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Report No.: 68260LC00023101

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Test Report

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ant ShenZhen Runlite Technology Co.,Ltd **Client Name**

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Anbote Building A15, Tantou the 4th Industrial Estate, SongGang Address Town, Baoan District, ShenZhen, China

SMD LED Product Name

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Date 2020-08-05

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Shenzhen Anbotek Pengcheng Compliance Laboratory Limited

Address: Zone B, 1/F., Building 2, Phase III, Huangtian Yangbei Industrial Zone, Huangtian Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com



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Anbotek Product Safety

Report No.: 68260LC00023101

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TEST REPORT

EN 62471:2008

Photobiological Safety of Lamps and Lamp Systems

	Report Reference No	68260LC00023101
	Report Reference No	00200100023101
	Tested by (printed name + signature):	Lenin Ye Lenin Fe
P	Supervised by	Flora Zhang Hora Zhang
	(printed name + signature):	ARE NO' AL
	Testing Laboratory	Shenzhen Anbotek Pengcheng Compliance Laboratory Limited
	Address:	Zone B, 1/F., Building 2, Phase III, Huangtian Yangbei Industrial Zone, Huangtian Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
	Testing location	Same as above
	Applicant's Name:	ShenZhen Runlite Technology Co.,Ltd
	Address	Building A15,Tantou the 4th Industrial Estate,SongGang Town,Baoan District,ShenZhen,China
	Test Specification:	tek Anbore And tek abotek Anbor Ar
	Standard Test procedure	EN 62471:2008
	Non-standard test method	
	Test Item Description	SMD LED N/A
	Manufacturer	ShenZhen Runlite Technology Co.,Ltd
	Address:	Building A15,Tantou the 4th Industrial Estate,SongGang Town,Baoan District,ShenZhen,China
	Model/Type reference:	X2835X-W64SXXXXDXXXX-XXXX
3	Ratings:	9VDC, 1W

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

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P.	Summary of Testing:	and the second	000
pte ^K	Tests performed (name of test and test clause):	Testing location:	An
nbotek	This appliance complies with EN 62471:2008 standards requirements.	Shenzhen Anbotek Pengcheng Compliance Laboratory Limited	N.
Anboro	The EUTs passed relevant tests.	Zone B, 1/F., Building 2, Phase III, Huangtian Yangbei Industrial Zone, Huangtian Community,	otek
r P	botek Anbotek Anbotek Anbotek	Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.	Anbot
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Summary of Compliance with National Differences:

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Copy of Marking Plate:

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Report No.: 68260LC00023101 Anbotek

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Test Item Particulars:	
Tested lamp Tested lamp system Lamp classification group Lamp cap Test item description Rated of the lamp	 N/A RG0 Exempt RG1 Low Risk RG2 Moderate Risk RG3 High Risk
Rated of the lamp	: 9VDC, 1W
Test case does not apply to the test object Test object does meet the requirement Test object does not meet the requirement	: P (Pass)
Testing:	
Ambient temperature of tested Test inputs Sample size for tested Date of receipt of test item Date (s) of performance of tests	: 9VDC : 1pcs : 2020-07-28
General Remarks:	
The test results presented in this report relate only to This report shall not be reproduced, except in full, w laboratory. "(See Enclosure #)" refers to additional information a "(See appended table)" refers to a table appended to Throughout this report a point is used as the decima List of test equipment must be kept on file and availa	ithout the written approval of the Issuing testing appended to the report. o the report. Il separator.
General Product Information:	
correlated color temperature, it can be any integer fro	XX-XXXX:The third "X" and the fourth "X" indicates the om 16 to 65,which states from 1600K to 6500K t can be D,E,F,H or I which states 70,75,80,90 or 95

