

No.



中国认可
国际互认
检测
TESTING
CNAS L0669



Test Report

CEPRI-TX1-2025-1480-1E

Name of sample: OPGW

Type of sample: OPGW-24B1-110[90.1;100.0]

Manufacturer: Henan Qingzhou Cable Co.,Ltd

Client: Henan Qingzhou Cable Co.,Ltd

Test category: Entrustment test

CHINA ELECTRIC POWER RESEARCH INSTITUTE



Dec.19, 2025



Notice

1. The test report is invalid without the common seal of test department.
2. The test report is invalid without compiler, main tester, assessor and authorizer.
3. The test report is invalid which has been altered.
4. The test report is only responsible for the provided sample.
5. The test report is invalid which been partial copy.
6. Different opinions about test report should be put forward to the laboratory within 15 days from the date of receiving the test report.

Address:	No.13 Haotian North Street, Liangxiang, Fangshan District, Beijing, P.R, China	Fax:	0086-010-58387078
Code:	102401	Tel:	0086-010-58387073
Web:	http://www.epri.sgcc.com.cn		

Test Report

Name of sample	Optical Fiber Composite Overhead Ground Wires (OPGW)	Type of sample	OPGW-24B1-110[90.1;100.0]
Client	Henan Qingzhou Cable Co.,Ltd	Manufacturer	Henan Qingzhou Cable Co.,Ltd
Arrive date	Oct.27, 2025	Test date	From Dec.03, 2025 to Dec.19, 2025
Sample No.	TX1-25/10/27-010	Sample Quantity	1100m
Sample description	Intact	Test category	Entrustment test
Address:	No.13 Haotian North Street, Liangxiang, Fangshan District, Beijing, P,R,China		
Test items	10 item (see page 2)		
Standard	IEC 60794-4-10:2014《Family Specification - Optical Ground Wires (OPGW) along electrical power lines》		
Conclusion	The OPGW cable, as tested, successfully met the requirements of IEC 60794-4-10:2014 for all the tests. Issued by: 王智慧 王智慧 Stamp of Laboratory 检验检测专用章 Date: Dec.19, 2025		

Verified by: 安慧蓉 安慧蓉 Tested by: 陈卫强 陈卫强 赵学军 赵学军 Compiled by: 陈卫强 陈卫强



Test Items and Conclusion

NO.	Test Items	Page	Result
1	Structure integrity and visual inspection	4	Qualified
2	Lay ratio of OPGW	4	Qualified
3	Diameter	4	Qualified
4	Cut-off wavelength	4	Qualified
5	Attenuation coefficient	4	Qualified
6	Breaking strength test	4	Qualified
7	Lightning test	4	Qualified
8	DC Resistance test	4	Qualified
9	Temperature cycling test	5	Qualified
10	Water penetration test	5	Qualified

Main Test Equipments

No.	Test Equipments	Model	Serial Number
1	Tension tester	1000kN	TX1-0008
2	OTDR	PK-8000	TX1-0038
3	Fiber multiparameter test system	2300	TX1-0104
4	Lightning test system	TDS3014B	TX1-0040
5	Temperature Chamber	CTP/W415A	TX1-0031
6	Warer penetration tester	L	TX1-0080
7	DC Resistance tester	Agilent 34405A	TX1-0139



