YL series

SF6 Gas Standard Capacitors

Insulated Standard Capacitors is an Indispensable instrument in every modern high-voltage laboratory and test field where it occupies a wide range of important functions.

The SF6 insulated standard capacitor is used as Capacitance standard in measuring bridge Circuits to measure the dielectric dissipation Factor tanδ of all types including cables, capacitors, bushings, instrument transformers and power transformers. Further-more, It can be used as high-voltage capacitor for voltage divider circuits of high-voltage transformer test.

The YL series standard capacitors can also be used as the high-voltage section of a capacitive divider. This allows high accurate voltage measurements e.g. such as those required for loss measurements on power transformer.

For very high voltages a grad with discrete capacitor elements achieves a liner field distribution. These results in higher voltage withstand capability even at humidity levels up to 95% without condensation. We use special stainless steel to permit the prefect temperature and voltage coefficient stability.

The capacitor is provided with a top electrode which allows partial discharge free interconnections to the other elements of the HV circuit.

The SF6 insulated standard capacitor is designed for indoor service or outdoor service. The standard capacitors of the series YL are used for:

- Exact measurements of the capacitance and tan delta
- Exact measurements of AC voltages (AC divider) in the industrial frequency range (with add. internal electrode or add. secondary part).

Over 20 years experience, Samgor has sold out over 100,000 units difference voltage level standard capacitors, owned highest voltage level standard capacitor manufacture ability our technology of standard capacitor is mature and reliable products.

YL1600KV/50pF Standard Capacitor

YL1500kV/30pF Standard Capacitor

YL400kV/10pF Standard Capacitor (Outside Use)

<15kV Standard capacitor (Instrument Use)

YL10kV/10000pF Standard Capacitor

Design:

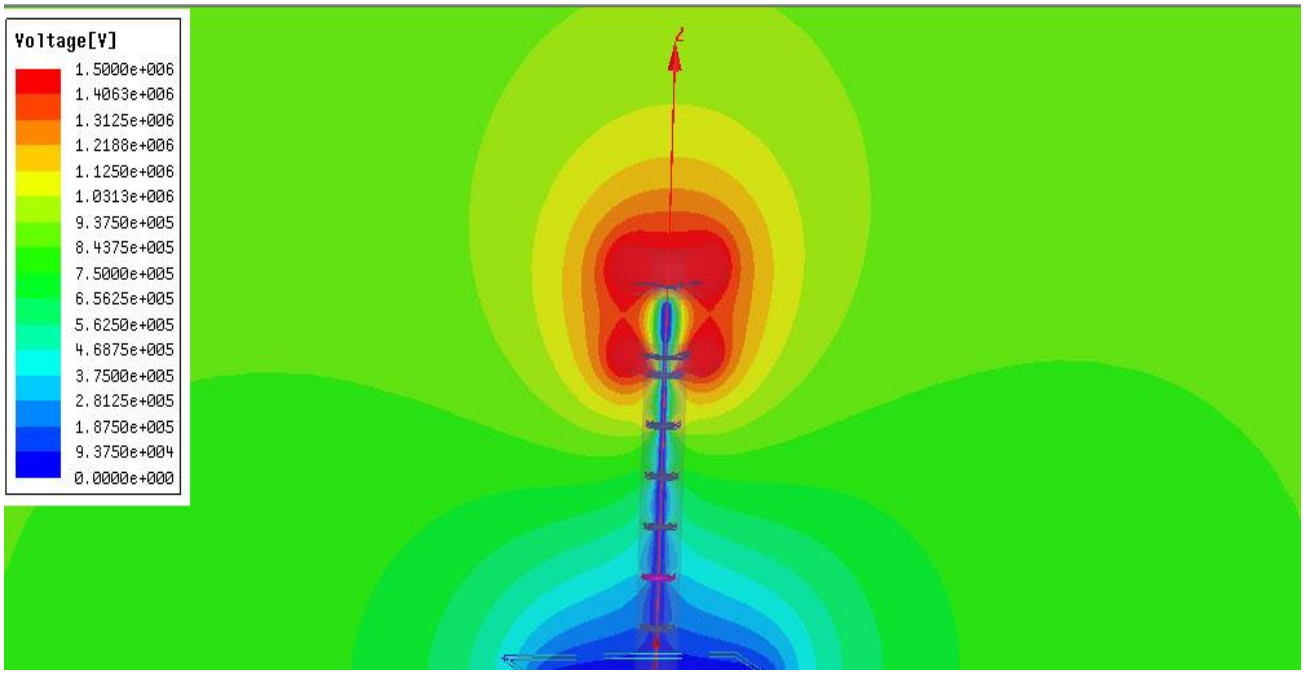
After 20 years experience, in the design stage, we have summarized two series standard capacitor design, lower than 600kV, we use traditional standard capacitor design, design principle is more compact, smaller, so our size is only 1/2 to 1/3 to our competitor.

