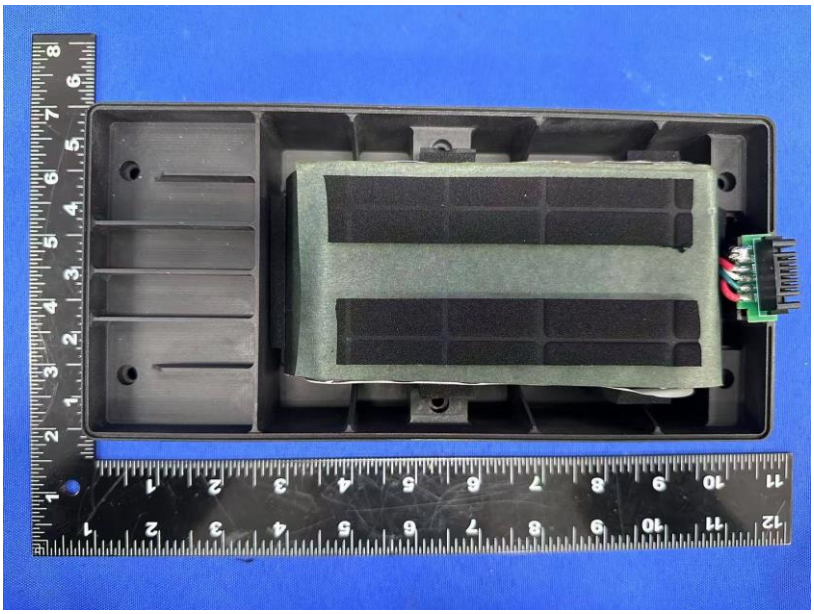


Figure 57

Overview of battery for 4S3P- Battery With Plastic housing

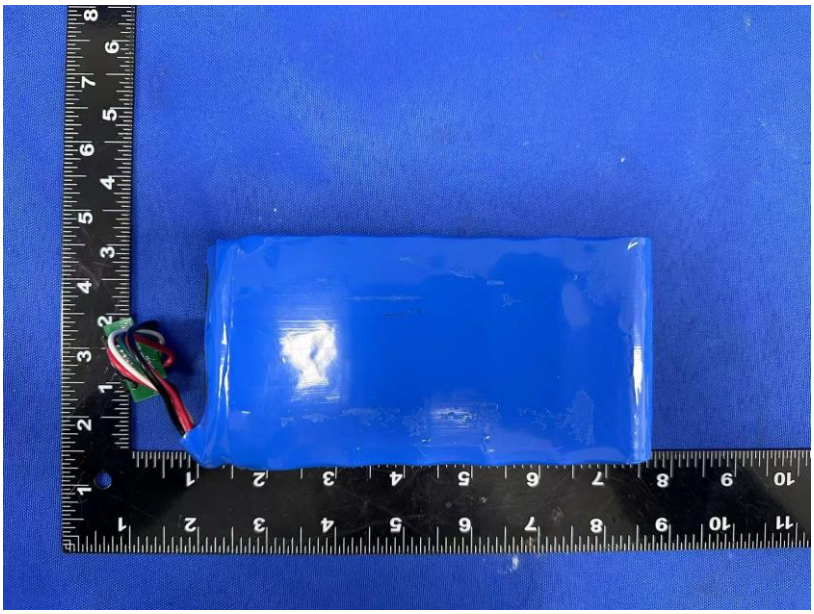


Figure 58

Overview of battery for 4S3P- Battery With Plastic housing

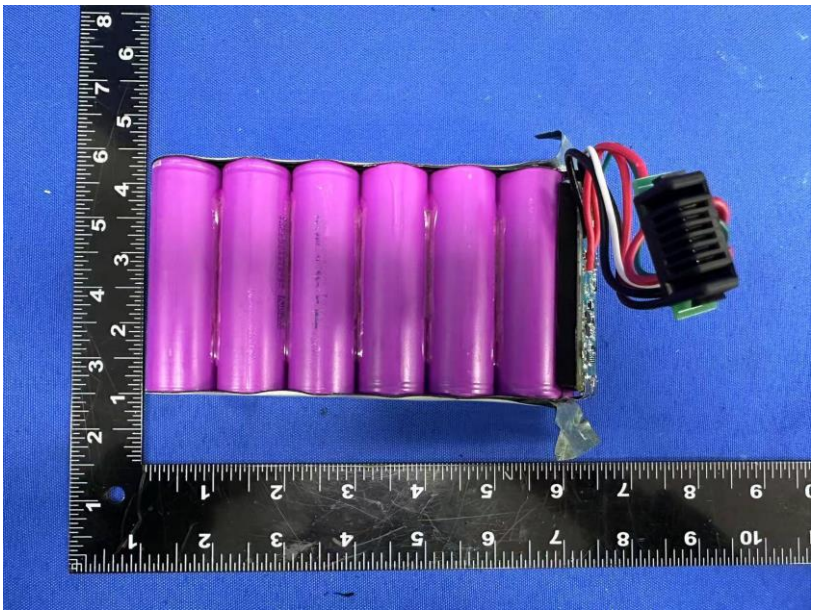


Figure 59

Overview of battery for 4S4P- Battery With Plastic housing

