TEST REPORT

For

Tablet

Model/Spec.: RT3

Report No.: WT226400852

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection
Site Location	:	Songshanhu Lab, No.7 of Industrial North Road, Songshan Lake Hi-Tech Industrial Zone, Dongguan, Guangdong.
Tel	:	0086-769-23324610
Fax	:	0086-769-23324601
Web	:	www.smq.com.cn

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Complaint hotline：400-900-8999 按 5
Email：complaint@smq.com.cn

Test Report Declaration

Applicant	:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD
Address	:	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No.20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen
Manufacturer	:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD
Address	:	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No.20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen
Factory	:	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD
Address	:	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No.20, Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen
Specimen	:	Tablet
Trade mark	:	OUKITEL
Model/Spec.	:	RT3
Specimen quantity	:	1 pc
Serial/Specimen No.	:	N/A
Manufactured date	:	Nov.03,2022
Specimen source	:	Submitted by applicant
Received date	:	Nov.04,2022
Processed date	:	Nov.07,2022
Test criteria	:	MIL-STD-810H:2019
Acceptance criteria	:	Same as test criteria

Tested by:	Zhu Zhi Yong	Date:	Nov.11,2022
Checked by:	You Shui Fu	Date:	Nov.11,2022
Approved by:	Chen Xiang Yu	Date:	Nov.11,2022

TABLE OF CONTENTS

1 TEST SUMMARY

Table 1 Test overview

Test Items	Specimen status	Serial/Specimen No.	Test conclusion	Processed date
Low pressure (Altitude) test	Unpackaged, operating	N/A	Pass	Nov.07, 2022

2 AMBIENT CONDITION

Temperature: (25~27)℃

Relative Humidity: (52~54)%

Atmospheric Pressure: (101~102)kPa

3 INITIAL CHECK

Before the test, the specimen exhibited no mechanical damage or functional failure.

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4 LOW PRESSURE(ALTITUDE)TEST

4.1 Test Requirement

Test criteria: Refer to MIL-STD-810H:2019 method 500.6, procedure II

Specimen status: Unpackaged, operating

Altitude:15000ft

Air pressure:57.2kPa

Pressure tolerance: ±5%

Rate of pressure change: ≤10m/s

Test temperature:(25±2)℃

Test duration: 4h

Recovery duration: 2h

4.2 Acceptance Criteria

During the test, the specimen should exhibit no functional failure.

After the test, the specimen should exhibit no appearance damage or functional failure.

4.3 Test Result

During the test, the specimen exhibited no functional failure.

After the test, the specimen exhibited no appearance damage or functional failure.

4.4 Test Conclusion

Pass

4.5 Photo and Profile

	
No.4-1 Inspection before test	No.4-2 Low pressure (Altitude) test specimen setting
	N/A
No.4-3 Inspection after test	

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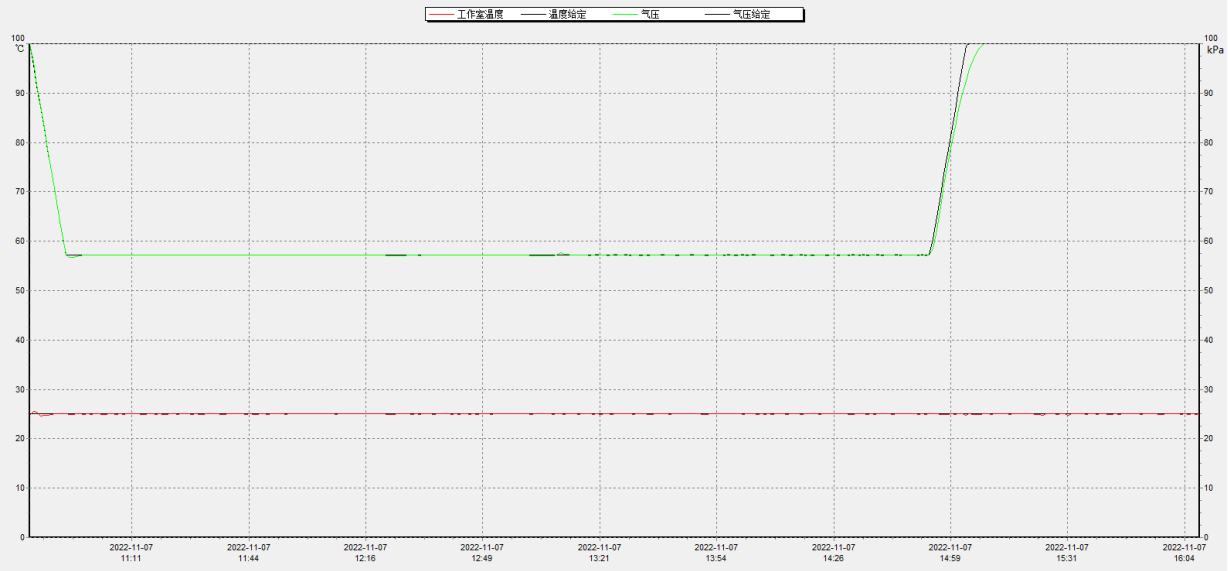

