

# TEST REPORT

**Product:** lithium battery

**Model No.:** S110, NM110LIT

**Applicant:** RAY-TECH INTERNATIONAL LIMITED

**Address:** 423, Overseas Students (Longgang)  
Pioneer Park, TengFei Road, LongCheng  
Street, LongGang, ShenZhen, China.  
518000

**Test Sort:** Consignment Test

Dongguan NTEK Testing service Co., Ltd.

# TEST REPORT

**Reference No.**..... : DGH210421005D  
**Applicant**..... : RAY-TECH INTERNATIONAL LIMITED  
**Address**..... : 423, Overseas Students (Longgang) Pioneer Park, TengFei Road,  
LongCheng Street, LongGang, ShenZhen, China. 518000  
**Manufacturer** ..... : RAY-TECH INTERNATIONAL LIMITED  
**Address**..... : 423, Overseas Students (Longgang) Pioneer Park, TengFei Road,  
LongCheng Street, LongGang, ShenZhen, China. 518000  
**Product Name**..... : lithium battery  
**Model No**..... : S110, NM110LIT  
**Brand**..... : LILEAD , Nordmax  
**Total pages**..... : 11 pages  
**Standards**..... : IEC60529:1989+A1:1999+A2:2013  
Degrees of protection provided by enclosures (IP code)  
**Test items**..... : IP67  
**Date of Receipt sample**..... : 2021-04-21  
**Date of Test**..... : 2021-04-21 to 2021-04-23  
**Date of Issue**..... : 2021-04-25  
**Test Result**..... : Pass

**\*Remarks:**

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory. The report would be invalid without specific stamp of test institute and the signatures of tester and approver.

**Prepared By:**

Dongguan NTEK Testing Service Co., Ltd.  
Address: Room101/401, Building 3, No.8, Keji 8th Road, Songshan Lake High-Tech Industrial  
Development Zone, Dongguan, Guangdong, China  
Testing location: The same as above  
Tel: +86-0769-23301618  
Fax: +86-0769-23301618

Compiled by:

Zhuoyang Wu

Zhuoyang wu / Project Engineer

Approved by:

Jeff Yang Manager Seal

**List of test items:**

No.	Test Items	Requirement + Test	Result
1	IP67	IEC60529:1989+A1:1999+A2:2013	Pass

**Test case verdicts:**

Test case does not apply to the test object: N (N/A)

Test item does meet the requirement: P (Pass)

Test item does not meet the requirement: F (Fail)

**Remark:**

Whether parts of tests for the product have been subcontracted to other labs:

Yes

No

If Yes, list the related test items and lab information:

Test items:

Lab information:

**Note:**

All models are identical, except for model name, tests were conducted on model S110 to represent other models.

IEC 60529:1989+A1:1999+A2:2013			
Clause	Requirement - Test	Result - Remark	Verdict
11	General requirements for tests		P
11.1	Atmospheric conditions for water or dust tests	25°C, 45%R.H., 1013mbar	P
11.2	Test samples		P
11.3	Application of test requirements and interpretation of test results		P
11.4	Combination of test conditions for the first characteristic numeral		P
11.5	Empty enclosures		N
12	Test for protection against access to hazardous parts indicated by the first characteristic numeral		P
12.1	Access probes		P
12.2	Test conditions		P
12.3	Acceptance conditions		P
12.3.1	For low-voltage equipment. (Rated voltage not exceeding 1000V a.c. and 1500V d.c.)		P
12.3.2	For high-voltage equipment (Rated voltage exceeding 1000V a.c. and 1500V d.c.)		N
12.3.3	For equipment with hazardous mechanical parts	No such parts	N
13	Test for protection against solid foreign objects indicated by the first characteristic numeral		P
13.1	Test means		P
	Test means and the main test conditions are given in table 7		P
13.2	Test conditions for first characteristic numerals 1, 2, 3, 4		N
13.3	Acceptance conditions for first characteristic numerals 1, 2, 3, 4		N
13.4	Dust test for first characteristic numerals 5 and 6	IP6X	P
13.5	Special conditions for first characteristic numeral 5		N
13.5.1	Test conditions for first characteristic numeral 5		N

IEC 60529:1989+A1:1999+A2:2013			
Clause	Requirement - Test	Result - Remark	Verdict
13.5.2	Acceptance conditions for first characteristic numeral 5		N
13.6	Special conditions for first characteristic numeral 6		P
13.6.1	Test conditions for first characteristic numeral 6		P
13.6.2	Acceptance conditions for first characteristic numeral 6		P
14	Test for protection against water indicated by the second characteristic numeral		P
14.1	The test means and the main test conditions are given in table III		P
14.2	Test conditions		P
	Test means and main test conditions are given in table III		P
	During the tests for IPX1 to IPX6 the water temperature should not differ by more than 5K from the temperature of the specimen under test		N
	For IPX7 details of the water temperature are given in 14.2.7	IPX7	P
	Test for second characteristic numeral 8,the test conditions are subject to agreement between manufacturer and user, but they shall be more severe than those prescribed in 14.2.7 and they shall take account of the condition than the enclosure will be continuously immersed in actual use		N
14.2.1	Test for second characteristic numeral 1 with the drip box		N
14.2.2	Test for second characteristic numeral 2 with the drip box		N
14.2.3	Test for second characteristic numeral 3 with oscillating tube or spray nozzle		N
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle		N
14.2.5	Test for second characteristic numeral 5 with the 6.3mm nozzle		N
14.2.6	Test for second characteristic numeral 6 with the 12.5mm nozzle		N

