Auxbeam LED H11
Replaceable Headlamp Light Source

CALCOAST – ITL
Lighting Technology
683 Thornton Street
San Leandro, CA 94577

07 August 2020

FINAL REPORT 108-CAN-20-006

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington, D.C. 20590

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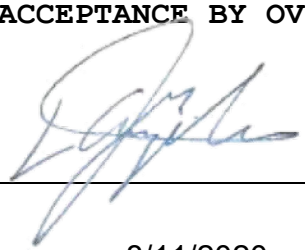
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Approved By: 

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15. Supplementary Notes

16. Abstract

Compliance tests were conducted on the subject replaceable headlamp light source.

The scope of this testing was limited to certain dimensional, markings, and electrical/photometric performance tests as indicated.

Test failures identified were as follows:
S11 Replaceable light source requirements - Dimensions
S11.1 Markings
S11.4.2 Electrical Characteristics/Luminous Flux

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Report Number: 191106-06P

TEST REPORT

Report Date: 07 August 2020

Project Name: Auxbeam LED H11
Replaceable Headlamp Light Source

Submitted by: Purchased by CCITL for NHTSA
from Amazon.com

Test Laboratory: Calcoast – ITL
San Leandro, CA 94577

Samples Submitted: Sixteen (16) LED H11 sources
in eight (8) 2 bulb boxes
received 06 November 2019

SUMMARY

Specification: FMVSS 108 / Part 564
Reference: Docket NHTSA-1998-3397-34

S11 Dimensions	**FAILED**
S11.1 Markings	**FAILED**
S11.4.2 Electrical Characteristics / Luminous Flux	**FAILED**
Color	Not Specified
S11.4.1 Seal	Not Tested
S11.4.1 Deflection	Not Tested

Written by:

Douglas G. Cummins
Photometric Engineer

Approved by:

Mark A. Evans
Laboratory Director

Results apply only to the submitted, tested samples. This document may not be modified or reproduced except in its entirety without the expressed consent of Calcoast - ITL.

TEST DATA SHEET

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

DESCRIPTION:

Samples are LED sources that can be installed in lamps designed for standard halogen H11 replaceable light sources. Each sample has an array of LEDs, instead of a filament, mounted vertically about the RLS' reference axis.

Because the design and performance of the submitted bulbs varies significantly from the specified standard in Docket NHTSA-1998-3397-34, not all submitted bulbs were tested.

One sample was selected for dimensional and markings criteria evaluation. All submitted samples equivalent for these characteristics.

One sample from 3 out of 8 submitted boxes were selected for Electrical/Luminous Flux/Color measurements (3 total).

Sample's ID dependent on which box it originated from. Samples 01 and 02 originated from Box 1, samples 03 and 04 originated from Box 2, etc.

DIMENSIONS:

Filament

Reference: Docket 3397-34 Sheets H11-1, H11-2
Instruments: Starrett HB-400 Optical Comparator

Sample number: 02

Maximum lamp outline Dimensions

Dimension	Measured	Required
Overall Length:	42.6 mm	44.0 mm maximum
Bulb End Diameter:	14.0 mm	15.0 mm maximum

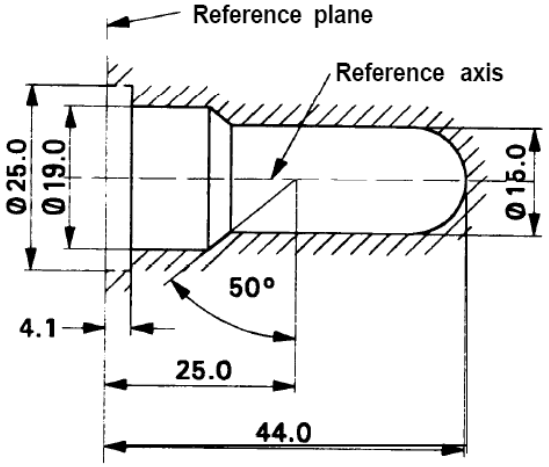


Figure 2: Maximum lamp outline 3/

Docket NHTSA-1998-3397-34 specifies the filament location for a H11 replaceable light source.

The sample did not have a filament and therefore does **NOT** meet filament dimension requirements.

See Appendix A for supplemental information.

