

TEST REPORT

Reference No.....: WTD22F01007667N

Applicant.....: : Martin Industries Ltd.

Address...... Unit 8 . Milton Business Centre . Wick Drive . New Milton .

Hampshire . BH25 6RH, The United Kingdom.

Manufacturer: Martin Industries Ltd.

Address...... Unit 8 . Milton Business Centre . Wick Drive . New Milton .

Hampshire . BH25 6RH, The United Kingdom.

Product Name.....: Air Purifier

Model No.....: AXP-200, AXP-400, AXP-800, AXP-1200, AXP-1600

Photobiological safety of lamps and lamp systems

Standards..... : EN 62471:2008

IEC 62471:2006 (First Edition)

BS EN 62471

Date of Receipt sample....: 2022-01-14

Date of Test.....: 2022-01-14 to 2022-01-27

Date of Issue..... : 2022-01-27

Test Report Form No......: WPL-62471A-01A

Test Result.....: Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By: Waltek Testing Group (Foshan) Co., Ltd.

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Compiled by:

Finn Yu / Project Engineer

Approved by:

Akin Xu / Manager

| Reference No., WIDZZFOTOO7007N Fagi | ce No.: WTD22F01007667N | Page 2 |
|-------------------------------------|-------------------------|--------|
|-------------------------------------|-------------------------|--------|

| Test item description: | Air Purifier | | | |
|------------------------|--------------|--|--|--|
| Trade Mark: | None | | | |

General remarks:

- "(See Enclosure #)" refers to additional information appended to the report.
- "(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 (point) is used as the decimal separator.

Remark:

- Measurement was conducted at voltage 240VAC 50Hz and at a stable ambient temperature 25°C±5°C.
- 2. All models are similar except to model name and enclosure shape are different. Unless otherwise specified, all tests were performed on model AXP-1600 to represent the other similar models.
- 3. Detail information for models covered in this report as below:

| Item | Model | Ratings | CCT | Driver |
|------------------------------|----------|---------------------|------------|--|
| ⁴⁰ 1 ⁴ | AXP-1600 | 100-240VAC, 50/60Hz | MIT MILL | Aur Aur. |
| 2 | AXP-200 | 100-240VAC, 50/60Hz | A 20 | 36th 376th |
| 3 | AXP-400 | 100-240VAC, 50/60Hz | 11/21/2 | 34, 74, |
| 4 | AXP-800 | 100-240VAC, 50/60Hz | 10t -50t . | الن المنطقين المنطقة ا |
| 5 | AXP-1200 | 100-240VAC, 50/60Hz | | |

Summary of testing:

The tests were conducted under luminaire/lamp/LED rating.

All tests were carried out at model AXP-1600.

 $\alpha = 0.1000$ radian, distance between lamp and sensor: 200.0 mm.

| Test item particulars | See below |
|--|--|
| Tested lamp: | |
| Tested lamp system: | No lamp system |
| Lamp classification group: | exempt⊠ risk 1□ risk 2□ risk 3□ |
| Lamp cap: | " a star star star star |
| Bulb: | THE METER WALLE WALLE WALL WALL WALL |
| Rated of the lamp:: | See model list in page 2 |
| Furthermore marking on the lamp: | None |
| Seasoning of lamps according IEC standard: | None |
| Used measurement instrument: | See page 14 |
| Temperature by measurement: | 25 ± 5 °C |
| Information for safety use: | the state of the state of the state of |

Possible test case verdicts:

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| _ | test object does meet the requirement P (Pass) |
|----------|---|
| - | test object does not meet the requirement: F (Fail) |
| Ge N/ | eneral product information: |
| 300 | |

