TUV Rheinland

Battery Testing Center Shenzhen

2014

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Category

1. Battery Testing Profile
2. Battery Testing Standard List
3. Safety Certification
4. Lab Qualification

Battery Testing Profile

- Battery Type

- **Primary Battery**
- **Rechargeable Battery**
  - Positive Material
    - Ni system
    - Li system
  - Application
    - Mobile Phone
    - Notebook
    - Electric Bike
    - Electric Vehicle
    - Solar Power Device

Battery Testing Profile

- Services

Safety Certification :

EMC:

Chemical:

RoHS, Battery Directive.

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2 Battery Testing Standard List

Battery Testing Standard List

- Battery for Portable Apparatus

EU	USA	Japan	China	Int.
EN 60086 EN 62133 EN 60623 EN 60896-21/22 EN 61056_1 EN 61427 EN 61951-1 EN 61951-2 EN 61960 EN61000-6-3 EN61000-6-1	UL 1642 UL 2054 IEEE 1625 IEEE 1725 ANSI C18.1M Part 2 ANSI C18.3M Part 2 FCC CFR Title 47 Part 15B	JIS C 8712 JIS C 8714	GB 8897.4 GB/T 18287 MT/T 1051 YD 1268.1	IEC 60086 IEC 62133

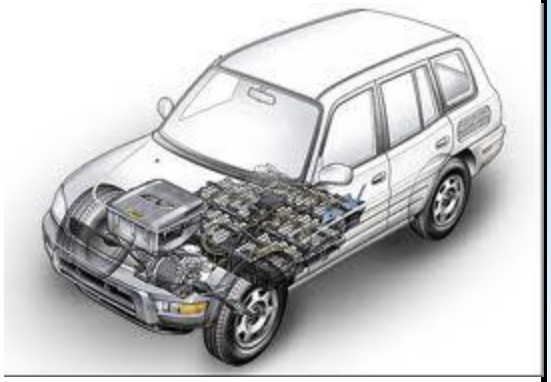
Battery Testing Standard List

- Battery for Electric Bicycle

EU	USA	Japan	China	Int.
EN 15194 (whole system) EN 61000-6-3 EN 61000-6-1	UL 2271 FCC CFR Title 47 Part 15B			BATSO 01 Second Edition

Battery Testing Standard List

- Battery for Electric Vehicle



EU	USA	Japan	China	Int.
Directive: LVD Mechanical	SAE J1766 SAE J2464 SAE J2288 UL 2580 FCC Rules	DENAN Law JEVS Standard	QC/T 743 GB/Z 18333.1 CCGF 213.6 QC/T 742	IEC 61982 IEC 62660 ISO 16750-4 ISO12405 (draft) FreedomCAR 42V Battery Test Manual

Battery Testing Standard List

- EMC requirements

Battery (electronic type) for generic use will be tested according to generic standards EN 61000-6-3 and EN 61000-6-1

Battery with specified design purpose (e.g. used for power tool only) will be tested according to generic standards plus product family (e.g. power tools) standards.

Audio/Video Devices	Household Appliances, Power Tools	ITE	Measurement Equipment	Lighting Equipment	Medical Devices
EN 55013 EN 55020	EN 55014-1 EN 55014-2	EN 55022 EN 55024	EN 61326-1	EN 55015 EN 61547	EN 60601-1-2

Battery Testing Standard List

- Lithium-ion Battery/Cell Transport and Package

UN 38.3	UN Code: UN3480 (transport Name: lithium-ion batteries)		UN code: UN3481 (transport Name: lithium-ion batteries packed with or contained in equipment)	
Law	**General Package instruction**	**Reference (special regulation for package)**	**General Package instruction**	**Reference (special regulation for package)**
UN DGL	P903	188;230;310;636	P903	188;230;636
IMDG-Code	P903	188;230;310;957	P903	188;230;957
ICAO TI	965	A88;A99;A154;A164	966;967	A88;A99;A154;A164
IATA- DGR	965	A88;A99;A154;A164	966;967	A88;A99;A154;A164
49 CFR*	185	29; 188; 189; 190; A54; A55; A100;	185	29;188;189;190;A54;A55;A104;
ADR	P903	188; 230; 310; 957	P903	188; 230; 310; 957