No.4-4 Low pressure (Altitude) test profile

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APPENDIX A EQUIPMENT USED FOR TEST

Table 2 Test equipment used

No.	Equipment	Equipment ID	Type	Manufacturer	Due date
1	Low air pressure chamber	SB19210	QDS62	Yin He	Jan.06,2023

(The end)

TEST REPORT

Report No. :BJ-R221121101A-EN

Test Item :IPX9K Test

Client :SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD

Address :202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Kukeng Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen

ShenZhen BestJ Testing Technologies Co., Ltd

Inspected Engineer: Liu YueHui Date: Nov.23,2022

Reviewed Engineer: Luo Ningsheng Date: Nov.23,2022

Authorized Signatory: ZhangJianBiao Date: Nov.23,2022

1/F, Fengze Building B, The Second Industrial Park of Huafeng, Nanchang Road, Hangcheng Street, Baoan District,Shenzhen
www.bestj.cn Hot-line：400-6688-794 Email:cs@bestj.cn Fax:0755-27857169

Content

1.SAMPLE INFORMATION

Sample Name	Tablet
Sample Mode	RT3
Sample No.	BJ-R221121101A-1#
Sample Size	/
Weight Of Sample	/
Sample Quantity	1 PC
Manufacturer	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO.,LTD
Address	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Kukeng Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen
Sample Source	Commissioned units send sample
Inspection Type	Commissioning test
Sample Description	Sample appearance is good

2.TEST INFORMATION

Test Items	Received Date	Date Of Test(s)
IPX9K Test	Nov.21,2022	Nov.22,2022

3.TEST RESULTS

Test Items	Test Results
IPX9K Test	After test, there was no water enter the enclosure of sample, and the function was normal.

4.IPX9K Test

4.1 Reference Standard

Test according to ISO 20653-2013 Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access

