Legal Department
26541 Agoura Road, Calabasas, CA 91302
(818) 307-0005 ● Facsimile (800) 905-5215
JLaForte@harborfreight.com

Via Electronic Mail

November 23, 2020

Administrator
United States Department of Transportation
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington, DC 20590

Re: Inconsequentiality Petition for Recall 20E-081

To Whom It May Concern:

Harbor Freight Tools ("HFT") submits this petition for inconsequential noncompliance pursuant to the Vehicle Safety Act, 49 U.S.C. § 30118(d) and 49 U.S.C. § 30120(h), and the related regulations at 49 C.F.R. 556. HFT is a corporation headquartered in California and with its principal place of business at 26541 Agoura Road Calabasas, California 91302. HFT requests that the agency grant its petition exempting it from the notice and remedy requirements of the Vehicle Safety Act on the ground that the noncompliance described below is inconsequential to motor vehicle safety.

Background

On October 26, 2020, HFT determined that two different aftermarket LED trailer light kit products, a submersible trailer light kit and a magnetic trailer light kit, did not fully comply with the photometry requirements of FMVSS 108. The noncompliance exists only at certain test points in certain units within specific production batches.[1] HFT engaged Calcoast, a well-regarded third-party facility, to conduct comprehensive compliance monitoring of its trailer light

[1] Because it is not possible to trace the individual noncompliant units within each production batch, HFT included the entire batch of products produced within the affected date range in the recall population. Not all units within each of the batches actually do not comply with the requirements of FMVSS 108.

products. HFT submitted samples of 24 sets of trailer lights from three separate production weeks, spanning the course of June through December 2019. A spreadsheet indicating the overall photometry results for each of the tested samples is included at Attachments 5 and 6. During the course of this routine compliance monitoring, it was found that a limited number of certain trailer light units in particular production batches marginally deviate from the FMVSS 108 photometry requirements at certain test points or zones. These are isolated instances of variations from the FMVSS 108 photometry requirements. These variances occur at discrete portions of the lamp and not every unit in the production batch experienced a deviation from the photometry requirements.[2] The trailer lights at issue either slightly exceed the maximum photometry value or fall slightly below the minimum photometry values for certain test points or zones.

HFT submitted a Noncompliance Information Report on October 26, 2020 after determining that approximately 3,832 sets of light kits could be affected by this issue. *See NHTSA Recall 20E-081, at Attachment 1*. HFT is not aware of any reports or complaints about the issue from the field and has taken steps with its supplier to correct the issue in production.

Analysis

Manufacturers may be exempted from the notification and remedy provisions of the Safety Act if NHTSA determines that the noncompliance is inconsequential to motor vehicle safety. *See 49 U.S.C. §§ 30118(d), 30120(h).* The basis upon which NHTSA evaluates an inconsequentiality petition is "whether the occupant who is affected by the noncompliance is likely to be exposed to a significantly greater risk than an occupant in a compliant vehicle." *See 69 Fed. Reg. 19897, 19900 (April 14, 2004*). This matter is appropriate for a decision that the noncompliance is inconsequential to motor vehicle safety as it does not present any increased risk to vehicle occupants.

While some of the trailer light kits at issue in this petition do not fully comply with certain photometric requirements of FMVSS 108, they deviate only by small margins at certain points and not by a degree that is sufficient enough to be noticeable to other road users or create an increased safety risk.

The trailer light kits are combination lamps with turn signal, stop lamp and tail lamp functions and that use a light emitting diode (LED) as their light source. The minimum and maximum photometry values for these functions are set out at FMVSS 108, Table VII and Table IX. In certain individual units, portions of the LEDs used in specific production batches have

[2] It is believed that the deviation in results is due to the manner in which the products were tested. The supplier evaluated (and based its good faith certification of compliance) of products that were tested at a test voltage of 12.8V while Calcoast evaluated the units at a test voltage of 13.5V. Although Calcoast has advised HFT that the manufacturer may choose the test voltage for LED lamps in a range between 12.0V to 14V, the supplier is now taking steps to ensure that their lamps meet the photometry requirements when tested at 13.5V, consistent with the process used by Calcoast.

candela values that were either marginally below and/or were slightly above the luminous intensity output provided for in FMVSS 108. The deviation from the photometry requirements is slight and all but one case falls within 25% of the required output. Thus, the actual performance of HFT's lamps compared to compliant lamps would not be perceptible to the human eye and therefore would not create an enhanced risk to safety. A description of each of the products and associated test results is set out below.

Submersible LED Trailer Lights – Part Number 64274

HFT's submersible trailer light kit consists of a pair of replacement trailer lamps to be used on trailers less than 80 inches in overall width.[3] The LED lamps used in the kit function as a combination lamp with three lighted sections. In this case, a total of six tests were conducted on samples from the same production batch produced in calendar week 27. Four of the samples meet all of the FMVSS 108 requirements to which they were tested. Two individual test samples fell slightly below the required candela values for turn signals and stop lamps only in Zone 3. The minimum candela value for Zone 3 for a lamp with three lighted sections is 520 cd. For these two test samples, one sample measured 466.33 cd in Zone 3 and the other sample measured 497.39 cd in Zone 3 – a deviation of 4.5% and 10.4%, respectively. In each case, all of the individual test points that make up Zone 3 were at least 60% of the required candela value and in many cases, were more than 90% of the value for the individual test point. The lamps met the luminosity requirements for all other testing zones and met all other requirements of FMVSS 108 to which they were tested.

Magnetic Trailer Light Kit – Part Number 64282

The second product at issue is a 12V magnetic LED trailer light kit.[4] Each trailer light kit consists of a pair of lamps that are intended to be magnetically attached to the rear of a trailer and that are wired to the towing vehicle's tail lamps. Each lamp is a combination lamp that functions as a turn signal, stop lamp and tail lamp with three lighted sections. A total of 13 sets of lamps were tested for this product and the Calcoast test results indicate that individual units within two separate production batches (calendar week 46 and calendar week 52) had individual test units that did not meet the photometry requirements for stop lamps, turn signals and tail lamps. For this product, the noncompliance occurred at certain individual test points, not at the zone level. The lamps met the luminosity requirements at all other test points and met all other requirements of FMVSS 108 to which they were tested.

For the magnetic trailer light kit produced in calendar week 46, two samples measured slightly higher candela values for a single test point when evaluated under the photometric intensity values for turn signals and stop lamps. Where the maximum candela value is 420 cd, in

[3] A link to the product can be found at: https://www.harborfreight.com/12v-submersible-trailer-lights-2-pc-64274.html

[4] A link to the product can be found at: https://www.harborfreight.com/12v-magnetic-led-towing-light-kit-64282.html

one sample a single test point (1.0U/ 0.7R) measured 579.81 cd after one minute (an exceedance of 27.6%)[5] and in the other sample a single test point (0.7D/ 0.3L) measured 426.87 cd after one minute (an exceedance of 1.7%). However, the overall photometric requirements for all of the test zones were met.

In addition, there were slight exceedances of the tail lamp photometry provisions. In one sample, a single test point slightly exceeded the tail lamp maximum output of 25 candelas, where one sample measured 25.7 cd at the H-V point and in another sample a single test point (at 1.0U/0.9R) measured 31.87 cd. This is a range of 2.7% - 21.5% above the maximum candela value. All of the overall photometric requirements for each of the zones were met. Separately, a batch of magnetic trailer light kits produced in week 52 was evaluated. In that case, one exemplar unit had a single test point (0.5D/1.3L) that measured 440 cd after one minute, an exceedance of 4.6% and above the 420 cd maximum value for any test point. Again, all of the overall photometric requirements for each of the zones were met.

HFT's Position

Historically, NHTSA has granted inconsequentiality petitions when the noncompliance is imperceptible or nearly imperceptible to vehicle occupants or surrounding traffic. When the photometric intensity level is within 25% above or below the boundary limit, the difference in the light being emitted is typically not perceptible to other drivers. This objective metric has been applied to various types of lighting sources, including turn signal lighting. *See Huey, R., Dekker, D. and Lyons, R. (1994); Driver perception of just-noticeable differences of automotive signal lamp intensities (Report No. DOT HS 808 209).* NHTSA has also applied this reasoning to non-compliances with particular zones, not just individual test points. *See Grant of Petition of General Motors, 61 Fed. Reg. 1663 (January 22, 1996).* In each of the samples described above, the deviation is well within 25% of the required values. The plot diagram at Attachment 7 provides a visual depiction of the relationship between the two outlier values to the 520 cd minimum for the Zone 3 test results for the submersible trailer light kits tested by Calcoast. The plot diagram at Attachment 8 gives a visual depiction of the relationship between the outlier values and the photometric requirements for the magnetic trailer light kits.

For the submersible trailer lights, two of the test samples fell slightly below the 520 cd minimum applicable to three lamp sections for turn signals and stop lamps. In each case, although Zone 3 fell marginally below the minimum candela value, it nevertheless fulfilled 89.6% – 95.6% of the requirement for the zone. In other words, the zone itself was only 10.4% and 4.4% lower than the minimum required candela value. In addition, none of the individual test points fell below 60% of the specified candela value for the test point. Because all of the test

[5] This exceedance is for a single test point and only on this particular lamp. No other reported values approached this outlier.

points within the zone are compliant, this accounts for the minimal effects on the photometric output of the zone overall.

An alternative basis on which to grant the petition is the performance exceedances of each of the other surrounding zones. Zones 1, 2, 4 and 5 all exceeded the minimum candela value for their respective zone by wide margins (e.g. from a range of 27% - 44% higher than the minimum candela value for the zone for one sample and 26% - 37% higher than the minimum candela value for each zone for the other sample). Thus, the minor discrepancy in one zone is offset by the substantial (and compliant) exceedances in the remaining zones. Taking the performance of the lamp as a whole, and because drivers view the output of lamps as a whole rather than at individual points within the lamp, the additional light from the other zones would compensate for the deviation in Zone 3. This rationale is consistent with the agency's findings in other similar petitions which concluded that enhanced photometric values in other areas of the same lamp could effectively minimize a minor deviation in one portion of the lamp. *See Grant of Petition of General Motors, 61 Fed. Reg. 1663 (January 22, 1996)* (granting petition where the level of noncompliance for the single affected zone was minimal and all of the other zones within the same lamp substantially exceeded candela values); *Grant of Petition of BMW, North America, 82 Fed. Reg. 55484 (November 21, 2017)* (finding ratio exceedance for license plate lamps to be inconsequential where the exceedance was minimal and the surrounding lamps otherwise exceeded the minimum photometric performance levels).

For the magnetic trailer light kits, there is no increased risk of glare to oncoming motorists because the photometric exceedances are minimal and in all cases, below the threshold metric of 25% so that the differences are not perceptible to other drivers. *See Grant of Petition of Hella, Inc., 55 Fed. Reg. 37601 (September 21, 1990)* (granting petition where taillamps exceeded the maximum candlepower upwards of 20% at certain test points and did not meet the 25% change in value to be perceived by the human eye).