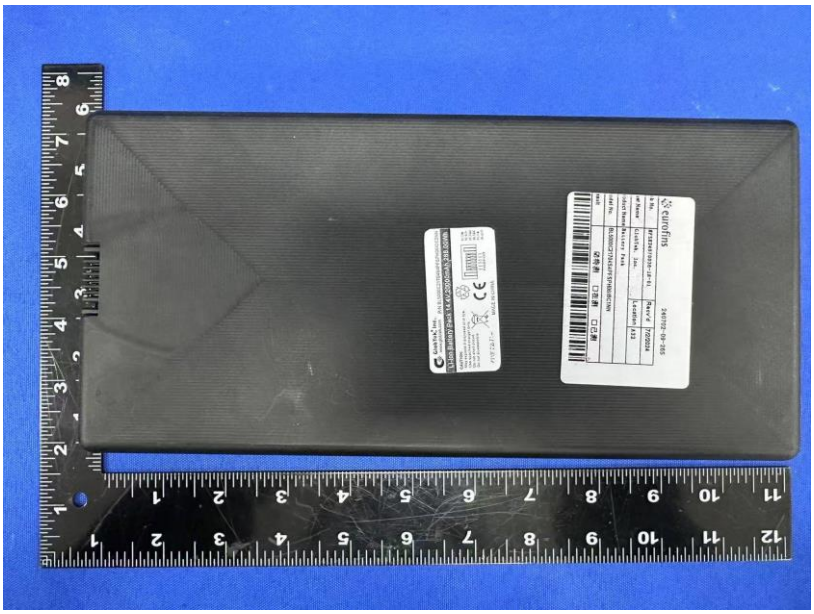


Figure 60

Overview of battery for 4S4P- Battery With Plastic housing

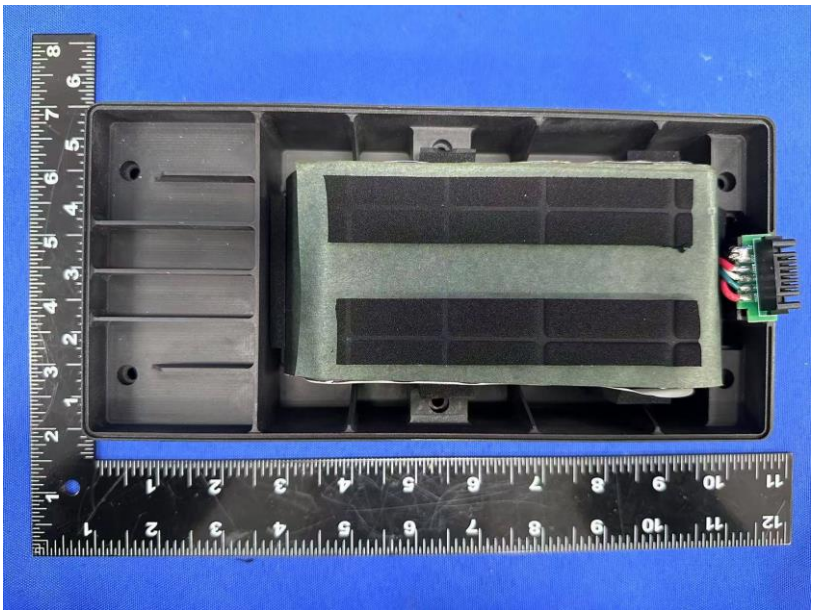


Figure 61

Overview of battery for 4S4P- Battery With Plastic housing

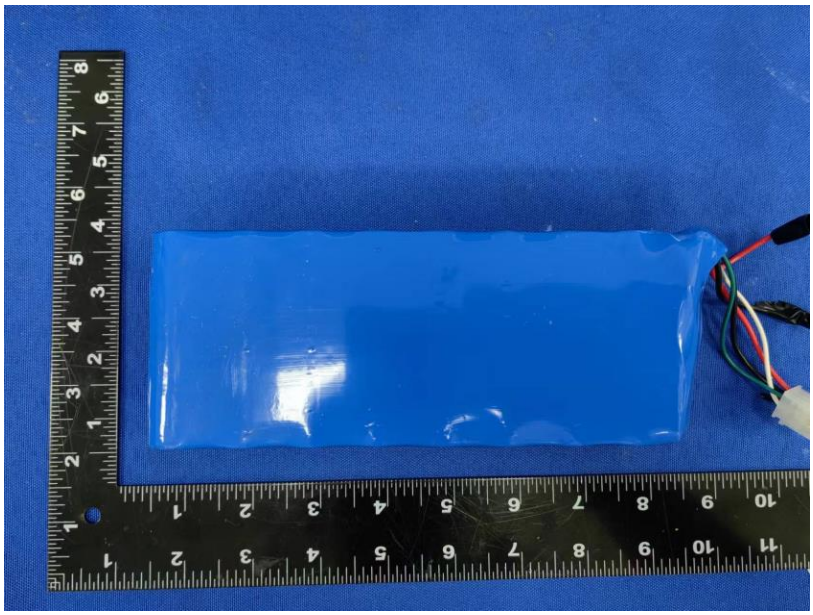
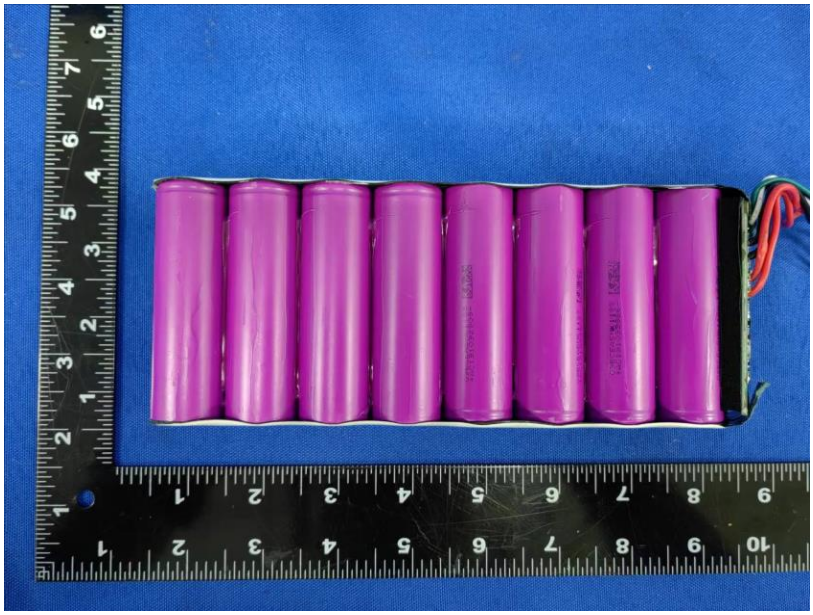


