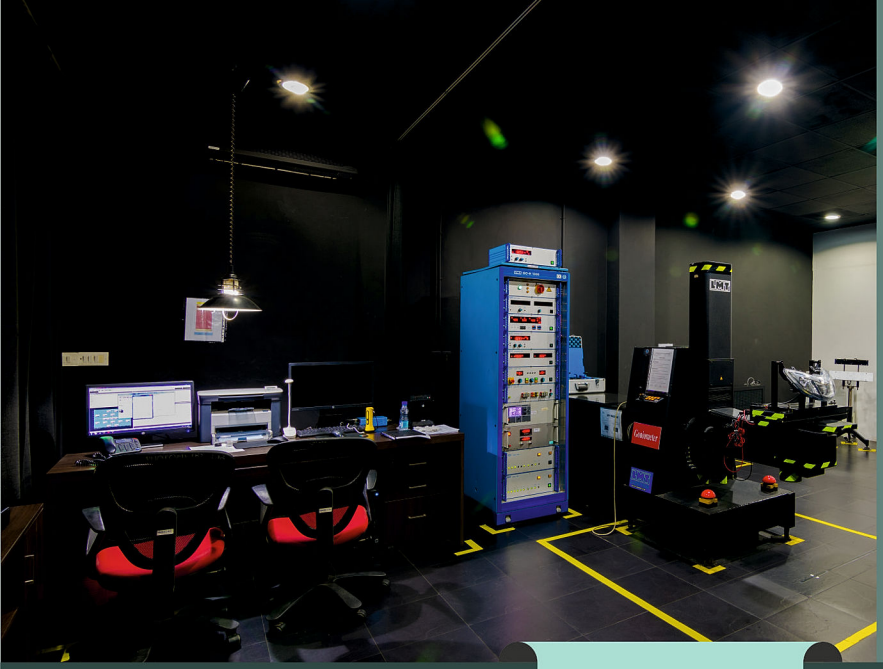
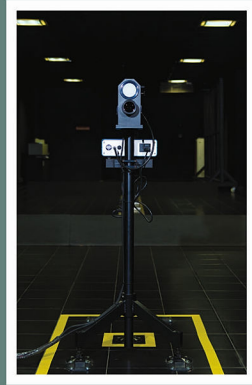
Innovation • Service • Excellence

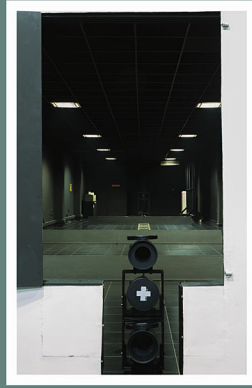
PHOTOMETRY LAB

INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY



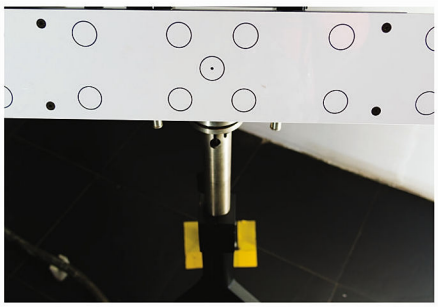
ICAT, has a state-of-the-art facility to develop, test and certify lamps, lighting, signaling & reflex systems. ICAT photometry lab is among the best maintained and managed automotive lighting testing labs in the country and hold NABL certification (Certificate No. T-1944), we have also recently added LED Based Lighting test facility. We have been providing services for testing and certification to the lighting industry since our inception in 2006. We have also been trying to develop cutting edge technologies at ICAT such as demonstration project for adaptive lighting system and system development for anti-glare using polarizer technology.

