



**CENTRE OF TESTING SERVICE
INTERNATIONAL**

OPERATE ACCORDING TO ISO/IEC 17025

TEST REPORT

TEST REPORT NUMBER : CNB3160429-00305-L



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

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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.

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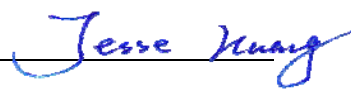
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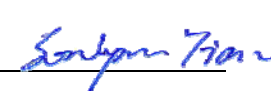
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Date: 04 May 2016

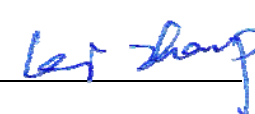
1.2 Tester**Tested by:**

04 May 2016	Jesse Huang	
Date	Name	Signature

Reviewed by:

04 May 2016	Sonlynn Tian	
Date	Name	Signature

Approved by:

04 May 2016	Lei Zhang	
Date	Name	Signature

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 B.V.
Street : P.O. Box 3082, 2280 GB
Town : Rijswijk
Country : The Netherlands
Telephone : +86- 21-51093622*521
Fax : /
Teletex : /
Contact : Kevin Zhou
Telephone : +86- 21-51093622*521

1.4.2 Details of manufacturer

Name : Xindao B.V.
Street : P.O. Box 3082, 2280 GB
Town : Rijswijk
Country : The Netherlands
Telephone : +86- 21-51093622*521
Fax : /
Teletex : /
Contact : Kevin Zhou
Telephone : +86- 21-51093622*521

1.4.3 Details of Factory

Name : Xindao B.V.
Street : P.O. Box 3082, 2280 GB
Town : Rijswijk
Country : The Netherlands

1.4.4 Dates of application

Date of receipt of application : 29 April 2016
Date of receipt of test item : 29 April 2016
Date of test : 29 April 2016 –04 May 2016

1.4.5 Buyer

Buyer : /

1.4.6 PO No.

PO No. : /

1.5 Test item Description

1.5.1 Description of test item

Type of product : Photobiological safety

Model/Type reference : P301.871

Serial number : ---

1.5.2 Test item particulars

Test item	Mobile phone flashlight, black
Trade Mark.....	N/A
Tested lamp	☒ continuous wave lamps; ☐ pulsed lamps.
Tested lamp system.....	N/A
Lamp classification group	☐ exempt; ☒ risk 1; ☐ risk 2; ☐ risk 3.
Lamp cap	N/A
Bulb	LED
Rated of the lamp.....	DC 3.6V
Furthermore marking on the lamp.....	N/A
Seasoning of lamps according IEC standard	N/A
Used measurement instrument.....	IEC/EN 62471 Tester
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 3.6V
Other parameters:	---

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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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 J · 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:		
	$E_s \cdot t = \sum_{200}^{400} \sum_t E_\lambda(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta\lambda \cdot \Delta t \leq 30 \quad \text{J} \cdot \text{m}^{-2}$		
	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 .		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time		P

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	less than 1000 s, shall be computed by: $t_{\max} \leq \frac{10\,000}{E_{\text{UVA}}} \text{ s}$		P
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:		P
	$L_B \cdot t = \sum_{300}^{700} \sum_t L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 10^6$ $(J \cdot m^{-2} \cdot sr^{-1}) t \leq 10^4 s$		N
	$L_B = \sum_{300}^{700} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \leq 100 (W \cdot m^{-2} \cdot sr^{-1})$ $t > 10^4 s$	$t > 10^4 s$	P
	The maximum permissible exposure duration, $t_{\max}$, shall be computed: $t_{\max} = \frac{10^6}{L_B} s$		P
4.3.4	Retinal blue light hazard exposure limit - small source		N
	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
	$E_B \cdot t = \sum_{300}^{700} \sum_t L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \leq 100 J \cdot m^{-2}$ $t \leq 100s$		N
	$E_B = \sum_{300}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \leq 1 W \cdot m^{-2} \quad t > 100s$		N
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		P

