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## **Test Report**

Client Name : ShenZhen Runlite Technology Co.,Ltd

Address Building A15, Tantou the 4th Industrial Estate, SongGang

Town,Baoan District,ShenZhen,China

Product Name : SMD LED

Date : 2020-08-05

Shenzhen Anbotek Pengcheng Compliance
Laboratory Limited



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## **TEST REPORT**

EN 62471:2008

Photobiological Safety of Lamps and Lamp Systems

Report Reference No...... 68260LC00023001

Tested by

(printed name + signature)......

Lewin Fe

Supervised by

(printed name + signature) ...... Flora Zhang

Testing Laboratory.....: Shenzhen Anbotek Pengcheng Compliance Laboratory Limited

Zone B, 1/F., Building 2, Phase III, Huangtian Yangbei Industrial

Shenzhen, Guangdong, China.

Testing location ...... Same as above

Applicant's Name ...... ShenZhen Runlite Technology Co.,Ltd

Address . Building A15, Tantou the 4th Industrial Estate, Song Gang Town, Baoan

District, Shen Zhen, China

**Test Specification:** 

Standard..... EN 62471:2008

Test procedure ...... Type Test

Non-standard test method...... N/A

Test Item Description..... SMD LED

Trade Mark ...... N/A

Manufacturer ...... ShenZhen Runlite Technology Co.,Ltd

Address ...... Building A15,Tantou the 4th Industrial Estate,SongGang Town,Baoan

District, Shen Zhen, China

Model/Type reference .....: X2835X-W64SXXXXDXXXX-XXXX

Ratings .....: 3VDC, 0.2W

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Anbotek Pengcheng Compliance Laboratory Limited. The test results presented in this report relate only to the object tested.

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Summary of Testing:	And Lotek Anbo. An
Tests performed (name of test and test clause):	Testing location:
This appliance complies with EN 62471:2008 standards requirements.  The EUTs passed relevant tests.	Shenzhen Anbotek Pengcheng Compliance Laboratory Limited Zone B, 1/F., Building 2, Phase III, Huangtian Yangbei Industrial Zone, Huangtian Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Summary of Compliance with National Differences	Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek
Copy of Marking Plate:	
ek Anborek	Anbotek

potek

nbotel



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Tested lamp	Continuous wave lamps  Pulsed lamps
Tested lamp	N/A
Lamp classification group	⊠ RGU Exempt
W. K. C. C.	NOT LOW NISK
ek Anbotek Anbotek Anbo	☐ RG2 Moderate Risk ☐ RG3 High Risk
Lamp cap	RG3 High Risk
Lamp cap  Test item description  Rated of the lamp	N/A
l est item description	SMD LED
201	3VDC, 0.2W
Possible Test Case Verdicts:	
Test case does not apply to the test object	ter and
Test object does meet the requirement	P (Pass)
Test object does not meet the requirement	nt F (Fail)
Testing:	
Ambient temperature of tested	
Test inputs	3VDC
Sample size for tested	1pcs
Date of receipt of test item	2020-07-28
Test inputs  Sample size for tested  Date of receipt of test item  Date (s) of performance of tests	2020-07-28
General Remarks:	
The test results presented in this report re	relate only to the object tested.
	ept in full, without the written approval of the Issuing testing
laboratory. "(See Enclosure #)" refers to additional ir	nformation appended to the report
"(See appended table)" refers to a table a	N Vie Vue
Throughout this report a point is used as	U. M.
List of test equipment must be kept on file	e and available for review.
General Product Information:	
X2835X-W64SXXXXDXXXX-XXXX and X	Y2835Y_\\\\YYYYYYYYYYY
VS002V-AAAVANVVVVVVVVVVVVVVVVVVVVVVVVVVVVVVV	^2000^-W^^^^^^^^^^^.
	XXXXXXXXXXX-XXXX:The third "X" and the fourth "X" indicates the
correlated color temporature it can be an	ny integer from 16 to 65, which states from 1600K to 6500K

