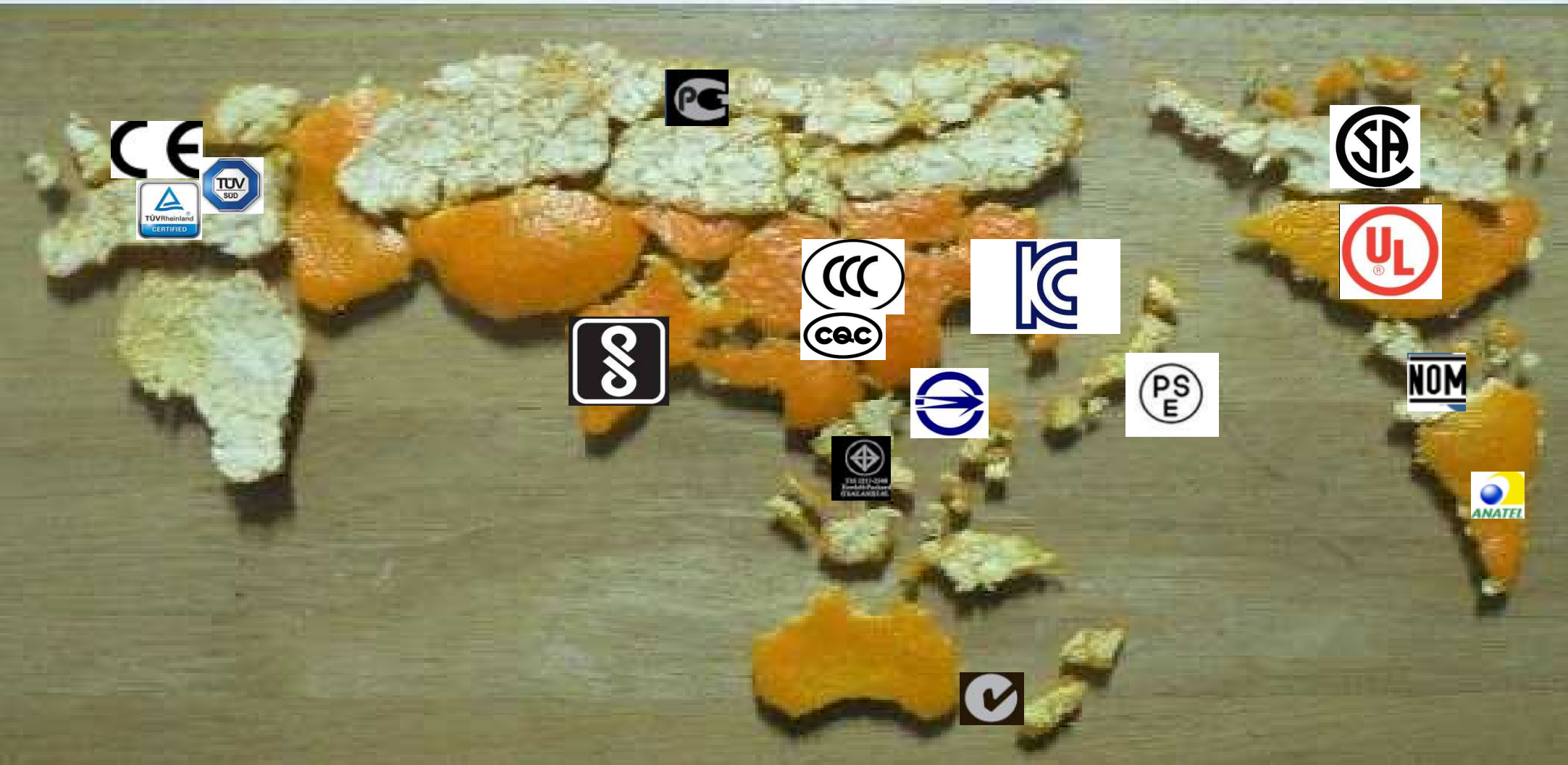


Small Battery Certification

2016. 10. 05
MJ Woo

Worldwide Certification Mark



Global Certification for Small Battery

Certification	Standard	Scope
UN (International)	UN 38.3	Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria for Lithium Batteries
UL (USA, Canada)	UL1642	Safety for Lithium Batteries
	UL2054	Safety for Household and Commercial Batteries
	UL60950-1	Safety for Information Technology Equipment
CB (International)	IEC 60950-1	Safety for Information Technology Equipment
	IEC 62133	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications
	IEC 61960	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications
CE (European Union)	EN 60950-1	Safety for Information Technology Equipment
	EN 62133	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications
	EN 55022,/55024	Testing the electromagnetic compatibility of batteries
IEEE (USA)	IEEE 1725	IEEE Standard for Rechargeable Batteries for Cellular Telephones
	IEEE 1625	Standard for Rechargeable Batteries for Multi-Cell Mobile Computing Devices
KC (Korea)	KC 62133	Safety requirements for portable lithium secondary cells, and for batteries made from them, for use in portable applications
PSE (Japan)	JIS 8712/8714	電気用品の技術上の基準を定める省令, 別表第九 リチウムイオン蓄電池 (리튬이온 전지의 전기 용품 기술 기준)
TISI (Thailand)	TIS 2217-2548	Thai Industrial Standard for Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications

Global Certification for Small Battery

Certification	Standard	Scope