WALTER



| | IEC/EN 62471 | | |
|---|---|------------------------|---|
| Clause | Requirement + Test | Result – Remark | Verdict |
| | THE THE THE STATE WITH SHIP SHIP | 24. 24. 2. | |
| 4 | EXPOSURE LIMITS | The stiff and the | yr P |
| 4.1 | General | 11. 24. 2 | P |
| ir istor | 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 | THE SHALL SHALL SHALL | Р |
| all little | Detailed spectral data of a light source are generally required only if the luminance of the source exceeds 10 ⁴ cd·m ⁻² | | P |
| 4.3 | Hazard exposure limits | The the to | Р |
| 4.3.1 | Actinic UV hazard exposure limit for the skin and eye | Liek Walter Marter M | Р |
| ies white | The exposure limit for effective radiant exposure is 30 J·m ⁻² within any 8-hour period | et whitet whitet whi | Pari |
| | To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broadband source, the effective integrated spectral irradiance, E _s , of the light source shall not exceed the levels defined by: | MUTEL MUTEL MUTEL | MATER WALTER |
| riter Milit | $E_{\rm s} \cdot t = \sum_{200}^{400} \sum_{t} E_{\lambda}(\lambda, t) \cdot S_{\rm UV}(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 30 \qquad \qquad \text{J-m}^{-2}$ | et gritet un | Р |
| ALTER SERVICE | The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by: | Marie Marie Marie | P |
| aller a | $t_{\text{max}} = \frac{30}{E_{\text{S}}}$ s | MALTER MALTE WALL | JIP JE |
| 4.3.2 | Near-UV hazard exposure limit for eye | ALTER MALTER MALTER AN | Р |
| SEEK SARCES SARC | 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, E _{UVA} , shall not exceed 10 W·m ⁻² . | Whitek whitek white | EK TEP Whi White White White Tek |
| | The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by: | and the test of the | P |
| EF WILLER | $t_{\text{max}} \le \frac{10\ 000}{E_{\text{UVA}}} \qquad \text{s}$ | the second | P |
| 4.3.3 | Retinal blue light hazard exposure limit | See table 4.2 | Р |

| | IEC/EN 62471 | | |
|-------------------------|---|--|---------------------------------------|
| Clause | Requirement + Test | Result – Remark | Verdict |
| | N N 20 50 50 50 30 30 30 3 | the state of the | |
| ing and | 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 |
| STER . | $L_{\rm B} \cdot t = \sum_{300}^{700} \sum_{t} L_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 10^{6} \qquad \text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1} \qquad \text{fc}$ | or $t \le 10^4 \text{ s}$ $t_{\text{max}} = \frac{10^6}{L_{\text{B}}}$ | Р |
| on s Tell si | $L_{\rm B} = \sum_{300}^{700} L_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 100 \qquad \qquad W \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$ | of the the life | Р |
| 4.3.4 | Retinal blue light hazard exposure limit - small source | The Man Man | N |
| ier _{Vil} atie | 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: | White white white w | N |
| Mrs. | $E_{B} \cdot t = \sum_{300}^{700} \sum_{t} E_{\lambda}(\lambda, t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta \lambda \le 100 J \cdot m^{-2}$ | Martin Marin Marin Mari | N |
| ings in | $E_{B} = \sum_{300}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta \lambda \le 1 \qquad W \cdot m^{-2}$ | LIES MILIES WHITE WHITE | N N |
| 4.3.5 | Retinal thermal hazard exposure limit | | Р |
| | 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 defined by: | Martin Antick Antick and | P |
| rliet pri | $L_{\rm R} = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{50000}{\alpha \cdot t^{0.25}}$ W · m ⁻² · sr ⁻¹ (1) | 10 μs ≤ t ≤ 10 s) | Р |
| 4.3.6 | Retinal thermal hazard exposure limit – weak visual stir | mulus | Р |
| MARTIER MARTIER | 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, L _{IR} , as viewed by the eye for exposure times greater than 10 s shall be limited to: | uncies whiles whiles whi | P P P P P P P P P P P P P P P P P P P |
| LTEN WILL | $L_{IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{6000}{\alpha} \qquad W \cdot m^{-2} \cdot sr^{-1}$ | Et anitet anitet unitet | Р |
| 4.3.7 | Infrared radiation hazard exposure limits for the eye | e die die die | Р |



| | IEC/EN 62471 | | |
|------------------------------|--|----------------------------|-------------------------------|
| Clause | Requirement + Test | Result – Remark | Verdict |
| | THE THE THE STILL STILL SHIP SHIP | Apr. Apr. 20 | |
| ancia Test ganci Start | The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E _{IR} , over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed: | CLIFE WALTER WALTER WALTER | P |
| Mariek o | $E_{\text{IR}} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 18000 \cdot t^{-0.75}$ W · m ⁻² | And And And | Р |
| | For times greater than 1000 s the limit becomes: | no the to | Р |
| | $E_{\rm IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 100 \qquad \qquad \text{W} \cdot \text{m}^{-2}$ | Life Martin Maritin M | Р |
| 4.3.8 | Thermal hazard exposure limit for the skin | the wife with the | A ₁ b ₂ |
| WILLER | Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to: | attle state and | P |
| Necessary | $E_{\text{H}} \cdot t = \sum_{380}^{3000} \sum_{t} E_{\lambda} (\lambda, t) \cdot \Delta t \cdot \Delta \lambda \le 20000 \cdot t^{0,25}$ J · m ⁻² | Lift night spilled | P.F |
| | والمراقع فالمراقع فالمواجه | | de de |
| 5 | MEASUREMENT OF LAMPS AND LAMP SYSTEM | IS ME THE THE | Р |
| 5.1 | Measurement conditions | | P |
| | Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification. | Marie Andrew Andrew | P |
| 5.1.1 | Lamp ageing (seasoning) | They are are | N |
| 3165 | | 1 July 196 | .0 AV |