PC-EE-01-a



nbotek



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Anbore		EN 62471:2008		
Anbo	Clause	Requirement + Test	Result – Remark	Verdict
	4 rek	EXPOSURE LIMITS	otok suport A	P
P	1/2	Contents of the whole Clause 4 of IEC 62471:2006	Anto	anbore
401	anbore	moved into a new informative Annex ZB	Anbo	W.
	HOY.	Clause 4 replaced by the following:	All hotek	P.P.
hotek	Anbo	Limits of the Artificial Optical Radiation Directive	Jek Vupos Vii	P "016
'We	hote	(2006/25/EC) have been applied instead of those	atek anbore	VUL
anbore	Vier	fixed in IEC 62471:2006	boten Anb	da No
	4.1	General	And spoten And	Р
Anbe		The exposure limits in this standard is not less than	Anbor Ar.	boten P
	poten	0,01 ms and not more than any 8-hour period and	Potek Vupo, V	100
b.	You	should be used as guides in the control of exposure	Ant Morek	eupo,
No Fel	Anbor	Detailed spectral data of a light source are generally	Anbores Ans	N/A
1/0	"olek	required only if the luminance of the source exceeds	otek anbote.	And
	And	10 <sup>4</sup> cd.m <sup>-2</sup>	tek bupo. W.	D'upolo,
n'ek	4.3	Hazard exposure limits	tel sporek Anbo	P
Anbo	4.3.1	Actinic UV hazard exposure limit for the skin and	upor Alle	ek P Anb
	lok Pup,	eye The exposure limit for effective radiant exposure is	notok Anbor An	otel*P
b.c.	Non	30 J.m <sup>-2</sup> within any 8-hour period	And K work Ar	por P
p.7	po,	To protect against injury of the eye or skin from	Anboise And	50 D
No	motel.	ultraviolet radiation exposure produced by a	A. anboise	And
	Anto	broadband source, the effective integrated spectral	Anbo	anbote
Note	vupote.	irradiance, ES, of the light source shall not exceed	ak społek Aupo	401
upo	h.	the levels defined by:	An tok shotek	Anbo
apolek	AUGO	400	wotek Anbor An	ok P 100
bu.	de No	$E_{s} \cdot t = \sum \sum E_{\lambda}(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 30$ J·m <sup>-2</sup>	the botek Anbo	VIII
Anbo	Dr.	200 t	abole. Ant	otek or
	Polek D	The permissible time for exposure to ultraviolet	otek Anbotes An	P
PL	No	radiation incident upon the unprotected eye or skin	Anbo	Aupote
10K	Vipole.	shall be computed by:	abotek Anbo	h. —tok
	Nek Nek	$t_{\text{max}} = \frac{30}{2}$ s	All spotek	Ant
bolek	Aupo	E <sub>S</sub>	ek Anbore All	botel
No.	4.3.2	Near-UV hazard exposure limit for eye	ok hotek Anbore	Р
Anboy	b-,	For the spectral region 315 nm to 400 nm (UV-A)	pole Am	by P Wupe
Anbot	ak Vupe	the total radiant exposure to the eye shall not	otek Anbores Anb	· ~ V
Aug	No.	exceed 10000 J.m <sup>-2</sup> for exposure times less than	Anbo. A sotek An	Jose M.
na	Dolo. V	1000 s. For exposure times greater than 1000 s	abotek Anbo	Nek
4.	-otek	(approximately 16 minutes) the UV-A irradiance for	A. tek spotek	Aupo
lok.	Anbo	the unprotected eye, EUVA, shall not exceed 10	Aupo, Ali	abotek
botek	* apolen	W.m <sup>-2</sup> .	AK MOTOK ANDOTO	D set
	No.	The permissible time for exposure to ultraviolet	Ans -k motok	Anboren
Anborek	Anbo	radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:	otek Anboten Anbe	v vol
Vur	W 100	V. 10, 14, 150, 150, 150, 150, 150, 150, 150, 150	bo. W. Polek Aupoli	Р
anboy	ak Anbo	$t_{\text{max}} \le \frac{10000}{5}$ s whole	abore And	otek Al
**	orek a	EUVA Anborek	Ant abovek Ant	P P
An	4.3.3	Retinal blue light hazard exposure limit	Aupor Am	N/A
V.	200	The state ing. it has a supposate in the	rak abo,	Part .



