



160008220369



中国认可  
国际互认  
检测  
TESTING  
CNAS L0207

报告编号  
Reference No

CT19-06326-2

# 检测报告 Test Report

样品名称 Name of sample	8.7/15kV全冷缩三芯户外终端 8.7/15kV cold-shrinkable outdoor termination
样品型号 Type of sample	RL-LSW-3-4
委托方 Consigner	淄博润霖工贸有限公司 Zibo Runlin Industrial and Trading Co., Ltd.
试验类型 Kind of test	型式试验 Type Test

国家电线电缆质量监督检验中心  
CHINA NATIONAL CENTRE FOR QUALITY  
SUPERVISION AND TEST OF ELECTRIC WIRE AND CABLE



地址：上海市军工路1000号 邮编：200093  
电话：021-65493333 传真：021-65490171  
电子邮箱：ewec@ticw.com.cn  
报告查询网站：www.ticw.com.cn

**国家电线电缆质量监督检验中心检测报告**  
China National Centre for Quality Supervision and Test of Electric Wire and Cable  
Test Report

共 12 页 第 1 页  
Page 1 of 12

试验类型 Kind of test	型式试验 Type Test	报告编号 Reference No.	CT19-06326-2		
样品名称 Name of sample	8.7/15kV全冷缩三芯户外终端 8.7/15kV cold-shrinkable three-core outdoor termination				
型号规格 Type and Size	RL-LSW-3-4 10kV 3×400	检测日期 Date of test	2019-10-22 ~ 2020-01-16		
委托方 Consigner	名称 Name	淄博润霖工贸有限公司 Zibo Runlin Industrial and Trading Co., Ltd.			
	地址 Address	山东省淄博市临淄区王家庄工业园27号 No.27, Wangjiazhuang Industrial Park, Linzi District, Zibo, China			
	电话号码 Tel.	13561687656	邮政编码 P.C.	/	单位编号 Unit No.
生产单位 Manufacturer	名称 Name	淄博润霖工贸有限公司 Zibo Runlin Industrial and Trading Co., Ltd.			
	地址 Address	山东省淄博市临淄区王家庄工业园27号 No.27, Wangjiazhuang Industrial Park, Linzi District, Zibo, China			
	电话号码 Tel.	13561687656	邮政编码 P.C.	/	单位编号 Unit No.
来样方式 Delivering mode	送样 Supplied by	接收状态 Sample state at receiving	正常 Normal	收样日期 Receiving date	2019-10-21
检测依据 Test standard	GB/T 12706.4—2008 额定电压1kV ( $U_m=1.2kV$ ) 到35 kV ( $U_m=40.5kV$ ) 挤包绝缘电力电缆及附件 第4部分: 额定电压6kV ( $U_m=7.2kV$ ) 到35kV ( $U_m=40.5kV$ ) 电力电缆附件试验要求 Power cables with extruded insulation and their accessories for rated voltages from 1kV( $U_m=1.2kV$ ) up to 35kV ( $U_m=40.5kV$ ) Part 4: Test requirements on accessories for cables with rated voltages from 6kV( $U_m=7.2kV$ ) up to 35kV ( $U_m=40.5kV$ )				
判定依据 Verdict standard	同检测依据/ Same as test standard				
检测结论 Conclusion	样品进行了GB/T 12706.4—2008标准要求的全部项目检测, 经检测该样品符合GB/T 12706.4—2008标准要求。All items for the sample have been carried out according to GB/T 12706.4—2008, and the sample is qualified for the requirement of GB/T12706.4—2008				
备注 Note	1. 短路热稳定试验和短路动稳定试验不在本机构认可范围内, 为分包项目, 分包单位为上海电器设备检测所有限公司 (CMA资质认定证书号为180008221885)。 Thermal short-circuit test and dynamic short-circuit test are not accredited and are subcontract items. The subcontractor is Shanghai Testing & Inspection Institute for Electrical Equipment Co., Ltd. (CMA Certificate No. 180008221885). 2. 样品名称和型号规格由委托方提供。 The name and type and size of the sample are provided by consigner.				
主检 Tested by	贺金红 He Jinhong 	审核 Checked by	范玉军 Fan Yujun 	批准 Approved by	毛阿兴 Mao Axing 
日期 Date	2020.02.10	日期 Date	2020-02-10	日期 Date	2020.2.10

