Battery Li-ion 7.2 V, 2.2 Ah, 16 Wh

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Website

http://www.flir.com

Customer support

http://support.flir.com

Disclaimer

Specifications subject to change without further notice. Camera models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to exportquestions@flir.com with any questions.

General description
High capacity battery for the IR camera.

Power system	
Battery type	Rechargeable Li ion battery
Battery voltage	7.2 V
Battery capacity	2.2 Ah, at +20°C (+68°F)
Battery note	Approximate lithium content: 1.0 g
Charging time	2.5 h to 95% capacity, charging status indicated by LEDs
Charging temperature	0°C to +45°C (+32°F to +113°F)

Environmental data	
Battery storage temperature range	–40°C to +70°C (–40°F to +158°F)

Physical data	
Battery weight	0.12 kg (0.26 lb.)
Size (L × W × H)	92 × 41 × 26 mm (3.6 × 1.6 × 1.0 in.)

Shipping information	
Packaging, type	Cardboard box
List of contents	• Battery
Packaging, weight	170 g (6.0 oz.)
Packaging, size	170 × 75 × 65 mm (6.7 × 2.6 × 3.0 in.)
EAN-13	7332558011782
UPC-12	845188012878
Country of origin	Indonesia

Compatible with the following products:

- N/A

Safety Data Sheet
MSDS 2.001.031

Rechargeable Lithium-Ion Battery
Series: LIC..., LIP..., LPP...

1 Identification of the product and of the company undertaking

Product details

Trade name	Rechargeable lithium ion battery
Electrochemical system:	Lithium ion
Anode (negative):	Carbon (proprietary)
Cathode (positive):	Metal oxide (proprietary)

This MSDS applies to the following cell types and batteries assembled from these types.

The values listed for energy and voltage are given for reference only; they are not contractual assurances of product attributes and may differ from values given in specifications, data sheets or other documents or on the products.

Type	Energy per cell	Nominal voltage per cell
LIC 14500 PD	3.0 Wh	3.7 V
LIC 18650-15 LC	5.6 Wh	3.6 V
LIC 18650-20 RC	7.2 Wh	3.6 V
LIC 18650-22 AL *	7.9 Wh	3.6 V
LIC 18650-22 BT	8.1 Wh	3.6 V
LIC 18650-22 FC	8.0 Wh	3.6 V
LIC 18650-22 PC	7.8 Wh	3.7 V
LIC 18650-22 S3B *	8.0 Wh	3.6 V
LIC 18650-25 FKD	9.3 Wh	3.7 V
LIC 18650-26 FC	9.6 Wh	3.7 V
LIC 18650-26 HC	9.4 Wh	3.7 V
LIC 18650-26 JC	9.5 Wh	3.63 V
LIC 18650-26SKE	9.5 Wh	3.65 V
LIC 18650-29 EC	10.4 Wh	3.7 V
LIC 18650-29 FC	10.7 Wh	3.7 V
LIC 18650-30 BC	11.2 Wh	3.7 V
LIC 18650-32MH1B	11.8 Wh	3.7 V
LIC 18650-35EC	12.2 Wh	3.6 V
LIC 18650-FTC1H	3.5 Wh	3.2 V
LIC 18650-M26B	9.4 Wh	3.6 V

* These cells contain SVHC substances $>$ 0.1 % (see section 3)

