180009011067

中国认可
国际互认
检测
TESTING
CNAS L1073

No.W-08-20-6399

TEST REPORT

Model&Type	SUN-FOSC-DH-CL5
Name of Product	Closure for Optical Fiber Cables
Client Name	Shanghai Sun Telecommunication Co., Ltd.
Test Sort	Commission Inspection

WRI Testing Technologies Co.,Ltd.

Quality Supervision & Inspection Center of Optical Communication Products, M.I.I

NOTICE

1. The report is invalid without special seal for inspection.

2. The report must include barcode identifier.

3. Copied report is invalid without special seal for inspection or department seal.

4. The report is invalid without the signatures of chief tester, inspector and approver.

5. The report is invalid if erased or altered.

6. For any objection to the report, inform our laboratory within 15 days from the date of receiving the report.

7. The report pertains exclusively to the test samples and the test items.

8. The report may not be reproduced or distributed in part without the prior written permission of our laboratory.

Address:	1st Building, Tanhu Rd, Canglongdao, Jiangxia District, Wuhan, Hubei, China	Post Code:	430205
TEL:	86 27 87691219,87691384	FAX:	86 27 87691139
Web Site:	http://www.wrilab.com	E-mail:	Lab@wrilab.com

Test Report

Name of Product	Closure for optical fiber cables	**Model/Type**	SUN-FOSC-DH-CL5
Client Name	Shanghai Sun Telecommunication Co., Ltd.	**Manufacturing Number / Production Date**	___
Manufacturer	___	**Test Sort**	Commission Inspection
Production Address	___		
Arrival Date of Samples	2020.12.14	**Specimen Deliverer**	Sting Zhang
Amount of Samples	___	**Quantity of Samples**	7
Initial State of Samples	Good		
Reference Documents	YD/T 814.1-2013 Closure for optical fiber cables Part 1: Closure for outdoor optical fiber cables GB/T 4208-2017/IEC 60529:2013 Degrees of protection provided by enclosure（IP code）		
Conclusion	The inspection results meet the requirements specified in YD/T 814.1-2013 and GB/T 4208-2017/IEC 60529:2013. Date of Issue: Dec. 30, 2020		
Remarks	Inspection Origin: This inspection is committed by Shanghai Sun Telecommunication Co., Ltd.		

Approved by：*Li Hongqiang* **Inspected by**：*Zhang Jinsong* **Chief tested by**：*Huang Hushi*

Sample Information

Item name: Closure for optical fiber cables

Model: SUN-FOSC-DH-CL5

Photo description:

Figure 1- Sample appearance

Figure 2-Internal structure

Location: Quality Supervision & Inspection Center of Optical Communication Products, MI.I

Date: 2020.12.14

Figure 1

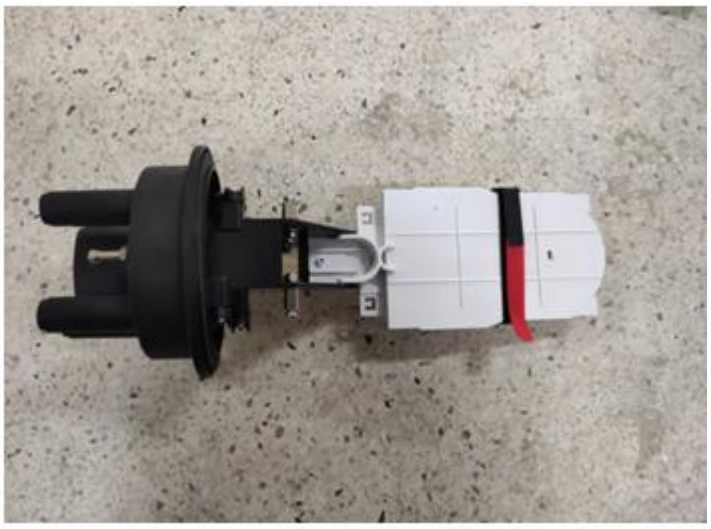

Figure 2

Outline of Test Result

Sequence number	Inspection items	Conclusion
1	Appearance	Pass
2	Sealing performance	Pass
3	Re-Seal performance	Pass
4	Water penetration	Pass
5	Tensile test	Pass
6	Axial compression	Pass
7	Crush test	Pass
8	Impact test	Pass
9	Bend test	Pass
10	Torsion test	Pass
11	Drop	Pass
12	Temperature cycling	Pass
13	Low temperature impact	Pass
14	Temperature heat durability	Pass
15	Vibration	Pass
16	Chemical Resistance Test	Pass
17	Insulation resistance	Pass
18	Withstand voltage strength	Pass
19	Degrees of protection provided by enclosure	Pass