Higher than 600kV standard capacitor we use internal divider voltage structure, it make the electrical strength of whole outside insulation smooth. Allow our standard capacitor using in the high humidity and also can be long time running in the rated voltage.

All electrode of our standard capacitor use special stainless steel make or stainless steel cover, it is guarantee the best temperature and voltage coefficient stability.

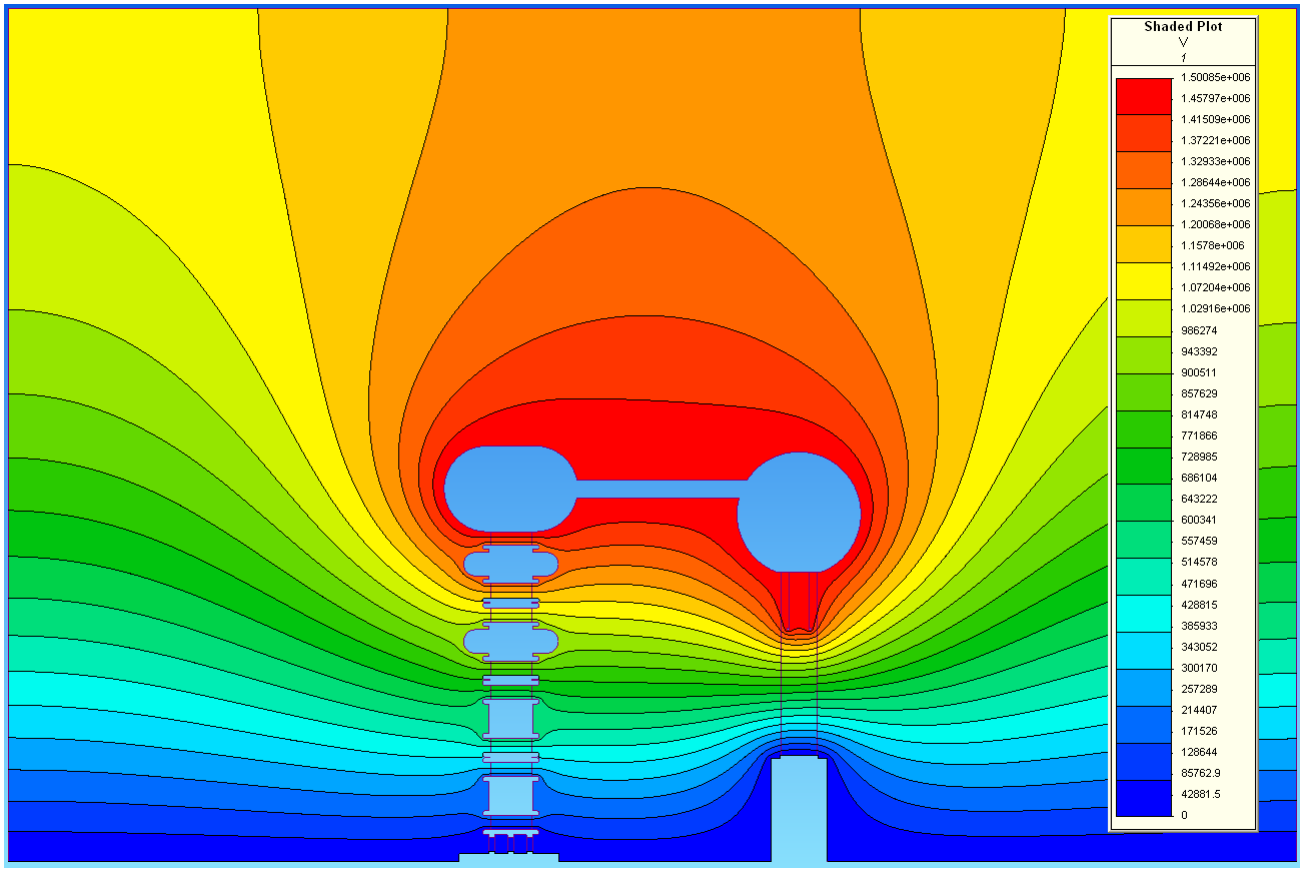
Double pressure consume make our standard capacitor <1% pressure leakage each year.