continued on next page

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Type	Energy per cell	Nominal voltage per cell
LIC 18650-M26SB	9.4 Wh	3.6 V
LIC 18650-M29B	10.5 Wh	3.67 V
LIC 18650-VTC4H	7.6 Wh	3.6 V
LIC 18650-VTC5AH	9.4 Wh	3.6 V
LIC 26650-30 H	9.6 Wh	3.2 V
LIP 103450 AC	8.4 Wh	3.7 V
LIP 103450 SC	7.5 Wh	3.7 V
LIP 103450-CAT	7.3 Wh	3.7 V
LIP 383450 AJL *	2.8 Wh	3.7 V
LIP 423048 AJL *	2.6 Wh	3.7 V
LIP 423450 AJL *	3.2 Wh	3.7 V
LIP 423450 AR	3.0 Wh	3.7 V
LIP 463048 FD	2.7 Wh	3.7 V
LIP 523450 AJL *	4.1 Wh	3.7 V
LIP 553450 WC	4.2 Wh	3.7 V
LIP 663450 MTC	4.9 Wh	3.7 V
LPP 383450 PL *	2.6 Wh	3.7 V
LPP 402025 CE *	0.5 Wh	3.7 V
LPP 402934 E *	1.1 Wh	3.7 V
LPP 422339 PL *	1.3 Wh	3.7 V
LPP 423566 BE *	4.2 Wh	3.7 V
LPP 442834 PVL *	1.5 Wh	3.7 V
LPP 443441 S *	2.4 Wh	3.7 V
LPP 454261 8TH	5.9 Wh	3.7 V
LPP 454261 8TSH	5.9 Wh	3.7 V
LPP 463149 S *	2.6 Wh	3.7 V
LPP 486588 H	13.0 Wh	3.7 V
LPP 503562 S *	4.5 Wh	3.7 V
LPP 503759 8HH	5.2 Wh	3.7 V
LPP 503759 DL *	4.6 Wh	3.7 V
LPP 523450 S *	3.7 Wh	3.7 V
LPP 553048 PL *	3.0 Wh	3.7 V
LPP 553436 S *	2.9 Wh	3.7 V
LPP 683566 BE *	6.7 Wh	3.7 V
LPP 702035 PVL *	1.6 Wh	3.7 V
LPP 702035 S *	1.6 Wh	3.7 V
LPP 751930 PL *	1.5 Wh	3.7 V

* These cells contain SVHC substances $>$ 0.1 % (see section 3)

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Supplier details

Address: VARTA Storage GmbH
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Emergency Phone Number: +49 7961 921 110 (VAC)

Legal remark (EU)

These batteries are no *"substances"* or *"mixtures"* according to Regulation (EC) No 1907/2006 EC. Instead they have to be regarded as *"articles"*, no substances are intended to be released during handling. Therefore there is no obligation to supply a safety data sheet according to Regulation (EC) 1907/2006, Article 31.

General remark

This information is provided as a service to our customers. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

2 Hazards identification

The battery is sealed hermetically. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.

If in case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to sections 4 to 6).

Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100 °C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

3 Composition/information on ingredients

Ingredients

Content	CAS no.	EC no.	Material	Hazard Categories	Hazard Statements
20 – 50 %	proprietary	proprietary	Metal oxide (proprietary)	Skin Sens. 1, Acute Tox. 2, Resp. Sens. 1, Carc. 1B, STOT RE 1, Aquatic Chronic 3	H317, H330, H334, H350, H372, H412
10 – 30 %	proprietary	proprietary	Carbon (proprietary)		
10 – 20 %	proprietary	proprietary	Electrolyte (proprietary)	Flam. Liq. 2, Skin Corr. 1B, Eye Dam. 1, Skin Sens. 1, Muta. 2, Carc. 2, Aquatic Chronic 2	H225, H312, H314, H317, H341, H351, H411

continued on next page

Content	CAS no.	EC no.	Material	Hazard Categories	Hazard Statements
2 – 10 %	7429-90-5	231-072-3	Aluminum foil		
2 – 10 %	7440-50-8	231-159-6	Copper foil		
<5 %	proprietary	proprietary	Binder		
Remainder	proprietary	proprietary	Inert materials		

For full text of hazard statements see section 16.

During charge process a lithium carbon intercalation phase is formed, which is highly flammable and corrosive, but not released under the circumstances of normal usage.

SVHC substances according to REACH (Article 33)

Content	CAS no.	EC no.	Material
> 0.1 %	1120-71-4	214-317-9	1,3-Propanesultone (only for cells marked with * in section 1)

For information to allow safe use: see section 7.