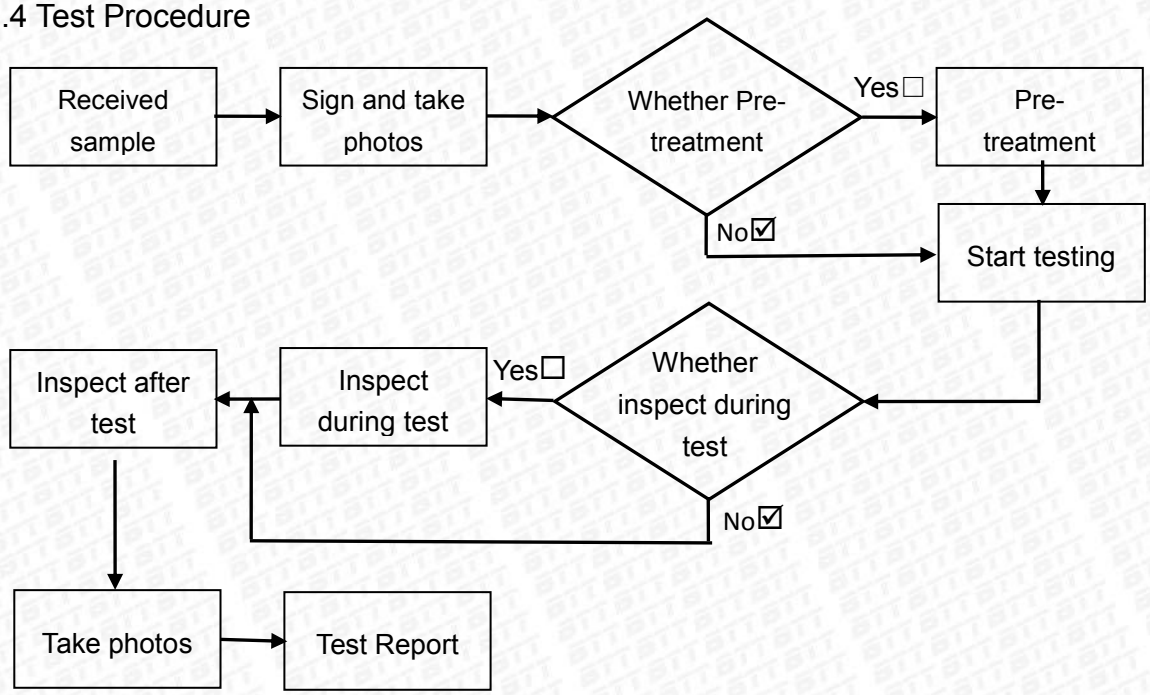
4.2 Laboratory Environment

Ambient temperature:25±3℃ Relative humidity:55±20%RH

4.3 Test Equipment

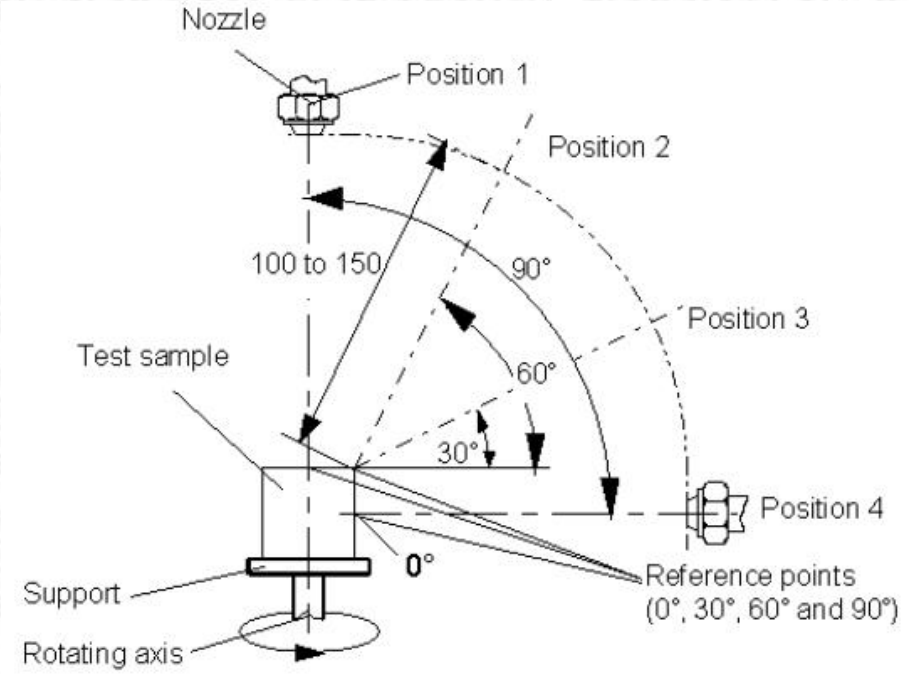
Test Equipment	Equipment Model	Calibration Date
Hi-Temp&Hi-Pressure Water Injection Test Chamber	TL-IPX9K-1000	Apr. 19,2022

4.4 Test Procedure



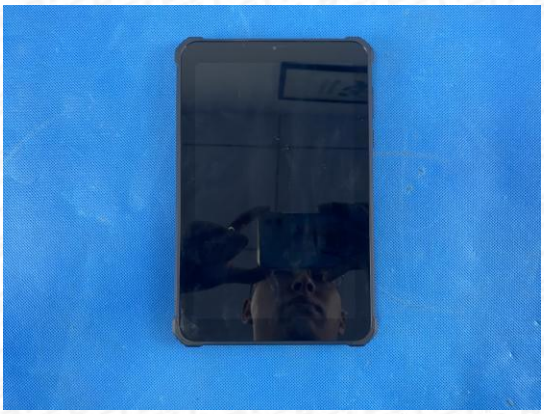
4.5 Test Conditions

Water temperature	80±5℃
pressure	（8000~10000）kPa
Water flow	14~16L/min
distance	10~15cm
Angle and time	0°、30°、60°、90° 30 seconds per angle



4.6 Test Photos

Before test



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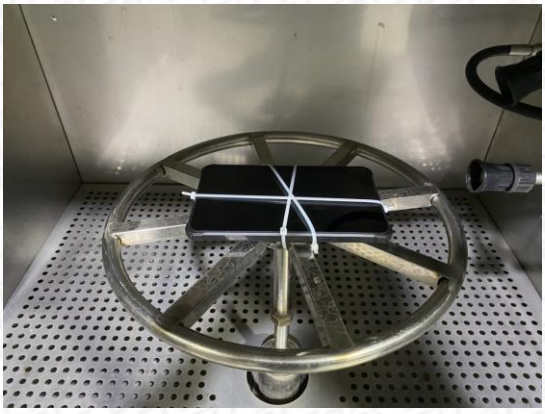
Test setup



After test

1/F, Fengze Building B, The Second Industrial Park of Huafeng, Nanchang Road, Hangcheng Street, Baoan District,Shenzhen
www.bestj.cn Hot-line：400-6688-794 Email:cs@bestj.cn Fax:0755-27857169

报 告 说 明

1.检测地点：
Place for the testing:

深圳市宝安区航城街道南昌路华丰工业园 B 栋一楼。
1/F, Fengze Building B, The Second Industrial Park of Huafeng, Nanchang Road, Hangcheng Street, Baoan District, Shenzhen.

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All expired samples which exceed standard time limited will not be remained, unless clients have special declaration with payment.

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All of the testing record would be kept for three years unless the customer declares and pays administration fee in advance.

报告结束 End of report

TEST REPORT
IEC/EN 60529
Degrees of protection provided by enclosures (IP code)

Report Number..... :	JYTSZ-R09-2200445
Date of issue..... :	Nov. 28, 2022
Total number of pages..... :	21
Applicant's name ..... :	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD
Address..... :	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Kukeng Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, China
Test specification:	
Standard ..... :	IEC 60529: 1989 + AMD1: 1999 + AMD2: 2013 EN 60529: 1992 + A2:2013
Test procedure..... :	Test Report
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60529B
Test Report Form(s) Originator ..... :	JYTSZ
Master TRF..... :	Dated 2022-02-15

General disclaimer:

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 by Jianyan Testing Group Shenzhen Co., Ltd.

