



TEST REPORT
IEC 62471-5
Photobiological safety of lamps and lamp systems –
Part 5: Image projectors

Report Number.....: 68.140.25.0653.01
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Total number of pages..... 15 (including attachments)

Name of Testing Laboratory preparing the Report.....: TÜV SÜD Certification and Testing (China) Co., Ltd.
 Shenzhen Branch

Applicant's name: XGIMI Technology CO., LTD.
Address: Building No.4, Zone A, No.1129, Shijicheng Road, Chengdu
 High-tech Zone, Sichuan Pilot Free Trade Zone, 610041
 Chengdu City, PEOPLE'S REPUBLIC OF CHINA

Test specification:

Standard: IEC 62471-5 (First Edition)
Test procedure: Type test
Non-standard test method: N/A

Test Report Form No.....: IEC62471_5A

Test Report Form(s) Originator: UL (US)

Master TRF: 2015-11

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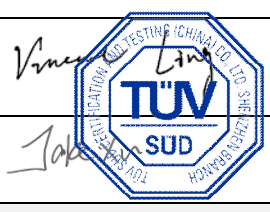
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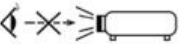
General disclaimer:

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Test item description	Projector
Trade Mark.....	XGIMI
Manufacturer	Same as applicant.
Model/Type reference	XR03B, XR06B
Ratings	100V-240VAC, 7A MAX, 50Hz/60Hz

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☒	Testing Laboratory:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Testing location/ address		Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, Guangdong 518052, China
☐	Associated CB Testing Laboratory:	
Testing location/ address		
Tested by (name, function, signature)		Vincent Ling Project Handler
Approved by (name, function, signature) ..		Jake Xu Designated Reviewer
		
☐	Testing procedure: CTF Stage 1:	
Testing location/ address		
Tested by (name, function, signature)		
Approved by (name, function, signature) ..		
☐	Testing procedure: CTF Stage 2:	
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature) ..		
☐	Testing procedure: CTF Stage 3	
☐	Testing procedure: CTF Stage 4	
Testing location/ address		
Tested by (name, function, signature)		
Witnessed by (name, function, signature) ..		
Approved by (name, function, signature) ..		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):	
Attachment No.1: 2 pages of photo document.	
Summary of testing:	
Tests performed (name of test and test clause): All applicable tests as described in the compliance checklist were performed at XR03B, XR06B.	Testing location: Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District, Shenzhen, Guangdong 518052, China
Summary of compliance with National Differences: European group difference ☒ The product fulfils the requirements of EN 62471-5:2015	

Copy of marking plate:	
XGIMI TITAN Product Information Product: Projector Model: XR03B Rated: 100V-240V~7A MAX 50Hz/60Hz Manufacturer XGIMI Technology Co., Ltd. Made in China Contact Information service@xgimi.com www.xgimi.com Building A4, No. 1129 Century City Road, High-tech Zone, Chengdu, China Contains IC: 24728-SKIWB921AU1 Contains FCC ID: 2AR82-SKIWB921AU1 SKIWB921AU1 Complies With FCC part 15 Rules CAN ICES-003(B)/NMB-003(B) This device complies with Part 15 of the FCC rules. Operation is subjected to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment. WARNING Do not open to avoid the risk of electric shock. Ne pas ouvrir pour éviter le risque de choc électrique. IMAX® ENHANCED Dolby Vision Dolby Audio dtshdmi  FC  IEC 60825-1:2014 CONSUMER LASER PRODUCT EN 50689-2021  RG2 Complies with 21 CFR 1040.10 and 1040.11 except for conformance as a Risk Group 2 LIP as defined in IEC 62471-5:Ed. 1.0. For more information see Laser Notice No. 57, dated May 8, 2019.  RN56LZ2E8XW4 Manufactured: April 2025	
(Marking on product).	
Remark: The model "XR03B" on the marking plate can be replaced by others listed in the test report.	