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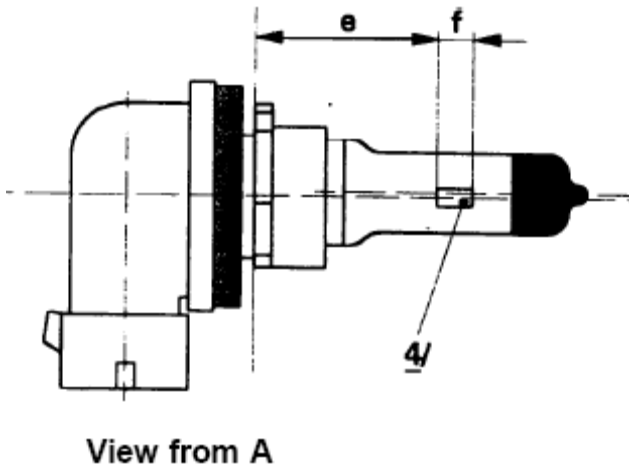
TEST DATA SHEET

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

H11 PGJ19-2 base
Reference: Docket 3397-34 Sheets H11-3, H11-4
Instruments: none

Samples have a significantly different base from what is specified in NHTSA-1998-3397-34. Base is separated into multiple parts and use LEDs as light source which is neither a resistive filament source nor a discharge source as described in FMVSS 108 S14.7.3.

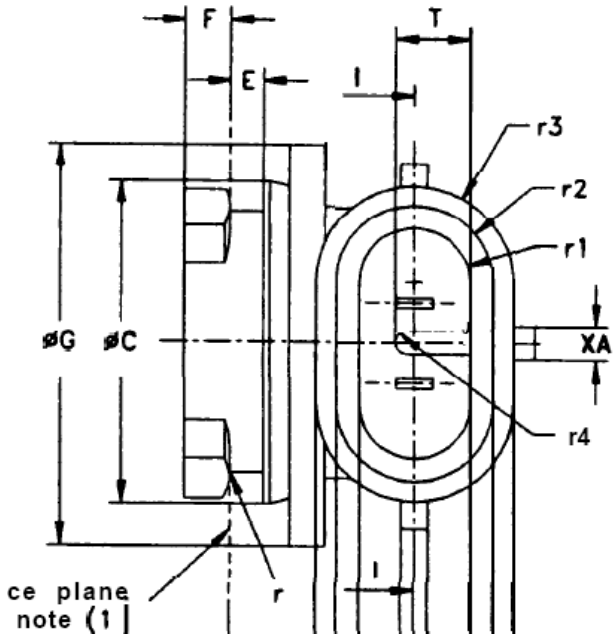
Sample can **NOT** be mounted into a typical H11 holder - sealing gasket is too thick and does not compress enough to allow bulb to be securely installed into bulb holder. A typical H11 plug can connect and provide power to sample if connector polarity is observed. Sample base is not indexed as specified on Sheet H11-3 (Dimension XA), so plug can be rotated 180° and reinserted if sample does not energize when voltage is applied.



NHTSA-1998-3397-34 Sheet H11-1



Photo of samples



NHTSA-1998-3397-34 Sheet H11-3


Photo of sample

TEST DATA SHEET

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source



Sealing gasket on (top) and off (bottom)

Samples do **NOT** meet the dimension requirements of the PGJ19-2 base.

MARKINGS

On bulb base: none
Tag on bulb power cord: "H11", "QC PASS Tear Invalid"

No manufacturer codes observed.

Sample is marked with the H type.

Sample does **NOT** have the manufacturer name/logo or the symbol "DOT" as required by FMVSS 108 S11.1 *Markings.*

Samples do **NOT** meet Markings requirements.