| 5 | MEASUREMENT OF LAMPS AND LAMP SYSTEMS | P. W |
|-----------|--|---------------------|
| 5.1 | Measurement conditions | Р |
| SILES. | Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification. | WILL WAS DEED THEFT |
| 5.1.1 | Lamp ageing (seasoning) | N |
| ners on | Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard. | SE N |
| 5.1.2 | Test environment | of GOP D |
| e white | For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations. | Autrick March |
| 5.1.3 | Extraneous radiation | CONTRACTOR P |
| riter and | Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results. | TEL MULTER AND |
| 5.1.4 | Lamp operation | P |
| | Operation of the test lamp shall be provided in accordance with: | ur ur Pi |
| 7/10 | the appropriate IEC lamp standard, or | N |

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| | IEC/EN 62471 | | | |
|----------------------|--|--|----------|--|
| Clause | Requirement + Test | Result – Remark | Verdict | |
| | THE THE STATE STATE STATE SHALL SHALL | 71, 21, 2, | | |
| recent with | the manufacturer's recommendation | TEN NITER WITER | Р | |
| 5.1.5 | Lamp system operation | | P | |
| e le | The power source for operation of the test lamp shall be provided in accordance with: | a feet white white and | Р | |
| ALCO VI | the appropriate IEC standard, or | 1 - 50 - 50 - 50 - 50 - 50 - 50 - 50 - 5 | P | |
| - 1 | - the manufacturer's recommendation | Au. 30. | Р | |
| 5.2 | Measurement procedure | Set Ster Willer | Р | |
| 5.2.1 | Irradiance measurements | 191 21, 2 | P | |
| in our | Minimum aperture diameter 7mm. | Clerk Stiffs and and | Р | |
| et de | Maximum aperture diameter 50 mm. | | . P | |
| - City | The measurement shall be made in that position of the beam giving the maximum reading. | te white with whi | W P | |
| Allen . | The measurement instrument is adequate calibrated. | WHITE WILLS WHITE | P | |
| 5.2.2 | Radiance measurements | at at some | P | |
| 5.2.2.1 | Standard method | The Pall of A | Р | |
| The Marie | The measurements made with an optical system. | de la julia de | Р | |
| H WALLEY | The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument. | and and | + P | |
| 5.2.2.2 | Alternative method | of the other mater | JAN JAP | |
| nit ^{et} an | 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. | Street Matter Militer W | of the | |
| 5.2.3 | Measurement of source size | the wife out it into | Р | |
| WALLEY. | The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source. | White white white | Put | |
| 5.2.4 | Pulse width measurement for pulsed sources | Self Self Self | Ñ | |
| TLER MUT | 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. | of the sanited sanited san | N Zer | |
| 5.3 | Analysis methods | et it it it it is | P | |
| 5.3.1 | Weighting curve interpolations | 70, 20, 20, | Р | |

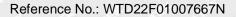


| - de | IEC/EN 62471 | | | |
|------------------|--|-----------------------------|---------|--|
| Clause | Requirement + Test | Result – Remark | Verdict | |
| , | the title title title either serie serie | Th. 30. 2. 1. | | |
| ancie an | To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired. | see table 4.1 | P | |
| 5.3.2 | Calculations | | Р | |
| whitek whitek | The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy. | HALTER MALTER MALTER MALTER | P | |
| 5.3.3 | Measurement uncertainty | | Р | |
| re en | The quality of all measurement results must be quantified by an analysis of the uncertainty. | all etter merte same and | Р | |