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Anbo		EN 62471:2008		
anbo	Clause	Requirement + Test	Result – Remark	Verdict
4.	-Ofek	To protect against retinal photochemical injury from	Agk above A	N/A
P.	Upo	chronic blue-light exposure, the integrated spectral	Anbo. All	polek
.V.	"Otek	radiance of the light source weighted against the	stek anbore	And
O.Ser.	And	blue-light hazard function, B(λ), i.e., the blue-light	Anbo. A. Lek	aboren
Nos	bolek	weighted radiance, LB, shall not exceed the levels	k sotek anbore	VIII
nboro	Ann	defined by:	Her Aup	anboro
-sek	, abole	defined by.	Anbo	NI/A
Vupo.	br	$L_{\rm B} \cdot t = \sum_{l} \sum_{\lambda} L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 10^6 \qquad \text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	nbore An	N/A Ant
0	lek aup	$B_{i} = \sum_{k} \sum_{i} D_{i}(x,i) \cdot D(x) \cdot \Delta t \cdot \Delta x \le 10$	rek anbore And	M
And	M	700	Anbo	N/A
(-	botek	$L_{B} = \sum_{\lambda} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 100 \qquad W \cdot m^{-2} \cdot sr^{-1}$	Lotek Anboys A	1477
b)		300	And	Moro
Nor	4.3.4	Retinal blue light hazard exposure limit - small source	poter Anbo	P. P.
0	by.	Thus the spectral irradiance at the eye Ελ, weighted	Vir. of Polick	VLBo.
Potok	Anboy	against the blue-light hazard function B(λ) shall not	tek anbore Ant	1010
AUD	30	exceed the levels defined by:100s	aboter aboter	Anb
aboten	Anbo	700	Potek Vupo, Vi	ek P
Die	w You	$E_{B} \cdot t = \sum_{k} \sum_{k} E_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 100  J \cdot m^{-2}$	up atek Aupo	Vien
anbo	V. Vie	300 t	boles Anbe	You
10.	YOK	$E_{\rm B} = \sum_{\rm app}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 1 \qquad W \cdot m^{-2}$	All Motok Af	P
L DY	po.	$E_{\rm B} = \sum E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 1$ W · m <sup>-2</sup>	Anbore And	hotek
V.	Nek	300	A. Spoter	And
0101	4.3.5	Retinal thermal hazard exposure limit	anbo. Pak	- Police
Nos	holes	To protect against retinal thermal injury, the	in siek anbore	P al
nboro	Ann	integrated spectral radiance of the light source, Lλ,	lek Augo	anbore
No.	abote	weighted by the burn hazard weighting function $R(\lambda)$	ok botek Anbo	br
Aupo.	bree	(from Figure 4.2 and Table 4.2), i.e., the burn hazard	bore And	ek anb
0	ek anb	weighted radiance, shall not exceed the levels	rek aboren And	V.
Anb	v	defined by:	Aupo, Air	ooten p
	poten		anbor All	D
DI	No	$L_{\rm B} = \sum_{\lambda} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{50000}{2.25}$ W·m <sup>-2</sup> ·sr <sup>-1</sup>	Anbo	anbore
*ok	anbore	$L_{\rm R} = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{50000}{\alpha \cdot t^{0,25}}$ W · m <sup>-2</sup> · sr <sup>-1</sup>	botek Anbo	W. SOK
,	4.3.6	Retinal thermal hazard exposure limit – weak visual st	timulus	VU.D.
hotek	Anbo	For an infrared heat lamp or any near-infrared	ek anbore And	P woley
Un	rotel	source where a weak visual stimulus is inadequate	rek aboten	VUID
aboton	Andre	to activate the aversion response, the near infrared	hotek Anbo. A.	od No
br.	n ye	(780 nm to 1400 nm) radiance, LIR, as viewed by	k stek anbor	Vien
Anbot	Vile	the eye for exposure times greater than 10 s shall be	aboten Ande	atek .
	Nek	limited to:	An hotek An	D. P.
An	DO. b		antore and	notek
No	notek	$L_{\rm IR} = \sum_{700}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{6000}{\alpha} \qquad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	atek anbotes	VUN
10.	Ville	$AH = \sum_{n=0}^{\infty} L_n(n) \cdot \Delta n \leq \frac{\alpha}{\alpha}$	Anbo. Al.	abolen
*eK	127	760	-K Motok Anbor	D self
por	4.3.7	Infrared radiation hazard exposure limits for the eye	VUD. K STOK	Phore
York	Anbors	The avoid thermal injury of the cornea and possible	sek spoter Anbu	P
Anbo	Pr-	delayed effects upon the lens of the eye	Do. Vi.	Anbo
100	an Aupo	(cataractogenesis), ocular exposure to infrared	otek Anbore And	No.
Ann	AV.	radiation, EIR, over the wavelength range 780 nm to	Anbo M. sek	ole. V
· A	ole. V	3000 nm, for times less than 1000 s, shall not	Potek Vupo, Vi	401
bu.	N. W.	exceed:	And	abol
ek.	Anboro	3000	aboten Anbu	Piek
	You	$E_{\text{IR}} = \sum_{\lambda} E_{\lambda} \cdot \Delta \lambda \le 18000 \cdot t^{-0.75}$ W·m <sup>-2</sup>	Arr notek	Anbo
POJOK	Aupo.	780	ak papole And	Note K
In I	- o'lek	For times greater than 1000 s the limit becomes:	w. sek abole.	P <sub>P</sub>
100	- 46	N	-V. t-O' DA	



