

SAE / DOT Photometric Test Report

Test Name SAE J581 (Auxilliary Upper Beam)

Test Date:	10.01.2025	Tested By:	Georgia
LAMP TESTED	AIR	Test Result:	PASS
<i>Special Aiming Requirement:</i>		<i>To comply with the regulation limits, and when installed on a vehicle, the lamp should be aimed so that the point of peak intensity is aimed at 1 degree above the horizon. (Or when using a digital protractor, the front lens angle should be at 1 degree pointing up, from the vertical plane. This is to ensure compliance with points HV0 & 4D on DOT FMVSS108.</i>	

Aims/Goals of Test:

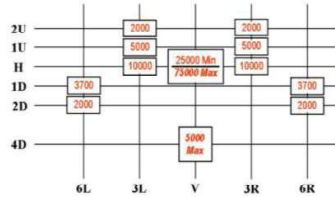
Primary To verify that the tested lamps comply with the optical requirements of SAE J581 and DOT FMVSS108 (Upper Beam Headlamp).

Secondary To confirm if there is any special aiming which is required in order to meet the photometric requirements of J581.

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6.1.6 Photometry

The lamp under test shall meet the photometric requirements contained in Figure 2.



1. Values shown are minimum of requirements except at H-V and 4D-V locations where the maximum values are shown in **italics** and **bold**.
2. A tolerance of $\pm 1^\circ$ degree in location may be allowed at any test point.

RESULTS

Detailed results are shown on page 2 and beyond. Only page 1 is uploaded to our website, in order to protect our Intellectual Property interests.

Locations HV0 & 4D/V is too bright when mounted horizontally. Lamped is needing a 1° incline mounting orientation to meet SAE regulation.



REPORT No. PC24110388

THIS REPORT CONTAINS THE TEST RESULTS OF THE BELOW INTEGRAL BEAM HEADLAMP, TO
DEMONSTRATE COMPLIANCE WITH THE APPLICABLE REQUIREMENTS OF FMVSS108 AND
CMVSS108

Test component : AIR-90 US

Manufacturer : Lazer Lamps Ltd
Carder House
Central Road,
Harlow
CM20 2ST

Sample identification: : HTC-2411/01035

Test Laboratory : IDIADA,
L'Albornar - Santa Oliva (Tarragona) Spain

Report date : 09/01/2025

Applus **IDIADA** Group is officially accredited by **AMECA**
(Automotive Manufacturers Equipment Compliance Agency, Inc)

Validate this report with the security code «XMV4JWFH» at: <https://homportal.idiada.com/#/document-verification>

Performed by:

Revised by:



Joan Fonts Sala
TEST ENGINEER



Ramon Santafè Guiu
DEPARTMENT MANAGER

* THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE
* THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN



SUMMARY

TEST (FMVSS-108 (571.108, Nt.) / CMVSS108 Rev. 6)
Integral Beam Headlamp

Color Test	PASSED
- White	
Physical Tests	
- Vibration Test	PASSED
- Dust Test	PASSED
- Moisture Test	PASSED
- Corrosion Test	PASSED
- Warpage Test	PASSED

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COLOR TEST

Test performed by: Joan Fonts

Test method: Tristimulus method

~~Bulb operated at rated mean spherical candlepower~~ / Device measured at design voltage

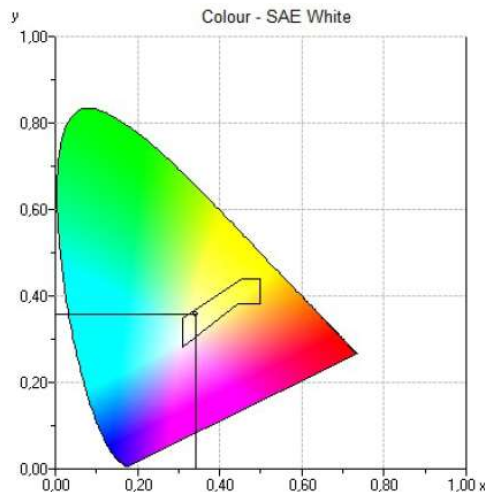
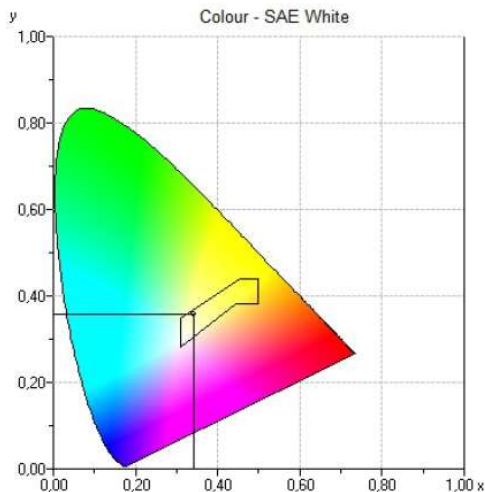
WHITE ZONE:

The color of light emitted must fall within the following boundaries:

- limit towards the blue: $x = 0.31$
- limit towards the yellow: $x = 0.50$
- limit towards the green: $y = 0.15 + 0.64x$
- limit towards the green: $y = 0.44$
- limit towards the purple: $y = 0.05 + 0.75x$
- limit towards the red: $y = 0.38$

richromatic co-ordinates	Sample LM	Sample RM
x	0.352	0.352
y	0.364	0.364
z	0.284	0.284

The sample device has uniform spectral characteristics in all useful directions.



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PHYSICAL TESTS

Test performed by: Joan Fonts

VIBRATION TEST

The device completed the vibration test without evidence of loose or broken parts, other than filaments, visible without magnification.

