# VERIFICATION OF LVD CONFORMITY

Registration No.

**012077-037/CN**

**Applicant :** ZHEJIANG TANHO ELECTRICAL EQUIPMENT CO., LTD.
NO.82,NORTH YUEDU RD,CHANGHONG INDUSTRIAL ZONE, LIUSHI TOWN,
YUEQING CITY, ZHEJIANG, CHINA

Is authorized to provide the product mentioned below with the mark as illustrated

CE

**Manufacturer :** ZHEJIANG TANHO ELECTRICAL EQUIPMENT CO., LTD.
NO.82,NORTH YUEDU RD,CHANGHONG INDUSTRIAL ZONE, LIUSHI TOWN,
YUEQING CITY, ZHEJIANG, CHINA

**Product Description :** INSULATING ANCHOR CLAMP

**Model No. :** PA, PAL, PALT, PALA, EA, PAG, NES, THA, THB, THKP, THKO, NXJ

**Test Standard :** EN 61284:1997

**Test Report Number :** UTS(12)-827-07-LVD

Conclusion of assessment:

We hereby confirm that the technical construction file and manufacturing, Inspection and testing processes for above mentioned equipment comply with the essential safety requirements of:

***Low Voltage Directive 2006/95/EC***

Note: This certificate is only valid for the equipment and configuration described, in conjunction with the test data detailed above.

Name: Jason. Ma
Position: General Manager

Signature: Jason. Ma

Third Party Authority
Stamp:

Date: Jul. 30, 2012

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# EN 61284:1997

# LVD MEASUREMENT AND TEST REPORT

## FOR

**Manufacturer:** ZHEJIANG TANHO ELECTRICAL EQUIPMENT CO.,LTD.

**Address:** NO.82,NORTH YUEDU RD,CHANGHONG INDUSTRIAL ZONE, LIUSHI TOWN, YUEQING CITY, ZHEJIANG, CHINA

**Product:** INSULATING ANCHOR CLAMP

**Model/Type:** PA, PAL, PALT, PALA, EA, PAG, NES, THA, THB, THKP, THKO, NXJ

**Test date:** JUL.8~JUN.18, 2012

**Issuance date:** JUN.18, 2012

**Authorized By:**

| | |
|---|---|
| Test item description | |
| Product name ..... : | **INSULATING ANCHOR CLAMP** |
| Standard ..... : | EN 61284:1997<br>Overhead lines – Requirements and tests for fitting |
| Trade Mark ..... : | SL 天虹电气 |
| Model /Type reference ..... : | THKP<br>Force torque: 22Nm<br>Min. destruction Load: 5 kN |
| Protection against electric shock..... : | / |
| IP number..... : | IP00 |
| Ambient temperature..... : | Without T marking |
| Type of terminals, screw-type..... : | / |
| Rated connecting capacity (mm²)..... : | / |
| Type of connector..... : | INSULATING ANCHOR CLAMP |
| Rated voltage (V a.c. / V d.c.)..... : | / |
| Test case verdicts | |
| Test case does not apply to the test object..... : | N(.A.) |
| Test item does meet the requirement..... : | P(ass) |
| Test item does not meet the requirement..... : | F(ail) |

General remarks

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

" (See Annex #)" refers to the annex appended to the report.

"(see Enclosure)" refers to additional information appended to the report.

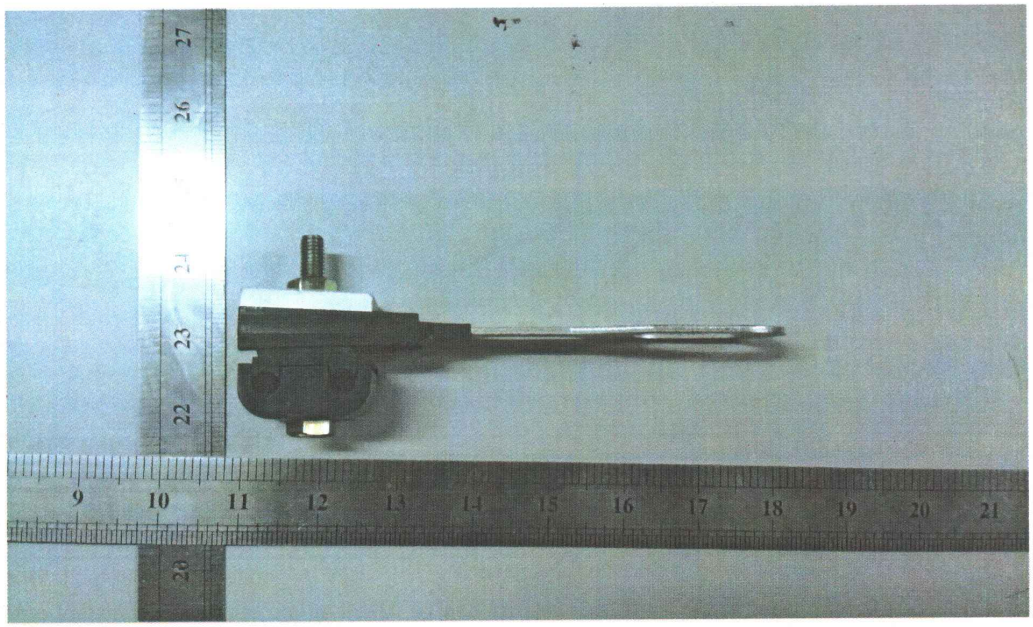
"(see appended table)" refers to a table appended to the report.