| 6 | LAMP CLASSIFICATION | | Р |
|---------|---|--------------------------|----------------|
| Aller. | For the purposes of this standard it was decided that the values shall be reported as follows: | see table 6.1 | Р |
| unice u | 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 | ALTER MILITER WALTER WAS | N |
| , and | for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm | Marie Marie Marie | P |
| 6.1 | Continuous wave lamps | RETURN OF THE SHALL S | J/P |
| 6.1.1 | Exempt Group | ** A B | A P |
| pr sil | In the exempt group is lamp, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose: | OF AST TOTAL | Р |
| k gel | an actinic ultraviolet hazard (E_s) within 8-hours exposure (30000 s), nor | The the top | Р |
| All All | a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor | and and and | Р |
| The s | a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor | Marker White Albert All | Р |
| ar an | – a retinal thermal hazard (L _R) within 10 s, nor | THE STEE WITE WITE | Р |
| EN OFF | an infrared radiation hazard for the eye (E_{IR}) within 1000 s | 4 At 5th 5th | Р |
| WILLEY. | Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L _{IR}), within 1000 s are in Risk Exempt Group | White white water | P Mile Mali |

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| | IEC/EN 62471 | IEC/EN 62471 | | | | |
|-----------------------|--|--------------------------|-----------|--|--|--|
| Clause | Requirement + Test | Result – Remark | Verdict | | | |
| | with the state of the parties with the | A. 2. | | | | |
| 6.1.2 | Risk Group 1 (Low-Risk) | LITER SALTER SALTER SA | N . | | | |
| 56. S. 18.55 | In this group is lamp, which exceeds the limits for the exempt group but that does not pose: | at alt sait s | N | | | |
| e State | an actinic ultraviolet hazard (E_s) within 10000 s, nor | | N | | | |
| 4, | a near ultraviolet hazard (E_{UVA}) within 300 s, nor | Auto ant an | N | | | |
| 25 | a retinal blue-light hazard (L_B) within 100 s, nor | at the set | N° | | | |
| | a retinal thermal hazard (L_R) within 10 s, nor | Mrs. Mrs. Com. | N | | | |
| | an infrared radiation hazard for the eye (E_{IR}) within 100 s | LIER WITER WITER ON | of N | | | |
| TEN SHOUTE | Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L _{IR}), within 100 s are in Risk Group 1. | A MULTER WALTER SIRES | N | | | |
| 6.1.3 | Risk Group 2 (Moderate-Risk) | The State Hills | , N | | | |
| and the same | This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose: | At the Sut | NA NA | | | |
| e e | an actinic ultraviolet hazard (E_s) within 1000 s exposure, nor | | N | | | |
| 2, | a near ultraviolet hazard (E_{UVA}) within 100 s, nor | The street | N | | | |
| ik şanifer | a retinal blue-light hazard (L_B) within 0,25 s (aversion response), nor | The source of the source | THE THE | | | |
| THE TEN | a retinal thermal hazard (L_R) within 0,25 s (aversion response), nor | atter street sources | MATER NO | | | |
| ni ^{rek} uri | an infrared radiation hazard for the eye (E_{IR}) within 10 s | ar and the | STEEL N- | | | |
| SEL MARTIN | Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L _{IR}), within 10 s are in Risk Group 2. | et milet milet smil | N | | | |
| 6.1.4 | Risk Group 3 (High-Risk) | | N | | | |
| CH. | Lamps which exceed the limits for Risk Group 2 are in Group 3. | Murice Auti, Auti, | N | | | |
| 6.2 | Pulsed lamps | Ster Willer Willer | N S | | | |
| litelle and | Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s. | All the state of | SEE N. N. | | | |
| er wite | A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer. | the shift white | N | | | |
| MITELS. | The risk group determination of the lamp being tested shall be made as follows: | All The State | N.C | | | |

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|-------------------------|--|----------------------------|---------|
| Clause | Requirement + Test | Result – Remark | Verdict |
| | At the the with miles with the | 741. 24. 2. | الر ا |
| ALCON ALC SON TO SON | a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High- Risk) | PUTER MALTER MALTER MALT | Je N |
| e sinciple | 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 | - Water aware and | N |
| anliek Alekan | 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 | STEEL SHOTEL SHOTEL SHOTEL | N |



| Wavelength λ, nm | UV hazard function $S_{\text{\tiny UV}}(\lambda)$ | Wavelength λ, nm | UV hazard function S _ω (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 | 0,0016 |
| 225 | 0,150 | 319 | 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 | 0,060 | 390 | 0,000044 |
| 308 | 0,026 | 395 | 0,000036 |
| 310 | 0,015 | 400 | 0,000030 |

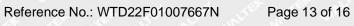
Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.