Separately, NHTSA has recognized the inherent challenges to manufacture all lamps so that each and every test point within the lamp meets the minimum criteria. That is the case here. When HFT commissioned Calcoast to review and confirm the performance of these lighting products, it tested a total of 24 sets of lamps produced over a seven month/year period. Of that universe, there were just two samples of submersible trailer light kits that had slightly reduced photometric values and three samples of the magnetic trailer light kit that experienced minimal exceedances. This indicates that the LED lamps were in fact designed to comply with FMVSS 108 and that the results of the monitoring testing indicate an isolated number of random failures, not a systemic lapse in production processes. *See 83 Fed. Reg. 51766, 51876* ("On a number of occasions since [the implementation of FMVSS 108], NHTSA has stated that it will not consider a lamp to be noncompliant if its failure to meet a test point is random and occasional. Thus, historically, there has never been an absolute requirement that every motor vehicle lighting device meet every single photometric test point to comply with Standard No. 108").

Finally, HFT has reviewed its systems and has not received any reports or complaints about the levels of brightness for these trailer lighting kits. The lack of reports or indications that the subject trailer lights are either too bright or too dim supports the conclusion that the condition is undetectable to road users such as drivers following a vehicle equipped with either of the lighting products. HFT is providing copies of the relevant Calcoast test reports with this petition at Attachment 2 for the submersible trailer light kits and at Attachments 3 and 4 for the magnetic trailer light kits.

Conclusion

Based on the above, the data demonstrates that there is no greater risk presented to an occupant or to following traffic that is exposed to the noncompliant trailer light under these circumstances than to a set of lamps that meets all of the photometric criteria. With the consideration of the above information, Harbor Freight Tools requests that that the agency exempt it from the notification and remedy provisions under the Safety Act.

Sincerely,

Jonathan LaForte
Automotive Compliance Manager
Harbor Freight Tools

Legal Department
26541 Agoura Road, Calabasas, CA 91302
(818) 836-5000 Ext. 3909 ● Facsimile (800) 905-5215

Via Electronic Mail

November 23, 2020

Administrator
United State Department of Transportation
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: **Documents Relating to Inconsequentiality Petition for Recall 20E-081**

Dear Administrator:

In attachment, please find Harbor Freight Tools Petition for Recall regarding 20E-081 dated November 20, 2020.

The attachments that follow the Petition are identified as follows:

Attachment "1" – NHTSA 573 Recall Equipment Report-573
Attachment "2" – Calcoast Test 64274 Submersible TLK Report No. 200103-03C
Attachment "3" – Calcoast Test 64282 Magnetic Tow Lamp Kit Report No. 200316-02H
Attachment "4" – Calcoast Test 64282 Magnetic Tow Lamp IST Report No. 200103-02C
Attachment "5" – Harbor Freight 64274 Submersible Lamp Results Data Report (Excel)
Attachment "6" – Harbor Freight 64282 Magnetic Tow Lamp Results Data Report (Excel)
Attachment "7" – Harbor Freight 64274 Submersible Lamp Results Plotted (Excel)
Attachment "8" – Harbor Freight 64282 Submersible Lamp Results Plotted (Excel)

The attached documents are being delivered electronically. The above list should enable you to open each attachment according to your preference. If there are any issues regarding not receiving a document, or you are unable to open any one of them, please contact HFT's Paralegal at ccramer@harborfreight.com for immediate assistance.

Thank you.

Sincerely,

Jonathan LaForte
Automotive Compliance Manager
Harbor Freight Tools

CC/enclosures

safercar.gov
U.S. Department of Transportation

Harbor Freight Tools

Equipment Report

NHTSA ID: 20E081 Transaction ID: 20-0011621-25207-10 (Original Report)

Required fields indicated with *

Manufacturer: Harbor Freight Tools

26541 Agoura Road
Calabasas CA 91302

Jonathan LaForte Automotive Compliance Manager
818 307 0005,

This is a Noncompliance Report. Filing a petition pursuant to 49 CFR 556

Equipment Information

Kenway 12v Magnetic LED Towing Light Kit 64282

* **Brand/Trade:** Kenway
* **Model:** 12v Magnetic LED Towing Light Kit

Production Dates Begin: 11/13/2019
End: 12/22/2019

* **Part No.:** 64282
Size: 12 Volt

Function:
Magnetic brake

Descriptive Information:
In certain 12v Magnetic LED Towing Light Kit manufactured by JINHUA EAGLE KING TOOLS Co., Ltd portions of the light emitting diodes (LEDs) used in specific production batches of the lamps had candela values that were either marginally below and/or were slightly above the photometric intensity output provided for in FMVSS 108. Other units in these and other production batches tested at an accredited third party U.S. laboratory were consistent with the photometry requirements. The 573 report and the Petition for Inconsequentiality Determination cover the entire production batch where a minor deviation was found, even though not all units in the batch are affected by the noncompliance.

Kenway 12v Submersible Trailer Lights 64274

* **Brand/Trade:** Kenway
* **Model:** 12v Submersible Trailer Lights

Production Dates Begin: 07/01/2019
End: 07/08/2019

* **Part No.:** 64274
Size: 12 Volt

Function:
LED submersible

Descriptive Information:
In certain 12v Submersible Trailer Lights manufactured by JINHUA EAGLE KING TOOLS Co., Ltd portions of the light emitting diodes (LEDs) used in specific production batches of the lamps had candela values that were either marginally below and/or were slightly above the luminous intensity output provided for in FMVSS 108. Other units in these and other production batches tested at an accredited third party U.S. laboratory were consistent with the photometry requirements. The 573 report and the Petition for Inconsequentiality Determination cover the entire production batch where a minor deviation was found, even though not all units in the batch are affected by the noncompliance.

Number potentially involved: 3832 **Estimated percentage of involved with defect:** 5%

Defect / Noncompliance Description

For this Defect/Noncompliance:

* **Describe the defect or noncompliance:**
For certain units, the candela value for certain individual positions and/or zones of light emitting diodes (LEDs) used in specific batches of the lamps were slightly higher and/or lower than the levels of brightness required by FMVSS 108.

If a noncompliance, provide the applicable FMVSS:
108 - Lamps, reflective devices, and assoc. Equipment

If applicable, provide any further FMVSS affected:

Describe the cause:

* **Describe the safety risk:**
None. Despite the slight variation in candela values for certain portions of LED lamps in specific production batches, there is no adverse effect on a driver following a trailer. HFT intends to submit an inconsequentiality petition.

Identify any warning which can precede or occur:
No warning can precede or occur.

This Recall affects all vehicles.

If applicable, identify the manufacturer of the defective or noncompliant component. If the manufacturer of the component is unknown, provide the information for the company that supplied the subject component.

Component manufacturer

Company Information

Company Name: JINHUA EAGLE KING TOOLS CO., Ltd

Company Contact Information

First Name: George

Last Name: Wang

Country:	China	**Position:**	Owner
Address 1:	Automotive Industry Park, 2nd Ring South	**Email:**	wjy@eagleking.com.cn
Address 2:	Jinhua	**Phone:**	8613819992998
City:	Zhejiang		
State:	FOREIGN STATES		
Zip/Postal Code:	321000		

Involved Components

If the defect or noncompliance involves a specific component(s), identify that component(s) below.

Purchaser Information

Chronology of Defect / Noncompliance Determination

Provide the chronology of events leading up to the defect decision or test data for the noncompliance decision.:
HFT conducts ongoing confirmatory testing of its products through accredited U.S. testing facilities. HFT commissioned Calcoast to conduct testing of its submersible trailer lamps to the requirements of FMVSS 108, including the photometric requirements. HFT received Calcoast's initial report in March 2020, and began to consider it thereafter. After receiving the Cal Coast report, HFT requested the complementary testing data from its overseas product supplier. Due to delays related to the COVID-19 pandemic, HFT did not receive that information until June 2020, and continued to analyze the data. Calcoast reported that at certain test points and/or zones, individual exemplar lamps contained within particular batches of lamps indicated variations in the lamp intensity (candela) values for isolated locations and/or zones of the turn signal, tail lamp and stop lamps. The Calcoast report also indicated that other exemplar lamps from the same batches and from other batches that it tested at the same time met all of the FMVSS 108 requirements. HFT initiated a detailed review of the apparent findings in consultation with Calcoast in Fall 2020, including the basis of the methodology used by Cal Coast to evaluate the photometry values under FMVSS 108 as applied to LED lights. HFT further considered the effect of the deviation in use and whether there would be the potential for actual adverse consequences upon following traffic and evaluated whether any potential customer claims for these units existed. Upon additional consideration, on October 26, 2020 Harbor Freight Tools decided that a non-compliance of the above listed specific lamp SKUs exists, for certain production batches. Harbor Freight Tools intends to submit a petition for inconsequential noncompliance as the isolated instances of deviation from the photometric requirements do not pose an increased safety risk.

Identify the Remedy

Describe the defect/noncompliance remedy program, including the manufacturer's plan for reimbursement.
HFT intends to submit a petition for inconsequential noncompliance because the condition does not present an increased risk to motor vehicle safety.

Describe what distinguishes the remedy component from the recalled component.
Harbor Freight Tools will submit a Petition for Inconsequentiality Determination.

Identify and describe how and when the recall condition was corrected in production.

Identify the Recall Schedule

Describe the recall schedule for notifications.:

Planned Dealer Notification Begin Date:
Planned Dealer Notification End Date:
Planned Owner Notification Begin Date:
Planned Owner Notification End Date:

Manufacturer's identification code for this recall (if applicable):

Please be reminded that owner notification letters must be mailed no more than 60 days from submission of this report.

Manufacturer Comments to NHTSA Staff

Document Upload

There are 0 documents associated with this report.