BSMI (Taiwan)	CNS 15364 CNS 14875-2	Safety requirements for portable lithium secondary cells, and for batteries made from them, for use in portable applications
CQC (China)	GB 31241-2014	Lithium Ion Cells and Batteries used in Portable Electronic Equipment
BIS (India)	IS 16046:2015	Secondary cells and batteries for use in portable applications.
GOST-R (Russia)	GOST-R	Safety for Information Technology Equipment
INEN (Ecuador)	RTE INEN 115	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications

Air-Transportation Changes

➤ IATA Rule Changes (From 4/1 2016)

1) SOC 30% Limitation for air transportation

For lithium ion and lithium metal battery transportation by air, SOC of batteries shall not be exceeded than 30 percent of their rated capacity.

This rule is applied only for

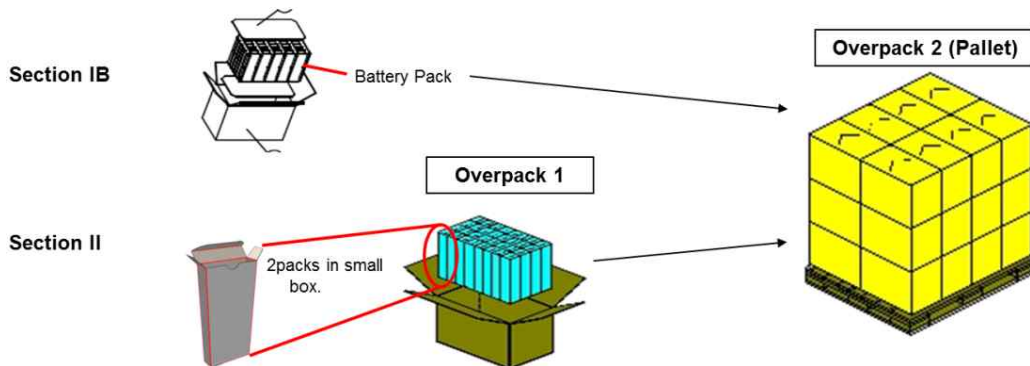
- UN3480 / PI965 Section IA/IB/II
- UN3090 / PI968 Section IA/IB/II

2) Prohibition of Overpack

Overpack is not permitted for packages of lithium ion batteries (UN3480) prepared according to Section II of PI965 and lithium metal batteries (UN3090) prepared according to Section II of PI968.

This rule is applied only for

- UN3480 / PI965 Section II (Not for Section IA/IB)
- UN3090 / PI968 Section II. (Not for Section IA/IB)



3) Prohibition of lithium ion battery transportation by passenger aircraft.

Lithium ion and battery transportation on passenger aircraft is prohibited. (Carriage on cargo aircraft)

All packages must bear the Cargo Aircraft Only label.