Test Report

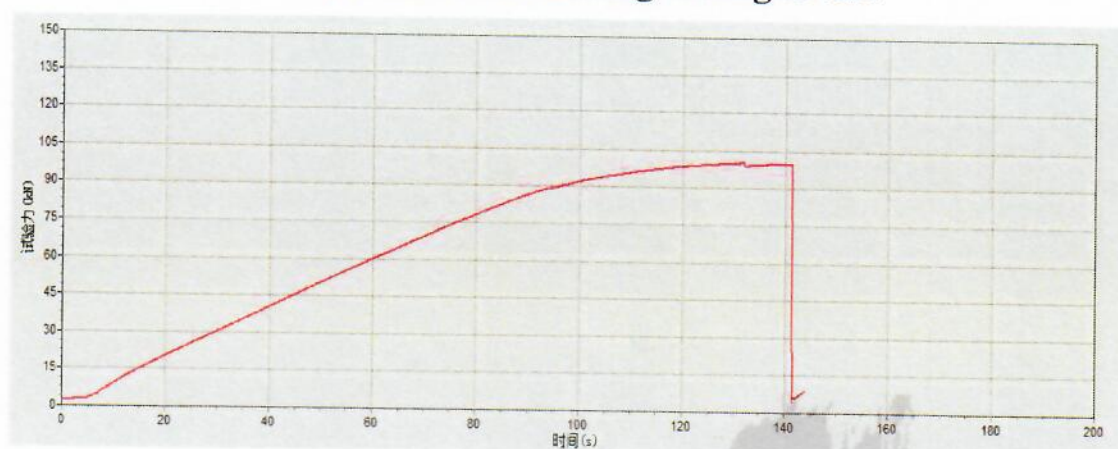
NO.	Test Item	Requirement	Test Result				Conclusion
1	Structure integrity and visual inspection	Eyesight to inspect. The structure should be integrity.	Center tube type , Integrity				Qualified
2	Lay ratio of OPGW	$10 \leq A \leq 14$	12.80				Qualified
3	Diameter	$\Phi 13.60\text{mm}$	13.61				Qualified
4	Cut-off wavelength	$\leq 1260\text{nm}$	1	1160.5	3	1189.8	Qualified
			2	1212.8	4	1149.0	
5	Attenuation coefficient	$1310\text{nm} \leq 0.35\text{dB/km}$	1	0.322	4	0.323	Qualified
			2	0.321	5	0.324	
			3	0.320	6	0.320	
		$1550\text{nm} \leq 0.21\text{dB/km}$	1	0.187	4	0.187	
			2	0.184	5	0.188	
			3	0.184	6	0.186	
6	Breaking strength test	$\geq 95\%\text{RTS}(85.60\text{kN})$	The cable was broken at 100.35kN. (See Appendix 1).				Qualified
7	Lightning test	Tensile load: (15~20)%RTS Lightning-level: I class(200A, 0.5s) Cycles: 5 The allowable permanent attenuation: $\leq 0.2\text{dB/fiber}$ (@1550nm). The residual strength $\geq 75\%\text{RTS}$.	Tensile load: 13.6kN There was no temporary or permanent attenuation (0.005dB/fiber) at 1550nm. No strands of breakage in the outer layer and no bird-caging effect on armour. The residual strength $\geq 75\%\text{RTS}$. (See Appendix 2).				Qualified
8	DC Resistance test	The calculated DC resistance of the OPGW is $0.467 \Omega/\text{km}$ at 20°C .	$0.4467 \Omega/\text{km}$ at 20°C				Qualified

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NO.	Test Item	Requirements	Test Result	Conclusion
9	Temperature cycling test	Cable length: $\geq 500\text{m}$ Temperature: $-40^{\circ}\text{C} \sim +75^{\circ}\text{C}$; Duration time: 16h at each holding time. Cycles: 2 Attenuation: $\leq 0.10\text{dB/km@ } 1550\text{nm}$.	$\Delta\alpha_{1550} \leq 0.035\text{dB/km}$	Qualified
10	Water penetration test	Water height: 1m Sample length: 1m Duration time: 1h No water should leak through.	No water leaked.	Qualified



Appendix 1 :**Results of Breaking strength test****Figure 1-1: Load-Time curve of Breaking strength test**