Substances relevant for Battery Directive 2006/66/EC

Content	CAS no.	EC no.	Material
<0.0010 %	7439-92-1	231-100-4	Lead
<0.0001 %	7440-43-9	231-152-8	Cadmium
<0.0001 %	7439-97-6	231-106-7	Mercury (none intentionally introduced, see section 12)

4 First-aid measures

After inhalation:	Fresh air. Seek for medical assistance.
After skin contact:	Remove solid particles immediately. Flush affected areas with plenty of water (at least 15 min). Remove contaminated cloth immediately. Seek for medical assistance.
After eye contact:	Flush the eye gently with plenty of water (at least 15 min). Seek for medical assistance.
After ingestion of battery components:	Drink plenty of water. Avoid vomiting. Seek for medical assistance. No trials for neutralization.

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5 Fire-fighting measures

Suitable extinguishing media:	Metal fire extinction powder, rock salt or dry sand shall be used. In case only water is available, it can be used in large amounts.
Extinguishing media with limited suitability:	Carbon dioxide (CO_2) is not suitable. Water in small quantities may have adverse effects.
Special protection equipment during fire-fighting:	Contamination cloth including breathing apparatus.
Special hazard:	Cells may explode and release metal parts. At contact of electrolyte with water traces of hydrofluoric acid may be formed. In this case avoid contact and take care for good ventilation. At contact of charged anode material with water extremely flammable hydrogen gas is generated.
Attention:	Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose of properly.

6 Accidental release measures

Person related measures:	Wear personal protective equipment adapted to the situation (protection gloves, face protection, breathing protection).
Environment protection measures:	In the event of battery rupture, prevent skin contact and collect all released material in a plastic lined container. Bind released ingredients with powder (rock salt, sand). Dispose of according to the local law and rules. Avoid leached substances to penetrate into the earth, canalization or water.
Treatment for cleaning:	If battery casing is dismantled, small amounts of electrolyte may leak. Package the battery tightly including ingredients together with lime, sand or rock salt. Then clean with water.

7 Handling and storage

Guideline for safe handling:

- Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types.
- Keep batteries away from children. Keep small cells and batteries which are considered swallowable out of the reach of children.
- For devices to be used by children, the battery casing should be protected against unauthorized access.
- Unpacked batteries shall not lie about in bulk.
- In case of battery change always replace all batteries by new ones of identical type and brand.
- Do not swallow batteries. Swallowing may lead to burns, perforation of soft tissue, and death. Severe burns can occur within 2 h of ingestion. In case of ingestion of a cell or battery, seek medical assistance promptly.
- Do not throw batteries into water.
- Do not throw batteries into fire.
- Avoid deep discharge.
- Do not short-circuit batteries.
- Use recommended charging time and current.
- Do not open or disassemble batteries.

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Supply to private end users:	In case the products are supplied to private end users packed with equipment or contained in equipment it is strongly recommended to follow UL product and instruction manual requirements. The product is required to be marked with a graphical symbol that alerts the user to refer to the instruction manual. The instruction manual itself is required to contain • a warning marking with text to alert the user of the potential chemical burn hazard associated with coin/button battery ingestion, • an instruction as to the presence of a coin/button cell battery, • possible effects of battery ingestion, • an instruction to keep batteries away from children, • an advice to seek immediate medical attention if it suspected that batteries have either been swallowed or placed inside any part of the body. Further advice for parents: http://buttonbatterysafety.com http://www.productsafety.gov.au/news/the-battery-controlled-button-battery-safety
Environmental conditions:	–20 °C to 20 °C for storage –20 °C to 60 °C for short exposition (e.g. transport) Avoid large temperature changes. Do not store close to heating devices. Avoid direct sunlight. At higher temperature the electrical performance may be reduced. Storage of unpacked batteries can cause short circuit and heat generation.
Storage category according to TRGS 510:	It is recommended to consider the *"Technical Rule for Hazardous Substances TRGS 510 - Storage of hazardous substances in nonstationary containers"* and to handle lithium ion batteries according to storage category 11 (*"combustible solids"*).
Storage of large amounts:	Follow the recommendations of the German Insurance Association (GDV - *"Gesamtverband der Deutschen Versicherungswirtschaft e.V."*) concerning lithium batteries: VdS 3103. In case of storage of large amounts (used storage volume $> 7\,m^3$ and/or more than 6 pallets) batteries shall be stored in fire-resistant or separated rooms or areas (e.g. warehouse or container for hazardous materials). Mixed storage with other products is not allowed. The storage area shall be monitored by an automatic fire detection system, connected to a permanently manned place. A fire-extinguishing system shall reflect the extinguishing agents mentioned in section 5.