Report No.: 200103-03C

TEST REPORT

Report Date: 10 February 2020

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights (SAE STIA AP2 L) for trailers less than 2032 mm in overall width

Submitted by: Harbor Freight Tools
Calabasas, CA 91302

Test Laboratory: Calcoast – ITL
San Leandro, CA 94577

Samples Submitted: Three (3) pairs (LH + RH) Rear Combination Lamps submitted 03 January 2020

SUMMARY

TESTS (FMVSS 108)

Photometric Tests – Rear Combination Lamp (LED / 3-lighted section device)

Turn Signal Lamp - S7.1.2.13 / Table VII (Red)	4 Passed/**2 Failed**
Tail Lamp - S7.2.13 / Table VII	Passed
Stop Lamp - S7.3.13 / Table IX	4 Passed/**2 Failed**
Sidemarker Lamp - S7.4.13 / Table X (Red)	Passed
License Plate Lamp - S7.7.13 using top holes, centered	Passed
Red Reflex Reflector, Rear - S8.1.11 / Table XVI (Red)	Passed
Red Reflex Reflector, Side - S8.1.11 / Table XVI (Red)	Passed

Lens Area Tests (EPLLA) – Table IV-a	Not Tested
Visibility Tests – Table V-b, Area Method	Not Tested
Color Tests – S14.4.1	Passed
Plastic Optical Material Tests – S14.4.2†	Passed
Physical (Mechanical) Tests – S14.5	Not Tested

Supplemental Test

SAE J575 AUG2015 4.9.3 Water Submersion Test	passed

† *Using AMECA List of Acceptable Plastics for determination of compliance.*

Written and Approved by:

Mark A. Evans
Laboratory Director

DESCRIPTION SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

Device is a lamp system consisting of one (1) pair of rear mounted combination lamps (RCLs) with Stop, Tail, Turn Signal, Sidemarker, Rear Reflex, and Side Reflex functions (AIST). The LH Rear Combination Lamp also includes License Plate Illumination function (L).

Device's Sidemarker LEDs includes lens optics for what would normally be considered a Clearance function, however since the application is for vehicles less than 2032 mm in overall width, they were included as part of the Tail function.

Device's License Plate Holder can be mounted in one of four configurations - utilizing the included license plate bracket's top or bottom mounting holes and placing the center of the license plate directly under the LEDs or offset to the side (see photos).

MARKINGS:

LENS: AIST: "SAE AISTP2 04 DOT", "2" – cavity number
AP2: "SAE AP2 04 DOT", "1" – cavity number
L: "SAE L 04 DOT"

HOUSING: "↑", "TOP", "ROAD SIDE" or "CURB SIDE", "LH" or "RH"
"Kenway", "Item:64274", "Serial:372381927"
"Kenway", "SUBMERSIBLE LED TRAILER LIGHT KIT", "64724"

License Holder: None

MATERIAL:

LENS: AIST: Chimei Acryrex CM-205 PMMA, R-001 Red
AP2: Chimei Acryrex CM-205 PMMA, R-001 Red
L: Chimei Acryrex CM-205 PMMA, N-000 Clear

Lens material formulation, pigment, and coating are listed in the October 20, 2017 AMECA List of Acceptable Plastics for Optical Lenses and Reflex Reflectors indicating the plastic meets FMVSS 108 S14.4.2 Plastic optical materials requirements.

HOUSING: Chimei PA-757 ABS, Black

Material information provided by Harbor Freight

MOUNTING: Two (2) or Three (3) carriage bolts to vehicle

BULBS:

DEVICE	FUNCTION	QUANTITY	TYPE	VOLTAGE	POWER	FLUX
RCL	IS	Twelve (12)	Red LEDs	13.5V	3W	N/A
	T				0.8W	N/A
	T	Three (3)	Red LEDs	13.5V		N/A
	P2	Three (3)	Red LEDs	13.5V		N/A
	L	Two (2)	White LEDs	13.5V	0.7W	N/A

PHOTOMETRIC TEST SUMMARY SHEET

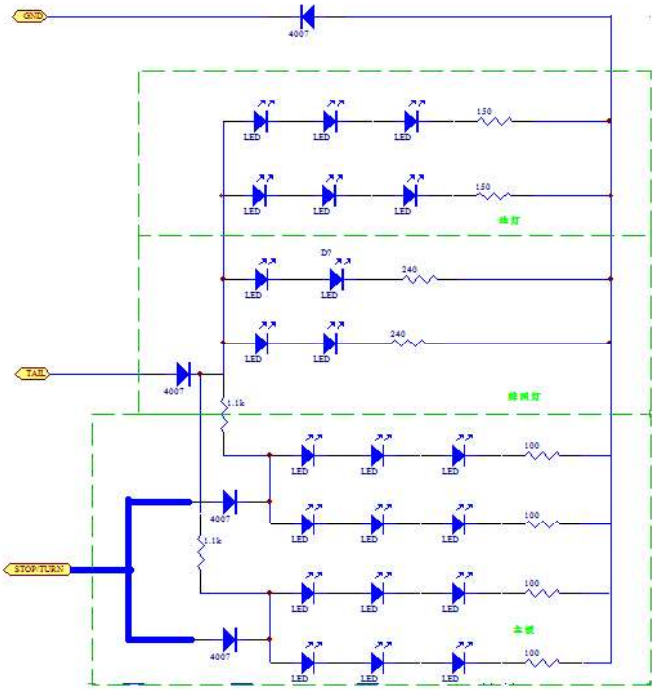
Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

SUMMARY OF PHOTOMETRIC TESTS

Specification(s): FMVSS 108
Tests performed by: MAE Date: 08-10 January 2020

Samples meet requirements at all points for:

S7.1.2.13 / Table VII	Rear Turn Signal Lamps, 3 Lighted Sections (**4 of 6**)
S7.2.13 / Table VIII	Tail Lamps, 3 Lighted Sections
S7.3.13 / Table IX	Stop Lamps, 3 Lighted Sections (**4 of 6**)
S7.4.13 / Table X	Sidemarker Lamps
S7.7.13	License Plate Lamps
S8.1.11 / Table XVI	Reflex Reflectors



Circuit Diagram submitted by Harbor Freight

NHTSA has interpreted LED lamps as having a single light source if all the LEDs are in series and as having multiple light sources if all the LEDs are not in series. Each parallel series of LEDs is considered a separate light source. Each light source is then considered a "lighted section".

FMVSS 108 has multiple lighted section requirements for rear turn signal lamps for vehicle less than 2032 mm wide (see S7.1.2.11.2 and Table VII).

FMVSS 108 has multiple lighted section requirements for tail lamps for vehicle less than 2032 mm wide (see S7.2.11.2 and Table VIII).

FMVSS 108 has multiple lighted section requirements for stop lamps for vehicle less than 2032 mm wide (see S7.3.11.2 and Table IX).

Report No.: 200103-03C

PHOTOMETRIC TEST SUMMARY SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

SUMMARY OF PHOTOMETRIC TESTS

Specification(s): FMVSS 108
Tests performed by: MAE Date: 08-10 January 2020

Reference detector control number: NIST P181-2
Projector: Hoffman GPS-101 - 30" Diameter Beam, Illuminant A, 1.0 Fc
Test distance: 100 feet

Samples tested using LEDs at designated voltage (13.5V). Samples mounted on CCITL universal fixture with function source located at goniometer center of rotation and tilt.

License function only tested with license plate centered under LED sources using the top and bottom mounting holes of license plate holder.

LED functions tested after output stabilized. Stop/Turn Signal functions were then multiplied by a factor to achieve the performance at 10 minutes (SAE J1889 methodology). After testing, the intensities at HV were measured through a voltage range and the ratios compared to design voltage tabulated below.:

Intensity vs. Voltage

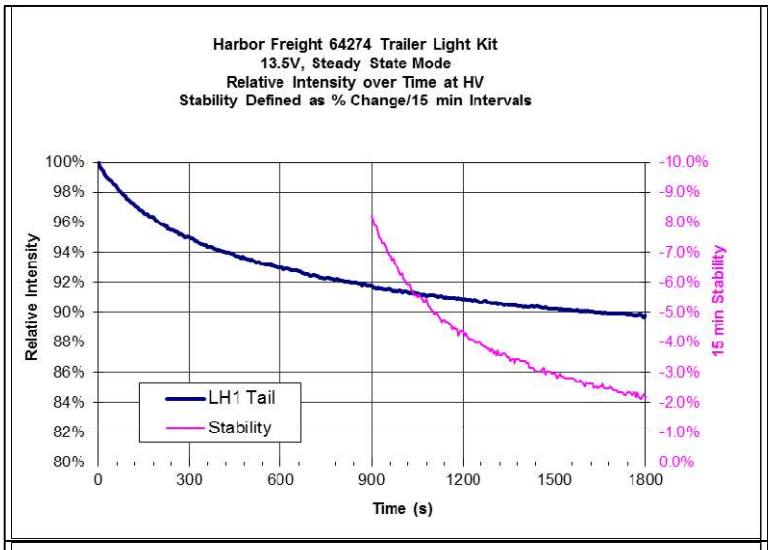
	12.0V	12.8V	13.5V	14.0V
Tail	78.8	90.2	100	107.3
Sidemarker	80.8	91.7	100	106.6
Stop/Turn	80.5	91.2	100	105.8
Above values do not take into account any heat effect				

