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TESTING
CNAS L0223

XIHARI

No. 240344J

检 验 报 告

Test Report

试品型号: UG120B146/320N16W
TYPE
高压线路耐污盘形悬式玻璃绝缘子

试品名称: Suspension Glass Insulator
DESIGNATION

委托单位: 萍乡强盛电瓷制造有限公司
CLIENT Pingxiang Qiangsheng Electric Insulator Manufacturing Co., LTD

制造单位: 萍乡强盛电瓷制造有限公司
MANUFACTURER Pingxiang Qiangsheng Electric Insulator Manufacturing Co., LTD

检验类别: 定型试验
TEST CLASSIFICATION Prototype Tests

西安高压电器研究院股份有限公司

XI'AN HIGH VOLTAGE APPARATUS RESEARCH INSTITUTE CO., LTD.

XIHARI

检验报告 Test Report

No. 240344J

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联系方式Contact information:

地址：陕西省西安市西二环北段18号

邮政编码 Zip code: 710077

Address: No.18, North Section of Xi'erhuan, Xi'an, Shaanxi, China

电话Tel: (+86)-29-84225675

传真Fax: (+86)-29-84225680

网址Web: www.xihari.com

电子邮箱E-mail: lab@xihari.com

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概述 Summary					
试品型号及名称 Test object		UG120B146/320N16W 高压线路耐污盘形悬式玻璃绝缘子 Suspension Glass Insulator			
委托单位 Client	名称 Name	萍乡强盛电瓷制造有限公司 Pingxiang Qiangsheng Electric Insulator Manufacturing Co., Ltd			
	联系方式 Connection	江西省萍乡市芦溪县芦溪工业区(337299) 电话: 86 799 7567555 Luxi Industrial Park, Luxi County, Pingxiang City, Jiangxi Province, P.R.China Postal code: 337299 Tel:+86 799 7567555 Fax:+86 799 7671988			
制造单位 Manufacturer		萍乡强盛电瓷制造有限公司 Pingxiang Qiangsheng Electric Insulator Manufacturing Co., Ltd			
出厂日期 Manufacture date		/			
委托单位/制造单位 规定的试品主要技术 参数 Rated value assigned by the client/ manufacturer		额定机械负荷/Specified load kN			120
		结构高度/Height mm			146
		盘径/Diameter of disk mm			255
		爬电距离/Creepage distance mm			320
		干雷电冲击电压(5片串)/Dry lightning impulse voltage (5 pieces) kV			420
		湿工频电压(5片串)/Wet power-frequency voltage (5 pieces) kV			180
		击穿耐受电压/Puncture withstand voltage kV			130
委托单位提供的技术资料 The tested object is guaranteed by the client		QS-G-15 U120B/146交流盘形悬式玻璃绝缘子总装配图 U120B/146 DISC Glass Insulator Assembly Drawing			
委托单位声明 Note		图示产品型号为: U120B/146, 机械强度按120kN考核。 The type is U120B/146 in the drawing, the mechanical load is tested as 120kN.			
委试单位代表 Representation of client		刘志平 Liu Zhiping			
注: 以上信息和数据由委托单位/制造单位提供, 本实验室不对其准确性负责。 Note: The above information and data are provided by client/manufacturer and the laboratory is not responsible for its accuracy.					
试品编号 Serial No.		1# ~ 35#			
试品到达日期 Reception date		2024-09-18			
试验日期 Date of tests		起 2024-09-26 止 2024-10-09 From To			
试验地址 Test address		本报告所有试验均在陕西省西安市大庆路642号进行。 All tests were carried out at No.642, Daqing Road, Xian, Shaanxi, China.			

检验结论
Test Conclusion

委托单位: 萍乡强盛电瓷制造有限公司

Client: Pingxiang Qiangsheng Electric Insulator Manufacturing Co., Ltd

试品型号及名称: UG120B146/320N16W
高压线路耐污盘形悬式玻璃绝缘子Test object: UG120B146/320N16W
Suspension Glass Insulator

制造单位: 萍乡强盛电瓷制造有限公司

Manufacturer: Pingxiang Qiangsheng Electric Insulator Manufacturing Co., Ltd

检验类别: 定型试验

Test classification: Prototype Tests

实施的检验项目/Tests have been performed:

逐个试验/Routine test: 逐个外观检查/Visual Inspection

逐个机械试验/Mechanical Test

抽样试验/Sample test: 尺寸检查/Verification of the Dimensions

偏差检查/Verification of the Displacements

锁紧装置检查/Verification of the Locking System

温度循环试验/Temperature Cycle Test

镀锌层试验/Galvanizing Test

无线电干扰试验/Radio Interference Test

机械破坏负荷试验/Mechanical Failing Load Test

击穿耐受试验/Puncture Withstand Test

残余机械强度试验/Residual Mechanical Strength Test

热震试验/Thermal Shock Test

检验结论
Test Conclusion型式试验/Type
test:

尺寸检查/Verification of the Dimensions

干雷电冲击电压试验/Dry Lightning Impulse Voltage Test

湿工频电压试验/Wet power-frequency Voltage Test

残余机械强度试验/Residual Mechanical Strength Test

机械破坏负荷试验/Mechanical Failing Load Test

热机械性能试验/Thermal-mechanical Performance Test

无线电干扰试验/Radio Interference Test

可见电晕电压试验/Visual Corona Voltage Test

击穿耐受试验/Puncture Withstand Test

检验依据/The tests have been performed in accordance with:

GB/T 1001.1-2021 标称电压高于1000V的架空线路绝缘子 第1部分: 交流系统用瓷或玻璃绝缘子元件 定义、试验方法和判定准则/Insulators for overhead lines with a nominal voltage above 1000V—Part1: Ceramic or glass insulator units for a. c. systems—Definitions, test methods and acceptance criteria (IEC 60383-1: 1993, MOD)

检验结论/Conclusion:

按照检验依据规定的逐个试验、抽样试验和型式试验各项全检, 其结果均符合检验依据和技术资料规定; 定型试验合格。

The results of the prototype tests (routine tests, sample tests and type tests) met the requirements of the standards and technical specifications.

