

Declaration



BARTEC GmbH · Max-Eyth-Straße 16 · 97980 Bad Mergentheim · Germany

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Herewith we, BARTEC GmbH, declare

that we use type no. B7-A2Z0-0029 (customer replaceable) battery pack for Agile X series type numbers B7-A234-4xxx/xxx2xxxx.


The battery pack includes four rechargeable Lithium Polymere battery cells in 2s2p (p=parallel / s=serial) configuration.

Battery packs are manufactured and assembled by Jhieh Hong Technology Co., Ltd.

In every Agile X is one hot swap battery type 03-9921-0016 built in (it is not customer replaceable). Hot swap battery pack is manufactured and assembled by JHT CO., LTD.

Battery packs related to product:

Agile X series (type no.'s B7-A234-4xxx/xxx2xxxx).

	Important note: This battery is built in in every Agile X type B7-A234-4xxx/xxx2xxxx and is not replaceable by customer!
Type number:	03-9921-0016 (internal)
SAP:	---
	(Battery for ATEX, IECEx Zone 2 and UL Division 2 certified Agile X series)
Technical data:	Lithium-Polymere Battery 7.4 V / 330 mAh / 2.442 Wh
Weight:	approx. 0.23 kg
Dimension:	60 x 60 x 4 up to 4.4 mm
UN 38.3 Test Report:	Passed
Proper Shipping Name:	Lithium Ion Batteries
Class:	9
UN Classification 3481:	Shipping of Lithium ion batteries: "contained in equipment"

Type number:	B7-A2Z0-0029 (external)
SAP:	374903
	(Battery for ATEX, IECEx Zone 2 and UL Division 2 certified Agile X series)
Technical data:	Lithium Polymere Battery 7.4 V / 10280 mAh / 76.07 Wh
Weight:	approx. 0.470 kg
Dimension:	153 x 123 x 17 mm
UN 38.3 Test Report:	Passed
Proper Shipping Name:	Lithium Ion Batteries
Class:	9
UN Classification 3480:	Shipping of Lithium ion batteries (limited to a maximum of 30% SoC) Shipping of single batteries without equipment.
UN Classification 3481:	Shipping of Lithium ion batteries: "packed with equipment" or "contained in equipment"

BARTEC GmbH

Max-Eyth-Straße 16
97980 Bad Mergentheim

District court: Ulm HRB 723429
Tax No.: 52001/09044
VAT No.: DE 262 57 03 04

Bank details
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Management Board
Dr. Martin Scheffer (CEO)
Gerhard Bickmann (CFO)
Dr. Jörg Dalhöfer (COO)
Xavier Hamer (CCO)

Declaration

Related to this declaration is following documentation:

- **B7-A2Z0-0029 (external)**
Jih Hong Technology Co., Ltd. / MATERIAL SAFETY DATA SHEET
Version 1.5 / JAN. 03rd, 2020 / for Model(s): BL101 (2S2P)
- **03-9921-0016 (internal)**
JHT Co., Ltd. MATERIAL SAFETY DATA SHEET
Version 1.2 / JAN. 05th, 2017 / for Model(s): UP130007 2S1P

Bad Mergentheim, July, 14th 2021

BARTEC GmbH

i. A. 

Sarah Springer

Product Manager Enterprise Mobility

B7-A2Z0-0029 (external)

Jhieh Hong Technology Co., Ltd.