This rule is applied only for

- UN3480 / PI965 Section IA/IB/II

* Classification (UN number)

Lithium batteries are classified in Class 9 – Miscellaneous dangerous goods as:

- UN 3090, Lithium metal batteries; and
- UN 3480, Lithium ion batteries

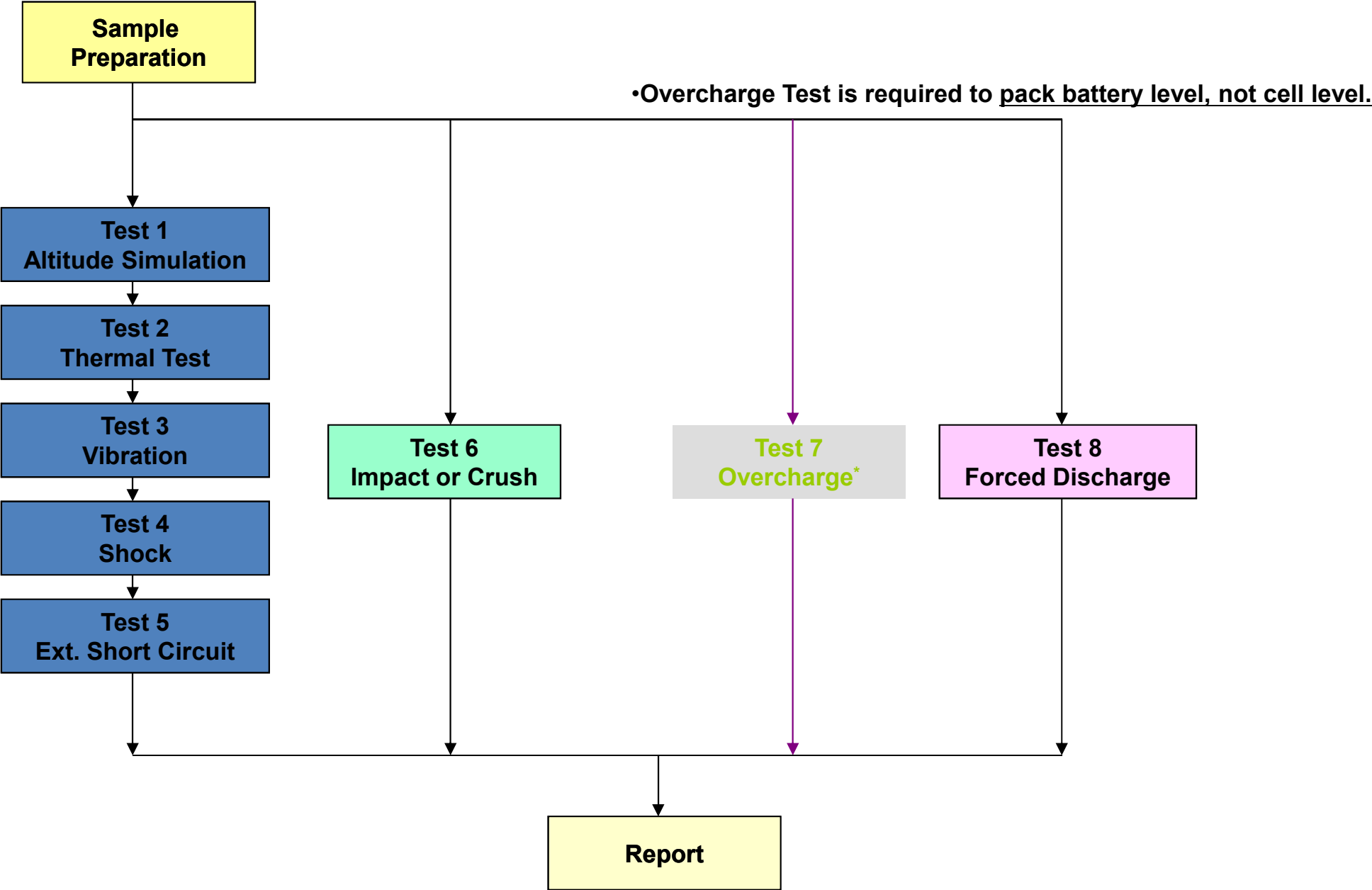
or, if inside a piece of equipment or packed separately with a piece of equipment as:

- UN 3091, Lithium metal batteries contained in equipment; or
- UN 3091, Lithium metal batteries packed with equipment; and
- UN 3481, Lithium ion batteries contained in equipment; or
- UN 3481, Lithium ion batteries packed with equipment