编写Edited:

杜雨欣

校核Checked:

何正华

批准Approved:

刘志强

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批准日期

Approved Date: 2024-10-31

逐个外观检查 (逐个) Visual Inspection (Routine test)

试验日期/Date of tests: 2024-09-26

1# ~ 35#样品外形规整, 铁帽标识机械强度为“Q120”, 绝缘件光滑透明, 无折痕、气孔等缺陷, 表面各种缺陷未超过标准规定; 金属附件镀锌层连续, 无毛刺、锌渣、针孔等缺陷; 符合检验依据规定。

Specimens No.1 ~ No.35 had fair appearance. The cap were labelled "Q120". No defects exceeding standard permission were observed. The result met test standard and the technical specifications.



样品外形和标识照片 Photograph 1

逐个机械试验 (逐个) Mechanical Test (Routine test)

试验日期/Date of tests: 2024-09-26

1# ~ 35#样品均经受拉伸负荷60kN, 持续时间3s的拉伸负荷试验, 样品均完好。符合检验依据规定。

A tensile load of 60kN was applied to specimens No.1 ~ No.35 for 3s, the specimens no damaged. The result met test standard and the technical specifications.

尺寸检查 (抽样)
Verification of the Dimensions (Sample test)

试验日期/Date of tests: 2024-09-26

16B 联接标记/Mark

单位/Units: mm

样品编号 Specimen No.	结构高度 Spacing	盘径 Diameter of disk	爬电距离 Creepage distance
9	147.0	255.8	326
10	148.0	256.3	324
11	147.0	257.6	328
12	146.5	255.1	327
规定值 Specifications	146±4.68	255±1.7	320±14.3

1[#] ~ 12[#]样品的铁帽和钢脚经量规检查, 均符合标准规定。

Specimen No.1 ~ No.12 passed the gauging of ball and socket verification.

1[#] ~ 6[#]样品串长为882mm, 符合(876±19)mm的规定。

The length of string (No.1 ~ No.6) was 882mm, met the requirement of (876±19)mm.

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

偏差检查 (抽样)
Verification of the Displacements (Sample test)

试验日期/Date of tests: 2024-09-26

单位/Units: mm

样品编号 Specimen No.	轴向偏差 (A) Variation on A	径向偏差 (B) Variation on B
1	2.6	4.3
2	4.3	4.7
3	4.3	3.0
4	3.6	2.6
5	4.2	2.9
6	2.9	3.7
7	3.3	3.5
8	4.0	3.0
9	2.5	2.7
10	2.1	4.3
11	3.3	2.9
12	2.9	3.8
规定值 Specifications	≤ 10.2	≤ 7.6

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

锁紧装置检查 (抽样) Verification of the Locking System (Sample test)

试验日期/Date of tests: 2024-09-26

16BW 钢质锁紧销/Steeliness clip

1 锁紧装置的符合性检查/Conformity of the locking device

绝缘子制造厂有所使用锁紧销的有效的检验合格证书, 符合检验依据规定, 合格。

The verification of the locking device had been confirmed by the insulator manufacturer, meets the requirement of the test basis.

2 锁紧状态的检查/Verification of locking

把绝缘子连接成两个元件的串, 锁紧装置置于锁紧位置, 向各个方向多次摆动、振动, 在整个过程中连接未脱开, 符合检验依据规定, 合格。

The insulators were connected in strings of two units. The locking device was placed in the locking position, then by applying movements comparable to those experienced in service. No uncoupling occurred.

3 锁紧装置操作试验/Operation test

样品编号 Specimen No.	引起锁紧销移至连接位置的负荷 Load caused locking device to move to the coupling position N			施加最大负荷 250N时 Position of locking device under max. load of 250N
	第一次 First	第二次 Second	第三次 Third	锁紧销的状况
9	129	138	125	未从球窝脱出 No removal from the socket
10	114	117	141	未从球窝脱出 No removal from the socket
11	147	143	147	未从球窝脱出 No removal from the socket
12	127	116	126	未从球窝脱出 No removal from the socket
规定值 Specifications	25 ~ 250			不应从球窝脱出 No removal from the socket

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

温度循环试验 (抽样) Temperature Cycle Test (Sample test)

试验日期/Date of tests: 2024-09-27

样品编号 Specimen No.	热水温度 The temperature of hot water ℃	冷水温度 The temperature of cold water ℃	温差 Difference in temperature K	冷热水中停留时间 Duration min	循环次数 Cycle Time	样品检查 Inspection	样品状况 Result
13	98	28	70	15	3	后经检查 All specimens were examined.	未损坏 No damage
14	98	28	70	15	3		未损坏 No damage
15	98	28	70	15	3		未损坏 No damage
16	98	28	70	15	3		未损坏 No damage
17	98	28	70	15	3		未损坏 No damage
18	98	28	70	15	3		未损坏 No damage
19	98	28	70	15	3		未损坏 No damage
20	98	28	70	15	3		未损坏 No damage
规定值 Specifications	/	/	70	15	3		/

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

镀锌层试验 (抽样)
Galvanizing Test (Sample test)