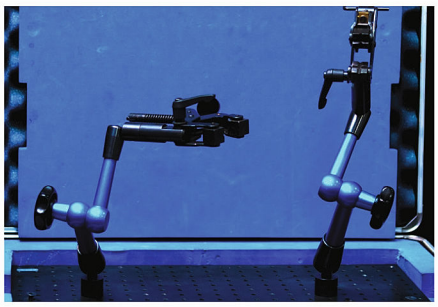


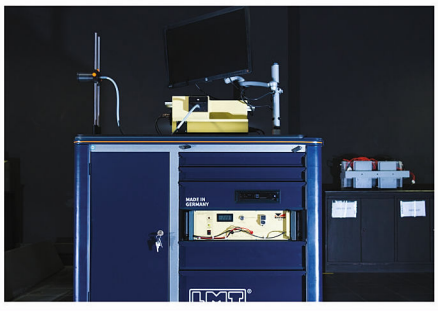


CAPABILITIES

- Measurement of spatial intensity distribution of the lamps, which include lighting and light signaling devices (like headlamps, fog lamps, stop lamps, direction indicators, reversing lamps etc.)
- Retro-reflection measurement of reflex reflectors, tapes, markings etc.
- Measurement of luminous flux and luminous efficiency of bulbs (incandescent, metal halide, HID, LED etc.)
- Lighting installation- and headlamp leveling device test.
- Luminance measurements of rear registration plate lamps, surfaces (roads, screens, etc.)
- High Security Registration Plate (HSRP) testing
- Measurement of lifetime of the bulbs and lamps
- Dimensional measurement of bulbs
- Measurements of glare characteristics of lamps
- Measurement of reflectivity and transmittance of different materials
- Tests on lamp under controlled conditions (voltage, temperature, humidity)
- Colorimetric measurements on lamps, lamp covers and various industrial products (plastics, textiles, etc.)
- LED measurement
- UV & IR measurement







SPECIFICATIONS OF EQUIPMENTS

S.No.	TEST FACILITY	BRIEF TECHNICAL SPECIFICATIONS	REFERENCE STANDARDS	ANY SPECIFIC CAPABILITY
1	TYPE A GONIO PHOTOMETER FOR LIGHTING & SIGNALLING DEVICES (M/s. LMT, Germany)	5 degrees of freedom – two rotations and 3 translations along With photo-sensors measuring (lux) and (candela) values for various Lighting and signaling devices.	AIS : (10, 12 & 62) and ECER : (6, 7, 19, 23, 38, 98, 112 & 113, 123)	(10 -4 to 8x10 4)lux
2	RETRO REFLECTION MEASUREMENT UNIT (M/s. LMT, Germany)	Combined with the Gonio Photometer to measure values in mill candela per unit lux.	AIS : (22, 57, 88, 89 & 90) and ECER : (3, 69, 104)	(0.1 to 199900) mcd/lux
3	TWO : TRISTIMULUS COLORMETER SET UP FOR RETRO REFLECTORS & LIGHTING & SIGNALLING DEVICES (M/s. LMT, Germany)	Combined with Goniometer to measure Chromaticity Coordinates & CCT	AIS : (10, 12, 22, 57, 62, 88, 89, & 90) and ECER : (3, 6, 7, 19, 23, 38, 69, 98, 104, 112 & 113)	0-1
4	INTEGRATING SPHERE (1m dia) for LIGHT SOURCES (M/s. LUMETRONICS)	Spectral luminous flux measurement (lumen)	AIS : 034 and ECER : (037 & 99)	(10 -3 to 5x10 5) Lumen (Incandescent, Halogen, High Intensity Discharge)
5	PROFILE PROJECTOR	Dimension measurement of the Automotive Light Sources	AIS : 034 and ECER : (037 & 99)	10 X magnification
6	ULTRAVIOLET & COLOR LUMINANCE FACTOR MEASUREMENT SYSTEM	UV output and Color measurement.	AIS: (10, 12, 22, 34 & 88) and ECER: (27, 37 & 99)	Spectral range of (200-1100)HM
7	LUMINANCE METER (M/s. LMT, Germany)	Combined with Goniometer and RRPL set up to do Luminance measurement in candela per meter	AIS: (10 & 12) and ECER 4	(0.0001 to 2x107) cd/m2
8	TRANSMISSION & DIFFUSION MEASUREMENT SET UP	Plastics lens material testing to measure the change in transmission & diffusion after weather-o-meter, chemical reagent and mechanical deterioration.	AIS: (10 & 12) and ECER : (98, 112 & 113, 123	For a (60mm x 80mm) sample size
9	INTEGRATING SPHERE (0.5m dia) for SINGLE LED's (M/s. Labsphere, USA)	To measure Luminous flux, Color measurement, CRI, Dominant wavelength, Spectral Power Distribution & Luminous Intensity Capable for 2 & 4 configuration Capable for 2 & 4 configuration	Clause 6 as per IS 16105:2012, Clause 11,12,13 & 14 as per IS 16106:2012	(10-3 to 5 x105) lumen (380 to 1050) Hm (10-2 to 1.5x105)cd
10	INTEGRATING SPHERE (2m dia) for LED CLUSTERS & LUMINARIES (M/s. Labsphere, USA)	To measure Luminous flux, Color measurement, CRI, Dominant wavelength, Spectral Power Distribution & Luminous Intensity Capable for 2 & 4 configuration	Clause 6 as per IS 16105:2012, Clause 11,12,13 & 14 as per IS 16106:2012 and CIE 127:1997	(10-3 to 5 x105) lumen (380 to 1050) Hm (10-2 to 1.5x105)cd
11	Warning Light Flash Measurement System (M/s. LMT, Germany)	To measure the luminous intensity of Special warning lights such as Ambulance Light, Emergency Siren Light etc.	ECE R65 AIS 125	-
12	SPECTRORADIOMETER (M/s. Labsphere, USA)	For (350 – 1050)Hm	-	Spectral resolution of 1.5 m
13	Wi41G M/s. Osram	Standard Illuminant A	-	271.7 cd CCT: 2856K
14	Ln3 (M/s. LMT, Germany)	Standard Illuminant A	-	1197 cd/m2 CCT: 2856K
15	GLOSS MEASUREMENT	Gloss measurement for Glossary surfaces	ASTM D 2457 08E1 (2013), ASTM E 430-11 (1997), ASTM D523-08 (1999), NIST Pub. SP 250-70, JIS 8741, ISO2813 (1994)	At 20°, 45° & 60°
16	SURFACE COLOR ASUREMENT SET UP	To measure surface color of tiles	-	0-1
17	MECHANICAL DETORIATION SET UP	To check the change in luminous intensity of Lighting devices	AIS: (10 & 12) and ECER : (98, 112 & 113, 123	-
18	COLOR ENDURANCE FOR SIGNALLING SOURCES	To check the change in color coordinate after 240 hrs of cyclic operation	AIS : 034 and ECER : (037 & 99)	0-1
19	ENDURANCE TEST SET UP FOR LIGHT SOURCES	Life test of Automotive Lamps	AIS : 034 and ECER : (037 & 99)	-
20	ENDURANCE TEST SET UP FOR HIGH UV DISCHARGE LAMPS	Calculate the kred content of High UV discharge lamps after life test	AIS: (10, 12 & 34) and ECER : (37, 98, 112 & 113, 123	-
21	STABILITY TEST RIG FOR LIGHTING DEVICES	To check the photometric compliance of Lighting devices after stability test of 12 hours	AIS: (10 & 12) and ECER : (98, 112 & 113, 123	-
22	STANDARD LAMPS & KELVIN HOLDER (M/s. Philips & M/s. Osram)	For use while performing standard testing for all Lighting, Signaling & Light source measurement testing	-	More than 70 Standard Lamps
23	Climatic Chamber (M/s. Weiss Technique, Germany)	For endurance testing of Automotive Lamps & For Resistance to Temperature Change	AIS: (10, 12 & 34) and ECER : (37, 98, 112 & 113, 123	-40°C to +180°C and (0 to 100%) RH