Figure 62

Overview of battery for 4S4P- Battery With Plastic housing



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Figure 63

Overview of battery for 1S2P- Battery With Plastic housing



Figure 64

Overview of battery for 1S2P- Battery With Plastic housing

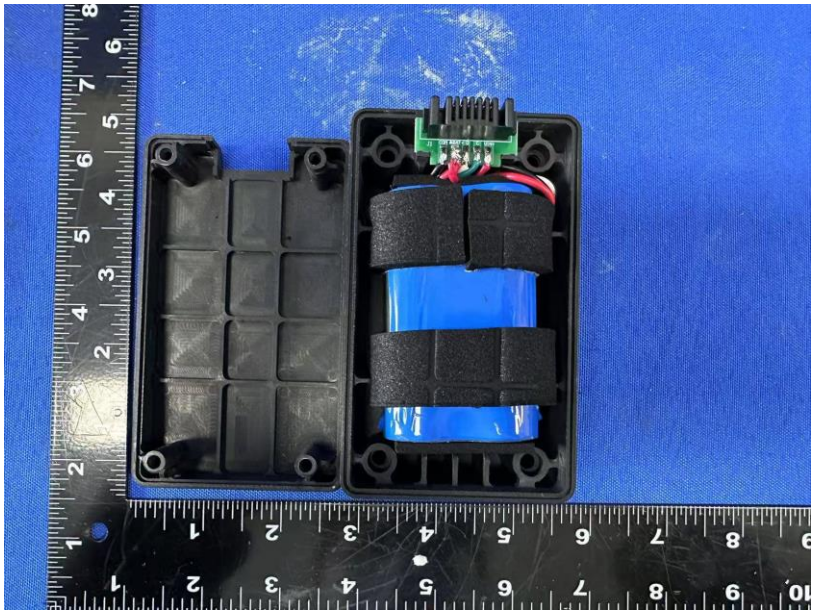


Figure 65

Overview of battery for 1S2P- Battery With Plastic housing

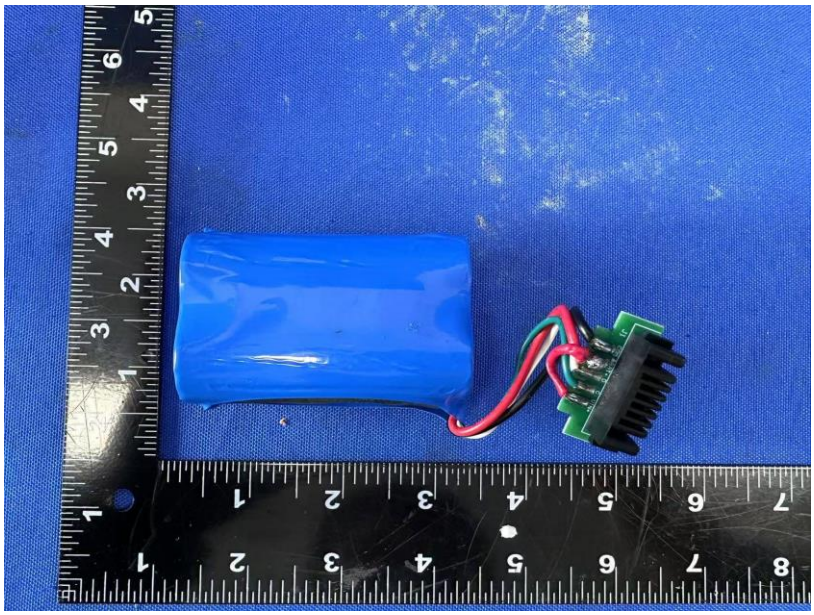


Figure 66

Overview of battery for 1S2P- Battery With Plastic housing

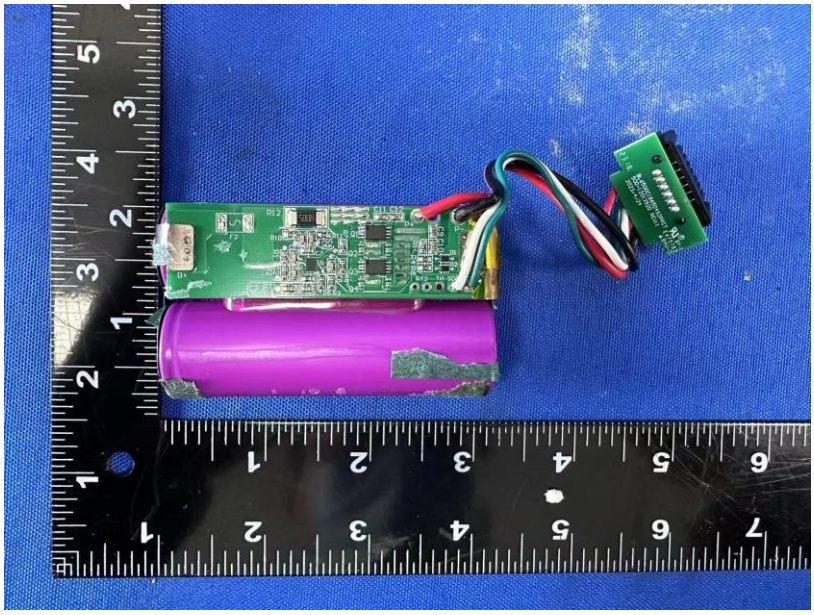


Figure 67

Main board view-PCB1（The PCB1 without the NTC soldered）

