



EU DECLARATION OF CONFORMITY

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CIF (VAT number): B17419292

Product's description: Battery pack

Manufacturer's reference: 91201, 91202, 91203

Distributor's reference: 60012, 60013, 60015

The declaration object complies with the following standard:

Standard	Title	Edition/ Date
EN 62841-1	Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements.	2014

Signed by:



Eduard Godoy

Purchasing department director

Girona, 24th March, 2021



Technical Report No.70.403.19.155.12-00

Rev. 00

Dated 2019-05-23

Choose certainty.
Add value.

Client:

Manufacturing place:

Test subject: Product: battery pack
Type: See page 11-12
Product: battery charger
Type: See page 11-12

Test specification: EN 62841-1:2014 Annex K
According to client's requirement, only verify the safety of the charging system for battery tools. Additional tests of clause K12.201, clause K13.1&13.2, clause K18.1& K18.201 & K18.202, clause K19.202, clause K20.3.1 and acceptable test were performed.

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

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

No.151 Heng Tong Road
Shanghai 20070
P. R. China



1 Description of the test subject

1.1 Function

Manufacturer's specification for intended use: battery pack for normal use.

Manufacturer's specification for predictive misuse: Covered by the instruction manual

1.2 Consideration of the foreseeable misuse

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

1.3 Technical Data

Battery pack : See page 11-12
Ratings : See page 11-12
charger : See page 11-12
Ratings : See page 11-12

2 Order

2.1 Date of Purchase Order, Customer's Reference

2019-04-16

2.2 Receipt of Test Sample, Location

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No.151 Heng Tong Road, Shanghai 200070 P.R.China

2.3 Date of Testing

2019-04-16 to 2019-05-23

2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
No. 1999, Duhui Road, Shanghai, 201108, P. R. China

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

None

3 Test Results

3.1 Positive Test Results

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)

EN 62841-1			
Clause	Requirement + Test	Result - Remark	Verdict
ANNEX K	BATTERY TOOLS AND BATTERY PACKS		
K.1	Rated voltage for tools and battery packs ≤ 75 V d.c.	20V d.c./18V d.c.	P
K.5.7	Tests to be done at rated voltage were done with a fully charged battery		P
K.5.201	Peak voltage of any superimposed ripple exceeding 10 % of the average value was included		P
K.5.202	Measurements of lithium-ion cell voltages were made using a filter as specified		P
K.5.203	Test area protected against fire and explosion, and well ventilated		P
K.5.204	Discharging and charging as specified		P
K.5.205	Thermocouples for lithium-ion cell temperature measurement located as specified		P
K.5.206	Currents measured during battery charging are average currents		P
K.5.207	Fully charged batteries used, after resting for ≥ 2 h but ≤ 6 h at an ambient temperature of (20 ± 5) °C		P
K.5.208	Battery consisting of a single cell not subject to special preparations of a cell in a series configuration		N/A

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K.5.209	For series arrangement of parallel clusters of cells, the cluster is treated as single cell for specified tests	For these 4Ah&6Ah battery pack	P
K.5.210	End-of-discharge voltages for common cell chemistries observed	2,5V Li-ion cell	P
K.12.201	Charging of lithium-ion battery under normal conditions did not exceed specified operating region for charging of the cell		P
	Charging procedure as specified		P
	Voltage, temperature and charging current monitored for all individual cells		P
	Test repeated with imbalanced battery		P
K.13.1	Thermoplastic materials of relevant enclosure parts sufficiently resistant to heat		P
	Ball-pressure test of IEC 60695-10-2:2003	See Table 13.1	P
K.13.2	Glow-wire test applicable only to external enclosure enclosing the current-carrying parts		P
	Non-metallic parts in of detachable or separable battery pack supporting connections that carry $\geq 0,2$ A during charging and those within a distance of 3 mm, subjected to the glow-wire test at 850 °C	See Table 13.2	P
K.18.1	Risk of fire or electric shock as a result of abnormal operation obviated as far as is practical		P
	No charring or burning of gauze or tissue paper resulted when battery tool and battery pack were subjected to any abnormal operations, tests a) to f)	See Table K.18.1	P
	No explosion during or after the test		P
	Adequate protection against electric shock		P
	Component(s) or conductors(s) that interrupt or limit the discharge current that operated operate during the above tests a) to f)		P
	Test repeated two more times for devices relied upon to pass the test; devices opened the circuit in the same manner		P

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	Test repeated with the open-circuited device bridged		N/A
	Protective electronic circuits whose function is relied on to pass a test regarded as providing a SCF and comply with 18.8 with a PL = a		N/A
K.18.201	Risk of fire and explosion as a result of abnormal operation during charging of a lithium-ion battery is obviated as far as is practical		P
	No charring or burning of gauze or tissue paper, no explosion resulted when battery tool and battery pack were subjected to any abnormal conditions a) to d)	See Table K.18.201	P
	The cells did not exceed the upper limit charging voltage by more than 150 mV unless...	<150mV	P
	...charging system permanently was disabled from recharging the battery		N/A
	No evident damage to the cell vent to impair compliance with Subclause K.21.202.		P
K.18.202	No risk of fire or explosion when main discharge connections of a series configured, integral Li-ion battery, detachable or separable Li-ion battery pack were shorted under extreme imbalance		P
	All cells fully charged, one cell fully discharged		P
	Main discharge connections of the battery were shorted, resistance $\leq 10 \text{ m}\Omega$		P
	No explosion during or after the test		P
	No charring or burning of the gauze or tissue paper		P
	Component(s) or conductors(s) that interrupt or limit the discharge current that operated operate during the above tests		P
	Test repeated two more times for devices relied upon to pass the test; devices opened the circuit in the same manner		P
	Test repeated with the open-circuited device bridged		N/A

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	Protective electronic circuits whose function is relied on to pass a test regarded as providing a SCF and comply with 18.8 with a PL = a		N/A
K.18.203	No risk of fire or explosion during abusive overcharging of batteries comprised of cells other than the Li-ion type	Li-ion battery	N/A
	Battery was charged during 1,25 h at a rate of 10 times the C5 rate for the battery		N/A
	No explosion during or after the test		N/A
	No charring or burning of the gauze or tissue paper		N/A
K.19.201	Not possible to install a detachable or separable battery pack in reverse polarity		P
K.19.202	Li-ion battery enclosure designed to safely release gases generated as a result of venting		P
	Total area of the openings in the enclosure allowing gases to pass without obstruction is $\geq 20 \text{ mm}^2$; or...		P
	... pressure drop within enclosure was tested , no rupture occurred		N/A
K.20.1	Battery tools and battery packs have adequate mechanical strength and withstand tests of 20.2 and K.20.3.1 or K.20.2 and		P
	- did not catch fire or explode		P
	- met requirements of clauses K.9, K.19 and either K.18.1 (f) or K.28.1 after tests of 20.2 and 28.1		P
	Li-ion battery tools and battery packs, after the test of K.20.3.1 or K.20.3.2, - did not have an open circuit voltage below 90 % of the voltage measured immediately prior to the test		P
	- demonstrated normal discharging and recharging after the test		P
	- showed no damage to the cell vent impairing compliance with K.21.202		P
K.20.3.1	Adequate mechanical strength after drop tests on a concrete surface from a height of 1 m		P

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	Test repeated with the battery pack removed from the tool		N/A
	Test repeated on the battery pack by itself		P
	The test was repeated with each attachment or combination of attachments		N/A
K.23.201	Battery cells comply with IEC 62133		P
K.23.202	Rechargeable battery cells not of lithium-metal type		P

13.1	TABLE: Ball Pressure Test of Thermoplastics				P
Allowed impression diameter (mm)				2,0	—
Object/ Part No.	Material	Manufacturer/ trademark	Test temperature (°C)	Impression diameter (mm)	
Enclosure	--	--	75	1,1	
Terminal of battery pack	--	--	75	0,7	
PCB	--	--	75	1,2	
Holder of battery cell	--	--	75	0,8	
Supplementary information: N/A					

13.2	TABLE: Glow Wire Test					P
Object/ Part No.	Material	Manufacturer / trademark	Test temperature (°C)	Material ignited, Yes/No	Layer under Test Sample ignited, Yes/No	Verdict
Enclosure	--	--	850	Yes	No	P
Terminal of battery pack	--	--	850	Yes	No	P
PCB	--	--	850	Yes	No	P
Holder of battery cell	--	--	850	Yes	No	P
Supplementary information: N/A						

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23.1	TABLE: Critical components information				P
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Mark(s) of conformity ¹⁾	
Battery cell for 91201A-S; 91202A-S; 91203A-S; 91201-S; 91202-S; 91203-S; 91201-S-18; 91202-S-18; 91203-S-18	SAMSUNG SDI CO LTD	INR 18650-20++/INR 19/65	3.6Vd.c. 2000mAh	UL/DK-72957-UL	
For 91201A-T 91201A-T; 91201-T; 91202-T; 91203-T; 91201-T-18; 91202-T-18; 91203-T-18	JIANGSU TENPOWER LITHI;UM CO., LTD	ICR18650 2000mAh	3.7Vd.c. 2000mAh	LCIE/FR_704 266	
For 91201A-H; 91202A-H; 91203A-H; 91201-H; 91202-H; 91203-H; 91201-H-18; 91202-H-18; 91203-H-18	JiangSu HighStar Battery Manufacturing Co., Ltd	ISR18650-2000	3.7Vd.c. 2000mAh	TUV Rheinland/JP TUV-084782	
Control IC	Cellwise Microelectronics	CW1051 MSOP8L	--	No (Test with unit)	
MOSFET	China Base Electronic Technology	MMBT7002K SOT-23	60V 300mA N-channel	No (Test with unit)	
Internal wire	SUZHOU DIAN HANG ELECTRONIC CO LTD	1007	80°C ,300V,24AWG	(Test with unit) E354173	
PCB	An hui Wende Electronic Technology CO Ltd	WB-200000	V-0, 130°C thickness Min: 1.6mm	No (Test with unit)	

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Alt-	WENZHOU ZHENGHAO ELECTRONIC CO LTD	KZ	V-0, 130°C thickness Min: 1.6mm	No (Test with unit)
Supplementary information: N/A				

K.18.1	TABLE: Battery Tool Abnormal Operation				P
Abnormal conditions	Explosion occurred?	Charring or burning of test materials?	Protector Operated?	Test repeated 3 more times?	
a) Terminals of detachable battery pack with exposed terminals shorted	No	No	Yes	Yes	
b) Motor terminals shorted	N/A	N/A	N/A	N/A	
c) Motor rotor locked	N/A	N/A	N/A	N/A	
d) Cord between battery tool and separable battery pack shorted	-	-	-	-	
e) Cord provided the tool and the charger shorted	-	-	-	-	
f) Any two uninsulated parts of opposite polarity in battery tools shorted	-	-	-	-	
Supplementary Information: broken the connection between battery cell is relied upon to pas test, and performed on three samples, open the circuit in the same manner.					