Battery Testing Standard List

- Lithium-ion Battery/Cell Transport and Package

Air-Transportation Requirements

- Endorsed by local civil aviation administration prior to air transport;
- One package not more than 12 single cell or 24 battery pack;
- Protection provision against short-circuit shall be provided on cell and pack;
- Each cell and pack should be placed within a sealed internal package, surrounding by non-flammable insulation material, before placed in external package。
- Pack or cell should be encased qualified external package, for instance, metal bucket, plastic bucket or veneer bucket , or metal box, plastic box or wooden box。
- For cargo aircraft transport, external package marking shall reflect cargo aircraft only。
- Reference material：MH/T 1020-2009; ICAO Doc 9284-AN/905, (ICAO TI); IATA DGR A88 special provision

Battery Testing Standard List

- Environment Protection

EU	USA	Japan	China	Other
Battery Directive ROHS REACH ========== http://www.epbaeurope.net	40 CFR 273 ordinary waste management law EPA Battery bill Resource recycle bill RCRA ========== Call2recycle INMETCO jrasnick@call2recycle.org.	Resource effectiveness and utility promotion law – Japan Economic Industry 2001 BAJ recycle symbol guideline (5th edition) 07-04 ========== 野村兴产株式会社	Electronics information product pollution control and management method ==========	Brazil No. 257 resolution year: 1999

Battery Testing Standard List

- Environment Protection

Hazardous Substance	Battery Directive		Brazil Resolution CONAMA 401 2008		Argentine
	Limit	Remark	Lead-Acid Battery	Other Battery	
Hg	5PPM	Button battery limit: 2%	50PPM	5PPM	5PPM
Cd	20PPM	Medical equipment, wireless, power tool and emergency lamp excluded	100PPM	20PPM	150PPM
Pb	40PPM		None		2000PPM
Disposal		Industrial Battery, EVB prohibited from burying or burning	prohibited from burying or burning		

3 Safety Certification

Safety Certification

- CB-Scheme

IECEE-CMC Resolution

IECEE-CMC/1224/RM 2011-07-15

DECISION 23/2011

DECISION 24/2011

IECEE-CMC 15/2010

15a)/2010

For battery used in products falling in the standards dealt with by TC 108, the resolution has been concluded in a meeting to be held in Istanbul in 2011 (IECEE-CMC/1145/INF)

15b)/2010

For products falling in the standards dealt with by TC 21, applicable to IEC 62133 test schedule.