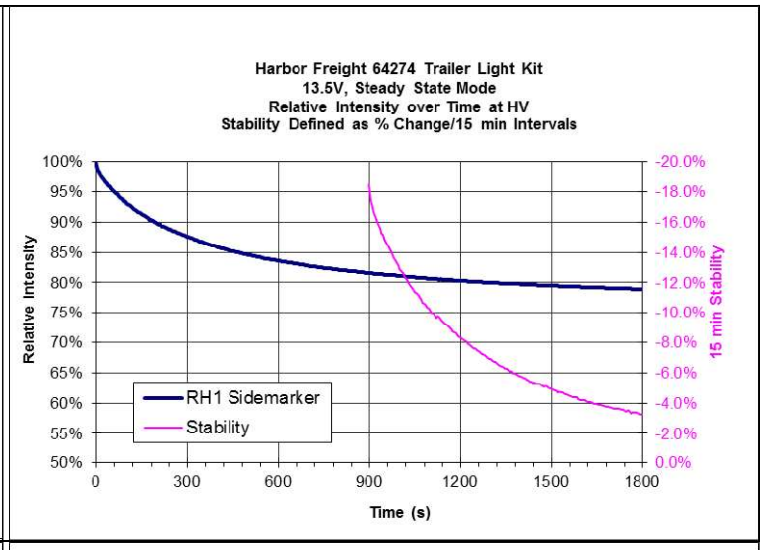
Report No.: 200103-03C

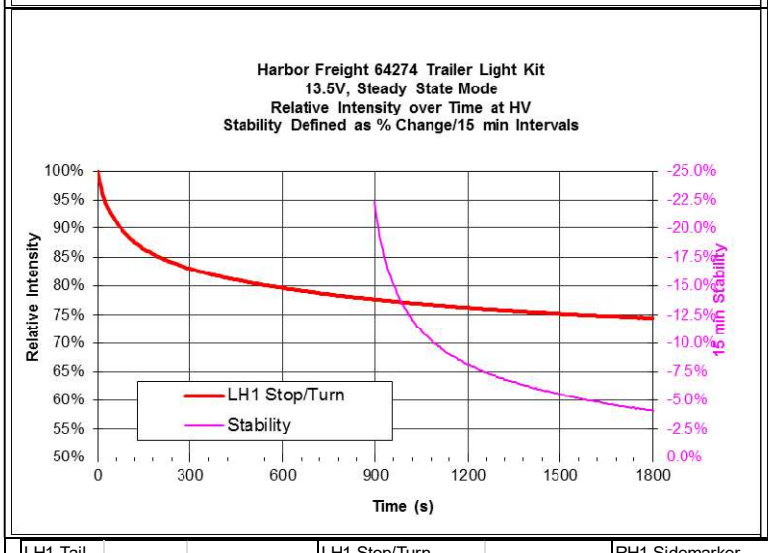
PHOTOMETRIC TEST SUMMARY SHEET

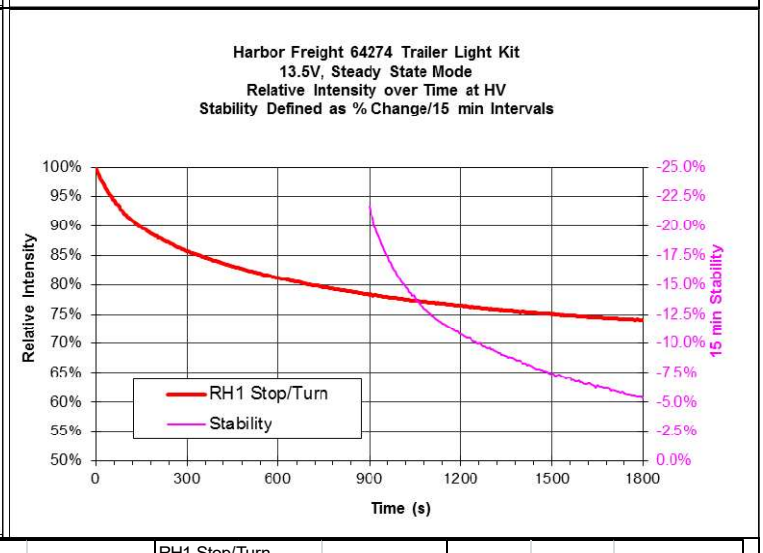
Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

Time Logs









LH1 Tail		LH1 Stop/Turn		RH1 Sidemarker		RH1 Stop/Turn			
Max:	15.0	Max:	198.4	Max:	62.1	Max:	115.5	Max:	0.0
Ratios		Ratios		Ratios		Ratios		Ratios	
1min/10min	1.058	1min/10min	1.143	1min/10min	1.135	1min/10min	1.162	1min/10min	#DIV/0!
10min/30min	1.036	10min/30min	1.069	10min/30min	1.060	10min/30min	1.095	10min/30min	#DIV/0!
1min/30min	1.095	1min/30min	1.222	1min/30min	1.203	1min/30min	1.272	1min/30min	#DIV/0!

Stop/Turn and sidemarker required greater than 30 minutes to reach SAE defined 3%/15min thermal stabilization.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH1

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		131.83		22	420
10.0U 5.0R		118.89		22	420
5.0U 20.0L		42.39		15	420
5.0U 10.0L		105.78		40	420
5.0U V		152.45		95	420
5.0U 10.0R		100.69		40	420
5.0U 20.0R		19.36		15	420
H 10.0L		103.08		55	420
H 5.0L		124.84		110	420
H V		155.61		110	420
H 5.0R		159.29		110	420
H 10.0R		101.29		55	420
5.0D 20.0L		44.07		15	420
5.0D 10.0L		86.49		40	420
5.0D V		150.97		95	420
5.0D 10.0R		60.12		40	420
5.0D 20.0R		15.57		15	420
10.0D 5.0L		79.87		22	420
10.0D 5.0R		53.34		22	420
MAXIMUM	2.8D 0.1R	166.63	(190.46 @ t = 1 min)	-	420
Zone 1		298.15		70	-
Zone 2		295.36		135	-
Zone 3		743.16		520	-
Zone 4		262.10		135	-
Zone 5		207.16		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 227mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.069 to acquire t = 10 minute values.

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH2

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		123.67		22	420
10.0U 5.0R		129.20		22	420
5.0U 20.0L		46.18		15	420
5.0U 10.0L		125.03		40	420
5.0U V		181.92		95	420
5.0U 10.0R		121.80		40	420
5.0U 20.0R		28.64		15	420
H 10.0L		144.82		55	420
H 5.0L		166.50		110	420
H V		175.82		110	420
H 5.0R		189.52		110	420
H 10.0R		135.48		55	420
5.0D 20.0L		42.88		15	420
5.0D 10.0L		115.71		40	420
5.0D V		194.50		95	420
5.0D 10.0R		95.88		40	420
5.0D 20.0R		27.04		15	420
10.0D 5.0L		108.42		22	420
10.0D 5.0R		84.03		22	420
MAXIMUM	2.2D 1.7R	206.43		-	420
Zone 1		321.14		70	-
Zone 2		385.56		135	-
Zone 3		908.25		520	-
Zone 4		353.17		135	-
Zone 5		268.90		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 215mA after 10 minute warmup per SAE J1889

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH3

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		140.89		22	420
10.0U 5.0R		139.54		22	420
5.0U 20.0L		37.63		15	420
5.0U 10.0L		110.05		40	420
5.0U V		151.74		95	420
5.0U 10.0R		128.66		40	420
5.0U 20.0R		37.42		15	420
H 10.0L		127.37		55	420
H 5.0L		155.26		110	420
H V		160.27		110	420
H 5.0R		163.18		110	420
H 10.0R		124.84		55	420
5.0D 20.0L		36.26		15	420
5.0D 10.0L		94.51		40	420
5.0D V		160.03		95	420
5.0D 10.0R		79.04		40	420
5.0D 20.0R		37.22		15	420
10.0D 5.0L		87.87		22	420
10.0D 5.0R		68.66		22	420
MAXIMUM	2.2D 2.6R	175.72		-	420
Zone 1		302.65		70	-
Zone 2		331.93		135	-
Zone 3		790.48		520	-
Zone 4		332.53		135	-
Zone 5		282.85		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 217mA after 10 minute warmup per SAE J1889

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: RH1

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		91.66		22	420
10.0U 5.0R		92.01		22	420
5.0U 20.0L		27.67		15	420
5.0U 10.0L		92.82		40	420
5.0U V		111.36		95	420
5.0U 10.0R		89.35		40	420
5.0U 20.0R		32.37		15	420
H 10.0L		111.05		55	420
H 5.0L		108.92+		110	420
H V		93.53+		110	420
H 5.0R		76.76+		110	420
H 10.0R		87.38		55	420
5.0D 20.0L		27.71		15	420
5.0D 10.0L		103.97		40	420
5.0D V		75.77+		95	420
5.0D 10.0R		81.97		40	420
5.0D 20.0R		37.70		15	420
10.0D 5.0L		112.45		22	420
10.0D 5.0R		100.21		22	420
MAXIMUM	3.8U 6.6L	118.35 (137.52 @ t = 1 min)		-	420
Zone 1		259.49		70	-
Zone 2		307.84		135	-
Zone 3		466.33*		520	-
Zone 4		258.70		135	-
Zone 5		262.28		70	-

+ Test point meets 60% of specified intensity
*** - Denotes Failure.**

Applied Voltage: 13.50V / 223mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.110 to acquire t = 10 minute values.

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: RH2

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		92.26		22	420
10.0U 5.0R		97.78		22	420
5.0U 20.0L		28.50		15	420
5.0U 10.0L		99.30		40	420
5.0U V		104.02		95	420
5.0U 10.0R		95.55		40	420
5.0U 20.0R		35.24		15	420
H 10.0L		114.31		55	420
H 5.0L		103.03+		110	420
H V		109.78+		110	420
H 5.0R		91.62+		110	420
H 10.0R		106.56		55	420
5.0D 20.0L		32.11		15	420
5.0D 10.0L		111.76		40	420
5.0D V		88.94+		95	420
5.0D 10.0R		101.80		40	420
5.0D 20.0R		34.97		15	420
10.0D 5.0L		113.54		22	420
10.0D 5.0R		101.63		22	420
MAXIMUM	1.6D 9.0L	118.28		-	420
Zone 1		266.41		70	-
Zone 2		325.37		135	-
Zone 3		497.39*		520	-
Zone 4		303.92		135	-
Zone 5		269.62		70	-

+ Test point meets 60% of specified intensity
*** - Denotes Failure.**

Applied Voltage: 13.50V / 224mA after 10 minute warmup per SAE J1889

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: RH3

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		88.55		22	420
10.0U 5.0R		114.69		22	420
5.0U 20.0L		25.52		15	420
5.0U 10.0L		86.08		40	420
5.0U V		182.41		95	420
5.0U 10.0R		133.55		40	420
5.0U 20.0R		35.18		15	420
H 10.0L		107.53		55	420
H 5.0L		179.79		110	420
H V		174.94		110	420
H 5.0R		142.12		110	420
H 10.0R		152.01		55	420
5.0D 20.0L		27.98		15	420
5.0D 10.0L		88.22		40	420
5.0D V		154.20		95	420
5.0D 10.0R		134.57		40	420
5.0D 20.0R		45.27		15	420
10.0D 5.0L		110.60		22	420
10.0D 5.0R		127.76		22	420
MAXIMUM	2.5U 0.6L	191.19		-	420
Zone 1		252.65		70	-
Zone 2		281.83		135	-
Zone 3		833.46		520	-
Zone 4		420.13		135	-
Zone 5		322.90		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 215mA after 10 minute warmup per SAE J1889

Aim: Lamp mounted with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH1

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		10.88		1.0	25.0
10.0U	5.0R		10.21		1.0	25.0
5.0U	20.0L		5.05		0.7	25.0
5.0U	10.0L		9.63		2.0	25.0
5.0U	V		12.77		4.5	25.0
5.0U	10.0R		9.25		2.0	25.0
5.0U	20.0R		3.52		0.7	25.0
H	10.0L		9.52		2.0	25.0
H	5.0L		10.88		5.0	25.0
H	V		13.10		5.0	25.0
H	5.0R		13.64		5.0	25.0
H	10.0R		9.45		2.0	25.0
5.0D	20.0L		5.17		0.7	-
5.0D	10.0L		8.32		2.0	-
5.0D	V		12.88		4.5	-
5.0D	10.0R		6.61		2.0	-
5.0D	20.0R		3.37		0.7	-
10.0D	5.0L		7.85		1.0	-
10.0D	5.0R		5.90		1.0	-
MX(H-90U/45L-45R)		1.0U 3.7R	14.05	(15.38 @ t = 1 min)	-	25.0
MAXIMUM		1.0U 3.7R	14.05		-	-
Zone 1			28.95		3.5	-
Zone 2			27.47		6.0	-
Zone 3			63.27		24.0	-
Zone 4			25.32		6.0	-
Zone 5			23.00		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 110mA after 30 minute warmup per SAE J1889
Current includes sidemarker and license plate lamp.

Aim: Lamp mounted with seating plane perpendicular to HV.