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	EN 62471:2008		
Clause	Requirement + Test	Result – Remark	Ve
botek	3,000	notek Anbor	
Yo.	$E_{\rm IR} = \sum E_{\lambda} \cdot \Delta \lambda \le 100$ W · m <sup>-2</sup>	Ans work	anb
anbore	780	Anboten Anb	
4.3.8	Thermal hazard exposure limit for the skin	A. Tok Mpoler	8
Anbo	Visible and infrared radiant exposure (380 nm to	stek Aupo, Air	
abott	3000 nm) of the skin shall be limited to:	ok solek Anbor	
bre	tek abotek Anbo	abole Ant	No.
OK DU	3000	otek Anbotes And	-\
	$E_{H} \cdot t = \sum_{200}^{300} \sum_{k} E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta \lambda \le 20000 \cdot t^{0,25}$ J · m <sup>-2</sup>	Anbo	"pote.
5	MEASUREMENT OF LAMPS AND LAMP SYSTEM	S sporek Aribo	
5.1.	Measurement conditions	All solver	Vien
Anao	Measurement conditions shall be reported as part of	Anbor	
"poter	the evaluation against the exposure limits and the	k botek Anbors	P
Bu.	assignment of risk classification.	ter And K wotek	
5.1.1 Anbox	Lamp ageing (seasoning)	otek anboise Ans	.V.
v 4a	Seasoning of lamps shall be done as stated in the	upo atok supo	1
Vu.	appropriate IEC lamp standard.	spotek Anbo	Nek
5.1.2	Test environment	by Poley V	Upo
0	For specific test conditions, see the appropriate IEC	Aupo, Wi	000
potek	lamp standard or in absence of such standards, the	notek Anbore	Dur
Vi.	appropriate national standards or manufacturer's	And	0.1
anbore	recommendations.	ek aboren And	
5.1.3	Extraneous radiation	P. Poler	
And	Careful checks should be made to ensure that	botek Anbo. A.	No
ek ant	extraneous sources of radiation and reflections do	ak shotek Anbo	
F 4014	not add significantly to the measurement results.	Pupole Vill	otek
5.1.4	Lamp operation	Ar store Ar	
Nos	Operation of the test lamp shall be provided in	Anbo	anbo
Aupolo	accordance with:	anboten and	
POLOK	<ul> <li>the appropriate IEC lamp standard, or</li> </ul>	A. stek anboten	P.
Ville	<ul> <li>the manufacturer's recommendation</li> </ul>	er Anbo	
5.1.5	Lamp system operation	sek soposek bupo.	M
V	The power source for operation of the test lamp shall	bo. W. Yek - Vpo.	37.
Anb	be provided in accordance with:	spotek Aupo, Au	No.
Not.	the appropriate IEC standard, or	An hotel An	90,
,0. 1	olek Vipo, by. K rotek	Anbore Ant	, bol
abotek	the manufacturer's recommendation	hotek Anbore	Vien
5.2	Measurement procedure	Arra ak motek	D.T
5.2.1	Irradiance measurements	ek vupole Vu	
hotel	Minimum aperture diameter 7mm.	niek anbore	
Vien	Maximum aperture diameter 50 mm.	poter And	N.
K anb	The measurement shall be made in that position of	tek społek Aupe	2
hr.	the beam giving the maximum reading.	Pupose Vue	otek
oten	The measurement instrument is adequate	notek anbor An	
No	calibrated.	Anb	nbot
5.2.2	Radiance measurements	above. And	
5.2.2.1	Standard method		