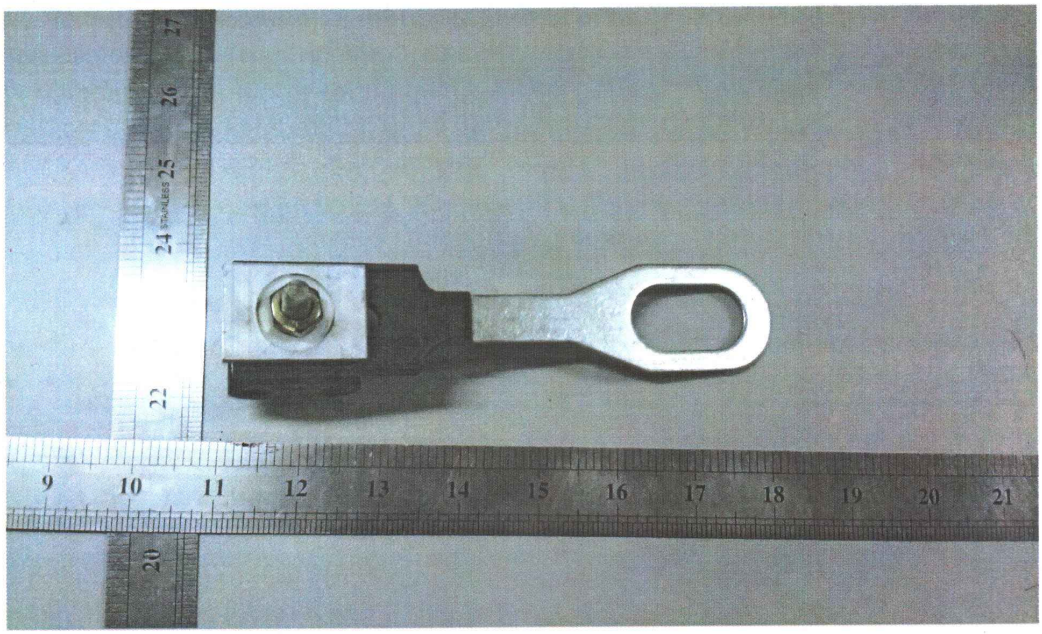
Throughout this report a point is used as the decimal separator.

Copy of marking plate:

/

Photo of the sample:






General product information:

All the tests are conducted on the INSULATING ANCHOR CLAMP of the selected model of THKP, this report also covers the following series of model because of the similar construction: PA, PAL, PALT, PALA, EA, PAG, NES, THA, THB, THKO, NXJ.

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| **4** | **Requirements** | | **P** |
| **4.1** | **General requirements** | | **P** |
| 4.1.1 | Design | | P |
| | The fittings shall be designed so as to | | P |
| | -avoid damaging the conductor | | P |
| | -withstand the mechanical loads relevant to installation, maintenance and service. | | P |
| | -ensure the individual components loose in services. | | P |
| | -have limited corona effects | | N |
| | Fittings for live line maintenance suitably designed for safe and easy handing | | N |
| | Surfaces of compression fittings in contact with the conductor be protected from contaminated. | | N |
| | Brittleness of finished parts avoided by adopting suitable process | | N |
| 4.1.2 | Materials | | P |
| 4.1.2.1 | Metallic materials | | P |
| | The material shall meet service life requirements | | P |
| | The materials of compression fittings withstanding the cold working due to compression | | P |
| | -aluminium or aluminium alloy; | | P |
| | -galvanized steel; | | N |
| | -galvanized malleable or ductile iron; | | N |
| | -stainless steel | | N |
| | -copper and copper alloys | | N |
| 4.1.2.2 | Non-metallic materials | | P |
| | Shall have good resistance to ageing and capable of withstanding service temperatures without detrimental change of properties. | | P |

