TEST REPORT

Product Name:	Lithium Polymer Battery
Testing type/mode:	LP573450
Additional type /model:	All Akyga prismatic type of Lithium polymer rechargeable battery
Prepared For:	Ropla Elektronik sp. z o.o.
Address:	ul. Wrocławska 1C, 52-200 Suchy Dwór, POLAND
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Sample Received Date:	Nov. 23, 2018
Sample tested Date:	Nov. 23, 2018 to Nov. 30, 2018
Issue Date:	Nov. 30, 2018
Test Standards	EN 61000-6-1:2007, EN 61000-6-3:2007+A1:2011
Test Results	PASS

Compiled by:	Reviewed by:	Approved by:
Icey Chen	Eric Yang	Carson Zhang/Manager

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

TABLE OF CONTENT

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
Confidential	Nov. 30, 2018	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	**Test Item**	**Test result**
EN 61000-6-3	Conducted Emission	N/A[1]
EN 61000-6-3	Radiated Emission	Pass

IMMUNITY (EN 61000-6-1))		
Standard	**Test Item**	**Test result**
IEC 61000-4-2	Electrostatic discharge (ESD)	Pass
IEC 61000-4-3	Radio-frequency electromagnetic field(RS)	Pass
IEC 61000-4-4	Fast transients (EFT)	N/A[1]
IEC 61000-4-5	Surges	N/A[1]
IEC 61000-4-6	Radio-frequency common mode(CS)	N/A[1]
IEC 61000-4-8	Power-frequency magnetic fields (PFMF)	N/A[2]
IEC 61000-4-11	Voltage dips and voltage interruptions (DIPS)	N/A[1]

Remark:
1. The EUT is powered by the DC only , the test item is not applicable
2. The Product doesn't contain any device susceptible to magnetic fields.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.20
Radiated Emission(30MHz~1GHz)	4.80
Radiated Emission(1GHz~6GHz)	4.90

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Ratings: DC 3.7V

The highest frequency of the internal sources of the EUT is (less than 108**)MHz:**

☒ less than 108 MHz, the measurement shall only be made up to 1 GHz.
☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.
☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.
☐ above 1 GHz, the measurement shall be made up to 6 GHz.

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Radiated emission(30MHz-1GHz)	Working	DC 3.7V
Electrostatic discharge (ESD) B ☒Air Discharge: ±2,4,8kV ☒Contact Discharge: ±4kV ☒HCP & VCP: ±4kV	Working	DC 3.7V
Radio-frequency electromagnetic field(RS) A 80MHz-1000MHz&1.4-2GHz,3V, 80%, 2-2.7GHz,1V/m,80%	Working	DC 3.7V
All test mode were tested and passed, only Conducted Emissions, Radiated Emissions Harmonic Current Emissions and Voltage Fluctuations and Flicker shows (*) is the worst case mode which were recorded in this report.		

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Radiated Emission Test (966 chamber)					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
966 chamber	ChengYu	966 Room	966	Mar. 03, 2018	Mar. 02, 2019
Receiver	R&S	ESR	102075	Jun. 20, 2018	Jun.19, 2019
Receiver	R&S	ESRP	101154	Jun. 20, 2018	Jun.19, 2019
Amplifier	Schwarzbeck	BBV9718	9718-309	Jun. 20, 2018	Jun.19, 2019
Amplifier	Schwarzbeck	BBV9744	9744-0037	Jun. 20, 2018	Jun.19, 2019
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Jun. 23, 2018	Jun.22, 2019
Horn Antenna	SCHWARZBECK	BBHA9120D	1201	Jun. 23, 2018	Jun.22, 2021
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

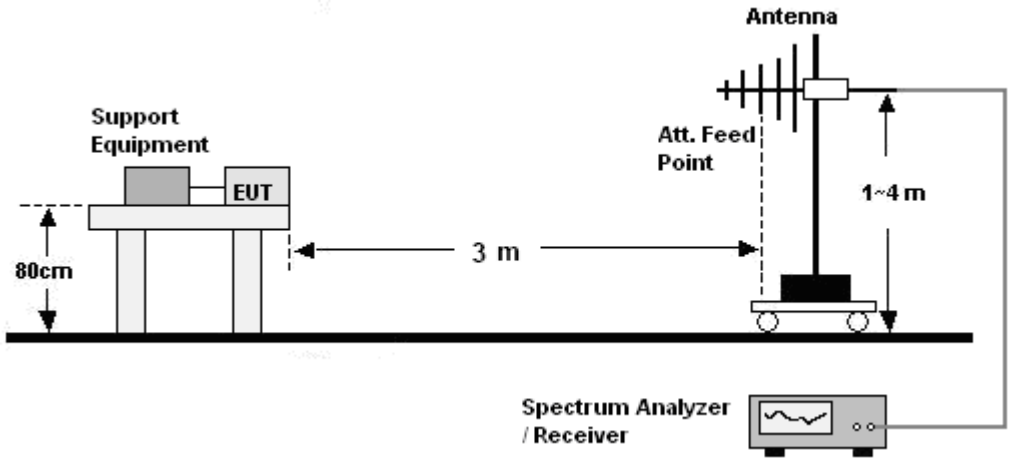
Electrostatic discharge Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
ESD Tester	KIKISUI	KES4201A	UH002321	Jun. 22, 2018	Jun. 21, 2019

Radio-frequency electromagnetic field Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power meter	Keysight	E4419	GB42421440	Apr. 15, 2018	Apr. 14, 2019
Power sensor	Keysight	E9300A	US39211305	Apr. 15, 2018	Apr. 14, 2019
Power sensor	Keysight	E9300A	US39211659	Apr. 15, 2018	Apr. 14, 2019
Amplifier	SKET	HAP-801000M-250W	/	Aug. 13, 2018	Aug. 12, 2019
Amplifier	SKET	HAP-801000M-75W	/	Aug. 13, 2018	Aug. 12, 2019
Amplifier	SKET	HAP-801000M-50W	/	Aug. 12, 2018	Aug. 11, 2019
Stacked double Log.-Per. Antenna	Schwarzbeck	STLP 9129	077	Apr. 15, 2018	Apr. 14, 2019
Field Probe	Narda	EP-601	80256	Jun. 23, 2018	Jun. 22, 2019
Signal Generator	Aglilent	N5181A	MY501437448	Jun. 20, 2018	Jun.19, 2019
Software	SKET	EMC-S	1.2.0.18	\	\

6. RADIATED EMISSION TEST

6.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



6.2 Limits

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

Note: The lower limit shall apply at the transition frequencies.