K.18.201	TABLE: Lithium-ion charging systems – Abnormal Operation					P
Abnormal conditions	Explosion occurred?	Charring or burning of test materials?	Upper limit charging voltage not exceeded by >150 mV ¹⁾	Charging system permanently disabled? ²⁾	Cell vent damaged?	
a) Components in the charging system faulted as in 18.6.1 b) to f)	No phenomenon	No	<150mV	No	No	
b) One cell 50% charged in a fully discharged battery	N/A	N/A	N/A	N/A	N/A	
c) Charging of a series configured battery with all cells 50% charged, one cell shorted	No phenomenon	No	<150mV	No	No	
d) Short across a component or between adjacent PCB tracks	No phenomenon	No	<150mV	No	No	

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Supplementary Information: test on charger 91103 with battery pack 91201A-H, 91201A-T, 91201A-S, 91202A-H, 91202A-T, 91202A-S, 91201-H, 91201-T, 91201-S, 91202-H, 91202-T, 91202-S; charger 91101 and 91102 with battery pack 91201A-H, 91201A-T, 91201A-S, 91202A-H, 91202A-T, 91202A-S, 91203A-H, 91203A-S, 91201-H, 91201-T, 91201-S, 91202-H, 91202-T, 91202-S, 91203-H, 91203-T, 91203-S.
One of conditions ¹⁾ or ²⁾ is sufficient to achieve compliance with this subclause.



Attachment (1): label for battery pack



Above label is an example, the other models have similar rating label except the model No, rated voltage, rated capacity, the special technical data please see below table.

Battery pack Model	Rated voltage	Configuration	Rated capacity	Battery cell
91201A-H	20Vd.c.	Only series	2000mAh	HIGHSTAR
91201A-T	20Vd.c.	Only series	2000mAh	TENPOWER
91201A-S	20Vd.c.	Only series	2000mAh	SAMSUNG
Above models is same except the battery cell.				
91202A-H	20Vd.c.	Two cells in parallel and series	4000mAh	HIGHSTAR
91202A-T	20Vd.c.	Two cells in parallel and series	4000mAh	TENPOWER
91202A-S	20Vd.c.	Two cells in parallel and series	4000mAh	SAMSUNG
Above models is same except the battery cell.				
91203A-H	20Vd.c.	Three cells in parallel and series	6000mAh	HIGHSTAR
91203A-S	20Vd.c.	Three cells in parallel and series	6000mAh	SAMSUNG
Above models is same except the battery cell.				
91201-H	20Vd.c.	Only series	2000mAh	HIGHSTAR
91201-T	20Vd.c.	Only series	2000mAh	TENPOWER
91201-S	20Vd.c.	Only series	2000mAh	SAMSUNG
91201-H-18	18Vd.c.	Only series	2000mAh	HIGHSTAR
91201-T-18	18Vd.c.	Only series	2000mAh	TENPOWER
91201-S-18	18Vd.c.	Only series	2000mAh	SAMSUNG
91201-H, 91201-T, 91201-S is same except the battery cell, 91201-H, 91201-T, 91201-S is respectively identical with 91201-H-18, 91201-T-18, 91201-S-18 except the rated voltage on label.				
91202-H	20Vd.c.	Two cells in parallel and series	4000mAh	HIGHSTAR
91202-T	20Vd.c.	Two cells in parallel and series	4000mAh	TENPOWER
91202-S	20Vd.c.	Two cells in parallel and series	4000mAh	SAMSUNG
91202-H-18	18Vd.c.	Two cells in parallel and series	4000mAh	HIGHSTAR

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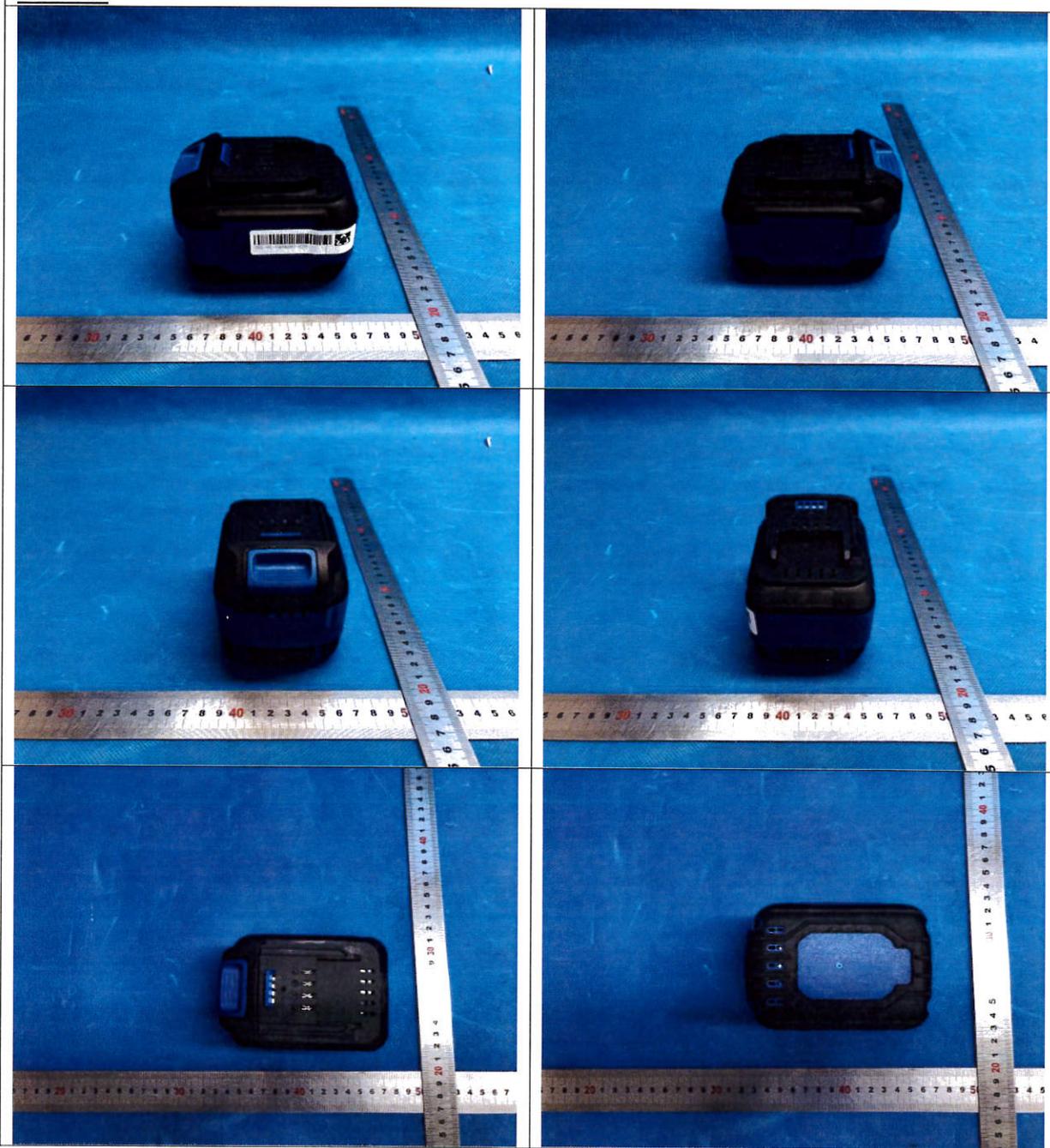
91202-T-18	18Vd.c.	Two cells in parallel and series	4000mAh	TENPOWER
91202-S-18	18Vd.c.	Two cells in parallel and series	4000mAh	SAMSUNG
91202-H, 91202-T, 91202-S is same except the battery cell, 91202-H, 91202-T, 91202-S is respectively identical with 91202-H-18, 91202-T-18, 91202-S-18 except the rated voltage on label.				
91203-H	20Vd.c.	Three cells in parallel and series	6000mAh	HIGHSTAR
91203-T	20Vd.c.	Three cells in parallel and series	6000mAh	TENPOWER
91203-S	20Vd.c.	Three cells in parallel and series	6000mAh	SAMSUNG
91203-H-18	18Vd.c.	Three cells in parallel and series	6000mAh	HIGHSTAR
91203-T-18	18Vd.c.	Three cells in parallel and series	6000mAh	TENPOWER
91203-S-18	18Vd.c.	Three cells in parallel and series	6000mAh	SAMSUNG
91203-H, 91203-T, 91203-S is same except the battery cell, 91203-H, 91203-T, 91203-S is respectively identical with 91203-H-18, 91203-T-18, 91203-S-18 except the rated voltage on label.				

Charger Model	Input	Output
91101	100-240V~ 50-60Hz 95W	20Vd.c. 4A
91102	100-240V~ 50-60Hz 145W	20Vd.c. 6A
91103	100-240V~ 50-60Hz 50W	20Vd.c. 2A
Remark: 91103 can be used for 91201A-H, 91201A-T, 91201A-S, 91202A-H, 91202A-T, 91202A-S, 91201-H, 91201-T, 91201-S, 91201-H-18, 91201-T-18, 91201-S-18, 91202-H, 91202-T, 91202-S, 91202-H-18, 91202-T-18, 91202-S-18. 91101 and 91102 can be used for all battery.		

