FACILITY MANUAL OF PHOTOMETRY LABORATORY

PHL
Estd. : 2006

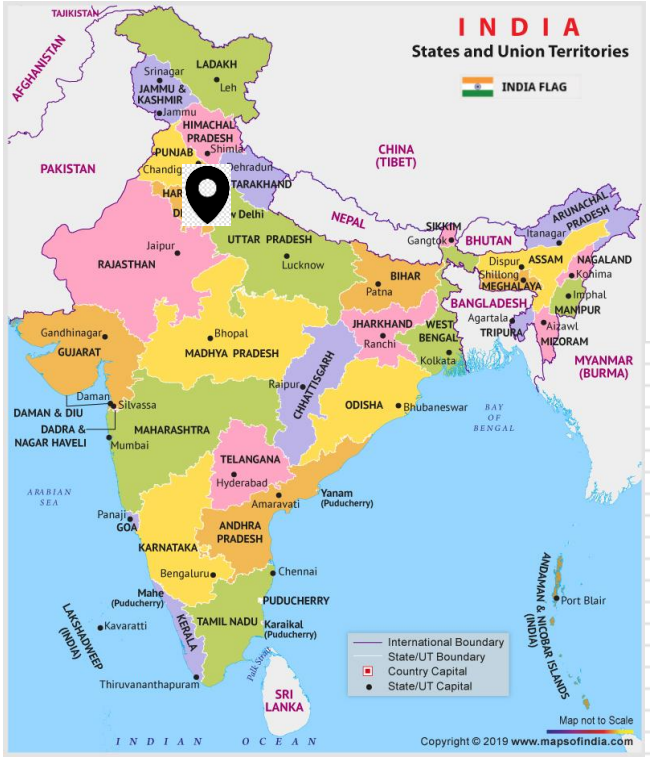
Plot - 26, Sector 3, IMT Manesar,
Gurugram, Haryana 122050, India

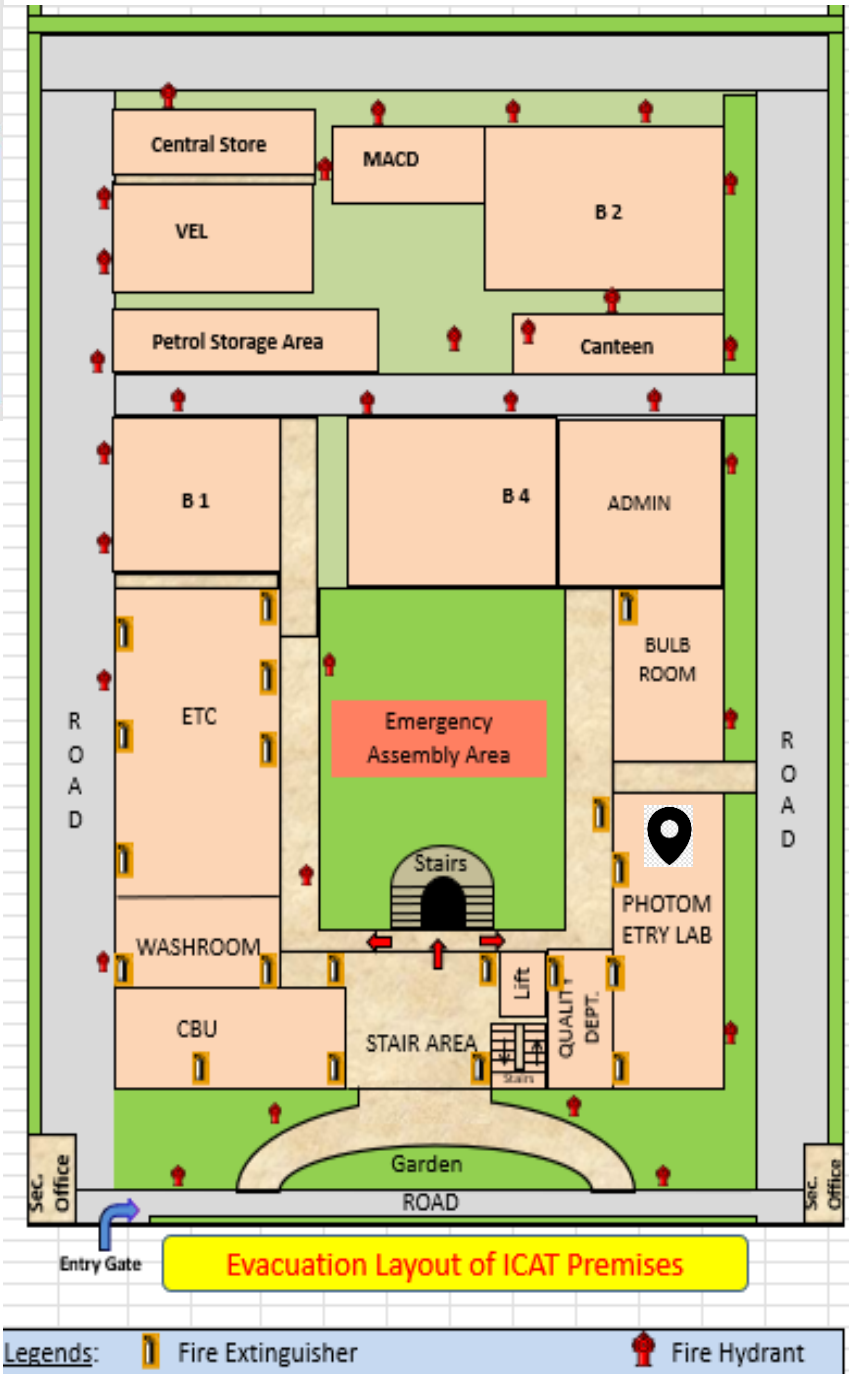
Rev. no.: 00
Release Date: 08.08.2025

KEY CONTACT DETAILS OF LAB PERSONNEL

Mr. Pritam Singh Sawariya **(Sr. Manager)**	• Mob.: 9871365588 • email: pritam.singh@icat.in
Mr. Girish Singh Rajawat **(Deputy Manager)**	• Mob.: 9650183968 • email: girish.singh@icat.in
Mr. Akash Biswas (Assistant Manager)	• Mob.: 7044598994 • email: akash.biswas@icat.in
Mr. Manish Sharma **(Sr. Engineer)**	• Mob.: 9799123484 • email: manish.sharma@icat.in

LAB LOCATION





ABOUT US.....

- Photometry lab at ICAT has the state-of-the-art infrastructure to cater to the requirements of both Automotive and non-automotive lighting components.
- **INVESTMENT & INICIATION**: With an initial investment of INR 5 Crore / INR 50 Million by The Govt. of India the lab was established in 2006.
- **ACCREDITATIONS:** The photometry lab at ICAT is accredited as per ISO 17025 by National Accreditation Board for Testing and Calibration Laboratories (NABL), ISO 9001 (IMS), ISO 14001 (for Environmental Management Systems), ISO 45001 (for Occupational Hazard & Safety).
- **CAPABILITY:** PHL is equipped with latest facilities capable of testing high end products like Intelligent lighting systems, PWM based LED luminaries, Special purpose warning lamps, Aviation lights, Non – automotive lamps along with various Road safety products.