New Design:



1500kV Standard Capacitor Electric Field Simulation (3D)

Traditional Desgn:



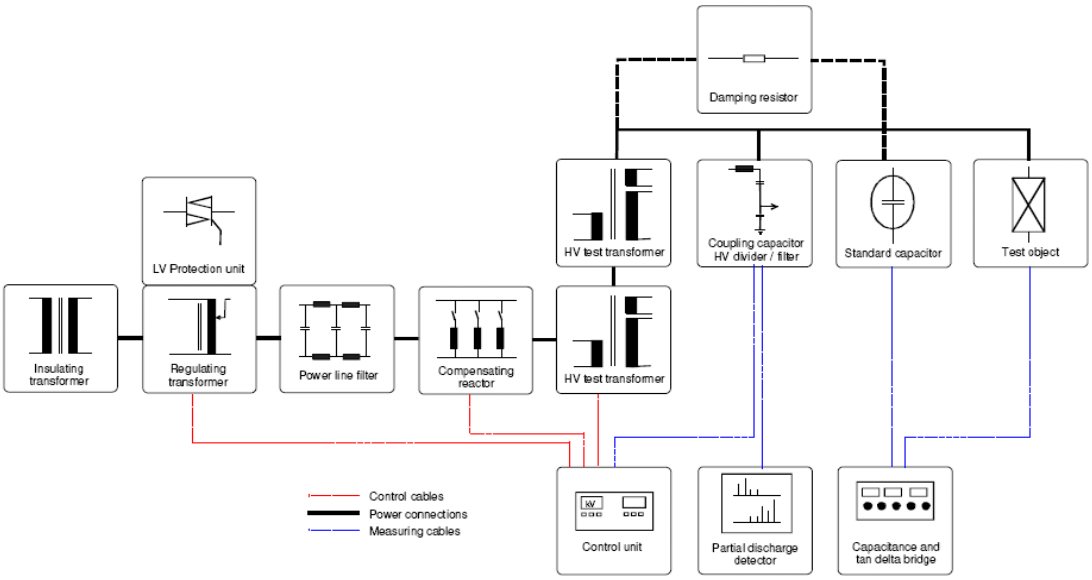
1500kV Standard Capacitor Electric Field Simulation (2D)

Technical Data

Type	YL10-50/100	YL30-100/1000	YL100-50/100	YL200-50/100	YL300-50/100	YL400-50/100	YL500-50/100	YL600-50/100	YL800-50/100	YL1000-30/50	YL1200-30/50	YL1600-30/50
Rated Voltage	10kV	30KV	100kV	200kV	300kV	400kV	500kV	600kV	800kV	1000kV	1200kV	1600kV
Test Voltage	15KV	36KV	120kV	240kV	360kV	480kV	600kV	660kV	880kV	1100kV	1320kV	1760kV
Rated capacitance	50/100pF	100/1000pF	50/100pF	50/100pF	50/100pF	50/100pF	50/100pF	50/100pF	50/100pF	30/50pF	30/50pF	30/50pF
Tolerance of capacitance	±0.5%	±0.5%	< ±0.5%	< ±0.5%	< ±0.5%	< ±0.5%	< ±0.5%	< ±0.5%	< ±1%	< ±1%	< ±1%	< ±1%
tanδ C12	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}	<1 x10^{-5}
Frequency drift	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}	< 1×10^{-5}
PD Level	< 2pC	< 5pC	< 5pC	< 5pC	< 5pC	< 5pC	< 5pC	< 5pC	< 10pC	< 10pC	< 10pC	< 10pC
Nominal pressure of SF6 gas	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa	350±50 kPa
Operating temperature	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃	-5~+45℃
Height above sea level	< 2000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m	< 1000m
Relative humidity	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%	< 95%
Temperature coefficient	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃	3×10^{-5}/℃
Pressure coefficient	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa	2.2×10^{-3}/kPa
Voltage drift (0...UN)	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}	< 3×10^{-5}

(Eg: We also can produce the standard capacitors you're your special request.)