The authenticity of this Test Report and its contents can be verified by Jianyan Testing Group Shenzhen Co., Ltd., responsible for this Test Report.

Test item description..... :	Tablet
Trade Mark ..... :	N/A
Manufacturer..... :	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD
Address..... :	202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Kukeng Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, China
Model/Type reference..... :	RT3
Ratings..... :	IP68

Testing procedure and testing location:	
Testing Laboratory..... :	Jianyan Testing Group Shenzhen Co., Ltd.
Testing location/ address..... :	No. 101, Building 8, Innovation Wisdom Port, No. 155hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.
Prepare by (name + signature) ..... :	Seul Wu
Reviewed by (name + signature) .. :	Joy Yi
Approved by (name + signature) ... :	Daniel Li

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
The submitted samples were tested and found to comply with the requirements of: - IEC 60529: 1989 + AMD1: 1999 + AMD2: 2013 - EN 60529: 1992 + A2:2013	Jianyan Testing Group Shenzhen Co., Ltd. No. 101, Building 8, Innovation Wisdom Port, No. 155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Summary of compliance with National Differences

List of countries addressed: National Differences and Group Differences.

☒ The product fulfils the requirements of EN 60529: 1992 + A2:2013.

Copy of marking plate: N/A

Test item particulars..... :	
Classification of installation and use..... :	IP68
Supply Connection..... :	☐ EUT with cable and plug ☒ EUT without cable and plug
Possible test case verdicts..... :	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	Nov.16, 2022
Date (s) of performance of tests..... :	Nov.21, 2022 to Nov.23, 2022

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Name and address of factory (ies)..... :	SHENZHEN YUNJI INTELLIGENT TECHNOLOGY CO., LTD 202, Building A2, Silicon Valley Power Intelligent Terminal Industrial Park, No. 20, Kukeng Dafu Industrial Zone, Kukeng Community, Guanlan Street, Longhua District, Shenzhen, China

General product information:

All the testing were carried out as applicable.

This report covers IP68 degree related tests to evaluate water and dust: results passed;

Picture of the product:

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
10	**Marking**		—
	The requirements for marking shall be specified in the relevant product standard.	IP68	P
	Where appropriate, such a standard should also specify the method of marking which is to be used when:		P
	one part of an enclosure has a different degree of protection to that of another part of the same enclosure		P
	the mounting position has an influence on the degree of protection		P
	the maximum immersion depth and time are indicated		N/A

11	**General requirements for tests**		—
11.1	**Atmospheric conditions for water or dust tests**		—
	Unless otherwise specified in the relevant product standard, the tests should be carried out under the standard atmospheric conditions described in IEC 60068-1.		P
	The recommended atmospheric conditions during the tests are as follows:		—
	Temperature range: 15 to 35°C Relative humidity: 25 to 75% Air pressure: 86 to 106 kPa (860 to 1060 mbar)		P
11.2	**Test samples**		P
	The tests specified in this standard are type tests.		P
	Unless otherwise specified in a relevant product standard, the test samples for each test shall be in a clean and new condition, with all parts in place and mounted in the manner stated by the manufacturer.		P
	If it is impracticable to test the complete equipment, representative parts or smaller equipment having the same full-scale design details shall be tested		N/A
	The relevant product standard shall specify details such as:		P
	the number of samples to be tested;		P
	the conditions for mounting, assembling and positioning of the samples, for example by the use of an artificial surface (ceiling, floor or wall);		P
	the pre-conditioning, if any, which is to be used;		P
	whether to be tested energized or not;		N/A

IEC 60529				
Clause	Requirement + Test		Result - Remark	Verdict
	whether to be tested with its parts in motion or not.			N/A
	In the absence of such specification, the manufacturer's instructions shall apply.			P
11.3	**Application of test requirements and interpretation of test results**			—
	The application of the general requirements for tests and the acceptance conditions for equipment containing drain-holes or ventilation openings is the responsibility of the relevant technical Committee.			N/A
	In the absence of such specification the requirement of this standard shall apply.			P
	The interpretation of test results is the responsibility of the relevant Technical Committee. In the absence of a specification the acceptance of a specification the acceptance conditions of this standard shall at least apply			P
11.4	**Combination of test conditions for the first characteristic numeral**			—
	Designation with a first characteristic numeral implies that all test conditions are met for this numeral:			P
	Table 5 – Test conditions for degrees of protection indicated by the first characteristic numeral			—
	First characteristic numeral	**Test for protection against**		P
		Access to hazardous parts	**Solid foreign objects**	
	0	No test required	No test required	N/A
	1	The sphere of 50 mm Ø shall not fully penetrate and adequate clearance shall be kept		N/A
	2	The jointed test finger may penetrate up to its 80 mm length, but adequate clearance shall be kept	The sphere of 12.5 mm Ø shall not fully penetrate	N/A
	3	The test rod of 2.5 mm Ø shall not penetrate and adequate clearance shall be kept		N/A
	4	The test wire of 1.0 mm Ø shall not penetrate and adequate clearance shall be kept		N/A
	5	The test wire of 1.0 mm Ø shall not penetrate and adequate clearance shall be kept	Dust-protected as specified in table 2	N/A
	6	The test wire of 1.0 mm Ø shall not penetrate and adequate clearance shall be kept	Dust-tight as specified in table 2	P
11.5	**Empty enclosures**			—

