



**CENTRE OF TESTING SERVICE
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

LVD TEST REPORT

TEST REPORT NUMBER : CNB3130227-00084-LO



CTS (Ningbo) Testing Service Technology Co., Ltd.
FL2 South Huoju Building, No.181 Canghai Rd., Jiangdong High-tech Park,
Ningbo, China

Table of contents

1.	General Information	2
1.1	Notes	2
1.2	Tester	3
1.3	Testing laboratory	4
1.4	Application details	4
1.5	Test item description	5
1.6	Test standards	6
2.	Technical test	7
2.1	Summary of test results	7
2.2	Test environment	7
3.	Test Results	8
3.1	Particulars: test item vs. test requirements	8
3.2	General requirements and results	10
3.3	Tables	16
	Attachments	17

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.

Reproduction or publication of extracts from the report requires the prior written approval of the Centre of Testing Service.

Report No.: CNB3130227-00084-LO

Page 3 of 17

Date: 07 March 2013

1.2 Tester

Tested by:

07 March 2013

Jason Zhu



Date

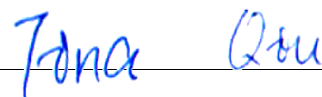
Name

Signature

Reviewed by:

07 March 2013

Tina Qiu



Date

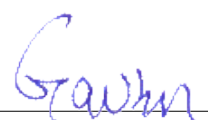
Name

Signature

Approved by:

07 March 2013

Gavin Duan



Date

Name

Signature



Copyright of this report is owned by Centre of Testing Service and may not be reproduced other than in full except with the written approval of the issuing Company.

CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.2 south Huojia Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China

Tel: +86-574-87912121 (16 lines)

Fax: +86-574-87907993

Complaint line: +86-574-87908003

E-mail: cts@cts-lab.com

See Reverse For Terms And Conditions of Service

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 : Xindao (Shanghai) Co., Ltd.
Street : 15th floor, LZY tower, No 4711, Jiao Tong Rd
Town : Shanghai P.R.
Country : CHINA
Telephone : +86-21-51093622-521
Fax : +86-21-51093699-521
Teletex : /
Contact : Kevin / Michael
Telephone : + 86-21-51093622-521

1.4.2 Details of manufacturer

Name : Xindao (Shanghai) Co., Ltd.
Street : 15th floor, LZY tower, No 4711, Jiao Tong Rd
Town : Shanghai P.R.
Country : CHINA
Telephone : +86-21-51093622-521
Fax : +86-21-51093699-521
Teletex : /
Contact : Kevin / Michael
Telephone : + 86-21-51093622-521

1.4.3 Details of factory

Name : Xindao (Shanghai) Co., Ltd.
Street : 15th floor, LZY tower, No 4711, Jiao Tong Rd
Town : Shanghai P.R.
Country : CHINA

1.4.4 Dates of application

Date of receipt of application : 28 February 2013
Date of receipt of test item : 28 February 2013
Date of test : 28 February 2013-7 March 2013

1.5 Test item Description**1.5.1 Description of test item**

Type of product : Quattro aluminium torch
Model/Type reference : P513.27*
Serial number : ---

1.5.2 Test item particulars

Test item.....:	Quattro aluminium torch
Trade Mark.....:	N/A
Tested lamp.....:	<input checked="" type="checkbox"/> continuous wave lamps; <input type="checkbox"/> pulsed lamps.
Tested lamp system.....:	N/A
Lamp classification group.....:	<input checked="" type="checkbox"/> exempt; <input type="checkbox"/> risk 1; <input type="checkbox"/> risk 2; <input type="checkbox"/> risk 3.
Lamp cap	N/A
Bulb.....:	N/A
Rated of the lamp.....:	DC 4.5V
Furthermore marking on the lamp.....:	N/A
Seasoning of lamps according IEC standard.....:	N/A
Used measurement instrument.....:	Spectroradiometer
Temperature by measurement.....:	20-25°C
Information for safety use.....:	---

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

1.6 Test standards

EN 62471: 2008
Photobiological safety of lamps and lamp systems

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:	18 ... 25 °C
Relative humidity content:	20 ... 75 %
Air pressure:	86 ... 103 kPa
Details of power supply:	DC 4.5V
Other parameters:	---

3 Test results basic standard(s)

3.1 Particulars: test item vs. Test requirements

<p align="center">EN 62471</p> <p align="center">Photobiological safety of lamps and lamp systems</p>	
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.....	<input type="checkbox"/> IEC 62471: 2006 <input checked="" type="checkbox"/> EN 62471: 2008
Test procedure.....	LVD DOC approval.
Non-standard test method.....	N/A
Test Report Form No EN 62471	
Test Report Form(s) Originator.....	Centre of Testing Service
Master TRF.....	Dated Jul 2008
Copyright blank test report.....	Centre of Testing Service

Report No.: CNB3130227-00084-LO

Page 9 of 17

Date: 07 March 2013

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.