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
<p>1. 样品描述 Sample description</p> <p>本试验共有三个试验回路，具体如下 Tests are carried out on three test loops, and details as follows:</p> <p>1.1 试验回路1 Test loop 1</p> <p>试验回路1包含一套8.7/15kV全冷缩三芯中间接头，一套8.7/15kV全冷缩三芯户外终端(一套测试样品)，一套8.7/15kV全冷缩三芯户内终端和一根三芯长度10米的电力电缆，电缆的型号规格为YJV22-8.7/15 3×400。 The test loop 1 comprises one 8.7/15kV cold-shrinkable three-core straight joint, 8.7/15kV cold-shrinkable three-core outdoor termination (one test sample), one 8.7/15kV cold-shrinkable three-core indoor termination and a 10m three cores power cable. Type and size of the cable is YJV22-8.7/15 3×400.</p> <p>1.2 试验回路2 Test loop 2</p> <p>组成同试验回路1 (一套测试样品)。 Assembled same as test loop 1 (one test sample).</p> <p>1.3 试验回路3 Test loop 3</p> <p>试验回路3包含两套8.7/15kV全冷缩三芯户外终端(其中一套为被试样品)，一根三芯长度8米的电力电缆，电缆的型号规格为YJV22-8.7/15 3×400。 The test loop 3 comprises two 8.7/15kV cold-shrinkable three-core outdoor terminations (one of the samples is test sample) and a 8m three cores power cable. Type and size of the cable is YJV22-8.7/15 3×400.</p> <p>2. 试验程序 Test sequences</p> <p>2.1 试验回路1和试验回路2均按GB/T 12706.4—2008中表4规定的终端试验程序1.1进行试验。 Test loop 1 and test loop 2 are tested according to test sequence 1.1 of termination given in table 4 of GB/T 12706.4—2008.</p> <p>2.2 试验回路1完成终端试验程序1.1后，再按试验程序1.2和1.3进行试验。 Test loop 1 is tested according to termination test sequences 1.2 and 1.3 after completing termination test sequence 1.1.</p> <p>2.3 试验回路3按GB/T 12706.4—2008中表4规定的试验程序1.5进行试验。 Test loop 3 are tested according to test sequence 1.5 given in table 4 of GB/T 12706.4—2008.</p> <p>2.4 试验项目中检验(检查)项目结果“无异常”，是指试验后无以下任一现象： The “no abnormality” in test result of examination in test item means the any of following phenomena shall not appear after testing:</p> <ul style="list-style-type: none"> <li>(I) 填充物和/或带材或管件有裂纹; cracking in the filling media and/or tape or tube components;</li> <li>(II) 主要密封部位有贯穿性潮湿通道; a moisture path across a primary seal;</li> <li>(III) 腐蚀和/或漏电痕迹、电蚀，最后导致附件的损坏; corrosion and/or tracking and/or erosion which would, in time, lead to failure of the accessory;</li> <li>(IV) 任何绝缘材料渗漏。leakage of any insulating material.</li> </ul>			

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400		报告编号 Reference No.	CT19-06326-2	
序号 No.	检测项目 Test Items	单位 Unit	技术要求 Requirements	检测结果 Test Results	单项评定 Verdict
1	试验程序 Sequence 1.1				
1.1	交流耐压试验(39kV, 5min) AC voltage test (39kV, 5min)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.2	交流耐压(淋雨, 35kV, 1min) AC(wet, 35kV, 1min)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.3	局部放电试验(15kV) Partial discharge(15kV)	pC	≤10	≤1.4 (灵敏度Sensitivity: 1.4)	P
1.4	冲击电压试验(95~100℃, 95kV, 正负极性各 10 次) Impulse voltage test (95~100℃, 95kV, 10 impulses of each polarity)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.5	空气中恒压负荷循环试验(22kV. 加热循环至少 8h, 95℃~100℃至少 2h, 自然冷却至少 3h, 共 60 次热循环) Heating cycles test in air (22kV. Heating cycle at least 8h, 95℃~100℃ at least 2h, natural cooling at least 3h, total 60 heating cycles)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.6	局部放电试验 Partial discharge				
1.6.1	局部放电试验(15kV, 95~100℃) Partial discharge(15kV, 95~100℃)	pC	≤10	≤1.2 (灵敏度Sensitivity: 1.2)	P
1.6.2	局部放电试验(15kV,环境温度) Partial discharge(15kV, ambient temperature)	pC	≤10	≤1.4 (灵敏度Sensitivity: 1.4)	P
1.7	冲击电压试验(室温, 95kV, 正负极性各 10 次) Impulse voltage test (ambient temperature, 95kV, 10 impulses of each polarity)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.8	交流耐压试验(22kV, 15min) AC voltage test (22kV, 15min)		不击穿或闪络 No breakdown or flashover	两个样品均未击穿、未闪络 No breakdown and flashover for two samples	P
1.9	检验(检查) Examination	/		样品无异常 No abnormality on the sample	N