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	If the enclosure is tested without equipment inside, detailed requirements shall be indicated by the enclosure manufacturer in his instructions for the arrangement and spacing of hazardous parts or parts which might be affected by the penetration of foreign objects or water.	Enclosure is tested with equipment inside	N/A
	The manufacturer of the final assembly shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of protection of the final product.		N/A

12	**Tests for protection against access to hazardous parts indicated by the first characteristic numeral**		—
12.1	**Access probes**		—
	Access probes to test the protection of persons against access to hazardous parts are given in table 6.		N/A
12.2	**Test conditions**		—
	The access probe is pushed against or (in case of the test for first characteristic numeral 2) inserted through any openings of the enclosure with the force specified in table 6.		N/A
	For tests on low-voltage equipment, a low-voltage supply (of not less than 40 V and not more than 50 V) in series with a suitable lamp should be connected between the probe and the hazardous parts inside the enclosure. Hazardous live parts covered only with varnish or paint, or protected by oxidation or by a similar process, are covered by a metal foil electrically connected to those parts which are normally live in operation.		N/A
	The signal-circuit method should also be applied to the hazardous moving parts of high-voltage equipment.		N/A
	Internal moving parts may be operated slowly, where this is possible.		N/A
12.3	**Acceptance conditions**		—
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.		N/A
	For the test of first characteristic numeral 1, the access probe 50 mm diameter shall not completely pass through the opening.		N/A

IEC 60529			
Clause	Requirement + Test	Result - Remark	Verdict
	For the test of first characteristic numeral 2, the jointed test finger may penetrate to its 80 mm length, but the stop face (Ø 50 x 20 mm) shall not pass through the opening. Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.		N/A
	See Annex A for further clarification. Adequate clearance means		N/A
12.3.1	**For low-voltage equipment** (rated voltages not exceeding 1000 V a.c. and 1500 V d.c.)		—
	The access probe shall not touch hazardous live parts.		N/A
	If adequate clearance is verified by a signal circuit between the probe and hazardous parts, the lamp shall not light.		N/A
12.3.2	**For high-voltage equipment** (rated voltages exceeding 1000 V a.c. and 1500 V d.c.)		—
	When the access probe is placed in the most unfavourable position(s), the equipment shall be capable of withstanding the dielectric tests as specified in the relevant product standard applicable to the equipment.		N/A
	Verification may be made either by dielectric test or by inspection of the specified clearance dimension in air which would ensure that the tests would be satisfactory under the most unfavourable electric field configuration (see IEC 60071-2).		N/A
	In the case where an enclosure includes sections at different voltage levels the appropriate acceptance conditions for adequate clearance shall be applied for each section.		N/A
12.3.3	**For equipment with hazardous mechanical parts**		—
	The access probe shall not touch hazardous mechanical parts.		N/A
	If adequate clearance is verified by a signal circuit between the probe and hazardous parts, the lamp shall not light.		N/A
13	**Tests for protection against solid foreign objects indicated by the first characteristic numeral**		—
13.1	**Test means**		—
	Test means and the main test conditions are given in table 7.		P

IEC 60529					
Clause	Requirement + Test		Result - Remark		Verdict
	Table 7 – Test means for the tests for protection against solid foreign objects				—
	First characteristic numeral	**Test means**	**Test force**	**Test conditions**	—
	0	No test required	—	—	N/A
	1	Rigid sphere without handle or guard 50 mm diameter	50 N ±10%	13.2	N/A
	2	Rigid sphere without handle or guard 12,5 mm diameter	30 N ±10%	13.2	N/A
	3	Rigid steel rod 2.5 mm diameter with edges free from burrs	3 N ±10%	13.2	N/A
	4	Rigid steel wire 1 mm diameter with edges free from burrs	1 N ±10%	13.2	N/A
	5	Dust chamber Figure 2, with or without underpressure	—	13.4 and 13.5	N/A
	6	Dust chamber Figure 2, with underpressure	—	13.4 and 13.6	P
13.2	**Test conditions for first characteristic numerals 1, 2, 3, 4**				—
	The object probe is pushed against any openings of the enclosure with the force specified in table 7.				N/A
13.3	**Acceptance conditions for first characteristic numerals 1, 2, 3, 4**				—
	The protection is satisfactory if the full diameter of the probe specified in table 7 does not pass through any opening.				N/A
13.4	**Dust test for first characteristic numerals 5 and 6**				—
	The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 um and the nominal width of a gap between wires 75 um. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.		IP68		P
	Enclosures are of necessity in one of two categories:				—