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	$R(\lambda)$ (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels de-fined by: $L_{IR} = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{50\,000}{\alpha \cdot t^{0.25}} \quad W \cdot m^{-2} \cdot sr^{-1}$ ($10\mu s \leq t \leq 10s$)	$10\mu s \leq t \leq 10s$	P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		P
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to acti-vate 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: $L_{IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{6\,000}{\alpha} \quad W \cdot m^{-2} \cdot sr^{-1}$ $t > 10s$	$t > 10s$	P
4.3.7	Infrared radiation hazard exposure limits for the eye		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: $E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0.75} \quad W \cdot m^{-2}$ $t \leq 1000s$		N
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 100 \quad W \cdot m^{-2}$ $t > 1000s$	$t > 1000s$	P
4.3.8	Thermal hazard exposure limit for the skin		P
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to: $E_H \cdot t = \sum_{380}^{3000} \sum_t E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta\lambda \leq 20\,000 \cdot t^{0.25} \quad J \cdot m^{-2}$ $t \leq 10s$	$t \leq 10s$	

5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.2.3	Measurement of source size		P

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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	Continuous wave lamps	N
	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		
	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 irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm		N
	for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		P
6.1	Continuous wave lamps		P
6.1.1	Exempt Group		N
	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)		P
	In this group are lamps, which exceeds the limits for the exempt group but that does not pose:		P
	– an actinic ultraviolet hazard (ES) within 10000 s, nor		
	– a near ultraviolet hazard (EUVA) within 300 s, nor		

IEC/EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict
	– a retinal blue-light hazard (LB) within 100 s, nor		P
	– a retinal thermal hazard (LR) within 10 s, nor		
	– an infrared radiation hazard for the eye (EIR) within 100 s		
	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.		
6.1.3	Risk Group 2 (Moderate-Risk)		N
	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
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		
6.2	Pulsed lamps		N
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.	Continuous wave lamps	
	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)		
	– 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		

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

3.3 Tables

EN 62471			
Clause	Requirement – Test	Result – Remark	Verdict

Table 6.1	Emission limits for risk groups of continuous wave lamps (Base on directive: 2006/25/EC)								P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	Es	W•m ⁻²	0,001	--	0.003	2.5e-03	---	---
Near UV	--	EUVA	W•m ⁻²	0,33	--	33	3.7e-01	---	---
Blue light	B(λ)	LB	W•m ⁻² •sr ⁻¹	100	--	10000	6.6e+02	400000	---
Blue light, small source	B(λ)	EB	W•m ⁻²	---	--	1,0	6.4e-01	400	---
Retinal thermal	R(λ)	LR	W•m ⁻² •sr ⁻¹	28000/ α	--	28000/ α	2.6e+04	71000/ α	---
Retinal thermal, weak visual stimulus**	R(λ)	LIR	W•m ⁻² •sr ⁻¹	545000 0,0017 $\leq \alpha \leq$ 0,011	---				
				6000/ α 0,011 $\leq$ $\alpha \leq$ 0,1	9.5e+01				
IR radiation, eye	--	EIR	W•m ⁻²	100	---	570	4.2e-03	---	---
Remark: Angular subtense of apparent source, $\alpha=66.52\text{mrad}$ * Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source White light was test in this test report.									



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-----

Type Designation: Mobile phone flashlight, black; P301.87
Report Number : CNB3160429-00305-L



Figure 1 (external view-whole)

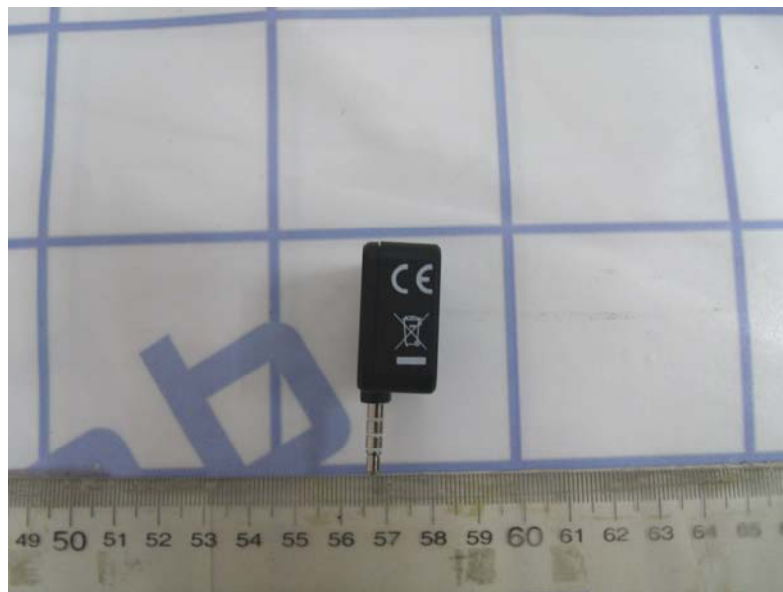


Figure 2 (external view-side)

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Figure 3 (external view-bottom)