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Report No.: 68260LC00023101

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	EN 62471:2008		
Clause	Requirement + Test	Result – Remark	Verdict
4 deter	EXPOSURE LIMITS	stek anbors A	P
N.	Contents of the whole Clause 4 of IEC 62471:2006	And	abore
aboten	moved into a new informative Annex ZB	k botek Anbo	P
Nor	Clause 4 replaced by the following:	Ann bet	P
Aupor	Limits of the Artificial Optical Radiation Directive	tek unbols An	P
note	(2006/25/EC) have been applied instead of those	anbore.	Anu
And	fixed in IEC 62471:2006	boten Anbo	lek se
4.1	General	An poten Anb	Р
	The exposure limits in this standard is not less than	Anbor An	tooter P
boten	0,01 ms and not more than any 8-hour period and	hotek Anbor A	Mar
- West	should be used as guides in the control of exposure	And hotek	habor
Anboi	Detailed spectral data of a light source are generally	Anbote. Anu	N/A
wotek.	required only if the luminance of the source exceeds	tek anbore.	Ano
Anb	10 ⁴ cd.m ⁻²	tek Aupo. A.	10 anno
4.3	Hazard exposure limits	tek sotek Anbo	P
4.3.1	Actinic UV hazard exposure limit for the skin and	hort Ann ak bo	ek P Anl
er pob	eye	hotek Anbort Ant	oter P
No.	The exposure limit for effective radiant exposure is 30 J.m ⁻² within any 8-hour period	Anor k sotek an	pore P
po'	To protect against injury of the eye or skin from	Anboten Anb	D
hotek	ultraviolet radiation exposure produced by a	tek suboter	Ano
Anu	broadband source, the effective integrated spectral	Anbo	anboten
Anboro.	irradiance, ES, of the light source shall not exceed	ak aboten Anbo	p.
in ate	the levels defined by:	All tek spotek	Anbo
Ano	400	hotek Anboy An	× P
do Ma	$E_{\rm s} \cdot t = \sum E_{\lambda}(\lambda, t) \cdot S_{\rm UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 30 \qquad \qquad J \cdot {\rm m}^{-2}$	he botek Anbo	b.
pre-	200 t	anbore Ant	otek
ootek I	The permissible time for exposure to ultraviolet	anbote An	P
Mar	radiation incident upon the unprotected eye or skin	Anbe	anbore
Anbois	shall be computed by:	aboten Anbo	Totak
Hotek	$t_{\text{max}} = \frac{30}{2}$ s we bolton Model	All tek aboten	Ant
Anb	Es moote And	ek Anbo. A. tek	nbote
4.3.2	Near-UV hazard exposure limit for eye	at potek Anbo	P
1947 1947	For the spectral region 315 nm to 400 nm (UV-A)	bort Ann wak work	ok P Anb
an Aup	the total radiant exposure to the eye shall not	sotek Anbore Ant	- alt
Mar	exceed 10000 J.m ⁻² for exposure times less than	And k sotek an	ot
por P	1000 s. For exposure times greater than 1000 s	aboten Anbo	-otek
Hatek	(approximately 16 minutes) the UV-A irradiance for	A. tek aboten	Anbo
AND	the unprotected eye, EUVA, shall not exceed 10	Anbo' A'' tek	aboten
-upoter	W.m ⁻² .	ak botak pribor	P."
P	The permissible time for exposure to ultraviolet	Ant hotek	Anbote
Anbo	radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:	otek Anbote Ano	N
×	to the second se	protein suboth	P
ak Anbo	$t_{\text{max}} \leq \frac{10000}{E}$ s produce And	aboten Anbo A.	otek
			and the second
otek	EUVA hotek Anbor	hek abote. Ant	

