CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

TEST REPORT

TEST REPORT NUMBER : CNB3110517-01883-L

CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl.2 South, HuoJu Building, No.181 CangHai Rd., Jiangdong Hi-tech Park
Ningbo

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CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl.2 south Huoju Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China
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Complaint line：+86-574-87908003 E-mail：cts@cts-lab.com

1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.
The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.
Furthermore, there is no guarantee that a test sample which has Passed all the relevant tests conforms to a specification (only telecommunication products).
Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.
The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.
The test report may only be reproduced or published in full.
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1.2 Tester

Tested by:

19 May 2011	Batty Xu	batty
Date	Name	Signature

Reviewed by:

19 May 2011	Allen Shao	Allen
Date	Name	Signature

Approved by:

19 May 2011	Gavin Duan	Gavin
Date	Name	Signature

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1.3 Testing laboratory

1.3.1 Location

CTS (Ningbo) Testing Service Technology Co., Ltd.
Fl. 2 South Huoju Building No. 181. Canghai Rd. Jiangdong High-tech. Park
Ningbo China
Telephone: + 86-574-87912121
Telefax : + 86-574-87907993

1.3.2 Test location, where different from CTS:

Name: ./.
Street: ./.
Town: ./.
Country: ./.
Telephone: ./.
Fax: ./.
Teletex: ./.

1.4 Client details

1.4.1 Details of applicant

Name : SHANGHAI ZIXI ELECTRIC CO.,LTD.
Street : 1F，NO.218，JIEXU ROAD
Town : SONGJIANG HIGH-TECH ZONE，SHANGHAI
Country : CHINA
Telephone : +86-21-67758972
Fax : +86-21-67758962
Teletex : ./.

Contact : YUAN XIANGQING
Telephone : /

1.4.2 Details of manufacturer

Name : SHANGHAI ZIXI ELECTRIC CO.,LTD.
Street : 1F，NO.218，JIEXU ROAD
Town : SONGJIANG HIGH-TECH ZONE，SHANGHAI
Country : CHINA
Telephone : +86-21-67758972
Fax : +86-21-67758962
Teletex : ./.

Contact : YUAN XIANGQING
Telephone : /

1.4.3 Details of factory

Name : SHANGHAI ZIXI ELECTRIC CO.,LTD.
Street : 1F，NO.218，JIEXU ROAD
Town : SONGJIANG HIGH-TECH ZONE，SHANGHAI
Country : CHINA

1.4.4 Dates of application

Date of receipt of application : 16 May 2011

Date of receipt of test item : 19 May 2011

Date of test : 16-19 May 2011

1.5 Test item Description

1.5.1 Description of test item

Type of product : stainless steel box

Model/Type reference : stx

Serial number : ---

1.5.2 Test item particulars

Test item ..... :	stainless steel bo
Trade Mark..... :	TIBOX
Protection Class ..... :	□ Class I; □ Class II; □ Class III.
IP Number ..... :	□ IP20; □ IP44; □ IP55; □ IP65; □ IPX4; □ IPX5; ☒ Other: IP66
Rated Voltage(Range)..... :	---
Rated Wattage ..... :	---
Supply Connection ..... :	□ Type X; □ Type Y; □ Type Z; □ Pins; □ Appliance inlet;☒ Terminals; □ connecting leads (tails); □ Adaptors; □ connectors;□ Other: N.A
Appliance Mobility ..... :	□ Portable Appliance; □ Hand-held Appliance; □ Stationary Appliance; □ Fixed Appliance; □ Built-in Appliance
Instructions language ..... :	□ English; □ French; ☒ Other: N.A

(all informations was provided by the applicant or detected at the sample)
Please see also attachment

1.6 Test standards

EN 60529: 1991 + A1: 2000（only IP66 test）
Degrees of protection provided by enclosures (IP Code)
(IEC 60529: 1989 + A1: 1999);

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

2.2 Test environment

Temperature:	15 ... 25 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details of power supply:	---
Other parameters:	

