

**Sealight LED H11
Replaceable Headlamp Light Source**

CALCOAST - ITL

Lighting Technology
683 Thornton Street
San Leandro, CA 94577



03 August 2020

FINAL REPORT 108-CAN-20-001

PREPARED FOR

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
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NHTSA Report No. 108-CAN-20-001

Prepared By:



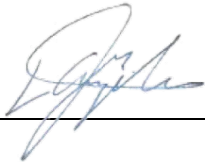
Approved By:



Approval Date: 03 August 2020

FINAL REPORT ACCEPTANCE BY OVSC:

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HS# 646671

TECHNICAL REPORT STANDARD TITLE PAGE

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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 - Multiple H type markings S11.4.2 Electrical Characteristics/Luminous Flux			
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INDUSTRIAL TESTING LABORATORY

Report Number: 191106-01P

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TEST REPORT

Report Date: 03 August 2020

Project Name: Sealight LED H11
Replaceable Headlamp Light SourceSubmitted by: Purchased by CCITL for NHTSA
from Amazon.comTest Laboratory: Calcoast - ITL
San Leandro, CA 94577Samples 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 SealNot Tested
S11.4.1 DeflectionNot Tested

Written by:

Douglas G. Cummins
Photometric Engineer

Approved by:

Mark A. Evans
Laboratory Director

TEST DATA SHEET

Project Name: Sealight 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:	39.0 mm	44.0 mm maximum
Bulb End Diameter:	14.0 mm	15.0 mm maximum

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.

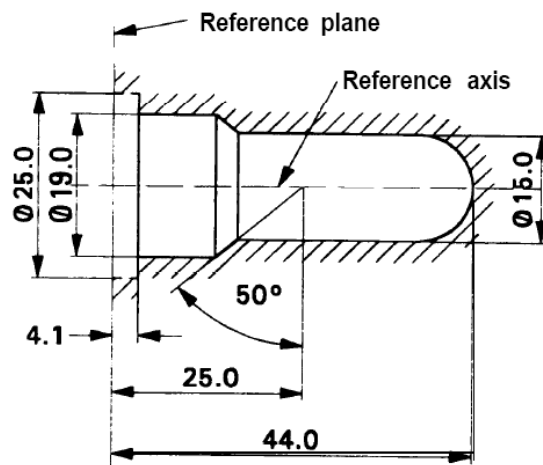


Figure 2: Maximum lamp outline 3/

TEST DATA SHEET

Project Name: Sealight LED H11 Replaceable Headlamp Light Source

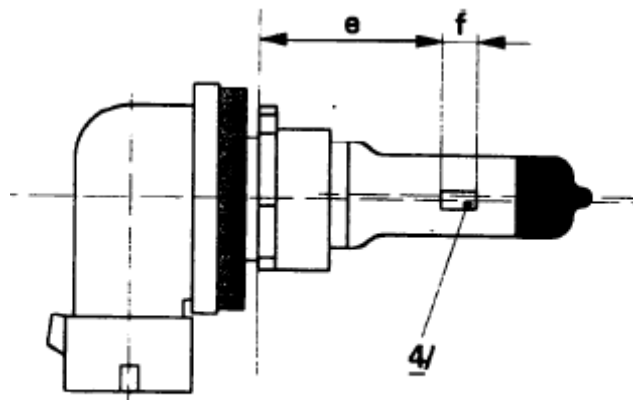
H11 PGJ19-2 base

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 be mounted into a typical H11 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.

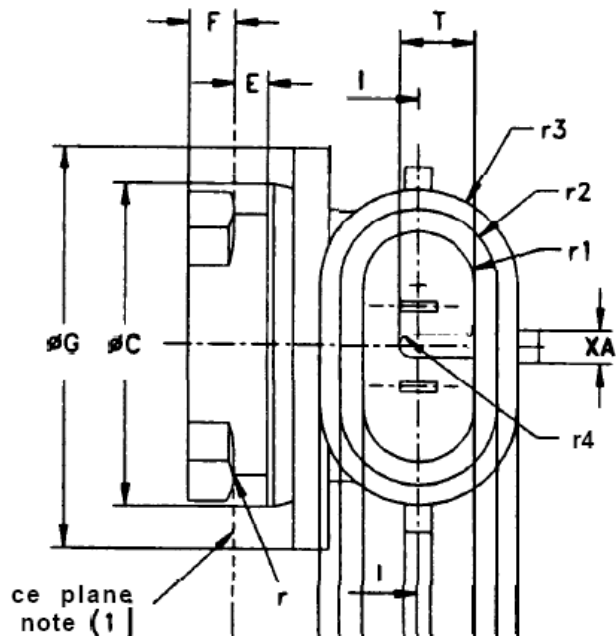


View from A

NHTSA-1998-3397-34 Sheet H11-1



Photo of samples



NHTSA-1998-3397-34 Sheet H11-3



Photo of sample

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

TEST DATA SHEET

Project Name: Sealight LED H11 Replaceable Headlamp Light Source

MARKINGS

On bulb base: "DOT", "SEALIGHT"