6.3 Test Procedure

30MHz ~ 1GHz:

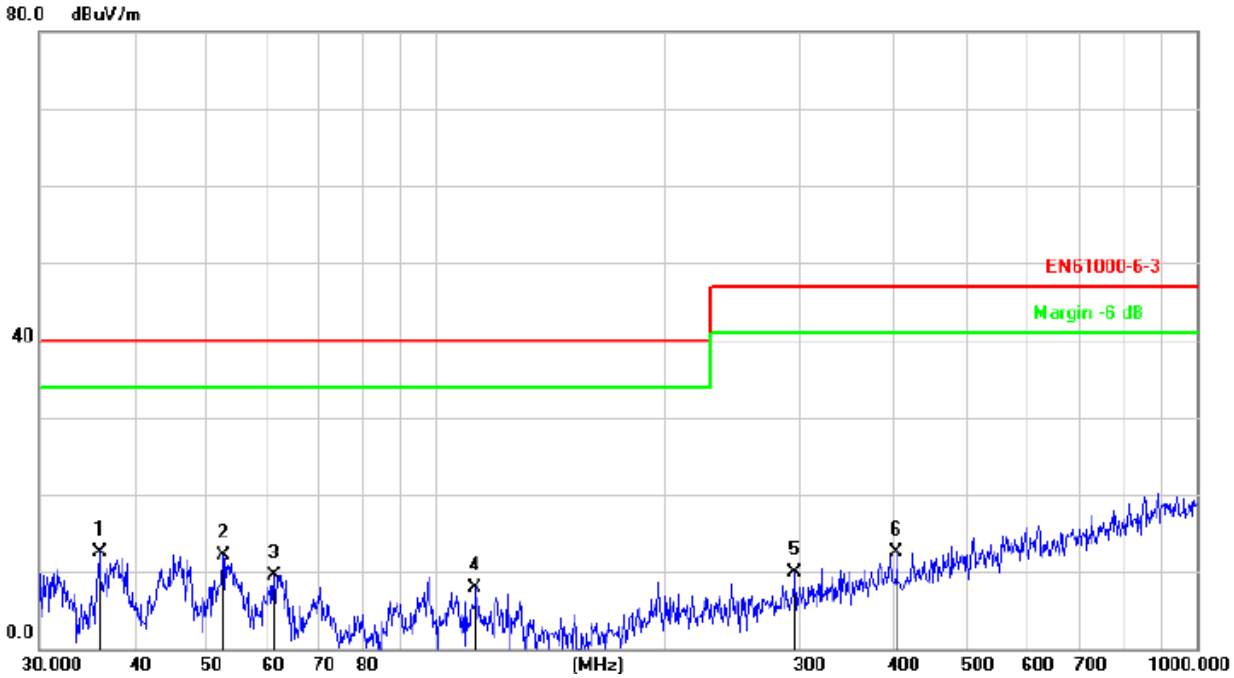
a. The Product was placed on the nonconductive turntable 0.8 m above the ground in a semi anechoic chamber.

b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

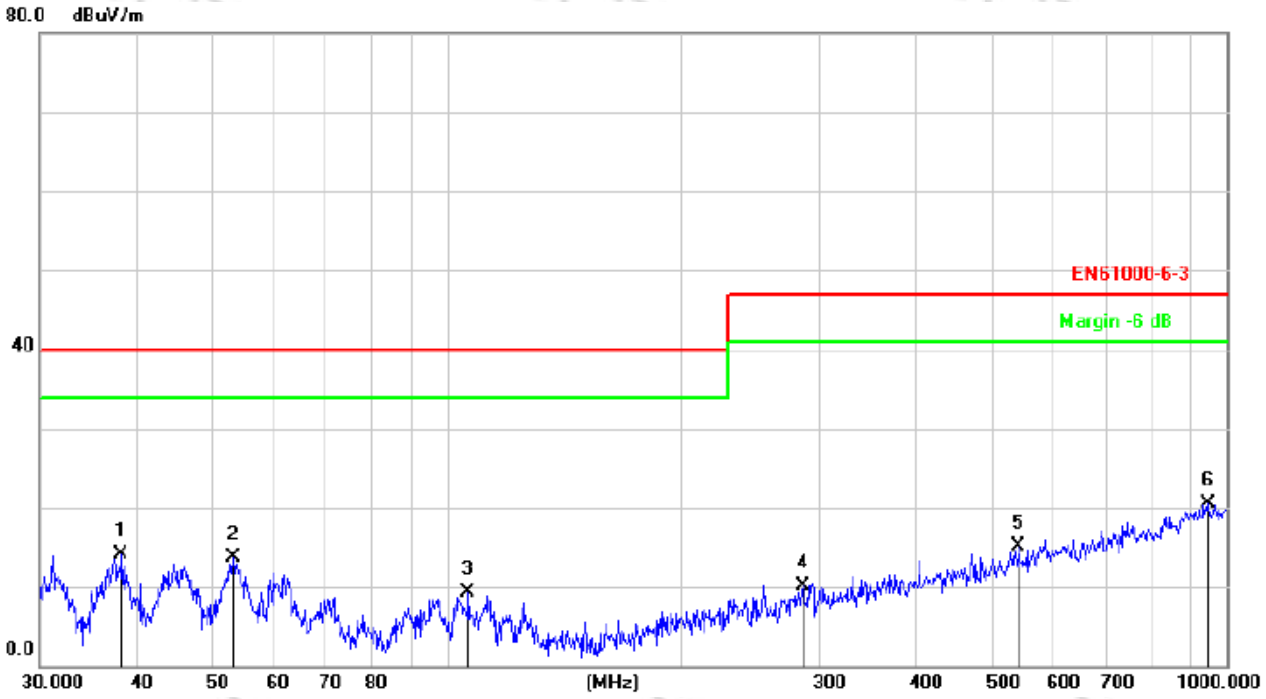
7.4 Test Results

Radiation Emission Test Data			
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Horizontal
Test Voltage :	DC 3.7V	Test Mode:	Working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	36.0007	28.61	-16.16	12.45	40.00	-27.55	QP			
2		52.3912	27.19	-15.10	12.09	40.00	-27.91	QP			
3		61.1315	25.76	-16.17	9.59	40.00	-30.41	QP			
4		112.5243	25.02	-17.09	7.93	40.00	-32.07	QP			
5		296.1836	23.55	-13.72	9.83	47.00	-37.17	QP			
6		403.2500	23.51	-11.02	12.49	47.00	-34.51	QP			

Radiation Emission Test Data			
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	DC 3.7V	Test Mode:	Working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	38.2120	29.87	-15.74	14.13	40.00	-25.87	QP			
2		53.1313	28.89	-15.18	13.71	40.00	-26.29	QP			
3		106.3850	26.05	-16.69	9.36	40.00	-30.64	QP			
4		285.9778	24.17	-14.03	10.14	47.00	-36.86	QP			
5		541.3724	23.08	-7.90	15.18	47.00	-31.82	QP			
6		945.4398	21.72	-1.15	20.57	47.00	-26.43	QP			