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Clause	Requirement + Test	Result – Remark	Verdict
hotek	The instrument shall be calibrated to read in	otok Anbort	P
Un	absolute radiant power per unit receiving area and	Anbo	Vupole.
Anbore	per unit solid angle to acceptance averaged over the	Anbotek Anbo	W. Stok
W. Stok	field of view of the instrument.	All solek	Aupo.
5.2.2.2	Alternative method	Jok Wipola VII.	N/A
5.2.2.2	Alternative method	k wotek Anbore	IN/A
bir.	Alta manting by the series and series and the series are the series and the series and the series and the series are the series are the series and the series are the serie	Upole, Vup	NIA Ant
ek Ar	Alternatively to an imaging radiance set-up, an	otek Anbore And	N/A
No	irradiance measurement set-up with a circular field stop placed at the source can be used to perform	Anbo	pole
	radiance measurements.	potek Anbo	-tek
5.2.3	Measurement of source size	All botok	Pupo.
5.2.5	The determination of α, the angle subtended by a	Antore An	Potek
polek	source, requires the determination of the 50%	k otek anbore	Arra
Ann	emission points of the source.	tek Anbe	anbore
5.2.4	Pulse width measurement for pulsed sources	sek abotek Anbo	N/A
V.	The determination of $\Delta t$ , the nominal pulse duration	upo, bi.	N/A
ion Vu	of a source, requires the determination of the time	hotek Anbor An	484
Nos	during which the emission is > 50% of its peak	And K Sofek Ar	por
	value.	Anbores Anb	"Otek
5.3	Analysis methods	stek supores	P. P.
5.3.1	Weighting curve interpolations	Anbo	P
Anbore	To standardize interpolated values, use linear	ak sporet Anbe	P
P. 03	interpolation on the log of given values to obtain	All tok shotek	Anbo
Anbo	intermediate points at the wavelength intervals	notek Anbor An	de Ve
do No	desired.	ip otek Aupo,	Am
5.3.2	Calculations	aboles And	atel P
-Olek	The calculation of source hazard values shall be	Ar Arboten Ar	P
-V	performed by weighting the spectral scan by the	Anbo	anboten
anboyer	appropriate function and calculating the total	botek Anbo.	W.
Mora Tok	weighted energy.	An Botek	Aupo,
5.3.3	Measurement uncertainty	ok anbore An	P
boto	The quality of all measurement results must be	watek anbore	Pulper
C Arr	quantified by an analysis of the uncertainty.	Anb K -ot	ak p Anb
o ant	Lamp Classification	stek anboten Anbo	P
-\/.	For the purposes of this standard it was decided that	Anbo	pore P P
oter	the values shall be reported as follows:	hotek Anbo, A.	400
Nor	<ul> <li>for lamps intended for general lighting service,</li> </ul>	Distance=205mm	Aupo, B
Anbo	the hazard values shall be reported as either	Anbore Ans	polek
spotek	irradiance or radiance values at a distance	k work anbore	Vu.
VIII	which produces an illuminance of 500 lux, but	And Andek	anbore
Anbore	not at a distance less than 200 mm	otek Anbotek Anbo	u
V	<ul> <li>for all other light sources, including pulsed lamp</li> </ul>	bote Anbor	N/A
ak Anb	sources, the hazard values shall be reported at	hotek Anbo. An	Nos
Nex	a distance of 200 mm	Ann ok wotek and	00, V
C 1	The state of the s	Anbore And	wotek
6.1 6.1.1	Continuous wave lamps	n Alek Antoles	Pok Pok
0.1.1	Risk Group 0 (Exempt)	Puppe N.	Antp
Aupole	In the except group are lamps, which does not pose	ak abotek Anbo	M. P
40	any photobiological hazard. The requirement is met by any lamp that does not pose:	Arr botek	Anbo
400	by any lamp mai does not pose.	K MOTO AND	