Note: Side marker and license plate lamp masked off during testing.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: RH1

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		8.15		1.0	25.0
10.0U 5.0R		8.08		1.0	25.0
5.0U 20.0L		4.69		0.7	25.0
5.0U 10.0L		9.62		2.0	25.0
5.0U V		10.28		4.5	25.0
5.0U 10.0R		8.82		2.0	25.0
5.0U 20.0R		4.71		0.7	25.0
H 10.0L		10.33		2.0	25.0
H 5.0L		10.02		5.0	25.0
H V		8.98		5.0	25.0
H 5.0R		7.64		5.0	25.0
H 10.0R		8.31		2.0	25.0
5.0D 20.0L		4.33		0.7	-
5.0D 10.0L		9.81		2.0	-
5.0D V		7.52		4.5	-
5.0D 10.0R		7.92		2.0	-
5.0D 20.0R		4.77		0.7	-
10.0D 5.0L		9.66		1.0	-
10.0D 5.0R		8.81		1.0	-
MX(H-90U/45L-45R)	3.0U 7.8L	11.12	(~12.23 @ t = 1 min)	-	25.0
MAXIMUM	3.5U 7.5L	11.11		-	-
Zone 1		26.84		3.5	-
Zone 2		29.76		6.0	-
Zone 3		44.44		24.0	-
Zone 4		25.04		6.0	-
Zone 5		26.37		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 59mA after 30 minute warmup per SAE J1889
Current includes sidemarker lamp.

Aim: Lamp mounted with seating plane perpendicular to HV.

Note: Side marker lamp masked off during testing.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

Sample Number: LH1 & RH1

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp Stop/Tail Ratio & Turn/Tail Ratio

	Tail			Stop/Turn			SI/T Ratio		
	LH	RH		LH	RH		LH	RH	Required
10.0U 5.0L	10.9	8.2		131.8	91.7		12.1	11.2	3
10.0U 5.0R	10.2	8.1		118.9	92.0		11.6	11.4	3
5.0U 20.0L	5.1	4.7		42.4	27.7		8.4	5.9	3
5.0U 10.0L	9.6	9.6		105.8	92.8		11.0	9.6	3
5.0U V	12.8	10.3		152.5	111.4		11.9	10.8	5
5.0U 10.0R	9.3	8.8		100.7	89.4		10.9	10.1	3
5.0U 20.0R	3.5	4.7		19.4	32.4		5.5	6.9	3
H 10.0L	9.5	10.3		103.1	111.1		10.8	10.8	3
H 5.0L	10.9	10.0		124.8	108.9		11.5	10.9	5
H V	13.1	9.0		155.6	93.5		11.9	10.4	5
H 5.0R	13.6	7.6		159.3	76.8		11.7	10.0	5
H 10.0R	9.5	8.3		101.3	87.4		10.7	10.5	3
5.0D 20.0L	5.2	4.3		44.1	27.7		8.5	6.4	3
5.0D 10.0L	8.3	9.8		86.5	104.0		10.4	10.6	3
5.0D V	12.9	7.5		151.0	75.8		11.7	10.1	3
5.0D 10.0R	6.6	7.9		60.1	82.0		9.1	10.3	3
5.0D 20.0R	3.4	4.8		15.6	37.7		4.6	7.9	3
10.0D 5.0L	7.9	9.7		79.9	112.5		10.2	11.6	3
10.0D 5.0R	5.9	8.8		53.3	100.2		9.0	11.4	3

Samples meet test requirements at all points.

Applied Voltage: 13.50V

Aim: Lamp mounted horizontally with seating plane perpendicular to HV.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH1

Specification: FMVSS 108 Table X: Sidemarker Lamp
Color: Red
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 45.0L		0.78		0.25	-
10.0U V		1.67		0.25	-
10.0U 45.0R		0.50		0.25	-
10.0U 45.0L TO 45.0R	43.9R	0.48		0.25	-
5.0U 45.0L TO 45.0R	44.4R	0.56		0.25	-
H 45.0L		1.38		0.25	-
H V		4.07		0.25	-
H 45.0R		0.65		0.25	-
H 45.0L TO 45.0R	43.7R	0.63		0.25	-
5.0D 45.0L TO 45.0R	45.0R	0.63		0.25	-
10.0D 45.0L		1.27		0.25	-
10.0D V		3.85		0.25	-
10.0D 45.0R		0.57		0.25	-
10.0D 45.0L TO 45.0R	45.0R	0.57		0.25	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 110mA after 30 minute warmup per SAE J1889
Current includes tail and license plate lamp.

Aim: Lamp mounted with seating plane parallel to HV.

Note: Tail and license plate lamp masked off during testing.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: RH1

Specification: FMVSS 108 Table X: Sidemarker Lamp
Color: Red
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 45.0L		0.47		0.25	-
10.0U V		2.59		0.25	-
10.0U 45.0R		0.80		0.25	-
10.0U 45.0L TO 45.0R	44.9L	0.47		0.25	-
5.0U 45.0L TO 45.0R	44.6L	0.61		0.25	-
H 45.0L		0.67		0.25	-
H V		4.85		0.25	-
H 45.0R		1.30		0.25	-
H 45.0L TO 45.0R	44.2L	0.66		0.25	-
5.0D 45.0L TO 45.0R	44.6L	0.69		0.25	-
10.0D 45.0L		0.72		0.25	-
10.0D V		3.57		0.25	-
10.0D 45.0R		1.44		0.25	-
10.0D 45.0L TO 45.0R	44.9L	0.72		0.25	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 56mA after 30 minute warmup per SAE J1889
Current includes tail lamp.

Aim: Lamp mounted with seating plane parallel to HV.

Note: Tail lamp masked off during testing.

Report No.: 200103-03C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

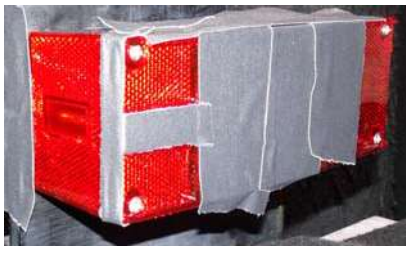
Sample Number: LH1 & RH1

Specification: FMVSS 108 Table XVI-a: Reflex Reflector
Color: Red
Specific Intensity, Candela / Footcandle

Test Point	Measured 0.2°	Required Minimum	Measured 1.5°	Required Minimum
LH1, Rear				
10.0U V	5.579	3.00	0.231	0.05
H 20.0L	3.265	1.50	0.123	0.03
H V	7.693	4.50	0.635	0.07
H 20.0R	2.707	1.50	0.118	0.03
10.0D V	5.783	3.00	0.314	0.05
LH1, Side				
10.0U V	4.894	3.00	0.114	0.05
H 20.0L	3.939	1.50	0.093	0.03
H V	6.259	4.50	0.158	0.07
H 20.0R	2.418	1.50	0.055	0.03
10.0D V	5.622	3.00	0.144	0.05
RH1, Rear				
10.0U V	4.233	3.00	0.272	0.05
H 20.0L	1.970	1.50	0.109	0.03
H V	6.861	4.50	0.470	0.07
H 20.0R	2.662	1.50	0.114	0.03
10.0D V	4.382	3.00	0.231	0.05
RH1, Side				
10.0U V	5.261	3.00	0.116	0.05
H 20.0L	2.280	1.50	0.053	0.03
H V	6.204	4.50	0.173	0.07
H 20.0R	3.797	1.50	0.097	0.03
10.0D V	5.090	3.00	0.132	0.05

Sample meets test requirements at all points.

Incident Illumination upon sample: 0.959 fc (10.31 Lux)
Aim: Lamp mounted with seating plane perpendicular to HV (rear).
Note: Entire device excluding reflex masked off during testing.



PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: LH1, LP holder top mounting holes / centered beneath LEDs

Specification: S7.7.13 License Plate Lamps
Test Method: FMVSS 108 S14.2.2, instrument ±5° to reference test plate plane
At least 75% of Test Stations areas viewed by luminance meter
Instrument: UDT-351 DLP Illuminance Meter,
Photo Research PR-655 Spectroradiometer

Test Station	Illuminance (fc)	
	Measured	Required Minimum
1	19.78	0.75
2	45.66	
3	50.70	
4	11.02	
5	11.12	
6	16.73	
7	19.28	
8	8.87	

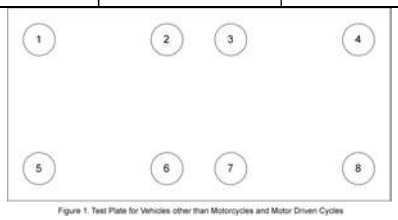
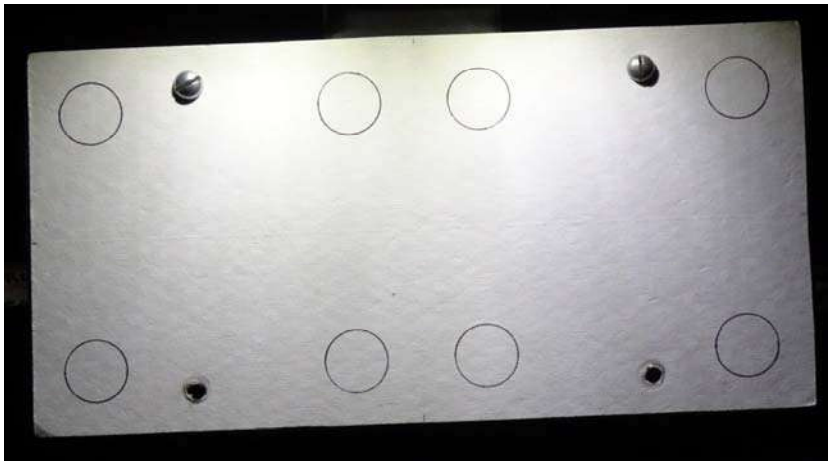


Figure 1. Test Plate for Vehicles other than Motorcycles and Motor Driven Cycles

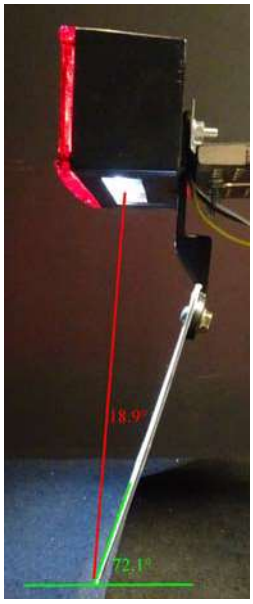

[Photo of illuminated plate]

Ratio of Max / Min

Max Stations	Min Stations	Ratio	Required Maximum
2 + 3	5 + 8	4.4	20

S6.6.3 License Plate Holder
S7.7.15 Installation / Geometry

Item	Measured	Required
License Plate Holder Mounting Surface Angle (< 1.2m from ground)	+13.4°	-15° to +30°
Cutoff Distance	40 mm	≥ 25 mm
Incident Light Angle	20°	≥ 8°



License test plate mounted on submitted license plate holder. Holder mounted to lamp using the top mounting holes of the holder and located directly beneath LEDs.