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	EN 62471:20			
Clause	Requirement + Test	Result – Remark		rdict
poter	To protect against retinal photochemical injury fro		Anbo, P.	J/A
Nor	chronic blue-light exposure, the integrated spectr	al And sale	botek Anbo	
Anbo	radiance of the light source weighted against the blue-light hazard function, $B(\lambda)$, i.e., the blue-light	Lotek Anbort	An	botek
abotek	weighted radiance, LB, shall not exceed the leve		Anbort	
Pres	defined by:	anbote. Anu	k hotek	Anbo
Anbo	700	hotek Anbois	Prov.	N/A
the H	$L_{B} \cdot t = \sum_{\lambda=1}^{100} \sum_{\lambda} L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 10^6 \qquad J \cdot m^{-2} \cdot s$	r have	otek Anbo	b,
pa.	300 t 700	Anbore An	100 ×04	N/A
oten	$L_{\rm B} = \sum_{\lambda} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 100 \qquad \qquad {\rm W} \cdot {\rm m}^{-2} \cdot {\rm W}$	sr-1 hotek	Anbort An	***
4.3.4	300 Retinal blue light hazard exposure limit - small so	urce	abotek Anbo	P
Pure a	Thus the spectral irradiance at the eye $E\lambda$, weigh		Alek	Potek
nboten	against the blue-light hazard function $B(\lambda)$ shall n		Anbor	
P. Se	exceed the levels defined by:100s	Anbort Ant	4 abotek	Anbo
Aupo		-2 abotek Anbot	Allek	Ρ
anb Anb	$E_{B} \cdot t = \sum_{200}^{\infty} \sum_{\star} E_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 100 \qquad J \cdot I$	tek ab	oten Anbo	h,
- Mar	700	Pupo, bu.	stek stooter	Р
010	$E_{\rm B} = \sum^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 1 \qquad {\rm W} \cdot {\rm m}^{-2}$	ak anbotek p	inbo k ind	lek.
Hotek	300	All	anboten Anbo	M
4.3.5	Retinal thermal hazard exposure limit	potek Anbo	h. Not	Poter
Anboro	To protect against retinal thermal injury, the	lek suboter	Anbo	P
hote	integrated spectral radiance of the light source, L		Anboter	And
Ann	weighted by the burn hazard weighting function F (from Figure 4.2 and Table 4.2), i.e., the burn has		K woyak	ant
K Anb	weighted radiance, shall not exceed the levels	otek anbc	And And	
Yo.	defined by:	Anbo	wotek Anote	
	$L_{B} = \sum_{\lambda}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \leq \frac{50000}{2.05} \qquad W \cdot m^{-2} \cdot s$	-1 Anboten A	nu not	Ρ
abotek	$L_{R} = \sum_{280}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{50000}{\alpha \cdot t^{0,25}} \qquad W \cdot m^{-2} \cdot s$	N notek	Anbore Ano	You
4.3.6	Retinal thermal hazard exposure limit – weak vis	ual stimulus	botek An	P
Anbo	For an infrared heat lamp or any near-infrared	no en Anbore	No.	Papote
nbote	source where a weak visual stimulus is inadequa		Anbo	bu
1	to activate the aversion response, the near infrar		ek sototek	Ant
Anb	(780 nm to 1400 nm) radiance, LIR, as viewed by		Printer	
Note.	the eye for exposure times greater than 10 s sha limited to:	I De Muse	botek Anboy	
-V-		Antoon	stek abot	P
nboter	$L_{\rm HR} = \sum_{\lambda}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{6000}{\alpha} \qquad W \cdot {\rm m}^{-2} \cdot {\rm s}$	r-1 k	Anbor	Note
Matek	780	All	abotek An	00
4.3.7	Infrared radiation hazard exposure limits for the		P	Phote
Anbote	The avoid thermal injury of the cornea and possil	he wet abotek	Anbo	Ρ
	delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared	AUDO, DI,	iek suboter	Anb
Ano	radiation, EIR, over the wavelength range 780 nr	n to abotek Anbo	A. tek	
tek a	3000 nm, for times less than 1000 s, shall not	All	boten Anbo	
	exceed:	Anboi Ai	tok spote	34
nbote	3000	-2 sbotek	Anbo	Per
hotek	$E_{\rm IR} = \sum_{\lambda \to \infty} E_{\lambda} \cdot \Delta \lambda \le 18000 \cdot t^{-0.75} \qquad W \cdot t$	n - All	anboten Ant	
And	780 For times greater than 1000 s the limit becomes:	about Anboi	p.,	Pibote
Anbore.	For times greater than 1000 s the limit becomes:	rek abotek	pabo	r