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

7. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

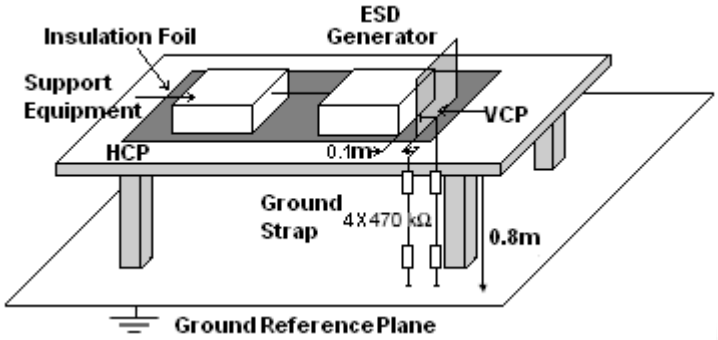
Product Standard	EN 61000-6-1:2007 Clause4
CRITERION A	The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
CRITERION B	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
CRITERION C	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

8. ELECTROSTATIC DISCHARGE (ESD)

8.1 Test Specification

Test Port	:	Enclosure port
Discharge Impedance	:	330 ohm / 150 pF
Discharge Mode	:	Single Discharge
Discharge Period	:	one second between each discharge

8.2 Block Diagram of Test Setup



8.3 Test Procedure

a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.

e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

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8.4 Test Results

Temperature:	23 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 3.7V		

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	A
Note: N/A					

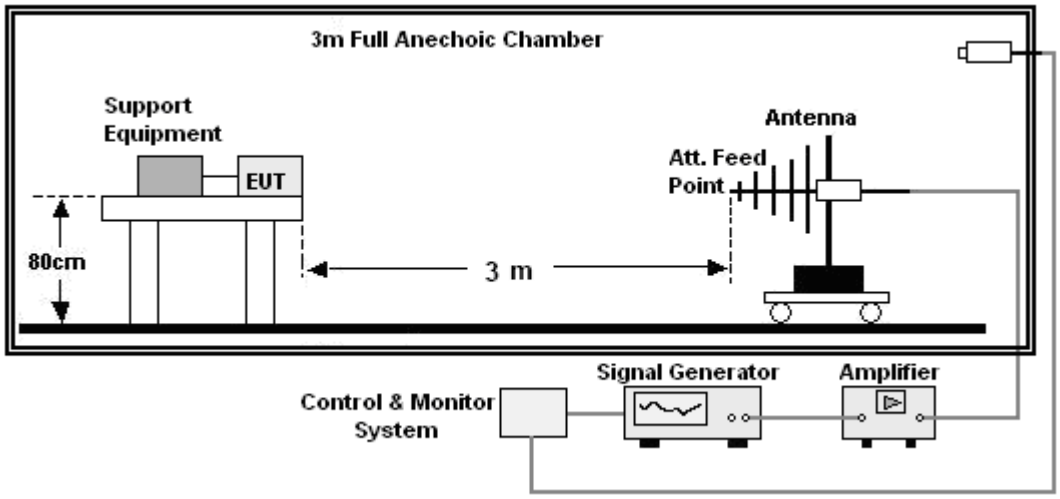
9. RADIO-FREQUENCY ELECTROMAGNETIC FIELD (RS)

9.1 Test Specification

Test Port	:	Enclosure port
Step Size	:	1%
Modulation	:	1kHz, 80% AM
Dwell Time	:	1 second
Polarization	:	Horizontal & Vertical

9.2 Block Diagram of Test Setup

Below 1GHz:



9.3 Test Procedure

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3m or 1m from the Product.

b. The frequency range is swept from 80MHz to 1000MHz and 1400MHz to 2700MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1%.

c. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

9.4 Test Results

Temperature:	23 ℃	Relative Humidity:	54%
Pressure:	101kPa	Test Mode:	Working
Test Voltage :	DC 3.7V		

Frequency	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000	Front, Right, Back, Left	3	A	A
1400 - 2000	Front, Right, Back, Left	3	A	A
2000 - 2700	Front, Right, Back, Left	1	A	A
Note: N/A				