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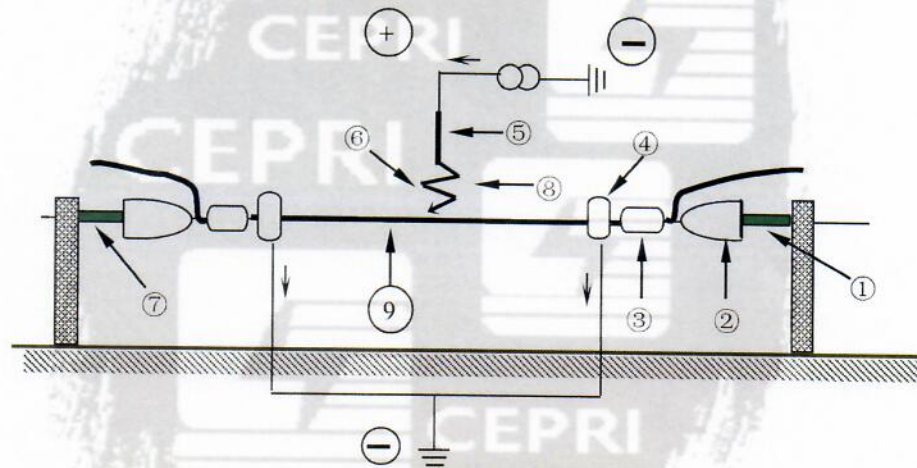


Appendix 2 :

Results of Lightning test

Table 2-1 Test result of lightning test

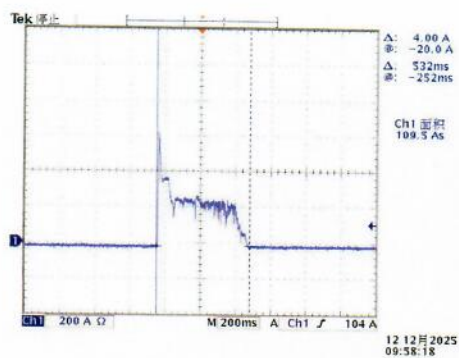
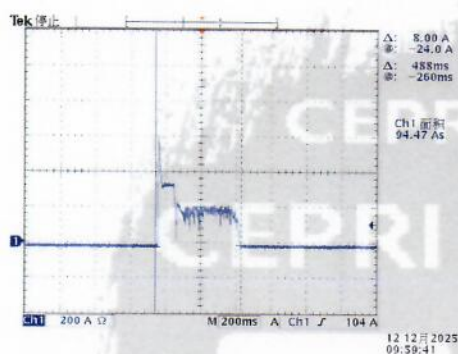
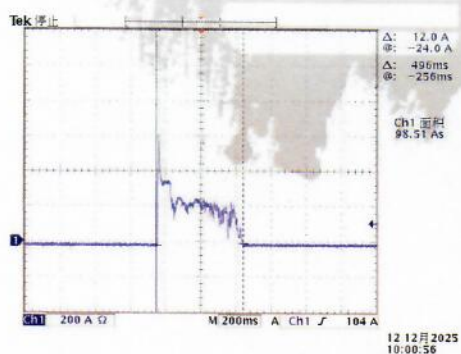
Cycle	Current	Duration time	Charge	Number of broken wires	Attenuation	Calculated residue tension
1st	200	532	109.5	0	0.005	100%RTS
2nd	200	488	94.47	0		100%RTS
3rd	200	496	98.51	0		100%RTS
4th	200	520	103.00	0		100%RTS
5th	200	516	95.67	0		100%RTS