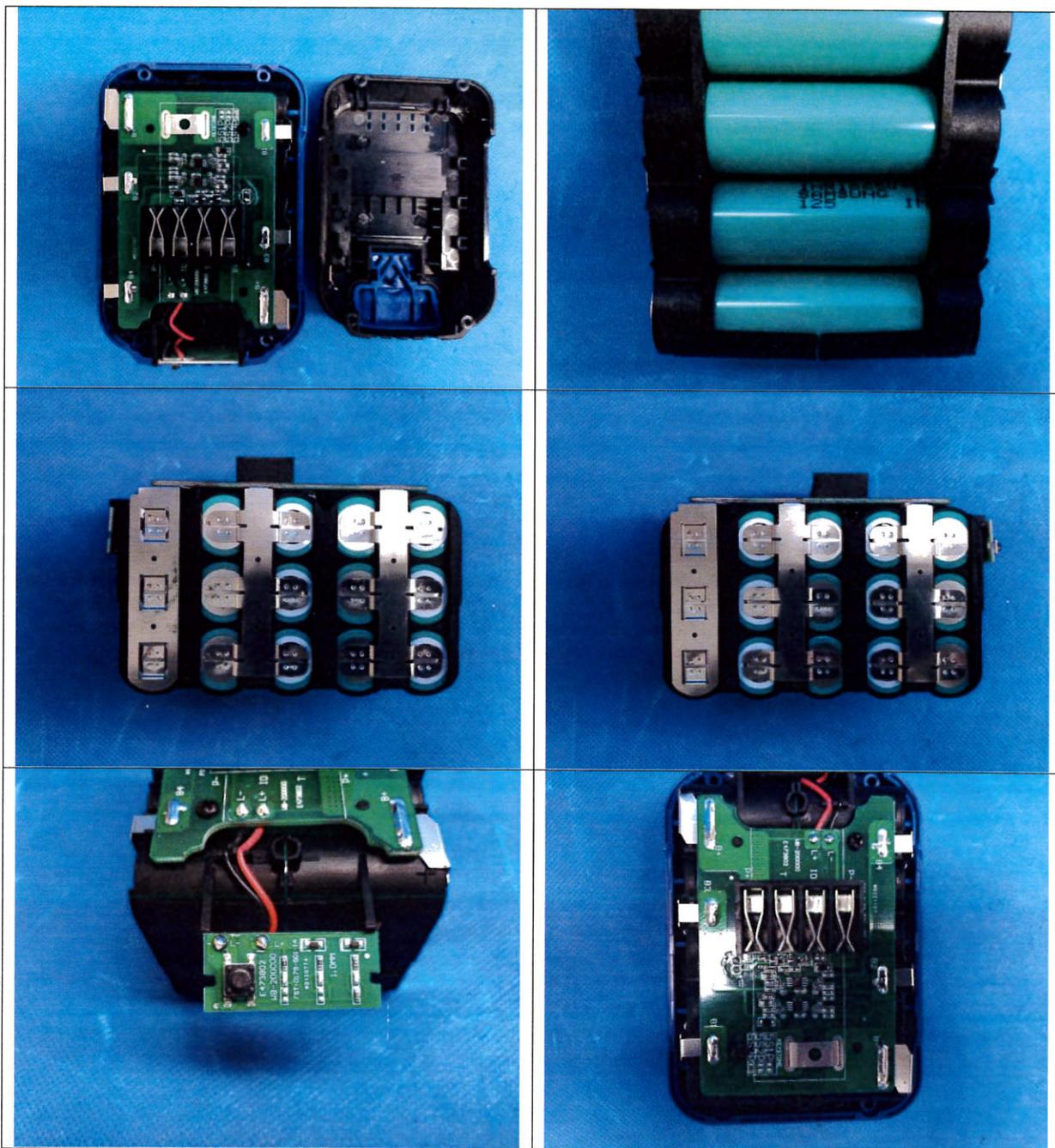
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Photo:

91203-S:

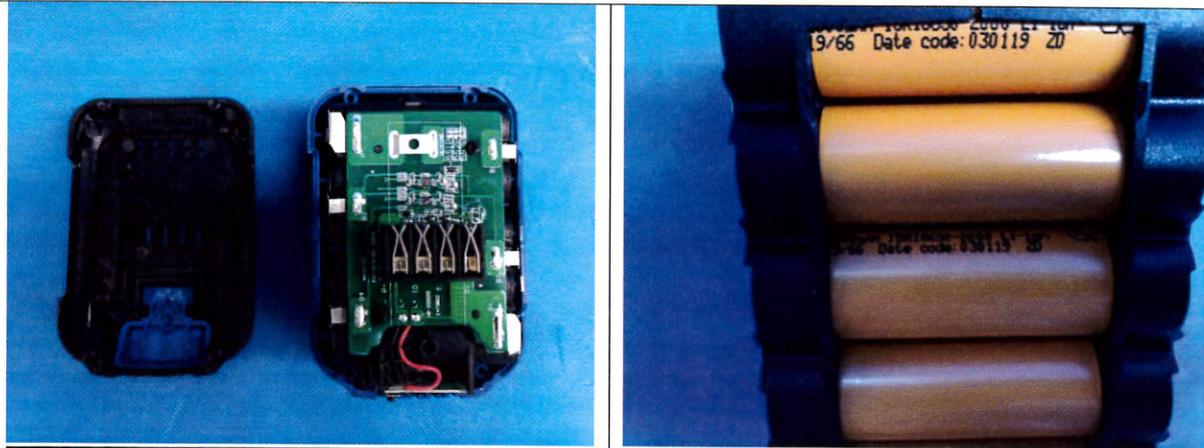


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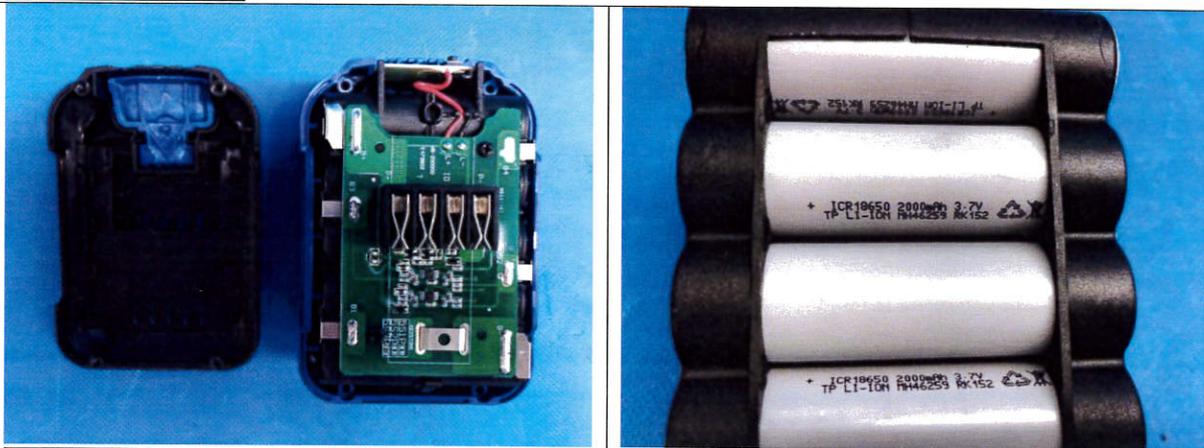


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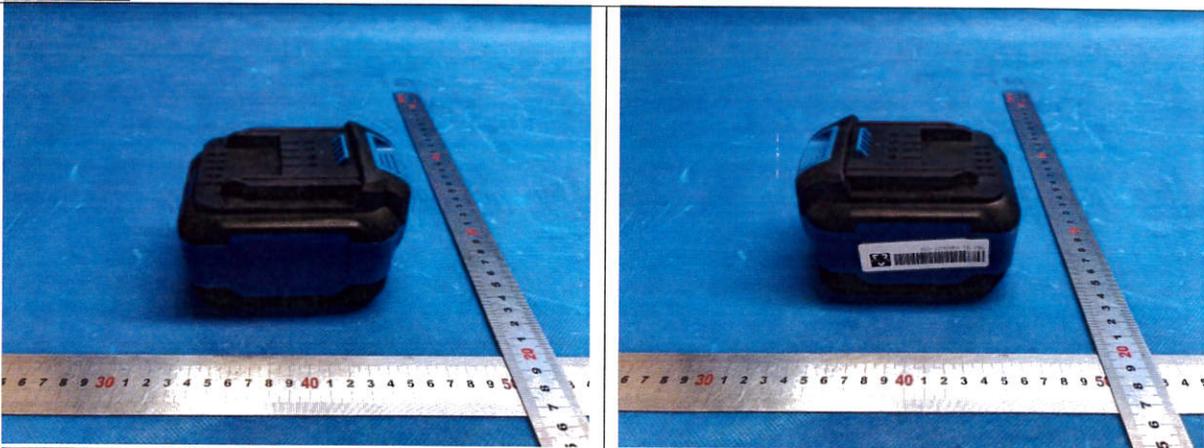
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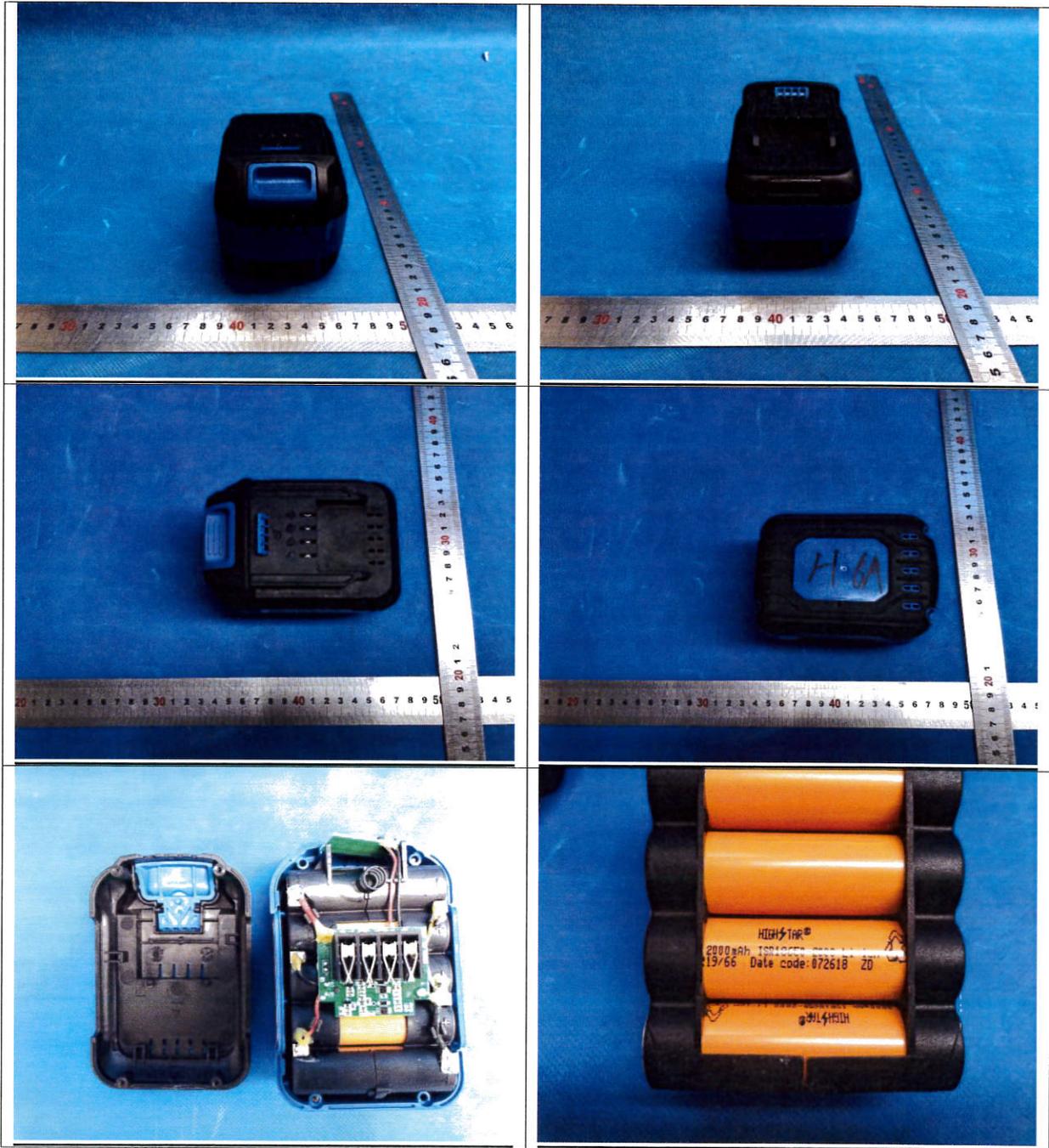