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2.3 Conformity verification - Summary of inspection

Clause	Summary of inspection	Test result		
		N.A.	Pass	Fail
4	Designations	☐	☒	☐
5	Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral	☐	☒	☐
6	Degrees of protection against ingress of water indicated by the second characteristic numeral	☐	☒	☐
7	Degrees of protection against access to hazardous parts indicated by the additional letter	☒	☐	☐
8	Supplementary letters	☒	☐	☐
9	Examples of designations with the IP Code	☐	☒	☐
10	Marking	☒	☐	☐
11	General requirements for tests	☐	☒	☐
12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral	☒	☐	☐
13	Tests for protection against solid foreign objects indicated by the first characteristic numeral	☐	☒	☐
14	Tests for protection against water indicated by the second characteristic numeral	☐	☒	☐
15	Tests for protection against access to hazardous parts indicated by the additional letter	☒	☐	☐
Annexes		☐	☒	☐

Test case verdicts
N.A.: Test case does not apply to the test object
Pass: Test item does meet the requirement
Fail: Test item does not meet the requirement

3 Test results basic standard(s)

3.1 Particulars: test item vs. test requirements

IEC 60529:1989 + A1:1999 and/or EN 60529: 1991 + A1: 2000 Degrees of protection provided by enclosures (IP Code)	
Possible test case verdicts:	
- test case does not apply to the test object .....:	N(N/A)
- test object does meet the requirement .....:	P(Pass)
- test object does not meet the requirement .....:	F(Fail)
Test specification:	
Standard ..... :	☐ IEC **60529: 1989 + A1: 1999** ☒ EN **60529: 1991 + A1: 2000**
Test procedure .....:	LVD DOC approval.
Non-standard test method.....:	N/A
Test Report Form No.....:	**EN 60529A**
Test Report Form(s) Originator .....:	Centre of Testing Service
Master TRF.....:	Dated Jan 2007
Copyright blank test report	Centre of Testing Service

General remarks:

"(see remark #)" refers to a remark appended to the report.

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

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

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

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3.2 General requirements and results

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
4	**Designations**		**—**
4.1	Arrangement of the IP code	IP66	P
5	**Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral**		**—**
5.1	protection against access to hazardous parts, see table I	IP6X	P
5.2	Protection against solid foreign objects, see table II	IP6X	P
6	**Degrees of protection against ingress of water indicated by the second characteristic numeral**		**—**
	protection against ingress of water by the second characteristic numeral, see table III	IPX6	P
7	**Degrees of protection against access to hazardous parts indicated by the additional letter**		N
8	**Supplementary letters**		N
9	**Examples of designations with the IP code**	IP66	P
10	**Marking**		**—**
	the requirements for marking shall be specified in the relevant product standard.		N
	Where appropriate, such a standard should also specify the method of marking which is to be used when:		N
	-Each part have a different degree of protection that in the same enclose		N
	-The mounting position has an influence on the degree of protection		N
	-The maximum immersion depth and time are indicated.		N
11	**General requirements for tests**		**—**
	Tests performed according to cl. 11, e.g. atmospheric		P

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
	conditions, test samples, etc.		