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

General product information:

Copy of marking plate:

see also attachment / pictures

3.2 General requirements and results

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
4	EXPOSURE LIMITS		P
4.1	General		P
	The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure		P
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds 104 cd.m-2		P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is $30 \text{ J} \cdot \text{m}^{-2}$ within any 8-hour period		
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broad-band source, the effective integrated spectral irradiance, E_s , of the light source shall not exceed the levels defined by:	$0.0 \times 10^0 \text{ W} \cdot \text{m}^{-2}$	
	$E_s \cdot t = \sum_{200}^{400} \sum_t E_\lambda(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 30 \text{ J} \cdot \text{m}^{-2}$	$0.0 \times 10^0 \text{ J} \cdot \text{m}^{-2}$	
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:		
	$t_{\max} = \frac{30}{E_s} \geq 30000 \text{ s}$		
4.3.2	Near-UV hazard exposure limit for eye		P
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J.m-2 for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, EUVA, shall not exceed 10 W.m-2 .	$0.0 \times 10^0 \text{ W} \cdot \text{m}^{-2}$	P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time		P
			P

Copyright of this report is owned by Centre of Testing Service and may not be reproduced other than in full except with the written approval of the issuing Company.

CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.2 south Huoju Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China

Tel: +86-574-87912121 (16 lines)

Fax: +86-574-87907993

Complaint line: +86-574-87908003

E-mail: cts@cts-lab.com

See Reverse For Terms And Conditions of Service

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	less than 1000 s, shall be computed by: $t_{\max} \leq \frac{10\,000}{E_{\text{UVA}}} \text{ s}$		
4.3.3	Retinal blue light hazard exposure limit		P
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, $B(\lambda)$, i.e., the blue-light weighted radiance, L_B , shall not exceed the levels defined by:	$1.08 \times 10^2 \text{ W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	P
	$L_B \cdot t = \sum_{300}^{700} \sum_t L_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 10^6$ $(\text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}) t \leq 10^4 \text{ s}$	$1.08 \times 10^6 \text{ J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	N/A
	$L_B = \sum_{300}^{700} L_\lambda \cdot B(\lambda) \cdot \Delta \lambda \leq 100 (\text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1})$ $t > 10^4 \text{ s}$	----	P
	The maximum permissible exposure duration, t_{\max} , shall be computed: $t_{\max} = \frac{10^6}{L_B} \text{ s}$	---	P
4.3.4	Retinal blue light hazard exposure limit - small source		N/A
	Thus the spectral irradiance at the eye E_λ , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:	----	N/A
	$E_B \cdot t = \sum_{300}^{700} \sum_t L_\lambda(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 100 \text{ J} \cdot \text{m}^{-2}$ $t \leq 100 \text{ s}$	---	N/A
	$E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta \lambda \leq 1 \text{ W} \cdot \text{m}^{-2} \quad t > 100 \text{ s}$	----	N/A
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_λ , weighted by the burn hazard weighting function $R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels de-fined by:		P
		$9.58 \times 10^3 \text{ W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	P

Copyright of this report is owned by Centre of Testing Service and may not be reproduced other than in full except with the written approval of the issuing Company.

CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.2 south Huoju Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China

Tel: +86-574-87912121 (16 lines)

Fax: +86-574-87907993

Complaint line: +86-574-87908003

E-mail: cts@cts-lab.com

See Reverse For Terms And Conditions of Service

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	$L_{IR} = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{50\,000}{\alpha \cdot t^{0.25}} \quad W \cdot m^{-2} \cdot sr^{-1}$ <p>(10μs ≤ t ≤ 10s)</p>		
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
	<p>For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, LIR, as viewed by the eye for exposure times greater than 10 s shall be limited to:</p> $L_{IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{6\,000}{\alpha} \quad W \cdot m^{-2} \cdot sr^{-1}$ <p>t > 10s</p>	8.42 × 10 ⁻³ W · m ⁻² · sr ⁻¹	P
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	<p>The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, EIR, over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:</p> $E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0.75} \quad W \cdot m^{-2}$ <p>t ≤ 1000s</p>	1.26 × 10 ⁻⁴ W · m ⁻²	N/A
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 100 \quad W \cdot m^{-2}$ <p>t > 1000s</p>	-----	P
4.3.8	Thermal hazard exposure limit for the skin		P
	<p>Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:</p> $E_H \cdot t = \sum_{380}^{3000} \sum_t E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta\lambda \leq 20\,000 \cdot t^{0.25} \quad J \cdot m^{-2}$ <p>t ≤ 10s</p>		P
5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.2.3	Measurement of source size		P

