REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

ACCREDITED

Electrical 1249-01
Mechanical 1249-02

Order No. 3149870 Date: April 28, 2008

REPORT NO. 3149870CRT-001

TEST OF 92 SERIES LED 360° WARNING LAMP

RENDERED TO

TRUCK-LITE CO., INC.
310 E ELMWOOD AVE.
FALCONER, NY 14733

INTRODUCTION

This report contains the results of examination and test of the above device to demonstrate compliance with the applicable test requirements of the SAE Standards as given in the SAE Handbook, effective as of the date of this report and as requested by the client.

The following is a summary of the results of tests of the device performed in accordance with the following SAE Standards.

Summary

Test	SAE Standards	Results
Photometric		
Optical Warning Device	J845 MAY1997	Complies
Color		
Yellow	J578 JUL2002	Complies
Vibration	J575 OCT2004	Complies
Rate of Flashing	J845 MAY1997	Complies
Extreme Temperature	J845 MAY1997	Complies
Durability	J845 MAY1997	Complies

AUTHORIZATION

The testing was authorized by signed quote no. 500079844.

MATERIAL SUBMITTED

The client submitted two samples. The samples were received by Intertek on April 11, 2008 in undamaged condition, and tested as received. The sample designations are A8019 and A8020.

TEST ASSIGNMENT NUMBERS

Photometric Test: A8019
Extreme Temperature and Durability: A8019
Vibration Test: A8019
Color: A8020

DATES OF TESTS

April 16, 2008 through April 25, 2008

DESCRIPTION OF DEVICE

The 360 degree LED flashing warning lamp consists of an outer ribbed yellow lens screwed to a metal base. The base in turn attaches to the vehicle with three screws. The LEDs are arranged in six columns of 3 stacked LEDs, with each LED having a clear plastic lens in front of it. The metal base has a pipe mount capability. All tests were conducted with the lamp operating at 12.8 volts. No lens plastic material information or light source information was supplied. The markings are listed below. Please see pictures.

The light has two flash patterns. The light was tested for photometry in both patterns. The first flash pattern consists of a train of two light pulses. The two pulses are approximately 145 msec in duration with an off time between the two pulses of 25 msec. Therefore the entire pulse train is approximately 330 msec. The pulse trains are separated by 685 msec for a total cycle time of 1000 msec. This produces a flash rate of 60 flashes per minute. The second flash pattern consists of a train of four light pulses. The four pulses are approximately 50 msec in duration with an off time between the four pulses of 40 msec. Therefore the entire pulse train is approximately 320 msec. The pulse trains are separated by 680 msec for a total cycle time of 1000 msec. This produces a flash rate of 60 flashes per minute.

Compliance and Materials Marking

On lens: "Truck-Lite SAE W3-107", twice, in raised molded lettering

On base: "Truck-Lite 92 SERIES" in raised molded lettering

On sticker: “PART NUMBER 95565Y OPERATING VOLTAGE 13.5” in black inked lettering on a silver sticker

Mounting

The devices were not submitted on test stands.

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration Date	Calibration Due Date
International Light Radiometer	IL1700	L061	Before Use	
Goniophotometer Electrical System	ETL	N784	01/02/08	01/02/09
Goniometer	ETL	N060	07/20/07	07/20/08
DMM-Fluke	87	E259	02/07/08	02/07/09
Thermotron Chamber	SM 32C	H137	01/02/08	01/02/09
Fisher Stopwatch	Fisher	Q021	04/20/07	04/20/08
Vibration Controller	UDC	V254	09/20/07	09/20/08
Signal Conditioner	CVA-4	V252	11/02/07	11/02/08
Accelerometer	10B10T	V253	07/19/07	07/19/08
Torque Wrench	DM70NM	N580	03/21/08	03/21/09
Oscilloscope	TDS410A	E289	06/06/07	06/06/08
Photo Research Spectra Scan	PR 705	O052	10/23/07	10/23/08

TESTS AND TEST METHODS AND RESULTS OF TEST

Tests -The tests performed and detailed in this report are listed on page 1 under "Summary".

Test Methods -The test methods used for photometric, color and mechanical test of the submitted device are in accordance with applicable SAE Standards. The salient points are briefly described in the notes preceding the test results below.

Optical Power (SAE J845 DEC2007) – Omnidirectional Optical Warning Devices

The lamp was mounted so that the horizontal plane through the photometer axis passed through the center of the light source and the vertical axis through the center of the light source was perpendicular to this horizontal plane. The lamp was allowed to operate for at least 5 minutes and the flash energy was then measured. The flash energy measurements were made at a distance of 60 feet. The flash energy is then integrated over a time of at least 20 seconds. The optical power is then calculated and presented as candela seconds per minute. The lamp was rotated about its vertical axis until the photometer indicates the minimum optical power measurement. This point was made the H-V reference point. The results of test are listed on the following 2 pages. The lights were compared to the Class 1 requirements.

Peak Luminous Intensity (SAE J845 DEC2007) – Omnidirectional Optical Warning Devices

The peak luminous intensity is calculated from the flash energy of one flash and an oscilloscope trace of the flash with the time recorded. The results are listed on the following 2 pages.

TESTS AND TEST METHODS AND RESULTS OF TEST (cont'd)

Photometric (Test distance: 60 feet) - SAE J845 MAY1997
(Light Source: LEDs) –18 ct.