Common C& Tan delta Test Block Diagram With Test Transformer



BASIC SCOPE OF SUPPLY

1 standard capacitor with top electrode

1 mobile base frame / air cushion

1 instruction manual

1 test report / calibration report

CALIBRATION

Our basic standard for calibrating each standard capacitor is a XIHARI (China) calibrated internal standard. A standard capacitor should be re-calibrated every year. Samgor can provide these services on-site.

ROUTINE TESTS IN THE FACTORY

Normally, the capacitance, tan d, and partial discharge values are tested before and after the 1.1 Un over-voltage test.

TRANSPORTATION

Usually, the capacitors having a rated voltage of less than 800kV a shipped with their rated SF6 pressure and are therefore ready for immediate use.

For higher voltages the internal pressure is reduced to 120 kPa (absolute) and must be pressurized on-site after installation.

ACCESSORIES (NOT INCLUDED)

SF6 filling device, including:

- 1 SF6 filling device with ... kg of SF6 and 1connection hose with adapted fitting
- Set of HV connections
- Secondary part for voltage measurements type
- Air Cushion

SPECIAL VERSIONS

- Additional capacitance C13 for voltage measurement

XIHARI Test Report

No. L0223

(2004)国认监认字(058)号

(2004)量认(国)字(A0149)号

No. 04693

检 验 报 告

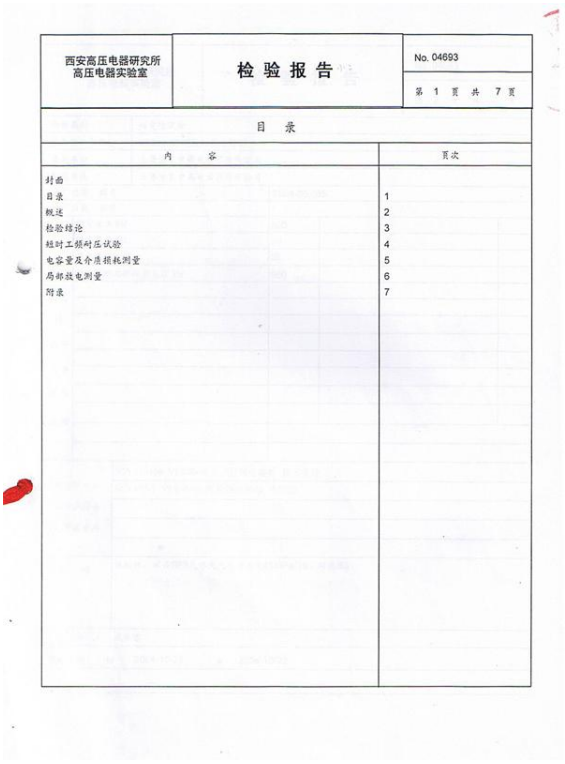
试品型号及名称: YL800-50
交流标准电容器

委 托 单 位: 上海浦东申高电容器有限公司

检 验 类 别: 研究性试验

国家高压电器质量监督检验中心

西安高压电器研究所 高压电器实验室



西安高压电器研究所 高压电器实验室	检 验 报 告	No. 04693
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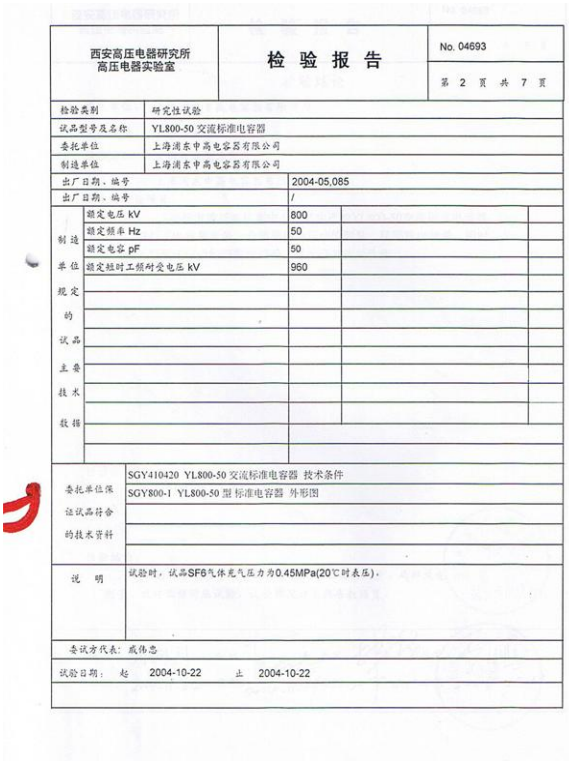

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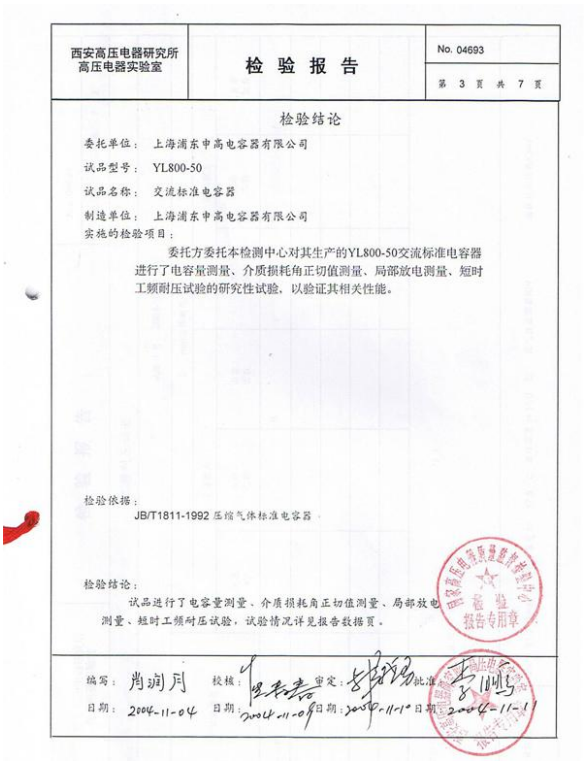
检验类别	研究性试验		
试品型号及名称	YL800-50 交流标准电容器		
委托单位	上海浦东申高电容器有限公司		
制造单位	上海浦东申高电容器有限公司		
出厂日期、编号	2004-05.085		
出厂日期、编号	/		
制造单位规定的试品主要技术数据	额定电压 kV	800	
	额定频率 Hz	50	
	额定电容 pF	50	
	额定短时工频耐受电压 kV	960	
委托单位保证试品符合的技术资料	SGY410420 YL800-50 交流标准电容器 技术条件		
	SGY800-1 YL800-50 型 标准电容器 外形图		
说 明	试验时，试品SF6气体充气压力为0.45MPa(20℃时表压)。		
委试方代表: 戚伟忠			
试验日期: 起 2004-10-22 止 2004-10-22			



西安高压电器研究所 高压电器实验室	检 验 报 告	No. 04693
		第 3 页 共 7 页

检验结论

委托单位： 上海浦东申高电容器有限公司

试品型号： YL800-50

试品名称： 交流标准电容器

制造单位： 上海浦东申高电容器有限公司

实施的检验项目：

委托方委托本检测中心对其生产的YL800-50交流标准电容器进行了电容量测量、介质损耗角正切值测量、局部放电测量、短时工频耐压试验的研究性试验，以验证其相关性能。