试验日期/Date of tests: 2024-09-26

采用磁力测层法测量。

单位/Units: μm

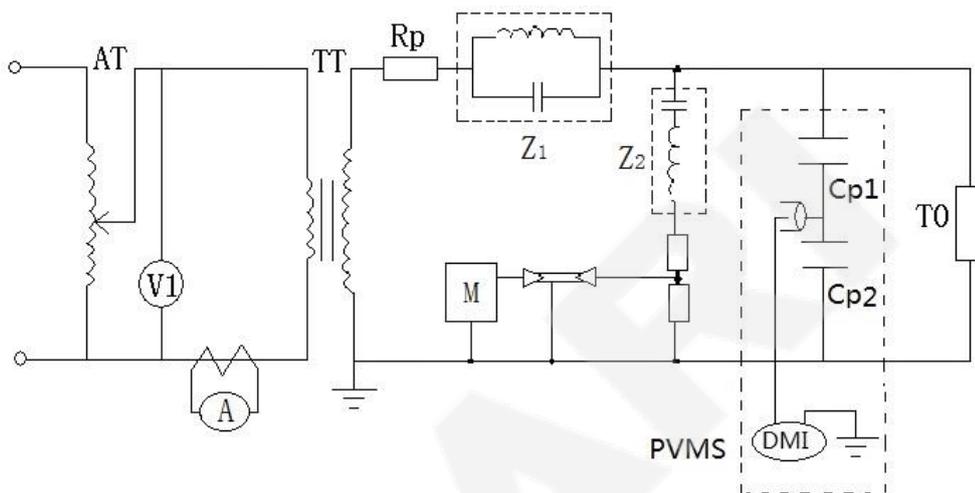
样品编号 Specimen No.	单个样品最小值 Minimum values of single specimen		单个样品平均值 Average values of single specimen		全部样品平均值 Average values of all specimen	
	铁帽 Cap	钢脚 Pin	铁帽 Cap	钢脚 Pin	铁帽 Cap	钢脚 Pin
9	85	83	124	137	133	130
10	85	89	131	130		
11	97	97	138	135		
12	97	86	140	120		
规定值 Specifications	/		≥ 70		≥ 85	

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

无线电干扰试验 (抽样) Radio Interference Test (Sample test)

无线电干扰试验线路图
(Diagram of radio interference voltage test circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容(H.V/ L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

Z_1 : 阻塞阻抗 (Blocking impedance)

Z_2 : 耦合阻抗 (Coupling impedance)

M: 干扰场强仪 (RIV measuring device)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/ kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
150/150	50	278.8	0.2785

无线电干扰试验 (抽样)
Radio Interference Test (Sample test)

试验日期/Date of tests: 2024-10-09

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$

测量频率: 1.0MHz; 样品安装: 悬挂安装; 背景干扰水平: 26.25dB

Test frequency: 1.0MHz. Specimen mounted: vertical as in service. Background noise level: 26.25dB.

试品的无线电干扰水平为 $V=V_m+A+R$ 。其中, 测量系统回路衰减因数 A 与电阻网络因数 R 总共为22.11dB。 V_m 为测量接收仪的读数。Radio interference $V=V_m+A+R$. $A+R=22.11\text{dB}$, V_m is measuring decibels.

试验按标准规定的“标准程序”进行, 最后一轮降压过程中规定测量电压下的无线电干扰电压如下:

The test was carried out according to the "standard procedure", RIV obtained during the last decreasing run at the specified test voltage was as follows.

样品编号 Specimen No.	施加电压 Voltage applied kV	测量分贝值 V_m Measuring decibels dB	无线电干扰值 V Radio interference dB	干扰电压值 Radio interference voltage μV
9	10.0	7.48	29.59	30.2
10	10.0	6.12	28.23	25.8
11	10.0	6.09	28.20	25.7
12	10.0	6.33	28.44	26.4
规定值 Specifications	10	/	/	≤ 50

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

机械破坏负荷试验 (抽样) Mechanical Failing Load Test (Sample test)

试验日期/Date of tests: 2024-09-29

样品编号 Specimen No.	破坏负荷值 Failing load kN	破坏状况 Failing at	结果判定 Result
1	146.2	脚拉脱/Pin	$\bar{X}_1=149.600\text{kN}$ $\sigma_1=7.922\text{kN}$ $C_1=1.42$ $SFL=120\text{kN}$ $SFL+C_1\sigma_1=131.249\text{kN}$ $\bar{X}_1 > SFL+C_1\sigma_1$
2	141.7	脚拉脱/Pin	
3	161.8	帽坏/Cap	
4	139.6	脚拉脱/Pin	
5	160.2	帽坏/Cap	
6	150.4	脚拉脱/Pin	
7	147.8	脚拉脱/Pin	
8	149.1	脚拉脱/Pin	

符合检验依据规定，合格。

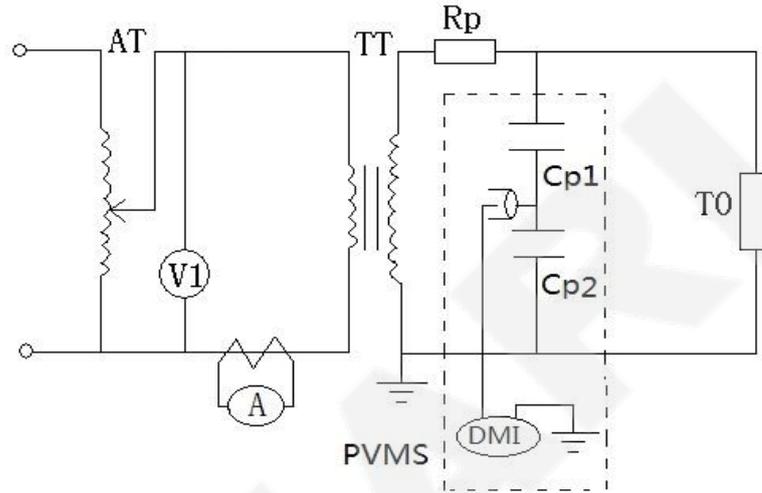
The result met test standard and the technical specifications.



样品机械破坏状况照片 Photograph 1

击穿耐受试验 (抽样) Puncture Withstand Test (Sample test)

工频试验回路图
(Diagram of power frequency voltage circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容 (H.V/L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
300/1200	50	411.4	0.411

击穿耐受试验 (抽样) Puncture Withstand Test (Sample test)

试验日期/Date of tests: 2024-10-09

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$

1 工频击穿耐受试验/Puncture withstand test

样品编号 Specimen No.	施加电压值 Voltage applied kV	样品状况 Result
9	130.0	未击穿 No punctured
10	130.0	未击穿 No punctured
11	130.0	未击穿 No punctured
12	130.0	未击穿 No punctured
规定值 Specifications	130	不应击穿 No punctured

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

2 工频击穿电压试验/Puncture test

样品编号 Specimen No.	施加电压值 Voltage applied kV	样品状况 Result
9	160.0	未击穿 No punctured
10	160.0	未击穿 No punctured
11	160.0	未击穿 No punctured
12	160.0	未击穿 No punctured

提供实测数据。

Provided the test datum only.