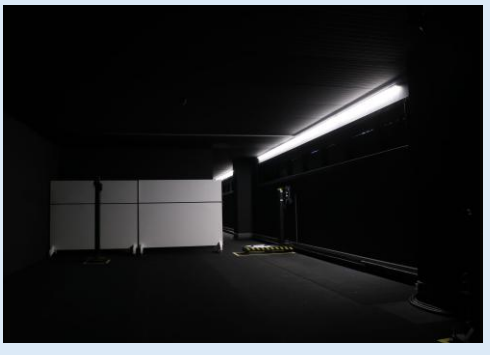
OCCUPATIONAL HAZARD AND SAFETY

POSSIBLE HAZARDS & SAFETY PROTOCALS

- Strict PPE kit protection enforcement at Lab. Mandatory use of PPE (helmet, gloves, goggles, coveralls, safety shoes)

- Control on laboratory access to only lab officials

- Hazard Identification & Risk Assessment. Dark Room thus lesser visibility.



- Electrical Hazards. Hazards from open end wiring.

- Fire Hazards. Hazards from electrical and other units generating fire.

OCCUPATIONAL HAZARD AND SAFETY

VISITOR DO's & DON'T's

DOs:

Register at the Security Desk: Always sign in at the entrance and always wear a visitor badge.
Follow Safety Instructions: Adhere to all safety guidelines provided during the lab orientation or by accompanying personnel.
Wear PPE (if required): Use personal protective equipment such as helmets, safety shoes, goggles, or lab coats as instructed.
Stay in Designated Areas: Remain within authorized zones and always be accompanied by a PHL representative.
Maintain Confidentiality: Respect the proprietary nature of tests and components being evaluated.
Report Hazards: Immediately inform PHL staff of any unsafe conditions or incidents.

DON'Ts:

Do Not Touch Equipment or Test Samples: Avoid interacting with test setups, machinery, or components unless explicitly permitted.
No Photography or Recording: Taking pictures, videos, or audio recordings is strictly prohibited inside the lab.
Avoid Entering Restricted Zones: Do not enter test chambers, high-voltage areas, or other restricted sections without permission.
Do Not Bring Hazardous Items: Outside chemicals, tools, or electronic devices not authorized by PHL are not allowed.
No Eating / Drinking or Smoking: Consumption of food or beverages is not allowed inside the lab areas. Smoking or consumption of any intoxicating substance is prohibited.

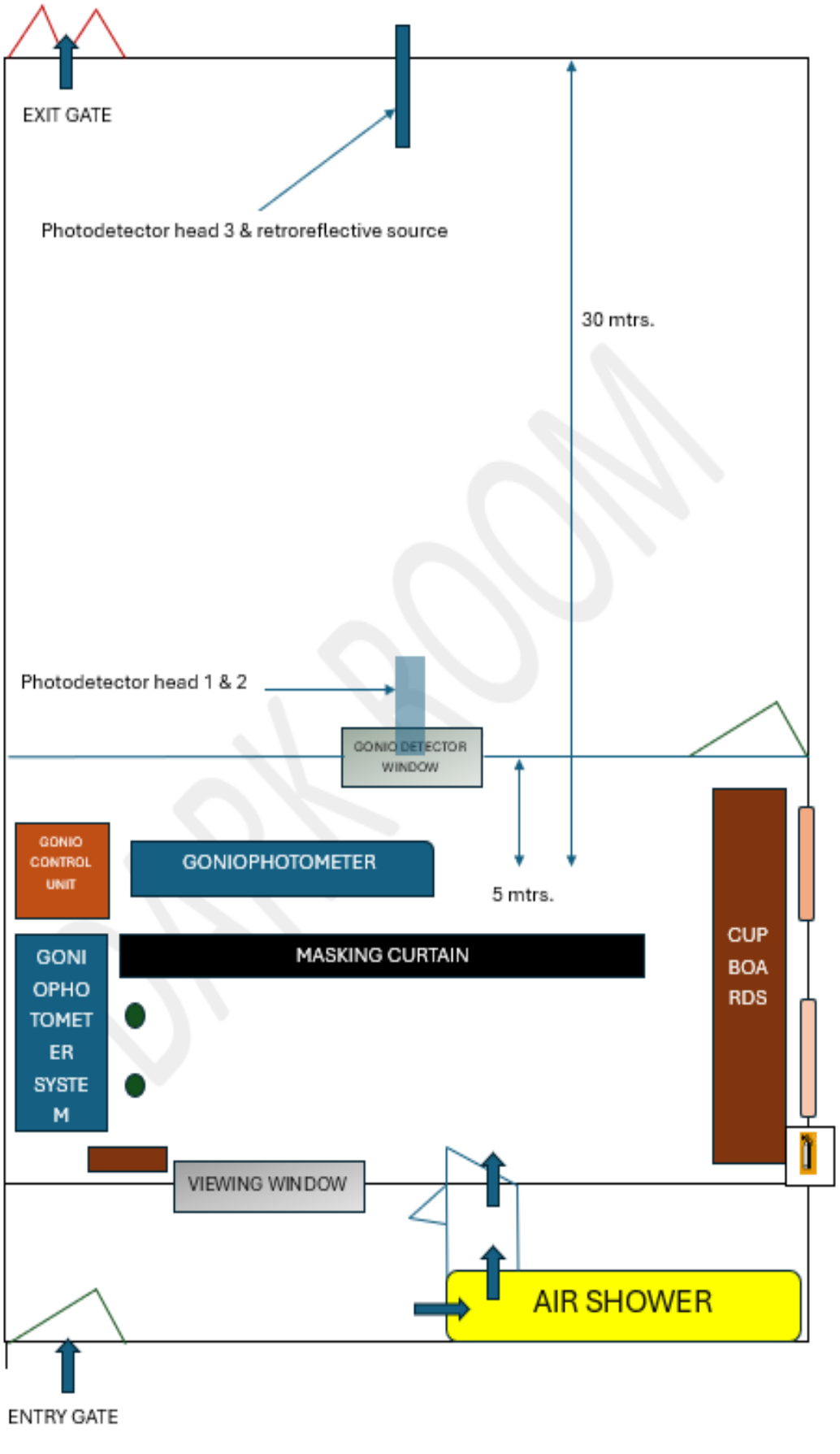
These guidelines are in place to ensure the safety of visitors, staff and equipment, as well as to maintain the integrity of the testing process.