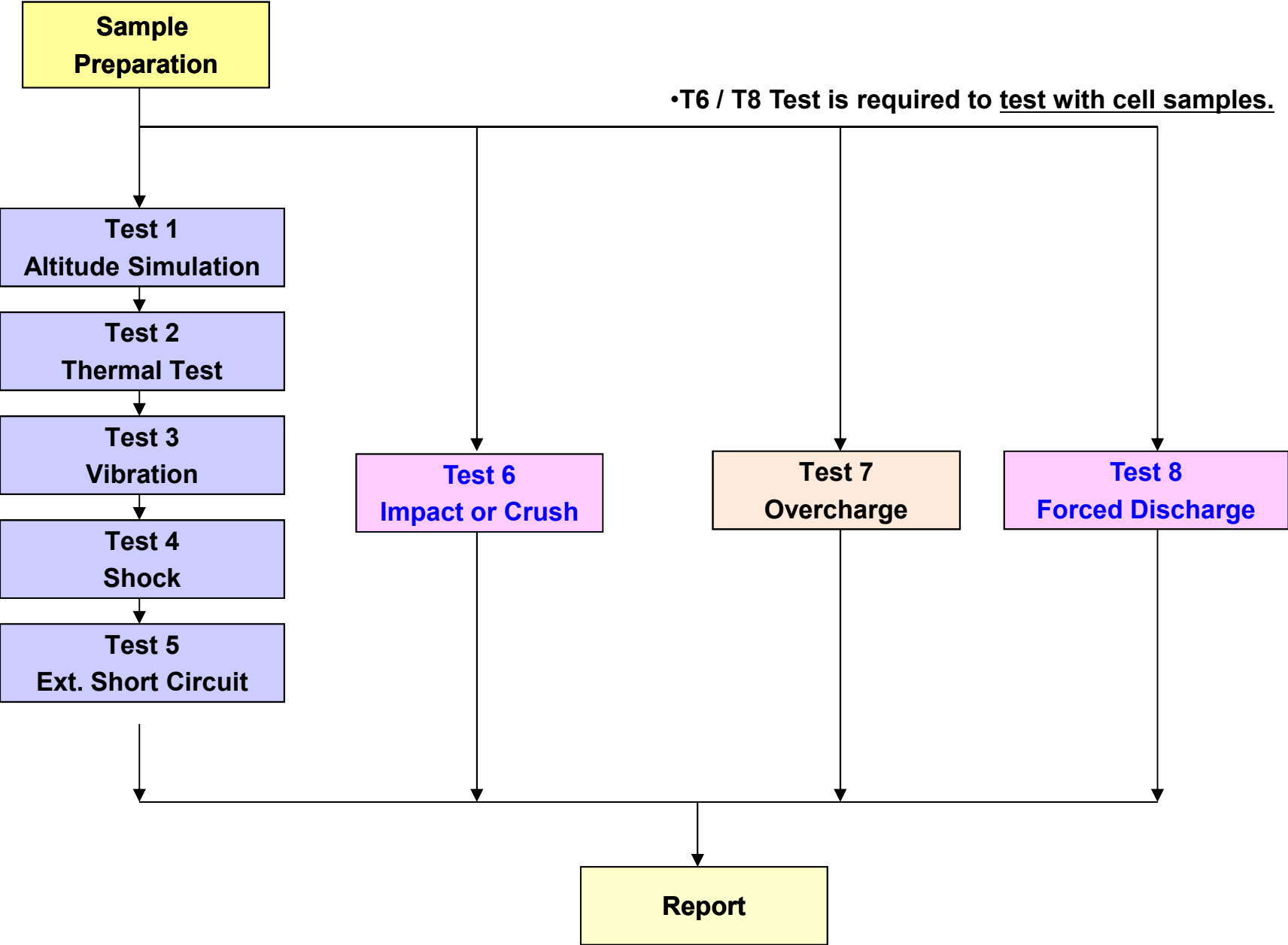
* Packing Instruction

- PI965 : Packed only Lithium ion batteries
- PI966 : Packed Lithium ion batteries with equipment
- PI967 : Packed Lithium ion batteries contained in equipment
- PI968 : Packed only Lithium metal batteries
- PI969 : Packed Lithium metal batteries with equipment
- PI970 : Packed Lithium metal batteries contained in equipment

UN38.3 Test Procedure - Cell



UN38.3 Test Procedure – Battery



IEC 62133 Test Items (Cell)