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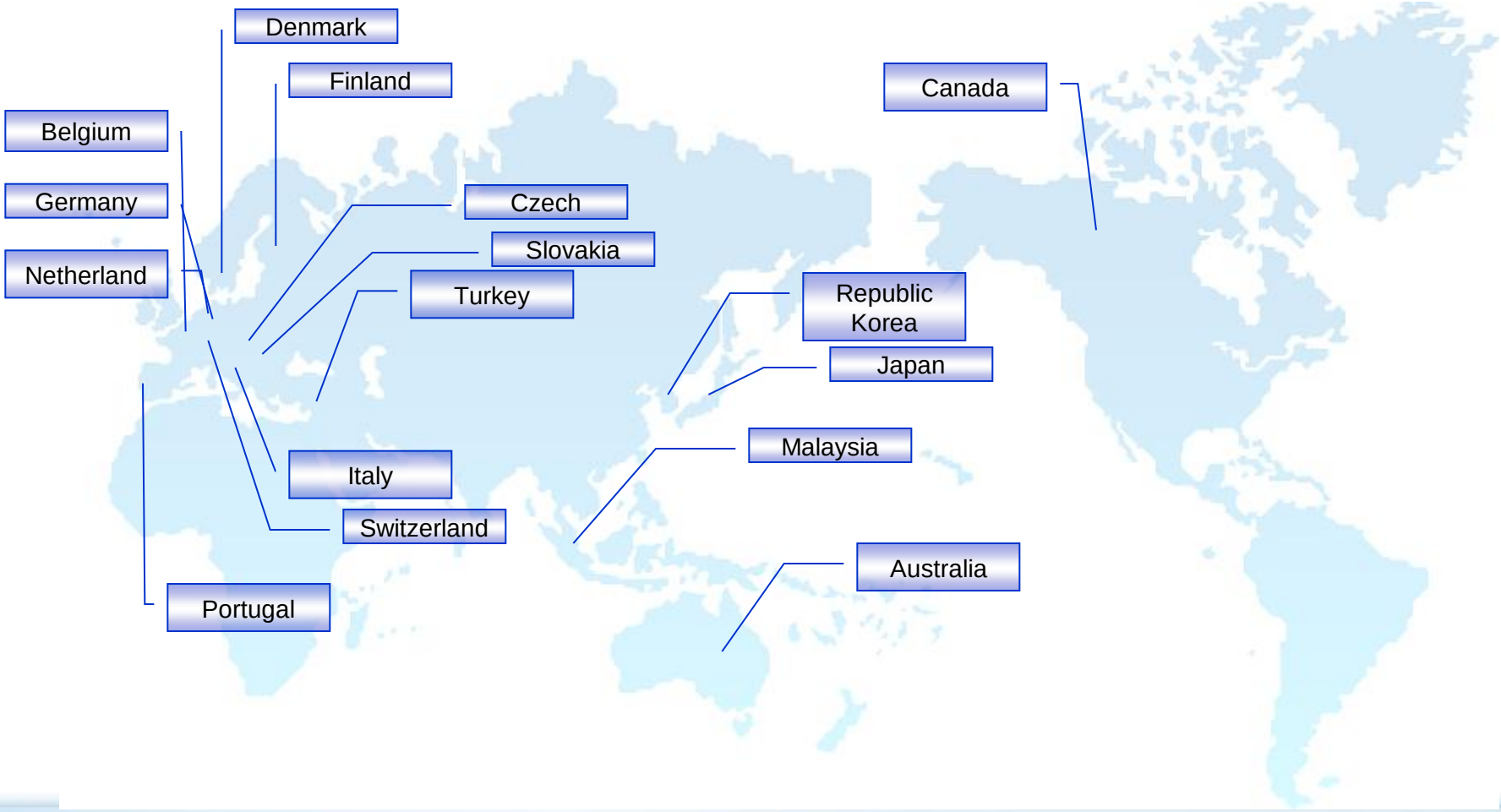
Safety Certification

- Nations Who Recognize IEC62133 CB



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Safety Certification

– EU

Type Approved
Safety
Regular Production
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General Product Safety Directive + EN 62133	RoHS
Battery Directive	EN 60950
EMC Directive	UN 38.3

Safety Certification

– Germany

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Scope

- Battery in independent spare part

Requirement

- Rechargeable battery and cell shall be tested to in compliance with DIN EN 62133，or equivalent evidence provided by third party；
- The type designation of the product to which the battery (note book) to be used；
- Battery pack and cell UN38.3 verification report shall provided

Safety Certification

- North America

Battery Directive	UN 38.3
FCC Rules, IC Standards	UL 1642, UL2054
UL 60950, IEEE 1725, IEEE 1625	UL2271, UL2580

Safety Certification

- Japan

Battery Energy Density

< 400 Wh/L

Lithium-Ion

> 400 Wh/L

PS E

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Ministerial Ordinance of MITI (1962:No.85)

1st Clause: Appendix 9

Safety Certification

- Japan

Law

- From 2007-11，DENAN Law Implements enforcement requirement for secondary lithium-ion battery
- Take effect on 2008-11-20

IEC 62133 Japan deviation

Clause	Item	Sample Size	Pack/Cell
4.3.2	Internal S-C	20	Cell
4.3.5	130℃ abuse	10	Cell
4.3.6	External S-C	10	Cell&Pack
4.101	Mandatory Internal S-C	10	Cell

Safety Certification

- Customs Union (CU)

Russia, Belarus and Kazakhstan

EMC Report

IEC 62133 CB

Safety Certification

- Korea

Law

ATS Notice 2008-1019,Lithium-ion battery has to be in compliance with KC certification since 2009-07-01

Applicable to 《Quality Management and Product Safety Law》 Clause 19, part 2, safety of secondary battery for portable equipment。

Test report provided by China's Lab is not acceptable (KTL)

Scope

Portable rechargeable lithium-ion cell with Energy density > 400Wh/L；

Lithium-ion battery pack

Lithium-ion battery in navigation device, no limit to energy density

Button cell, vehicle battery, or battery used in medical equipment excluded (desk-top or portable)

Safety Certification

- Brazil

Law

- 2007-09-10，N481 resolution, from 2008-02，mobile phone lithium-ion battery has to be certified
- Test has to be conducted at the accredited lab in Brazil. No exception condition
- No FI requirement