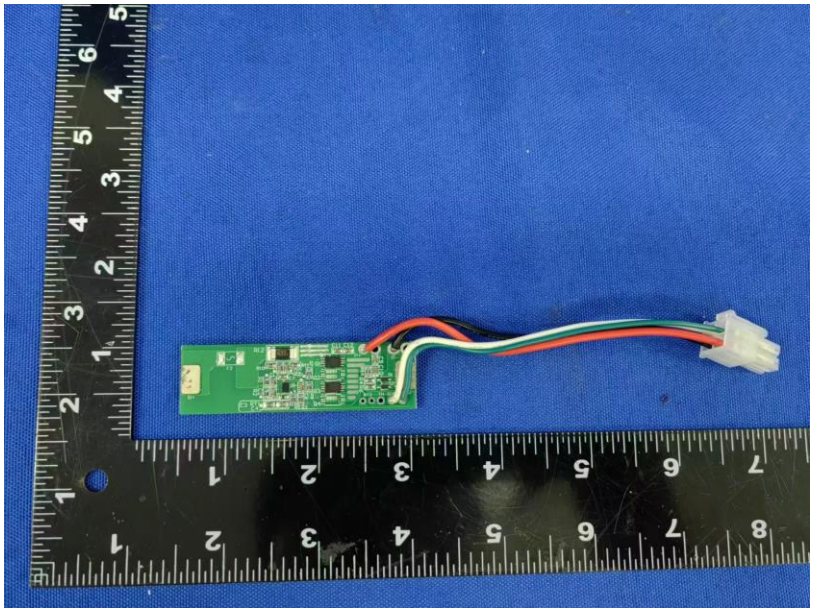


Figure 68

Main board view-（The PCB1 without the NTC soldered）

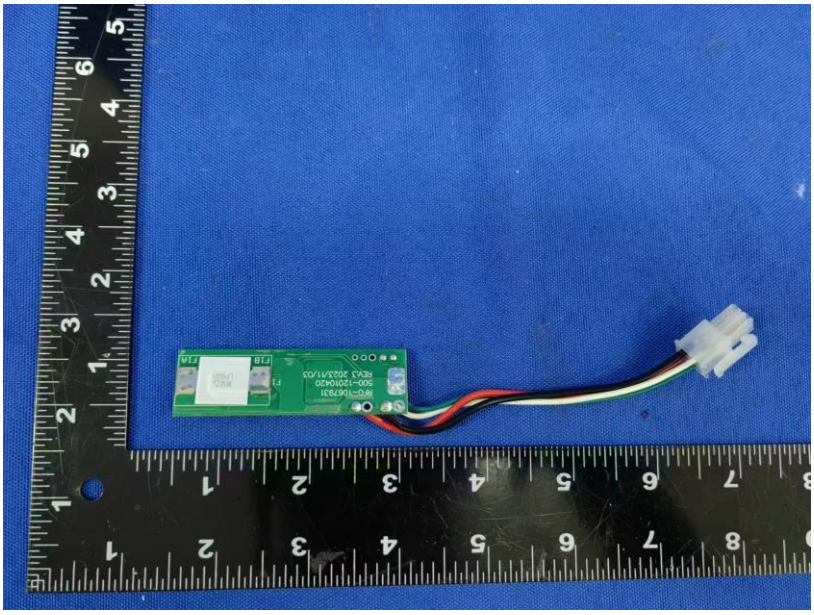


Figure 69

Main board view- （The PCB2 without the NTC soldered）

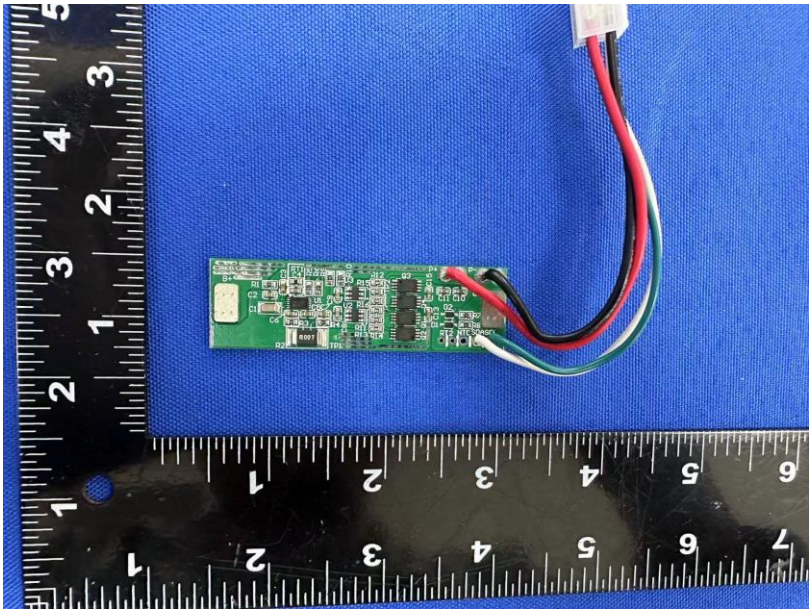


Figure 70

Main board view- （The PCB2 without the NTC soldered）

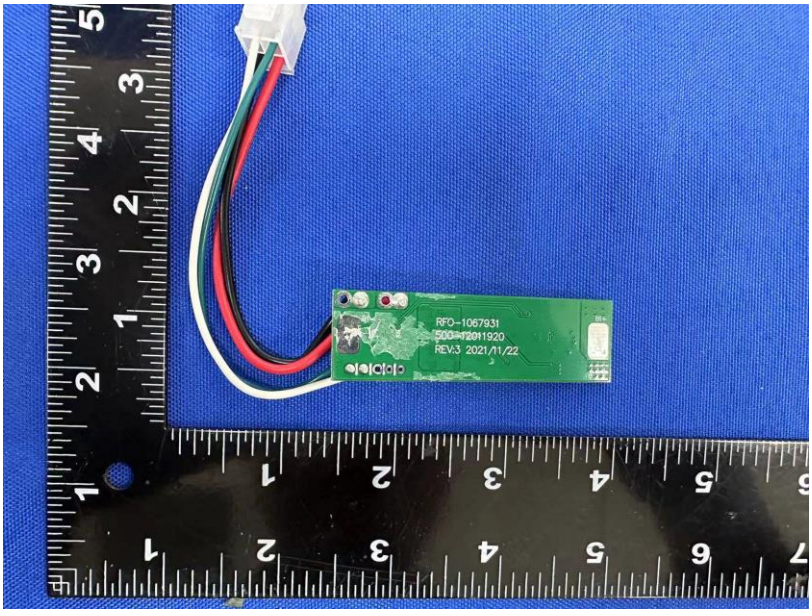


Figure 71

Main board view- （The PCB3 without the NTC soldered）

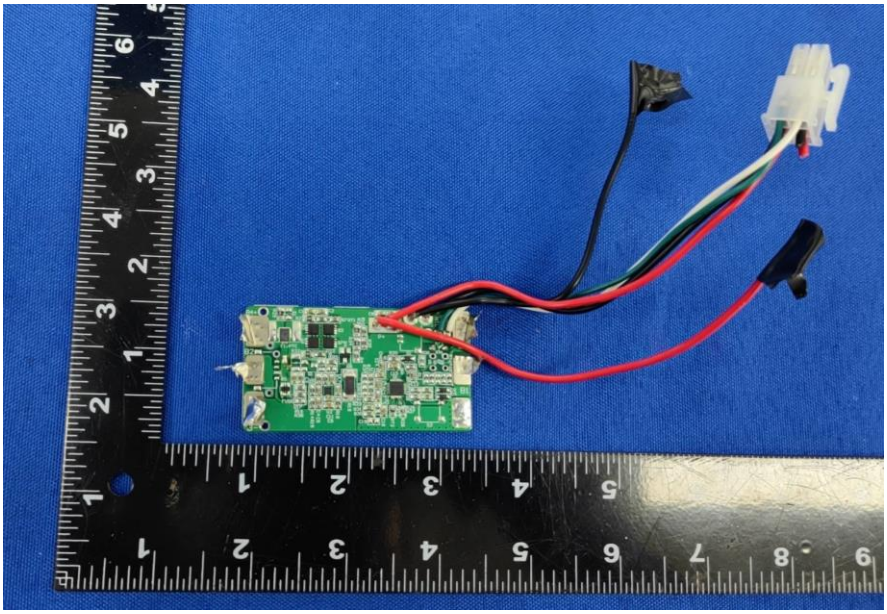


Figure 72

Main board view- （The PCB3 without the NTC soldered）

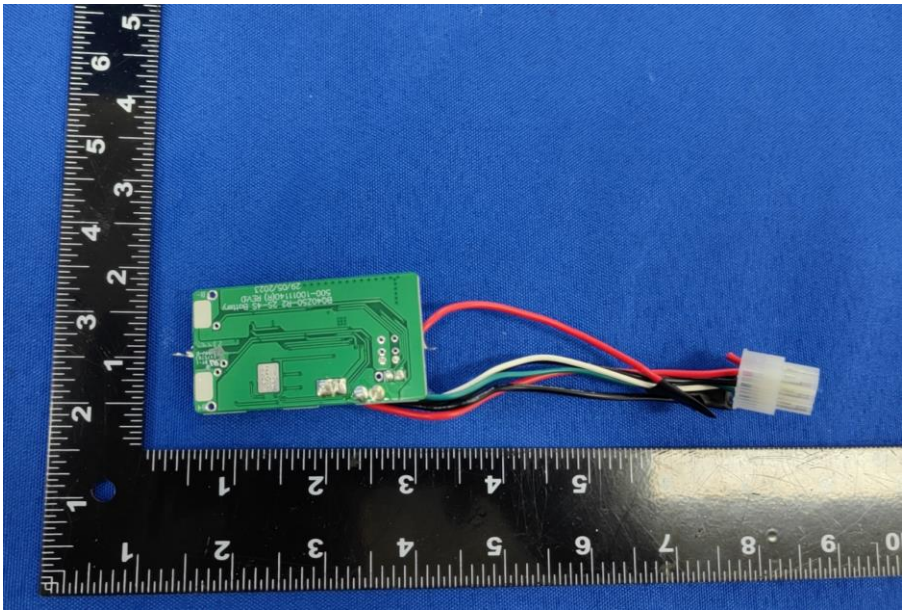


Figure 73

Main board view- (The PCB4 without the NTC soldered)