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TEST DATA SHEET

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

ELECTRICAL CHARACTERISTICS / LUMINOUS FLUX

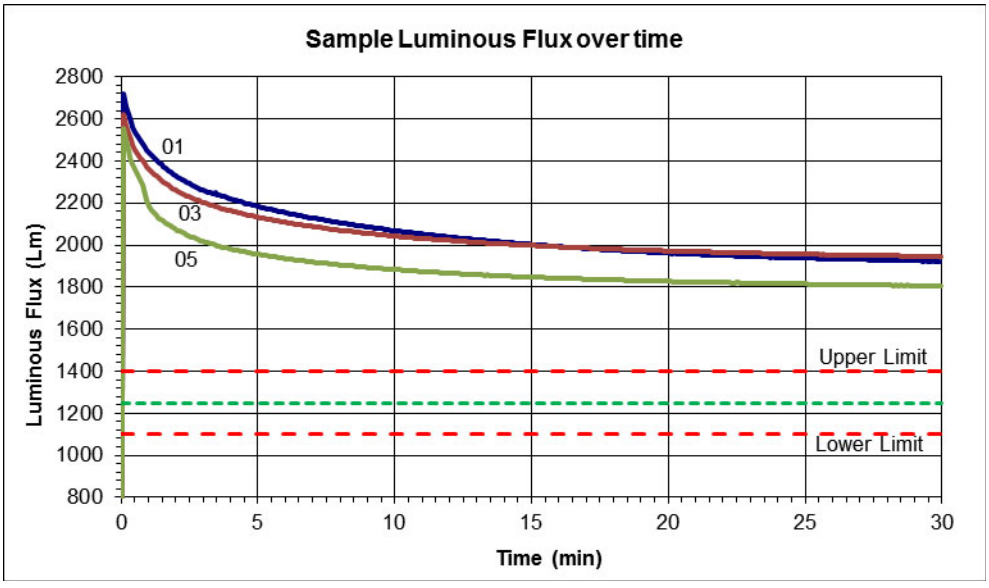
Test Method: IESNA LM-45, CIE 84, ASTM E308
Test Voltage: 12.80 ± 0.01V measured at the bulb terminals
Equipment: CCITL 0.85 meter diameter integrating sphere
IL1400A with SEL033/Y/W detector (luminous flux)
Ocean Optics USB2000 spectroradiometer with L2/CC-3 lens
H11 shroud #2 (270 cm³ interior volume, 3.8% absorption)

Sample luminous flux measured every 5 seconds for 30 minutes to determine stability. Current measured at t = 5 seconds, 1 minute, 2 minutes, and at 30 minutes. Samples installed in holder with sealing gasket removed.

#	Time	Current (A)	Power (W)	Flux (Lumens)	Color (x, y)
	-	-	Maximum 60	1250 ± 150 (1100 - 1400)	See Appendix A
01	5 s	2.265	29.0	2722*	(0.310, 0.318)
	1 m	2.233	28.6	2450*	(0.306, 0.313)
	2 m	2.218	28.4	2331*	(0.304, 0.311)
	30 m	2.100	26.9	1923*	(0.296, 0.303)
03	5 s	2.275	29.1	2621*	(0.305, 0.311)
	1 m	2.135	27.3	2372*	(0.302, 0.308)
	2 m	2.095	26.8	2264*	(0.300, 0.306)
	30 m	1.989	25.5	1945*	(0.295, 0.300)
05	5 s	2.264	29.0	2553*	(0.302, 0.305)
	1 m	2.079	26.6	2212*	(0.296, 0.300)
	2 m	2.048	26.2	2077*	(0.295, 0.298)
	30 m	1.956	25.0	1806*	(0.289, 0.292)

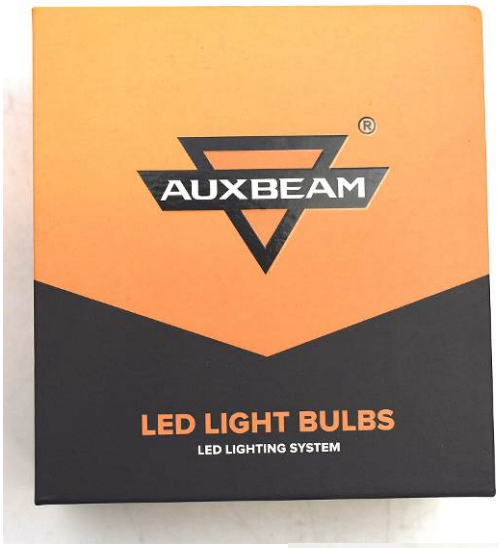
*** - denotes failure.**

Sample 01 Luminous flux exceeded maximum 1400 Lm throughout test.
Sample 03 Luminous flux exceeded maximum 1400 Lm throughout test.
Sample 05 Luminous flux exceeded maximum 1400 Lm throughout test.