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	EN 62471:2008		
Clause	Requirement + Test	Result – Remark	Verdict
Anbotek	<ul> <li>an actinic ultraviolet hazard (ES) within 8-hours exposure (30000 s), nor</li> </ul>	Anbotek Anbotek	Anbotek Anbotek
Anbote	<ul> <li>a near-UV hazard (EUVA) within 1000 s, (about 16 min), nor</li> </ul>	otek Anbotek Anbotek	P Anbore
upotek Vu	<ul> <li>a retinal blue-light hazard (LB) within 10000 s (about 2,8 h), nor</li> </ul>	Anbotek Anbotek An	botek P
Anbore	<ul> <li>a retinal thermal hazard (LR) within 10 s, nor</li> </ul>	Anbotek Anbo	Potek
Anbotek	an infrared radiation hazard for the eye (EIR) within 1000 s	lek Anbotek Anbotek	Aupore
6.1.2	Risk Group 1 (Low-Risk)	moren Anb	N/A
Jok Vul	In this group are lamps, which exceeds the limits for the except group but that does not pose:	Anbotek Anboten Anbo	N/A
, botek	<ul> <li>an actinic ultraviolet hazard (ES) within 10000 s, nor</li> </ul>	Anbotek Anbotek A.	N/A
Anbotek	<ul> <li>a near ultraviolet hazard (EUVA) within 300 s, nor</li> </ul>	lek Vupotek Vupotek	N/A
anbore	a retinal blue-light hazard (LB) within 100 s, nor	tek shotek Anbore	N/A
lek al	- a retinal thermal hazard (LR) within 10 s, nor	bos Anbo	N/A
potek	<ul> <li>an infrared radiation hazard for the eye (EIR) within 100 s</li> </ul>	Anborek Anborek Ar	N/A
Anbotek Anbotek	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.	ek Anbotek Anbotek	N/A
6.1.3	Risk Group 2 (Moderate-Risk)	otek anboten Anbo	N/A
tak Ant	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:	Anbotek Anbotek Anbot	N/A
potek .	<ul> <li>an actinic ultraviolet hazard (ES) within 1000 s exposure, nor</li> </ul>	Anbotek Anbotes An	N/A
Anborotek	<ul> <li>a near ultraviolet hazard (EUVA) within 100 s, nor</li> </ul>	Anbotek Anbotek	N/A
Anbote	<ul> <li>a retinal blue-light hazard (LB) within 0,25 s (aversion response), nor</li> </ul>	potek Anbotek Anbotek	N/A
ek Anb	a retinal thermal hazard (LR) within 0,25 s (aversion response), nor	Anbotek Anbotek Anbot	N/A
anbotek	<ul> <li>an infrared radiation hazard for the eye (EIR) within 10 s</li> </ul>	Anbotek Anbotek	N/A
Anbotek	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.	ek Anbotek Anbotek	N/A
6.1.4	Risk Group 3 (High-Risk)	pore And	N/A



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Clause	) C	Requirement + Test Result – Remark	Verdict
hotek	10	Lamps which exceed the limits for Risk Group 2 are in Group 3.	N/A
6.2	6	Pulsed lamps	N/A
Anbore.		Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.	N/A
an' An'	0	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.	N/A
Anboren	-	The risk group determination of the lamp being tested shall be made as follows:	N/A
Anbore		<ul> <li>a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High- Risk)</li> </ul>	N/A
potek Ant	0	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
Anbotek Anbote		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/A

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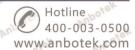
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Clause Requiremen	nt + Test	Result – Remark	Verdict
Table 4.1 Spectral we	ighting function for assessing	ultraviolet hazards for skin	and eye P
Wavelength¹ λ, nm	UV hazard function S <sub>υν</sub> (λ)	Wavelength λ, nm	UV hazard function S <sub>υν</sub> (λ)
200	0,030	313*	0,006
205	0,051	315	0,003
210	0,075	316	0,0024
215	0,095	317	0,0020
220	0,120	318 nbox	0,0016
225	0,150	319 Anbore	0,0012
230	0,190	320	0,0010
235	0,240	322	0,00067
240	0,300	323	0,00054
245	0,360	325	0,00050
250	0,430	328	0,00044
254*	0,500	330	0,00041
255	0,520	333*	0,00037
260	0,650	335	0,00034
265	0,810	340	0,00028
270	1,000	345	0,00024
275	0,960	350	0,00020
280*	0,880	355	0,00016
285	0,770	360	0,00013
290	0,640	365*	0,00011
295	0,540	370	0,000093
297*	0,460	375	0,000077
300	0,300	380	0,000064
303*	0,120	385	0,000053
305 Annotes	0,060	390	0,000044
308	0,026	395	0,000036
310	0,015	400	0,000030
VA PA No.	100	/U - 1	250

Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.

Emission lines of a mercury discharge spectrum.