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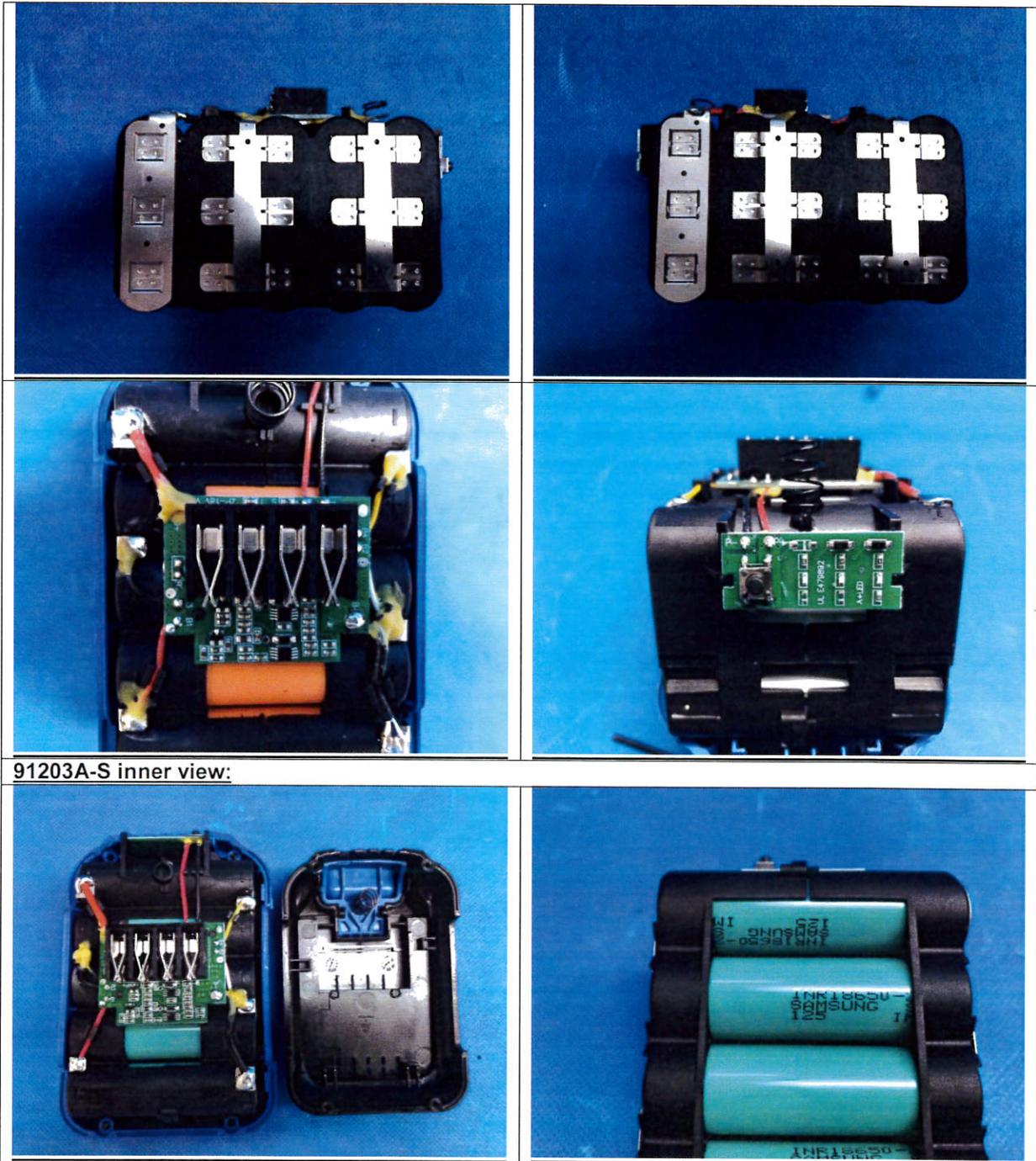
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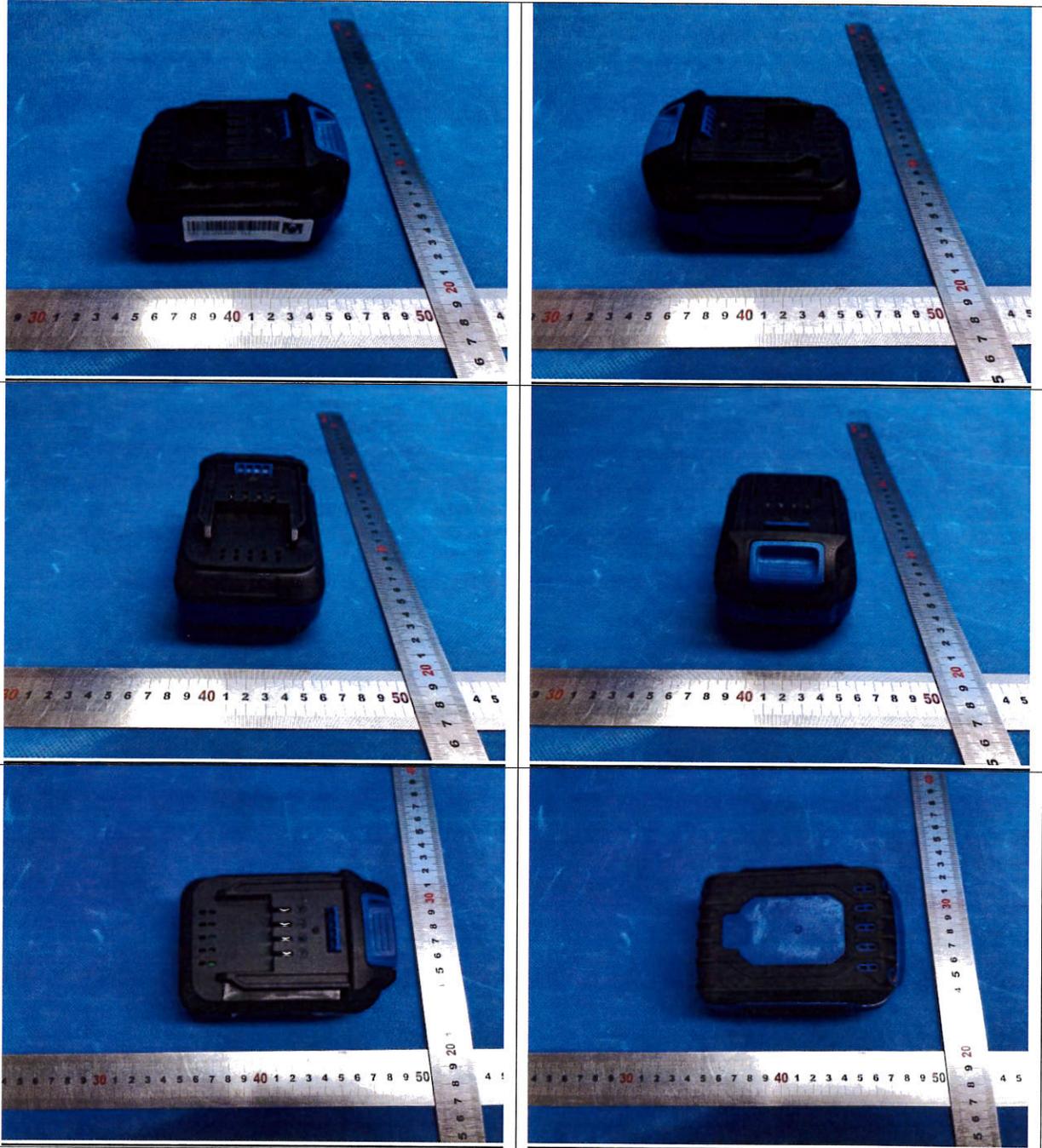
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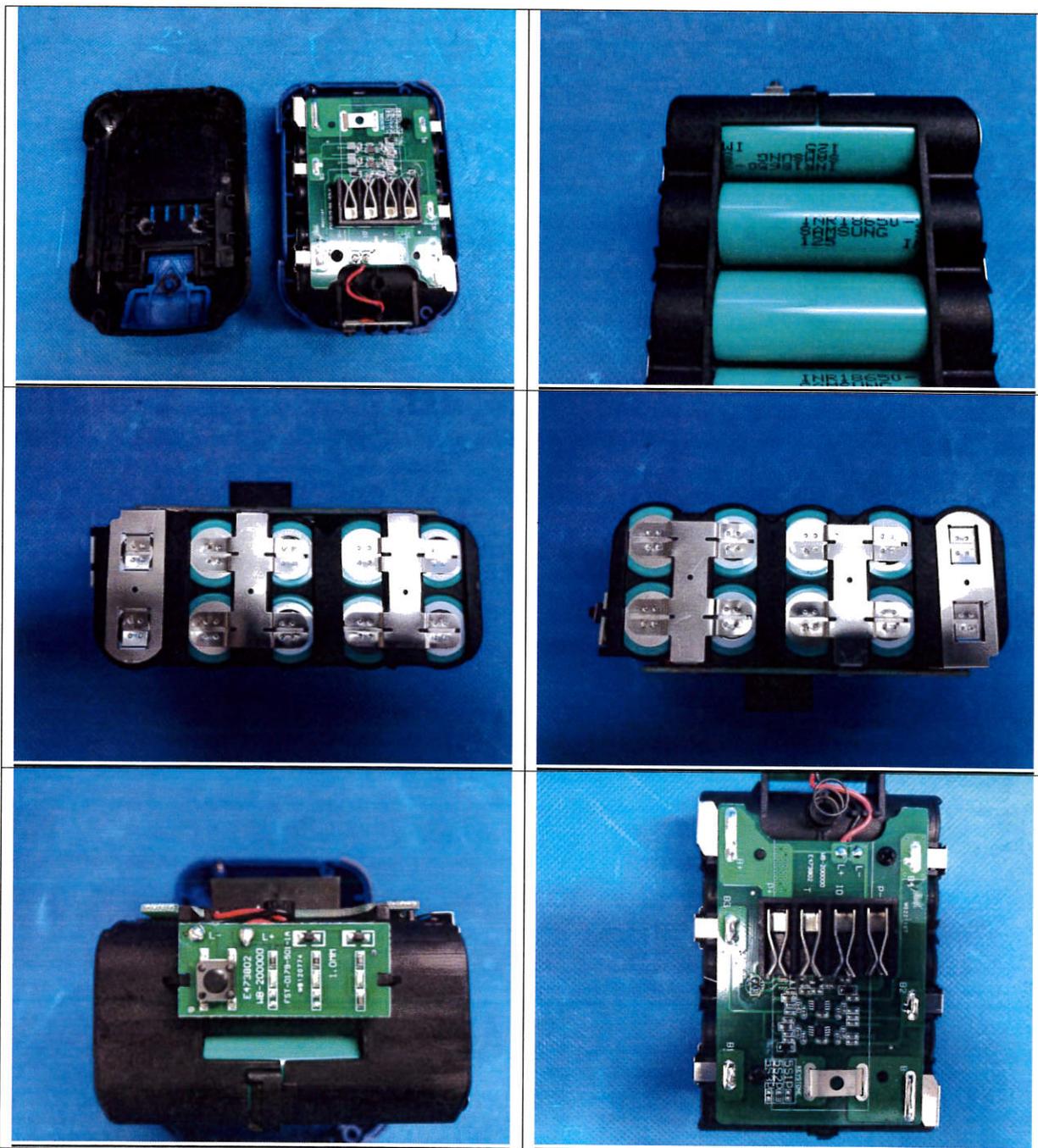