MATERIAL SAFETY DATA SHEET

Version 1.5 / JAN. 03rd, 2020

for Model(s): BL101 (2S2P)

MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

MATERIAL SAFETY DATA SHEET

&

UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8) Independent Certificate

**Model(s):
BL101**

*Version 1.5
Jan. 3rd. 2020*

MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

Revision History

Version #	Date of Issued	Remarks	Issued by
1.4	2019.01.04	<i>IATA updated to comply with the standards requested in the 60th Edition of the IATA Dangerous Goods Regulations</i>	<i>Anny Lin</i>
1.5	2020.01.03	<i>IATA updated to comply with the standards requested in the 61th Edition of the IATA Dangerous Goods Regulations</i>	<i>Anny Lin</i>

Document Review Team

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MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

1. MANUFACTURER

Name of Company	<i>Jhih Hong Technology Co., Ltd.</i>
Address	6F, No.15, Wu Chuan Road, Wu-Ku Industrial Park , New Taipei City 248, Taiwan (R.O.C.)
Telephone number	+886-2-2298-9236
Facsimile number	+886-2-2290-1657

2. PRODUCT

Product Category	<i>Lithium ion rechargeable battery pack</i>
Model(s)	<i>BL101</i>
Capacity	<i>10280mAh</i>
Voltage	<i>7.4V</i>
Chemical System	<i>Lithium ion</i>

3. DANGEROUS GOODS CLASSIFICATION STATUS

The 61th edition of the IATA Dangerous Goods Regulations incorporates all amendments made by the IATA Dangerous Goods Board and includes addenda issued by ICAO to the 2019-2020 edition of the Technical Instructions. The following list is intended to assist the user to identify the main changes introduced in this edition and must not be considered an exhaustive listing. The changes have been prefaced by the section or subsection in which the change occurs.

A simple rule of thumb is that “Total Watt-Hour rating = Number of voltage x aggregate capacity in Ah”

For examples:

Models	Total Watt-Hour rating	Remarks
BL101	$(2 \times 3.7) \times 10.28 = 76.07 \text{ Wh}$	NOT DANGEROUS GOODS

MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

4. HAZARDOUS AND TOXICITY CLASS

Class Name	<i>Not applicable for regulated class</i>
Hazard	<i>It may cause heat generation or electrolyte leakage if battery terminals contact with other metal. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.</i>
Toxicity	<i>Vapor generated from burning batteries, may make eyes, skin and throat irritate.</i>

MATERIAL OR INGREDIENT	CAS No. / EC No.	Chemical GHS safety label	%/wt.
Graphite	CAS# 7782-42-5 EC#231-955-3	substance with a Community workplace exposure limit	7-25
Cobalt lithium dioxide	CAS# 12190-79-3 EC#235-362-0	Carc. 2, H351; Skin Sens. 1, H317	15-40
Lithium Hexafluorophosphate(1-)	CAS# 21324-40-3 EC#235-362-	Acute Tox. 3, H311; Skin Corr. 1B, H314; Acute Tox. 4, H30	0-5
Diethyl Carbonate	CAS#105-58-8 EC#203-311-1	Flam. Liq. 3, H226	0-15
Propylene Carbonate	CAS#108-32-7 EC#203-572-1	Eye Irrit. 2, H319	0-15
Ethylene Carbonate	CAS# 96-49-1 EC#202-510-0	Eye Irrit. 2, H319	0-15
1,3-propanesultone	CAS# 1120-71-4 EC# 214-317-9	Carc. 1B, H350; Acute Tox. 4, H302 Acute Tox. 4, H312	0-5
Copper	CAS#7440-50-8 EC#231-159-6	substance with a Community workplace exposure limit	10-12
Aluminum	CAS#7429-90-5 EC#231-072-3	substance with a Community workplace exposure limit	3-5
Nickel	CAS#7440-02-0 (Ni) EC#231-111-4	substance with a Community workplace exposure limit	0-1

5. FIRST AID MEASURES

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye Contact	Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Skin Contact	Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.
Inhalation	Content of an opened battery can cause respiratory irritation. Provide fresh air and get a medical treatment immediately.

6. FIRE FIGHTING MEASURES

Extinguishing Method	Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Fire Extinguishing Agent	Dry chemical, alcohol-resistant foam, carbon dioxide and plenty of water are effective.