IEC 60529:1989+A1:1999+A2:2013			
Clause	Requirement - Test	Result - Remark	Verdict
14.2.7	Test for second characteristic numeral 7: temporary immersion between 0.15m and 1m	IPX7	P
	The test is made by completely immersing the enclosure in water in its service position as specified by the manufacturer so that the following conditions are satisfied		P
	a) the lowest point of enclosures with a height less than 850mm is located 1000mm below the surface of the water		P
	b) the highest point of enclosures with a height equal to or greater than 850mm is located 150mm below the surface of the water		N
	c) the duration of the test is 30min		P
	d) the water temperature does not differ from that of the equipment by more 5K		P
14.2.8	Test for second characteristic numeral 8: continuous immersion subject to agreement		N
14.3	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.8 the enclosure shall be inspected for ingress of water		P
	It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test		P
	In general, if any water has entered, it shall not:	No any water has entered	N
	–be sufficient to interfere with the correct operation of the equipment or impair safety		N
	–deposit on insulation parts where it could lead to tracking along the creepage distances		N
	–reach live parts or windings not designed to operated when wet		N
	–accumulate near the cable end or enter the cable if any		N
	If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment		N

IEC 60529:1989+A1:1999+A2:2013			
Clause	Requirement - Test	Result - Remark	Verdict
	For enclosure without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts	No drain-holes provided	N
15	Test for protection against access to hazardous parts indicated by the additional letter		N
15.1	Access probes	No additional letter	N
	The access probe are given in table 6		N
15.2	Test conditions		N
	The access probe is pushed against any openings of the enclosure with the force specified in table 6		N
15.3	Acceptance conditions		N
	Test for the additional letter B		N
	Test for the additional letter C and D		N

**After the test of IP67, following test was conducted**

<b>A.1</b>	<b>Insulation resistance test</b>	---
	<p>Test requirements: Immediately after the moisture treatment, the insulation resistance shall be measured with a d.c. voltage of approximately 500 V, 1 min after application of the unit having an insulating cover or envelope shall be wrapped with metal foil.</p> <p>Test result: Between input and enclosure: Max. <u>100</u> MΩ &gt; 4 MΩ</p>	N
<b>A.2</b>	<b>Electric strength test</b>	N
	<p>Test requirement: Immediately after the test of A.1, the insulation is subjected for 1 min to a voltage of substantially sine-wave form at rated frequency. The value of the test voltage and the points of application are as following</p> <p>Test result: Between input and enclosure: 500 VDC There is no flashover or breakdown occurred.</p>	N





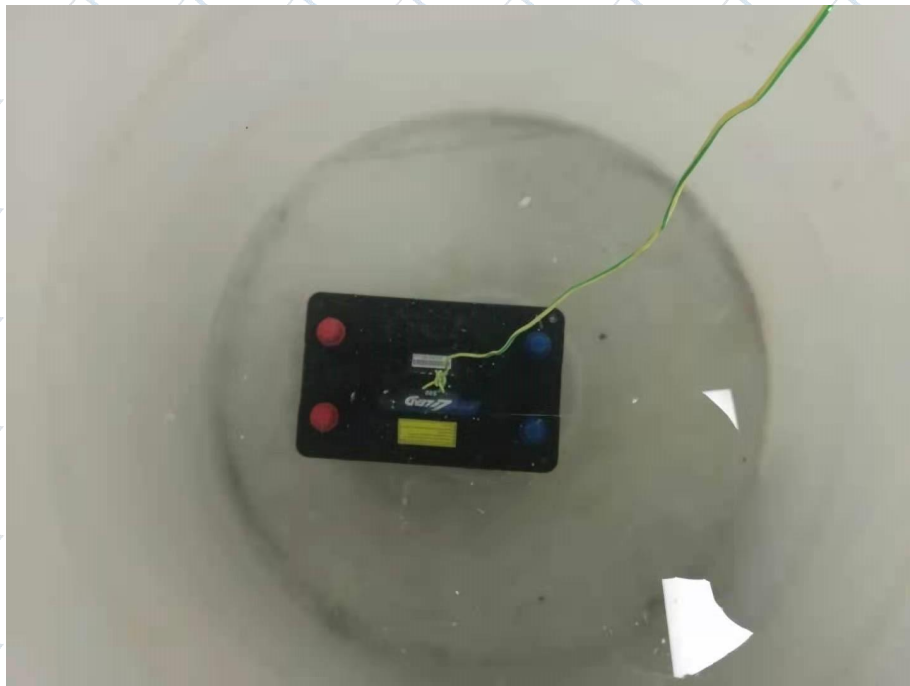


Photo 3 -- Waterproof testing



Photo 4 -- After test



Photo 5 -- After test

==== End of Test Report ====

## STATEMENT

1. Any objections must be raised to NTEK within 15 days since the date when the report is received.
2. The test results in the report only apply to the tested sample.
3. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver.
4. This inspection report is invalid without "special seal for testing".
5. It should not be reproduced except in full, without the written approval of our laboratory. The copy approved for reproduction shall be sealed and confirmed.
6. The "\*" in the inspection item is the subcontract inspection item.
7. The remaining samples must be retrieve within three months after receiving the inspection report. If they are not retrieved after the deadline, our company will handle them by itself.

Company Name: Dongguan NTEK Testing service Co., Ltd.

Address: Room101/401, Building 3, No.8, Keji 8th Road, Songshan Lake High-Tech Industrial Development Zone, Dongguan, Guangdong, China

Postal Code: 523080

Tel: (86)-0769-2330 1618

Fax: (86)-0769-2330 1618

Website: <http://www.ntek-test.org.cn>

Dongguan NTEK Testing service Co., Ltd.

+86-0769-2330 1618 <http://www.ntek-test.org.cn>