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source.	---	
5.2.4	Pulse width measurement for pulsed sources		N/A
	The determination of Δt , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.	-----	

6	LAMP CLASSIFICATION		P
	For the purposes of this standard it was decided that the values shall be reported as follows:	See table 6.1	P
	for lamps intended for general lighting service, the hazard values shall be reported as either ir-radiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm	At a distance which produces illuminance of 200 lux	
	for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm	-----	N/A
6.1	Continuous wave lamps		P
6.1.1	Exempt Group		
	In the exempt group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:	-----	
	– an actinic ultraviolet hazard (ES) within 8-hours exposure (30000 s), nor	-----	
	– a near-UV hazard (EUVA) within 1000 s, (about 16 min), nor	-----	
	– a retinal blue-light hazard (LB) within 10000 s (about 2,8 h), nor	-----	
	– a retinal thermal hazard (LR) within 10 s, nor	-----	
	– an infrared radiation hazard for the eye (EIR) within 1000 s	-----	
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the exempt group but that does not pose:	Conformity	N/A
	– an actinic ultraviolet hazard (ES) within 10000 s, nor	Conformity	

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	– a near ultraviolet hazard (EUVA) within 300 s, nor	Conformity	N/A
	– a retinal blue-light hazard (LB) within 100 s, nor	Conformity	
	– a retinal thermal hazard (LR) within 10 s, nor	Conformity	
	– an infrared radiation hazard for the eye (EIR) within 100 s	Conformity	
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 100 s are in Risk Group 1.	Conformity	
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:	-----	
	– an actinic ultraviolet hazard (ES) within 1000 s exposure, nor	-----	
	– a near ultraviolet hazard (EUVA) within 100 s, nor	-----	
	– a retinal blue-light hazard (LB) within 0,25 s (aversion response), nor	-----	
	– a retinal thermal hazard (LR) within 0,25 s (aversion response), nor	-----	
	– an infrared radiation hazard for the eye (EIR) within 10 s	-----	
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 10 s are in Risk Group 2.	-----	
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.	-----	
6.2	Pulsed lamps		N/A
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.	-----	
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.	-----	
	The risk group determination of the lamp being tested shall be made as follows:	-----	
	– a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)	-----	

Copyright of this report is owned by Centre of Testing Service and may not be reproduced other than in full except with the written approval of the issuing Company.

CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.2 south Huoju Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China

Tel: +86-574-87912121 (16 lines)

Fax: +86-574-87907993

Complaint line: +86-574-87908003

E-mail: cts@cts-lab.com

See Reverse For Terms And Conditions of Service

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	– for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group	-----	N/A
	– for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission	-----	

3.3 Tables

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict

Table 6.1	Emission limits for risk groups of continuous wave lamps								N/A
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S_{uv}(λ)	E_s	W·m⁻²	0,001	-	0,003	-	0,03	-
Near UV	–	E_{UVA}	W·m⁻²	10	-	33	-	100	-
Blue light	B(λ)	L_B	W·m⁻²·sr⁻¹	100	-	10000	-	400000	-
Blue light, small source	B(λ)	E_B	W·m⁻²	1,0*	-	1,0	-	400	-
Retinal thermal	R(λ)	L_R	W·m⁻²·sr⁻¹	28000/α	-	28000/α	-	71000/α	-
Retinal thermal, weak visual stimulus**	R(λ)	L_{IR}	W·m⁻²·sr⁻¹	6000/α	-	6000/α	-	6000/α	-
IR radiation, eye	–	E_{IR}	W·m⁻²	100	-	570	-	3200	-
Remark: Angular subtense of apparent source, α=*mrad * Small source defined as one with 0 < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source									



Report No.: CNB3130227-00084-LO

Page 17 of 17

Date: 07 March 2013

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-----

Copyright of this report is owned by Centre of Testing Service and may not be reproduced other than in full except with the written approval of the issuing Company.

CTS (Ningbo) Testing Service Technology Co., Ltd.

Fl.2 south Huoju Building, No.181 canghai Rd., Jiangdong High-tech Park Ningbo China

Tel: +86-574-87912121 (16 lines)

Fax: +86-574-87907993

Complaint line: +86-574-87908003

E-mail: cts@cts-lab.com

See Reverse For Terms And Conditions of Service

Type Designation: Quattro aluminium torch, P513.27*
Report Number : CNB3130227-00084-LO



Figure 1 (external view-General)