7. MEASURES FOR ELECTROLYTE LEAKAGE FROM THE BATTERY PACK

Take up with absorbent cloth.
Move the battery away from the fire

8. HANDLING AND STORAGE

When packing the batteries, do not allow battery terminals to contact each other, or contact with other
metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Do not let water penetrate into packaging boxes during their storage and transportation.
The batteries will be stored at room temperature, charged to about 30~50% of capacity.
Do not store the batteries in places of the high temperature exceeding 35 degree C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
Please avoid storing the battery in the places where it is exposed to the static electricity. It may cause the protection circuit to be damaged.

9. EXPOSURE CONTROL

Acceptable Concentration	Not specified in ACGIH.
Facilities	Provide appropriate ventilation system such as local ventilator in the storage place.
Protective Clothing	Gas mask for organic gases, safety goggle, safety glove.

10. STABILITY AND REACTIVITY

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	Oral (rat) LD50>2g/kg (estimated)
Irritation	Irritating to eyes and skin.
Chronic Toxicity	Not specified

12. ECOLOGICAL INFORMATION

When properly used or disposed, this product do not present environmental hazard.

13. DISPOSAL CONSIDERATIONS (PRECAUTION FOR RECYCLING)

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government. Disposal of the worn-out battery may be subjected to Collection and Recycling Regulation.

**MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test
14. TRANSPORT INFORMATION**

The following are transportation requirements:

All lithium, lithium ion and lithium polymer cells and batteries must be tested in accordance with the “UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8) 2019.

The 61th edition of the IATA Dangerous Goods Regulations incorporates all amendments made by the IATA Dangerous Goods Board and includes addenda issued by ICAO to the 2019-2020 edition of the Technical Instructions. The following list is intended to assist the user to identify the main changes introduced in this edition and must not be considered an exhaustive listing. The changes have been prefaced by the section or subsection in which the change occurs.

UN3480, PACKING INSTRUCTION 965, Lithium Ion Batteries

UN3481, PACKING INSTRUCTION 966, Lithium Ion Batteries packed with equipment

UN3480, PACKING INSTRUCTION 967 Lithium Ion Batteries contained in equipment

Cells and batteries must be packed in inner packaging that completely encloses the cell or battery.

Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

Each consignment must be accompanied with a document such as an air waybill with an indication that:

- the package contains lithium ion cells or batteries;**
- the package must be handled with care, and that a flammability hazard exists if the package is damaged;**
- special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and**
- a telephone number for additional information.**

Each package must be labelled with a lithium battery handling label;

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

15. REGULATORY INFORMATION

The international regulations on air transportation of rechargeable Lithium Ion batteries (commercial and cargo) are governed mainly by the following regulations

<p>International Conventions</p>	<p><i>* Air - IATA (International Air Transport Association) Dangerous Goods Regulations (DGR) 61th Edition Effective January 2020.</i></p> <p><i>* Air - ICAO (International Civil Aviation Organization) Technical Instructions for the safe transport of dangerous goods by air.</i></p> <p><i>* Sea – IMDG (International Maritime Dangerous Goods) regulations</i></p> <p><i>* Land – ADR (road), RID (rail)</i></p> <p><i>United Nations “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, Subsection 38.3, (Tests T1-T8), November 1, 2006.</i></p> <p><i>United Nations “Recommendations on the Transport of Dangerous Goods, Model Regulations –Dec. 2006, Ref. ST/SG/AC.10/34/Add.1”</i></p> <p><i>United Nations “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria Dec. 2006 – Ref. ST/SG/AC.10/34/Add.2“</i></p>
	<p><i>* Code of Federal Regulations (49CFR Ch. 1 & 173 -185)</i></p> <p><i>Both IATA and ICAO Special Provision A88 and IMO Special Provision 188, are identical to the requirements of</i></p>

16. DISCLAIMER

The application of the regulations can vary according to the aviation company, therefore, highly recommends that you consult with the aviation company prior to transporting battery or cell. This information has been compiled from sources considered to be reliable and to the best of our knowledge, accurate and reliable. However, does not accept liability for any loss or damage that may occur, direct or indirect, from using this information.