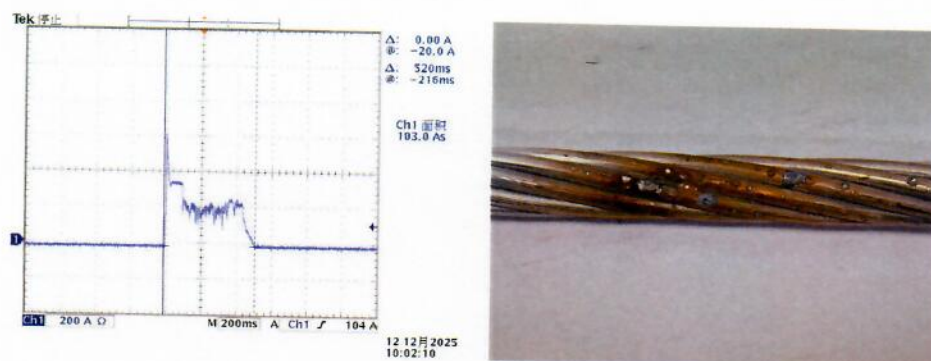
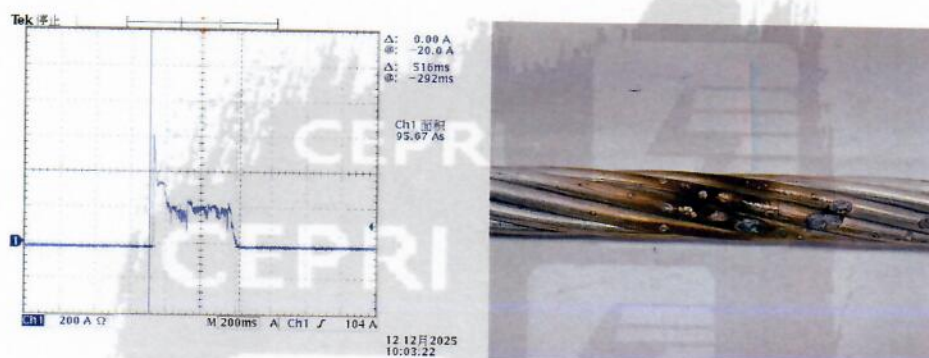


1. Turnbuckle 2. Insulator 3. Anchoring clamps 4. Symmetrical earth connectors 5. Electrode 6. Fuse 7. Tension meter 8. Gap between electrode and cable surface 9. OPGW test sample

Figure2-1 Lightning test setup



Figure 2-2 1st lightning resultFigure 2-3 2nd lightning resultFigure 2-4 3rd lightning result

Figure 2-5 4th lightning resultFigure 2-6 5th lightning result

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Appendix 3



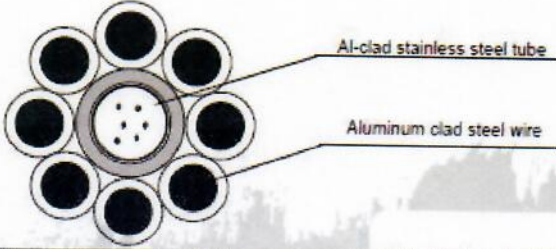
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OPGW Cable Specifications		QTY	80KM
		Date	20250501

Cable Type:

OPGW-24B1-110 [90.1;100.0]

Cross Section:



Structure		Name	No	Name	No	Material Dia.
	Fiber	G.652D	24			SUS-Dia: 2.80 mm
	Center	AL-Tube	1			Tube-Dia: 3.0/6.1 mm
	Layer1	27% AS wire	8			Diameter: 3.75 mm

Technical Data

according to IEC, IEEE standards	
stranding direction of outer layer is right hand(Z-stranding)	
Cable Diameter	13.80 mm
Cable Weight	809.0 kg/km
Supporting Cross Section	110.51 mm²
Section of AS Wire	88.36 mm²
Section of AL tube	22.16 mm²
Rate Tensile Strength (RTS)	90.1 kN
Modulus of Elasticity (E-Modulus)	123.2 kN/mm²
Thermal Elongation Coefficient	14.3 × 10⁻⁶/℃
Permissible Maximum Working Stress (40% RTS)	326.1 N/mm²
Everyday Stress (EDS) (18%~25% RTS)	148.8 ~203.8 N/mm²
Ultimate Exceptional Stress (70% RTS)	570.7 N/mm²
DC Resistance	0.467 Ω/km
Short Time Current (1s, 20℃~200℃)	10.0 kA
Short Time Current Capacity I²t	100.0 kA²s
Minimum Bending Radius: Installation:	272 mm
Operating:	204 mm
Temperature	-10℃ ~ +50℃
Range: Transportation and Operation	-40℃ ~ +80℃

Remarks: All Sizes and Values are Nominal Values

No contents in the following