注：“单项评定”符号含义：P：检测结果符合要求；F：检测结果不符合要求；N：检测结果不要求判定。  
Note: "P" means this item does meet the requirement, "F" means this item does not meet the requirement, "N" means this item does not require to the verdict.

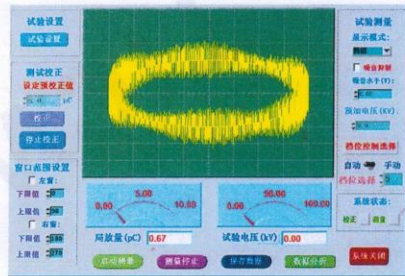
型号和规格 Type and size		RL-LSW-3-4 10kV 3×400		报告编号 Reference No.	CT19-06326-2	
序号 No.	检测项目 Test Items	单位 Unit	技术要求 Requirements	检测结果 Test Results	单项评定 Verdict	
2	试验程序 Sequence 1.2+1.3					
2.1	交流耐压试验(39kV, 5min) AC voltage test (39kV, 5min)		不击穿或闪络 No breakdown or flashover	样品未击穿、未闪络 No breakdown and flashover	P	
2.2	短路热稳定试验 (导体, 42.5kA, 3s, 2次) Thermal short-circuit test (conductor, 42.5kA, 3s, two short-circuits)		无可见损伤 No visible deterioration	样品未见损伤 No visible deterioration for the sample (环境温度 ambient temperature: 15°C)	P	
2.3	短路动稳定试验 (184.2kA, 至少 10ms, 1次) Dynamic short-circuit test (184.2kA, at least 10ms, One short-circuit)		无可见损伤 No visible deterioration	样品未见损伤 No visible deterioration for the sample (环境温度 ambient temperature: 15°C)	P	
2.4	冲击电压试验(室温, 95kV, 正负极性各 10 次) Impulse voltage test (ambient temperature, 95kV, 10 impulses of each polarity)		不击穿或闪络 No breakdown or flashover	样品未击穿、未闪络 No breakdown and flashover	P	
2.5	交流耐压试验(22kV, 15min) AC voltage test (22kV, 15min)		不击穿或闪络 No breakdown or flashover	样品未击穿、未闪络 No breakdown and flashover	P	
2.6	检验(检查) Examination	/	/	样品无异常 No abnormality on the sample	N	
3	试验程序 Sequence 1.5					
3.1	盐雾试验 (喷雾速率: (0.4±0.1)L/(h·m <sup>3</sup> ) 雾水电导率: (1600±200)mS/m 电压: 11kV, 时间: 1000h) Salt fog test (Spray rate: (0.4±0.1)L/(h·m <sup>3</sup> ) Spray water conductivity: (1600±200)mS/m Voltage: 11kV, time: 1000h)		不击穿或闪络 跳闸不超过三次 无显著的损伤 No breakdown or flashover No more than three trippings No substantial damage	通过 Passed	P	
3.2	检验(检查) Examination	/	/	样品无异常 No abnormality on the sample	N	

注：“单项评定”符号含义：P：检测结果符合要求；F：检测结果不符合要求；N：检测结果不要求判定。  
Note: "P" means this item does meet the requirement, "F" means this item does not meet the requirement, "N" means this item does not require to the verdict.