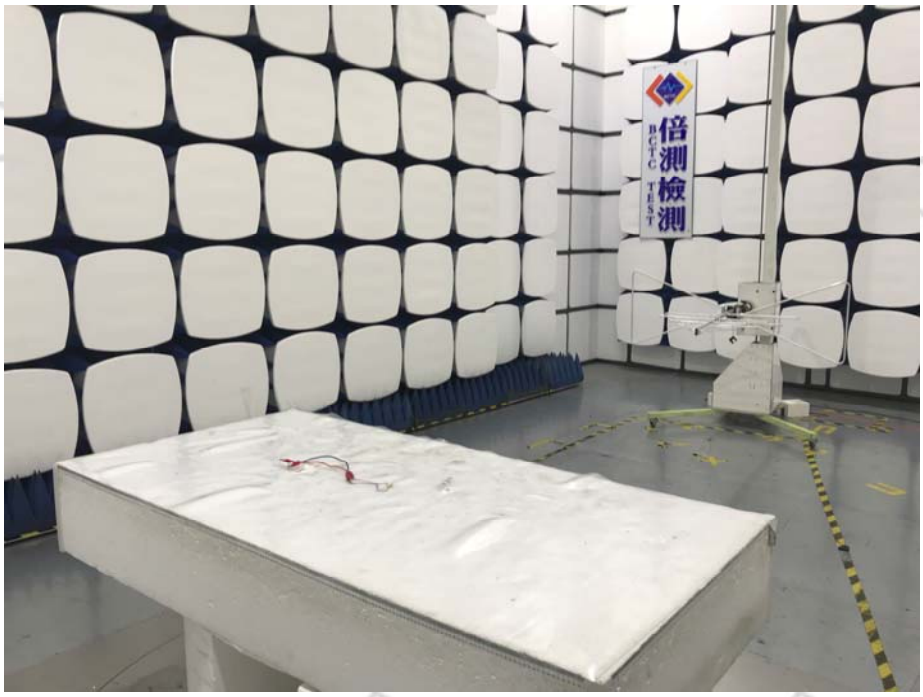
10. EUT PHOTOGRAPHS

EUT Photo 1

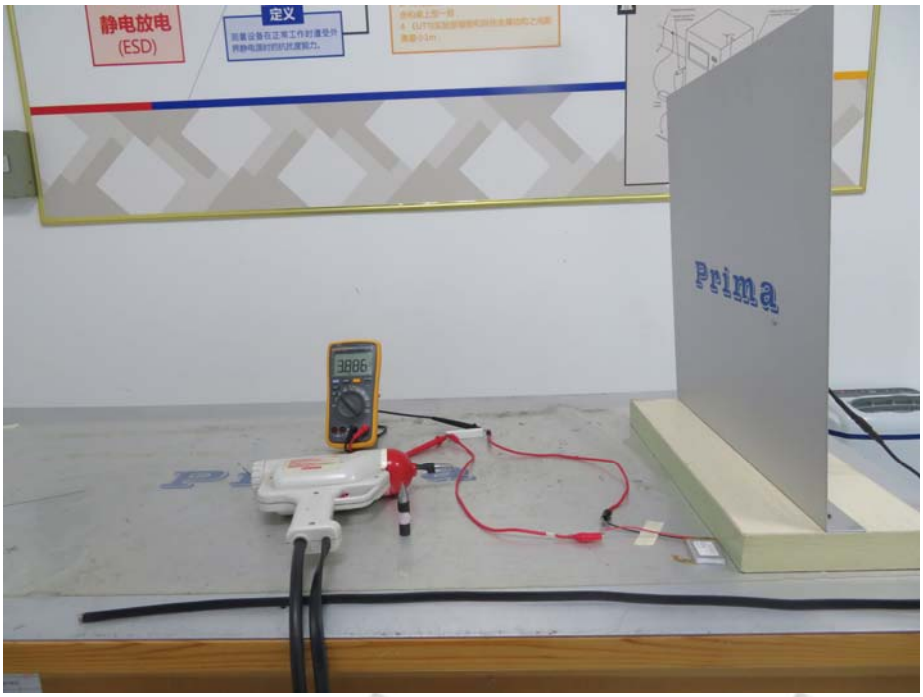
EUT Photo 2

11. EUT TEST SETUP PHOTOGRAPHS

Radiated emission



ESD



RS

※※※※※ END OF REPORT ※※※※※

MSDS

MATERIAL SAFETY DATA SHEET

Prepared For : **Ropla Elektronik sp. z o. o.**
ul. Wrocławska 1C, 52-200 Suchy Dwór, POLAND

Prepared By : **Shenzhen BCTC Testing Co., Ltd.**
BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China

Issue Date : **2019.01.02**

Written by: Linda Liang **Approved by:**

Material Safety Data Sheet

** The MSDS is prepared based on the information provided by client. The contents and formats of this MSDS are revised as per client's request.*

Section 1-Chemical Product and Company Identification

Product Name	Lithium Polymer Battery
Model	LP601730
Trade Mark	Akyga
Ratings	3.7V, 250mAh, 0.93Wh
Weight	6.7g
Additional type /model	All Akyga prismatic type of Lithium polymer rechargeable battery
Applicant	Ropla Elektronik sp. z o.o.
Applicant address	Ropla Elektronik sp. z o.o. ul. Wroclawska 1C, 52-200 Suchy Dwór, POLAND
Emergency Telephone	N/A

Section 2- Composition Information

Chemical Composition	CAS No.	Weight (%)	Trade Secret
Lithium cobaltate	12190-79-3	15 - 40	*
Graphite	7782-42-5	10 - 30	*
Phosphate(1-), hexafluoro-, lithium	21324-40-3	10 - 30	*
Copper	7440-50-8	7 - 13	*
Aluminium	7429-90-5	5 - 10	*
Nickel	7440-02-0	1 - 5	*

" * " The exact percentage (concentration) of composition has been withheld as a trade secret.

Section 3- Hazards Identification

Emergency overview:	N/A
Classification according to GHS	Not a dangerous substance according to GHS
Label elements:	
Hazard pictogram(s)	Not Available
Signal word	Not Available
Hazard statement(s)	Not Available

Precautionary statement(s):	
Prevention	Not Available
Response	Not Available
Disposal	Not Available
Environmental hazards:	No relevant information
Important symptoms:	See section 11 for more information

Section 4- First Aid Measures

Eye contact	Flush eyes with plenty of water for least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin contact	Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.
Inhalation	Remove from exposure and move to fresh air immediately. Use oxygen if available.
Ingestion	Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Section 5- Fire Fighting Measures

Flash Point	N/A
Auto-Ignition Temperature	N/A
Extinguishing Media	H_2O, CO_2
Special Fire-Fighting Procedures	Self-contained breathing apparatus
Unusual Fire and Explosion Hazards	Cell may vent when subjected to excessive heat-exposing battery contents
Hazardous Combustion Products	Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6- Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:
If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate. Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed with sand, earth or other inert substance and contaminated area should be ventilated meantime.

Environment precautions:
Do not allow product to reach sewage system or any water source.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers surface or ground water.

Methods and material for containment and cleaning up: If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

Section 7- Handling and Storage

Handling	The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.
Storage	Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.
Other Precautions	The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8- Exposure Controls/Personal Protection

Engineering Controls	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.
Personal Protective Equipment	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear suitable protective clothing and gloves if handling an open or leaking battery. Hand protection: Wear suitable gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery.
Other Protective Equipment	Have a safety shower and eye wash fountain readily available in the immediate work area.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain good housekeeping.

Section 9- Physical and Chemical Properties

Form	Solid
Color	Silver
Odour	Not Available
pH	Not Available
Melting point/freezing point	Not Available
Boiling Point and Boiling range	Not Available

Flash Point	Not Available
Upper/lower flammability or explosive limits	Not Available
Vapor Pressure	Not Available
Vapor Density	Not Available
Relative density	Not Available
Solubility in Water	Not Available
Auto-ignition temperature	Not Available
Decomposition temperature	Not Available
Evaporation rate	Not Available
Flammability (soil, gas)	Not Available
Viscosity	Not Available

Section 10- Stability and reactivity

Stability	The product is stable under conditions described Section 7
Conditions to Avoid	Heat above 70°C or incinerate. Deform, Mutilate, Crush, Disassemble, Overcharge, Short circuit, Expose over a long period to humid conditions.
Incompatible Materials	Oxidizing agents, acid, base.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide, lithium oxide fumes.
Possibility of Hazardous Reaction	Not Available

Section 11 – Toxicological Information

Irritation	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Sensitization	Not Available
Neurological Effects	Not Available
Teratogenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity (Genetic Effects)	Not Available
Toxicologically Synergistic Materials	Not Available

Section 12- Ecological Information	
Ecological Toxicity	Not Available
Mobility in soil	Not Available
Persistence and Degradability	Not Available
Bioaccumulation potential	Not Available
Other Adverse Effects	Not Available
Section 13- Disposal Considerations	
Product disposal recommendation	Observe local, state and federal laws and regulations.
Uncleaned packaging recommendation	Disposal must be made according to official regulations
Section 14 – Transport Information	
Label for conveyance	Lithium Battery Label
UN Number	UN 3480 or UN 3481
Transport hazard class(es)	9
Packing group	--
Marine pollutant	No
UN Proper shipping name	Lithium ion Batteries (Including lithium ion polymer batteries) Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries) Lithium ion Batteries contained in equipments (Including lithium ion polymer batteries)

Transport information:

The goods shall be complied with the requirements of Section IB~II of Packing Instruction 965 or of Section II of Packing Instruction 966 967 of 60th DGR Manual of IATA or special provision 188 of IMDG CODE (Amdt. 39-18).