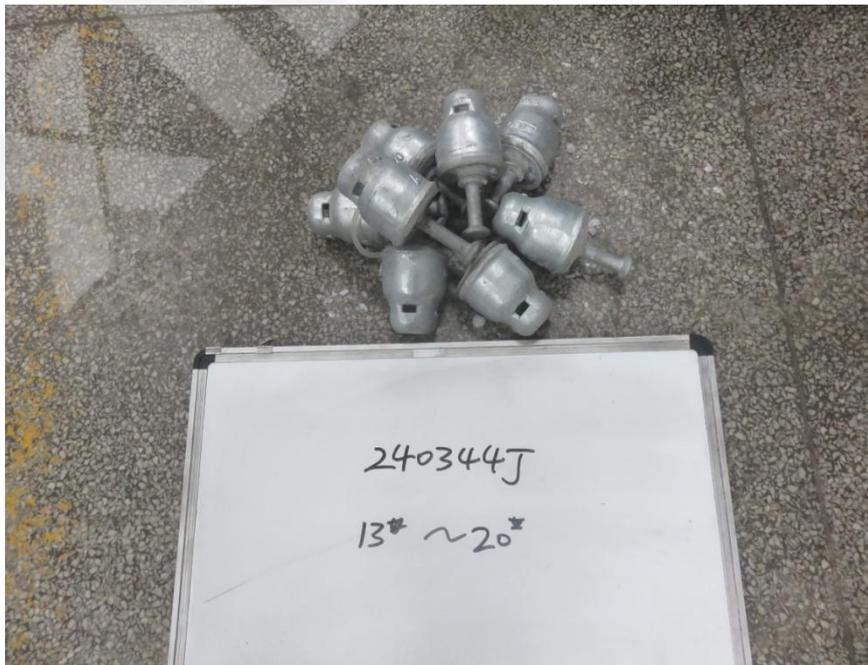
残余机械强度试验 (抽样) Residual Mechanical Strength Test (Sample test)

试验日期/Date of tests: 2024-09-29

样品编号 Specimen No.	破坏负荷值 Failing load value kN	破坏状况 Failing at	金属附件破坏的样品共8只，破坏值范围为121.8kN ~ 136.7kN，均大于SFL(120kN)。 There were 8 specimens who failed at its metal fittings, the failing loads were 121.8kN ~ 136.7kN, none of them was less than SFL(120kN).
13	132.5	脚延伸/Pin	
14	136.5	脚延伸/Pin	
15	127.7	脚延伸/Pin	
16	131.0	脚延伸/Pin	
17	136.7	脚延伸/Pin	
18	126.0	脚延伸/Pin	
19	121.8	脚延伸/Pin	
20	129.7	脚延伸/Pin	

符合检验依据规定，合格。

The result met test standard and the technical specifications.



样品残留机械强度破坏状况照片 Photograph 1

热震试验 (抽样)
Thermal Shock Test (Sample test)

试验日期/Date of tests: 2024-09-27

样品编号 Specimen No.	烘箱中热空气温度 The temperature of hot air ℃	热空气中停留时间 Duration in hot air min	冷水温度 The temperature of cold water ℃	冷水中停留时间 Duration in cold water min	温差 Difference in temperature K	样品状况 Result
9	135	30	29	5	106	未损坏 No damage
10	135	30	29	5	106	未损坏 No damage
11	135	30	29	5	106	未损坏 No damage
12	135	30	29	5	106	未损坏 No damage
规定值 Specifications	/	/	≤ 50	≥ 2	≥ 100	不应损坏 No damage

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

尺寸检查 (型式) Verification of the Dimensions (Type test)

试验日期 Date of tests: 2024-09-26

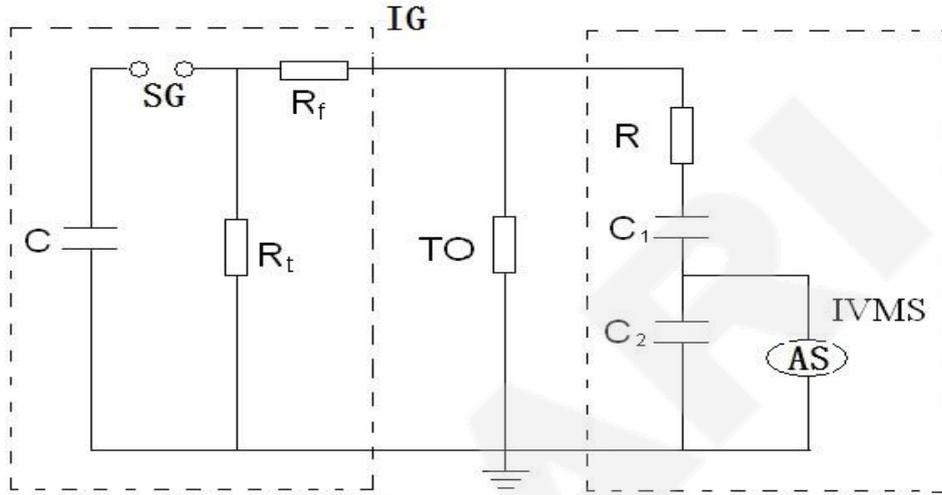
16B 联接标记/Mark

样品编号 Specimen No.	结构高度 Spacing	盘径 Diameter of disk	爬电距离 Creepage distance
21	147.0	256.4	327
22	147.5	257.8	328
23	147.5	257.8	326
24	146.5	256.7	323
25	146.5	255.9	323
26	146.0	257.1	322
27	146.5	255.5	325
28	147.5	255.4	326
29	147.5	255.6	325
30	146.0	255.9	324
规定值 Specifications	146±4.68	255±11.7	320±14.3

21#~30#样品的铁帽和钢脚经量规检查, 均符合标准规定。
Specimen No.21 ~ No.30 passed the gauging of ball and socket verification.
符合检验依据规定, 合格。
The result met test standard and the technical specifications.