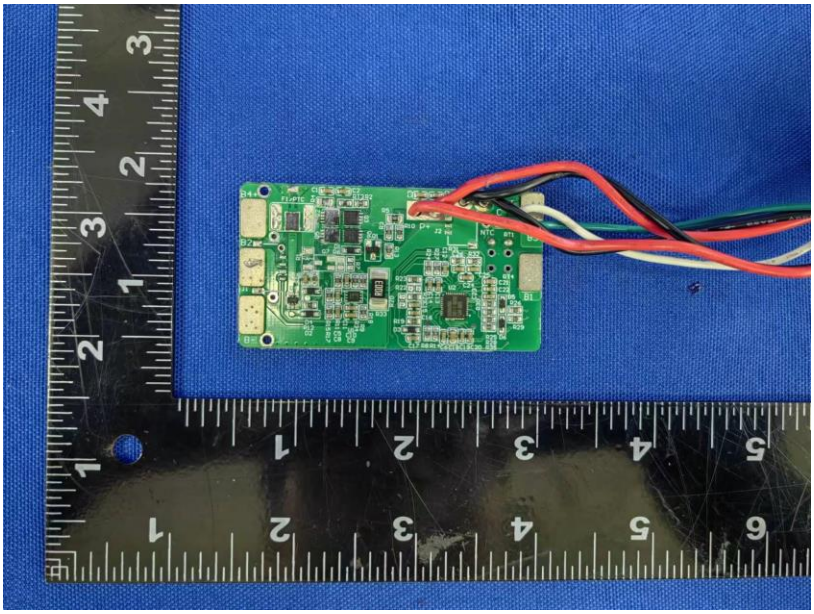


Figure 74

Main board view- (The PCB4 without the NTC soldered)

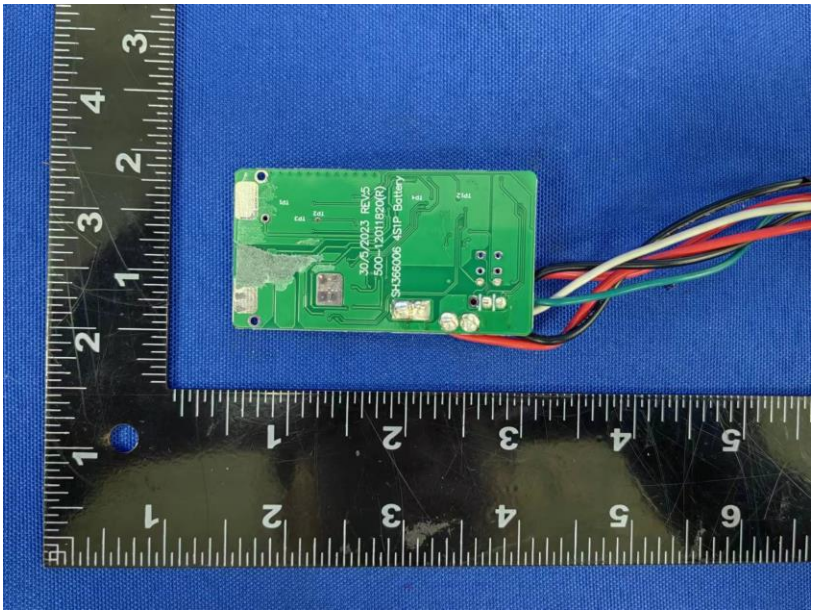


Figure 75

Main board view- （The PCB1 with the NTC soldered）

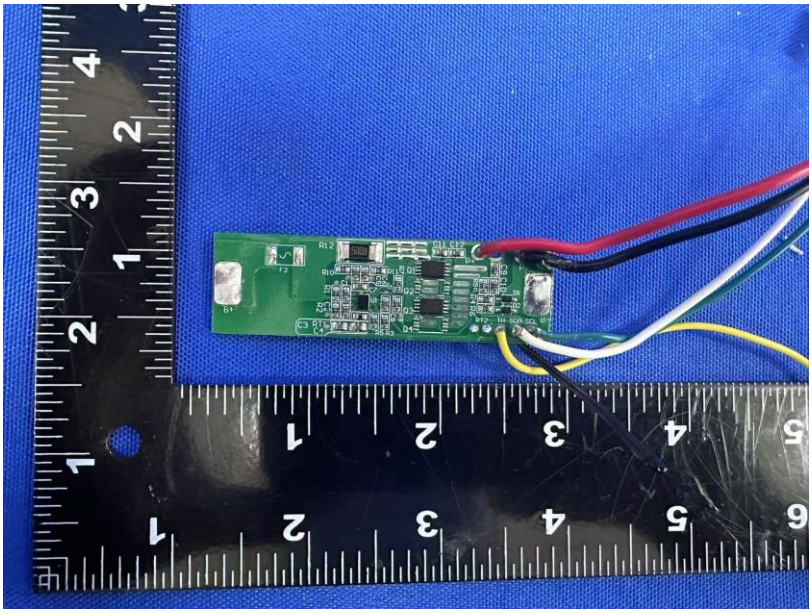
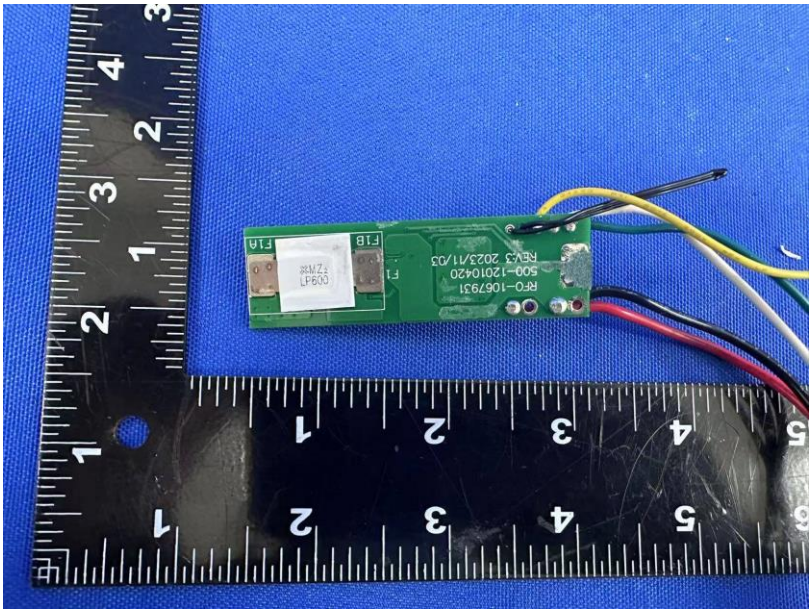