Separate Lithium-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport, ensure that the goods will not falling, dropping, and breakage, Prevent collapse of cargo piles and wet by rain.

Transport Fashion: By air, by sea, by railway, by road.

Section 15- Regulatory information

Law information

《Dangerous Goods Regulations》
《Recommendation on the Transport of Dangerous Goods Model Regulations》
《International Maritime Dangerous Goods》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《Classification and code of dangerous Goods》
《Occupational Safety and Health Act》(OSHA)
《Toxic Substance Control Act》(TSCA)
《Consumer Product Safety Act》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《The Oil Pollution Act》(OPA)
《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》(SARA)
《Resource Conservation and Recovery Act》(RCRA)
《Safety Drinking Water Act》(CWA)
《California Proposition 65》
《Code of Federal Regulations》(CFR)
In according with all Federal, State and local laws.

Section 16- Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, concorde makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

-- End of Report --

Date:Nov. 30, 2018 Page 1 of 12

Applicant	:	Ropla Elektronik sp. z o.o.
Address	:	ul. Wrocławska 1C, 52-200 Suchy Dwór, POLAND

The submitted sample and sample information was/were submitted and identified by/on the behalf of the client

Sample name	:	Lithium Polymer Battery
Testing type /model	:	LP573450
Additional type /model	:	All Akyga prismatic type of Lithium polymer rechargeable battery
Sample received date	:	Nov. 23, 2018
Testing period	:	Nov. 23, 2018 - Nov. 30, 2018

Test requested : 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.

According to the RoHS Directive 2011/65/EU

*****For more detailed information, please refer to the next page*****

Tested by Weicheng Zhang

BCTC APPROVED SHENZHEN BCTC TESTING CO., LTD.

Approved by Chaobiao Zhang

Test Report

Test Method:

A. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

Element	Limit of IEC 62321-3-1:2013. Unit (mg/kg)		MDL	
	Polymers and metals	Composite material	Polymers	Other material
Pb	BL≤(700-3σ) <X <(1300+3σ) ≤OL	BL≤(500-3σ)<X <(1500+3σ) ≤OL	10 mg/kg	50 mg/kg
Cd	BL≤(70-3σ)<X <(130+3σ) ≤OL	LOD≤(50-3σ)<X <(150+3σ) ≤OL	10 mg/kg	50 mg/kg
Hg	BL≤(700-3σ)<X <(1300+3σ) ≤OL	BL≤(500-3σ)<X <(1500+3σ) ≤OL	10 mg/kg	50 mg/kg
Cr	BL≤(700-3σ)< X	BL≤(500-3σ)< X	10 mg/kg	50 mg/kg
Br	BL≤(300-3σ)< X	BL≤(250-3σ)< X	10 mg/kg	50 mg/kg

Note:

-BL = Under the XRF screening limit

-OL = Further chemical test will be conducted while result is above the screening limit

-X= The symbol “X” marks the region where further investigation is necessary

-3σ= The reproducibility of analytical instruments

-LOD= Detection limit

B. Chemical Test

Test Item(s)	Test Method	Measured Equipment(s)	MDL	Limit
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	1000 mg/kg
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	100 mg/kg
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	2 mg/kg	1000 mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321-7-1:2015 Ed.1.0	UV-VIS	/	1000 mg/kg
	IEC 62321-7-2:2017 Ed.1.0		8 mg/kg	1000 mg/kg
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015 Ed.1.0	GC-MS	5 mg/kg	1000 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015 Ed.1.0	GC-MS	5 mg/kg	1000 mg/kg

Test Report

Test Results:

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
1	Silver wire core	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
2	Red wire jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
3	Black wire jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
4	Red plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
5	Silver metal contact sheet	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
6	IC body	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Test Report

7	IC metal pin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
8	SMD capacitor	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
9	SMD resistor	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
10	Green PCB	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	31031	N.D.	
11	Silver metal sheet	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
12	Tin solder	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
13	Silver-white foil paper	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	

Test Report

14	White label paper	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
15	Yellow tape	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
16	Silver metal conductive sheet	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	
17	Translucent film	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
18	Green tape	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
19	Green tape	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
20	Copper foil	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	

Test Report

21	Black coating	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
22	Aluminum foil	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	/	/	

Note:

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.1μg/cm^2 with 50cm^2 sample surface area used.

-Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than 0.13μg/cm^2 with 50cm^2 sample surface area used.

Remark:

- The screening results are only used for reference.

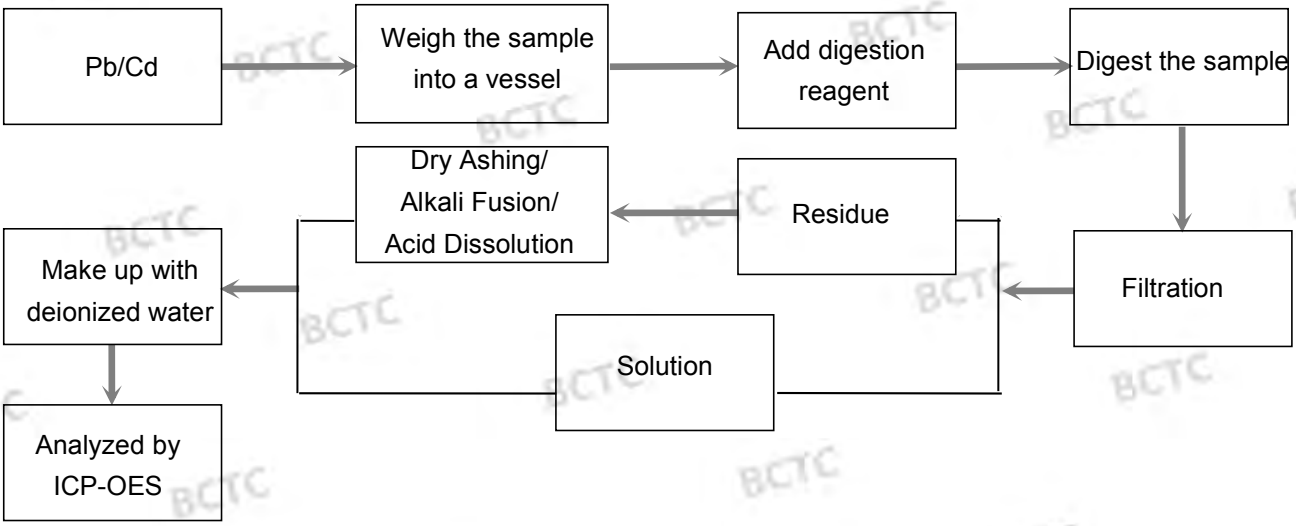
- When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