CORRECT



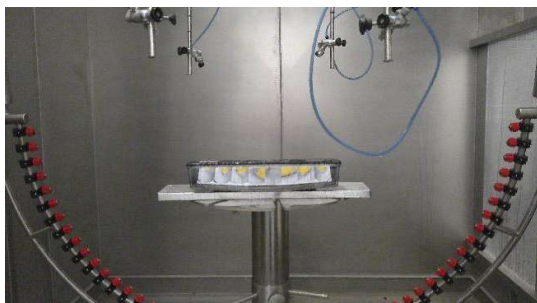
DUST TEST



MOISTURE TEST

At the completion of test, the accumulation of moisture inside the device is less than 2cc and there is no visible moisture in the unit.

CORRECT



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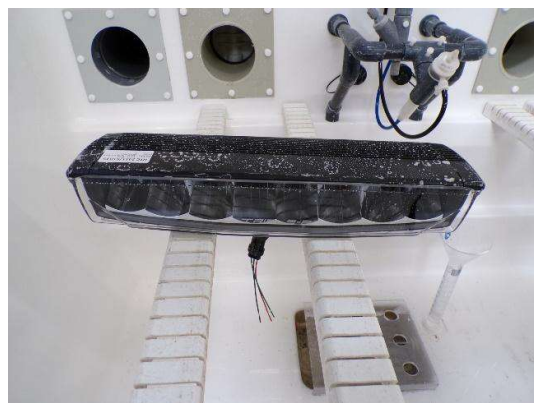
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CORROSION TEST

At completion of test, there is no evidence of corrosion which would affect the proper function of the device or it would result in the failure of any other applicable tests.	CORRECT
Necessary to rephotometer test. (Signal devices)	NOT APPLICABLE
Additional photometric data added to report. (Signal devices)	NOT APPLICABLE



WARPAGE TEST

If warpage is observed, it does not affect the compliance of other tests.	CORRECT
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Test place: L'Albornar, E-43710 Santa Oliva (Tarragona)
Test date: November 2024 – January 2025

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TECHNICAL DOCUMENTATION

Calder House, Central Road
Harlow, Essex, CM20 2ST
T: +44 (0)1992 377674

DATE: 03/12/2024
DOCUMENT VERSION 1
TRADE NAME: TRIPLE-R LIGHTS LLC
DEVICE NAME: AIR
DEVICE PART NUMBER: 0A90-US-B
TYPE: AIR-90 US

REVISION TABLE

Revision #	Description	Date	Approved
1	Initial Release	03/12/2024	BRS

Manufacturers Office Address:

Lazer Lamps Ltd
Calder House, Central Road
Harlow, Essex
CM20 2ST

Manufacture Address:

Lazer Lamps Ltd
Calder House, Central Road
Harlow, Essex
CM20 2ST

Intended lens marking:

"SAE Y 24 DOT"

Overview

The "AIR 90" is tested to SAE J581 as an auxiliary HIGH BEAM LAMP and is compliant with DOT FMVSS108 requirements. This document is intended to provide a detailed explanation for the device.

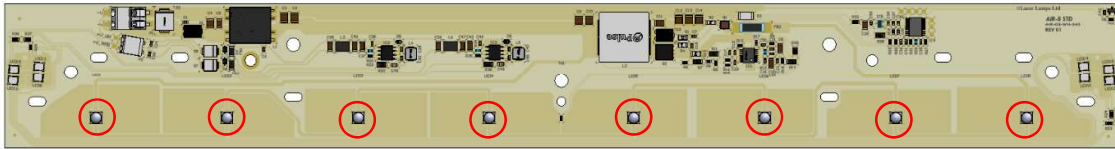
Device Technical Description

The Driving Light function is designed for both LH and RH traffic. The lamp is designed for fitment on the left or right-hand side of the vehicle. The headlamp does not contain an adjustable reflector. Alignment of the headlamp is controlled by an adjustable mount to the vehicle. The light source is LED. There are a total of eight LEDs to create the High Beam Light function. The device is compatible with both 12V and 24V systems.

Lens Material

Makrolon Polycarbonate, hardcoat is Momentive PHC587C2 (ref Idiada test report PC21070415)

LED Module



8 pcs XP-G4 (XPGEW01CLAZ0BR3G), drive current = 2.83 Amps

LED Driver

The lamp utilizes a specialized Single Channel LED Driver. This driver maintains precise current regulation, allowing for stable operation and longevity of the LEDs. When running in SAE/DOT mode, the LED driver is maintaining the LED power at 25%.

Operating Voltage

The device is compatible with both 12V and 24V electrical systems.

Thermal Management

There is a microchip on the LED module which analyses the temperature reading of a thermistor on the board. If the temperature on the board hits the trigger temperature, the microcontroller uses Pulse Width Modulation to reduce the drive current of the Reg 149 LEDs. The reduction in drive current isn't visible to the driver of the vehicle, as we reduce 3% for every 1C above the trigger temperature until equalisation has occurred. This safety mechanism may engage when the lamp has been switched on for around 30 minutes, and the ambient temperature around the lamp is 25C without air flow.

Other Functions

The customer has the chance to switch from the approved High Beam Light function to a function with higher luminous flux, when they are using the lamp in a State (or country) where DOT FMVSS108 photometric limits aren't required, or where they are driving off-highway.

To convert the approved high beam to have a higher light output, the customer can flash their high beam in a specific flash pattern, with specific flash time periods. This changes the duty cycle from 25% to 100%, thereby increasing the light output accordingly.

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It is made clear to the purchaser of the product that it is their responsibility to comply with the highway regulations, and the higher output mode must not be active during highway use in a State where DOT photometric limits apply.



SIGNED: Ben Russell-Smith
Director – Lazer Lamps Ltd

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