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Clause	Requirement + Test	Result – Remark	Verdict
otek	3 000 Anto	atek unboten A	P
	$E_{\rm IR} = \sum E_{\lambda} \cdot \Delta \lambda \leq 100 \qquad W \cdot m^{-2}$	Anbo	anboten
anbore.	780	s abotek Anbo	Mark
4.3.8	Thermal hazard exposure limit for the skin	Ar stek sphoten	P
Ano	Visible and infrared radiant exposure (380 nm to	otek Anbo. A. otek	Pubot
Anbore	3000 nm) of the skin shall be limited to:	stek soboten Anbo	. W.
	stek sanbors And k sotek	nbo, A. otok mbo	lon Ar
An	$E_{H} \cdot t = \sum_{\lambda} \sum_{\lambda} E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta \lambda \le 20000 \cdot t^{0,25} \qquad J \cdot m^{-2}$	Anboten Anbo k	Motok.
Nato	380 7	A anboten A	10-
5	MEASUREMENT OF LAMPS AND LAMP SYSTEM	S Anbo	AmboiP
5.1 oten	Measurement conditions	Anboten Anbo	Potek
botek	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the	k notek Anboten	Arres
Ann	assignment of risk classification.	ter And k votek	Anbo
5.1.1 Made	Lamp ageing (seasoning)	wotek Anboten Anbo	N/A
No. 16	Seasoning of lamps shall be done as stated in the	no star sotek anbo	N/A
Pur	appropriate IEC lamp standard.	Anbore Ano	otek-
5.1.2	Test environment	hotek anbore Ar	P
YOK	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the	And hotek	Anboil
Anbo	appropriate national standards or manufacturer's	Anbore Ant	botek
abotek	recommendations.	ak hotek Anbore	Pur
5.1.3	Extraneous radiation	and hoten	Rupor
AUDA	Careful checks should be made to ensure that	notek Anbor An	× P
M and	extraneous sources of radiation and reflections do	the botek Anbo	Pr.
E 414	not add significantly to the measurement results.	Anbors Arr	P
5.1.4	Lamp operation Operation of the test lamp shall be provided in	abotak Anbo. Ar	E P
hotek	accordance with:	All tek suboten	Anbo
p.m.	 the appropriate IEC lamp standard, or 	Antro, K sotek	N/A
Anbor	 the manufacturer's recommendation 	lek Anboter Anb	Papot
5.1.5 Mitorie	APT AV NO. A.	tek abotek Anbol	M P
5.1.5	Lamp system operation The power source for operation of the test lamp shall	pote Ant hotek Anbot	P P
Anb	be provided in accordance with:	unbotek Anboi An	Notek
otek p	 the appropriate IEC standard, or 	abotek Anboter An	N/A
abotek	- the manufacturer's recommendation	Ar. sotek anbotek	Anbo P
5.2	Measurement procedure	And wotek	AnP
5.2.1	Irradiance measurements	ok Anbort Ano	Puote
botel	Minimum aperture diameter 7mm.	notek Anbota	P
p.,	Maximum aperture diameter 50 mm.	oote Anu at not	M P pot
Anbo	The measurement shall be made in that position of	hotek Anboten Anbo	P
101	the beam giving the maximum reading. The measurement instrument is adequate	Ant botok Ant	P
. P	calibrated.	Anbore Ant	abotek
5.2.2	Radiance measurements	botek Anber	Pet
5.2.2.1	Standard method	An boten	AnbP
Anb	The measurements made with an optical system.	We about print	Phote

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Clause	Requirement + Test	Result – Remark	Verdict
potek	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and	Anbotek Anbotek A	Anbotek
Anborek	per unit solid angle to acceptance averaged over the field of view of the instrument.	Anboter And	Anbotek
5.2.2.2	Alternative method	notek Anbotek Anbotek	N/A of
ak Ant	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.	Anbotek Anbotek Anbo	N/A
5.2.3	Measurement of source size	wotek Anbots	P.W.
Anbotek	The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source.	tek Anbotek Anbotek	ArPort
5.2.4 🔊	Pulse width measurement for pulsed sources	sofek Anbors Ans	N/A
ak Anb	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	Anbotek Anbotek Anbo	N/A ^{ba}
0000	value.	Anboten Anbo	botek
5.3	Analysis methods	wotek Anbort	Arr P.ak
5.3.1	Weighting curve interpolations	And	P
Antone	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.	lootek Anbortek Anbotek	P Anbot An
5.3.2	Calculations	aboten Anbo	Note K P
Anbotek	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.	Anbotek Anbotek An	Anbotek Anbotek
5.3.3	Measurement uncertainty	ek anboter Anb	P
6 Anbotel	The quality of all measurement results must be quantified by an analysis of the uncertainty.	potek Anbotek Anbote	P Ant
otek p	For the purposes of this standard it was decided that the values shall be reported as follows:	Anboten Anbotek An	pote ^k P
unbotek	 for lamps intended for general lighting service, the hazard values shall be reported as either 	Distance=320mm	Anbo' P
Anborek	irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm	ek Anbotek Anbotek	Anbote
anbc	 for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm 	Anbotek Anbotek Anbot	N/A M
6.1	Continuous wave lamps	Ant work work	Aupor P
6.1.1	Risk Group 0 (Exempt)	Anbore Anu	Plak
Anbotek	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:	ek Anbotek Anbote	AntP