12	**Tests for protection against access to hazardous parts indicated by the first characteristic numeral**		**—**
12.1	Access probes, see the table VI		N
12.2	Use a low-voltage supply in series with a suitable lamp should be connected between the probe and the hazardous parts		N
12.3.1	Low Voltage appliances (up to 1000V AC / 1500V DC)		N
	the probe shall not come in contact with live parts.		N
	Compliance was proved by a continuity test with the probe		N
	A (sphere diameter 50mm for IP 1X, with test force 50N±10%)		N
	B (test finger diameter 12mm for IP 2X, with test force 10N±10%)		N
	C (stick diameter 2,5 mm for IP 3X, with test force 3N±10%)		N
	D (wire diameter 1,0 mm for IP 4X, IP5X, IP6X with test force 1N±10%)		N
12.3.2	High Voltage appliances (over 1000V AC / 1500V DC**)**		N
	the probe shall not come near to life parts that clearances are reduced.		N
	Compliance was tested with the following probe in conjunction with the high- voltage test		N
	A (sphere diameter 50mm for IP 1X, with test force 50N±10%)		N
	B (test finger diameter 12mm for IP 2X, with test force 10N±10%)		N
	C (stick diameter 2,5 mm for IP 3X, with test force 3N±10%)		N
	D (wire diameter 1,0 mm for IP 4X, IP5X, IP6X with test force 1N±10%)		N
12.3.3	Low Voltage appliances with hazardous mechanical parts		N
	the probe shall not come in contact with these hazardous mechanical parts		N
	Compliance is tested with the continuity test with the probe		N
	A (sphere diameter 50mm for IP 1X, with test force 50N±10%)		N
	B (test finger diameter 12mm for IP 2X, with test force 10N±10%)		N
	C (stick diameter 2,5 mm for IP 3X, with test force 3N±10%)		N

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
	D (wire diameter 1,0 mm for IP 4X, IP5X, IP6X with test force 1N±10%)		N

13	**Tests for protection against solid foreign objects indicated by the first characteristic numeral**		**—**
13.1	Test means must comply with Table VII.	See attached table	P
13.2	All appliances	IP6X	N
	the probe shall not penetrate in the appliance when the probe is applied with the force:		N
	A (sphere diameter 50mm with 50N for IP 1X)		N
	B (sphere diameter 12,5mm with 30N for IP 2X)		N
	C (stick diameter 2,5 mm with 3N for IP 3X)		N
	D (wire diameter 1,0 mm with 1N for IP 4X)		N
13.3	Acceptance conditions for the first characteristic numerals 1,2,3,4		N
	The probe does not pass through any opening		N
13.4	Dust test for first numerals 5 and 6		P
	-Dust test condition for enclosures category 1: With sup-atmosphere		N
	-Category 2: with normal atmosphere at dust chamber		P
13.5.2	the amount of intruded dust does not impair safety (for IP 5X)		N
13.6.2	no dust did intrude (for IP 6X)		P

14	**Tests for protection against water indicated by the second characteristic numeral**		**—**
14.1	Test means, see the Table VIII	See attached table	P
14.2	Test conditions must comply with Table VIII		P
14.2.1	**Proof with the drop machine (IP X1)**	IPX6	N
	test for 10 min with a water - volume -stream of 1mm/min on a rotating table (1 round/min distance between appliance and the axis of the table is 100mm)		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		N
14.2.2	**Proof with the drop machine (IP X2)**	IPX6	N
	test for 10 min with a water - volume -stream of 3mm/min on a rotating table (1 round/min distance between appliance and the axis of the table is 100mm)		N
	test for 2,5 min at 4 fixed positions with 15° slope		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N
	-the equipment pass the dielectric strength test		N
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
14.2.3	**Proof with the sprinkling machine (IP X3)**	IPX6	N
	Testing not less than 5min from - 60 to 60 degree jet angle at 0,07 l /min per hole with a distance of 200mm a shower at 10 l /min, and the water pressure range of 50kPa to 150kPa.		N
	The test duration is 1min/m²		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		N
14.2.4	**Proof with the sprinkling machine (IP X4)**	IPX6	N
	Testing not less than 5min from - 180 to 180 degree jet angle at 0,07 l /min per hole with a distance of 200mm a shower at 10 l /min, and the water pressure range of 50kPa to 150kPa.		N
	The test duration is 10min		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		N
14.2.5	**Proof with a jet nozzle (IPX5)**	IPX6	N
	test with a nozzle with a diameter of 6,3mm at 12,5l/min in a distance of 2,5m to 3m for 1 min/m²per surface		N
	Minimum test duration: 3min		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		N
14.2.6	**Proof with a jet nozzle (IPX6)**	IPX6	P
	test with a nozzle with a diameter of 12,5 mm at 100 l/min in a distance of 2,5m to 3m for 1 min/m² per surface		P
	Minimum test duration: 3min	3min	P
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment	No water ingress in appliance	P
	-the water shall not cause tracking currents		P
	-the water shall not reach live parts or winding which are not build for use in wet conditions		P
	-the water shall not reach the end of wires		P
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		P
14.2.7	**Temporary immersing (IPX7)**	IPX6	N
	test with cases with a height up to 850mm in a test deep of 1000mm for 30min		N
	test with cases with a height over 850mm at 150mm water over the top for 30min		N
	-the ingress of water shall not impair safety or interfere with the correct operation of equipment		N
	-the water shall not cause tracking currents		N