Applied Voltage: 13.5V / 51 mA
Sample meets license plate holder and license plate illumination requirements.

Report No.: 200103-03C

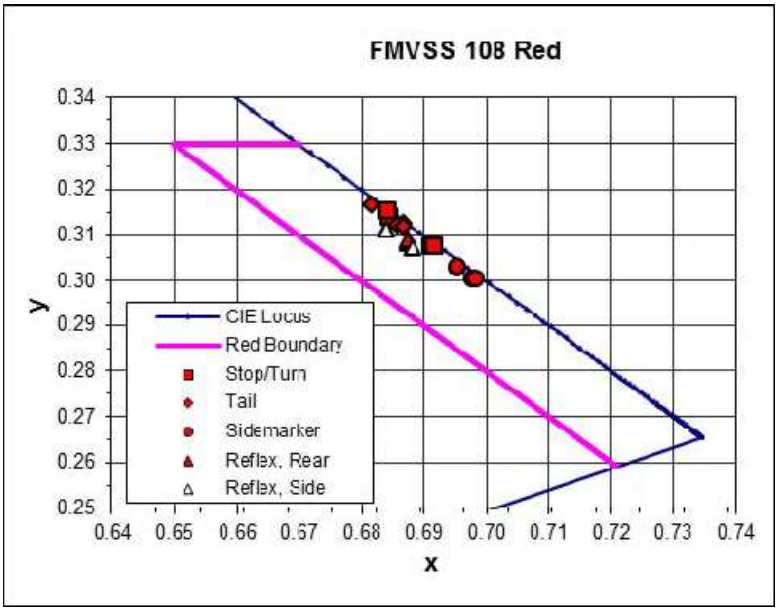
COLORIMETRY TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights
for trailers less than 2032 mm in overall width

Sample Number: Set #1

Requirement: FMVSS 108 S14.4.1 Color Test
Test Method: FMVSS 108 S14.4.1.4 Tristimulus Method
Average of 3 reads using LEDs at design voltage
Instrument: Photo Research PR-655 Spectroradiometer with SRS-3 Target
Location: HV, 2 ft (Tail, Stop/Turn, Sidemarker);
5D/V (Reflex - Ill. A, 2° Observer, +5°/0.33° Geometry at 10 ft)
Voltage: 13.5V (Tail, Stop/Turn, Sidemarker)

Measured (x, y)					Requirement & Chart
Tail	LH1	t=0	0.6816	0.3166	Required $y \leq 0.33$ $y \geq 0.98 - x$
		t=30	0.6868	0.3125	
	RH1	t=0	0.6858	0.3122	
		t=30	0.6868	0.3118	
Stop/Turn	LH1	t=0	0.6845	0.314	
		t=30	0.6913	0.3073	
	RH1	t=0	0.6842	0.3152	
		t=30	0.6918	0.3073	
Sidemarker	LH1	t=0	0.6953	0.3027	
		t=30	0.6978	0.3005	
	RH1	t=0	0.6953	0.3032	
		t=30	0.6985	0.3002	
Reflex, Rear	LH1		0.6875	0.3082	
	RH1		0.6876	0.3089	
Reflex, Side	LH1		0.6883	0.3072	
	RH1		0.684	0.3112	



Samples meet Red Color requirements.

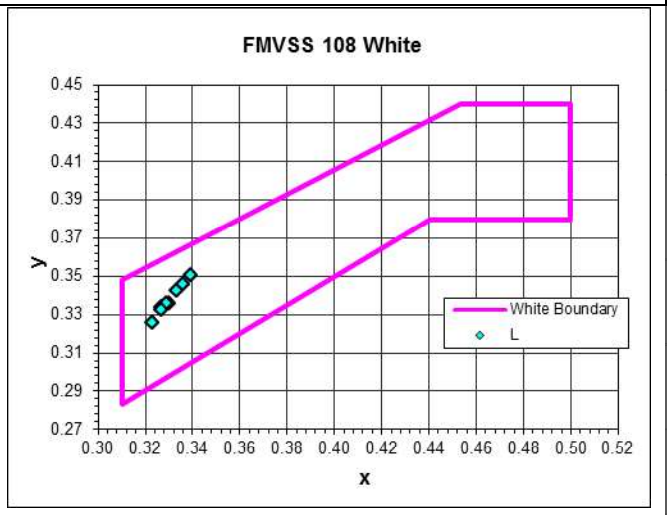
Report No.: 200103-03C

COLORIMETRY TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

Sample Number: LH1 (LP bracket mounted using top mounting holes)

Requirement: FMVSS 108 S14.4.1 Color Test
Test Method: FMVSS 108 S14.4.1.4 Tristimulus Method
Average of 3 reads
Instrument: Photo Research PR-655 Spectroradiometer with SRS-3 Target
Location: HV, 2 ft (Sidemarker);
5D/V (Reflex - Ill. A, 2° Observer, +5°/0.33° Geometry at 10 ft);
Test stations, direct view of each source (License)
Voltage: 13.5V (License)

Measured (x, y)		Required	Chart
x	y	$0.31 \le x \le 0.50$ $0.38 \le y \le 0.44$ $y \ge 0.75x + 0.05$ $y \le 0.64x + 0.15$	
0.333	0.342		
0.339	0.350		
0.336	0.345		
0.330	0.335		
0.327	0.333		
0.329	0.335		
0.327	0.332		
0.323	0.325		

Sample meets White Color requirements.

MECHANICAL TEST DATA SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

MECHANICAL TESTS (SAE J575 AUG2015)

4.9.3 Water Submersion Test: ..... Passed

Sample Numbers: LH2/RH2

Samples completely submerged under laboratory ambient temperature water at a depth of 150 to 175 mm as measured from the top of the device for a duration of one minute.

There was no observed bubbles caused by air escaping from the sealed portion of the device or water leaking from the device immediately after it is removed from submersion.
There was no observed interior water pooling.

Device is designed to allow water into the interior chamber but not within the sealed portion that contains the LEDs.

Sample complies with SAE J575 4.9.3 Water Submergence Test requirements.

PHOTOGRAPH SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

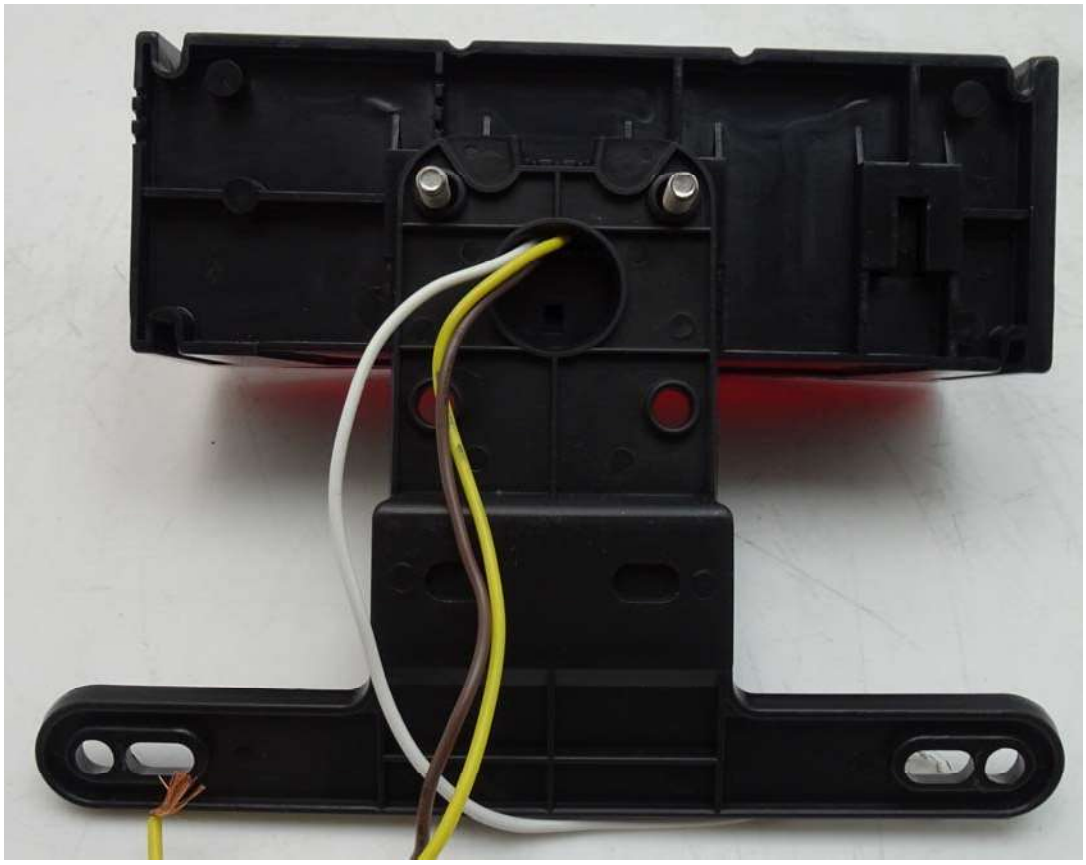
PHOTOGRAPH SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

PHOTOGRAPH SHEET

Project Name: Harbor Freight 64274 2pc Submersible LED Trailer Lights for trailers less than 2032 mm in overall width

License Plate Holder Mounting Configurations



Report No.: 200316-02H

TEST REPORT

Report Date: 29 March 2020

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)
for Vehicles <2032 mm in Overall Width

Submitted by: Harbor Freight Tools
Calabasas, CA 91302

Test Laboratory: Calcoast – ITL
San Leandro, CA 94577

Samples Submitted: Four (4) kits Serial: 372381927 submitted 16 March 2020
Four (4) kits Serial: 372381952 submitted 16 March 2020

SUMMARY

TESTS (FMVSS 108/CMVSS 108)

Photometric Tests – Combination Lamp

Serial: 372381927 (Designated LH1/RH1-LH4/RH4)
Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) .....8 of 8 Passed
Tail Lamp - S7.2.13 / Table VII .....8 of 8 Passed
Stop Lamp - S7.3.13 / Table IX .....8 of 8 Passed

Serial: 372381952 (Designated LH5/RH5-LH8/RH8)
Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) .....7 of 8 Passed
Tail Lamp - S7.2.13 / Table VII .....8 of 8 Passed
Stop Lamp - S7.3.13 / Table IX .....7 of 8 Passed

No additional tests performed in this test program.

Written and Approved by:

Mark A. Evans
Laboratory Director

DESCRIPTION SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Kit contains a lamp system consisting of one (1) pair of rear mounted combination lamps (RCLs) with Tail, Stop, and Rear Turn Signal functions using LEDs as light sources.
The Stop and Rear Turn Signal are optically combined.