干雷电冲击电压试验 (型式) Dry Lightning Impulse Voltage Test (Type test)

冲击试验回路图
(Diagram of impulse voltage circuit)



IG: 冲击发生器 (Impulse generator)

C: 冲击发生器主电容 (Capacitor of impulse generator)

SG: 点火球隙 (Sphere gap)

R_f : 波头电阻 (Front resistance)

R_t : 波尾电阻 (Tail resistance)

TO: 试品 (Test object)

C_1/C_2 : 分压器高压臂/低压臂电容 (H.V/L.V arm capacitance)

R: 阻尼电阻 (Damping resistance)

AS: 采集装置 (Acquisition device)

IVMS: 冲击电压测量系统 (Impulse voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

波形 (Wave shape)	U/W (kV/kJ)	C (μ F)	R_f (Ω)	R_t (Ω)	C_1 (pF)	C_2 (μ F)
雷电波 (Lightning impulse)	1200/22.5	0.375	可调	可调	800	0.627

干雷电冲击电压试验 (型式) Dry Lightning Impulse Voltage Test (Type test)

试验日期/Date of tests: 2024-10-09

 干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$, 电弧距离/The arc distance $L=825\text{mm}$

 规定值/Specifications: 420kV, 大气校正因数/Correction coefficient: $K_t=0.965$

校正后电压值/Corrected voltage: 405.3kV

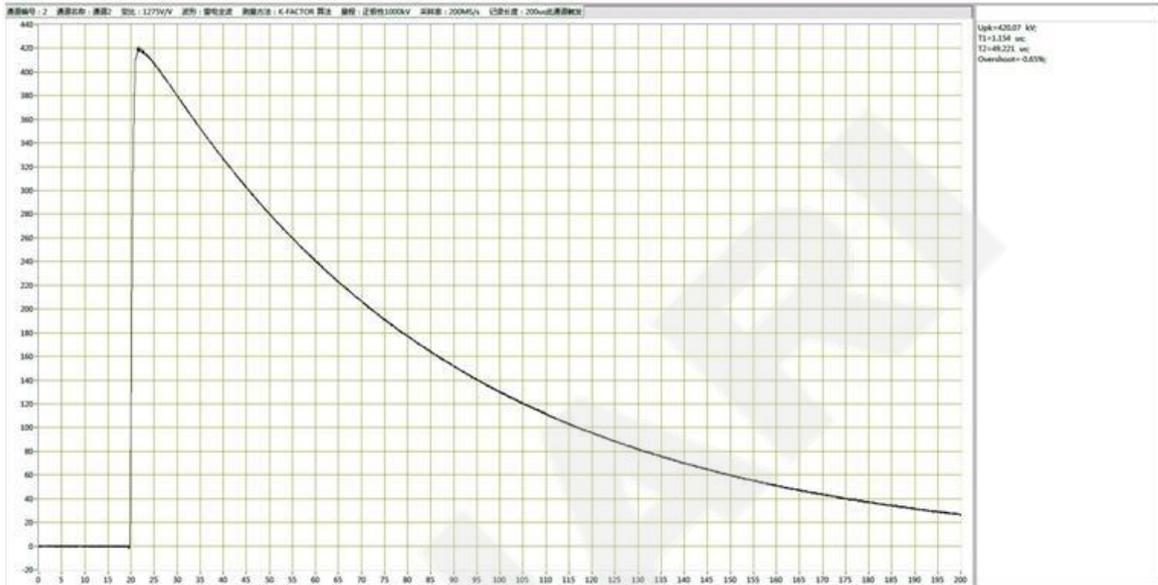
样品编号 Specimen No.	施加电压次数 Times	应施电压值 Excepted voltage kV	实测电压值 Measured voltage kV	耐受结果 Result
31 ~ 35 (短串/short string)	正极性15次 Positive polarity 15 shots	405.3	420~423	均未闪络 No flashover
	负极性15次 Negative polarity 15 shots	405.3	420~423	均未闪络 No flashover
规定值 Specifications	15	/	/	闪络次数 ≤ 2

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

干雷电冲击电压试验 (型式) Dry Lightning Impulse Voltage Test (Type test)

典型示波图/Typical oscillogram



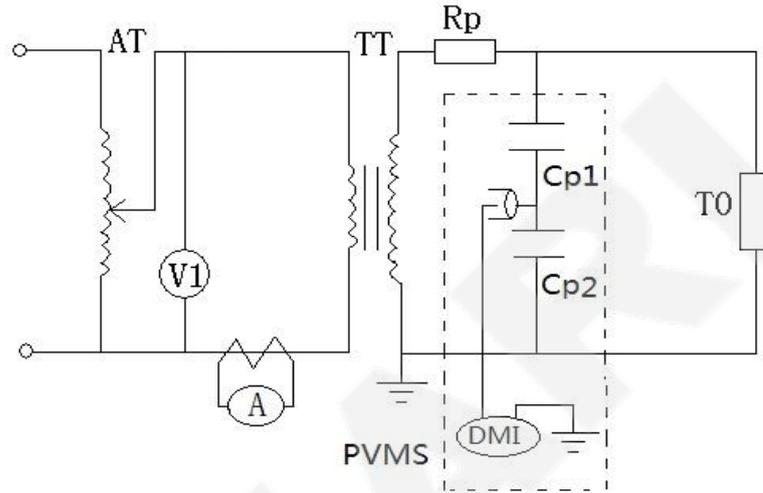
No.31 ~ No.35-1 (正/Positive)



No.31 ~ No.35-1 (负/Negative)

湿工频电压试验 (型式) Wet Power-frequency Voltage Test (Type test)

工频试验回路图
(Diagram of power frequency voltage circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容 (H.V/L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
300/1200	50	411.4	0.411

湿工频电压试验 (型式)
Wet Power-frequency Voltage Test (Type test)