On bulb power cord module: "SEALIGHT", manufacturer's code, "Model:H11/H8/H9"

Manufacturer's Codes:

<u>Sample</u>	<u>Manufacturer Code</u>	<u>Sample</u>	<u>Manufacturer Code</u>
01	K19F 41925	09	K19F 41016
02	K19F 41924	10	K19F 40988
03	K19F 41911	11	K19F 41841
04	K19F 41903	12	K19F 41840
05	K19F 42046	13	K19F 42245
06	K19F 42047	14	K19F 42244
07	K19F 41915	15	K19F 40779
08	K19F 41909	16	K19F 40778

Sample is marked with manufacturer name/logo, H type, and the symbol "DOT" as required by FMVSS 108 S11.1 *Markings* (see photo).

However, the markings of multiple H type models ("Model:H11/H8/H9") are of replaceable light sources with different requirements.

Part 564.2.(a).(2) sets the requirement for interchangeability between different types of replacement light sources. The requirement is that redesigned or newly developed light sources must be distinct, different, and noninterchangeable with previously existing light sources.

Therefore, interchangeability is not possible between different light source designs which means multiple markings of different types are not allowed.

Samples do **NOT** meet Markings requirements.

TEST DATA SHEET

Project Name: Sealight LED H11 Replaceable Headlamp Light Source

ELECTRICAL CHARACTERISTICS / LUMINOUS FLUX

Test Method: IESNA LM-45, CIE 84, ASTM E308

Test Voltage: $12.80 \pm 0.01\text{V}$ 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.

#	Time	Current (A)	Power (W)	Flux (Lumens)	Color (x, y)
	-	-	Maximum 60	1250 ± 150 (1100 - 1400)	See Appendix A
01	5 s	1.090	14.0	1518*	(0.308, 0.312)
	1 m	1.073	13.7	1469*	(0.306, 0.310)
	2 m	1.066	13.6	1443*	(0.306, 0.309)
	30 m	1.033	13.2	1289	(0.301, 0.305)
03	5 s	1.036	13.3	1414*	(0.307, 0.308)
	1 m	1.011	12.9	1383	(0.305, 0.308)
	2 m	1.005	12.9	1365	(0.305, 0.306)
	30 m	0.976	12.5	1239	(0.300, 0.302)
05	5 s	1.082	13.8	1470*	(0.304, 0.302)
	1 m	1.070	13.7	1425*	(0.303, 0.302)
	2 m	1.064	13.6	1401*	(0.302, 0.301)
	30 m	1.038	13.3	1273	(0.298, 0.298)

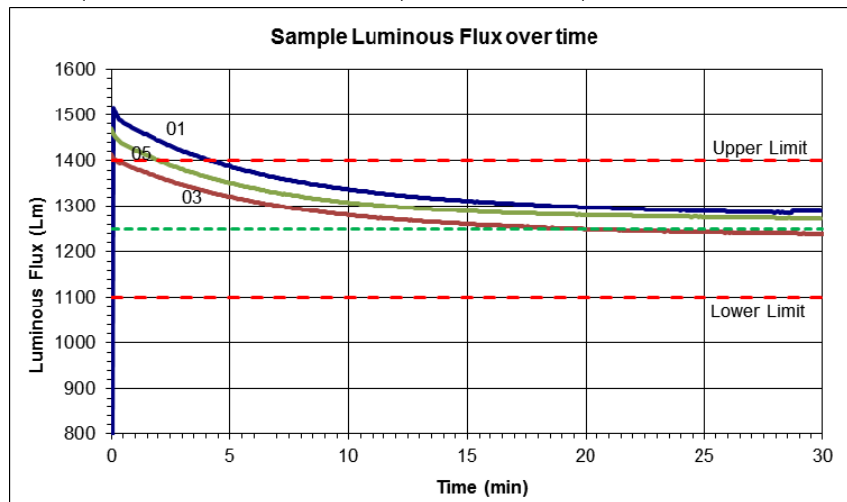
* - denotes failure.

Sample 01 Luminous flux exceeded maximum 1400 Lm for 4.2 minutes.

Sample 03 Luminous flux exceeded maximum 1400 Lm for 15 seconds.