Test item particulars.....	: Projector
Supply Connection	: AC plug
Intended Application	: ☐ Data projector ☒ Home-use projector ☐ Cinema-use projector ☐ Other []
Equipment Mobility.....	: ☐ Hand-held ☐ Transportable ☒ Movable ☐ Stationary ☐ Other []
Emission Condition	: ☒ Continuous Wave (CW) Emission ☐ Pulse Emission
Lamp Type	: ☐ LED ☐ Tungsten-halogen ☐ Discharge or arc-lamp ☒ Laser generated
Projector Risk Group (RG)	: ☐ RG0 projector ☐ RG1 projector ☒ RG2 projector ☐ RG3 projector
Possible test case verdicts:	
- test case does not apply to the test object: N/A	
- test object does meet the requirement: P (Pass)	
- test object does not meet the requirement: F (Fail)	
Testing	
Date of receipt of test item : 2025-10-15	
Date (s) of performance of tests..... : 2025-10-15 to 2025-11-27	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.	
Name and address of factory (ies) : Yibin XGIMI Optoelectronic Co., Ltd. No.2, West Section 4, Changjiang North Road, Lingang Economic Development Zone, 644000 YiBin, Sichuan Province, PEOPLE'S REPUBLIC OF CHINA	

General product information:

The used Laser diode specification as below:

Laser Model no.	Manufacturer	I _F (A)	V _F (V)	Wavelength (nm)	Optical Power(W)
XR06B					
NUBB38	NICHIA CORPORATION	3.0	39.4	455	57
NURB22	NICHIA CORPORATION	3.2	22.5	643	26.8
XR03B					
NUBB38	NICHIA CORPORATION	3.0	39.4	455	57
NURB21	NICHIA CORPORATION	3.2	11.3	643	13.5
NURB22	NICHIA CORPORATION	3.2	22.5	643	26.8

According to client's requirement, the model XR03B and XR06B emitting the white light was selected to perform all tests.

The projector complies with the threshold limit L_T as defined in IEC 60825-1:2014 which allows this product to be evaluated under the IEC 62471-5:2015 standard.

This projector with laser module has been classified under the IEC 60825-1:2014. And the IEC 60825-1:2014 standard test report which with report no. 68.184.25.0880.01 is available at the manufacturer.

Remarks:

- Only photobiological hazards have been addressed.;
- Safety testing for the finished product will be performed by manufacturer separately.

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Clause	Requirement + Test	Result - Remark	Verdict
4	GENERAL		$\frac{3}{4}$
4.4	Assessment criteria – assigned risk group of projector		P
5	RISK GROUP DETERMINATION		$\frac{3}{4}$
5.1	Test conditions		P
	- climatic conditions	Dark room and 25.0°C	P
	- vibration and shock	Non vibration and shock	P
	Evaluation with product adjusted to maximum emissions and light source operated at maximum optical power output.	Product under Max. output optical power mode and adjusted the maximum throw ratio.	P
	Evaluation under reasonably foreseeable single fault	$\alpha = 85\text{mrad}$, $L_T = 11.8 \text{ MWm}^{-2}\text{sr}^{-1}$ Measured $L = 3.87 \text{ MWm}^{-2}\text{sr}^{-1}$ Single fault has been considered. Short circuit RZ41. Measured $L = 3.89 \text{ MWm}^{-2}\text{sr}^{-1}$ measured power is not exceed the limit value. [for XR03B] $\alpha = 94\text{mrad}$, $L_T = 10.6 \text{ MWm}^{-2}\text{sr}^{-1}$ Measured $L = 4.02 \text{ MWm}^{-2}\text{sr}^{-1}$ Single fault has been considered. Short circuit RZ41. Measured $L = 4.11 \text{ MWm}^{-2}\text{sr}^{-1}$ measured power is not exceed the limit value. [for XR06B]	P
5.2	Measurement conditions for image projector		P
5.2.1	Measurement throw ratio..... :	(See Table 3)	P
5.2.2	Measurement distance (1 m from the closest point of human access) :	1m (Between the lens of projector and screen)	P
5.3	The position and size of apparent source, the calculation of angular subtense		P
	Angular subtense of apparent source..... :	(See Table 3)	—
5.4	Measurement of irradiance – specified apertures		P
	Angle of acceptance..... :	0.011rad	—
	Aperture stop diameter..... :	20mm	—
5.5	Measurement of radiance		P
	Field of view for CW emission (Table 1) :	0.011rad	P
	Field of view for pulsed emission (Table 2)..... :		N/A
5.6	Accessible emission limits		P