91203A-S inner view:

91202-S:



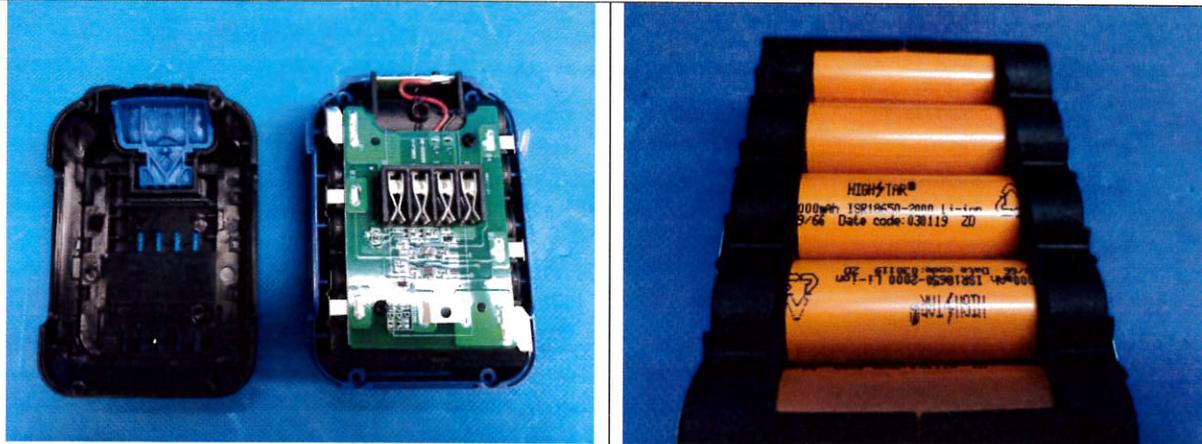
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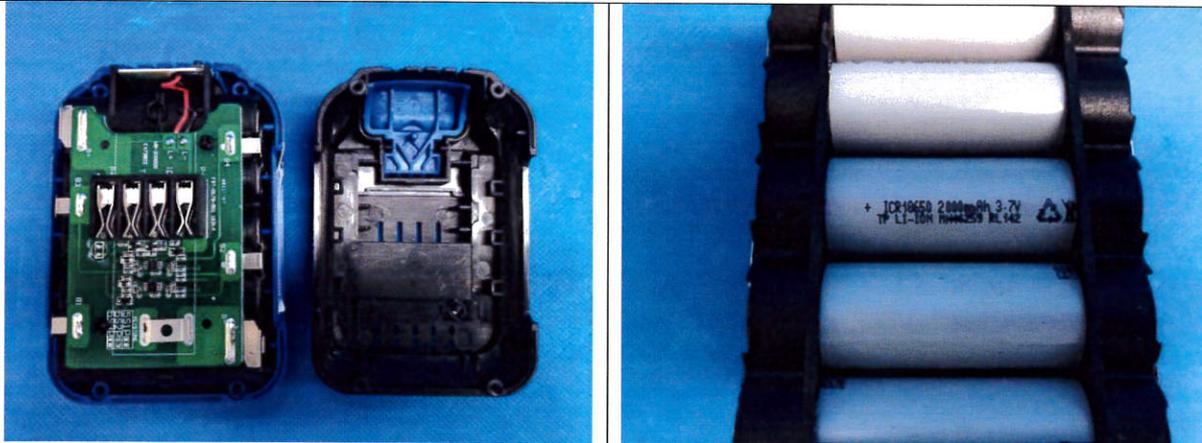
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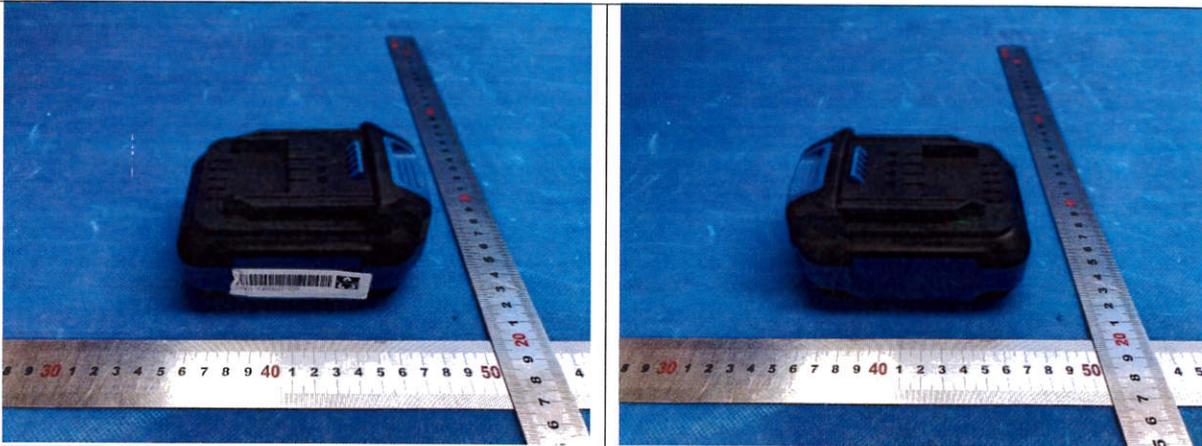
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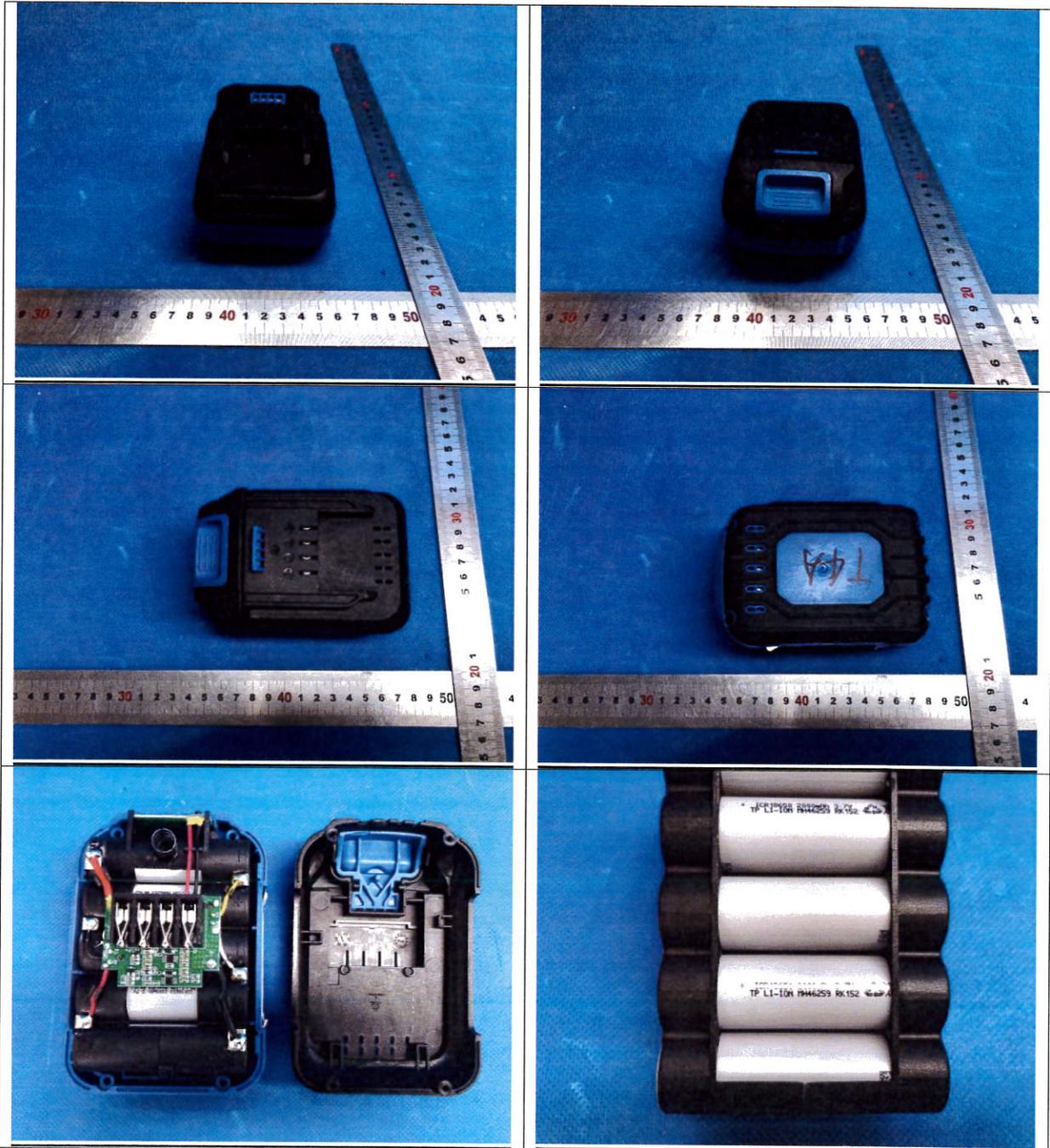
91202-T inner view:



91202A-T:

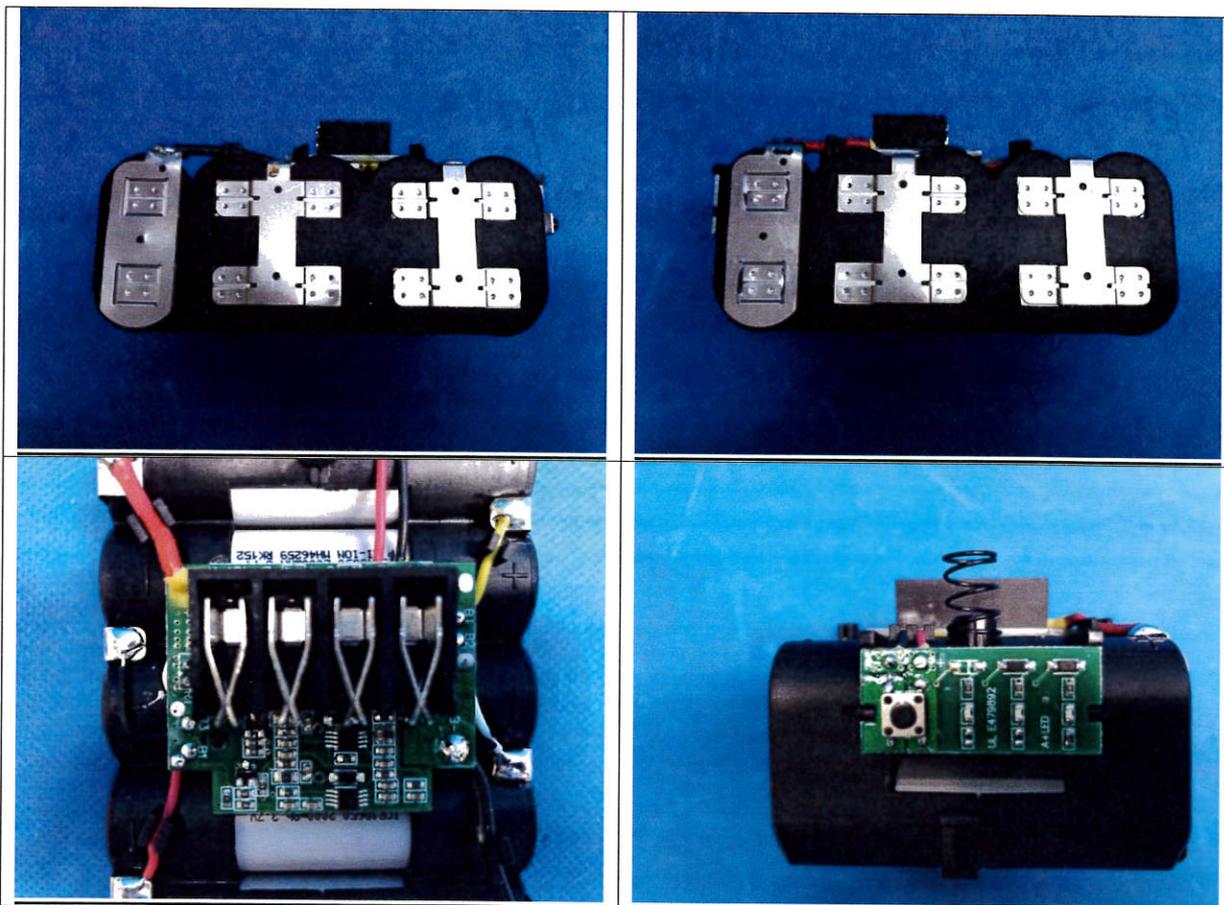


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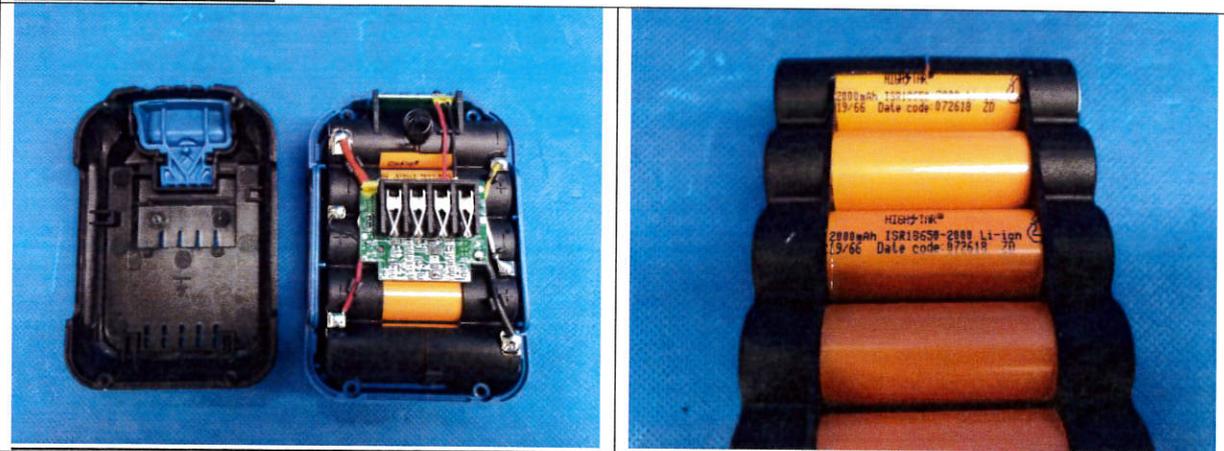


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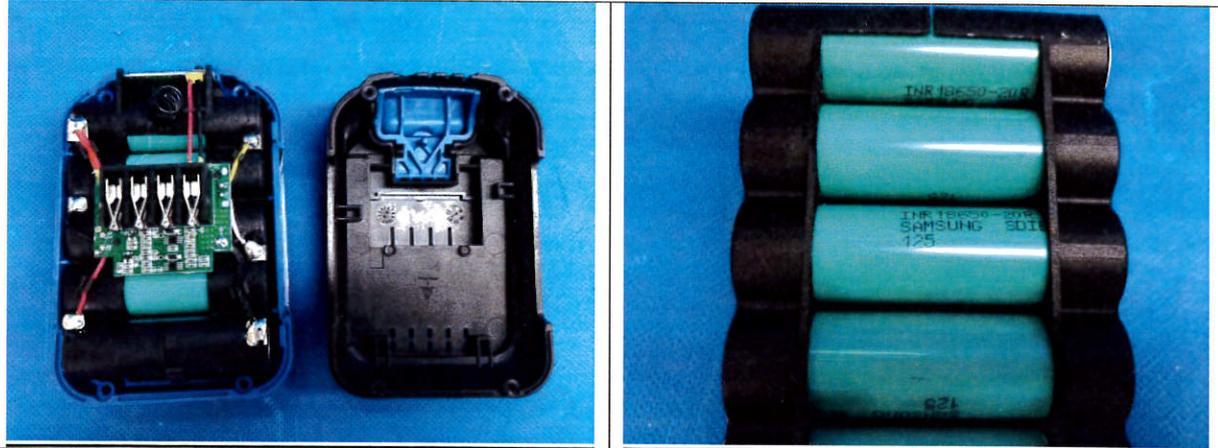


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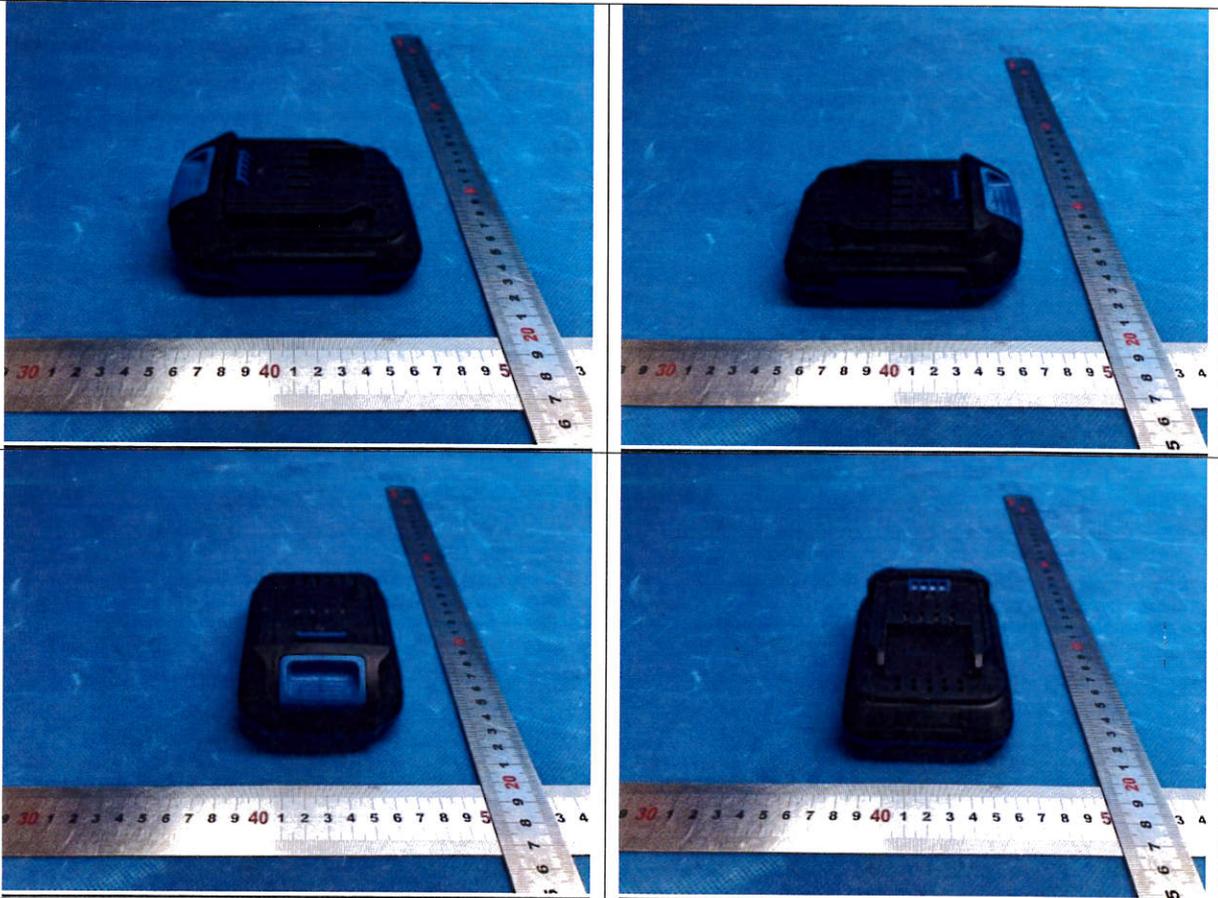