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Clause 🏾	Requirement + Test	Result – Remark	Verdict
potek	- an actinic ultraviolet hazard (ES) within 8-hours	abotek Anbots P	P
hotek	exposure (30000 s), nor	All otek anbotek	Anbo
And	potek Anboit Alli otek aubote	Anbo. A. potek	anboter
Anboi	- a near-UV hazard (EUVA) within 1000 s, (about	otek Anbote. Anu	P
anbot	16 min), nor	tek stotek Anbor	Pro
	ptek Anbote Ant tek abatek	nbo' An untek Anter	Ien Ar
An	 a retinal blue-light hazard (LB) within 10000 s (about 2,8 h), nor 	Anboten Anbo	Votek.
potek		abotek Anbore A	Notek .
hotet	 a retinal thermal hazard (LR) within 10 s, nor 	All otek Anbotek	Prot
Ann	hore have set	And tek storek	Arporte
Anbo	 an infrared radiation hazard for the eye (EIR) within 1000 s 	otek Anboit All otek	anbot
6.1.2	Risk Group 1 (Low-Risk)	woten Anboten Anbo	N/A
an Ma	In this group are lamps, which exceeds the limits for	nbo sek stotek Anbo	N/A
h.	the except group but that does not pose:	Anbort Antonio	potek
	 an actinic ultraviolet hazard (ES) within 10000 s, 	Anboten Anbo Ak	N/A
Anbotek	nor	botek inbore	N/A
hotek	 a near ultraviolet hazard (EUVA) within 300 s, nor 	Ant stek anbotek	ANVA
Ann	the the state of the state	lek Anbo h. hotek	N/A
Anbo.	 a retinal blue-light hazard (LB) within 100 s, nor 	botek Anbore An	N/A 🕅
M pal	 a retinal thermal hazard (LR) within 10 s, nor 	anbotek Anbo	
otek	 an infrared radiation hazard for the eye (EIR) within 100 s 	Anbotek Anbotek Ar	N/A
abotek	Lamps that emit infrared radiation without a strong	hotek Anbote.	N/A
Al. Lotek	visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 100 s are in Risk Group	And tek spotek	Anbor
Anbo	1.	ek Anbor An otek	Anbote
6.1.3	Risk Group 2 (Moderate-Risk)	anborer Ano	N/A
K ant	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:	tek spotek Anbo	N/A M
You	 an actinic ultraviolet hazard (ES) within 1000 s 	Anbo' Au cotek An	N/A
0 ¹	exposure, nor	Anbote Anu sek	abotek
Inpoter	- a near ultraviolet hazard (EUVA) within 100 s,	Anboist Anboi	N/A
Astodek	nor him had	k notek Anboten	And
p	– a retinal blue-light hazard (LB) within 0,25 s	Ant stek unbotek	N/A
And	(aversion response), nor	potek Anbo. A.	Ange M
Anb	- a retinal thermal hazard (LR) within 0,25 s	abotek Anbote Ano	N/A
Nek	(aversion response), nor	All stek snootek An	NI/A
nbotek	 an infrared radiation hazard for the eye (EIR) within 10 s 	Anbutek Anbotek	N/A
botek	Lamps that emit infrared radiation without a strong	An notek anbotek	N/A
Ann	visual stimulus and do not pose a near-infrared retinal hazard (LIR), within 10 s are in Risk Group 2.	Anbo wek notek	Anbote
6.1.4	Risk Group 3 (High-Risk)	notek Anbore Ano	N/A

otek Shenzhen Anbotek Pengcheng Compliance Laboratory Limited

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Clause	Requirement + Test	Result – Remark	Verdict
botek	Lamps which exceed the limits for Risk Group 2 are in Group 3.	Anbotek Anbote p	N/A
6.2	Pulsed lamps	k Anboten Anbo	N/A
Anbore. Anbo	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.	nbotek Anbotek Anbotek	N/A Antone A
ootek Ar	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.	Anbotek Anbote Anu Anbotek Anbotek A	N/A
Anboten	The risk group determination of the lamp being tested shall be made as follows:	Anbotek Anbo	N/A
Anbo. Anbo	 a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High- Risk) 	nbotek Anbotek Anbotek	N/A
ootek potek	 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 	Anbotek Anbotek Anbotek A	potelN/A
Anbotek Anbot	 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 	Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	N/A Anbote
otek	pulsed emission	Anboltek Anboltek Ar	poten pho