试验日期/Date of tests: 2024-10-09

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$, 电弧距离/The arc distance $L=825\text{mm}$ 雨水温度 $t_{\text{water}}=22.1^{\circ}\text{C}$, 实测雨水电导率/Conductivity of water $\sigma=95.3\mu\text{S/cm}$ 降雨量: 水平分量为 1.29mm/min , 垂直分量为 1.39mm/min Precipitation rate: Horizontal component is 1.29mm/min , vertical component is 1.39mm/min .规定值/Specifications: 180kV , 电压校正系数/Correction coefficient $K_1=0.990$ 校正后电压值/Corrected voltage: 178.2kV

样品编号 Specimen No.	应施电压值 Excepted voltage kV	实测电压值 Measured voltage kV	耐受时间 Duration s	样品状况 Result
31 ~ 35 (短串/short string)	178.2	180.0	60	未闪络 No flashover
规定值	/	/	60	不应闪络 No flashover

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

残余机械强度试验 (型式)
Residual Mechanical Strength Test (Type test)

机械破坏负荷试验 (型式)
Mechanical Failing Load Test (Type test)

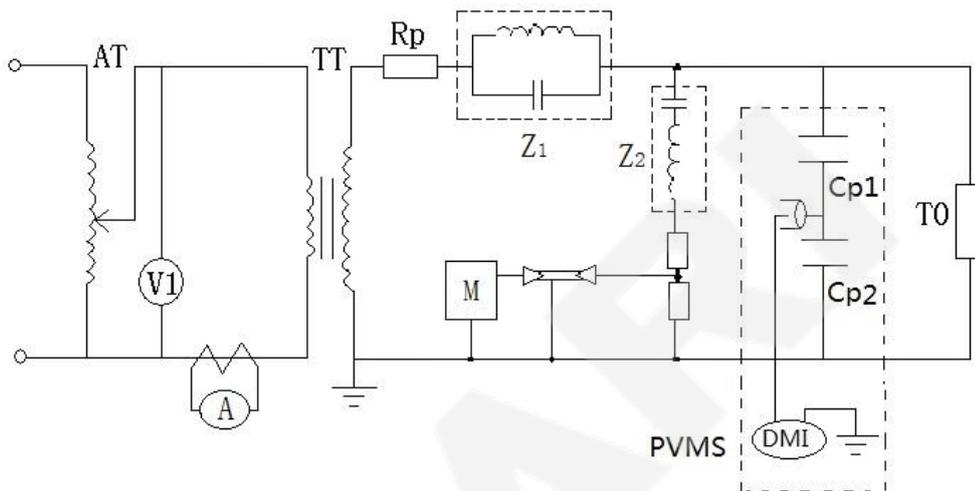
热机械性能试验 (型式)
Thermal-mechanical Performance Test (Type test)

本产品与该公司的UG120B146/550H16W高压线路耐污盘形悬式玻璃绝缘子相比, 具有相同的材料、采用相同工艺制造的强度等级、连接尺寸及绝缘件与金属附件之间的连接结构相同, 并且公称直径相同, 公称爬电距离相同, 因此这2种绝缘子机械设计具有等效结构, 由于UG120B146/550H16W高压线路耐污盘形悬式玻璃绝缘子已经通过了定型试验, (详见本实验室No.240341J检验报告), 因此本产品的上述型式试验项目均免试。

Comparing with the type UG120B146/550H16W insulator of the client, this product was made in the same factory, with same materials, and by the same process, designed in the same strength class, the same designs of connection were adopted between insulation components and metal fittings, with same nominal diameter and same nominal creepage distance. So they are mechanically equivalent insulators. As the type UG120B146/550H16W of the client had passed the prototype tests (Vide No. 240341J Test Report). The mechanical test are valid.

无线电干扰试验 (型式) Radio Interference Test (Type test)

无线电干扰试验线路图
(Diagram of radio interference voltage test circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容(H.V/ L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

Z_1 : 阻塞阻抗 (Blocking impedance)

Z_2 : 耦合阻抗 (Coupling impedance)

M: 干扰场强仪 (RIV measuring device)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
150/150	50	278.8	0.2785

无线电干扰试验 (型式) Radio Interference Test (Type test)

试验日期/Date of tests: 2024-10-09

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$

测量频率: 1.0MHz; 样品安装: 悬挂安装; 背景干扰水平: 26.25dB

Test frequency: 1.0MHz. Specimen mounted: vertical as in service. Background noise level: 26.25dB.

试品的无线电干扰水平为 $V=V_m+A+R$ 。其中, 测量系统回路衰减因数 A 与电阻网络因数 R 总共为22.11dB。 V_m 为测量接收仪的读数。

Radio interference $V=V_m+A+R$. $A+R=22.11\text{dB}$, V_m is measuring decibels.

试验按标准规定的“标准程序”进行, 最后一轮降压过程中规定测量电压下的无线电干扰电压如下:

The test was carried out according to the "standard procedure", RIV obtained during the last decreasing run at the specified test voltage was as follows.

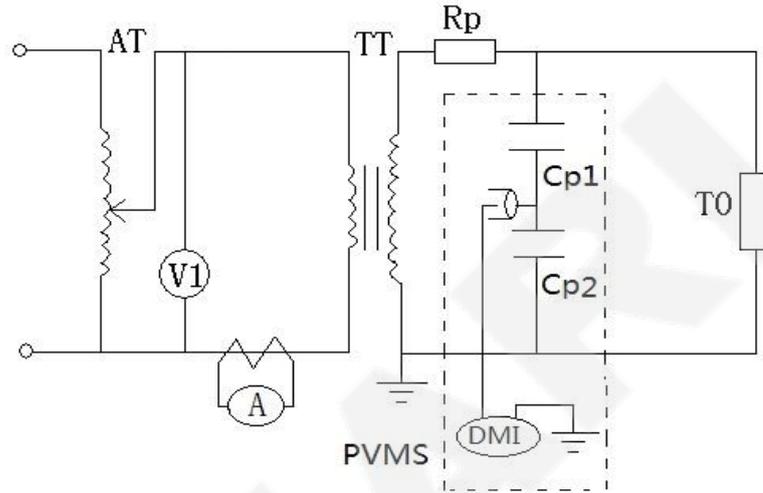
样品编号 Specimen No.	施加电压 Voltage applied kV	测量分贝值 V_m Measuring decibels dB	无线电干扰值 V Radio interference dB	干扰电压值 Radio interference voltage μV
31	10.0	7.68	29.79	30.9
32	10.0	6.31	28.42	26.4
33	10.0	7.28	29.39	29.5
34	10.0	5.65	27.76	24.4
35	10.0	6.95	29.06	28.4
规定值 Specifications	10	/	/	≤ 50