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Clause	Requirement + Test	Result - Remark	Verdict
	Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, e.g., due to thermal cycling effects.		P
	Category 2: Enclosures where no pressure difference relative to the surrounding air is present		N/A
	Category 1 enclosures:		—
	The enclosure under test is supported inside the test chamber and the pressure inside the enclosure is maintained below the surrounding atmospheric pressure by a vacuum pump.		P
	The suction connection shall be made to a hole specially provided for this test.		P
	If not otherwise specified in the relevant product standard, this hole shall be in the vicinity of the vulnerable parts.		N/A
	If it is impracticable to make a special hole, the suction connection shall be made to the cable inlet hole.		N/A
	If there are other holes (e.g., more cable inlet holes or drain-holes) these shall be treated as intended for normal use on site.		P
	The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour.		P
	In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in figure 2.		P
	If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h.		N/A
	If, with a maximum depression of 2 kPa (20 mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8 h has elapsed.		P
	or a period of 8 h has elapsed.		N/A
	Category 2 enclosures:		—
	The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump.		N/A
	Any drain-hole normally open shall be left open for the duration of the test.		N/A
	The test shall be continued for a period of 8h		N/A
	Category 1 and category 2 enclosures:		—

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Clause	Requirement + Test	Result - Remark	Verdict
	If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall be applied:		N/A
	testing of individually enclosed sections of the enclosure;		N/A
	testing of representative parts of the enclosure, comprising components such as doors, ventilation openings, joints, shaft seals, etc., in position during test;		N/A
	testing of a smaller enclosure having the same full-scale design details.		N/A
	In the last two cases, the volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale		N/A
13.5	**Special conditions for first characteristic numeral 5**		—
13.5.1	**Test conditions for first characteristic numeral 5**		—
	The enclosure shall be deemed category 1 unless the relevant product standard for the equipment specifies that the enclosure is category 2.		N/A
13.5.2	**Acceptance conditions for first characteristic numeral 5**		—
	The protection is satisfactory if, on inspection, talcum powder has not accumulated in a quantity or location such that, as with any other kind of dust, it could interfere with the correct operation of the equipment or impair safety.		N/A
	Except for special cases to be clearly specified in the relevant product standard, no dust shall deposit where it could lead to tracking along the creepage distances.		N/A
13.6	**Special conditions for first characteristic numeral 6**		—
13.6.1	**Test conditions for first characteristic numeral 6**		—
	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		P
13.6.2	**Acceptance conditions for first characteristic numeral 6**		—
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.	No dust enters after test	P

14	**Tests for protection against water indicated by the second characteristic numeral**		—
14.1	**Test means**		—
	The test means and the main test conditions are given in table 8.		P

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Clause	Requirement + Test			Result - Remark		Verdict
	Table 8 – Test means and main test conditions for the tests for protection against water					—
	Second charact. numeral	**Test means**	**Water flow rate**	**Duration of test**	**Test conditions**	—
	0	No test required	—	—	—	N/A
	1	Drip box Figure 3 Enclosure on turntable	1 mm/min	10 min	14.2.1	N/A
	2	Drip box Figure 3 Enclosure in 4 fixed positions of 15° tilt	3 mm/min	2.5 min for each position of tilt	14.2.2	N/A
	3	Oscillating tube Figure 4 Spray ± 60° from vertical, distance max. 200 mm	0.07 l/min ± 5% per hole, multiplied by number of holes	10 min	14.2.3 a)	N/A
		or Spray nozzle Figure 5 Spray ± 60° from vertical	10 l/min ± 5%	1 min/m² at least 5 min	14.2.3 b)	
	4	As for numeral 3 Spray ± 180° from vertical	As for numeral 3		14.2.4	N/A
	5	Water jet hose nozzle Figure 6 Nozzle 6.3 mm diameter, distance 2.5 m to 3 m	12.5 l/min ± 5%	1 min/m² at least 3 min	14.2.5	N/A
	6	Water jet hose nozzle Figure 6 Nozzle 12.5 mm diameter, distance 2.5 m to 3 m	100 l/min ± 5%	1 min/m² at least 3 min	14.2.6	N/A
	7	Immersion tank Water-level on enclosure: 0.15 m above top 1 m above bottom	—	30 min	14.2.7	N/A
	8	Immersion tank Water-level: by agreement	—	by agreement	14.2.8	P

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Clause	Requirement + Test			Result - Remark		Verdict
	9	Fan jet nozzle Figure 7 Test of small enclosure on turntable Figure 12 Turntable speed (5 ± 1) r/min Spray at 0°, 30°, 60°, 90° Or Test of large enclosures as per intended use Spray from all practical directions Distance (175 ± 25) mm	(15 ± 1) l/min	30 s per position 1 min/m2 at least 3 min	14.2.9 a) 14.2.9 b)	N/A
14.2	**Test conditions**					—
	Test means and main test conditions are given in Table 8.			IP68		P
	Details concerning compliance of degrees of protection – in particular for second characteristic numerals 5/6 (water jets) and numerals 7/8 (immersion) – are given in Clause 6.					P
	The tests are conducted with fresh water.					P
	During the tests for IPX1 to IPX6 the water temperature should not differ by more than 5 K from the temperature of the specimen under test.					N/A
	If the water temperature is more than 5 K below the temperature of the specimen a pressure balance shall be provided for the enclosure.					N/A
	For IPX7 and IPX9 details of the water temperature are given in 14.2.7 and 14.2.9 respectively.					N/A
	During the test, the moisture contained inside the enclosure may partly condense. The dew which may thus deposit shall not be mistaken for an ingress of water.					P
	For the purpose of the tests, the surface area of the enclosure is calculated with a tolerance of 10%.					P
	Adequate safety precautions should be taken when testing the equipment in the energized condition			Test equipment is power off		N/A
14.2.1	**Test for second characteristic numeral 1 with the drip box**					—