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Clause	Requirement + Test	Result - Remark	Verdict
5.6.1	For CW emission	(See appended table 3)	P
5.6.2	For pulsed emission		N/A
5.6.2.1	Emission considered pulsed due to peak radiated power over 1.5 times average radiated power.		N/A
5.6.2.2	For UV, UVA, photochemical retinal limits and IR cornea limit	(See appended table 3)	N/A
5.6.2.3	For retinal thermal limit		N/A
	a) Averaged radiance		N/A
	(a-1) Regular pulse pattern	(See appended table 5)	N/A
	(a-2) Irregular pulse pattern	(See appended table 5)	N/A
	b) Peak radiance		N/A
	Number of pulses N and factor C ₅ (Table 6) :		N/A
5.6.3	Spectral weighting functions		P
5.7	Applying information from the lamp manufacturers		P
5.7.1	General		P
5.7.2	Limits provided in irradiance/radiant exposure		P
5.7.3	Limits provided in radiance or radiance dose		P

6	MANUFACTURER'S REQUIREMENTS		¾
6.1	General		P
6.2	Determination of HD (hazard distance)		N/A
6.3	Safety feature "soft start"		P
6.4	Optional safety features		P
6.4.1	Projection of warning message		P
6.4.2	Power reduction by sensor system		N/A
6.5	Labelling on products		P
6.5.1	General		P
	Labels durable, permanently affixed, legible, and clearly visible		P
	Labels positioned so that they can be read without exposure to radiation in excess of applicable AEL		P
	Label and symbol size adapted to product size		P
	Colour combination of text, borders and background		P
	Labels required by IEC 60825-1 for laser illuminated projectors		P
6.5.2	RG0 projector		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
6.5.3	RG1 projector		N/A
	RG1 label (Figure 5)		N/A
6.5.4	RG2 projector		P
	RG2 label (Figure 6)		N/A
	RG2 caution symbol (Figure 7)		N/A
	RG2 caution pictogram (Figure 8)	See "Copy of marking plate"	P
6.5.5	RG3 projector		N/A
	RG3 label (Figure 9)		N/A
	Optical radiation warning symbol (Figure 10)		N/A
	Not for household use symbol (Figure 11)		N/A
6.6	User information		P
6.6.1	General		P
6.6.2	Assessment of user accessible area		P
6.6.3	User information (user manual)		P
6.6.3.1	General		P
	Reproduction of all required labels		P
6.6.3.2	RG0 projector		N/A
6.6.3.3	RG1 projector – wording used		N/A
6.6.3.4	RG2 projector – wording used	As with any bright source, do not stare into the direct beam, RG2 IEC 62471-5:2015	P
6.6.3.5	RG3 projector – wording used		N/A
	Hazard distance.....		N/A
6.6.4	User information for maintenance		P
6.7	Labelling and user information for image projectors where the risk group will be changed by interchangeable lens		N/A
6.7.1	General		N/A
6.7.2	Labelling on the projector		N/A
	Wording provided for projectors becoming RG3 when an interchangeable lens with higher throw ratio is used		—
6.7.3	Mark on the interchangeable lens		N/A
6.7.4	The user information in the user manual of the projector		N/A
	Explanation of the change of hazard magnitude by installing interchangeable lenses		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	List of model numbers of interchangeable lenses		N/A
	Hazard distance at the maximum TR of each lenses		N/A
6.7.5	The user information in the user manual of the interchangeable lens		N/A
	Explanation of the change of hazard by installing the lens		N/A
	Throw ratio range of the lens		N/A
	List of model numbers of projectors with which the lens may be used		N/A
	Hazard distance according to the highest TR		N/A
7	INFORMATION FOR SERVICE		$\frac{3}{4}$
	Adequate instructions for service personnel		P

IEC 62471-5			
Clause	Requirement + Test	Result - Remark	Verdict

For XR03B:

Table 3	AEL (accessible emission limits) for risk groups of lamps and lamp systems emitting CW optical radiation									P
Hazard	Wavelength range, nm	Symbol for emission level ¹	Emission Measurement						Units	
			Exempt Group (RG0)		Risk Group 1 (RG1)		Risk Group 2 (RG2)			Assigned Risk Group
			Limit	Result	Limit	Result	Limit	Result		
UV ²	200 to 400	E _S	0,001	0.00000229	0,003	--	0,03	--	W•m ⁻²	RG0
UV-A ²	315 to 400	E _{UVA}	10	0.000354	33	--	100	--	W•m ⁻²	RG0
Blue-light	300 to 700	L _B	100	329	10 000	254000	4 000 000	254000	W•m ⁻² •sr ⁻¹	RG2
Blue-light small source	300 to 700	E _B	1,0	--	1,0	--	400	--	W•m ⁻²	--
Retinal thermal	380 to 1400	L _R	28 000/α	588000	28 000/α	--	28 000/α	--	W•m ⁻² •sr ⁻¹	RG0
IR anterior eye ²	780 to 3000	E _{IR}	100	0.000518	570	--	3200	--	W•m ⁻²	RG0
Supplementary information:										
1 Symbols for emission levels (E_S, E_{UVA}, L_B, E_B, L_R, E_{IR}) and each formula are defined in IEC 62471. Some formulae of above emission levels are defined by using weighting functions B(l) and R(l) (see Table 8). 2 For an image projector that is to be assigned to RG3, the AE for UV, UVA and IR shall not exceed the AEL for RG2.										
Angular Subtense of Apparent Source α: 0.016 rad										
Measurement throw ratio: 2.86										