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Clause	Requirement -						
Table 4.1 Spectral weig Wavelength¹ λ, nm		nting function for assessing	ng ultraviolet hazards for skir	and eye P			
		UV hazard function $S_{uv}(\lambda)$	Wavelength λ, nm	UV hazard functior S _{υν} (λ)			
200		0,030	313*	0,006			
Anbote	205	0,051	315	0,003			
lek ant	210 Anbor	0,075	316	0,0024			
tek 2	215	0,095	anbola 317	0,0020			
bo halk 2	220	0,120	antipotek 318 mbole	0,0016			
Anbor 2	225	0,150	hotek 319 Anbotek	0,0012			
Anbore 2	230	0,190	320 March 320	0,0010			
Anbore	235	0,240	322	0,00067			
ek Anb2	240	0,300	323	0,00054			
potek 2	245	0,360	325	0,00050			
otek 2	250	0,430	328 June 1 and 1 a	0,00044			
Anbe 2	54*	0,500	anbortel 330 Anbort	0,00041			
Anbo	255	0,520	333* M ^{bott}	0,00037			
Anbor 2	260	0,650	335	0,00034			
ek Anb2	265	0,810	340	0,00028			
potek A	270	1,000	345	0,00024			
hotek 2	275	0,960	350	0,00020			
And water 2	80* manak	0,880	Manager 355 March 198	0,00016			
Anu	285 patrole	0,770	360	0,00013			
	290	0,640	365*	0,00011			
ak Anbo	295	0,540	370	0,000093			
poten 2	97*	0,460	375	0,000077			
	300	0,300	380	0,000064			
subotek 3	03* 100 000	0,120	Market 385 Mark	0,000053			
(Pert	305 Anbotek	0,060	390	0,000044			
	308 Nobole	0,026	395	0,000036			
Anbo	310	0,015	400	0,000030			

¹ Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.

Anbo

Emission lines of a mercury discharge spectrum.

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Bite 4.2 Spectral weighting functions for assessing retinal hazards from broadband optical sources P Wavelength nm Blue-light hazard function 8 (A) Burn hazard function 7 (A) 300 0,01	ropart	No.: 68260LC00023101	EN 62471:20	08	- Ago	12 of 16
Sources Blue-light hazard function B (λ) Brun hazard function R (λ) 300 0.01 R(λ) 305 0.01 R(λ) 310 0.01 R(λ) 310 0.01 R(λ) 320 0.01 R(λ) 320 0.01 R(λ) 321 0.01 R(λ) 3325 0.01 R(λ) 3330 0.01 R(λ) 3335 0.01 R(λ) 3340 0.01 R(λ) 345 0.01 R(λ) 355 0.01 R(λ) 360 0.01 R(λ) 375 0.01 R(λ) 385 0.01 R(λ) 386 0.01 R(λ) 385 0.01 R(λ) 385 0.025 0.25 385 0.020 2.0 410 0.40 4.0 420 0.90 9.0 425 0.95	Clause 🔬		hotek Anbo			Verdict
nm B (λ) R (λ) 300 0.01	Table 4.2		tions for assessing reti	hal hazards fro	om broadband opt	ical P
306 0.01 310 0.01 315 0.01 320 0.01 320 0.01 325 0.01 330 0.01 333 0.01 3340 0.01 346 0.01 355 0.01 360 0.01 365 0.01 375 0.01 375 0.01 380 0.01 375 0.01 380 0.01 380 0.025 390 0.025 400 0.10 410 0.40 410 0.40 410 0.40 420 0.90 9.0 9.0 425 0.95 430 0.98 445 0.97 440 1.00 440 0.94 <	١	_		unction		
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Clause	Requirement + Test	Ann	Res	ult – Remark	. A	Verdict
Table 5.4	Summary of the ELs fo values)	r the surface of th	e skin or corne	a (irradiance base	edoto	Am P
Hazard Name	Relevant equation	Wavelength range (nm)	Exposure duration (sec)	Limiting aperture rad (deg)	constant	terms of irradianc •m ⁻²)
Actinic UV skin & eye	$E_{S} = \sum E_{\lambda} \bullet S(\lambda) \bullet \Delta \lambda$	200 – 400	< 30000 pm	1,4 (80)	lek 3	30/t
Eye UV-A	$E_{UVA} = \sum E_{\lambda} \bullet \Delta \lambda$	315 – 400	≤ 1000 > 1000	1,4 (80)	100	000/t 10
Blue-light small source	$E_{B} = \sum E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda$	300 – 700	≤ 100 > 100	< 0,011	Yer	00/t 1,0
Eye IR	$E_{IR} = \sum E_{\lambda} \cdot \Delta \lambda$	780 –3000	≤ 1000 > 1000	1,4 (80)	1.2	00/t ^{0,75} 00
Skin thermal	$E_{H} = \sum E_{\lambda} \cdot \Delta \lambda$	380 – 3000	< 10	2π sr	o ^{stalk} 2000	00/t ^{0,75}