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
clause	**Requirement – Test**	**Result**	**Verdict**
	-the water shall not reach live parts or winding which are not build for use in wet conditions		N
	-the water shall not reach the end of wires		N
	-if the case is provided with drainage holes water shall not stay in the case and flow without impairing safety		N
	-the equipment pass the dielectric strength test		N
14.2.8	**Temporary immersing (IPX8)**	IPX6	N
	Unless there is a relevant product standard, the test conditions are subject to agreement between manufacturer and user, but they shall be more severe than those prescribed in 14.2.7 and they shall take account of the condition that the enclose will be continuously immersed in actual use.		N

15	**Tests for protection against access hazardous parts indicated by the additional letter**		N

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3.3 Annex as stated in the standards

IEC 60529:1989 + A1:1999 and / or EN 60529: 1991+A1: 2000			
Clause	Requirement - Test	Result - Remark	Verdict
ANNEXE A	**Examples of IP coding for the verification of protection low-voltage equipment against access to hazardous parts**		P
	IP codes of examples in annexe A		P

ANNEXE B	**Summary of responsibilities of relevant technical committees**		N

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3.4 Table

Table V –test conditions for degrees of protection indicated by the first characteristic numeral

First characteristic numeral	Test for protection against	
	Access to hazardous parts	Solid foreign objects
0	No test required	No test required
1	The sphere of 50 mm Φ shall not fully penetrate and adequate clearance shall be kept	
2	The jointed test finger may penetrate up to its 80 mm length, but adequate clearance shall be kept	The sphere of 12.5 mm Φ shall not fully penetrate
3	The test rod of 2.5 mm Φ shall not penetrate and adequate clearance shall be kept	
4	The test wire of 1.0 mm Φ shall not penetrate and adequate clearance shall be kept	
5	The test wire of 1.0 mm Φ shall not penetrate and adequate clearance shall be kept	Dust –protected as specified in table II
6	The test wire of 1.0 mm Φ shall not penetrate and adequate clearance shall be kept	Dust –tight as specified in table II

Table VII- test means for the tests for protection against solid foreign objects

First characteristic numeral	Test means(object probes and dust chamber)	Test force	Test conditions see
0	No test required	--	--
1	Rigid sphere without handle or guard $50^{+0,05}_{0}$ mm diameter.	50N±10%	13.2
2	Rigid sphere without handle or guard $12,5^{+0,2}_{0}$ mm diameter.	30N±10%	13.2
3	Rigid steel rod $2,5^{+0,05}_{0}$ mm diameter with edges free from burrs	3N±10%	13.2
4	Rigid steel wire $2,5^{+0,05}_{0}$ mm diameter with edges free from burrs	1N±10%	13.2
5	Dust chamber figure 2, with or without underpressure	--	13.4+13.5
6	Dust chamber figure 2, with underpressure	--	13.4+13.6

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Table VIII- test means and main test conditions for the tests for protection against water