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
1	Appearance	-	Fiber optic cable joint box should be complete in shape, without burr, bubble, crack, cavitations warping and impurity. All the background colors should be uniform and continuous	Meet the requirements.	Pass

a)Test procedure

1.According to conditions of 6.1 of YD/T 814.1-2013, visual inspection, check the appearance.

b)Test condition

Date	Environment	Location
2020.12.14	24℃，54%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
——	——	——

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
2	Sealing performance	—	**Condition:** Internal ressure:100kPa; **Requirement:** Immersed in the water for 15 minutes, no air bubbles escape.	No air bubbles escape.	Pass
3	Re-sealing performance	—	**Condition:** Internal pressure:100kPa; **Requirement:** Immersed in the water for 15 minutes, no air bubbles escape.	No air bubbles escape.	Pass

a)Test procedure

1. According to conditions of 6.2 of YD/T 814.1-2013.

2. Package relies on the prescribed operating procedure on the sealing performance test; when checking the re-sealing performance, repeat packing 3 times. Fill the closure with dry air at 100kpa pressure and soak it in clean water container at room temperature observes 15 minutes, no bubbles should escapes.

b)Test condition

Date	Environment	Location
2020.12.14	20℃，50%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
4	Water penetration	—	**Conditions:** Water column height:1.5m; Internal pressure: 0kPa; Duration: 24 hrs. **Requirement:** No water ingress.	No water ingress.	Pass

a)Test procedure

1. According to conditions of 6.3 of YD/T 814.1-2013.

2. After package the closure rely on the prescribed operating procedure, immersing 1.5 meter deep water at room temperature for 24 hours, then take out of the water and wipe the water over the interface, open the closure , visual inspection, whether there are any water in the closure.

b)Test condition

Date	Environment	Location
2020.12.14～2020.12.15	(22～23)℃，(48～50)%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Water immersion test chamber	JZ-396	201512005

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
5	Tensile test	—	**Conditions:** Internal pressure: 60kPa; Load:800N; Test time: 1 minute. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass
6	Axial compression	—	**Conditions:** Internal pressure: 60kPa; Load:100N (axial); Test time: 1 minute. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.4.3 and 6.4.9 of YD/T 814.1-2013.
2. Tensile test: Internal pressure:60kPa, Speed:10mm/min, Load: 800N, Test time:1 min, Distance between the clamping point of the force and the connection of the closure and cable:500mm.
3. Axial compression: Internal pressure:60kPa, Load: 100N, Test time:1 minute.

b)Test condition

Date	Environment	Location
2020.12.23	23℃，45%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Tensile testing machine	WDL-10	14429
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
7	Crush test	—	**Conditions:** Internal pressure:60kPa; Load: 2000N/100mm; Duration: 1 minute. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.4.4 of YD/T 814.1-2013.
2. Internal pressure:60kPa, Load over the central of closure : 2000N/100mm, Test time:1 min.

b)Test condition

Date	Environment	Location
2020.12.23	20℃，45%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Material testing machine	BDO/FB020TN	173397/2006/E
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
8	Impact test	—	**Conditions:** Internal pressure:60kPa; Height: 1m; Weight:1.6kg; Number of impacts: 3. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.4.5 of YD/T 814.1-2013.

2. At the room temperature, put the closure over a smooth and flat impact work surface ,the impact height is 1 meter, the ball is 1.6 kg, the number of impacts is 3 (one for each side and one in the middle).

b)Test condition

Date	Environment	Location
2020.12.24	20℃，45%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Falling ball impact testing machine	XJC-10	14425
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
9	Bend test	—	**Conditions:** Internal pressure: 60kPa; Force: Bending angle ±45° or 150N; Number of cycles: 10. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass
10	Torsion test	—	**Conditions:** Internal pressure:60kPa; Torque: Torsion angle ±90° or 50N·m; Number of cycles: 10. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes，no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.4.6 and 6.4.7 of YD/T 814.1-2013.

2. Bend test: the internal pressure is 60kPa, put the closure over a smooth and flat surface, deflect the cable by 45 degree at a length of 150mm from the end of closure, keep for 1 minute, return to original position, repeat the same operate process in the opposite direction last in 1 minute to complete a full cycle; the total number of the cycle should be 10.