17. IATA T1–T8 CERTIFICATE

According to the 61th Edition of the IATA Dangerous Goods Regulations effective January 2020, all lithium ion and/or lithium polymer cells and batteries must be tested in accordance with the “UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8 2020).

We, certified that the model(s) listed in this document comply with T1 to T8 test as required by the IATA.

Lithium Ion Polymer Rechargeable Cell/Battery Manufacturer:	Jhjh Hong Technology Co., Ltd.
Lithium Ion Polymer Rechargeable Cell/Battery Model(s):	BL101

No.	Test Items	Results
T1	Altitude Simulation – Stored batteries at a pressure of 11.6kPa or less for at least six hours at ambient temperature (20±5° C)	☼ Pass – no mass loss, no leakage, no venting, no disassembly, no rupture and no fire..
T2	Thermal Test – Stored batteries for at least six hours at a test temperature equal to 75±2° C, followed by storage for at least six hours at a test temperature equal to -40±2° C. The maximum time interval between test temperature extremes was 30 minutes. The procedure was repeated 10 times, after which all test batteries were stored for 24 hours at ambient temperature (20±5° C).	☼ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.
T3	Vibration – Batteries were firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration was a sinusoidal waveform with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15 minutes. This cycle was repeated 12 times for a total of 3 hours for each three mutually perpendicular mounting positions of cell. One of the directions of vibration was perpendicular to the terminal face.	☼ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.

MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

	<p>The logarithmic frequency sweep is as follows: from 7Hz a peak acceleration of 1g_r is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 8g_r occurs (approximately 50Hz). A peak acceleration of 8g_r is then maintained until the frequency is increased to 200Hz.</p>	
T4	<p>Shock – Batteries were secure to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each battery was subjected to a half-sine shock of peak acceleration of 150g_r and pulse duration of 6 milliseconds. Each battery were subjected to three shocks in the positive direction followed by three shocks in the negative direction of each of three mutually perpendicular mounting positions of the cell for a total of 18 shocks.</p>	<p>☼ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.</p>
T5	<p>External Short Circuit – Batteries tested were temperature stabilized so that its external case temperature reaches 55±2° C and then the battery was subjected to a short circuit condition with a total external resistance of less than 0.1ohm at 55±2° C. this short circuit condition is continued for at least one hour after the battery external case temperature has returned to 55±2° C. The battery must be observed for a further six hours for the test to be concluded.</p>	<p>☼ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.</p>
T6	<p>Impact (For cell only) – The test sample cell or component cell was placed on a flat surface. A 15.8mm diameter bar was placed across the centre of the sample. A 9.1kg mass was dropped from a height of 61±2.5cm onto the sample.</p>	<p>☼ Pass – external temperature does not exceed 170° C and there is no disassembly and no fire within six hours of the test</p>
T7	<p>Overcharge – the charge current was set at twice</p>	<p>☼ Pass – no disassembly and no</p>

MATERIAL SAFETY DATA SHEET (MSDS) 、 IATA T1 - T8 CERTIFICATE、 1.2M Drop Test

	<p>the manufacturer’s recommended maximum continuous charge current. The minimum voltage of the test was as follows:</p> <ul style="list-style-type: none"> - when the manufacturer’s recommended charge voltage is not more than 18V, the minimum voltage of the test shall; be the lesser of two times the maximum charge voltage of the battery or 22V. - when the manufacturer’s recommended charge voltage is more then 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage. 	<p>fire within seven days of the test.</p>
T8	<p>Forced Discharge (For cell only) – Each cell was forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.</p>	<p>☼ Pass - no disassembly and no fire within seven days of the test.</p>

18. 18. UN TRANSPORTATION MODEL REGULATION <PACKING>

No.	Test Item	Criteria	Result	Remark
P1	Drop Test	No damage which threatens safety during the transport in the layer outside the exterior container most.	Passed	Requirement of SP188 Height=1.2m
P2	Packing Weight	Packing must not exceed 10kg (gross weight)	Passed	Less than 10kg

03-9921-0016 (internal)

JHT Co., Ltd.