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Clause	Requirement + Test	hotek Anbo.	Result - F	Remark	Verd
Table 4.2	Spectral weighting fund	ctions for assessing re	tinal hazards fro	m broadband opt	ical P
potek	sources	And And	, v	ak Anbore	Arra
•	Wavelength	Blue-light hazard	function	Burn hazard	I function
	nm	Β (λ)		R ()	<b>(</b> )
-pole.	300	0,01	bu.	Lotek Anbo	h.
Property	305	0,01	anboren	Vup.	words.
Anbo	310	0,01	Note N	anbote. A	. V.
n No	315	0,01	Anbo	stek	VUPO
bre.	320	0,01	ak abore	Augo	Note N
ofek .	325	0,01 Anber	p.33	yk aboros	VUP
u	330	0,01	otek Anbor	* OK	abor
abores	335	0,01	V. Vo.	ofek Anbo	PV
-tek	340	0,01	Anbore	tak mo	Br. An
VUPO,	345	0,01	Notek.	Aupor Man	Non
bole	350	0,01	Diego	work or	00.
P.C.	355 NOTE:	0,01	anboter	And k	"Olek
Anb.	360	0,01	20%	anbotan	Will Park
No.	365	0,01	Ariso	No.	anbore
, b	370	0,01	sek above	VUSO	210
-otek	375	0,01	97.	tek abores	Ariso
VIII	380	0,01	hotek but	0,1	de No
anborer	385	0,013	No.	0,1	
10	390	0,025	Anbore	0,2	- 12
Anto	395	0,05	motel.	0,5	
N 100	400	O,10 mbores	Nu.	noter 1,0	
	405	0,20	k vipola	2,0	
olen b	410	0,40	40	4,0	bu.
Nor	415	0,80	Ole, Vue	8,0	Anbor
Aupo.	420	0,90	de Nor	9,0	V. so
hotek	425	0,95	IUDO	9,5	Arra
Vu.	430	0,98	aboter !	9,8	
Anborer	435	1,00	P. S. F. C. K.	10,0	
	440 MOONE AN	1,00	Aupor	10,0	
VUD	445	0,97	r polok	Anbo 9,7	
401	450	0,94	Vien	9,4	
0. b	455		Jek Aupo	9,0	
polek	460	0,80	V	anbo 8,0	br.
Nos	465	0,70	upoles Vile	7,0	
Anbo	470	0,62	101	6,2	V
"Olek	475	0,55	AND	5,5	
bus	480	0,45	abotel.	4,5	
k anbo	485	0,40	W. North	4,0	
14	490	0,22	Anbose	2,2	
ole, Vi	10 P7	0.16	ov	Anbore 1,6	h. 10/
otek	500-600	10 <sup>[(450-λ)/50]</sup>	Har. Bug	, hote1,0	
'Upo'	600-700	0,001	potek Aroc	1.0	L:
polek	700-1050	anbores A		1,0 10 <sup>[(700-7</sup>	()/500]
Pro-	1050-1150	, Alek	Anborok A		400

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Clause	Requirement + Test	Vug.	44537	ult – Remark	Verdict
Table 5.4	Summary of the ELs for values)	r the surface of the	e skin or corne	a (irradiance base	ed P
Hazard Name	Relevant equation	Wavelength range (nm)	Exposure duration (sec)	Limiting aperture rad (deg)	EL in terms of constant irradiand (W•m <sup>-2</sup> )
Actinic UV skin & eye	$E_{S} = \sum E_{\lambda} \bullet S(\lambda) \bullet \Delta \lambda$	200 – 400	< 30000	1,4 (80)	30/t
Eye UV-A	$E_{UVA} = \sum E_{\lambda} \bullet \Delta \lambda$	315 – 400	≤ 1000 > 1000	1,4 (80)	10000/t 10
Blue-light small source	$E_B = \sum E_\lambda \bullet B(\lambda) \bullet \Delta \lambda$	300 – 700	≤ 100 > 100	< 0,011	100/t 1,0
Eye IR	$E_{IR} = \sum E_{\lambda} \bullet \Delta \lambda$	780 –3000	≤ 1000 > 1000	1,4 (80)	18000/t <sup>0,75</sup> 100
Skin thermal	$E_H = \sum E_\lambda \bullet \Delta \lambda$	380 – 3000	× 10	2π sr	20000/t <sup>0,75</sup>

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Table 5.5	Summary of the ELs for	the retina (radiar	nce based valu	es)	Aupo, by
Hazard Name	Relevant equation	Wavelength range (nm)	Exposure duration (sec)	Field of view radians	EL in terms of constant radiance (W•m <sup>-2</sup> •sr <sup>-1</sup> )
Blue light	$L_{B} = \sum L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda$	300 – 700	0,25 - 10 10-100 100-10000 ≥ 10000	0,011•√(t/10) 0,011 0,0011•√t 0,1	10 <sup>6</sup> /t 10 <sup>6</sup> /t 10 <sup>6</sup> /t 100
Retinal thermal	$L_{R} = \sum L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 0,011•√(t/10)	50000/(α•t <sup>0,25</sup> ) 50000/(α•t <sup>0,25</sup> )
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda$	780 – 1400	> 10	0,011	6000/α