8 Exposure controls/personal protection

Under normal conditions (during charge and discharge) release of ingredients does not occur.

9 Physical and chemical properties

Not applicable if closed.

10 Stability and reactivity

Dangerous reactions:	When heated above 100 °C the risk of rupture occurs.

11 Toxicological information

Under normal conditions (during charge and discharge) release of ingredients does not occur. In case of accidental release see information in sections 2 to 4 and 6.

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Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up. See section 4.

12 Ecological information

VARTA LIC/LIP/LPP series lithium ion batteries do not contain heavy metals as defined by the European directives 2006/66/EC Article 21; they comply with the chemical composition requirements of this Directive.

Mercury has not been *"intentionally introduced (as distinguished from mercury that may be incidentally present in other materials)"* in the sense of the U.S.A. *"Mercury-Containing and Rechargeable Battery Management Act"* (May 13 1996).

The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by the China authorities including the State Administration of Light Industry and the State Environmental Protection Administration defines *"low mercury"* as *"mercury content by weight in battery as less than 0.025 %"*, and *"mercury free"* as *"mercury content by weight in battery as less than 0.0001 %"*. And therefore: VARTA LIC/LIP/LPP series lithium ion batteries belong to the category of mercury-free battery (mercury content lower than 0.0001 %).

13 Disposal considerations

In order to avoid short circuit and heating, used VARTA LIC/LIP/LPP series lithium ion batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals
- Embedding in dry sand

European Union

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (www.epbaeurope.net/legislation_national.html).

Importers and users outside EU should consider the local law and rules.

USA

VARTA LIC/LIP/LPP series lithium ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by Call2Recycle, Inc. Please go to their website at www.call2recycle.org for additional information.

14 Transport information

VARTA LIC/LIP/LPP series lithium ion batteries are considered to be UN 3480 Lithium Ion Batteries, and are tested according to subsection 38.3 of the *"UN Manual of Tests and Criteria"* for compliance with the requirements of special provisions ADR 188, IMDG 188, as well as the requirements of DOT / 49 CFR § 173.185, and the requirements of IATA DGR packing instruction 965. Test results as well as other relevant information required for transportation are given in dedicated *"Supplier's Test Summaries"*.

Please note that for some products state of charge and VARTA packaging are not designed for air transport in bulk; this does not affect air transport of batteries packed with equipment or contained in equipment.

Transportations of cells or batteries packed with equipment or contained in equipment have to follow the appropriate regulations for UN 3481.

During the transportation of large amounts of batteries by ship, trailer or railway, do not store them in places of high temperature and do not allow them to be exposed to condensation. During the transportation do not allow the packaging to be damaged,

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as a damage of the packaging may cause fire. In the event packaging is damaged, special procedures must be used including inspection and repackaging if necessary and handle with care.

Code of practice for packaging and shipment of secondary batteries given in IEC 62133: The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

Compilations of transport requirements for Lithium batteries can be found in:
https://www.lithium-batterie-service.de/en/
https://www.iata.org/whatwedo/cargo/dgr/Documents/lithium-battery-shipping-guidelines.pdf

Each cell or battery is manufactured under a quality management program according to IATA DGR clause 3.9.2.6, ADR clause 2.2.9.1.7 e), and IMDG code clause 2.9.4.5.

15 Regulatory information

Marking consideration

European Union: According to *"DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC"* the batteries have to be marked with the crossed wheel bin symbol. According to Commission Regulation (EU) No 1103/2010 portable secondary (rechargeable) batteries and accumulators shall be marked with a capacity marking, except those which are incorporated or designed to be incorporated in appliances before being provided to end-users, and not intended to be removed.

Rechargeable Lithium ion batteries, which contain electronic modules (e.g. PCM) and which are subjected to the EMC directives 2004/108/EC or 2014/35/EU (as they are end-user replaceable devices), must undergo a EU conformity assessment and must wear the CE marking.