3. Torsion test: the internal pressure is 60kPa, clamp the closure firmly with a clamp, use a rotating chuck to clamp an optical cable at 500 mm from the cable outlet of the closure. After marking the starting position of the optical fiber then twist 90 degree, keep for 1 minute, return to original position, repeat the same operate process in the opposite direction last in 1 minute to complete a full cycle; the total number of the cycle should be 10.

b)Test condition

Date	Environment	Location
2020.12.23	20℃，45%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Bending and torsion test machine	NDW-100	14430
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
11	Drop	—	**Conditions:** Internal pressure: 60kPa; Drop height:1m; Number of drops: 1. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes，no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.4.8 of YD/T 814.1-2013.

2. Package relies on the prescribed operating procedure; the internal pressure is 60kPa, free fall the colures without the cable from a height of 1 meter to hard ground in a horizontal state, just one time.

b)Test condition

Date	Environment	Location
2020.12.23	20℃，45%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Single-wing drop test machine	SC/DL-320	SCDL3201812
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
12	Temperature cycling	—	**Conditions:** Internal pressure: 60kPa; Temperature cycle : +65℃ to -40 ℃; Duration: 2 hrs at +65℃ and -40℃; Number of cycles: 5. **Requirement:** After the test, the pressure shall not be less than 40kPa.	After the test, the pressure is 56 kPa.	Pass

a)Test procedure

1. According to conditions of 6.5.3 of YD/T 814.1-2013.

2. Internal pressure is 60kPa over the room temperature, put the sample into the test chamber, increase the temperature in the speed of 1℃/min until the upper limit, keep it for 2 hours, then reduce temperature to room temperature, keep 2 hours, after that reduce the temperature to the lower limit for 2 hours then increase to room temperature for 2 hours, here is a full cycle, the total number of cycle is 5.

b)Test condition

Date	Environment	Location
2020.12.21 9:30～ 2020.12.23 18:30	(19～20)℃， (50～52)%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Damp-Heat Chamber	C1000-70A	201512004
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
13	Low temperature impact	—	**Conditions:** Internal pressure:60kPa; Temperature:-20℃; Duration: 4 hrs ; Height: 1m;Weight:1kg; Number of impacts:3. **Requirement:** After the test, the pressure drop should not exceed 3kPa, then immersed in the water for 15 minutes，no air bubbles escape. The shell and its components shall be free of cracks, damage and deformation.	After the test, the pressure drop is 0 kPa, no air bubbles escape. The shell and its components are not cracked, damaged and obviously deformed.	Pass

a)Test procedure

1. According to conditions of 6.5.4 of YD/T 814.1-2013.
2. Internal pressure:60kPa; decrease the temperature until -20℃ as the speed of 1℃/min, last in 4 hours, the impact height is 1 meter, the ball is 1 kg, the number of impacts is 3 (one for each side and one in the middle), restored at the room temperature for 4 hours, detect the air pressure.

b)Test condition

Date	Environment	Location
2020.12.23 19:00～ 2020.12.23 23:30	20℃，52%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Damp-Heat Chamber	C1000-70A	201512004
Falling ball impact testing machine	XJC-10	14425
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
14	Temperature heat durability	—	**Conditions:** Internal pressure: 60kPa; Temperature : +65℃; Duration: 100 hrs. **Requirement:** After the test, the pressure shall not be less than 40kPa.	After the test, the pressure is 42 kPa.	Pass

a)Test procedure

1. According to conditions of 6.5.5 of YD/T 814.1-2013.
2. At the room temperature, put the sample in the chamber, raise the temperature until 65℃ and fall rate of 1℃/min, keep the temperature at 65℃ for 100 hours, then reduce the temperature to room temperature, after 4 hours, check the air pressure of closure.

b)Test condition

Date	Environment	Location
2020.12.24 8:00～ 2020.12.28 12:30	(20～21)℃， (50～52)%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Damp-Heat Chamber	C1000-70A	201512004
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
15	Vibration	—	**Conditions:** Internal pressure:60kPa; Vibration frequency:10Hz; Amplitude: ±3mm; Number of cycles: 10^6 cycles. **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape.	After the test, the pressure drop is 0 kPa, no air bubbles escape.	Pass

a)Test procedure

1. According to conditions of 6.5.6 of YD/T 814.1-2013.
2. The internal press should be 60kPa, frequency is 10Hz, amplitude should be ±3mm, the total number of cycles will be 10^6 checks the air pressure of closure after the test.