Scope

- Applicable to Lithium-ion battery together with mobile phone or separately sell

4 Lab Qualification

Lab Qualification

- Battery Lab

Accreditation/Authorization:

- IECEE CBTL
- DAkkS
- CNAS
- ZLS
- CTIA
- BATSO

Lab location:

- Shenzhen
- Taipei

Lab Qualification

- Battery Lab

Lab capacity:

Equipment	Capacity	Standards
Alititude Chamber	Max 600mmX600mmX600mm	UN38.3, IEC 62133, UL1641, BATSO,
Vibration Tester	350kG, Max 400mm 7 to 3000HZ Random 100ms, 10ms Sine, >90dB	UN38.3, IEC 62133, UL1642, BATSO,
Shock	Max 50kg, 50-6000m/s2, 30-1.5ms	UN38.3, IEC 62133, UL1642, BATSO,
Oven for Short Circuit	Max 80kg, Max 600mmX600mmX600mm,	UN38.3, IEC 62133, UL1642, BATSO,UL2054
Charger and Discharger	0~1000A, 0~600V	UN38.3, IEC 62133, UL1642, BATSO,UL2054, IEC62660-1, IEC62660-2
Tempertature cycling	Ramp speed 7 to 8 ℃/min, Range -60℃-150℃; battery weight < 160kg,	UN38.3, IEC 62133, UL1642, BATSO,
Crush Tester	15 to 150KN, Max Battery dimension < 600mm	IEC 62133, UL1642, BATSO,UL2054

Lab Qualification

- Battery Lab

Lab layout:

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Lab Qualification
- Battery Lab

Shenzhen Battery lab:

Shock Test

Temperature cycling Test

Lab Qualification
- Battery Lab

Shenzhen Battery lab:

Vibration Test

Lab Qualification
- Battery Lab

Shenzhen Battery lab:

Safety Lab

Sample Room

Lab Qualification

- Battery Lab

Shenzhen Battery lab:

Charger

Lab Qualification

- Safety Lab

Accreditation/Authorization:

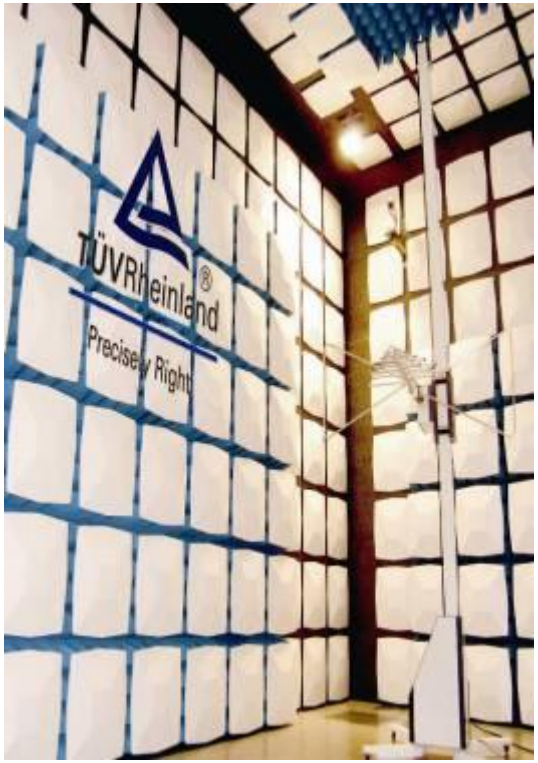
CBTL, DAkkS, CNAS, TAF, BSMI, Spring

Lab Location:

Taichung, Shenzhen, Hong Kong, Guangzhou, Ningbo, Shanghai, Qingdao, Beijing

Lab Qualification

- EMC Lab



Accreditation/Authorization :

DAkkS, CNAS, TAF, HOKLAS, CBTL, FCC/IC listed, FCC accredited, VCCI appointed

Lab Location:

Guangzhou, Shanghai, Hongkong, Taipei

Lab Qualification

- Chemical Lab



Accreditation/Authorization :

CBTL, DAkkS, CNAS, TAF, BSMI, Spring

Lab Location:

Taizhong, Shenzhen, Hongkong, Guangzhou, Ningbo, Shanghai, Qingdao, Beijing

Thank you !

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