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| 4.1.3 | Dimensions and tolerances | | P |
| | Tolerances applied to dimensions shall ensure that the fittings mmet their specified mechanical and electrical requirements | | P |
| 4.1.4 | Protection against corrosion | | P |
| | Fittings shall be either inherently resistant to atmospheric corrosion or be suitably protected against corrosion. | | P |
| | There shall never be contact between metals for which the difference in electrochemical potential can give rise to galvanic corrosion | | P |
| | All external treads shall be cut or rolled before hot dip galvanizing | | P |
| 4.1.5 | MARKING | | P |
| | Marking shall ensure the system of traceability for each of the component parts of the fittings: | | P |
| | Castings | | P |
| | -identification of fittings | THKP | P |
| | - manufacturer's name or trademark | SL 天虹电气 | P |
| | -date of manufacture(month and year) | | P |
| | - cast code | | P |
| | Forgings | | N |
| | -identification of fittings | | N |
| | - manufacturer's name or trademark | | N |
| | -date of manufacture(month and year) | | N |
| | - cast code | | N |
| | Links and plates | | N |
| | -identification of fittings | | N |
| | - manufacturer's name or trademark | | N |
| | -date of manufacture(month and year) | | N |

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| | Assemblies of fittings | | P |
| | -identification of fittings | | P |
| | - manufacturer's name or trademark | | P |
| | -date of manufacture(month and year) | | P |
| | Conductor compression fittings | | N |
| | -identification of fittings | | N |
| | - manufacturer's name or trademark | | N |
| | -date of manufacture(month and year) | | N |
| | Instructions for assembly | | P |

| | | | |
|---|---|---|---|
| **4.2** | **Requirements for specific fittings** | | **P** |
| 4.2.1 | Insulator set fittings and earth wire fittings | | P |
| | For parts made of forged steel, holes conform to tolerances | | P |
| 4.2.2 | Suspension clamps | | P |
| | The conductor or earth wire installed in the suspension clamps can be used bare or equipped with armour rods | | P |
| | The suspension clamps shall withstanding the vibration and avoid localized pressure or damage to the conductor or earth wire. | | P |
| | Shall have surface to avoid damage by fault currents | | P |
| | The wear resistance of the articulation assembley shall prevent deterioration in service. | | P |
| | Magnetic losses not exceed the laid downvalue. | | P |
| | The body shall permit oscillation | | P |
| 4.2.3 | Fittings for jointing, terminating and repairing conductor and earth wire | | N |
| | Fitting for the purpose not limited to the following: | | N |
| | -compression type connectors | | N |
| | -cone or wedge type clamps | | N |
| | -bolted type clamps | | P |
| | -factory-formed helical fittings | | N |

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| | -fittings installed using an explosive charge | | N |
| | The fitting types for tension and non-tension joints shall not reduce the electrical capability of the conductor or earth wire | | P |
| | Fittings used for electrical continuity connections shall meet the requirements of clause 13. | | P |
| | Fittings with auxiliary eyes intended for use during construction or maintenance shall be marked | | N |
| | Fittings provided with an oxide-inhibiting compound intended to reduce metal oxidation | | N |
| | The initial contact area between the fitting and the conductor do not raise stress | | P |
| | Intended to connect conductors avoid bimetallic corrosion | | P |
| | Designed to avoid localized pressures | | P |
| | Intended for the restoration of electrical and mechanical properties of a conductor have clearly instructions | | P |
| 4.2.4 | Insulator protective fittings | | P |
| | Insulator protective fittings designed to protect insulator sets against damage caused by power arcs. | | P |

| | | | |
|---|---|---|---|
| 5 | Quality assurance | | N |
| 6 | Classification of tests: type tests/sample tests/routine tests。 | type tests | P |
| 6.1 | Type tests..... | | P |
| 6.2 | Sample tests ..... | | N |
| 6.3 | Routine tests ..... | | N |
| 7 | Visual examination | | P |
| 8 | Dimensional and material verification | | P |
| 9 | Hot dip galvanizing | | P |
| 10 | Non-destructive testing | | P |