PHOTOGRAPH SHEET

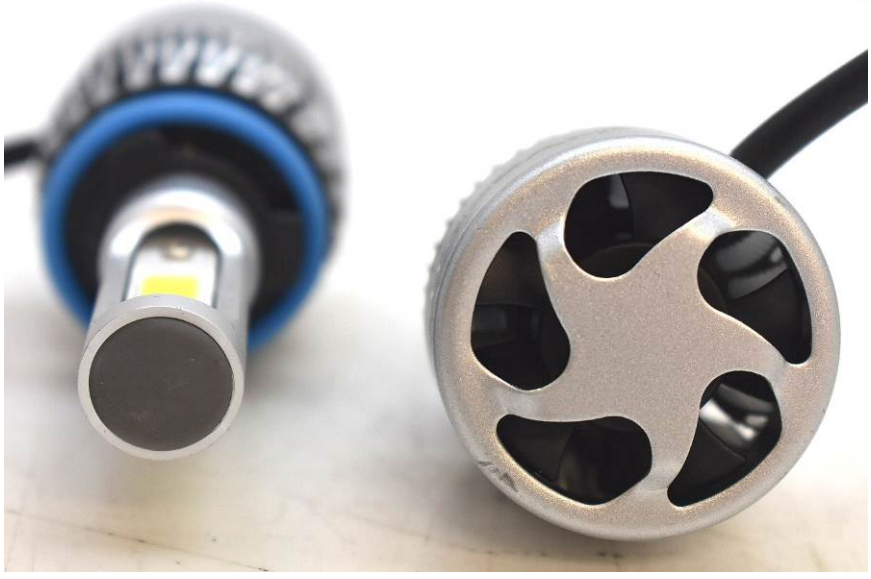
Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source











EQUIPMENT LIST

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

PHOTOMETRY / COLOR — Last Calibrated

Luminous Flux, 0.85 m diameter Integrating Sphere
IL 1400A, S/N #3970 w/SEL033Y/W detector ..... 25 November 2019
[1 mLm to 10 kLm, ±0.01 Lm, accuracy ±2.0%] ..... [due every 12 months]

Color – Spectroradiometric, 0.85 m diameter Integrating Sphere
Ocean Optics USB2000 Spectroradiometer with L2 Lens;
SLIT-50 50µm Slit; GRATING #3 350-1000 nm bandwidth,
600lines/mm; CC-3 Cosine Corrector opaline lens,
S/N USB2E811 ..... 25 November 2019
[resolution 2nm, (x, y) ±0.002, ±5% luminous flux] ... [due every 12 months]

ELECTRICAL — Last Calibrated

DC Power Supply
Kepco 15-12M , S/N H114530 .....N/A
[150W, 0-15V, 0-12A] ..... [use DMMs for measurement]

Voltage
Data Precision DP 3600, S/N 1301 ..... 29 February 2020
[0.001V resolution, accuracy ±0.02%] ..... [due every 12 months]

Current
Fluke 45 (#2), S/N 7940016 ..... 29 February 2020
[0.001A resolution, accuracy ±0.02%] ..... [due every 12 months]

APPENDIX A

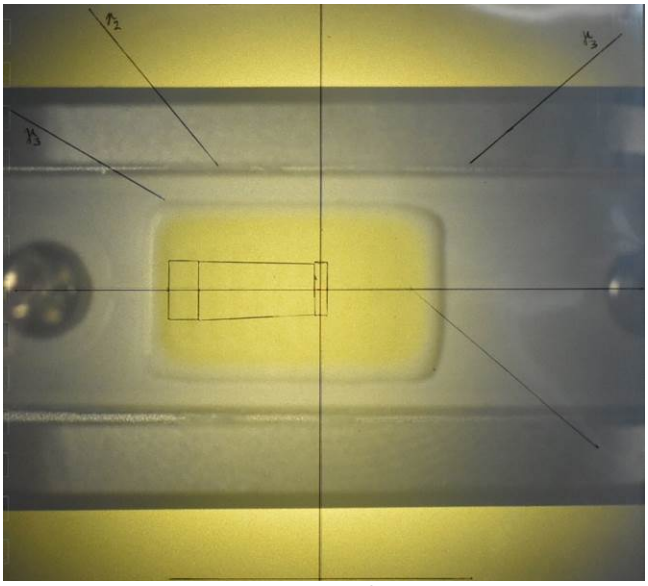
Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

Since the light source does not have a filament, photos of the sample's LED array position were taken for each View and visually examined for fit within the specified filament tolerance box instead of trying to measure specified dimensions.