Test Report

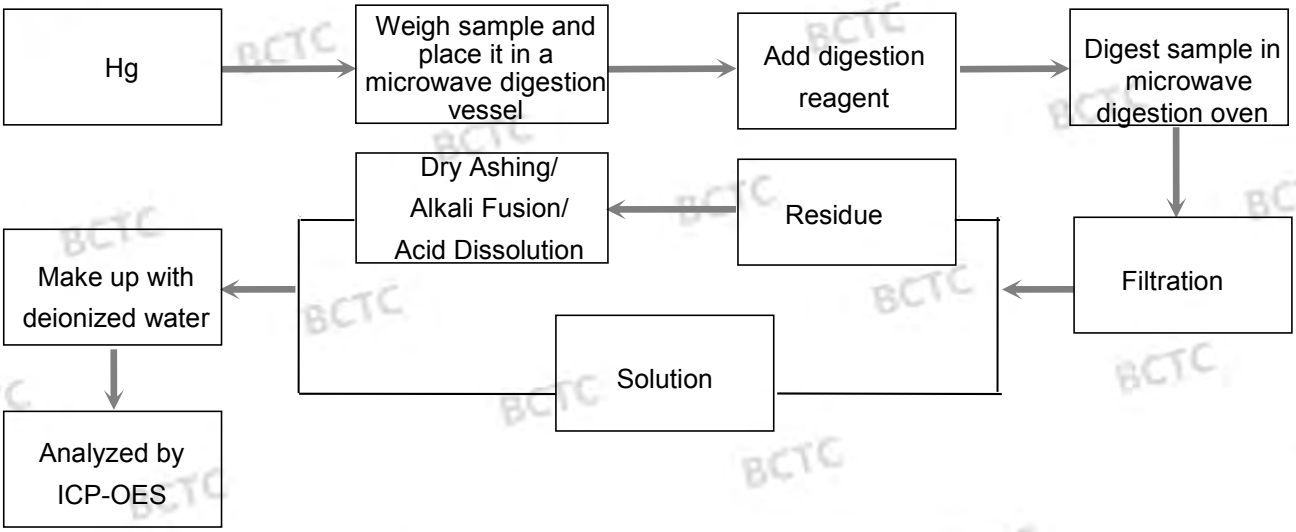
Test Process:

The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

◆IEC 62321-5:2013 Ed.1.0

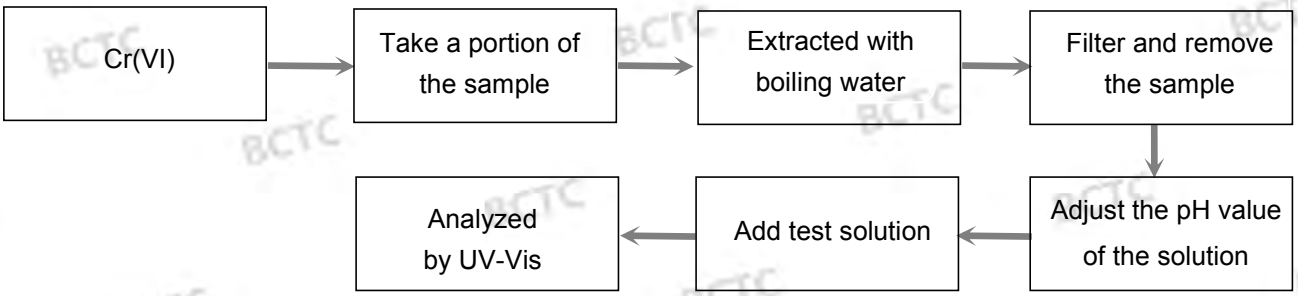


◆IEC 62321-4:2013+AMD1:2017

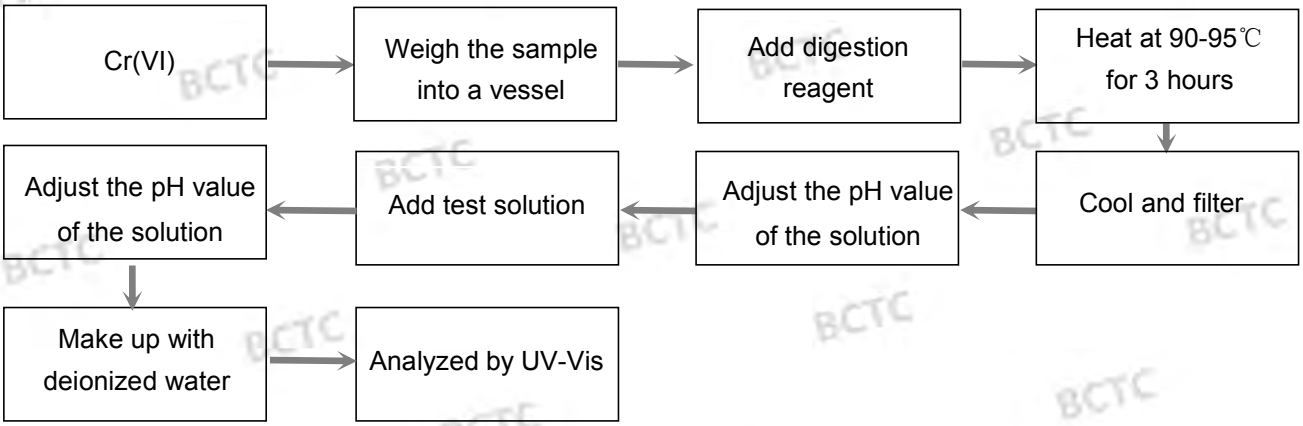


Test Report

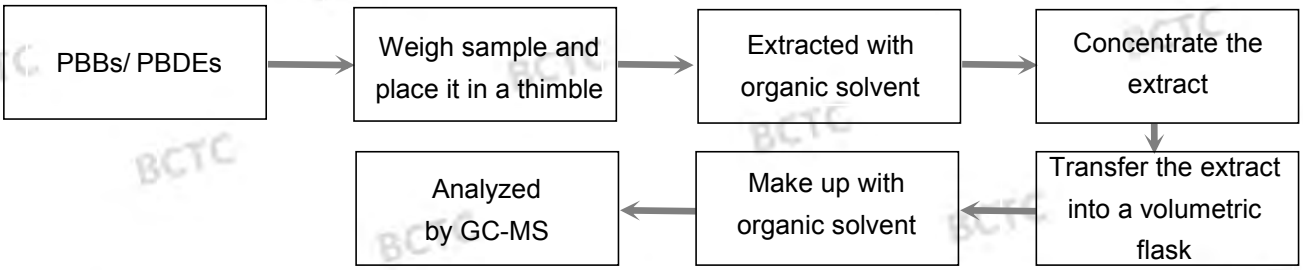
◆IEC 62321-7-1:2015 Ed.1.0



◆IEC 62321-7-2:2017 Ed.1.0



◆IEC 62321-6:2015 Ed.1.0



Test Report

Photograph of Sample

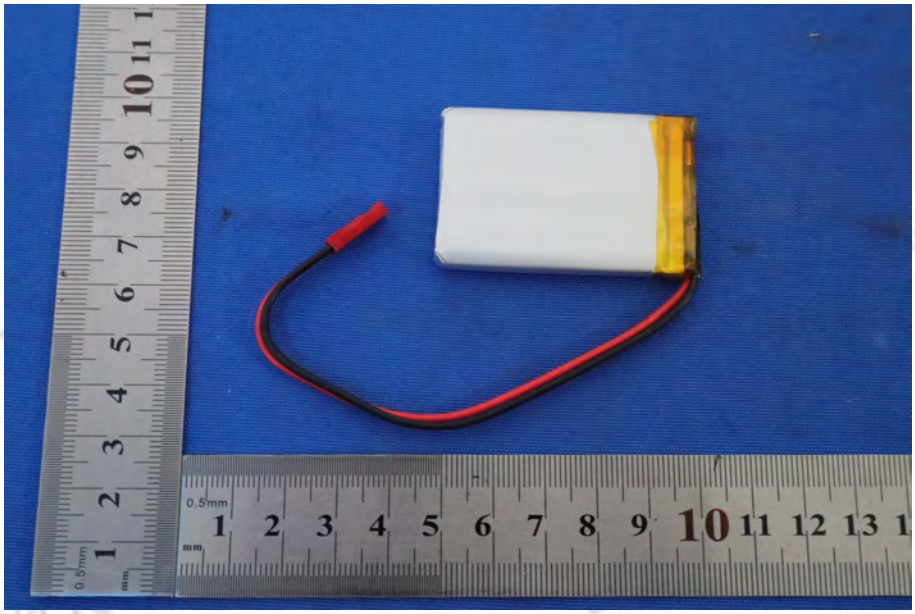


Fig.1

Fig.2

Test Report

Photo(s) of the tested component(s)