Second characteristic numeral	Test means	Water flow rate	Duration of test	Test conditions, see
0	No test required	--	--	--
1	Drip box figure 3 enclosure on turntable	$1^{+0,5}_{0}$ mm/min	10 min	14.2.1
2	Drip box figure 3 enclosure in 4 fixed positions of 15° tilt	$3^{+0,5}_{0}$ mm/min	2.5 min for each position of tilt	14.2.2
3	Oscillating tube figure 4 spray±60° from vertical, distance max.200mm Or spray nozzle figure 5 spray±60° from vertical	0.07 l/min±5% per hole, multiplied by number of holes 10 l/min ±5%	10 min 1 min/m² At least 5 min	14.2.3a) 14.2.3b)
4	As for numeral 3 spray±180° from vertical	As for numeral 3		14.2.4
5	Water jet hose nozzle figure 6 nozzle 6.3 mm diameter distance 2.5m to 3m	12.5 l/min±5%	1 min/m² At least 3 min	14.2.5
6	Water jet hose nozzle figure 6 nozzle 12.5 mm diameter distance 2.5m to 3m	100 l/min±5%	1 min/m² At least 3 min	14.2.6
7	Immersion tank water-level on enclosure: 0.15m above top 1 m above bottom	--	30 min	14.2.7
8	Immersion tank water-level : by agreement	--	By agreement	14.2.8

Attachments

☒ Photo document

☐ BOM

☐ CDF (critical data form)

☐ Copies of certificates of certified components

☐ Instruction manual

☐ Circuit diagram

☐ Explosion block

☐ Other if necessary

----------end of report----------

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Type Designation: stainless steel box; stx
Report Number: CNB3110517-01883-L

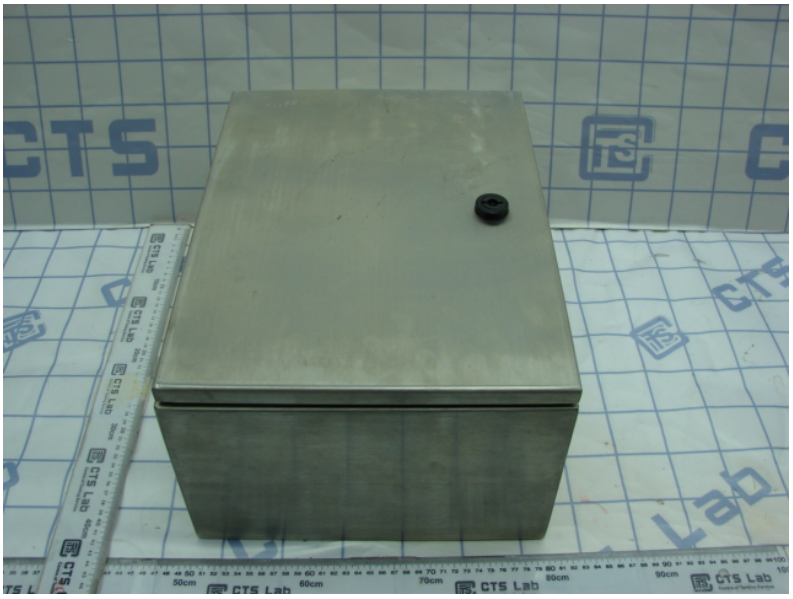

Figure 1 (External front view)

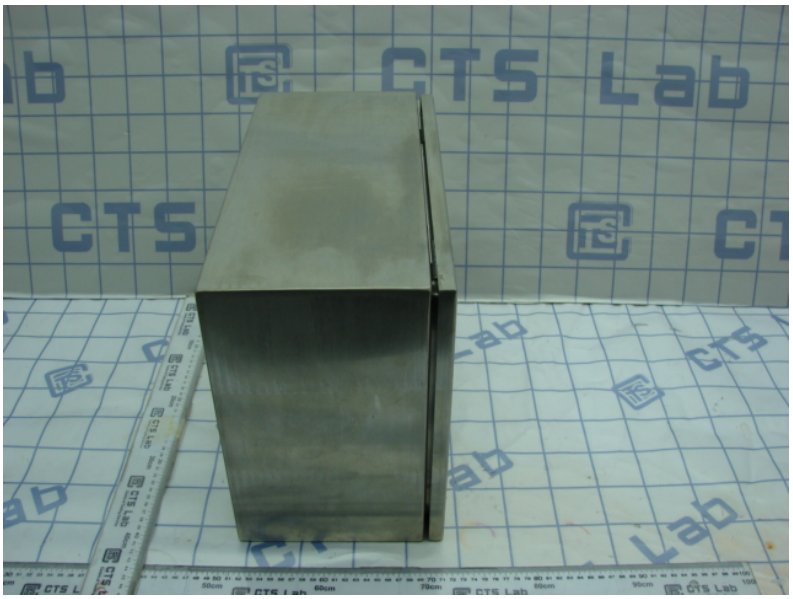

Figure 2 (side view)