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

可见电晕电压试验 (型式) Visual Corona Voltage Test (Type test)

可见电晕电压试验线路图
(Diagram of Visual corona voltage test circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容 (H.V/L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
150/150	50	278.8	0.2785

可见电晕电压试验 (型式) Visual Corona Voltage Test (Type test)

试验日期/Date of tests: 2024-10-09

1 铁帽/Cap

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$ 样品安装: 悬挂安装; 海拔高度: 396.9m; 海拔校正因数 $K_a=1.05$ Sample assembly: suspension. Altitude $H=396.9\text{m}$. Correction coefficient $K_a=1.05$.

样品编号 Specimen No.	可见电晕电压 Voltage applied kV			平均值 Average value kV	校正值 Corrected value kV
31	29	28	29	28.7	30.1
32	29	29	27	28.3	29.7
33	28	29	27	28.0	29.4
34	27	28	28	27.7	29.1
35	27	29	27	27.7	29.1
规定值 Specifications	/			/	≥ 22

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

2 钢脚/Pin

干球温度 $t=24.6^{\circ}\text{C}$, 相对湿度 $\text{RH}=54\%$, 大气压 $P=97.6\text{kPa}$ 样品安装: 悬挂安装; 海拔高度: 396.9m; 海拔校正因数 $K_a=1.05$ Sample assembly: suspension. Altitude $H=396.9\text{m}$. Correction coefficient $K_a=1.05$.

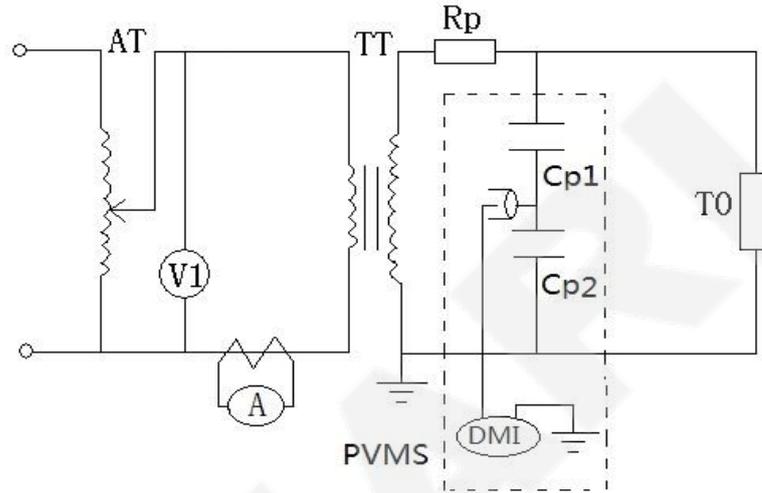
样品编号 Specimen No.	可见电晕电压 Voltage applied kV			平均值 Average value kV	校正值 Corrected value kV
31	25	25	25	25.0	26.3
32	24	25	25	24.7	25.9
33	25	25	25	25.0	26.3
34	24	24	24	24.0	25.2
35	24	25	25	24.7	25.9
规定值 Specifications	/			/	≥ 18

符合检验依据规定, 合格。

The result met test standard and the technical specifications.

击穿耐受试验 (型式) Puncture Withstand Test (Type test)

工频试验回路图
(Diagram of power frequency voltage circuit)



AT: 调压器 (Regulators)

R_p : 保护电阻 (Protection resistance)

TT: 工频试验变压器 (Testing transformer)

TO: 试品 (Test object)

V1: 电压表 (Voltmeter)

A: 电流表 (Ammeter)

C_{p1}/C_{p2} : 分压器高压臂/低压臂电容 (H.V/L.V arm capacitance)

DMI: 数字测量仪 (Digital measuring instrument)

PVMS: 工频电压测量系统 (Power frequency voltage measuring system)

试验所用设备主要参数

(Main parameters of testing equipment)

U/W (kV/kVA)	f_{TT} (Hz)	C_{p1} (pF)	C_{p2} (μ F)
300/1200	50	411.4	0.411

击穿耐受试验 (型式) Puncture Withstand Test (Type test)

试验日期/Date of tests: 2024-10-09

 干球温度 $t=24.6^{\circ}\text{C}$ ，相对湿度 $\text{RH}=54\%$ ，大气压 $P=97.6\text{kPa}$

21[#]~30[#]样品受热水 98°C 、冷水 28°C ，温差为 70°C ，热、冷水中各停留15min的热、冷循环3次后，样品均完好。
Specimens No.21 ~ No.30 passed the temperature cycle test satisfactory, the temperature of hot water at 98°C was 70K higher than that of the cold water, specimens withstood 3 cycles of hot and cold bathing for 15min each.

1 工频击穿耐受试验/Puncture withstand test

样品编号 Specimen No.	施加电压值 Voltage applied kV	样品状况 Result
21	130.0	未击穿 No punctured
22	130.0	未击穿 No punctured
23	130.0	未击穿 No punctured
24	130.0	未击穿 No punctured
25	130.0	未击穿 No punctured
26	130.0	未击穿 No punctured
27	130.0	未击穿 No punctured
28	130.0	未击穿 No punctured
29	130.0	未击穿 No punctured
30	130.0	未击穿 No punctured
规定值 Specifications	130	不应击穿 No punctured

符合检验依据规定，合格。

The result met test standard and the technical specifications.