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Clause	Requiremen	t + Test	Ano		Re	sult – Rer	nark	. No.	Verdict
Table 6.1	Emission lin Lamp classi	4400	- 10	A		Die	1 mrad) 3	nbotek	Anb Pek
		Sympol	Units		E	mission	Measure	ment	
Risk	Action			Exempt		Low risk		Mod risk	
spectro	spectrum			Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	Anbore Es	W•m⁻²	0.001	0.00e+00	0.003	0.00e+00	0.03	0.00e+00
Near UV	Anbore	EUVA	W•m <sup>-2</sup>	0.33	0.00e+00	33	0.00e+00	100	0.00e+00
Blue light	Β(λ)	ek LB A	W•m <sup>-2</sup> •sr <sup>-1</sup>	Anbor hotek	Anb	rok	Aupolek	Anbo	tek Pu
Blue light, small source	Β(λ)	ibotek EB	W•m <sup>-2</sup>	0.01	8.12e-05	nbotek 1 Anbotek	5.44e-03	400	5.44e-03
Retinal thermal	R(λ)	LRotek	W•m <sup>-2</sup> •sr <sup>-1</sup>	3.80e+06	6.04e+02	3.80e+06	2.09e+03	9.63e+06	2.09e+03
Retinal thermal, weak visual stimulus**	R(λ)	lek LIR An	W•m <sup>-2</sup> •sr <sup>-1</sup>	5.45e+05	0.00e+00	5.45e+05	0.00e+00	5.45e+05	0.00e+00
IR radiation, eye	Aupotek Ar	Anberek Matek	W•m <sup>-2</sup>	100	0.00e+00	570	0.00e+00	3200	0.00e+00
Skin thermal	Anbotek Anbotek	Eh Anbot	W·m-2	3.56e+03	5.25e-05	- Anb	otek otek	Anbotek	Anbot

<sup>\*</sup> Small source defined as one with  $\alpha$  < 0.011 radian. Averaging field of view at 10000 s is 0.1 radian.

## **Measurement Uncertainty Statement:**

EB, Urel=2.52% (k=2)

EUVA, Urel=2.52% (k=2)

EIR, Urel=2.52% (k=2)

Eh, Urel=2.52% (k=2)

Es, Urel=15.14% (k=2)

LB, Urel=2.84% (k=2)

LR, Urel=2.84% (k=2)

LIR, Urel=2.84% (k=2)

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<sup>\*\*</sup> Involves evaluation of non-GLS source.



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Test Equipment

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Equipment Name	Manufacturer	Model No.	Reference No.	Calibration Due Date
Light Radiation Safety Test System	LINKCOLOR	LRS-104	SE-1164	2021-05-05
AC power source	LINKCOLOR	LCP-500R	SE-1192	2021-05-05
DC power supply	LINKCOLOR	M8874	SE-1193	2021-05-05
Digital Power Meter	YOKOGAMA	WT310	SE-1194	2021-05-05
Temperature & Humidity meter	Zhengzhou Boyang	HTC-1	SE-423	2021-05-05
Illuminance Standard Lamp	LINKCOLOR	LCL-100	SE-1195	2021-05-05
Brightness Standard Lamp	LINKCOLOR	LCL-200	SE-1196	2021-05-05
Deuterium Lamp	LINKCOLOR	LCL-300	SE-1197	2021-05-05
Illuminometer	LINKCOLOR	ST-80C	SE-1198	2021-05-05

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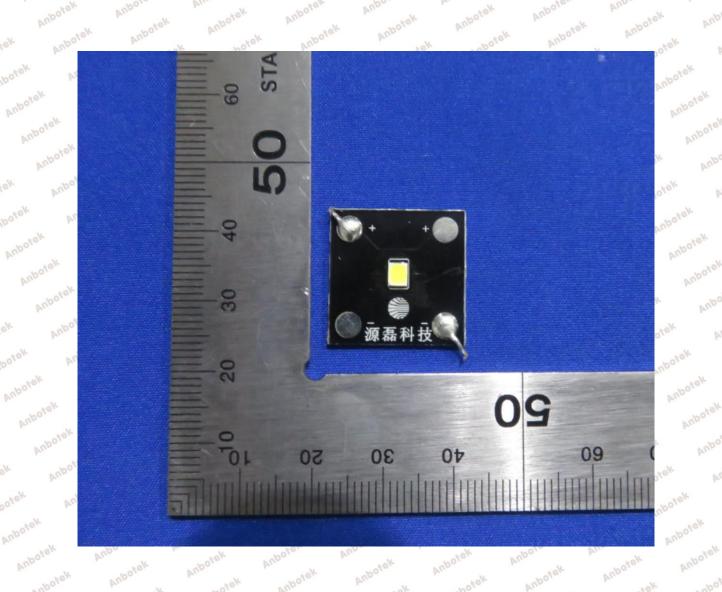


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## Attachment A - Product Photo



\*\*\*\*END OF TEST REPORT\*\*\*\*

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