^{*} Emission lines of a mercury discharge spectrum.



| Table 4.2 | Spectral weighting sources | functions for assessing retinal hazards fr | om broadband optical F |
|---------------|----------------------------|--|--|
| The A | Wavelength nm | Blue-light hazard function B (λ) | Burn hazard function R (λ) |
| 100 10 | 300 | 0,01 | The state with the state of |
| | 305 | 0,01 | the state of the s |
| et si | 310 | 0,01 | A B B 50 |
| -01 | 315 | 0,01 | City They They the |
| - | 320 | 0,01 | |
| - 300 | 325 | 0,01 | et de een een |
| 67, | 330 | 0,01 | "" " " " " " " " " " " " " " " " " " " |
| .J. | 335 | 0,01 | |
| 10° 1 | 340 | 0,01 | The state of the s |
| | 345 | 0,01 | 4, 4, 4 |
| 10° 3 | 350 | 0,01 | The second second |
| σ_{th} | 355 | 0,01 | the the the |
| اد ب | 360 | 0,01 | |
| | 365 | 0,01 | Att of the second |
| 23, | 370 | 0,01 | A 24 A A |
| 100 | 375 | 0,01 | , L 34 35 |
| 1100 | 380 | 0,01 | 0,1 |
| | 385 | 0,013 | 0,13 |
| A | 390 | 0,025 | 0,25 |
| S. 10. | 395 | 0,05 | 0,5 |
| 4 | 400 | 0,10 | 1,0 |
| e | 405 | 0,20 | 2,0 |
| 2. | 410 | 0,40 | 4,0 |
| ائي <u>ب</u> | 415 | 0,80 | 8,0 |
| 10 | 420 | 0,90 | 9,0 |
| 34.1 | 425 | 0,95 | 9,5 |
| 100 | 430 | 0,98 | 9,8 |
| 3 m | 435 | 1,00 | 10,0 |
| | 440 | 1,00 | 10,0 |
| J (1) | 445 | 0,97 | 9,7 |
| 400 | 450 | 0,94 | 9,4 |
| 4 .6 | 455 | 0,90 | 9,0 |
| | 460 | 0,80 | 8,0 |
| | 465 | 0,70 | 7,0 |
| · | 470 | 0,62 | 6,2 |
| The s | 475 | 0,55 | 5,5 |
| | 480 | 0,45 | 4,5 |
| , O' . | 485 | 0,40 | 4,0 |
| 3, 5,0 | 490 | 0,22 | 2,2 |
| A | 495 | 0,16 | 1,6 |
| · July | 500-600 | 10[(450-\)/50] | 1,0 |
| | 600-700 | 0,001 | 1,0 |
| | 700-1050 | 2. 7.0 | 10 ^[(700-λ)/500] |
| 31 | 1050-1150 | the state of the state of | 0,2 |
| - 160 | 1150-1200 | the transfer of the transfer of the | 0,2.10 ^{0,02(1150-λ)} |
| . (1) | 1200-1400 | * | 0,02 |





| Table 5.4 | Summary of the ELs for the | surface of the sl | kin or cornea (| irradiance ba | sed values) P |
|----------------------------|--|---------------------|-----------------------------|-----------------------------|--|
| Hazard Name | Relevant equation | Wavelength range nm | Exposure duration sec | Limiting aperture rad (deg) | EL in terms of constant irradiance W•m-2 |
| 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 ^{0,75} 100 |
| Skin therma | $E_H = \sum E_\lambda \bullet \Delta \lambda$ | 380 – 3000 | < 10 | 2π sr | 20000/t ^{0,75} |

| Table 5.5 | Summary of the ELs for t | he retina (radian | ce based valu | es) | P |
|---|---|---------------------|---|--|--|
| Hazard Nan | ne Relevant equation | Wavelength range nm | Exposure duration sec | Field of view radians | EL in terms of constant radiance W•m ⁻² •sr ⁻¹) |
| Blue light | $L_B = \sum L_A \bullet B(A) \bullet \Delta A$ | 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 |
| 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}) |
| Retinal thermal (weak visual stimulus) | $L_{IR} = \sum L_{\lambda} \bullet R(\lambda) \bullet \Delta \lambda$ | 780 – 1400 | > 10 | 0,011 | 6000/α |