According to Dangerous Goods Regulations (see section 14) battery packs have to be marked with the Watt-hour rating.

Water hazard class

The regulations of the German Federal Water Management Act (WHG) are not applicable as VARTA LIC/LIP/LPP series lithium ion batteries are articles and not substances, thus there is no risk of water pollution, except the batteries are violated or dismantled.

16 Other information

Note:	Date of issue of the transport regulations: ADR 2021, RID 2021, IATA DGR 2021 (62nd edition), IMDG Code 2021. Latest covered modification of the European Battery Directive 2006/66/EC: Directive (EU) 2018/849.
RoHS:	See special Declaration
REACH:	See special Declaration
Issued by:	VARTA Microbattery GmbH Product Compliance
Contact:	https://www.varta-storage.com/contact-storage/?lang=en
Updates:	Current SDS can be downloaded from VARTA's web page https://products.varta-microbattery.com/en/news-downloads/document-search.html (select Document Type "MATERIAL SAFETY DATA SHEET").

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No.: JTB0201

Test Report
UN38.3

Name of Sample: Rechargeable Lithium-ion Battery (Assembled)
2S/LIC 18650-22BT PCM PC

Tests requested by: Hanna Seiband
VARTA Storage GmbH (Nördlingen)
Manufacturer: PT. VARTA Microbattery (Indonesia)

Test Report
UN38.3

Name of Sample:	Rechargeable Lithium-ion Battery (Assembled) 2S/LIC 18650-22BT PCM PC
Sample Reference:	SPF No: 21-0093
Test Job Number:	JTB0201
Drawing No.:	801560-Rev 00 VKB 56655 702 012
Customer/Project	Flir BABX
Nominal Voltage:	7.2V
Rated Capacity:	2200mAh
Watt-hour Rating:	16Wh

Tests requested by:	Hanna Seiband VARTA Storage GmbH (Nördlingen)
Manufacturer:	PT. VARTA Microbattery (Indonesia)
Tracer:	0221

Test Method:	Recommendations on the Transport of Dangerous Goods, UN Manual of Tests and Criteria, Part III, subsection 38.3, Seventh Revised Edition, 2019 ST/SG/AC.10/11/Rev.7 from United Nations		
Criterion:	Recommendations on the Transport of Dangerous Goods, UN Manual of Tests and Criteria, Part III, subsection 38.3, Seventh Revised Edition, 2019 ST/SG/AC.10/11/Rev.7 from United Nations		
Remark	25 cycles pre-treatment is with charge/discharge as follows: • Charge at 2200mA to 8.5V, cut off by current 8.5mA/44mA • Discharge at 2200mA to 6.0V. The T7 Overcharge is performed based on “Max. Charge Voltage 8.5V” as indicated on battery drawing.		
Accepted Date:	2021-03-16	Completed Date	2021-04-29
Test Items:	Altitude Simulation, Thermal Test, Vibration, Shock, External Short Circuit, Overcharge		
Conclusion:	The Sample has passed the test items of UN38.3 Rev. 7.		

Test Report
UN38.3

Test No.	Test Item	Standard requirement / Clause number of Standard	Test Result	Comment
1	Altitude Simulation	UN Manual of Test and Criteria, Section 38.3,4.1 Test T.1	Appendix T1	passed
2	Thermal Test	UN Manual of Test and Criteria, Section 38.3,4.2 Test T.2	Appendix T2	passed
3	Vibration Test	UN Manual of Test and Criteria, Section 38.3,4.3 Test T.3	Appendix T3	passed
4	Shock Test	UN Manual of Test and Criteria, Section 38.3,4.4 Test T.4	Appendix T4	passed
5	External Short Circuit	UN Manual of Test and Criteria, Section 38.3,4.5 Test T.5	Appendix T5	passed
-	Impact test (on component cell)	UN Manual of Test and Criteria, Section 38.3,4.6 Test T.6	Ref: Molicell UN38.3 Report, E-One Moli Energy Corp, Report No.160216-10-2, date 2016-02-16,T6 Impact Test page 11 of 13	passed
6	Overcharge	UN Manual of Test and Criteria, Section 38.3,4.7 Test T.7	Appendix T7	passed
-	Forced Discharge Test (on component cell)	UN Manual of Test and Criteria, Section 38.3,4.8 Test T.8	Ref: Molicell UN38.3 Report, E-One Moli Energy Corp, Report No.160216-10-2, date 2016-02-16,T8 Forced Discharge Test page 12 of 13	passed
Test Environment Condition		Ambient Temperature: 15°C — 25°C		