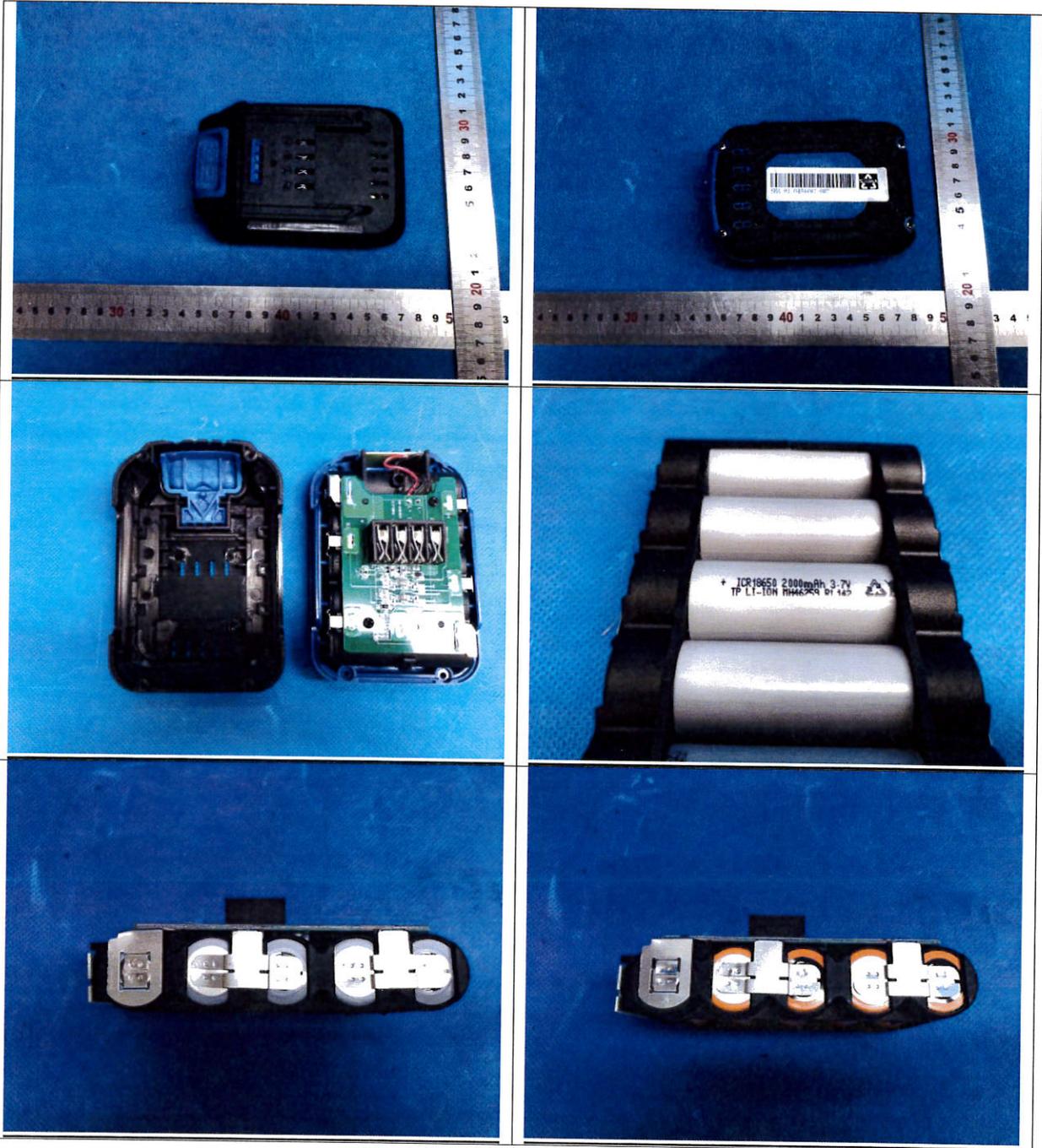
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91202A-S inner view:



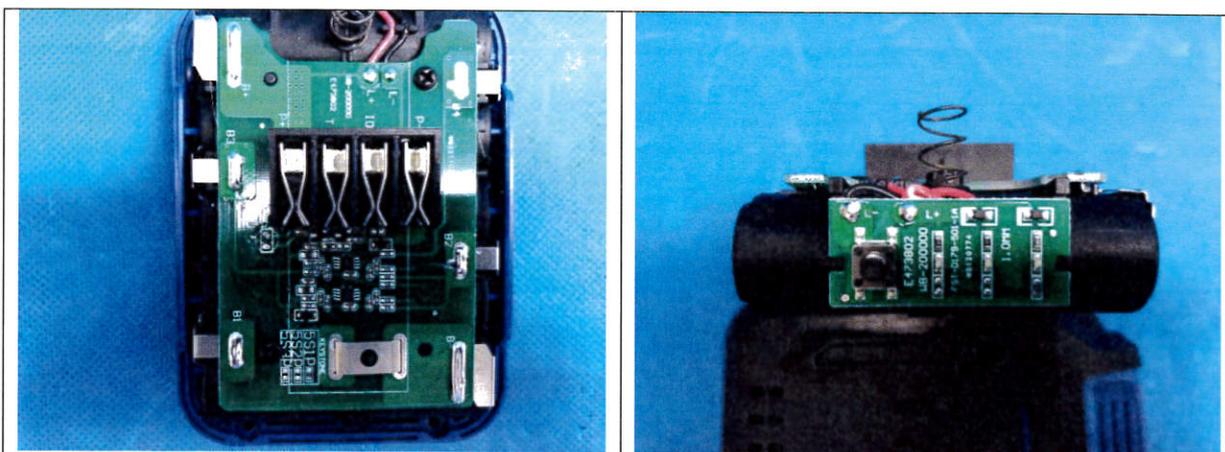
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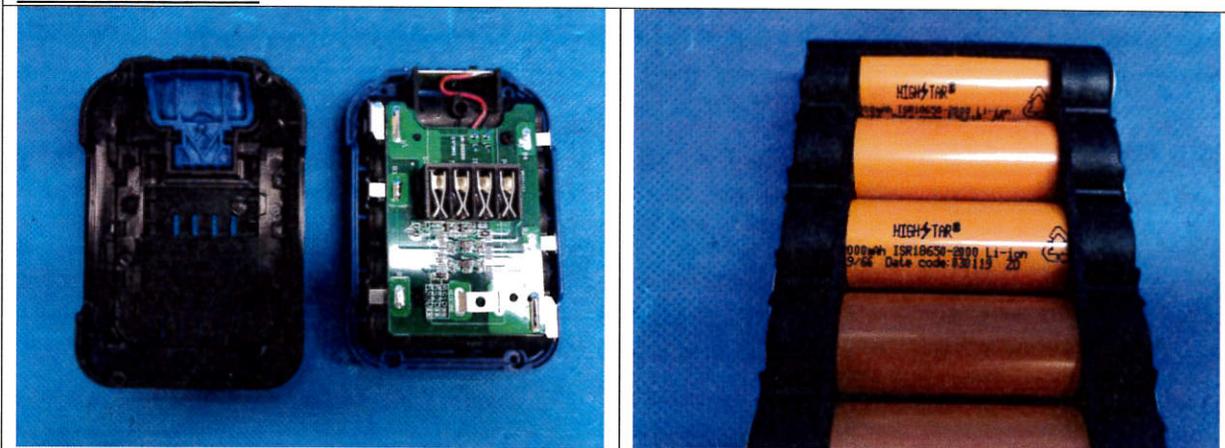