Devices are to be temporarily mounted on vehicles using magnets. Devices are wired to provide separate LH and RH Turn Signal activation.

MARKINGS:

LENS:

Outer: None

Inner: "DOT", "SAE IST02"

HOUSING: "Kenway", "Item: 64282", "Serial: 372381927" or "Serial: 372381952"
Sticker – "Kenway 12 VOLT LED MAGNETIC TOWING LIGHT KIT", "64282", additional text

MATERIAL:

LENS:

Outer Chimei Corporation Acryrex CM-205 PMMA with R-001 Red Pigment

Inner: Chimei Corporation Acryrex CM-205 PMMA with N-000 Clear Pigment

Lens material formulation and pigments are listed in the AMECA List of Acceptable Plastics indicating compliance with FMVSS 108 S14.4.2 Plastic optical materials requirements.

HOUSING: Plastic, Black

MOUNTING: One (1) large magnet to vehicle

BULBS:

FUNCTION	QUANTITY	TYPE	VOLTAGE	POWER @ 13.5V	FLUX
IS	12	LED SMD2835R	13.5V	3W	-
T				0.15W	-

BULB SOCKET REQUIRMENTS – SAE J567b

FMVSS 108 S14.2.1.6.2 / SAE J567b does not apply to LED systems.

Note: Material information provided by manufacturer.

PHOTOMETRIC TEST SUMMARY SHEET

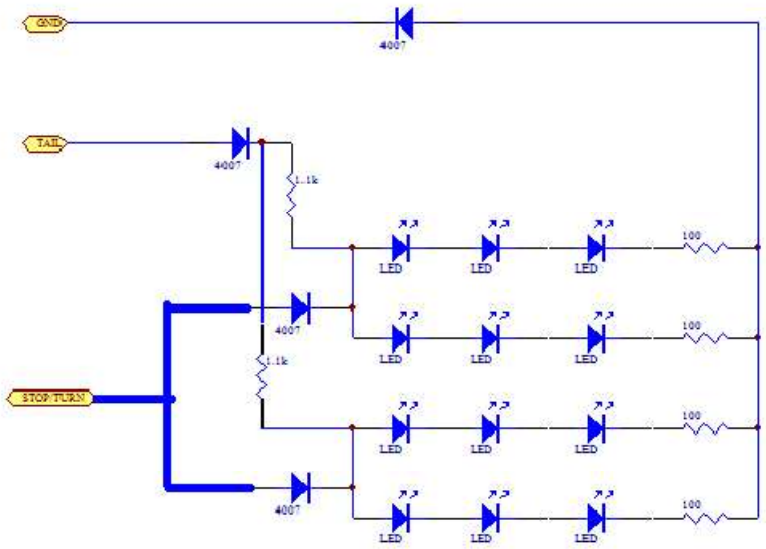
Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

SUMMARY OF PHOTOMETRIC TESTS

Specification(s): FMVSS 108 / CMVSS 108
Tests performed by: DGC/MAE Date: 27-28 March 2020

Serial: 372381927 (Designated LH1/RH1-LH4/RH4)
Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) ..... 8 of 8 Passed
Tail Lamp - S7.2.13 / Table VII ..... 8 of 8 Passed
Stop Lamp - S7.3.13 / Table IX ..... 8 of 8 Passed

Serial: 372381952 (Designated LH5/RH5-LH8/RH8)
Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) ..... 7 of 8 Passed
Tail Lamp - S7.2.13 / Table VII ..... 8 of 8 Passed
Stop Lamp - S7.3.13 / Table IX ..... 7 of 8 Passed



Wiring Diagram Submitted by Manufacturer

NHTSA has interpreted LED lamps as having a single light source if all the LEDs are in series and as having multiple light sources if all the LEDs are not in series. Each parallel series of LEDs is considered a separate light source. Each light source is then considered a "lighted section".

FMVSS 108 has multiple lighted section requirements for rear turn signal lamps for vehicle less than 2032 mm wide (see S7.1.2.11.2 and Table VII).

FMVSS 108 has multiple lighted section requirements for tail lamps for vehicle less than 2032 mm wide (see S7.2.11.2 and Table VIII).

FMVSS 108 has multiple lighted section requirements for stop lamps for vehicle less than 2032 mm wide (see S7.3.11.2 and Table IX).

Report No.: 200316-02H

PHOTOMETRIC TEST SUMMARY SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

SUMMARY OF PHOTOMETRIC TESTS (Cont.)

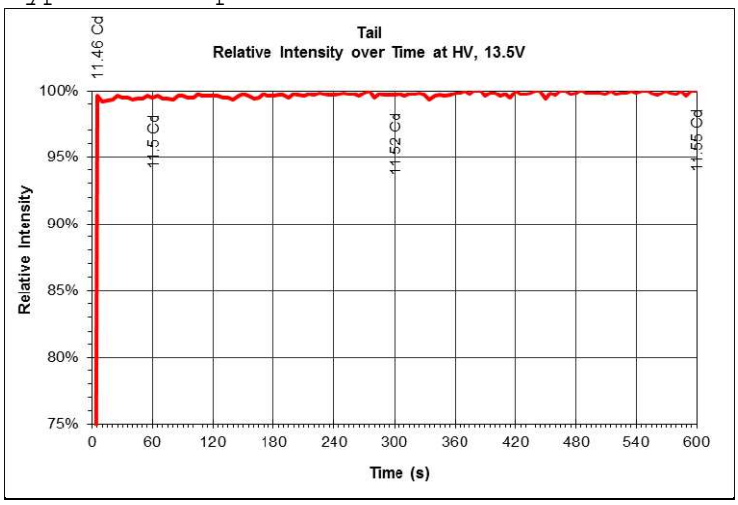
Specification(s): FMVSS 108 / CMVSS 108
Tests performed by: DGC/MAE Date: 27-28 March 2020

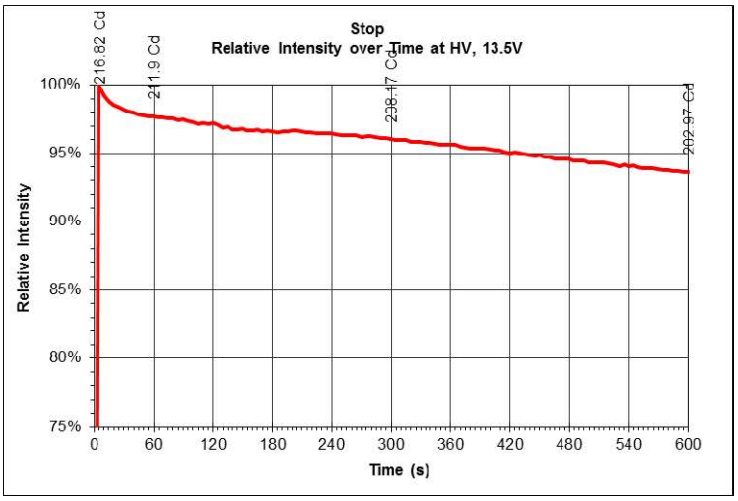
Reference detector control number: NIST P181-2
Test distance: 100 feet

Samples tested using LEDs at designated voltage (13.5V). Samples mounted on CCITL universal fixture with function source located at goniometer center of rotation and tilt.

LED functions tested after 10 minute of stabilization. Stop/Turn Signal maximums were then multiplied by a factor to achieve the performance at 1 minute (SAE J1889 methodology).
After testing, the intensities at HV were measured through a voltage range and the ratios compared to design voltage tabulated below.:

Typical Response over Time





Tail Had No Degradation
Stop/Turn Degraded Approximately 5% Over 10 Minute Period