Figure 76

Main board view- （The PCB1 with the NTC soldered）



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Figure 77

Main board view-（The PCB2 with the NTC soldered）

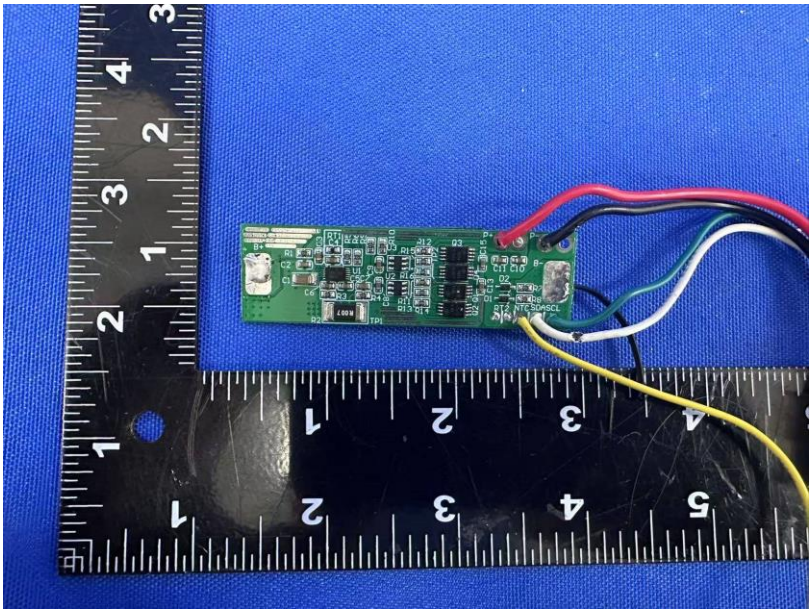
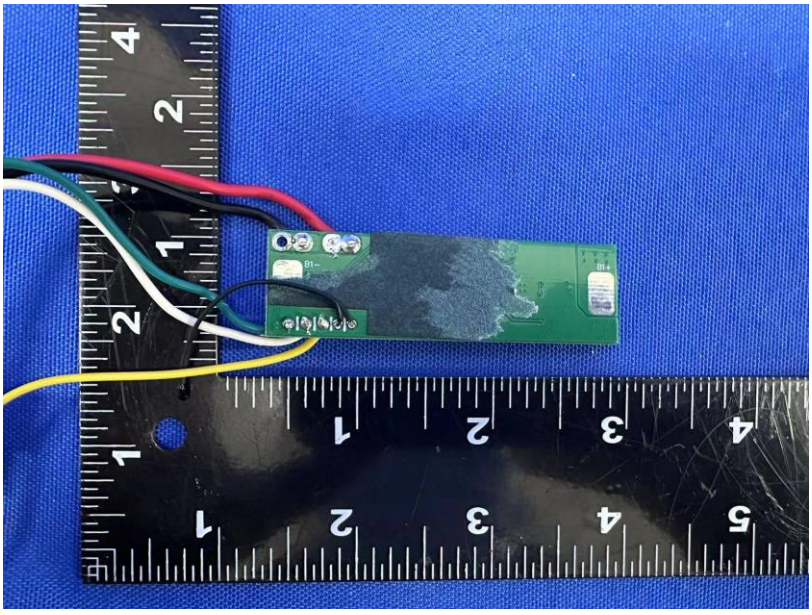