MATERIAL SAFETY DATA SHEET

Version 1.2 / JAN. 05th, 2017

for Model(s): UP130007 2S1P

MATERIAL SAFETY DATA SHEET

&

UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8) Independent Certificate

Model(s):

UP130007 2S1P

Version 1.2

JAN. 05th, 2017

Revision History

Version #	Date of Issued	Remarks	Issued by
1.2	2017.01.05	<i>IATA updated to comply with the standards requested in the 58th Edition of the IATA Dangerous Goods Regulations</i>	JOE

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1. MANUFACTURER

Name of Company	<i>1.1.1.1 Jhieh Hong Technology Co., Ltd.</i>
Address	<i>6F, No.15, Wu Chuan Road, Wu-Ku Industrial Park, New Taipei City 248, Taiwan (R.O.C.)</i>
Telephone number	<i>+886-2-2298-9236</i>
Facsimile number	<i>+886-2-2290-1657</i>

2. PRODUCT

Product Category	<i>2.1.1.1 Lithium ion rechargeable battery pack</i>
Model(s)	<i>UP130007 2S1P</i>
Capacity	<i>330mAh</i>
Voltage	<i>7.4V</i>
Chemical System	<i>Li-Polymer</i>

3. DANGEROUS GOODS CLASSIFICATION STATUS

The 58th edition of the IATA Dangerous Goods Regulations incorporates all amendments made by the ICAO Dangerous Goods Panel in developing the content of the 2017–2018 edition of the ICAO Technical Instructions as well as changes adopted by the IATA Dangerous Goods Board. The following list is intended to assist the user to identify the main changes introduced in this edition and must not be considered an exhaustive listing. The changes have been prefaced by the section or subsection in which the change occurs. A simple rule of thumb is that “Total Watt-Hour rating = Number of voltage x aggregate capacity in Ah”

For examples:

Models	Total Watt-Hour rating	Remarks
<i>UP130007 2S1P</i>	<i>7.4*0.33= 2.442Wh</i>	NOT DANGEROUS GOODS

4. HAZARDOUS AND TOXICITY CLASS

Class Name	4.1.1.1 Not applicable for regulated class
Hazard	<i>It may cause heat generation or electrolyte leakage if battery terminals contact with other metal. Electrolyte is flammable. In case of electrolyte leakage, move the battery from fire immediately.</i>
Toxicity	<i>Vapor generated from burning batteries, may make eyes, skin and throat irritate.</i>

5. FIRST AID MEASURES

The product contains organic electrolyte. In case of electrolyte leakage from the battery, actions described below are required.

Eye Contact	5.1.1.1 Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Skin Contact	<i>Wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin.</i>
Inhalation	<i>Content of an opened battery can cause respiratory irritation. Provide fresh air and get a medical treatment immediately.</i>

6. FIRE FIGHTING MEASURES

Extinguishing Method	<i>Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.</i>
Fire Extinguishing Agent	<i>Dry chemical, alcohol-resistant foam, carbon dioxide and plenty of water are effective.</i>

7. MEASURES FOR ELECTROLYTE LEAKAGE FROM THE BATTERY PACK

<i>Take up with absorbent cloth.</i>
<i>Move the battery away from the fire</i>

8. HANDLING AND STORAGE

When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.

Do not let water penetrate into packaging boxes during their storage and transportation.

The batteries will be stored at room temperature, charged to about 30~50% of capacity.

Do not store the batteries in places of the high temperature exceeding 35 degree C or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.

Please avoid storing the battery in the places where it is exposed to the static electricity. It may cause the protection circuit to be damaged.