OCCUPATIONAL HAZARD AND SAFETY

EMERGENCY CONTACT DETAILS

POLICE	• CONTACT : 100 / 0124- - 2311200
NODAL OFFICER (DISASTER MANAGEMENT)	• CONTACT : 0124 - 2322106
FIRE STATION	• CONTACT : 0124 – 2292101 (IMT, Manesar) • CONTACT : 0124 – 2373101 (Sector 37, Gurgaon)
SECURITY	• CONTACT : 0124 - 4586222
SAFETY OFFICER	• CONTACT : +91 9654067148 (Mr. Kailash Gupta)
PHOTOMETRY LAB EMERGENCY RESPONSE TEAM	• Mr. Manish Sharma : +91 9799123484 • Mr. Shivam Pal : +91 9953588728

LAB LAYOUT



LEGEND	
	ENTRY AND EXIT GATES
	CHAIRS
	FIRE EXTINGUISHERS
	AIR CONDITIONERS

SERVICES OFFERED WITH APPLICABLE STANDARDS

Tests Performed	Corresponding Standards (National / International)
Luminance Distribution (Photometric Characteristics) & Gradient of Luminance	AIS 10 (Part 3) (Rev. 1) AMD 2015
	AIS 12 (Part 4) (Rev. 1) AMD 2018
	AIS 62 (Rev. 1) AMD 2022
	ECE R50 Rev. 4
	ECE R4 Rev. 4
	UN Regulation No. 148 Rev. 1 Amd. 1
Co-efficient of Luminous Intensity	AIS 57 (Rev. 1) AMD 2019
	AIS 22 AMD 2013
	AIS 62 (Rev. 1) AMD 2022
	ECE R3 Rev. 5
	ECE R27 Rev 3
	UN Regulation No. 150 Amd. 6
	IRC 67 Cl. No. 6.7.1, 6.7.2, 6.7.3 and 6.7.4
	IRC 79 Cl no. 3,4,5 & 6
	IRC 35 Cl no. 5.1.2
	MoRTH Section 800 Cl no. 804
	ASTM D 4383 cl. 6.1 and 10.1
Co-efficient of retro reflection	IS/ISO 6742-2
	AIS 90
	AIS 89 AMD 2014
	AIS 88
	AIS 62
	ECE R104 Rev 1 Amd 4
	ECE R70 Rev. 1 Amd. 5
	ECE R69 Rev. 1 Amd. 1 Corr. 1
	IS 14221 (Part 1)
	UN Regulation No. 150 Amd. 6
	ASTM D 4956 Cl No.: 6.2,6.3 & 7

SERVICES OFFERED WITH APPLICABLE STANDARDS

Tests Performed	Corresponding Standards (National / International)
Colour Coordinates	IS/ISO 6742-2
	AIS 159
	ISO 7591-1982
	AIS 159
	ISO 7591-1982
	AIS 10 (Part 5) (Rev. 1)
	ECE R48 Rev. 14 Amd. 3
	AIS 57 (Rev. 1) AMD 2019
	AIS 22 AMD 2013
	AIS 62 (Rev. 1) AMD 2022
	ECE R3 Rev. 5
	ECE R27 Rev 3
	UN Regulation No. 150 Amd. 6
	AIS 90
	AIS 89 AMD 2014
	AIS 88
	AIS 62
	ECE R104 Rev 1 Amd 4
	ECE R70 Rev. 1 Amd. 5
	ECE R69 Rev. 1 Amd. 1 Corr. 1
	IS 14221 (Part 1)
	UN Regulation No. 150 Amd. 6
	AIS 12 (Part 4) (Rev. 1) (Amd. 3)
	IRC 67 Cl. No. 8
	ICAO Annex 14 Vol. I Ed. 8th (Appendix 1, Cl. 2.1, 2.2, 2.3,2.4)
	ASTM D 4383 cl. 6.3 and 10.3
	ASTM D 4280 Cl 6.2.4 and 9.3

SERVICES OFFERED WITH APPLICABLE STANDARDS

Tests Performed	Corresponding Standards (National / International)
Dimension Measurement	ECE R99 Annex 1 (Rev. 3) (Amd. 5)
	ECE R37 Annex 1 (Rev. 8)
	AIS 34 (Part 1) (Amd. 2014) & (Part 2) (Annex A)
	AIS 130 (Amd 1)
	ECER 128 (Annex 1) (Amd 11)
Electrical and Photometric Characteristics	AIS 034 (Part 1) (Rev. 1) AMD 2014
	ECE R37 Rev. 8
	AIS 130
	UN Regulation No. 128 Amd 11
Gloss Measurement	ASTM E 430
	ASTM D 2457 Ed. 1
	ISO 2813 (Reviewed 2019)
	NIST Pub. SP 250 70
Illumination (Light Distribution)	ASTM D 523
	AIS 012 (Part1) (Rev. 1) AMD 2014
	AIS 012 (Part3) (Rev. 1)
	AIS 062 (Rev. 1) AMD 2022
	ECE R19 Rev. 8
	ECE R119 Rev. 3
	UN Regulation No. 149 Rev. 1 Amd 1

SERVICES OFFERED WITH APPLICABLE STANDARDS

Tests Performed	Corresponding Standards (National / International)
Illumination area	AIS 010 (Part3) (Rev. 1) AMD 2015
	AIS 012 (Part5) (Rev. 1)
	AIS 062 (Rev. 1) AMD 2022
	ECE R50 Rev. 4
	ECE R6 Rev. 5 Amd. 3
	UN Regulation No. 148 Rev 1 Amd. 1
	AIS 12 (Part 2) (Rev. 1) AMD 2018
	AIS 62 (Rev.1) AMD 2022
	ECE R38 Rev 4
	UN Regulation No. 148 Rev. 1 Amd. 1
	AIS 10 (Part 3) (Rev. 1)
	AIS 12 (Part 7) (Rev.1) AMD 2017
	AIS 62 (Rev.1) AMD 2011
	ECE R50 Rev. 4
	ECE R23 Rev. 5
	UN Regulation No. 148 Rev. 1 Amd.1
	AIS 10 (Part 3) (Rev. 1) AMD 2015
	AIS 12 (Part 6) (Rev. 1) AMD 2013
	AIS 12 (Part 8) (Rev. 1) AMD 2019
	AIS 12 (Part 10) (Rev. 1) AMD 2017
	AIS 12 (Part 9) (Rev. 1) AMD 2019
	AIS 62 (Rev. 1) AMD 2022
	ECE R7 Rev 7
	ECE R77 Rev. 4
	ECE R87 Rev. 4
	ECE R91 Rev. 4
	UN Regulation No. 148 Rev. 1 Amd. 1