Test item	Test Condition	Criteria	Samples
Continuous low-rate charging	Discharged cell, for 7 days to a charge as specified by the manufacturer	NL, NF, NE	5
External short circuit	Fully charged cell @ Upper/Lower Limit Temp., $80 \pm 20 \text{m}\Omega$ @ 20°C Test for 24 hours, or Case temperature declines by 20% of the maximum temperature rise.	NF, NE	5 / temp
Free fall	Fully charged cell, 1m, concrete, random 3 times, Visual inspection after min. 1 hour	NF, NE	3
Thermal abuse	Fully charged cell @ Upper/Lower Limit Temp., a rate of $5^\circ\text{C}/\text{min}$, remain for 10min @ 130°C	NF, NE	5 / temp
Crushing of cells	Fully charged cell @ Upper/Lower Limit Temp., 13kN	NF, NE	5 / temp
Forced discharge	A discharged cell is subjected to a reverse charge at 1C for 90 min.	NF, NE	5
Forced internal Short	Fully charged cell @ Upper/Lower Limit Temp., Disassembly of charged cell & insertion of Ni particle to winding core Press the sample, 0.1mm/s, Press until Drop 50mV or 800N (for cylindrical), 400N (for Prismatic). When voltage drop caused, keep pressing for 30 sec @ Upper/Lower Limit Temp. The test shall be conducted from steps 1 to 5 until five samples prove to have undergone a voltage drop.	NF	5 / temp

IEC 62133 Test Items (Pack)

Test item	Test Condition	Criteria	Samples
Molded case stress at high ambient temperature	Fully charged pack, storage @ 70°C for 7h	No physical distortion of the battery case resulting in exposure of internal components.	3
External short circuit	Fully charged pack@ Upper/Lower Limit Temp., $80 \pm 20 \text{m}\Omega$ @ 55°C	NF, NE	5 / temp
Free fall	Fully charged cell, 1m, concrete, random 3 times, Visual inspection after min. 1 hour	NF, NE	3
Over-charging	Fully discharged pack, Charging 2C - using a supply voltage (not to exceed the maximum voltage supplied by the recommended charger – if value not available it shall be 5,0 V per cell),	NF, NE	5

New Certification (1/2)

1 IEC 62368-1 Annex M (Battery Requirements)

- 1) Standard : IEC 62368-1 Annex M
 - IEC 62368-1 is harmonized with IEC 60950-1 and IEC 60065
- 2) Published on : February, 2010
- 3) Effective Date : 2019 (TBD)
- 4) Scope : AV&ITE products (include Battery)
- 5) Remark : IEC 62133(Cell/Pack) is required to get IEC 62368-1.

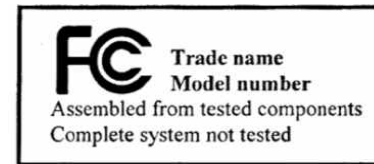
2 New Zealand

- 1) Standard : AS/NZS 4417, AS/NZS CISPR22:2009 A1:2010
- 2) Effective Date : February 29, 2016
- 3) Scope : Electrical and electronic equipment
- 4) Lead time : 4 weeks
- 5) RCM Mark (It should be higher than 6mm)



3 FCC (Federal Communication Commission) - USA

- 1) Standard : FCC part 15 subpart B
 - Compulsory Certification (FCC is checked in customs)
- 2) Scope : For home use power supply (Internal power supply in PC)
 - In case of selling the battery only
- 3) Label Requirement (If the label is too small, it can add in User Manual)



4 ICES - Canada

- 1) Standard : ICES-003
 - Compulsory Certification (ICES is checked in customs)
- 2) Scope : For home use power supply (Internal power supply in PC)
 - In case of selling the battery only
- 3) Label Requirement (If the label is too small, it can add in User Manual)
 - CAN ICES-3(B)/NMB-3(B)

New Certification (2/2)

5 Vietnam

- 1) Standard : QCVN 101:2016/BTTTT
 - QCVN is harmonized with IEC 61960 & IEC 62133
- 2) Published on : March 17th, 2016
- 3) Effective on : April 1st, 2017
- 4) Scope : Lithium Batteries for Portable Applications
 - Mobile phone, Tablet and Laptop

- 7) Label Requirement (refer to IEC 62133 & IEC 61960, Appendix 4)
 - "Secondary Li, Secondary Li-ion, Rechargeable Li, Rechargeable Li-ion" battery
 - IEC Designation
 - Polarity (can be skipped to mark in case of built-in type)
 - Manufacturer or Supplier
 - Rated Capacity (Fully discharged 0.2C till 5 hours at least)
 - Rated Voltage
 - Caution
 - ICT Mark (It should be higher than 6mm)



**NAME/CODE : License Holder
(Applicant or Importer)**

* Local Representative in Vietnam should submit the application.

** MIC : Ministry of Information and Communication