9. EXPOSURE CONTROL

Acceptable Concentration	<i>Not specified in ACGIH.</i>
Facilities	<i>Provide appropriate ventilation system such as local ventilator in the storage place.</i>
Protective Clothing	<i>Gas mask for organic gases, safety goggle, safety glove.</i>

10. STABILITY AND REACTIVITY

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

11. TOXICOLOGICAL INFORMATION

Acute toxicity	<i>11.1.1.1 Oral (rat) LD50>2g/kg (estimated)</i>
Irritation	<i>Irritating to eyes and skin.</i>
Chronic Toxicity	<i>Not specified</i>

12. ECOLOGICAL INFORMATION

When properly used or disposed, this product do not present environmental hazard.

13. DISPOSAL CONSIDERATIONS (PRECAUTION FOR RECYCLING)

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government. Disposal of the worn-out battery may be subjected to Collection and Recycling Regulation.

14. TRANSPORT INFORMATION

The following are transportation requirements:

All lithium, lithium ion and lithium polymer cells and batteries must be tested in accordance with the “UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8) 2017.

The 58th edition of the IATA Dangerous Goods Regulations incorporates all amendments made by the ICAO Dangerous Goods Panel in developing the content of the 2017–2018 edition of the ICAO Technical Instructions as well as changes adopted by the IATA Dangerous Goods Board. The following list is intended to assist the user to identify the main changes introduced in this edition and must not be considered an exhaustive listing. The changes have been prefaced by the section or subsection in which the change occurs.

UN3480, PACKING INSTRUCTION 965, Lithium Ion Batteries

UN3481, PACKING INSTRUCTION 966, Lithium Ion Batteries packed with equipment

UN3480, PACKING INSTRUCTION 967 Lithium Ion Batteries contained in equipment

Cells and batteries must be packed in inner packaging that completely encloses the cell or battery.

Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.

Each consignment must be accompanied with a document such as an air waybill with an indication that:

- the package contains lithium ion cells or batteries;**
- the package must be handled with care, and that a flammability hazard exists if the package is damaged;**
- special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and**

- a telephone number for additional information.

Each package must be labelled with a lithium battery handling label;

Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.

15. REGULATORY INFORMATION

The international regulations on air transportation of rechargeable Lithium Ion batteries (commercial and cargo) are governed mainly by the following regulations

<p>International Conventions</p>	<p>* Air - IATA (International Air Transport Association) Dangerous Goods Regulations(DGR) 58th Edition Effective January 2017.</p> <p>* Air - ICAO (International Civil Aviation Organization) Technical Instructions for the safe transport of dangerous goods by air.</p> <p>* Sea – IMDG (International Maritime Dangerous Goods) regulations</p> <p>* Land – ADR (road), RID (rail)</p> <p>United Nations “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, Subsection 38.3, (Tests T1-T8), November 1, 2006.</p> <p>United Nations “Recommendations on the Transport of Dangerous Goods, Model Regulations –Dec. 2006, Ref. ST/SG/AC.10/34/Add.1”</p> <p>United Nations “Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria Dec. 2006 – Ref. ST/SG/AC.10/34/Add.2“</p>
<p>USA</p>	<p>* Code of Federal Regulations (49CFR Ch. 1 & 173 -185)</p> <p>Both IATA and ICAO Special Provision A88 and IMO Special Provision 188, are identical to the requirements of</p>

16. DISCLAIMER

The application of the regulations can vary according to the aviation company, therefore, highly recommends that you consult with the aviation company prior to transporting battery or cell. This information has been compiled from sources considered to be reliable and to the best of our knowledge, accurate and reliable. However, does not accept liability for any loss or damage that may occur, direct or indirect, from using this information.

17. IATA T1–T8 CERTIFICATE

According to the 58th Edition of the IATA Dangerous Goods Regulations effective January 2017, all lithium ion and/or lithium polymer cells and batteries must be tested in accordance with the “UN Manual of Tests and Criteria, Part III, Subsection 38.3 (Test T1-T8 2017).

We, certified that the model(s) listed in this document comply with T1 to T8 test as required by the IATA.