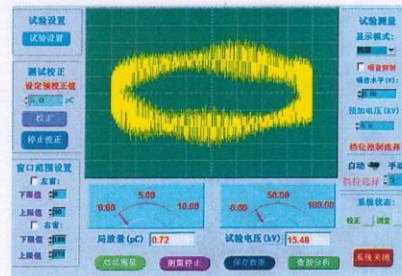
型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录A 恒压负荷循环试验后局部放电试验图形（室温）

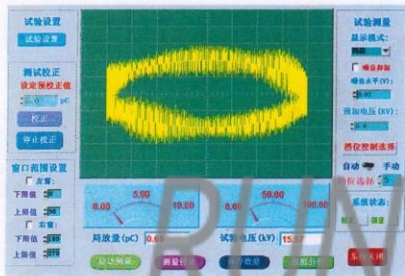
Annex A Oscillograms of partial discharges on the sample after heating cycles test (ambient temperature)



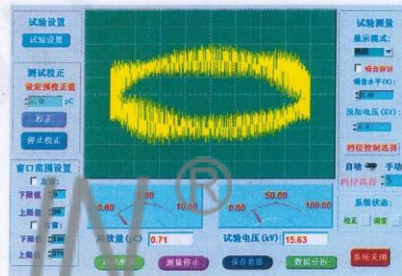
A1: 试验回路1局部放电试验背景噪声  
The background noise during partial discharge test on test loop 1



A2: 试验回路1红芯在15kV下局部放电试验图形  
The oscillogram of partial discharge of red core at 15kV on test loop 1



A3: 试验回路1黄芯在15kV下局部放电试验图形  
The oscillogram of partial discharge of yellow core at 15kV on test loop 1



A4: 试验回路1绿芯在15kV下局部放电试验图形  
The oscillogram of partial discharge of green core at 15kV on test loop 1

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
			
<p>A5: 试验回路2局部放电试验背景噪声 The background noise during partial discharge test on test loop 2</p>			
		<p>A6: 试验回路2红芯在15kV下局部放电试验图形 The oscillogram of partial discharge of red core at 15kV on test loop 2</p>	
			
<p>A7: 试验回路2黄芯在15kV下局部放电试验图形 The oscillogram of partial discharge of yellow core at 15kV on test loop 2</p>			
		<p>A8: 试验回路2绿芯在15kV下局部放电试验图形 The oscillogram of partial discharge of green core at 15kV on test loop 2</p>	

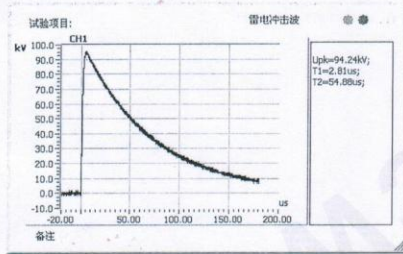
型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录B 恒压负荷循环试验后样品冲击电压试验实际耐受电压值及其波形图(95kV, 允许±3%偏差)  
Annex B The values and oscillograms of impulse voltages test on samples after heating cycles voltage test (95kV, ±3% tolerance)

温度: 20℃, 相对湿度: 60%, 大气压力: 102.5kPa  
Ambient temperature:20℃, Relative humidity:60%, Atmosphere: 102.5kPa

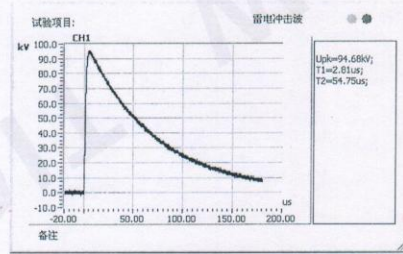
kV

+	94.24	94.41	95.58	95.21	95.46	94.74	95.31	95.17	95.16	94.68
-	94.26	96.76	96.31	96.03	95.46	96.25	95.80	95.82	96.26	95.99