b)Test condition

Date	Environment	Location
2020.12.16～2020.12.17	(20～21)℃，(50～52)%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Electric vibration test system	DC-1000-15	140103
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
16	Chemical Resistance Test	—	**Conditions:** Immersed in 5%HCL, 5%NaOH ,5%NaCL for 24 hours, Internal pressure:60kPa; **Requirement:** After the test, the pressure drop should not exceed 2kPa, then immersed in the water for 15 minutes, no air bubbles escape, swelling and corrosion	After the test, the pressure drop is 0 kPa, no air bubbles escape. No swelling and corrosion	Pass

a)Test procedure

1. According to conditions of 6.5.8 of YD/T 814.1-2013.
2. Each sample must be immersed in a test solution individually. Place the closure in a glass container and then pour the solution. During the test, the closure should be completely immersed in the test solution. After soaking it for 24 hours, take our and wipe it, observe the appearance and detect the change of air pressure of the closure.

b)Test condition

Date	Environment	Location
2020.12.21～2020.12.22	(20～21)℃, (50～52)%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Precision pressure gauge	YB-150B	HC69582403931

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
17	Insulation resistance	MΩ	The insulation resistance between the immobile devices of the optical cables should be not less than 2×10^4 MΩ when being applied by DC 500V.	$>5\times10^5$	Pass
18	Withstand voltage strength	—	Apply DC 15kV between the immobile devices of the optical cables, there should be no arc and breakdown after 1min.	No breakdown, no fly arc	Pass

a)Test procedure

1. According to conditions of 6.6.1and 6.6.2 of YD/T 814.1-2013.
2. Insulation resistance test: open the closure, use a high resistance meter to test the insulation resistance between any optical cable strengthening member fixing devices, by using method C of "Test 3a: Insulation resistance" from GB/T 5095.2-1997.
3. Voltage strength test: open the closure, use a voltage tester to test the withstand voltage strength between any optical cable metal components and between metal components and the ground, by using method C of "Test 4a: Withstand voltage strength" from GB/T 5095.2-1997.

b)Test condition

Date	Environment	Location
2020.12.28	20℃，52%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
High voltage tester	YD2013	2013-251
High voltage insulation resistance meter	3455-20	110342413

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
19	Degrees of protection provided by enclosure	—	Comply with IP6X requirements in GB/T 4208-2017/IEC 60529:2013: 1) Place the sample in the specified position, and the test wire with a diameter of 1.0mm shall not enter the enclosure, and keep enough clearance with the live part. 2) Put the sample in the dust-proof box, depression is 2kPa, the duration of test is 2 hours, and there is no obvious dust deposition in the cabinet after the test.	Meet the requirements of the IP6X level.	Pass

a)Test procedure

1. According to conditions of 12.2,13.4,13.6 of GB/T 4208-2017/IEC60529:2013.
2. Environment condition: temperature(15~35) ℃, relative humidity (25~75)%.
3. Place the sample in the specified position for the test, the diameter of test wire is 1.0mm, test force is 1N, and check the test wire insert the shell or not.
4. Place the sample in the dust proof test box, add negative pressure, the test lasts for 2 hours, after the test, blow off the dust on the surface of the sample and open the shell to check the dust accumulation.

b)Test condition

Date	Environment	Location
2020.12.28	20℃，52%R.H	Laboratory

c)Test equipment

Item name	Item number	Code
Object test tool kit(enclosure protection level)	KXT0301、KXT0302、KXT0307、KXT0308	K170117、K170118、K170119、K170120
Digital force gauge	ZP-50N	K170121
Dust test room	WiD27-La	20141101

Test Result

Sequence Number	Inspection Item	Unit	Requirement	Inspection Results	Conclusion
19	Degrees of protection provided by enclosure	—	Comply with IPX8 requirements in GB/T 4208-2017/IEC 60529:2013: The bottom of the shell is 2 m above the water surface; Time of duration: 24 hrs; After the test, check the water intake of the shell, and the water intake does not reach harmful level.	Meet the requirements of the IP X8 level.	Pass

a)Test procedure

1. According to conditions of 14.2.8 of GB/T 4208-2017/IEC60529:2013.
2. Environment condition: temperature(15~35) ℃, relative humidity (25~75)%.
3. Diving test: the lowest point of the shell is 2000mm below the water surface, and the test duration is 24h. Open the shell to check the water ingress after the test.

b)Test condition

Date	Environment	Location
2020.12.23 16:20～ 2020.12.24 16:30	21℃，55%R.H.	Laboratory

c)Test equipment

Item name	Item number	Code
Water Pressurized Immersion test chamber	JZ-396	201512005