Figure 78

Main board view-（The PCB2 with the NTC soldered）



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Figure 79

Main board view-（The PCB3 with the NTC soldered）

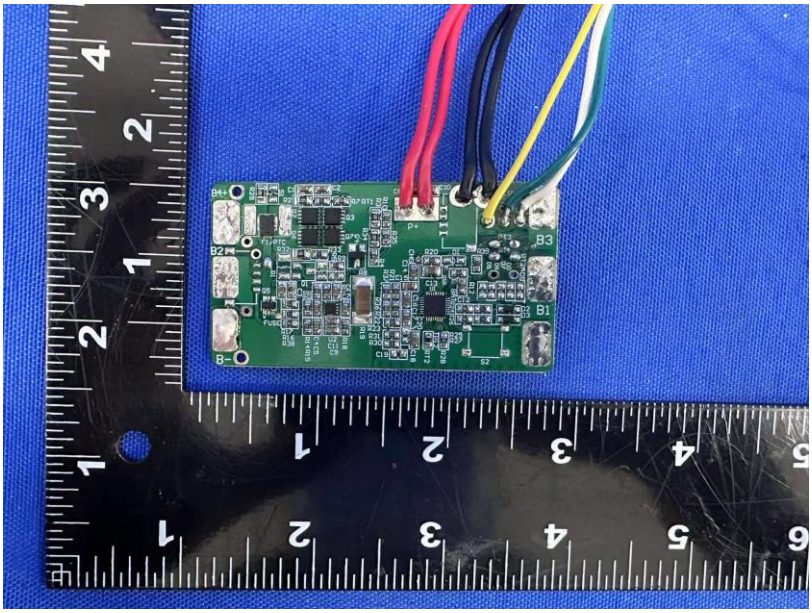


Figure 80

Main board view-（The PCB3 with the NTC soldered）

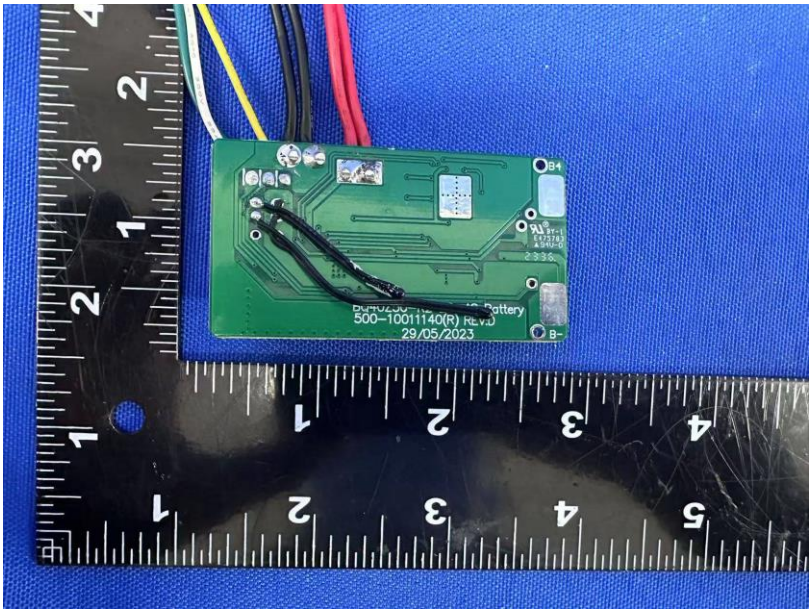


Figure 81

Main board view-（The PCB4 with the NTC soldered）

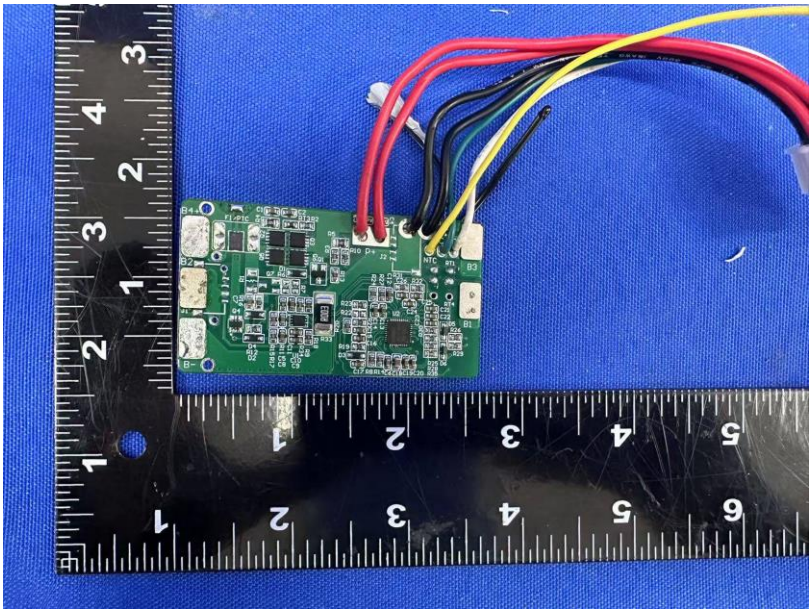


Figure 82

Main board view-（The PCB4 with the NTC soldered）

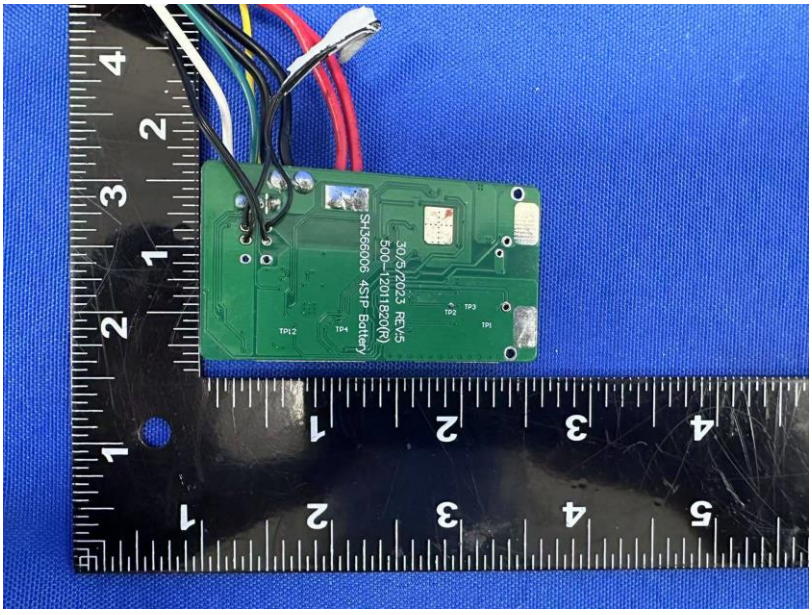


Figure 83

Cell view- LR2170SD, 03BCEA5

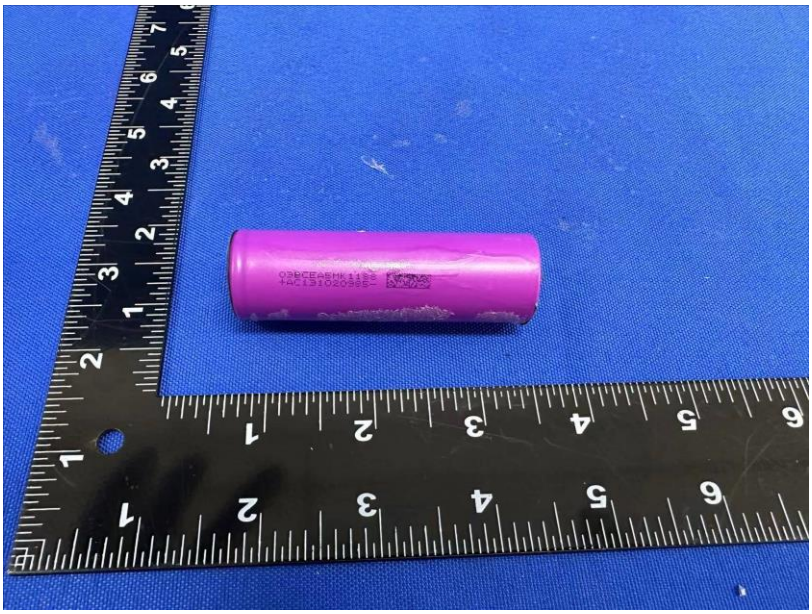


Figure 84

Cell view- LR2170SZ



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Illustrations

Illustration 1.

Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21701S1PFT	BL5000C21701S2PFT	BL5000C21701S3PFT	BL5000C21701S1PFS
Nominal capacity/mAh	5000	10000	15000	5000
Nominal voltage/V	3.6	3.6	3.6	3.6
Nominal charge current/A	0.375A（0℃~10℃） 1A（10℃~45℃）	0.75A（0℃~10℃） 2A（10℃~45℃）	1.125A（0℃~10℃） 3A（10℃~45℃）	0.375A（0℃~10℃） 1A（10℃~45℃）
Nominal discharge current/A	1	2	3	1
Maximum charge current/A	1	2	3	1
Maximum discharge current/A	5	5	5	5
Limited Charging Voltage/V	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4（0℃~5℃） 4.125（5℃~35℃） 4（35℃~45℃）
Upper limit charging voltage/V	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4（0℃~5℃） 4.125（5℃~35℃） 4（35℃~45℃）
Cut-off voltage/V	3	3	3	3
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21701S2PFS	BL5000C21701S3PFS	BL5000C21701S4PFS	BL5000C21701S4PFT
Nominal capacity/mAh	10000	15000	20000	20000
Nominal voltage/V	3.6	3.6	3.6	3.6
Nominal charge current/A	0.75A（0℃~10℃） 2A（10℃~45℃）	1.125A（0℃~10℃） 3A（10℃~45℃）	1.5A（0℃~10℃） 4A（10℃~45℃）	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃））
Nominal discharge current/A	2	3	4	4
Maximum charge current/A	2	3	4	4
Maximum discharge current/A	5	5	5	8
Limited Charging Voltage/V	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）
Upper limit charging voltage/V	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）	4V（0℃~5℃） 4.125V（5℃~35℃） 4V（35℃~45℃）
Cut-off voltage/V	3	3	3	3
Charging temperature/℃	0~45	0~45	0~45	0~45

