TEST REPORT

IEC 60529

Degrees of protection provided by enclosure(IP code)

Report Reference No..... :	TS2021082707
Authorizer (+ signature)..... :	Shizong Nie
Date of issue..... :	September 28, 2021
Testing Laboratory..... :	Product Technology Service(Ningbo) Co., Ltd.
Address..... :	3/F., Building 1, Hengyu Industrial Park, Fengjia, Shiqi Street, Haishu District, Ningbo, Zhejiang, China
Applicant's name..... :	Cliff Electronic Components Limited
Address..... :	76 Holmethorpe Avenue, Holmethorpe Industrial Estate, Redhill, Surrey, RH1 2PF.
Test specification:	
Standard..... :	IEC 60529 :1989+A1 :1999+A2 :2013
Test procedure..... :	IP65
Non-standard test method…….. :	N/A
Test Report Form No..... :	RC-PSNB-R913/02
TTRF Originator..... :	PTS
Master TRF..... :	2014-1
Test item description..... :	Network cable socket + Network cable plug
Trade Mark..... :	N/A
Manufacturer..... :	--
Address..... :	--
Model/Type reference..... :	LE8FP-2W + LE8MCW
Ratings..... :	--

Test item particulars:	
Electrical safety class..... :	Class Ⅲ
IP number.....:	IP65
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 .....:	2021.8.30
Date(s) of performance of test ..... :	2021.9.01

General 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.
"(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 is used as the decimal separator.
Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.

The test report is only used for scientific research, teaching or internal quality control.

General product information:

The products covered in this report are Network cable socket and Network cable plug.

Summary of testing:

The test result is passed.

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Clause	Requirement + Test	Result - Remark	Verdict
10	**Marking**		
	The requirements for marking shall be specified in the relevant product standard.		N/A
	Where appropriate, such a standard should also specify the method of marking which is to be used When:		N/A
	—one part of an enclosure has a different degree of protection to that of another part of the same enclosure;		N/A
	—the mounting position has an influence on the degree of protection;		N/A
	—the maximum immersion depth and time are Indicated.		N/A
11	**General requirements for tests**		
11.1	Atmospheric conditions for water or dust tests:		P
	Temperature range: 15℃ to 35℃	23,5℃	P
	Relative humidity: 25%to 75%	57%RH	P
	Air pressure: 86 kPa to 106 kPa (860 mbar to 1 060 mbar).	100kPa	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
	The relevant product standard shall specify details such as:		N/A
	—the number of samples to be tested;		N/A
	—conditions for mounting, assembling and positioning of the samples,for example by the use of an artificial surface (ceiling,floor or wall);		N/A
	— the pre-conditioning,if any, which is to be used;		N/A
	—whether to be tested energized or not;		N/A
	—whether to be tested with its parts in motion or Not.		N/A
11.3	Application of test requirements and interpretation of test results		P
	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.		N/A
	The interpretation of test results is the responsibility of the relevant technical committee.		N/A
	In the absence of a specification the acceptance conditions of this standard shall at least apply.		P

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Clause	Requirement + Test	Result - Remark	Verdict
11.4	Combination of test conditions for the first characteristic numeral	IP6X	P
	Designation with a first characteristic numeral implies that all test conditions are met for this Numeral.		P
11.5	Empty enclosures		N/A
	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.		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		N/A
	Access probes to test the protection of persons against access to hazardous parts are given in Table 6.	Class III	N/A
12.2	Test conditions		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
12.3	Acceptance conditions		N/A
	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 50mm diameter shall not completely pass through the opening.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	For the test of first characteristic numeral 2,the jointed test finger may penetrate to its 80mm length,but the stop face(ϕ50mm×20mm)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 possidle position.		N/A
12.3.1	For low-voltage equipment(rated voltages not exceeding 1000V a.c and 1500V d.c.)		N/A
	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 1000V a.c and 1500V d.c.)		N/A
	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.		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		N/A
	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		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/A
	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		N/A
	The protection is satisfactory if the full diameter of the probe specified in Table 7 does not pass through any opening.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
13.4	Dust test for first characteristic numerals 5 and 6	IP6X	P
	The test is made using a dust chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μm and the nominal width of a gap between wires 75 μm . 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.		P
	Enclosures are of necessity in one of two categories:		P
	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:		P
	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. 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 he in the vicinity of the vulnerable parts.		P
	If it is impracticable to make a special hole, the suction connection shall he made to the cable inlet hole.		N/A
	If there are other holes (e.g.,more cable inlet holes or drain-holes) these shall he 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. 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 2h.	2h	P
	If,with a maximum depression of 2kPa(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 8h has elapsed.		N/A
	The enclosure under test is supported in its normal operating position inside the test chamber, but is not connected to a vacuum pump. Any drain-hole normally open shall be left open for the duration of the test. The test shall he continued for a period Of 8h.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Category 1 and category 2 enclosures:		N/A
	If it is impracticable to test the complete enclosure in the test chamber, one of the following procedures shall he 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
13.5	Special conditions for first characteristic Numeral 5		N/A
13.5.1	Test conditions for first characteristic numeral 5		N/A
	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		N/A
	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 he 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		P
13.6.1	Test conditions for first characteristic numeral 6		P
	The enclosure shall he deemed category 1, whether reductions in pressure below the atmospheric pressure axe present or not.		P
13.6.2	Acceptance conditions for first characteristic numeral 6		P
	The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.	No deposit of dust is observable inside the enclosure at the end of the test.	P