SERVICES OFFERED WITH APPLICABLE STANDARDS

Tests Performed	Corresponding Standards (National / International)
Intensity of Light Emitted (Light Distribution)	AIS 010 (Part3) (Rev. 1) AMD 2015
	AIS 012 (Part5) (Rev. 1)
	AIS 062 (Rev. 1) AMD 2022
	ECE R50 Rev. 4
	ECE R6 Rev. 5 Amd. 3
	UN Regulation No. 148 Rev 1 Amd. 1
	AIS 12 (Part 2) (Rev. 1) AMD 2018
	AIS 62 (Rev.1) AMD 2022
	ECE R38 Rev 4
	UN Regulation No. 148 Rev. 1 Amd. 1
	AIS 10 (Part 3) (Rev. 1)
	AIS 12 (Part 7) (Rev.1) AMD 2017
	AIS 62 (Rev.1) AMD 2011
	ECE R50 Rev. 4
	ECE R23 Rev. 5
	UN Regulation No. 148 Rev. 1 Amd.1
	AIS 10 (Part 3) (Rev. 1) AMD 2015
	AIS 12 (Part 6) (Rev. 1) AMD 2013
	AIS 12 (Part 8) (Rev. 1) AMD 2019
	AIS 12 (Part 10) (Rev. 1) AMD 2017
	AIS 12 (Part 9) (Rev. 1) AMD 2019
	AIS 62 (Rev. 1) AMD 2022
	ECE R7 Rev 7
	ECE R77 Rev. 4
	ECE R87 Rev. 4
	ECE R91 Rev. 4
	UN Regulation No. 148 Rev. 1 Amd. 1

TESTS PERFORMED AT PHOTOMETRY LABORATORY

Tests Performed	Corresponding Standards (National / International)
Light Distribution in a) driving beam b) passing beam	AIS 127
	ECE R123 Rev.2
	UN Regulation No. 149 Rev. 1 Amd 1
	AIS 10 (Part 1,2 and 4) (Rev. 1)
	AIS 062 (Rev. 1) AMD 2022
	ECE R112 Rev. 4
	ECE R113 Rev. 5
	ECE R98 Rev. 4
	UN Regulation No. 149 Rev. 1 Amd 1
Luminous Intensity Measurement	ICAO Annex 14 Vol. I Ed. 8th
Photometric and Electrical parameters of LED (Non-Automotive) Luminaires	LM 79-08, IS 10322 (Part 5, Sec 1 to 7), IS 16102 (Part 2), IS 16103 (Part 2), IEC 62722-1, IS 16107 Sec-2 (Part 1) & IS 16106
Measurements of luminance factor by day	AIS 159
	ISO 7591-1982
Minimum value of Co-efficient of retro reflection	AIS 159
	ISO 7591-1982
Retro Reflectivity	ASTM D 4280 Cl 6.2.1 and 9.1
Uniformity of retro-reflection on area of 5 x 5 cm	AIS 159
	ISO 7591-1982

FAQS ?

- **How can I submit a lamp / component for testing at PHL?**

✓ You can submit a lamp / component testing request at the **Photometry Lab (PHL)** through the **ICAT IOCS Portal.** This portal streamlines the entire process from test request to report delivery. The link can be found on the ICAT website under the “Login” tab.

- **What documents are required to initiate testing?**

  - ✓ Contract Review Form / Test request form.
  - ✓ Component drawings/specs, if applicable.
  - ✓ Standard/Regulation references (e.g., AIS, ECER, ASTM, IS. etc.)

FAQS ?

- **Can PHL conduct tests for Foreign standard requirements?**

✓ Yes, PHL conducts tests as per international standards like ECER, SAE, ASTM, LM 79, FAA and ICAO. PHL also supports component manufacturer to get their product certified for European & American countries etc.

- **Does PHL support prototype or developmental testing?**

✓ Yes. PHL offers developmental/RnD testing services to support new product development and design validation.

- **What is PTIV, TAC, & CoP ?**

  - ✓ **PTIV (Pre-Test Inspection Visit):** An initial inspection of components and documents by ICAT to ensure test readiness and compliance before actual testing begins.
  - ✓ **TAC (Type Approval Certificate):** A certificate issued by ICAT confirming that a vehicle or component meets the required regulatory standards after successful testing.
  - ✓ **CoP (Conformity of Production):** Periodic verification to ensure that mass-produced components or vehicles continue to meet the standards approved during type approval.

FAQS ?

- **How can I contact PHL for inquiries or support?**

✓ You can reach out via:
Email / Phone (provided by the PHL office), Official website inquiry form

- **What happens if the component fails the test?**

✓ You will be informed via mail & receive a detailed test report highlighting the failed parameter specifications.

- **How to get type approval of safety component?**

✓ Register/Login on the ICAT IOCS Portal.
✓ Once your company is registered submit a Type Approval Request by selecting the component and applicable test standards (e.g., AIS, IS).
✓ Upload all required technical documents, drawings, and specifications.
✓ Dispatch test sample to ICAT – Photometry Lab (PHL).
✓ PHL will provide/inform the dates for PTIV (Pre-Test Inspection Visit) / Site Audit of manufacturing plant.
✓ Plant audit will be conducted by PHL officials.
✓ Testing of the dispatched samples will be conducted at PHL.
✓ Once tests are satisfactory, ICAT issues a test report as per CMVR/NABL.
✓ Based on the test report and successful completion of PTIV, ICAT grants the Type Approval Certificate (TAC).

COMPONENT CERTIFICATION

COMPONENT CERTIFICATION PROCESS

Step 1 : Customer Contact
Customer send their queries via email to a designated support address Emails should include relevant details like product information and clear descriptions of the Product.

Step 2: Quotation Provided to Customer
Quotation shared with the customer outlining pricing, terms as per their requirements.

Step 3: IOCS Registration (Company Registration)
Company registration process to establish our legal business entity and ensure compliance with regulatory requirements & and company registered to the IOCS portal of ICAT after a Docket No. IS provided to the customer.

Step 4 : Initial Audit as Per AIS 37 (PTIV) at Manufacturing Site
An audit of a company is a formal review and examination of the company's financial statements and operations. It is conducted by independent auditors to ensure that the financial & Technical records are accurate, complete, and comply with applicable laws and accounting standards.

Step 5: Documents Provided by the Customer
List and summary of all relevant documents submitted by the customer for project evaluation and processing.

Step 6: Testing as Per Reference AIS Standard
To validate that products/processes meet predefined specifications and regulatory requirements. Conducting tests aligned with industry standards to ensure product quality, safety, and compliance and Systematic testing includes sample preparation, execution, data collection, and result analysis based on standard protocols.

Step 7: Release of Final TAC after successful completion of above activity
The final certificate has been issued to formally acknowledge the successful completion of the project/process and The final certificate has been delivered to the customer through formal channels. This Certificate is valid up to 2 years

LABORATORY CERTIFICATIONS

National Accreditation Board for Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

INTERNATIONAL CENTRE FOR AUTOMOTIVETECHNOLOGY

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

PLOT NO. 26, SECTOR-3, HSIIDC, IMT MANESAR, GURGAON, HARYANA, INDIA

in the field of

TESTING

Certificate Number: TC-11834

Issue Date: 29/10/2024 Valid Until: 28/10/2028

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: NATIONAL AUTOMOTIVE BOARD

Signed for and on behalf of NABL

Anuja Anand
Director

N. Venkateswaran
Chief Executive Officer

NABL ACCREDITATION

LABORATORY CERTIFICATIONS

INTERCERT®

CERTIFICATE OF REGISTRATION

INTERCERT hereby certifies that the Environmental Management System of

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

H.O. AND CENTRE 1: Plot No.26, Sector 3, HSIIDC, IMT Manesar, Gurugram - 122 050, Haryana, India

See Annexure for additional sites and additional site scopes

Has been successfully assessed as per the requirements of

ISO 14001:2015

For the scope of

Testing, Certification and Validation of Automotive Vehicles, Sub Assemblies and Components.