IEC 62471-5			
Clause	Requirement + Test	Result - Remark	Verdict

For XR06B:

Table 3	AEL (accessible emission limits) for risk groups of lamps and lamp systems emitting CW optical radiation									P
Hazard	Wavelength range, nm	Symbol for emission level ¹	Emission Measurement						Units	Assigned Risk Group
			Exempt Group (RG0)		Risk Group 1 (RG1)		Risk Group 2 (RG2)			
			Limit	Result	Limit	Result	Limit	Result		
UV ²	200 to 400	E _S	0,001	0.00000655	0,003	--	0,03	--	W•m ⁻²	RG0
UV-A ²	315 to 400	E _{UVA}	10	0.0000645	33	--	100	--	W•m ⁻²	RG0
Blue-light	300 to 700	L _B	100	301	10 000	298000	4 000 000	298000	W•m ⁻² •sr ⁻¹	RG2
Blue-light small source	300 to 700	E _B	1,0	--	1,0	--	400	--	W•m ⁻²	--
Retinal thermal	380 to 1400	L _R	28 000/α	547000	28 000/α	--	28 000/α	--	W•m ⁻² •sr ⁻¹	RG0
IR anterior eye ²	780 to 3000	E _{IR}	100	0.000066	570	--	3200	--	W•m ⁻²	RG0
Supplementary information:										
1 Symbols for emission levels (E_S, E_{UVA}, L_B, E_B, L_R, E_{IR}) and each formula are defined in IEC 62471. Some formulae of above emission levels are defined by using weighting functions B(l) and R(l) (see Table 8). 2 For an image projector that is to be assigned to RG3, the AE for UV, UVA and IR shall not exceed the AEL for RG2.										
Angular Subtense of Apparent Source α: 0.025 rad										
Measurement throw ratio: 1.82										

IEC 62471-5			
Clause	Requirement + Test	Result - Remark	Verdict

Table 5	Basic retinal thermal emission limit L_R			N/A
a) Averaged radiance of pulse train				
Exposure duration *	α used for calculating AEL	Emission Measurement		Units
		Limit **	Result	
0,25 s		$28000/\alpha$		$W \cdot m^{-2} \cdot sr^{-1}$
				$W \cdot m^{-2} \cdot sr^{-1}$
				$W \cdot m^{-2} \cdot sr^{-1}$
b) Peak radiance of each pulse				
Pulse duration ***	α used for calculating AEL	Emission Measurement		Units
		Limit ****	Result	
				$W \cdot m^{-2} \cdot sr^{-1}$
				$W \cdot m^{-2} \cdot sr^{-1}$
				$W \cdot m^{-2} \cdot sr^{-1}$
Assigned Risk Group				
Supplementary information:				
* For regularly pulse pattern, averaging exposure duration shall be 0,25 sec. For irregular pulse pattern, averaging exposure duration shall be 0,25 sec or shorter.				
** The emission limit L_R is defined as follows. $L_R^{EL} = 0,63 \alpha^{-1} \cdot t^{-1}$ (for $t \leq 1 \mu s$), $2,0 \times 10^4 \cdot \alpha^{-1} \cdot t^{-0,25}$ (for $1 \mu s < t \leq 0,25 s$), same as CW (for $> 0,25 s$)				
*** The pulse duration is defined as $t_p = D/L_{peak}$.				
**** The limit value shall be multiplied by C_5 .				
Factor C_5 :				

Attachment No. 1

Details of: Overall view 1 for models XR06B and XR03B

Remark:



Details of: Overall view 2 for models XR06B and XR03B



Details of: Internal view 1 for model XR06B



Details of: Internal view 2 for model XR03B



END OF REPORT