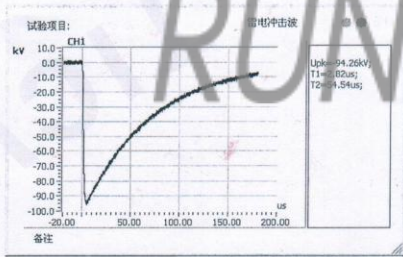
B1:正极性第1次

The 1st positivity lightning impulse waveform



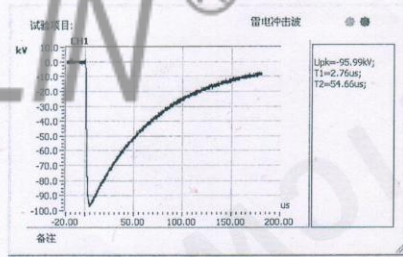
B2:正极性第10次

The 10th positivity lightning impulse waveform



B3:负极性第1次

The 1st negative lightning impulse waveform



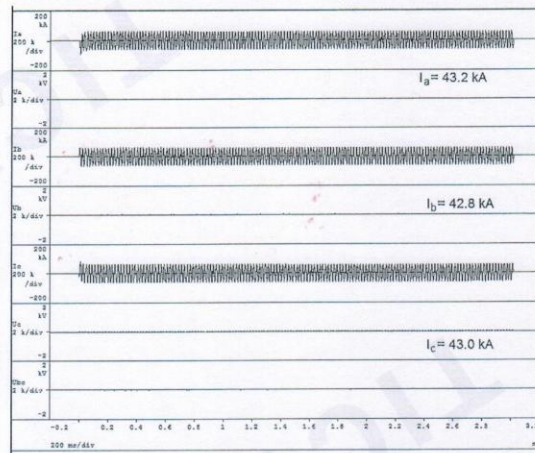
B4:负极性第10次

The 10th negative lightning impulse waveform



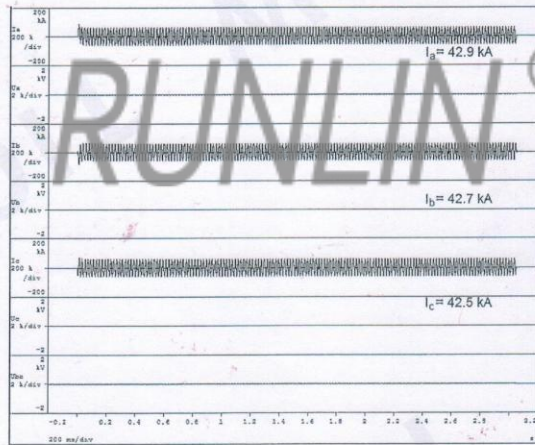
型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录C: 短路热稳定(导体)电流曲线图  
Annex C The graphs of thermal short-circuit (conductor) current



短路电流有效值  
R.M.S.  
value of short-circuit  
current:  
 $I_A$ : 43.2 kA  
 $I_B$ : 42.8 kA  
 $I_C$ : 43.0 kA  
持续时间  
Duration time:  
 $t$ : 3.02s

C1: 第1次 The 1<sup>st</sup>



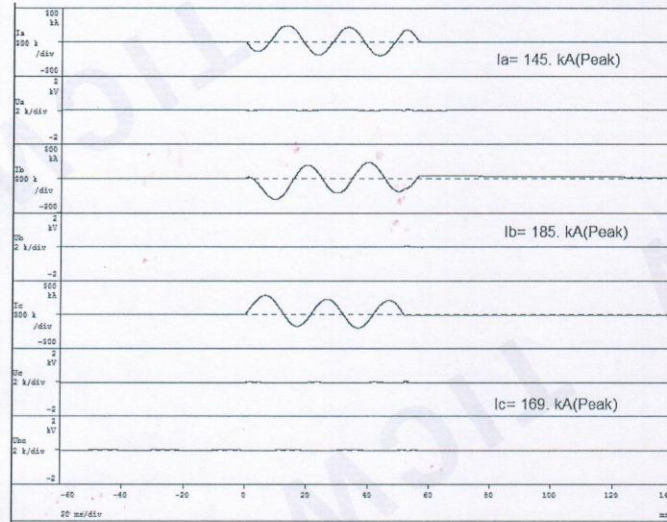
短路电流有效值  
R.M.S.  
value of short-circuit  
current:  
 $I_A$ : 42.9 kA  
 $I_B$ : 42.7 kA  
 $I_C$ : 42.5kA  
持续时间  
Duration time:  
 $t$ : 3.05s

C2: 第2次 The 2<sup>nd</sup>

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录 D 短路动稳定电流曲线图

Annex D The graphs of dynamic short-circuit current



短路电流峰值 Peak  
value of short-circuit  
current:

I<sub>A</sub>: 145 kA

I<sub>B</sub>: 185 kA

I<sub>C</sub>: 169 kA

持续时间

Duration time:

t: 56.9ms

D1: 短路动稳定电流曲线图 The graphs of dynamic short-circuit current

RUNLIN®

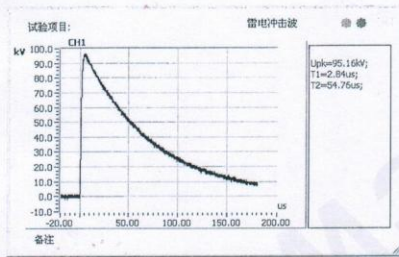
型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录E 短路动热稳定试验后样品冲击电压试验实际耐受电压值及其波形图(95kV, 允许±3%偏差)  
Annex E The values and oscillograms of impulse voltages test on samples after thermal and dynamic short-circuit test (95kV, ±3% tolerance)

温度: 16℃, 相对湿度: 56%, 大气压力: 101.9kPa  
Ambient temperature: 16℃, Relative humidity: 56%, Atmosphere: 101.9kPa

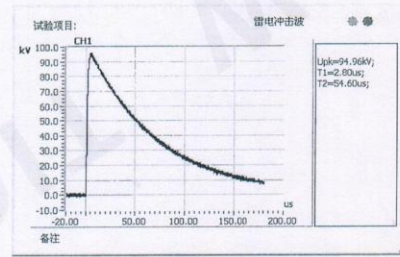
	+	95.16	95.13	95.53	94.67	95.25	95.44	95.20	95.13	94.81	94.96
-	-	96.44	95.91	96.74	94.59	96.42	94.97	95.23	94.60	95.65	96.07

kV



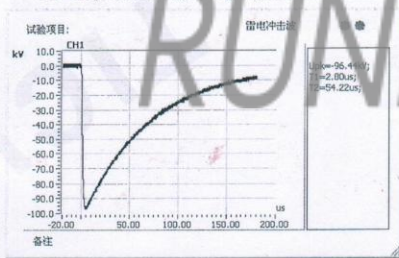
E1:正极性第1次

The 1st positivity lightning impulse waveform



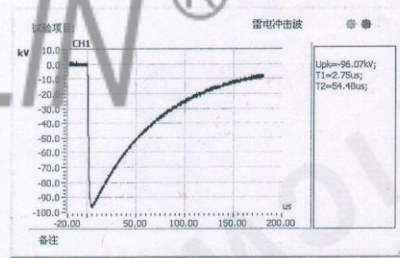
E2:正极性第10次

The 10th positivity lightning impulse waveform



E3:负极性第1次

The 1st negative lightning impulse waveform



E4:负极性第10次

The 10th negative lightning impulse waveform

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
------------------------	-----------------------	-----------------------	--------------

附录F 试验照片  
Annex F Photos about testing



F1: 样品外观 The appearance of the sample



F2: 样品局部放电试验及交流耐压试验  
Partial discharge test and AC voltage test on the sample



F3: 冲击电压试验 Impulse voltage test

型号和规格 Type and size	RL-LSW-3-4 10kV 3×400	报告编号 Reference No.	CT19-06326-2
附录G 试验电缆的标识 Annex G Identification of test cable			
额定电压 $U_0/U(U_m)$ Rated voltage	8.7/15(17.5) kV		
结构: Construction	芯数 Core number	三芯 Three-core	
	屏蔽结构 Screened	分相屏蔽 Individually screened	
导体: Conductor	材料 Material	铜 Copper	
	形状 Shape	紧压圆形绞合 Stranded compacted circular	
	截面 Cross-sectional area	400mm <sup>2</sup>	
	外径 Overall diameter	22.6mm	
绝缘: Insulation	材料 Material	交联聚乙烯 XLPE	
	厚度 Thickness	4.5mm	
	外径 Overall diameter	33mm	
屏蔽: Screen	绝缘屏蔽厚度 Thickness of insulation screen	0.8mm	
	绝缘屏蔽是否可剥离 Strippability for insulation screen	可剥离 Strippable	
	绝缘屏蔽外径 Overall diameter of insulation screen	34.6mm	
	金属屏蔽 Metallic screen	铜带屏蔽 Copper tape	
铠装: Armour	结构和材料 Construction and Material	双层钢带 Two steel tapes	
外护套: Oversheath	材料 Material	聚氯乙烯 PVC	
	外径 Overall diameter	91.2mm	
电缆标示: Cable marking	YJV22-8.7/15 3×400		