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Clause	Requirement + Test	Result - Remark	Verdict
	The test is made with a device which produces a uniform flow of water drops over the whole area of the enclosure.		N/A
	The turntable on which the enclosure is placed has a rotation speed of 1 r/min and the eccentricity (distance between turntable axis and specimen axis) is approximately 100 mm.		N/A
	The enclosure under test is placed in its normal operating position under the drip box, the base of which is larger than that of the enclosure.		N/A
	Except for enclosures designed for wall or ceiling mounting, the support for the enclosure under test should be smaller than the base of the enclosure.		N/A
	An enclosure normally fixed to a wall or ceiling is fixed in its normal position of use to a wooden board having dimensions which are equal to those of that surface of the enclosure which is in contact with the wall or ceiling when the enclosure is mounted as in normal use.		N/A
	The duration of test is 10 min.		N/A
14.2.2	**Test for second characteristic numeral 2 with the drip box**		—
	The dripping device is the same as specified in 14.2.1 adjusted to provide the water flow rate specified in Table 8.		N/A
	The table on which the enclosure is placed does not turn as in the case of the test for the second characteristic numeral 1.		N/A
	The enclosure is tested for 2,5 min in each of four fixed positions of tilt. These positions are 15° on either side of the vertical in two mutually perpendicular planes (see Figure 3b)).		N/A
	The total duration of the test is 10 min.		N/A
14.2.3	**Test for second characteristic numeral 3 with oscillating tube or spray nozzle**		—
	The test is made using one of the two test devices described in Figure 4 and in Figure 5 in accordance with the relevant product standard.		N/A
	a) Conditions when using the test device as in Figure 4 (oscillating tube)		N/A
	b) Conditions when using the test device as in Figure 5 (spray nozzle)		N/A
14.2.4	**Test for second characteristic numeral 4 with oscillating tube or spray nozzle**		—
	The test is made using one of the two test devices described in Figure 4 and in Figure 5 in accordance with the relevant product standard.		N/A
	a) Conditions when using the test device as in Figure 4 (oscillating tube):		N/A