UN38.3 Test Report ─ Appendix T1

(Altitude Simulation at 11.6kPa, 6h)

Test No.	**1**		**Test Item.**		**Altitude Simulation**		
		Before Test		**After Test**		**Percentage (%)**		**Comment**
Sample No.	**Sample Status**	**Weight (g)**	**OCV (V)**	**Weight (g)**	**OCV (V)**	**Mass Loss (Before -After) /Before (%)**	**OCV (After /Before) (%)**	
01	1CYCFULL	124.60	8.43	124.57	8.42	0.02	99.9	**P**
02	1CYCFULL	124.08	8.41	124.05	8.40	0.02	99.9	**P**
03	1CYCFULL	123.88	8.41	123.85	8.40	0.02	99.9	**P**
04	1CYCFULL	123.13	8.41	123.11	8.40	0.02	99.9	**P**
05	25CYCFULL	122.41	8.40	122.38	8.40	0.02	100.0	**P**
06	25CYCFULL	123.30	8.36	123.27	8.35	0.02	99.9	**P**
07	25CYCFULL	123.31	8.36	123.28	8.36	0.02	99.9	**P**
08	25CYCFULL	123.38	8.36	123.36	8.35	0.02	99.9	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=No Leakage, No Venting, No Disassembly, No Rupture, No Fire

UN38.3 Test Report ─ Appendix T2

(Thermal Test at -40°C/+72°C, temperature change within 30 minutes, 10 cycles, total 154h)

Test No.	**2**		**Test Item.**		**Thermal Test**			
		Before Test		**After Test**		**Percentage (%)**		**Comment**
Sample No.	**Sample Status**	**Weight (g)**	**OCV (V)**	**Weight (g)**	**OCV (V)**	**Mass Loss (Before -After) /Before (%)**	**OCV (After /Before) (%)**	
01	1CYCFULL	124.57	8.42	124.58	8.26	0.00	98.1	**P**
02	1CYCFULL	124.05	8.40	124.06	8.19	-0.01	97.4	**P**
03	1CYCFULL	123.85	8.40	123.86	8.18	-0.01	97.4	**P**
04	1CYCFULL	123.11	8.40	123.12	8.18	-0.01	97.4	**P**
05	25CYCFULL	122.38	8.40	122.42	8.20	-0.03	97.7	**P**
06	25CYCFULL	123.27	8.35	123.31	8.02	-0.03	96.0	**P**
07	25CYCFULL	123.28	8.36	123.32	8.02	-0.03	96.0	**P**
08	25CYCFULL	123.36	8.35	123.40	8.02	-0.03	96.0	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=No Leakage, No Venting, No Disassembly, No Rupture, No Fire

UN38.3 Test Report ─ Appendix T3

(Vibration Test between 7Hz to 200Hz, $1g_n$ at 7Hz, amplitude ± 0.8mm at 18HZ, $8g_n$ at 200Hz)

Test No.	**3**		**Test Item.**		**Vibration Test**			
		Before Test		**After Test**		**Percentage (%)**		**Comment**
Sample No.	**Sample Status**	**Weight (g)**	**OCV (V)**	**Weight (g)**	**OCV (V)**	**Mass Loss (Before -After) /Before (%)**	**OCV (After /Before) (%)**	
01	1CYCFULL	124.58	8.26	124.59	8.25	-0.01	99.9	**P**
02	1CYCFULL	124.06	8.19	124.07	8.13	-0.01	99.3	**P**
03	1CYCFULL	123.86	8.18	123.87	8.12	0.00	99.3	**P**
04	1CYCFULL	123.12	8.18	123.13	8.12	-0.01	99.3	**P**
05	25CYCFULL	122.42	8.20	122.41	8.19	0.01	99.9	**P**
06	25CYCFULL	123.31	8.02	123.29	8.00	0.01	99.8	**P**
07	25CYCFULL	123.32	8.02	123.31	8.00	0.01	99.8	**P**
08	25CYCFULL	123.40	8.02	123.38	7.96	0.01	99.3	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=No Leakage, No Venting, No Disassembly, No Rupture, No Fire

