

 宁波梦婷户外用品有限公司	编号.	MT/QJ04-32-2021
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防水测试(IPX4)	版本	A/0
	制定日期	30/6/2021
制定部门: 品质部		

- Test Name:** Water Resistant (IPX 4)
测试名称: 防水试验 (IPX4)
- Former Standard Test Number:** N/A
对应的旧版本标准测试编号: 不适用
- Test Category:** Claims Performance
测试类别: 宣称的性能
- Feature Tested:** Resistance to water for lights that have weatherproof, weather resistant, or water resistant claims
测试特点: 宣称設有防水/抗水功能的灯
- Test Intent:** Evaluate for protection from damage in normal use conditions which simulate the light is used in outdoor with exposure to water (splash and rain)
测试目的: 评估产品在模拟用户正常户外使用接触到水(洒水或雨淋)的情况下的防护而不被损坏.
- Regulatory Reference or Standard:** IEC60529 section 14.2.4 – IPX4 , ANSI FL-1 2.7.3.1
参考条列或标准: IEC60529 章节 14. 2. 4 - IPX4 , ANSI FL-1 2. 7. 3. 1.
- Sample Plan:** 取樣品計劃

Product Class 产品级别	Prove In Sample Size 新灯导入确认样板数	Surveillance 品质监察	
		Sample Size 样板数	Frequency 频次
OPP 低价值	5	5	NA
Core 核心	5	5	12-18 months 月
Performance 专业	5	5	6-12 months 月

- Prove In testing:** Conducted on engineering samples, pilot production, or mass production. For lights that use multiple battery requirements, performance & Water Resistant testing must be conducted with all intended battery configurations.
证明测试: 在工程样品、试生产或批量生产中进行。对于可使用多种电池的灯全, 产品需装配各种不同电池下进行性能及防水测试。
- Surveillance testing:** Conducted on random samples from mass production.
监察测试: 从批量生产中随机抽取样板。

8. Quality Requirement: 品质要求:

Product Class 产品级别	Parameter 参数	Acceptance Criteria 接受规则
OPP 低价值	Duration is 10 minutes 持续时间 10 分钟.	<u>Primary</u> <ul style="list-style-type: none"> All test samples shall function normally after the test and 30 mins after the test. 所有测试样板测试后及测试后 30 分钟必须功能正常. Water ingress is allowed as long as the above conditions are met. (For ANSI standard, if there is drop requirement, all test samples must pass the drop test before doing the water resistant test) 只要满足上述条件, 产品允许有入水. (对于 ANSI 标准, 如果产品有跌落测试要求, 则所有测试样板在做防水试验前必须先通过跌落试验.) 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. 如果外壳带有排水孔, 需要检验证明进入的水没有累积并且水可以在不损坏设备的情况下排走. <u>Secondary</u> <ul style="list-style-type: none"> Quantity of water ingress to be measured after 30 minutes (for reference only) 30 分钟后测量入水量 (仅供参考).
Core 核心		
Performance 专业		

9. Quality Standard Test Procedure: (Prove in and surveillance)

品质标准及测试程序 (新灯导入验证及品质监察)

- Ensure IPX4 tester is calibrated
确认 IPX4 测试座已校正
- Place batteries into the light (Refer to Quality Standard for battery types)
装电池入灯(电池类型参考品质标准)
- Place the product on the stage of the IPX4 tester. Place the light in the orientation most commonly used by the users.
将产品装上 IPX4 测试台, 将灯按用户最常用的方向放置
- Press the "RED" button to connect the power , and the "green" button with mentioned IP4 to start the test
按红色按钮已接通电源, 接着按绿色按钮启动 IP4 测试。
- Continue test for 10 minutes (The test can then be automatically stopped at 10 minutes)
连续测试 10 分钟 (10 分钟后仪器会自动停止)
- Take out the light and check function ability of the light first, then check any water enters immediately.
将灯取出后立即检查入水状况及功能。
- After 30 minutes, check if the light is still functionable even if water ingresses to the light.
30 分钟后再检查灯的功能是否正常 (尽管产品已入水)
- Measure the ingress water quantity (for reference).
量度进水量(作参考用)

9. Record the results.

记录结果

10. Ultimate Point Test Procedure: N/A

极限点测试: 不适用.

11. Tested With Batteries Installed: Yes

带电池安装测试: 是

12. Calculation:

Total water flow rate q_v under IPX3 and IPX4 test conditions -

Mean flow rate per hole $q_{vI} = 0.07$ l/min

总水流量 q_v 在 IPX3 和 IPX4 的测试条件 - 每孔平均水流速度 $q_{vI} = 0.07$ 升/分钟

Tube radius 管半径 R mm	Degree IPX3		Degree IPX4	
	Number of open holes 开孔数 N ¹⁾	Total water flow 总水流量 q_v l/min	Number of open holes 开孔数 N ¹⁾	Total water flow 总 水流量 q_v l/min
200	8	0,56	12	0,84
400	16	1,1	25	1,8
600	25	1,8	37	2,6
800	33	2,3	50	3,5
1 000	41	2,9	62	4,3
1 200	50	3,5	75	5,3
1 400	58	4,1	87	6,1
1 600	67	4,7	100	7,0

¹⁾ Depending on the actual arrangement of the hole centres at the specified distance, the number of open holes N may be increased by 1. 按规定距离布置开孔, 实际开孔数量 N 可以增加1个.

13. Equipment required: 所需仪器

- IPX4 Tester IPX4 测试设备



14. Reference: N/A

参考文件: 不适用.

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