Initial Certification Date	:	January 06, 2022
Certificate Issue Date	:	December 29, 2024
Surveillance Validity Date	:	January 05, 2026
Recertification Date	:	January 05, 2028

Registration Number: IC-EM-2501185

Page No 01 of 02

Issued on behalf of InterCert
Head - Certifications

The validity of this certificate can be verified at **www.intercert.com** or through email at **info@intercert.com**. This certificate is the property of **INTERCERT INC**, 2001 Timberloch Place - Suite 500, The Woodlands, Texas 77380, United States and must be returned on request.

ISO 14001 : 2015 ACCREDITATION

LABORATORY CERTIFICATIONS

INTERCERT®

CERTIFICATE OF REGISTRATION

INTERCERT hereby certifies that the Occupational Health & Safety Management System of

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

H.O. AND CENTRE 1: Plot No.26, Sector 3, HSIIDC, IMT Manesar, Gurugram - 122 050, Haryana, India

See Annexure for additional sites and additional site scopes

Has been successfully assessed as per the requirements of

ISO 45001:2018

For the scope of

Testing, Certification and Validation of Automotive Vehicles, Sub Assemblies and Components.

Initial Certification Date	:	January 06, 2022
Certificate Issue Date	:	December 29, 2024
Surveillance Validity Date	:	January 05, 2026
Recertification Date	:	January 05, 2028

Registration Number: IC-OS-2501186

Page No 01 of 02

Issued on behalf of InterCert
Head - Certifications

The validity of this certificate can be verified at **www.intercert.com** or through email at **info@intercert.com**. This certificate is the property of **INTERCERT INC**, 2001 Timberloch Place - Suite 500, The Woodlands, Texas 77380, United States and must be returned on request.

ISO 45001 : 2018 ACCREDITATION

LABORATORY CERTIFICATIONS

INTERCERT®

CERTIFICATE OF REGISTRATION

INTERCERT hereby certifies that the Quality Management System of

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY

H.O. AND CENTRE 1: Plot No.26, Sector 3, HSIIDC, IMT Manesar, Gurugram - 122 050, Haryana, India

See Annexure for additional sites and additional site scopes

Has been successfully assessed as per the requirements of

ISO 9001:2015

For the scope of

Testing, Certification and Validation of Automotive Vehicles, Sub Assemblies and Components.

Initial Certification Date	:	January 06, 2022
Certificate Issue Date	:	December 29, 2024
Surveillance Validity Date	:	January 05, 2026
Recertification Date	:	January 05, 2028

Registration Number: IC-QM-2501184

Issued on behalf of InterCert
Head - Certifications

ISO 9001 : 2015 ACCREDITATION

RECOGNITION & AWARDS

LIST OF MoUs

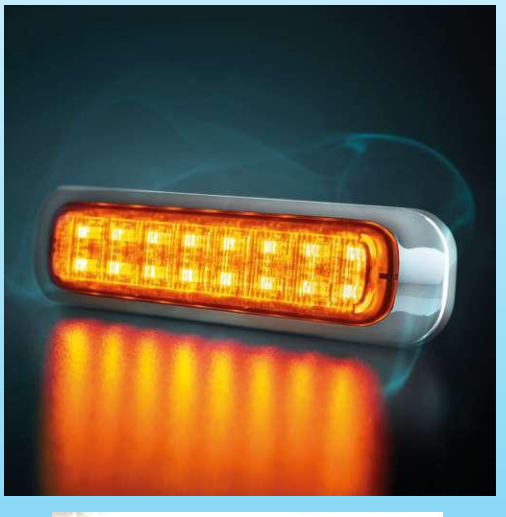
- IDIADA, Spain
- TUV Rhineland, Berlin, Germany
- UTAC, France
- CCIC, Barcelona, Spain
- TUV-SUD, China
- TUV Rhineland, China
- TUV-SUD, Czech Republic
- CATARC, China

COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
1	Lighting Devices (Head lamps and Front Fog Lamps)	AIS 010, AIS 012, AIS 062	ECER 112, ECER 113, ECER 98, ECER 19

COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
2	Signaling Devices (Stop lamps, DRLs, Direction Indicators, Rear Fog lamps, End outline marker lamps and Side marker Lamps)	AIS 010, AIS 012, AIS 062	ECER 6, ECER 7, ECER 38, ECER 87, ECER 91

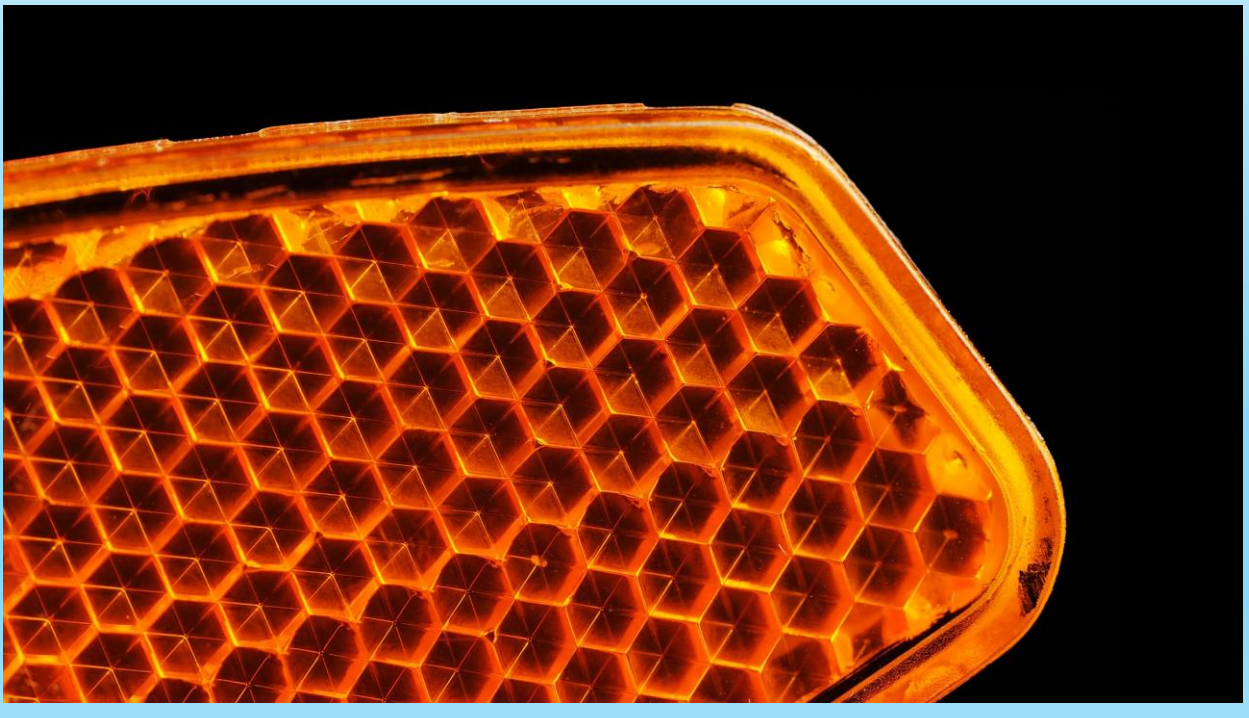


COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
3	Rear Registration Plate Lamp (RRPL)	AIS 010, AIS 012	ECER 4

COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
4	Retro reflecting Devices	AIS 057	ECER 3



COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
5	Retro reflecting tapes, Rear Marking plates & Retro reflective markings	AIS 088, AIS 089, AIS 090	ECER 69, ECER 70, ECER 104

COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
6	Advance Warning Triangle (AWT)	AIS 022	ECER 27

COMPONENT WISE TEST LIST

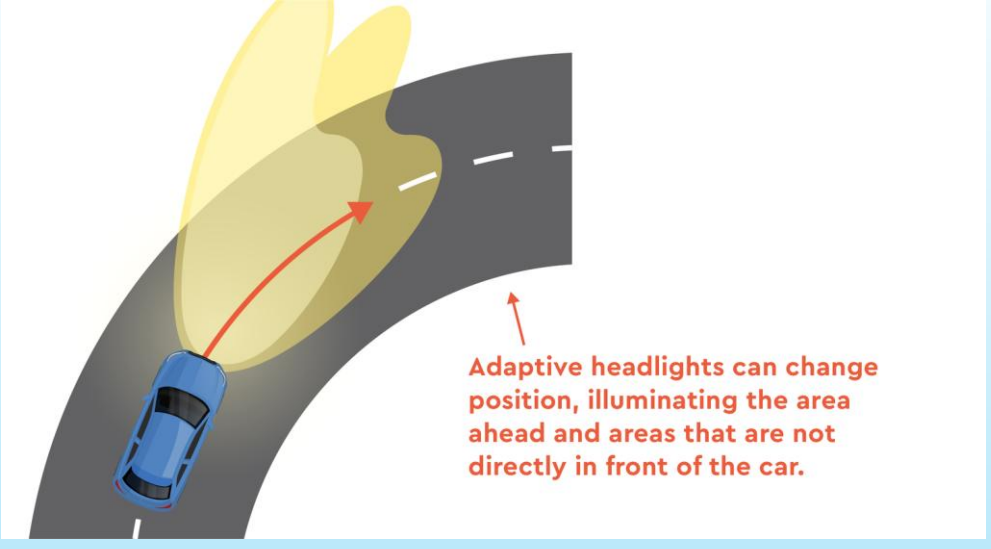
Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
7	Automotive Bulbs	AIS 034	ECER 37, ECER 99

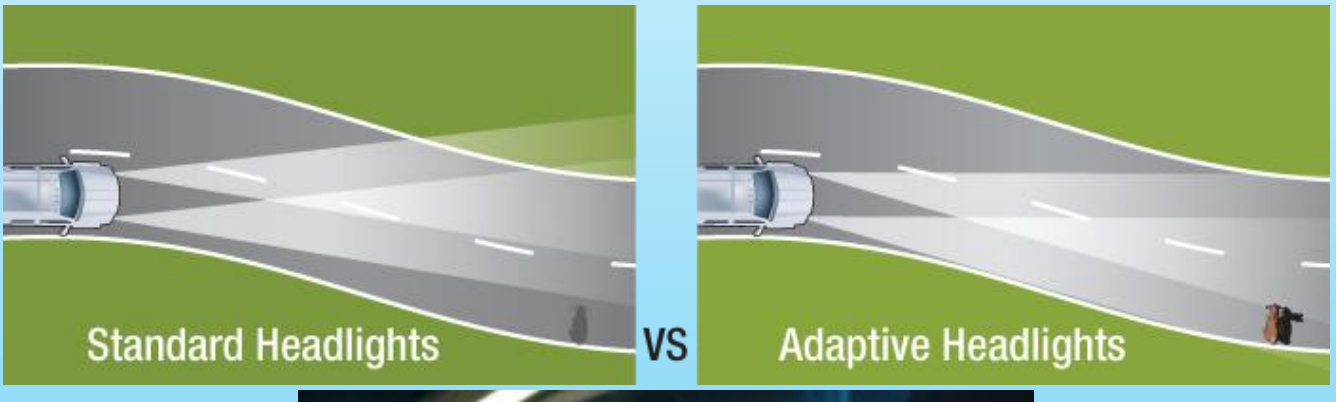
COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
8	Special Warning Lamps	AIS 125	ECER 65

COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
9	Adaptive Front Lighting System	AIS 127	ECER 123





COMPONENT WISE TEST LIST

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
10	Non-Replaceable LED Lamps	AIS 130	ECER 28

MANPOWER

NO. OF EMPLOYES : 10 Nos.

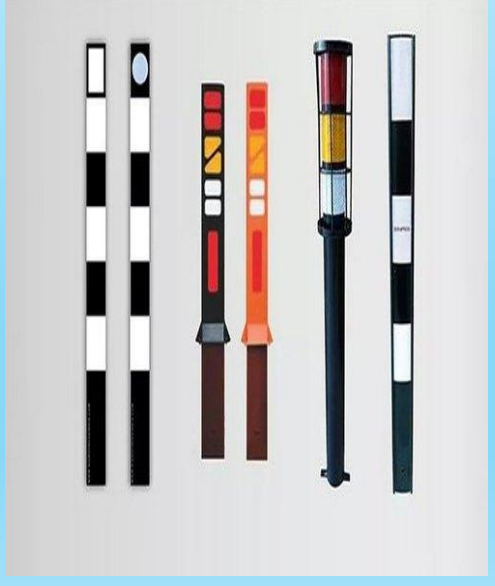
Sl. No.	DESIGNATION	TOTAL Nos.
1	ENGINEERS	04
2	ASSOCIATES & OPERATORS	06

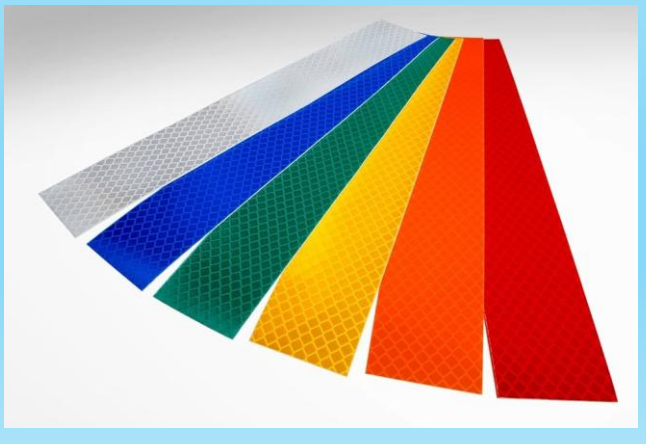
NON-AUTOMOTIVE LAMP TESTING

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
1	Non-Automotive Lamps (LED Bulb, Street Lamps, Self Ballasted Lamps, Flood lights, Recessed Luminaires & Downlighters)	IS 10322 (Part 5, Sec 1 to 7), IS 16102 (Part 2), IS 16103 (Part 2), IEC 62722-1, IS 16107 Sec-2 (Part 1) & IS 16106	LM 79-08