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| **11.** | **MECHANICAL TESTS** | | **P** |
| 11.1 | Three fittings shall pass the test. | | P |
| | Terminals | | N |
| 11.2 | Test piece and attachments for mechanical damage and failure load test, conductors used in the mechanical tests | | N |
| 11.3 | Insulator set fittings and earth wire fittings | | N |
| 11.3.1 | Mechanical damage and failure load test | | N |
| 11.3.2 | Mechanical damage and failure load test of the attachment point used during erection | | N |
| 11.4 | Suspension clamps | | N |
| 11.4.1 | Vertical damage load and failure load test | | N |
| 11.4.2 | Slip test on standard clamps with a specified minimum and maximum slip load | | N |
| 11.4.3 | Slip test on standard clamps with only specified minimum slip load | | N |
| 11.4.4 | Slip test on controlled slippage clamps | | N |
| 11.4.5 | Clamp bolt tightening test | | N |
| | The bolts being tightened with installation torque | | N |
| | A factor of 1.1 of the torque value | | N |
| | Twice the value of the torque | | N |
| 11.5 | Tension clamps, dead-end tension joints and mid-span tension joints | | P |
| 11.5.1 | Tensile test | | P |
| | The fitting be installed on the conductor or wire | | P |
| 11.5.2 | Mechanical damage and failure load test | | P |
| 11.5.3 | Mechanical damage and failure load test of attachment point used during erection | | P |
| 11.5.4 | Clamp blot tightening test | | P |
| 11.6 | Partial tension fittings | | N |
| 11.6.1 | Partial tension fittings other T connectors | | N |
| 11.6.2 | T connectors | | N |
| | The load be raised until 50% of the RTS of the conductor and be kept constant for 60s. | | N |

| EN 61284-1997 | | | |
|---|---|---|---|
| Cl. | Requirement + Test | Result - Remark | Verdict |
| **12.** | **MAGNECTIC LOSSES TEST** | | **P** |
| 12.1 | The test is aimed at ascertaining the magnetic losses of suspension clamps and U-bolt type tension clamps for overhead line conductors | | P |
| 12.2 | Test procedure | | P |
| | A power frequency current passed through a suitable length of conductor and the power losses be measured both with and without the fittings assembled on the conduct | No apparent loss | P |

| | | | |
|---|---|---|---|
| **13.** | **HEAT CYCLE TESTS** | | **N** |
| 13.1 | Heat cycle tests aims at ascertaining the long-term electrical performance of current –carrying joints | | N |
| 13.2 | Joints | | N |
| 13.2.1 | Tension joints and non-tension joints | | N |
| 13.2.2 | Service temperature | | N |
| 13.2.3 | Classification for test purposes | | N |
| | Class A | | N |
| | Class B | | N |
| 13.3 | Test specimens | | N |
| 13.4 | Test arrangements | | N |
| 13.5 | Heat cycle test procedure | | N |
| 13.5.1 | General | | N |
| 13.5.2 | Joints of class A | | N |
| 13.5.3 | Joints of class B | | N |

| | | | |
|---|---|---|---|
| **14.** | **CORONA AND RADIO INTERFERENCE VOLTAGE(RIV) TESTS** | | **N** |
| 14.1 | Purpose | | N |
| 14.2 | Description of fest methods | | N |
| 14.3 | General | | N |
| 14.4 | Test circuit and instruments | | N |
| 14.5 | Corona and RIV test procedures | | N |
| 14.6 | Acceptance criteria | | N |
| 14.7 | Test report | | N |
| 14.8 | Voltage method | | N |

# *EC Declaration of conformity*

Council Directive 2006/95/EC on Low Voltage Directive

We, **ZHEJIANG TANHO ELECTRICAL EQUIPMENT CO.,LTD.**
**NO.82,NORTH YUEDU RD,CHANGHONG INDUSTRIAL ZONE, LIUSHI TOWN, YUEQING CITY, ZHEJIANG, CHINA**

Certify that the product described is in conformity with the Directive 2006/95/EC as amended

Product Name: **INSULATING ANCHOR CLAMP**
Product Model: **PA, PAL, PALT, PALA, EA, PAG, NES, THA, THB, THKP, THKO, NXJ**

The product has been assessed by the application of the following standards:

**EN 61284:1997**

Overhead lines – Requirements and tests for fitting

Issue place and date

Company stamp and Signature
of authorized personnel