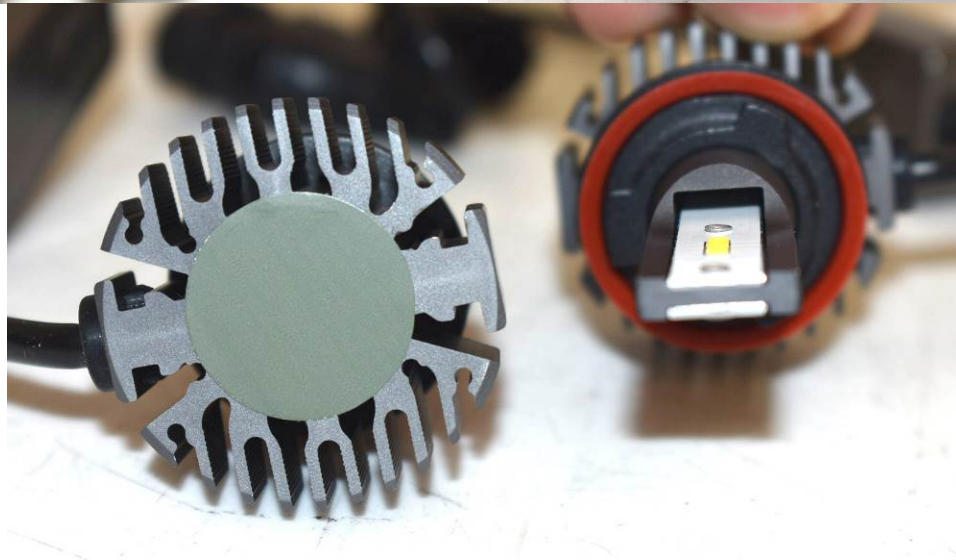
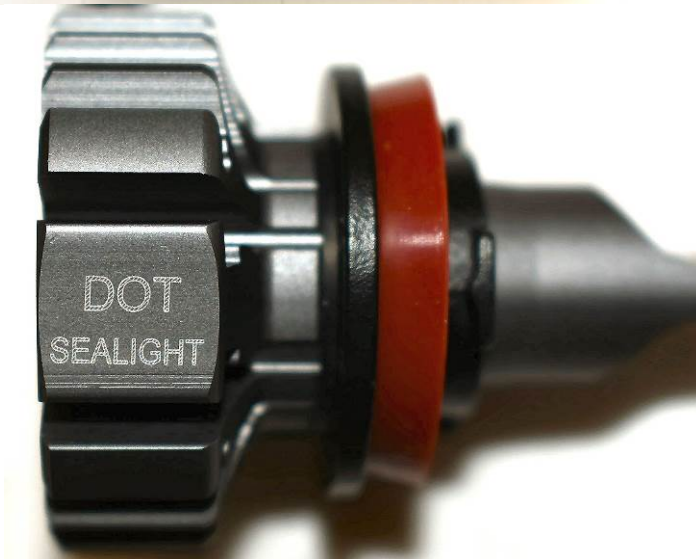
Sample 05 Luminous flux exceeded maximum 1400 Lm for 2.2 minutes.

Samples were marked "H11/H8/H9". Sample 01, 03, and 05 also failed to meet luminous flux for H8 (730 ± 110 lumens) and H9 (2000 ± 240 lumens)



PHOTOGRAPH SHEET

Project Name: Sealight LED H11 Replaceable Headlamp Light Source



EQUIPMENT LIST

Project Name: Sealight 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 $\pm 2.0\%$] [due every 12 months]

Color - Spectroradiometric, 0.85 m diameter Integrating Sphere

Ocean Optics USB2000 Spectroradiometer with L2 Lens;

SLIT-50 50 μ m 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 , $\pm 5\%$ luminous flux] ... [due every 12 months]

ELECTRICAL

Last Calibrated

DC Power Supply

Kepco 15-12M , S/N H114530N/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 $\pm 0.02\%$] [due every 12 months]

Current

Fluke 45 (#2), S/N 7940016 29 February 2020

[0.001A resolution, accuracy $\pm 0.02\%$] [due every 12 months]