ROAD SAFETY DEVICES

Sl. No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
2	Road Safety Devices (RPM, Solar Studs, Delineators, Retroreflective Sheeting, Road Cones & FMMs)	IRC 67, IRC 79, MoRTH Sec 800	ASTM D 4280, ASTM D 4383, ASTM D 4956, IEC 60598, IEC 62262, IEC 62722





AIRFIELD LAMPS

Sl. No.	COMPONENT	INDIAN STANDARD	INTERNATIONAL STANDARDS
3	Airfield Lamps (Inset / Elevated – Taxiway/Runway Lamps, Obstruction Lamps & Signages)	IS 7785-1	ICAO Annex 14, ICAO Annex 13, FAA 150-5345-46E, Engineering Brief 67D, MIL Standards

MEDICAL LUMINAIRES

Sl. No.	COMPONENT	INDIAN STANDARD	INTERNATIONAL STANDARDS
4	Surgical Lamps (Surgical, UV etc.)	-	IEC 60601-2-41

TEST TIME & PREPERATION TIME

Sl. No.	CASE CATEGORY	DURATION
1	TYPE - I	8 DAYS
2	TYPE - II	20 DAYS
3	TYPE- III	30 DAYS

Sr. No.	Component	Applicable Standard			Test Name
		IS	AIS	ECE R	
1	Lighting Devices (Head lamps and Front Fog Lamps)	-	AIS 010, AIS 012, AIS 062	ECER 112, ECER 113, ECER 98, ECER 19	Photometry, Colorimetry, Stability, Mechanical Deterioration, Kuv Kred, Lumen Measurement
2	Signaling Devices (Stop lamps, DRLs, Direction Indicators, Rear Fog lamps, End outline marker lamps and Side marker Lamps)	-	AIS 010, AIS 012, AIS 062	ECER 6, ECER 7, ECER 38, ECER 87, ECER 91	Photometry, Colorimetry, CIL
3	Rear Registration Plate Lamp (RRPL)	-	AIS 010, AIS 012	ECER 4	Photometry, Colorimetry, Gradient, Dimension

TEST TIME & PREPERATION TIME

Sr. No.	Component	Applicable Standard			Test Name
		IS	AIS	ECE R	
4	Retro reflecting Devices	-	AIS 057	ECER 3	Photometry, Colorimetry, Dimension
5	Retro reflecting tapes, Rear Marking plates & Retro reflective markings	-	AIS 088, AIS 089, AIS 090	ECER 69, ECER 70, ECER 104	Photometry, Colorimetry, CIL, Dimension
6	Advance Warning Triangle (AWT)	-	AIS 022	ECER 27	Photometry, Colorimetry, Luminance Factor, CIL, Environmental Test
7	Automotive Bulbs	-	AIS 034	ECER 37, ECER 99	Luminous Flux, Filament Position & Dimensional test, Colorimetry (x,y colour coordinates), UV Radiation, Colour Endurance Test

TEST TIME & PREPERATION TIME

Sr. No.	Component	Applicable Standard			Test Name
		IS	AIS	ECE R	
8	Special Warning Lamps	-	AIS 125	ECER 65	Photometry, Colorimetry, Luminance Factor, CIL, Environmental Test
9	Adaptive Front Lighting System	-	AIS 127	ECER 123	Photometry, Colorimetry, Stability, Mechanical Deterioration, Kuv Kred, Lumen Measurement
10	Non-Replaceable LED Lamps	-	AIS 130	ECER 28	Photometry, Colorimetry, Lumen Measurement

TEST TIME & PREPERATION TIME

Sr. No.	Component	Applicable Standard			Test Name
		IS	ISO	OEM's Stanards	
11	Non-Automotive Lamps (LED Bulb, Street Lamps, Self Ballasted Lamps, Flood lights, Recessed Luminaires & Downlighters)	IS 10322 (Part 5, Sec 1 to 7), IS 16102 (Part 2), IS 16103 (Part 2), IEC 62722-1, IS 16107 Sec-2 (Part 1) & IS 16106	LM 79-08	-	Luminous Flux, Intensity Distribution and Colorimetry (x,y colour coordinates, CCT, CRI)
12	Road Safety Devices (RPM, Solar Studs, Delineators, Retroreflective Sheeting, Road Cones & FMMs)	IRC 67, IRC 79, MoRTH Sec 800	IEC 60598, IEC 62262, IEC 62722	ASTM D 4280, ASTM D 4383, ASTM D 4956	C.I.L / Coefficient of Retro Reflectivity, Dimension and Mechanical Tests
13	Airfield Lamps (Inset / Elevated – Taxiway/Runway Lamps, Obstruction Lamps & Signages)	IS 7785-1	-	ICAO Annex 14, ICAO Annex 13, FAA 150-5345-46E, Engineering Brief 67D, MIL Standards	Intensity Distribution and Colorimetry
14	Surgical Lamps (Surgical, UV etc.)	-	IEC 60601-2-41	-	Illuminance and Irradiance

OUR CUSTOMERS

OUR CUSTOMERS

BMW

TÜV SÜD

VOLVO

Honeywell

FORVIA HELLA

TOYOTA

EICHER

SGS

LEGENDS
A Name That Lights The Nation

Clarity & Reality
KK PRODUCT
Beyond Imagination

KRISTAL™

DELEGATES AT PHOTOMETRY LABORATORY

MARUTI SUZUKI GLOBAL HOMOLOGATION TEAM AT PHL

DELEGATES AT ISOL 2023 – PHL BIANNUAL EVENT

PROJECTS & PUBLICATIONS

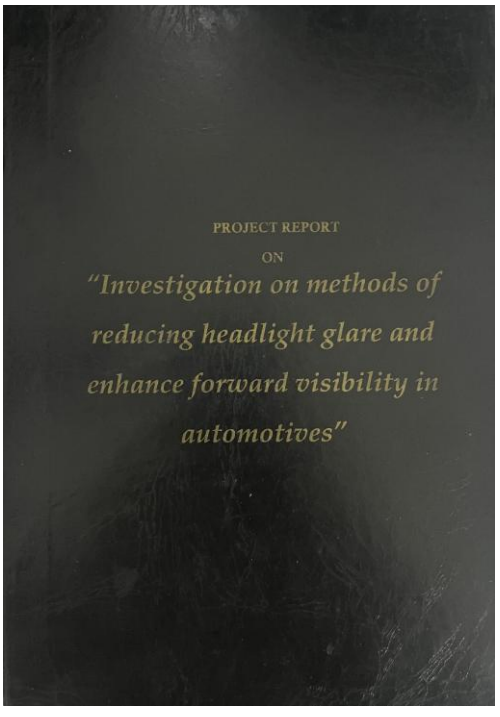
Project Title:

Investigation on methods of reducing headlight glare and enhance forward visibility in automobiles (DHI).