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Clause	Requirement + Test			Result - Remark		Verdict
	b) Conditions when using the test device as in Figure 5 (spray nozzle):					N/A
	Table 9 – Total water flow rate qv under IPX3 and IPX4 test conditions –Mean flow rate per hole q_{vl} = 0.07 l/min					—
	Tube radius R mm	**Number of open holes N (1)**	**Total water flow Qv l/min**	**Number of open holes 1)**	**Total water flow qv l /min**	—
	200	8	0.56	12	0.84	N/A
	400	16	1.1	25	1.8	N/A
	600	25	1.8	37	2.6	N/A
	800	33	2.3	50	3.5	N/A
	1000	41	2.9	62	4.3	N/A
	1200	50	3.5	75	5.3	N/A
	1400	58	4.1	87	6.1	N/A
	1600	67	4.7	100	7.0	N/A
	(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.					N/A
14.2.5	**Test for second characteristic numeral 5 with the 6.3 mm nozzle**					—
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in Figure 6.					N/A
	The conditions to be observed are as follows:					—
	internal diameter of the nozzle: 6,3 mm;					N/A
	delivery rate: 12.5 l/min ± 5%;					N/A
	water pressure: to be adjusted to achieve the specified delivery rate;					N/A
	core of the substantial stream: circle of approximately 40 mm diameter at 2.5 m distance from nozzle;					N/A
	test duration per square metre of enclosure surface area likely to be sprayed: 1 min;					N/A
	minimum test duration: 3 min;					N/A
	distance from nozzle to enclosure surface: between 2.5 and 3 m					N/A
14.2.6	**Test for second characteristic numeral 6 with the 12.5 mm nozzle**					—
	The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle as shown in Figure 6.					N/A
	The conditions to be observed are as follows:					—
	internal diameter of the nozzle: 12.5 mm;					N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	delivery rate: 100 l/min ± 5%;		N/A
	water pressure: to be adjusted to achieve the specified delivery rate;		N/A
	core of the substantial stream: circle of approximately 120 mm diameter at 2.5 m distance from nozzle;		N/A
	test duration per square metre of enclosure surface area likely to be sprayed: 1 min;		N/A
	minimum test duration: 3 min;		N/A
	distance from nozzle to enclosure surface: between 2.5 and 3 m.		N/A
14.2.7	**Test for second characteristic numeral 7: temporary immersion between 0.15 and 1 m**		—
	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:		—
	a) the lowest point of enclosures with a height less than 850 mm is located 1000 mm below the surface of the water;		N/A
	b) the highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water;		N/A
	c) the duration of the test is 30 min;		N/A
	d) the water temperature does not differ from that of the equipment by more than 5K.		N/A
	However, a modified requirement may be specified in the relevant product standard if the tests are to be made when the equipment is energized and/or its parts in motion		N/A
14.2.8	**Test for second characteristic numeral 8: continuous immersion subject to agreement**		—
	Unless there is a relevant product standard, the test conditions are subject to agreement between manufacturer and user,		P
	but they shall be more severe than those prescribed in 14.2.7		P
	And they shall take account of the condition that the enclosure will be continuously immersed in actual use.	Water depth 1500mm, duration 30min	P
14.2.9	**Test for second characteristic numeral 9 by high pressure and temperature water jetting**		—
	The test is made by spraying the enclosure with a stream of water from a standard test nozzle as shown in Figures 7, 8 and 9.		N/A
	The set-up for measuring the impact force of the water jet is given in Figure 10.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The distribution force shall be verified at upper and lower limits of distance tolerance range (see Figure 11).		N/A
	a) For small enclosures (largest dimension less than 250 mm), the enclosure shall be mounted on the test device shown in Figure 12.		N/A
	turntable speed: 5 r/min ± 1 r/min		N/A
	spray positions: 0°, 30°, 60°, 90°		N/A
	The test duration is 30s per position.		N/A
	b) For large enclosures (largest dimension greater than or equal to 250 mm), the enclosure shall be mounted as per intended use. The entire exposed surface area of the enclosure shall be subjected to the spray at some point during the test procedure.		N/A
	spray positions: the enclosure shall be sprayed from all practical directions covering the entire surface area and the spray shall be, as far as possible, perpendicular to the sprayed surface.		N/A
	distance between nozzle and sample under test shall be 175 ± 25 mm.		N/A
	The test duration is 1 min/m^2 of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 3 min.		N/A
14.3	**Acceptance conditions**		—
	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.9 the enclosure shall be inspected for ingress of water.	No water enters the shell after test	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 dieletric strength test, if any.		P
	In general, if any water has entered, it shall not:		—
	be sufficient to interfere with the correct operation of the equipment or impair safety;		P
	deposit on insulation parts where it could lead to tracking along the creepage distances;		P
	reach live parts or windings not designed to operate when wet;		P
	accumulate near the cable end or enter the cable if any.		P
	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/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts		N/A
15	**Tests for protection against access to hazardous parts indicated by the additional letter**		—
15.1	**Access probes**		—
	Access probes to verify the protection of persons against access to hazardous parts are given in Table 6.		N/A
15.2	**Test conditions**		—
	The access probe is pushed against any openings of the enclosure with the force specified in Table 6.		N/A
	If it partly or fully penetrates, it is placed in every possible position, but in no case shall the stop face fully penetrate through the opening.		N/A
	Internal barriers are considered part of the enclosure as defined in 3.1.		N/A
	For tests on low-voltage equipment, a low-voltage supply (of not less than 40 V and not more than 50 V) in series with a suitable lamp should be connected between the probe and the hazardous parts inside the enclosure.		N/A
	Hazardous live parts covered only with varnish or paint, or protected by oxidation or by a similar process, are covered by a metal foil electrically connected to those parts which are normally live in operation.		N/A
	The signal-circuit method should also be applied to the hazardous moving parts of high-voltage equipment.		N/A
	Internal moving parts may be operated slowly, where this is possible.		N/A
15.3	**Acceptance conditions**		—
	The protection is satisfactory if adequate clearance is kept between the access probe and hazardous parts.		N/A
	In the case of the test for the additional letter B, the jointed test finger may penetrate to its 80mm length, but the stop face (Ø 50 x20 mm) shall not pass through the opening.		N/A
	Starting from the straight position, both joints of the test finger shall be successively bent through an angle of up to 90° with respect to the axis of the adjoining section of the finger and shall be placed in every possible position.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	In case of the tests for the additional letters C and D, the access probe may penetrate to its full length, but the stop face shall not fully penetrate through the opening.		N/A
	See Annex A for further clarification.		N/A
	Conditions for verification of adequate clearance are identical with those given in 12.3.1, 12.3.2 and 12.3.3.		N/A

Annex B	**Summary of responsibilities of relevant technical committees**	N/A

Annex ZA	**(normative)(EN 60529)** **Other International Publications quoted in this standard with the references of the relevant European Publications**	N/A

Test Equipment

Equipment No	Equipment Name	Manufacturer	Model	Calibration information
WXJ088-11	Ipx1-x8 waterproof test system	ZHONGZHI	CZ-56K-LY	2023-01-19
WXJ088-10	Dustproof test chamber	ZHONGZHI	CZ-800SC-ZK	2023-01-19
WXJ072-1	stopwatch	TIANFU	PC2810	2023-01-22

Photo documentation

Details of: **IP6X Before the test**

Details of: **IP6X In the test**

Photo documentation

Details of: **IP6X After the test**

Details of: **IPX8 Before the test**

Photo documentation

Details of: **IPX8 In the test**

Details of: **IPX8 After the test**

—The report end—