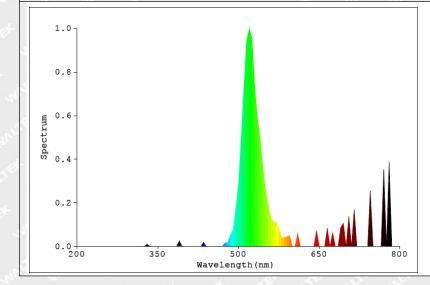


Table 6.1 (AXP-1600;) Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC) α = 0.1000rad

| | Action | | | | Em | ission Mea | suremen | t | | |
|-----------------------------------|---------------------|-----------------|---|----------------------------------|----------------------------------|------------|-------------------------|---------------|------------------|--------|
| Risk | spectr | Symbol | Units | Exe | empt | Low | risk | Mod | risk | |
| | um | | , | | Limit | Result | Limit | Result | Limit | Result |
| Actinic UV | S _{υν} (λ) | Es | W•m⁻² | 0,001 | 5.479e-9 | 0,003 | - CEN | 0,03 | 5128 175 | |
| Near UV | 578 | Euva | W•m⁻² | 0.33 | 3.555e-5 | 33 | 310 | 100 | | |
| Blue light | Β(λ) | L _B | W•m⁻ ²•sr⁻¹ | 100 | 2.011e-2 | 10000 | ruser and | 4000000 | ell de | |
| Blue light, small source | Β(λ) | Ев | W•m⁻² | 0.01 | er _{str} ier | 1,0 | 564- -1104 - 1564 | 400 | giniter Sites | |
| Retinal thermal | R(λ) | L _R | W•m⁻ ²•sr⁻¹ | 28000/α | 6.205e-1 | 28000/α | | 71000/α | er 13 | |
| Retinal thermal, weak | R(λ) | L _{IR} | W•m ⁻ ² •sr ⁻¹ | 545000 0.0017 ≤α≤ 0.011 | ANCTO WALTER | SINCE OF | ner and | | WALTER | |
| visual stimulus ** | | | -51 | 6000/α 0.011 ≤α≤ 0.1 | # 12 ¹ 2 ¹ | muret un 8 | 3.214e-3 | WALTER TEX | ingris (| |
| IR radiation , eye | <u></u> | E _{IR} | W•m⁻² | 100 | 4.417e-4 | 570 | | 3200 | 24 15 24 15 | |

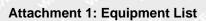
^{*} Small source defined as one with α <0.011 radian. Averaging field of view at 10000 s is 0.1 radian.

^{**} Involves evaluation of non-GLS source.



| LB RFOV | Measured | Limit |
|-------------|-----------------------|-----------|
| (mrad) | (W/m2/sr) | (W/m2/sr) |
| 100(Exempt | 2.011e-2 | 1.000e2 |
| Risk Group) | 2.0116-2 | 1.00062 |
| 11(Risk | 2.317e-2 | 1.000e4 |
| Group 1) | 2.3176-2 | 1.00064 |
| 1.7(Risk | 2.435e-2 | 4.000e6 |
| Group 2) | 2.4336-2 | 4.00000 |
| LR RFOV | Measured | Limit |
| (mrad) | (W/m2/sr) | (W/m2/sr) |
| 11(Exempt | 6.205e-1 | 2.800e5 |
| Risk Group) | 0.203 e -1 | 2.800e3 |
| 11(Risk | 6.205e-1 | 2.800e5 |
| Group 1) | 0.2006-1 | 2.600e3 |
| 1.7(Risk | 6.521e-1 | 7.100e5 |
| Group 2) | 0.5216-1 | 7.100e5 |





Reference No.: WTD22F01007667N

| Equipment | Model/Type | Cal. Due. Date |
|--|-----------------------|----------------|
| Biosafety ultraviolet light leaking spectrum analysis system | EVERFINE PMS-700 | 2023-01-11 |
| Standards reflect the whiteboard | EVERFINE ⊄60 | 2023-01-11 |
| Precise digital display dc current stabilized voltage supply | EVERFINE WY305-V1 | 2023-01-11 |
| High standards of stable ultraviolet radiation power | EVERFINE UVS-8005 | 2023-01-11 |
| Ultraviolet radiation standard lamp | EVERFINE SIS-631 | 2023-01-11 |
| D204BH ray radiation intensity standard lamp | EVERFINE D204BH-3200K | 2023-01-11 |
| AC power source | ACPOWER AFC-110104F | 2023-01-11 |
| Temperature & Humidity Datalogger | Testo 608-H1 | 2023-01-11 |







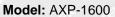




Photo 1

===== End of Report =====