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Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21702S1PFT	BL5000C21702S2PFT	BL5000C21702S3PFT	BL5000C21702S4PFT
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	7.2	7.2	7.2	7.2
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃)	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃)	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃)	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃)
Nominal discharge current/A	1	2	3	4
Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）
Upper limit charging voltage/V	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）
Cut-off voltage/V	6	6	6	6
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21703S1PFT	BL5000C21703S2PFT	BL5000C21703S3PFT	BL5000C21703S4PFT
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	10.8	10.8	10.8	10.8
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃)	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃)	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃)	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃)
Nominal discharge current/A	1	2	3	4
Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）
Upper limit charging voltage/V	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）
Cut-off voltage/V	9	9	9	9
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21704S1PFT	BL5000C21704S2PFT	BL5000C21704S3PFT	BL5000C21704S4PFT
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	14.4	14.4	14.4	14.4
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃)	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃)	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃)	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃)
Nominal discharge current/A	1	2	3	4

Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）
Upper limit charging voltage/V	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）
Cut-off voltage/V	12	12	12	12
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21702S1PFS	BL5000C21702S2PFS	BL5000C21702S3PFS	BL5000C21702S4PFS
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	7.2	7.2	7.2	7.2
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃)	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃)	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃)	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃)
Nominal discharge current/A	1	2	3	4
Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）
Upper limit charging voltage/V	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）	8V（0℃~5℃） 8.25V（5℃~35℃） 8V（35℃~45℃）
Cut-off voltage/V	6	6	6	6
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21703S1PFS	BL5000C21703S2PFS	BL5000C21703S3PFS	BL5000C21703S4PFS
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	10.8	10.8	10.8	10.8
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃)	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃)	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃)	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃)
Nominal discharge current/A	1	2	3	4
Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）	12V（0℃~5℃） 12.375V（5℃~35℃） 12V（35℃~45℃）
Upper limit charging voltage/V	12V（0℃~5℃） 12.375V（5℃~35℃）	12V（0℃~5℃） 12.375V（5℃~35℃）	12V（0℃~5℃） 12.375V（5℃~35℃）	12V（0℃~5℃） 12.375V（5℃~35℃）

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	12V（35℃~45℃）	12V（35℃~45℃）	12V（35℃~45℃）	12V（35℃~45℃）
Cut-off voltage/V	9	9	9	9
Charging temperature/℃	0~45	0~45	0~45	0~45
Product name	Lithium- Ion Battery Pack			
Type/model	BL5000C21704S1PFS	BL5000C21704S2PFS	BL5000C21704S3PFS	BL5000C21704S4PFS
Nominal capacity/mAh	5000	10000	15000	20000
Nominal voltage/V	14.4	14.4	14.4	14.4
Nominal charge current/A	0.375A（0℃~5℃） 0.75A（5℃~10℃） 1A(10℃~45℃）	0.75A（0℃~5℃） 1.5A（5℃~10℃） 2A(10℃~45℃）	1.125A（0℃~5℃） 2.25A（5℃~10℃） 3A(10℃~45℃）	1.5A（0℃~5℃） 3A（5℃~10℃） 4A(10℃~45℃）
Nominal discharge current/A	1	2	3	4
Maximum charge current/A	1	2	3	4
Maximum discharge current/A	5	8	8	8
Limited Charging Voltage/V	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）
Upper limit charging voltage/V	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）	16V（0℃~5℃） 16.5V（5℃~35℃） 16V（35℃~45℃）
Cut-off voltage/V	12	12	12	12
Charging temperature/℃	0~45	0~45	0~45	0~45

Illustrations (Continued)

Illustration 2.

Caution

(1) Risk of Fire and Burns. Do Not Open, Crush, Heat Above (manufacturer's specified maximum temperature) or Incinerate. Follow Manufacter's Instructions.

(2)Do not dismantle , open or shred secondary cells or batteries.

(3)Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.

(4)Do not short-circuit a cell or a battery. Do not store cells or batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

(5)Do not remove a cell or battery from its original packaging until required for use.

(6)Do not subject cells or batteries to mechanical shock.

(7)In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.

(8)Do not use any charger other than that specifically provided for use with the equipment.

(9)Observe the plus (+) and minus (–) marks on the cell, battery and equipment and ensure correct use.

(10)Do not use any cell or battery which is not designed for use with the equipment.

(11)Do not mix cells of different manufacture, capacity, size or type within a device.

(12)Battery usage by children should be supervised.

(13)Seek medical advice immediately if a cell or a battery has been swallowed.

(14)Always purchase the battery recommended by the device manufacturer for the equipment.

(15)Keep cells and batteries clean and dry.

(16)Wipe the cell or battery terminals with a clean dry cloth if they become dirty.

(17)Secondary cells and batteries need to be charged before use. Always use the correct charger and refer to the manufacturer's instructions or equipment manual for proper charging instructions.

(18)Do not leave a battery on prolonged charge when not in use.

(19)After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.

(20)Retain the original product literature for future reference.

(21)Use only the cell or battery in the application for which it was intended.

(22)When possible, remove the battery from the equipment when not in use.

(23)Battery should be disposed according to the local laws.

(24)Battery should be stored in a cool, dry and well-ventilated area

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Testing Considerations

Samples of the BL5000C2170*F*(the 1st*part denotes for battery packs configuration, which may be 1S1P,1S2P,1S3P,1S4P,2S1P,2S2P,2S3P,2S4P,3S1P,3S2P,3S3P,3S4P,4S1P,4S2P,4S3P,4S4P, the 2nd*part denotes the IC type which can be T or S,T - Texas Instruments, S - Sinowealth) were subjected to the following test program with satisfactory results. All tests were conducted in accordance with CSA C22.2 No. 62133-2:20 / UL 62133-2, MAY 31, 2024, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems. Only these tests were considered necessary due to engineering considerations.

Detailed test results are on file at MET Laboratories under project number NRTLC 135503.

TESTS CONDUCTED:

UL62133-2:2020 Tests Conducted:

Clause 7.2.2	Case stress at high ambient temperature (battery)
Clause 7.3.2	External short circuit (batteries)
Clause 7.3.3	Free fall
Clause 7.3.6	Over-charging of battery
Clause 7.3.8.1	Vibration (battery)
Clause 7.3.8.2	Mechanical shock (battery)

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Conclusion

The product covered by this report have been tested, examined, and found to comply with the applicable requirements of CSA C22.2 No. 62133-2:20 / UL 62133-2, MAY 31, 2024, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems.
This certification has been granted under a System 3 program as defined in ISO/IEC 17067.

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