Lithium Ion Polymer Rechargeable Cell/Battery Manufacturer:	Jhieh Hong Technology Co., Ltd.
Lithium Ion Polymer Rechargeable Cell/Battery Model(s):	UP130007 2S1P

No.	Test Items	Results
T1	Altitude Simulation – Stored batteries at a pressure of 11.6kPa or less for at least six hours at ambient temperature (20±5°C)	<input checked="" type="checkbox"/> Pass – no mass loss, no leakage, no venting, no disassembly, no rupture and no fire..
T2	Thermal Test – Stored batteries for at least six hours at a test temperature equal to 75±2°C, followed by storage for at least six hours at a test temperature equal to -40±2°C. The maximum time interval between test temperature extremes was 30 minutes. The procedure was repeated 10 times, after which all test batteries were stored for 24 hours at ambient temperature (20±5°C).	<input checked="" type="checkbox"/> Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.
T3	Vibration – Batteries were firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration was a sinusoidal waveform with a logarithmic sweep between 7Hz and 200Hz and back to 7Hz traversed in 15 minutes. This cycle was repeated 12 times for a total of 3 hours for each three	<input checked="" type="checkbox"/> Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.

	<p><i>mutually perpendicular mounting positions of cell. One of the directions of vibration was perpendicular to the terminal face.</i></p> <p><i>The logarithmic frequency sweep is as follows: from 7Hz a peak acceleration of 1g_r is maintained until 18Hz is reached. The amplitude is then maintained at 0.8mm (1.6mm total excursion) and the frequency increased until a peak acceleration of 8g_r occurs (approximately 50Hz). A peak acceleration of 8g_r is then maintained until the frequency is increased to 200Hz.</i></p>	
T4	<p><i>Shock – Batteries were secure to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each battery was subjected to a half-sine shock of peak acceleration of 150g_r and pulse duration of 6 milliseconds. Each battery were subjected to three shocks in the positive direction followed by three shocks in the negative direction of each of three mutually perpendicular mounting positions of the cell for a total of 18 shocks.</i></p>	<p><i>☑ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.</i></p>
T5	<p><i>External Short Circuit – Batteries tested were temperature stabilized so that its external case temperature reaches 55±2°C and then the battery was subjected to a short circuit condition with a total external resistance of less than 0.1ohm at 55±2°C. this short circuit condition is continued for at least one hour after the battery external case temperature has returned to 55±2°C. The battery must be observed for a further six hours for the test to be concluded.</i></p>	<p><i>☑ Pass - no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.</i></p>
T6	<p><i>Impact (For cell only) – The test sample cell or</i></p>	<p><i>☑ Pass – external temperature</i></p>

	component cell was placed on a flat surface. A 15.8mm diameter bar was placed across the centre of the sample. A 9.1kg mass was dropped from a height of 61±2.5cm onto the sample.	does not exceed 170°C and there is no disassembly and no fire within six hours of the test
T7	Overcharge – the charge current was set at twice the manufacturer’s recommended maximum continuous charge current. The minimum voltage of the test was as follows: - when the manufacturer’s recommended charge voltage is not more than 18V, the minimum voltage of the test shall; be the lesser of two times the maximum charge voltage of the battery or 22V. - when the manufacturer’s recommended charge voltage is more then 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.	☑ Pass – no disassembly and no fire within seven days of the test.
T8	Forced Discharge (For cell only) – Each cell was forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer.	☑ Pass - no disassembly and no fire within seven days of the test.

18. UN TRANSPORTATION MODEL REGULATION <PACKING>

No.	Test Item	Criteria	Result	Remark
P1	Drop Test	No damage which threatens safety during the transport in the layer	Passed	Requirement of SP188



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 New Taipei City 248, Taiwan F +886 2 2290 1657
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		<i>outside the exterior container most.</i>		<i>Height=1.2m</i>
<i>P2</i>	<i>Packing Weight</i>	<i>Packing must not exceed 10kg (gross weight)</i>	<i>Passed</i>	<i>Less than 10kg</i>