Device Color: Yellow Class: 1

	Dual Flash				Quad Flash			
	Flash Energy (candela•second)				Flash Energy (candela•second)			
	Device Measured		Specified Minimum		Device Measured		Specified Minimum	
Test Points deg.	Pt. by Pt.	Zone Total	60% of Table 4	Zone Total	Pt. by Pt.	Zone Total	60% of Table 4	Zone Total
5.00U-V	93		6.0		78		6.0	
2.50U-V	107		27		84		27	
H-V	89	361	54	200	71	291	54	200
2.50D-V	49		27		40		27	
5.00D-V	23		6.0		18		6.0	

Device operated at test voltage.

Volts: 12.8

TESTS AND TEST METHODS AND RESULTS OF TEST (cont'd)

Chromaticity Test (SAE J578 JUL2002)

The color measurements were made using a spectrophotometer. The light was measured from 380 – 780 nm in 5 nm increments and the chromaticity coordinates determined. Chromaticity measurements for the color of light emitted are listed below.

	Chromaticity Coordinates		
Color	x	y	z
yellow	0.590	0.407	0.003

The device complies with the requirements of SAE J578 JUL2002 for yellow.

Vibration Test (SAE J575OCT2004)

Test Procedure

The test sample was mounted on a test fixture and securely mounted to the vibration table and subjected to the following wide band random vibration test parameters:

1. Frequency range from 10 to 250 Hz.
2. The G-Load Power Spectrum Density as portrayed in Figure 1 of SAE J575 NOV2006.
3. Direction of vibration on the vertical axis of the device as it is mounted on the vehicle.
4. Test duration of six hours at room ambient temperature.
5. A tolerance of ± 3dB
6. An RMS value of 1.81g.

Test Evaluation

Upon completion of the vibration test procedure, there shall be no observed rotation, displacement, cracking, or rupture of parts of the device (except bulb filaments) which would result in failure of any test contained in SAE J575 NOV2006. Looseness of parts as evidenced by rattling heard when the part assembly is shaken shall also constitute a failure. Cracking or rupture of parts of the device affecting its mounting shall also constitute a failure.

Test Result

Upon examination after completion of the vibration test procedure, there was no observed rotation, displacement, cracking, or rupture of parts of the device (except bulb filaments) which would result in failure of any test contained in SAE J575 NOV2006. There was no looseness of parts as evidenced by rattling heard when the part assembly was shaken. There was no cracking or rupture of parts of the device affecting its mounting.

TESTS AND TEST METHODS AND RESULTS OF TEST (cont'd)

Flash Rate, Extreme Temperature and Rate of Flashing - (SAE J845 MAY1997) – Optical Warning Devices

High Temperature Flash Rate Test

The device was subjected to an ambient temperature of 50 ± 3 C for a period of six hours. The device was off during the first hour and lighted and operated for five hours at rated voltage (12.8 volts specified by the client). The flash rate was measured before the test, not less than three minutes nor more than four minutes after the beginning of the second hour of the test and not less than three minutes nor more than four minutes after the end of the test.

Low Temperature Flash Rate Test

The device was subjected to an ambient temperature of -30 ± 3 C for six hours. The device was off during the first five hours and lighted and operated at rated voltage during the last hour of the test. The flash rate was measured before the test, not less than three minutes nor more than four minutes after the beginning of the last hour of operation and not less than three minutes nor more than four minutes after the end of the test.

Durability Test

The device was operated continuously for 200 hours at an ambient temperature of 25 ± 3 C in cycles consisting of 50 minutes on and 10 minutes off at rated voltage. The flash rate was measured before the test, after 100 hours and three minutes after the last "off" period at the end of the test.

Test Evaluation

There shall be no evidence of operating conditions that would result in failure to comply with any other test. The final measured flash rate shall not vary more that 20% from the initial flash values and shall always be between 1 – 4 Hz.

TESTS AND TEST METHODS AND RESULTS OF TEST (cont'd)

Test Results

There was not evidence of any operating condition that would result in failure of any other test. The flash rate measurements follow.

High and Low Temperature Flash Rate Tests (SAE J845 DEC2007)

Ambient Temperature	Flashes per Minute Measured (12.8 Volts) Quad	Dual	Minimum SAE	Maximum SAE
1. 50 deg. C before	60	60	60	240
1st reading @ 1 hr.	60	60	60	72
2nd reading @ 6 hr.	60	60	60	72
2. -30 deg. C before	60	60	60	240
1st reading @ 5 hr.	60	60	60	72
2nd reading @ 6 hr.	60	60	60	72

Durability Test (SAE J845 DEC2007)

Operation Time (hours)	Flashes per Minute Measured (12.8 volts) Quad	Dual	Minimum SAE	Maximum SAE
Before	60	60	60	240
100	60	60	60	72
200	60	60	60	72

In Charge of Tests:

Ernest Dykeman

Ernest Dykeman
Senior Project Engineer
Lighting Division

Report Reviewed by:

Jeremy N. Downs

Jeremy N. Downs, P.E.
Engineering Team Leader
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Attachment: Two Picture Pages

"TEST OF 92 SERIES LED 360° WARNING LAMP"
TESTED FOR TRUCK-LITE CO., INC.

Intertek ETL SEMKO

Order No. 3149870
Report No. 3149870CRT-001


SAE W3-10


92 SERIES


PART NUMBER 92565Y
OPERATING VOLTAGE 13.5V