**击穿耐受试验 (型式)
Puncture Withstand Test (Type test)****2 工频击穿电压试验/Puncture test**

样品编号 Specimen No.	施加电压值 Voltage applied kV	样品状况 Result
21	160.0	未击穿 No punctured
22	160.0	未击穿 No punctured
23	160.0	未击穿 No punctured
24	160.0	未击穿 No punctured
25	160.0	未击穿 No punctured
26	160.0	未击穿 No punctured
27	160.0	未击穿 No punctured
28	160.0	未击穿 No punctured
29	160.0	未击穿 No punctured
30	160.0	未击穿 No punctured

提供实测数据。

Provided the test datum only.

附录
Appendix

一、确认的试品图纸/Drawing

QS-G-15

U120B/146

二、不确定度/ Measurement uncertainty

共1张/One sheet in total

XIHARI

附录 Appendix

一、确认的试品图纸/Drawing

技术要求
Technical Requirement

1. 绝缘件公称直径:255mm。
1. Nominal Diameter:255mm
2. 公称结构高度:146mm。
2. Nominal Space:146mm
3. 公称爬电距离:320 mm。
3. Creepage distance:320mm
4. 额定机电破坏负荷:120kN。
4. Mechanical failing load:120kN
5. 逐个拉伸负荷试验:60kN。
5. Routine failing load:60kN
6. 连接标记:16A。
6. Coupling size:16A
7. 工频击穿电压:130kV。
7. Power frequency puncture voltage:130kV
8. 雷电冲击耐受电压:100kV。
8. Dry lightning impulse withstand voltage:100kV
9. 除图示外应符合IEC60383规定要求。
9. According to IEC Standard 60383

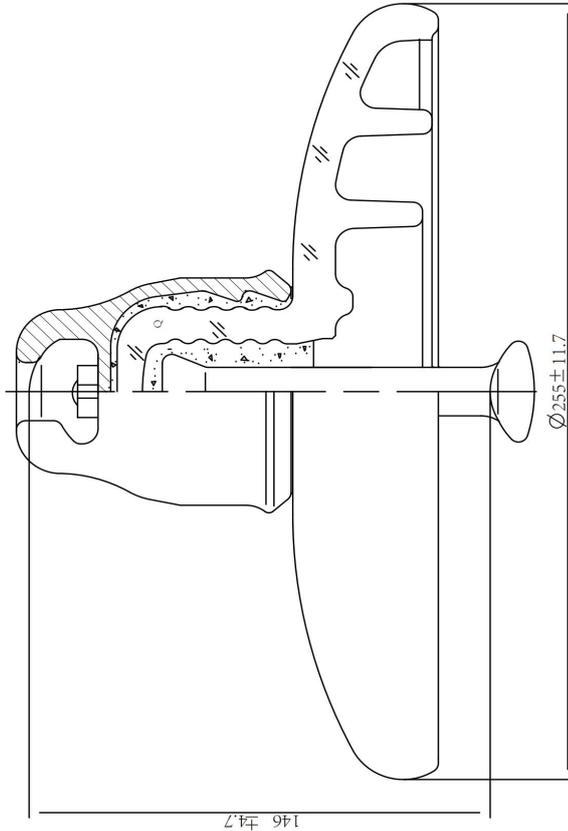
萍乡强盛电瓷 制造有限公司		Pingxiang Qiangsheng Electric Insulator Manufacturing co.,ltd
设计	日期	型号
制图	名称	U120B
会签	玻璃交流 悬式绝缘子	总装图
校核	标准号	图号
审定	IEC60383	OS-G-15
批准	Ø255±11.7	146 ±0.7

附录 Appendix

技术要求

Technical Requirement

1. 绝缘件公称直径:255mm。
1. Nominal Diameter:255mm
2. 公称结构高度:146mm。
2. Nominal Space:146mm
3. 公称爬电距离:320mm。
3. Creepage distance:320mm
4. 额定机电破坏负荷:120kN。
4. Mechanical failing load:120kN
5. 逐个拉伸负荷试验:60kN。
5. Routine failing load:60kN
6. 连接标记:16A。
6. Coupling size:16A
7. 工频击穿电压:130kV。
7. Power frequency puncture voltage:130kV
8. 雷电冲击耐受电压:100kV。
8. Dry Lightning impulse withstand voltage:100kV
9. 除图示外应符合IEC60383规定要求。
9. According to IEC Standard 60383



签名	日期	名称	型号
设计		玻璃交流 悬式绝缘子	U120B
制图			
会签			
审核		总装图	
审定		标准号	图号
批准		IEC60383	OS-G-15

萍乡强盛电瓷
制造有限公司

Pingxiang Qiangsheng
Electric Insulator
Manufacturing co.,ltd

附录 Appendix

二、不确定度/ Measurement uncertainty

序号 No.	设备名称 Equipment Name	设备编号 Equipment No.	不确定度 Measurement uncertainty ($k=2, p=95\%$)
1	600kN卧式拉力试验机 600kN Horizontal tensile testing machine	2010003	$U_{rel}=1.2\%$
2	600kN万能材料试验机 600kN Universal material testing machine	QH2007-001	$U_{rel}=1.2\%$
3	覆层测厚仪 Galvanizing testing machine	39769000003	$U=2.2\mu\text{m}$
4	1200kV冲击电压测量系统 1200kV Impulse voltage measurement system	20127-2	电压 $U_{rel}=2.3\%$ 波前时间 $U_{rel}=2.8\%$ 半峰值时间 $U_{rel}=2.8\%$
5	冷热试验温度系统 Cold and hot test temperature system	/	$U=1.2^\circ\text{C}$
6	电导率仪 Conductivity meter	611800N002002002	$U_{rel}=0.92\%$
7	工作测力计 Forcemeter	71213022	$U_{rel}=1.3\%$
8	300mm游标卡尺 300mm Vernier caliper	6175	$U=0.05\text{mm}$
9	500mm游标卡尺 500mm Vernier caliper	L14071368	$U=0.05\text{mm}$
10	150kV无晕交直流电压测量系统 150kV Corona AC/DC voltage measuring system	1607089	$U_{rel}=1.1\%$
11	300kV工频电压测量系统 300kV Power frequency voltage measuring system	1808150	$U_{rel}=1.4\%$
12	高温烘箱 Hot temperature oven	JYZhx01	$U=2.4^\circ\text{C}$