14	**Tests for protection against water indicated by the second characteristic numeral**		
14.1	Test means		P
	The test means and the main test conditions are given in Table 8.		P
14.2	Test conditions		P
	During the tests for IPXI to IPX6 the water temperature should not differ by more than 5 K from the temperature of the specimen under test.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	For IPX7 and IPX9 details of the water temperature are given in 14.2.7 and 14.2.9 respectively.		N/A
14.2.1	Test for second characteristic numeral 1 with the drip box		N/A
	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 l r/min and the eccentricity is approximately 100mm.		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. 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 flxed 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		N/A
	The dripping device is the same as specifled in 14.2.1 adjusted to provide the water flow rate specifled 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 characterÍstic numeral 1.		N/A
	The enclosure is tested for 2,5 min in each of four fixed positions of tilt. These positions are 15^0 on either side of the vertical in two mutually perpendicular planes.		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		N/A
	a) Conditions when using the test device as in Figure 4 (oscillating tube):		N/A
	The total flow rate is adjusted as specified in Table 9 and is measured with a flow meter.		N/A
	The oscillating tube is provided with spray holes over an arc of 60^0 either side of the centre point. The support is not perforated.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	The enclosure to be tested is placed at the centre point of the semicircle.The tube is caused to oscillate through an angle of 120°, 60° on either side of the vertical, the time for one complete oscillation (2 x 120°) being about 4 s and the test duration being 5 min. The enclosure is then turned through an horizontal angle of 90° and the test is continued for a further 5 min.		N/A
	b) Conditions when using the test device as in Figure 5 (spray nozzle):		N/A
	The counterbalanced shield is in place for this test		N/A
	The water pressure is adjusted to give the specifled delivery rate. The pressure to achieve this delivery rate will be in the range of 50 kPa to 150 kPa. It should be kept constant during the test		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 5min.		N/A
14.2.4	Test for second characteristic numeral 4 with oscillating tube or spray nozzle		N/A
	a)The oscillating tube has spray holes over the whole 180° of the semicircle. The total flow rate is adjusted as specifled in Table IX and measured with a flow meter.		N/A
	The tube is caused to oscillate through an angle of almost 360°, 180° on either side of the vertical, the time for one complete oscillation (2 x 360°) being about 12 s.		N/A
	The duration of the test is 10 min.		N/A
	b)The counterbalanced shield is removed from the spray nozzle and the enclosure is sprayed from all practicable directions.		N/A
	The rate of water flow and the spraying time per unit area are as specified in 14.2.3.		N/A
14.2.5	Test for second characteristic numeral 5 with the 6,3 mm nozzle		P
	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.		P
	The condition to be observed are as follows:		P
	—internal diameter of the nozzle:6,3 mm;		P
	—delivery rate: 12,5L/min ± 5%;	12,5L/min	P
	—water pressure: to be adjusted to achieve the specified delivery rate;		P
	—core of the substantial stream: circle of approximately 40mm diameter at 2,5m distance from nozzle;		P

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Clause	Requirement + Test	Result - Remark	Verdict
	—test duration per square metre of enclosure surface area likely to be sprayed: 1 min;		N/A
	—minimum test duration:3min;	3min	P
	—distance from nozzle to enclosure surface:between 2,5m and 3m	2,7m	P
14.2.6	Test for second characteristic numeral 6 with the 12,5 mm nozzle		N/A
	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:		N/A
	—internal diameter of the nozzle: 12,5mm;		N/A
	—delivery rate:100L/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 120mm 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 m and 3 m.		N/A
14.2.7	Test for second characteristic numeral 7: temporary immersion between 0,15 m and 1 m		N/A
	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:		N/A
	a)the lowest point ofenclosures with a height less than 850 mm is located 1 000 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 5 K.		N/A
14.2.8	Test for second characteristic numeral 8: continuous immersion subject to agreement		N/A
	Unless there is a relevant product standard, 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 that the enclosure will be continuously immersed in actual use.		N/A
14.2.9	Test for second characteristic numeral 9 by high pressure and temperature water jetting (IEC 60529/A2)		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	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. (IEC 60529/A2)		N/A
	The set-up for measuring the impact force of the water jet is given in Figure 10. (IEC 60529/A2)		N/A
14.3	Acceptance conditions		P
	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 entered.	P
	It is 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, if any.		N/A
	In general,if any water has entered,it shall not:		N/A
	—be sufficient to interfere with the correct operation of the equipment or impair safety;		N/A
	—deposit on insulation parts where it could lead to tracking along the creepage distance;		N/A
	—reach live parts or windings not designed to operate when wet;		N/A
	— accumulate near the cable end or enter the cable if any.		N/A
	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
	For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.		N/A

Sample photo:

Overview

Overview

Sample photo:

Network cable socket

Network cable plug

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