Type Designation: stainless steel box; stx
Report Number: CNB3110517-01883-L

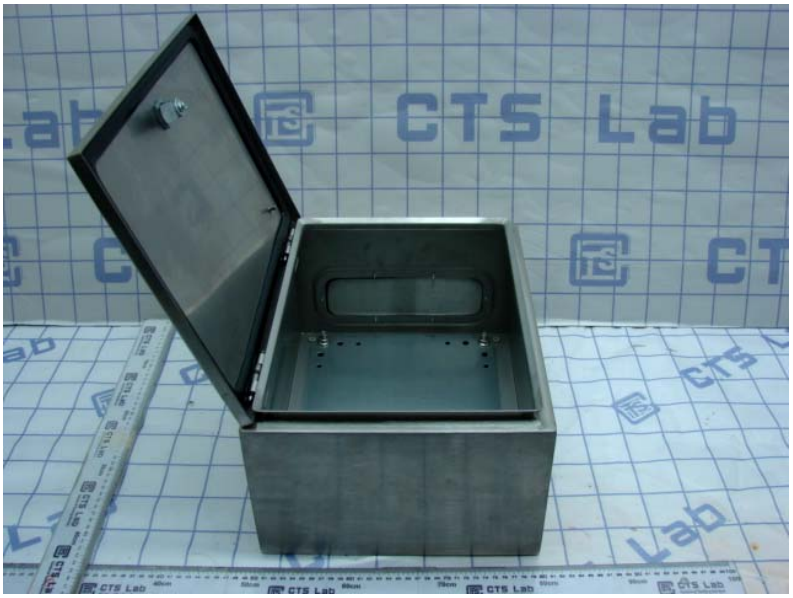

Figure 3 (internal view)

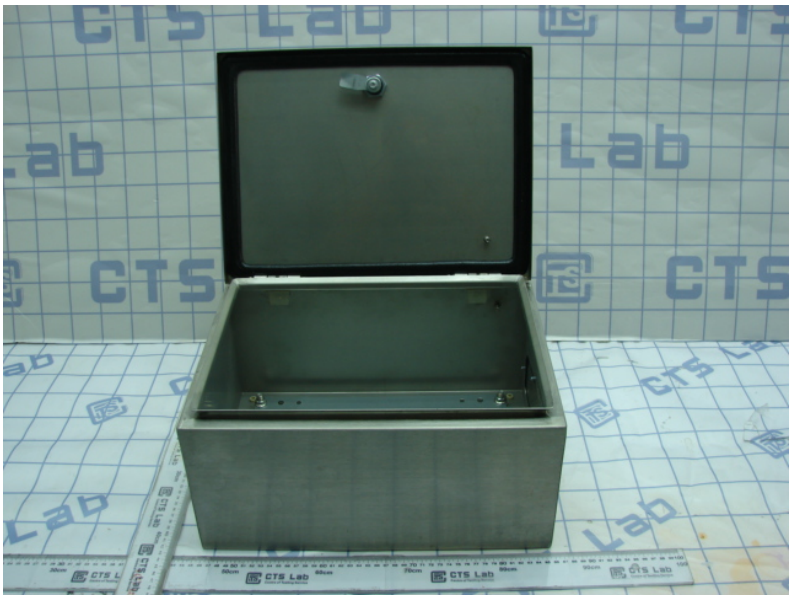

Figure 4 (waterproof gasket view)