UN38.3 Test Report ─ Appendix T4

(Shock Test at 150g 6ms, 3 shocks for 6 directions ±X/ ±Y/ ±Z, total 18 shocks)

Test No.	**4**		**Test Item.**		**Shock Test**			
		Before Test		**After Test**		**Percentage (%)**		**Comment**
Sample No.	**Sample Status**	**Weight (g)**	**OCV (V)**	**Weight (g)**	**OCV (V)**	**Mass Loss (Before -After) /Before (%)**	**OCV (After /Before) (%)**	
01	1CYCFULL	124.59	8.25	124.57	8.23	0.01	99.7	**P**
02	1CYCFULL	124.07	8.13	124.06	8.10	0.01	99.6	**P**
03	1CYCFULL	123.87	8.12	123.85	8.10	0.01	99.7	**P**
04	1CYCFULL	123.13	8.12	123.11	8.10	0.01	99.7	**P**
05	25CYCFULL	122.41	8.19	122.41	8.17	0.00	99.7	**P**
06	25CYCFULL	123.29	8.00	123.30	7.94	0.00	99.3	**P**
07	25CYCFULL	123.31	8.00	123.31	7.95	0.00	99.3	**P**
08	25CYCFULL	123.38	7.96	123.38	7.94	0.00	99.7	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=No Leakage, No Venting, No Disassembly, No Rupture, No Fire

UN38.3 Test Report – Appendix T5

(External Short-Circuit Test at 57±4°C , with < 0.1 ohm)

Test No.	**5**	**Test Item.**	**External Short circuit Test**
Sample No.	**Sample Status**	**Max External Temperature (°C)**	**Comment**
01	1CYCFULL	55.7	**P**
02	1CYCFULL	55.9	**P**
03	1CYCFULL	55.9	**P**
04	1CYCFULL	55.9	**P**
05	25CYCFULL	55.8	**P**
06	25CYCFULL	56.0	**P**
07	25CYCFULL	56.1	**P**
08	25CYCFULL	56.1	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=Battery temperature not exceeding 170°C, and no disassembly,

no ruptue, no fire 6h after test

UN38.3 Test Report ─ Appendix T7

(**Overcharge Test**, at 2 I_{max}, lower of 2 V_{max} or 22V, for 24h)
For the battery under test, 2S/LIC 18650-22BT PCM PC(#801560-Rev 00):

2 I_{max} = 2 x 2.200A = 4.4A

lower of 2V_{max} or 22V = lower of 2 x 8.5V or 22V = 17.0V

Test No.	**7**		**Test Item.**		**Over Charge Test**	
	Before Test			**After Test**		
Sample No.	**Sample Status**	**Weight (g)**	**OCV (V)**	**Weight (g)**	**OCV (V)**	**Comment**
09	1CYCFULL	123.61	8.41	123.60	8.23	**P**
10	1CYCFULL	123.42	8.41	123.41	8.22	**P**
11	1CYCFULL	125.89	8.42	125.89	8.24	**P**
12	1CYCFULL	123.41	8.42	123.40	8.25	**P**
13	25CYCFULL	123.38	8.41	123.39	8.20	**P**
14	25CYCFULL	123.18	8.42	123.19	8.31	**P**
15	25CYCFULL	122.69	8.41	122.70	8.20	**P**
16	25CYCFULL	122.26	8.42	122.27	8.31	**P**

Note:

L=Leakage, V=Venting, D=Disassembly, R=Rupture, F=Fire, P=No disassembly, no fire 7 days after test

UN38.3 Test Report – Appendix P

Before Test	After Test