STANDARDS / REGULATIONS COVERED

S.No.	COMPONENT	INDIAN STANDARD	EUROPEAN REGULATION
1	Lighting devices (Headlamps & front fog lamps)	AIS: 010, 012,062	ECE R 112, 113, 98, 19
2	Signaling devices (stop light, DRL, direction indicator, rear fog lamps, end outline marker lamp, side marker lamps etc.)	AIS:010, 012, 062	ECE R 6,7, 38, 87, 91
3	Rear registration plate lamp	AIS: 010, 012	ECE R 4
4	Retro reflecting devices	AIS:057	ECE R 3
5	Retro reflective tapes, rear marking plates, retro reflective markings	AIS:088,089, 090	ECE R 69, 70, 104
6	Advance warning triangle	AIS:022	ECE R 27
7	Automotive bulbs	AIS:034	ECE R 37, 99
8	Special warning Lamps	AIS:125	ECE R 65
9	Adaptive Front Lighting System	AIS:127	ECE R 123
10	Non-replaceable LED lamps	AIS:130	ECE R 28

SPECIFIC CAPABILITIES

Photometry lab at ICAT is capable of doing core projects on optical sciences. The lab has already worked extensively on projects related to visibility, glare, and system development (like polarized headlighting system, adaptive front lighting system, dynamic headlighting system etc.) . In addition to this lab is capable of performing product development, detailed performance analysis of the lighting components, design & product validation as per engineering standards.

KEY PROJECTS

- Adaptive front lighting system (AFS)
- Dynamic head lighting system
- Headlamp leveling measurement system
- Polarized head lighting system

ISOL / EVENTS DETAILS

The International Centre for Automotive Technology (ICAT) organizes International Symposium on lighting (iSoL). This biennial event is one of the biggest automotive lighting symposium in Asia pacific region. The two days Symposium provides a common platform to professionals related directly or indirectly to the automotive lighting fraternity from all around the globe. The participants include experts from automotive industry, automotive lighting industry, rule makers, test houses, research centres, educational institutes & associations etc. In this event, the professionals share their experiences and learn about the trends & innovation in automotive lighting technology. The symposium also consists an exhibition, where different automotive companies showcase their products and services.

COMPLIANCE

ISO 17025/ NABL

BENCHMARKING CORRELATION INFORMATION

Benchmarking and correlation is done with ARAI and other associated laboratories.

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