otek	Table 5.5	Summary of the ELs for	the retina (radiar	ce based valu	Anbotek es) stek	Anbore Ann
Anboten	Hazard Name	Relevant equation	Wavelength range (nm)	Exposure duration (sec)	Field of view radians	EL in terms of constant radiance (W•m ⁻² •sr ⁻¹)
k otek	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 ⁶ /t 10 ⁶ /t 10 ⁶ /t 100
nbote.	Retinal thermal	$L_R = \sum L_\lambda \bullet R(\lambda) \bullet \Delta \lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 0,011•√(t/10)	50000/(α•t ^{0,25}) 50000/(α•t ^{0,25})
An	Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_{\lambda} \bullet R(\lambda) \bullet \Delta \lambda$	780 – 1400	Antboliak > 10 Antboliak	nbotek 0,011	6000/α
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Table 6.1	101	Emission limits for risk groups of continuous wave lamps (α=10.4 mrad) Lamp classification group: ⊠ RG0 □ RG1 □ RG2 □ RG3						Anbotek	
	Action			E Exempt		mission Measuren Low risk		ment Mod risk	
Risk	spectrum	Symbol	Units	Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV(λ)	Anbote Es	W•m ⁻²	0.001 📦	0.00e+00	0.003	0.00e+00	0.03	0.00e+00
Near UV	Anboten	EUVA	W•m ⁻²	0.33	0.00e+00	33	0.00e+00	100	0.00e+00
Blue light	Β(λ)	ره ^{اد} LB م	W•m ⁻² •sr ⁻¹	Anbotek	Anb	Nek	Anbotek	Anbore	tek Ant
Blue light, small source	Β(λ)	EB	W•m ⁻²	0.01	1.25e-03	nbotek 1 Anbotek	8.21e-02	400	8.21e-02
Retinal thermal	R(λ)	LRobert	W•m ⁻² •sr ⁻¹	2.70e+06	9.76e+03	2.70e+06	2.01e+04	6.86e+06	2.01e+04
Retinal thermal, weak visual stimulus**	R(A)	e ^k LIR M	W•m ⁻² •sr ⁻¹	5.45e+05	0.00e+00	5.45e+05	0.00e+00	5.45e+05	0.00e+00
IR radiation, eye	Anbotek	Anbetek	W•m ⁻²	100	0.00e+00	570	0.00e+00	3200	0.00e+00
Skin thermal	Anbotek	Eh	W∙m-2	3.56e+03	1.35e-02	Anb	otek rek	Anbotek	Anbote

* Small source defined as one with α < 0.011 radian. Averaging field of view at 10000 s is 0.1 radian. ** Involves evaluation of non-GLS source.

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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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Report No.: 68260LC00023101 Anboi **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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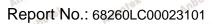
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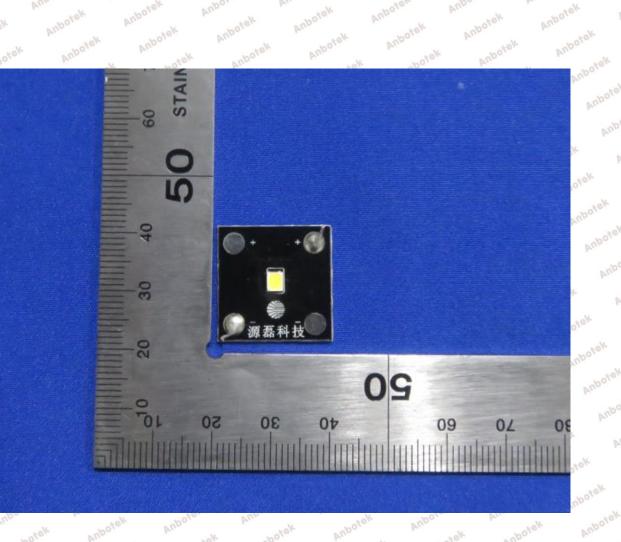
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