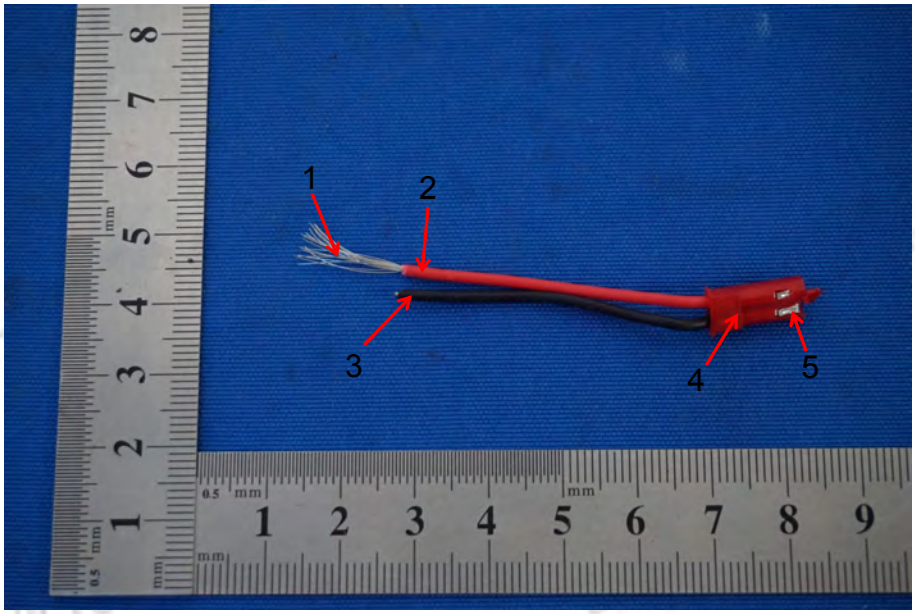


Fig.3

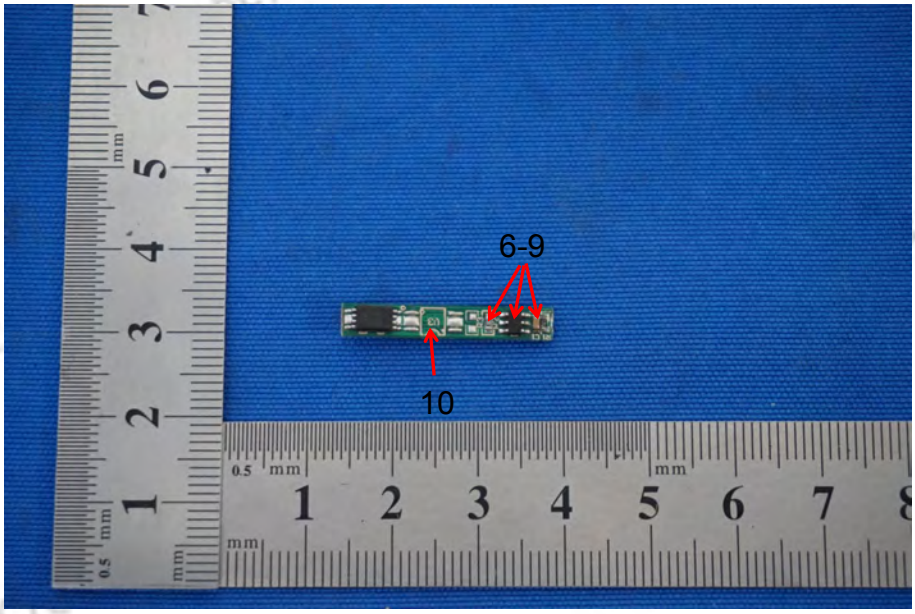


Fig.4

Test Report

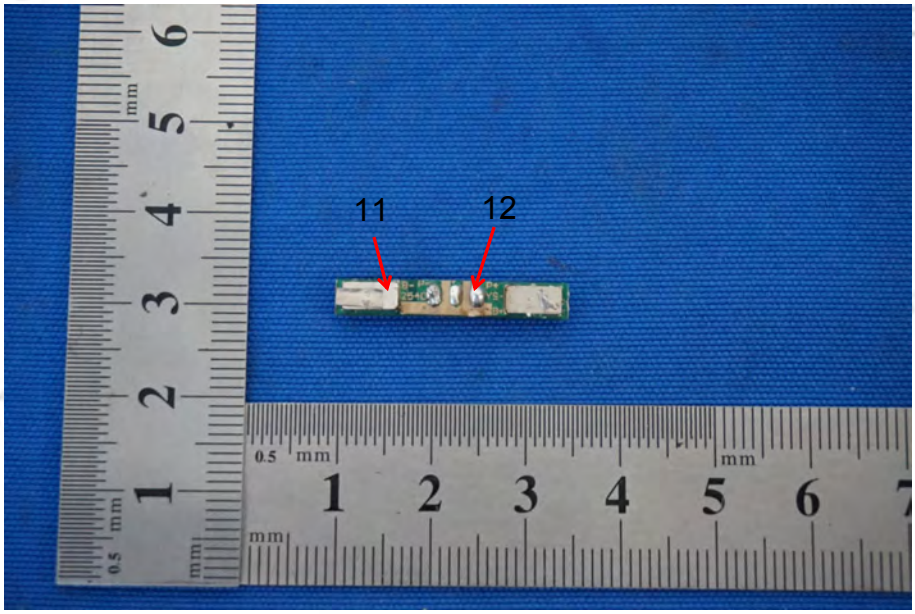


Fig.5

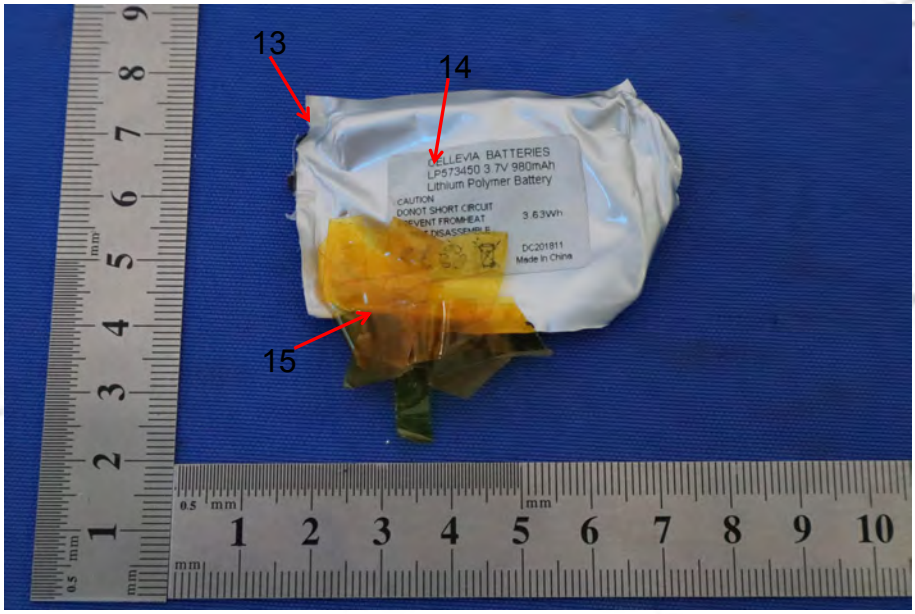


Fig.6

Test Report

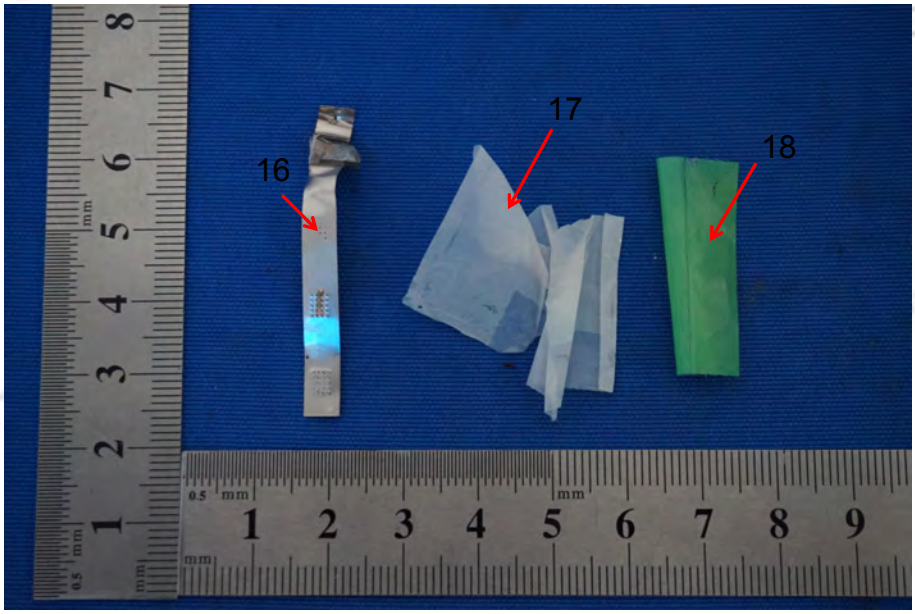


Fig.7

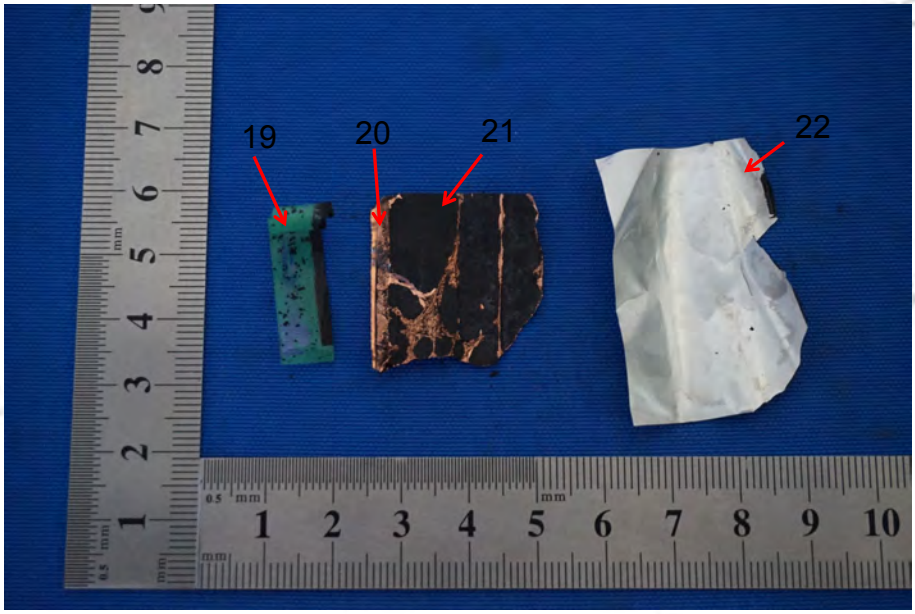


Fig.8

********** End of Report **********