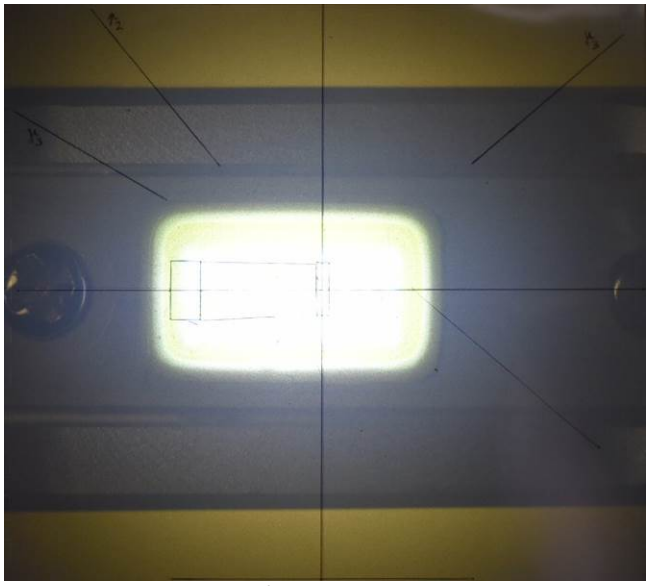
Two photos were taken from View A (sample not energized and energized) and one photo from View B for the visual examination.

Sample installed in holder with sealing gasket removed.

View from A (Side View)

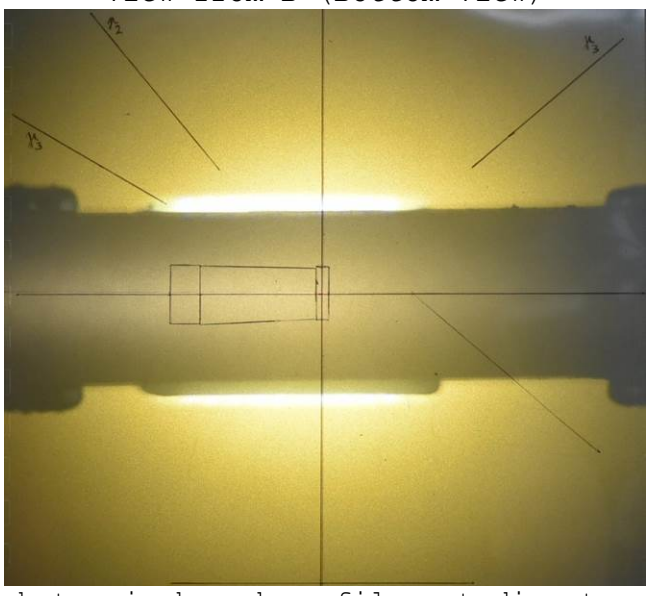


Not Energized



Energized at 12.8V

View from B (Bottom View)



Notes: Tolerance box in photos is based on filament diameter of 1.4 mm.
Vertical line in photos indicates e = 25.0 mm from the reference plane (located to the right for photos).
For compliance, filament must be contained within the tolerance box with the ends of the filament located within the tolerance box ends.

When compared to a light source with a filament, the LED array is **NOT** contained within tolerance box for View A or View B. Ends of LED array are **NOT** located within the tolerance box ends.

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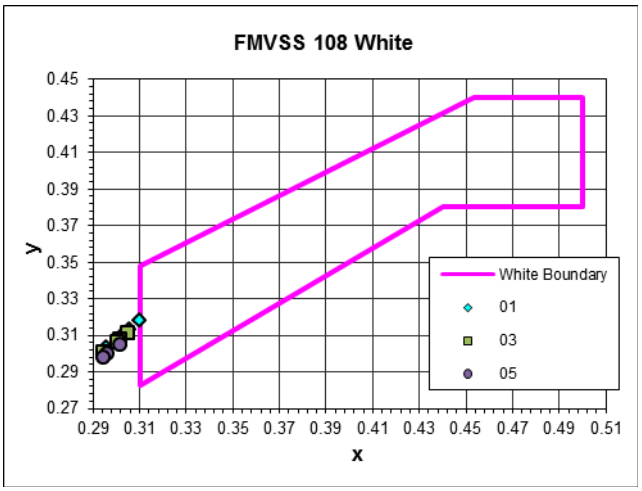
APPENDIX A

Project Name: Auxbeam LED H11 Replaceable Headlamp Light Source

FMVSS 108 Headlamp Color Requirements:

White

$0.38 \leq y \leq 0.44$
$0.31 \leq x \leq 0.50$
$y \leq 0.15 + 0.64x$
$y \geq 0.05 + 0.75x$



Emitted color from sample 01 shifted outside the FMVSS 108 headlamp color boundaries for white after 5 seconds.
Emitted color from samples 03 and 05 does not fall within FMVSS 108 headlamp color boundaries for white.