检验依据：

JB/T1811-1992 压缩气体标准电容器

检验结论：

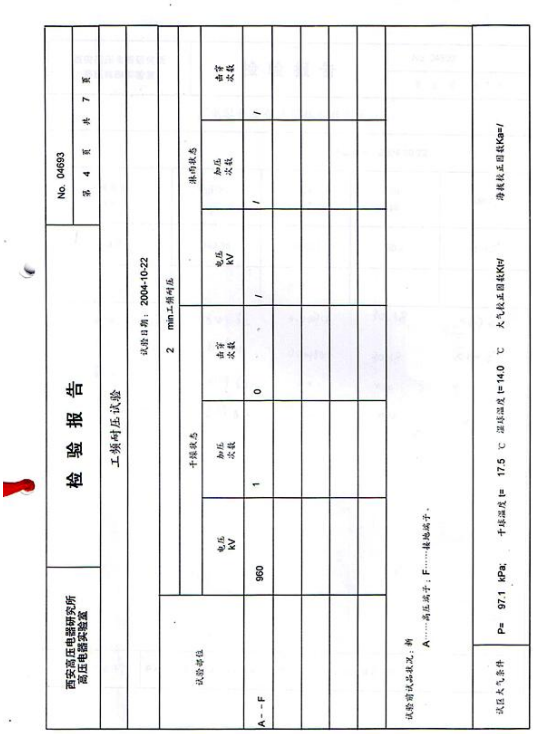
试品进行了电容量测量、介质损耗角正切值测量、局部放电测量、短时工频耐压试验，试验情况详见报告数据页。

编写： 肖润月 日期： 2004-11-04

校核： 日期： 2004-11-04

审定： 日期： 2004-11-1

批准： 日期： 2004-11-1



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检 验 报 告

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工频耐压试验

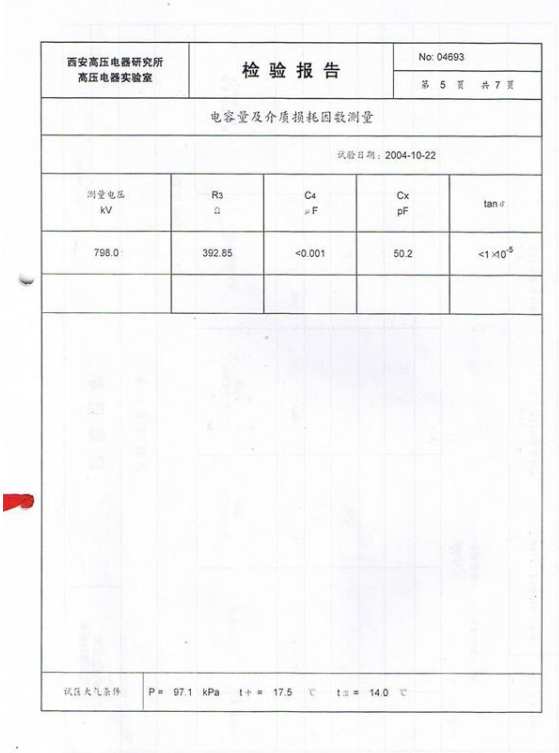
试验日期：2004-10-22

试验部位	2 min工频耐压				干燥状态				潮湿状态			
	电压 kV	加压次数	电容 pF	放电	电压 kV	加压次数	电容 pF	放电
A－F	960	1	0		/	/	/	