Project Lead: Dr. Madhusudan Joshi / Mr. Girish Singh
Project Cost: INR 4 Cr.
Project Funding: By Ministry of Heavy Industries, Govt. of India
Project Duration: 29 Months

Project Objective:

To explore the methods to reduce the intensity of the glare sources and alternate methods to reduce the amount of light entering the on-coming driver's eye. Special attention would be given to polarized head lighting system.



PROJECTS & PUBLICATIONS

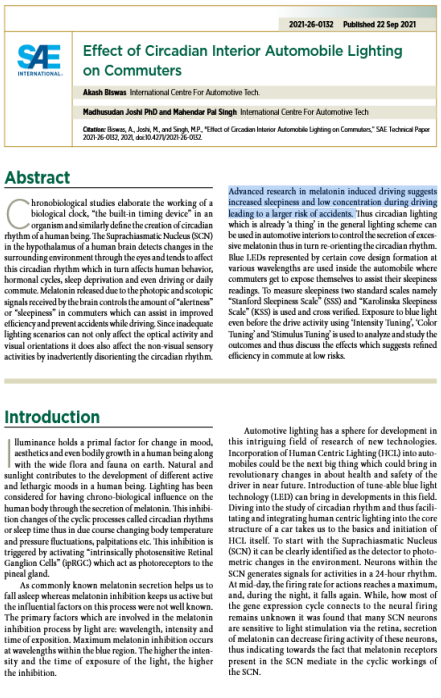
Technical Paper Publication Title:

Effect of Circadian Interior Automobile Lighting on Commuters (SAE).

Author: Mr. Akash Biswas
Co-Author: Dr. Madhusudan Joshi & Mr. Mahendar Pal
Paper No.: 2021-26-0132

Abstract:

Advanced research in melatonin induced driving suggests increased sleepiness and low concentration during driving leading to a larger risk of accidents. Thus, this research puts forward a study of the effects of abnormal circadian disorder during commuting and whether or how can it be improved with substantial lighting tweaks and exposé of the drivers to tune able blue light just before the drive.



2021-26-0132 Published 22 Sep 2021

Effect of Circadian Interior Automobile Lighting on Commuters

Akash Biswas International Centre For Automotive Tech.

Madhusudan Joshi PhD and Mahendar Pal Singh International Centre For Automotive Tech

Citation: Biswas, A., Joshi, M., and Singh, M.P., "Effect of Circadian Interior Automobile Lighting on Commuters," SAE Technical Paper 2021-26-0132, 2021, doi:10.4271/2021-26-0132.

Abstract

Chronobiological studies elaborate the working of a biological clock, "the built-in timing device" in an organism and similarly define the creation of circadian rhythm of a human being. The Suprachiasmatic Nucleus (SCN) in the hypothalamus of a human brain detects changes in the surrounding environment through the eyes and tends to affect this circadian rhythm which in turn affects human behavior, hormonal cycles, sleep deprivation and even driving or daily commute. Melatonin released due to the photopic and scotopic signals received by the brain controls the amount of "alertness" or "sleepiness" in commuters which can assist in improved efficiency and prevent accidents while driving. Since inadequate lighting scenarios can not only affect the optical activity and visual orientations it does also affect the non-visual sensory activities by inadvertently disorienting the circadian rhythm.

Advanced research in melatonin induced driving suggests increased sleepiness and low concentration during driving leading to a larger risk of accidents. Thus circadian lighting which is already 'a thing' in the general lighting scheme can be used in automotive interiors to control the secretion of excessive melatonin thus in turn re-orienting the circadian rhythm. Blue LEDs represented by certain cove design formation at various wavelengths are used inside the automobile where commuters get to expose themselves to assist their sleepiness readings. To measure sleepiness two standard scales namely "Stanford Sleepiness Scale" (SSS) and "Karolinska Sleepiness Scale" (KSS) is used and cross verified. Exposure to blue light even before the drive activity using 'Intensity Tuning', 'Color Tuning' and 'Stimulus Tuning' is used to analyze and study the outcomes and thus discuss the effects which suggests refined efficiency in commute at low risks.

Introduction

Illuminance holds a primal factor for change in mood, aesthetics and even bodily growth in a human being along with the wide flora and fauna on earth. Natural and sunlight contributes to the development of different active and lethargic moods in a human being. Lighting has been considered for having chrono-biological influence on the human body through the secretion of melatonin. This inhibition changes of the cyclic processes called circadian rhythms or sleep time thus in due course changing body temperature and pressure fluctuations, palpitations etc. This inhibition is triggered by activating "intrinsically photosensitive Retinal Ganglion Cells" (ipRGC) which act as photoreceptors to the pineal gland.

As commonly known melatonin secretion helps us to fall asleep whereas melatonin inhibition keeps us active but the influential factors on this process were not well known. The primary factors which are involved in the melatonin inhibition process by light are: wavelength, intensity and time of exposition. Maximum melatonin inhibition occurs at wavelengths within the blue region. The higher the intensity and the time of exposure of the light, the higher the inhibition.

Automotive lighting has a sphere for development in this intriguing field of research of new technologies. Incorporation of Human Centric Lighting (HCL) into automobiles could be the next big thing which could bring in revolutionary changes in about health and safety of the driver in near future. Introduction of tune-able blue light technology (LED) can bring in developments in this field. Diving into the study of circadian rhythm and thus facilitating and integrating human centric lighting into the core structure of a car takes us to the basics and initiation of HCL itself. To start with the Suprachiasmatic Nucleus (SCN) it can be clearly identified as the detector to photometric changes in the environment. Neurons within the SCN generates signals for activities in a 24-hour rhythm. At mid-day, the firing rate for actions reaches a maximum, and, during the night, it falls again. While, how most of the gene expression cycle connects to the neural firing remains unknown it was found that many SCN neurons are sensitive to light stimulation via the retina, secretion of melatonin can decrease firing activity of these neurons, thus indicating towards the fact that melatonin receptors present in the SCN mediate in the cyclic workings of the SCN.

UNIQUE PROJECTS DELIVERED

- **Test Conducted:** To carry out White Light Optical Transmittance Test as per customer specification for Defence Vehicle Telescope on special request of the customer as a part of development exercise.

- **Test Conducted:** To carry out test for the presence of UV wavelength range at 3 different distances (30cm, 40cm & 50 cm) of a Surgical UV Device as a part of developmental exercise on specific request of the customer.

Innovation • Service • Excellence

PHOTOMETRY LABORATORY

NABL ACCREDITED

SHAPING THE FUTURE THROUGH LIGHT