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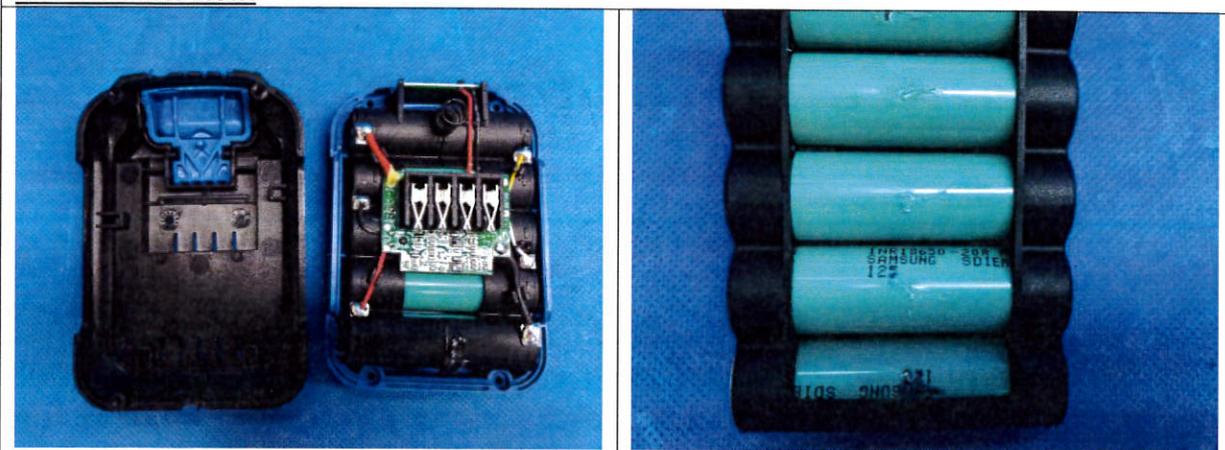
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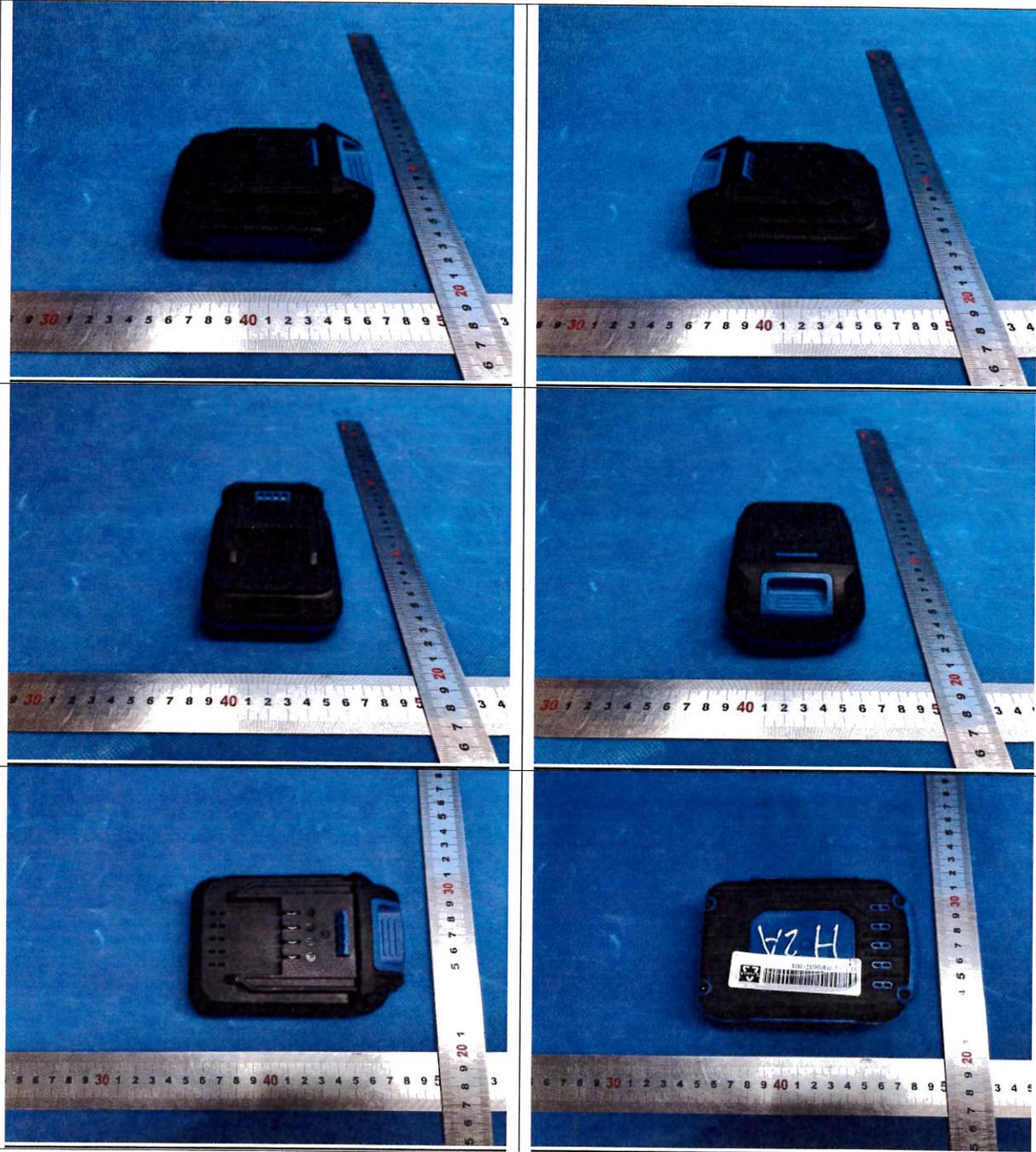
91201-H inner view:



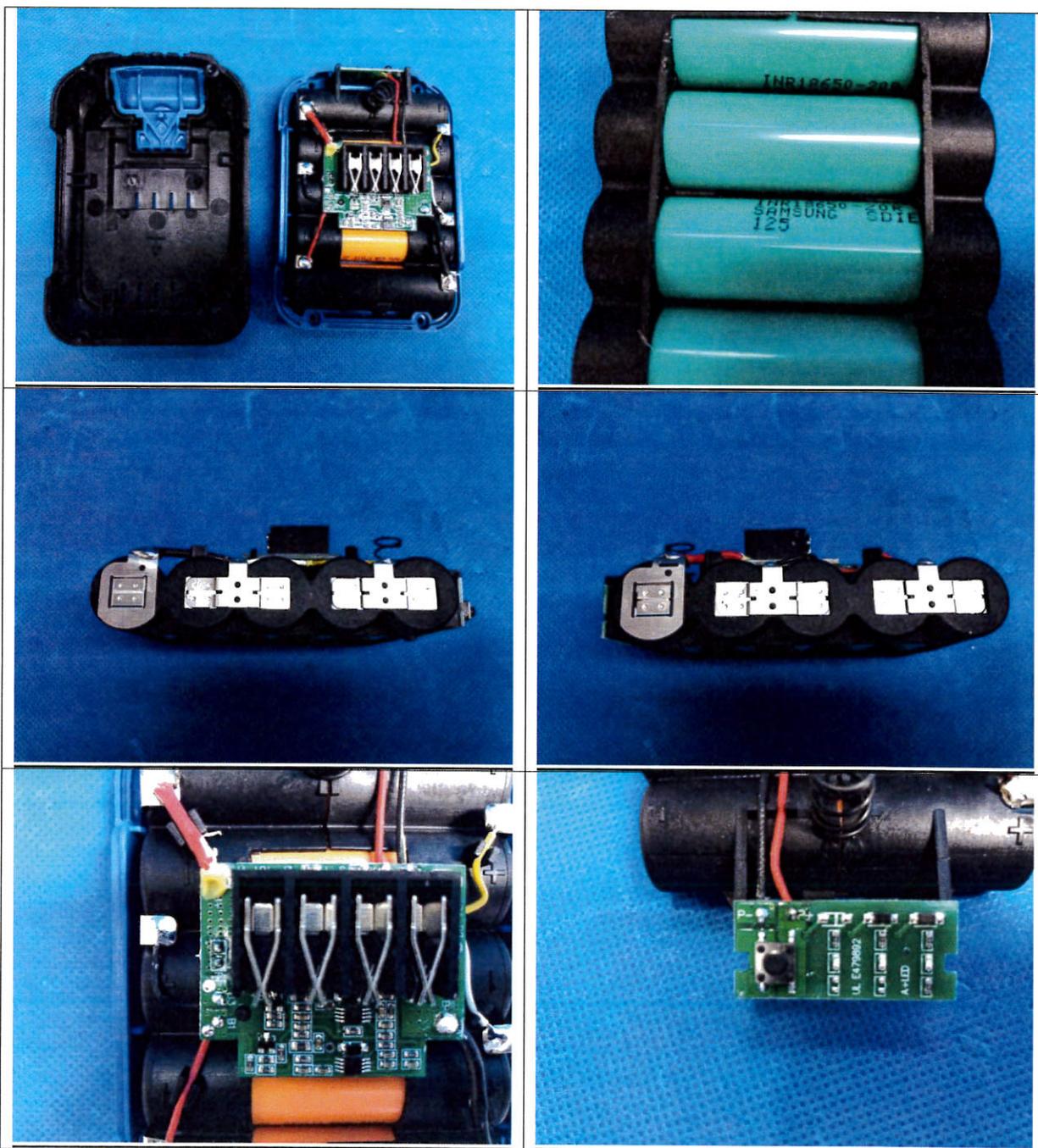
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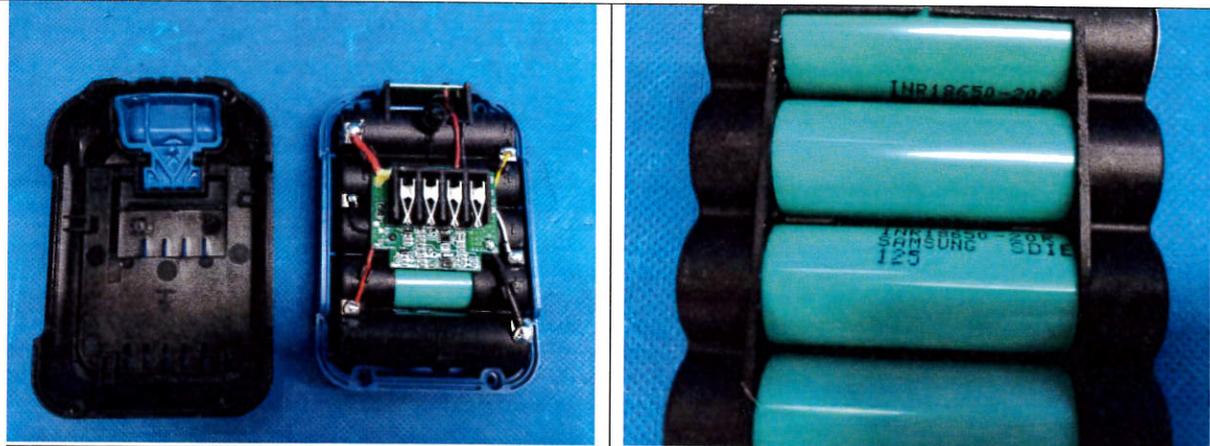


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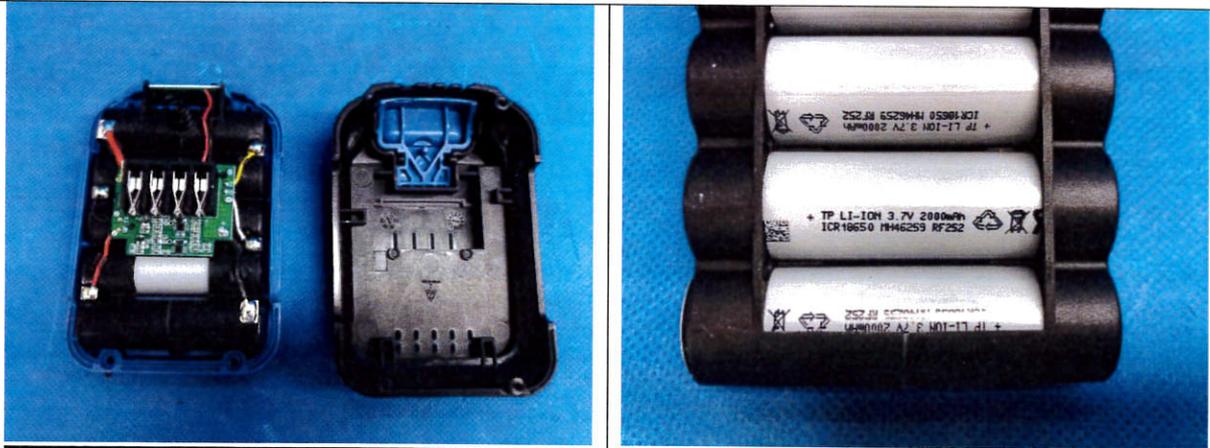


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2012-10-29

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91201A-T:

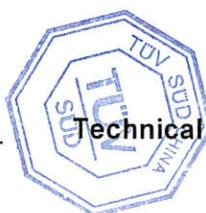




TÜV SÜD Certification and Testing (China) Co., Ltd Shanghai Branch
TÜV SÜD Group

Engineer:


Roy YANG



Technical Report checked:


Jack ZHANG

-----End of Report-----