试验前试品状况：新

A——高压端子；F——接地端子。

试品大气条件 P= 97.1 kPa， 干燥温度 t= 17.5 ℃ 湿球温度 t= 14.0 ℃ 大气绝对湿度Kg=/ 海拔高度 m



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检 验 报 告

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电容量及介质损耗因数测量

试验日期：2004-10-22

测量电压 kV	R3 Ω	C4 μF	Cx pF	tanδ
798.0	392.85	<0.001	50.2	$<1\times10^{-5}$

试压大气条件 P = 97.1 kPa t + = 17.5 ℃ t ± = 14.0 ℃

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检 验 报 告

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局部放电测量

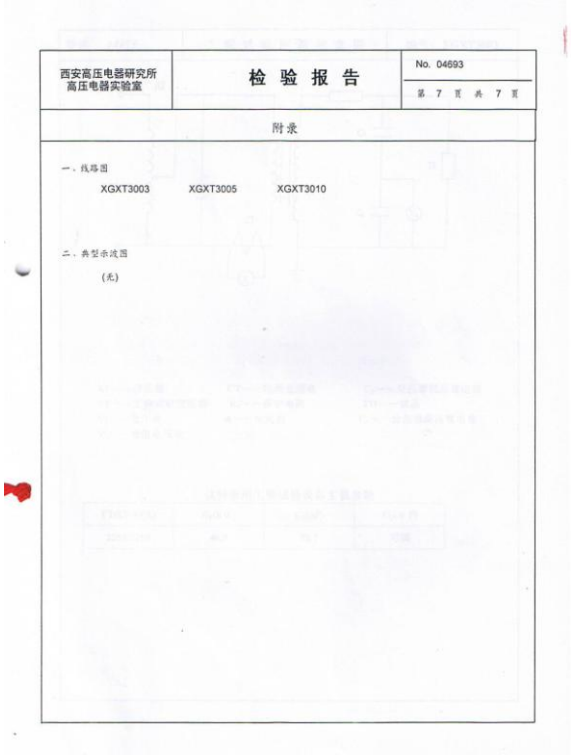
试验日期：2004-10-22

试品状态	试验部位	预加电压(kV) >60s	测量电压(kV) >60s	实测局放量(pC)	标准规定最大局放量(pC)
/	A－F	/	801 /	<5	<5
/	/	/	/	/	/
/	/	/	/	/	/

试品状况：/

A－－高压端子；F－－低压端子。

试品大气条件： 大气压力P=97.1 kPa 干燥温度t=17.5 ℃ 湿球温度t= 14.0 ℃



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附录

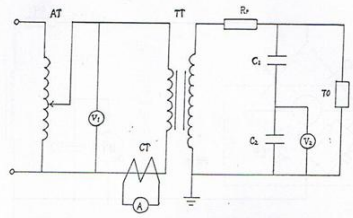
一、线路图

XGXT3003 XGXT3005 XGXT3010

二、典型示波图

(无)

委试 04693 | 工频试验回路示意图 | 编号：XGXT3003

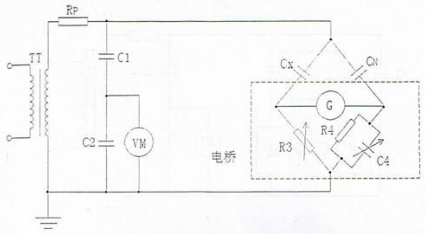


AT——调压器　CT——电流互感器　C_2——分压器低压臂电容
TT——工频试验变压器　R_P——保护电阻　TO——试品
V_1——电压表　A——电流表　C_1——分压器高压臂电容
V_2——峰值电压表

试验所用工频试验设备主要参数

TT(kV/kVA)	R_P(kΩ)	C_1(pF)	C_2(μF)
2250/2250	46.0	76.7	可调

委试 04693 | 电容量及介质损耗因数测量线路图 | 编号：XGXT3005

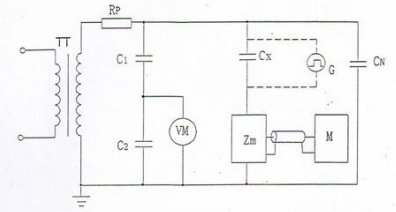


TT——工频试验变压器　R_P——保护电阻　C_1——分压器高压臂电容
C_2—分压器低压臂电容　C_N——标准电容器　C_X——试品电容
G——检流计　R_3、R_4、C_4——电桥的低压臂　Bridge——西林电桥
VM——峰值电压表

试验所用设备主要参数

TT(kV/kVA)	R_P(Ω)	C_1(pF)	C_2(μF)	C_X(pF)	R_4(Ω)
2250/2250	46.0×10^3	76.7	可调	61.96	1000/π

委试 04693 | 局部放电测量接线示意图 | 编号：XGXT3010



TT——工频试验变压器　R_P——保护电阻　C_1——分压器高压侧电容
C_2——分压器低压侧电容　C_N——标准电容器　G——方波校准器
C_X——试品　VM——峰值电压表　Zm——测量阻抗
M——局放测量仪

试验所用设备主要参数

TT(kV/kVA)	R_P(kΩ)	C_1(pF)	C_2(μF)	C_X(pF)
2250/2250	46.0	76.7	可调	61.96

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