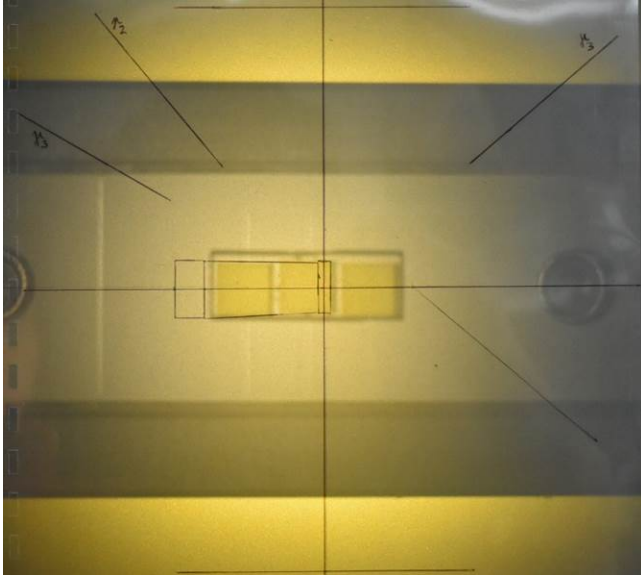
APPENDIX A

Project Name: Sealight LED H11 Replaceable Headlamp Light Source

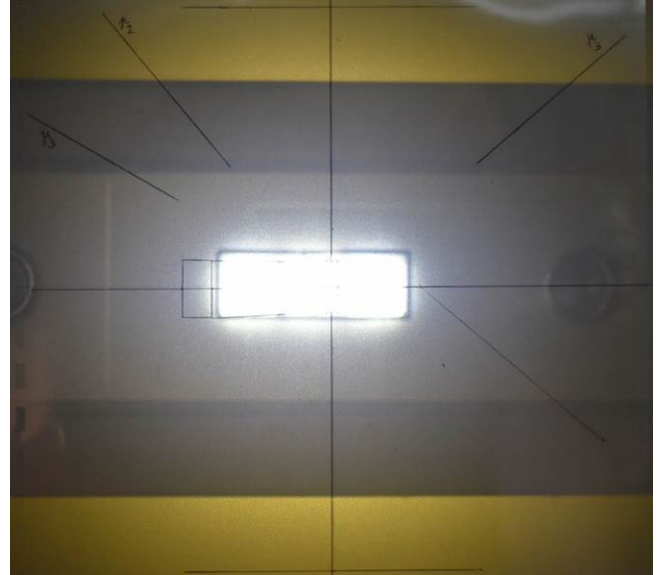
Since the light source does not have a filament, photos of the sample's LED array position were taken for each View and visually examined for fit within the specified filament tolerance box instead of trying to measure specified dimensions.

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

View from A (Side View)

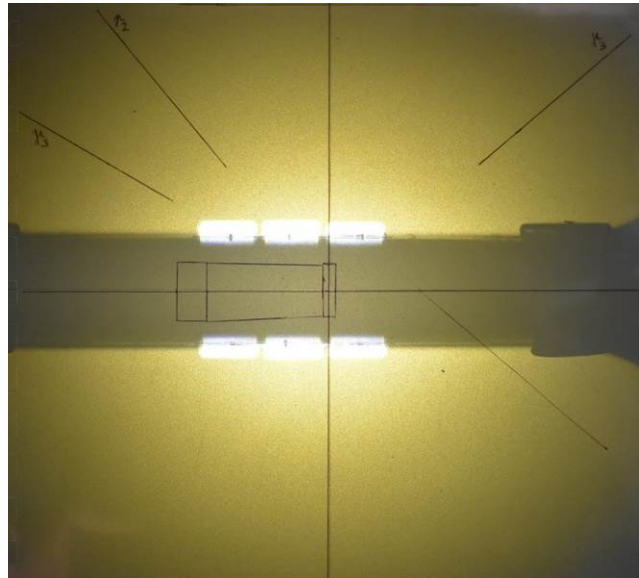


Not Energized



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.

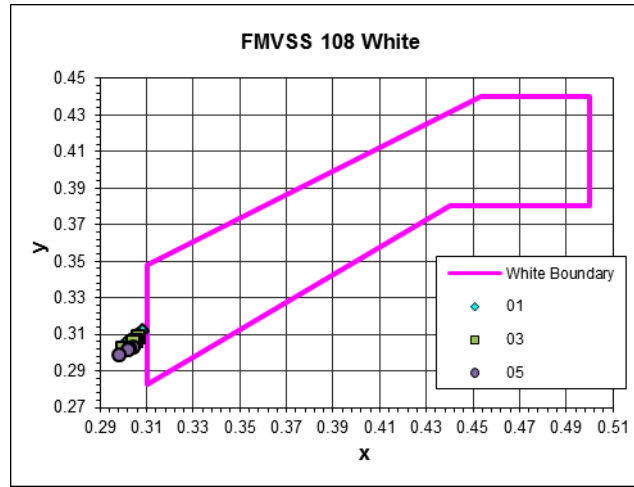
APPENDIX A

Project Name: Sealight LED H11 Replaceable Headlamp Light Source

FMVSS 108 Headlamp Color Requirements:

White

$$\begin{aligned} 0.38 &\leq y \leq 0.44 \\ 0.31 &\leq x \leq 0.50 \\ y &\leq 0.15 + 0.64x \\ y &\geq 0.05 + 0.75x \end{aligned}$$



Emitted color from samples does not fall within FMVSS 108 headlamp color boundaries for white.