Intensity vs. Voltage

12.0V	12.8V	13.5V	14.0V
0.84	0.93	1.00	1.05

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH1 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		93.25		22	420
10.0U 5.0R		99.02		22	420
5.0U 20.0L		48.40		15	420
5.0U 10.0L		95.43		40	420
5.0U V		118.21		95	420
5.0U 10.0R		102.32		40	420
5.0U 20.0R		36.94		15	420
H 10.0L		110.52		55	420
H 5.0L		183.62		110	420
H V		202.06		110	420
H 5.0R		151.45		110	420
H 10.0R		111.94		55	420
5.0D 20.0L		56.20		15	420
5.0D 10.0L		96.62		40	420
5.0D V		218.91		95	420
5.0D 10.0R		109.80		40	420
5.0D 20.0R		42.01		15	420
10.0D 5.0L		99.44		22	420
10.0D 5.0R		98.66		22	420
MAXIMUM	2.5D 1.3L	352.12	[367.61 @ t=1min]	-	420
Zone 1		297.29		70	-
Zone 2		302.58		135	-
Zone 3		874.25		520	-
Zone 4		324.06		135	-
Zone 5		276.64		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.229A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH2 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		79.64		22	420
10.0U 5.0R		78.25		22	420
5.0U 20.0L		27.53		15	420
5.0U 10.0L		79.78		40	420
5.0U V		122.04		95	420
5.0U 10.0R		102.14		40	420
5.0U 20.0R		70.10		15	420
H 10.0L		87.71		55	420
H 5.0L		146.13		110	420
H V		246.43		110	420
H 5.0R		267.24		110	420
H 10.0R		121.81		55	420
5.0D 20.0L		32.88		15	420
5.0D 10.0L		83.29		40	420
5.0D V		239.29		95	420
5.0D 10.0R		111.54		40	420
5.0D 20.0R		72.47		15	420
10.0D 5.0L		86.06		22	420
10.0D 5.0R		95.64		22	420
MAXIMUM	3.0D 1.9R	367.60		-	420
Zone 1		226.11		70	-
Zone 2		250.78		135	-
Zone 3		1021.12		520	-
Zone 4		335.48		135	-
Zone 5		316.45		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.238A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH3 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		121.11		22	420
10.0U 5.0R		126.44		22	420
5.0U 20.0L		71.17		15	420
5.0U 10.0L		108.00		40	420
5.0U V		263.54		95	420
5.0U 10.0R		106.70		40	420
5.0U 20.0R		56.36		15	420
H 10.0L		93.31		55	420
H 5.0L		150.57		110	420
H V		221.67		110	420
H 5.0R		143.26		110	420
H 10.0R		100.80		55	420
5.0D 20.0L		53.59		15	420
5.0D 10.0L		87.86		40	420
5.0D V		99.49		95	420
5.0D 10.0R		92.21		40	420
5.0D 20.0R		43.90		15	420
10.0D 5.0L		79.27		22	420
10.0D 5.0R		88.03		22	420
MAXIMUM	2.7U 0.3R	359.45	[389.42 @ t=1min]	-	420
Zone 1		325.14		70	-
Zone 2		289.17		135	-
Zone 3		878.53		520	-
Zone 4		299.71		135	-
Zone 5		314.73		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.238A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Note: Sample received damaged. Data collection only for maximum intensity.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH4 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		116.56		22	420
10.0U 5.0R		116.82		22	420
5.0U 20.0L		45.10		15	420
5.0U 10.0L		115.55		40	420
5.0U V		150.00		95	420
5.0U 10.0R		107.28		40	420
5.0U 20.0R		42.40		15	420
H 10.0L		128.32		55	420
H 5.0L		154.17		110	420
H V		214.32		110	420
H 5.0R		165.39		110	420
H 10.0R		110.32		55	420
5.0D 20.0L		48.46		15	420
5.0D 10.0L		113.49		40	420
5.0D V		154.62		95	420
5.0D 10.0R		103.51		40	420
5.0D 20.0R		41.35		15	420
10.0D 5.0L		99.93		22	420
10.0D 5.0R		100.34		22	420
MAXIMUM	1.3D 0.4R	240.16	[249.62 @ t=1min]	-	420
Zone 1		310.04		70	-
Zone 2		357.35		135	-
Zone 3		838.51		520	-
Zone 4		321.12		135	-
Zone 5		300.91		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.233A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH1 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		89.51		22	420
10.0U 5.0R		85.74		22	420
5.0U 20.0L		40.01		15	420
5.0U 10.0L		84.00		40	420
5.0U V		121.11		95	420
5.0U 10.0R		85.59		40	420
5.0U 20.0R		46.60		15	420
H 10.0L		98.56		55	420
H 5.0L		137.71		110	420
H V		189.07		110	420
H 5.0R		185.96		110	420
H 10.0R		96.95		55	420
5.0D 20.0L		49.95		15	420
5.0D 10.0L		89.41		40	420
5.0D V		230.83		95	420
5.0D 10.0R		95.54		40	420
5.0D 20.0R		50.96		15	420
10.0D 5.0L		84.74		22	420
10.0D 5.0R		87.37		22	420
MAXIMUM	3.0D 0.5R	306.09	[326.55 @ t=1min]	-	420
Zone 1		264.21		70	-
Zone 2		271.97		135	-
Zone 3		864.67		520	-
Zone 4		278.09		135	-
Zone 5		270.67		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.239A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH2 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		82.36		22	420
10.0U 5.0R		92.03		22	420
5.0U 20.0L		39.83		15	420
5.0U 10.0L		86.86		40	420
5.0U V		136.29		95	420
5.0U 10.0R		100.85		40	420
5.0U 20.0R		49.02		15	420
H 10.0L		91.79		55	420
H 5.0L		145.89		110	420
H V		189.42		110	420
H 5.0R		158.20		110	420
H 10.0R		110.34		55	420
5.0D 20.0L		39.38		15	420
5.0D 10.0L		82.68		40	420
5.0D V		169.87		95	420
5.0D 10.0R		107.70		40	420
5.0D 20.0R		51.45		15	420
10.0D 5.0L		87.05		22	420
10.0D 5.0R		93.45		22	420
MAXIMUM	2.2D 1.4L	226.87	[232.11 @ t=1min]	-	420
Zone 1		248.62		70	-
Zone 2		261.33		135	-
Zone 3		799.67		520	-
Zone 4		318.89		135	-
Zone 5		285.93		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.240A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH3 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		77.98		22	420
10.0U 5.0R		89.64		22	420
5.0U 20.0L		37.19		15	420
5.0U 10.0L		77.18		40	420
5.0U V		111.03		95	420
5.0U 10.0R		99.44		40	420
5.0U 20.0R		41.35		15	420
H 10.0L		93.97		55	420
H 5.0L		142.47		110	420
H V		142.66		110	420
H 5.0R		109.68+		110	420
H 10.0R		100.02		55	420
5.0D 20.0L		35.56		15	420
5.0D 10.0L		85.93		40	420
5.0D V		131.65		95	420
5.0D 10.0R		97.26		40	420
5.0D 20.0R		48.28		15	420
10.0D 5.0L		85.86		22	420
10.0D 5.0R		87.40		22	420
MAXIMUM	1.0U 1.6L	146.50	[155.90 @ t=1min]	-	420
Zone 1		236.58		70	-
Zone 2		257.09		135	-
Zone 3		637.50		520	-
Zone 4		296.72		135	-
Zone 5		266.67		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.242A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH4 (Serial: 372381927)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		91.99		22	420
10.0U 5.0R		101.24		22	420
5.0U 20.0L		21.93		15	420
5.0U 10.0L		91.93		40	420
5.0U V		119.77		95	420
5.0U 10.0R		117.81		40	420
5.0U 20.0R		65.05		15	420
H 10.0L		94.26		55	420
H 5.0L		144.84		110	420
H V		246.18		110	420
H 5.0R		190.16		110	420
H 10.0R		131.88		55	420
5.0D 20.0L		30.59		15	420
5.0D 10.0L		89.82		40	420
5.0D V		193.50		95	420
5.0D 10.0R		123.63		40	420
5.0D 20.0R		70.45		15	420
10.0D 5.0L		89.64		22	420
10.0D 5.0R		102.64		22	420
MAXIMUM	2.4D 1.1R	278.87	[289.86 @ t=1min]	-	420
Zone 1		234.16		70	-
Zone 2		276.01		135	-
Zone 3		894.46		520	-
Zone 4		373.31		135	-
Zone 5		339.38		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.241A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH1 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.63		1.0	25.0
10.0U 5.0R		5.96		1.0	25.0
5.0U 20.0L		2.75		0.7	25.0
5.0U 10.0L		5.72		2.0	25.0
5.0U V		7.07		4.5	25.0
5.0U 10.0R		6.17		2.0	25.0
5.0U 20.0R		2.15		0.7	25.0
H 10.0L		6.60		2.0	25.0
H 5.0L		11.18		5.0	25.0
H V		11.56		5.0	25.0
H 5.0R		8.79		5.0	25.0
H 10.0R		6.78		2.0	25.0
5.0D 20.0L		3.31		0.7	-
5.0D 10.0L		5.84		2.0	-
5.0D V		13.20		4.5	-
5.0D 10.0R		6.68		2.0	-
5.0D 20.0R		2.41		0.7	-
10.0D 5.0L		5.98		1.0	-
10.0D 5.0R		5.99		1.0	-
MX(H-90U/45L-45R)	H 2.4L	13.74		-	25.0
MAXIMUM	2.2D 1.5L	20.82		-	-
Zone 1		17.67		3.5	-
Zone 2		18.16		6.0	-
Zone 3		51.79		24.0	-
Zone 4		19.63		6.0	-
Zone 5		16.51		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH2 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.61		1.0	25.0
10.0U 5.0R		4.60		1.0	25.0
5.0U 20.0L		1.47		0.7	25.0
5.0U 10.0L		4.63		2.0	25.0
5.0U V		6.94		4.5	25.0
5.0U 10.0R		5.97		2.0	25.0
5.0U 20.0R		3.94		0.7	25.0
H 10.0L		5.12		2.0	25.0
H 5.0L		8.52		5.0	25.0
H V		13.10		5.0	25.0
H 5.0R		14.73		5.0	25.0
H 10.0R		7.12		2.0	25.0
5.0D 20.0L		1.75		0.7	-
5.0D 10.0L		4.87		2.0	-
5.0D V		13.68		4.5	-
5.0D 10.0R		6.50		2.0	-
5.0D 20.0R		4.16		0.7	-
10.0D 5.0L		5.03		1.0	-
10.0D 5.0R		5.61		1.0	-
MX(H-90U/45L-45R)	H 4.8R	14.77		-	25.0
MAXIMUM	2.2D 3.3R	20.30		-	-
Zone 1		12.85		3.5	-
Zone 2		14.62		6.0	-
Zone 3		56.97		24.0	-
Zone 4		19.59		6.0	-
Zone 5		18.31		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH3 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		7.24		1.0	25.0
10.0U 5.0R		7.48		1.0	25.0
5.0U 20.0L		4.23		0.7	25.0
5.0U 10.0L		6.40		2.0	25.0
5.0U V		15.14		4.5	25.0
5.0U 10.0R		6.33		2.0	25.0
5.0U 20.0R		3.31		0.7	25.0
H 10.0L		5.59		2.0	25.0
H 5.0L		8.98		5.0	25.0
H V		13.34		5.0	25.0
H 5.0R		8.45		5.0	25.0
H 10.0R		6.02		2.0	25.0
5.0D 20.0L		3.25		0.7	-
5.0D 10.0L		5.22		2.0	-
5.0D V		6.02		4.5	-
5.0D 10.0R		5.48		2.0	-
5.0D 20.0R		2.54		0.7	-
10.0D 5.0L		4.76		1.0	-
10.0D 5.0R		5.16		1.0	-
MX(H-90U/45L-45R)	2.8U V	21.56		-	25.0
MAXIMUM	2.8U V	21.52		-	-
Zone 1		19.48		3.5	-
Zone 2		17.21		6.0	-
Zone 3		51.94		24.0	-
Zone 4		17.83		6.0	-
Zone 5		18.49		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.20V / 22mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Note: Sample received damaged. Data collection only for maximum intensity.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH4 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		7.01		1.0	25.0
10.0U 5.0R		7.04		1.0	25.0
5.0U 20.0L		2.58		0.7	25.0
5.0U 10.0L		6.90		2.0	25.0
5.0U V		8.75		4.5	25.0
5.0U 10.0R		6.45		2.0	25.0
5.0U 20.0R		2.40		0.7	25.0
H 10.0L		7.70		2.0	25.0
H 5.0L		9.12		5.0	25.0
H V		12.29		5.0	25.0
H 5.0R		9.85		5.0	25.0
H 10.0R		6.64		2.0	25.0
5.0D 20.0L		2.83		0.7	-
5.0D 10.0L		6.87		2.0	-
5.0D V		9.40		4.5	-
5.0D 10.0R		6.29		2.0	-
5.0D 20.0R		2.40		0.7	-
10.0D 5.0L		6.02		1.0	-
10.0D 5.0R		6.11		1.0	-
MX(H-90U/45L-45R)	H V	12.41		-	25.0
MAXIMUM	1.3D 0.3R	13.89		-	-
Zone 1		18.44		3.5	-
Zone 2		21.47		6.0	-
Zone 3		49.41		24.0	-
Zone 4		19.39		6.0	-
Zone 5		17.96		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH1 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.10		1.0	25.0
10.0U 5.0R		4.89		1.0	25.0
5.0U 20.0L		2.15		0.7	25.0
5.0U 10.0L		4.80		2.0	25.0
5.0U V		6.88		4.5	25.0
5.0U 10.0R		4.90		2.0	25.0
5.0U 20.0R		2.65		0.7	25.0
H 10.0L		5.68		2.0	25.0
H 5.0L		7.94		5.0	25.0
H V		10.56		5.0	25.0
H 5.0R		10.47		5.0	25.0
H 10.0R		5.49		2.0	25.0
5.0D 20.0L		2.78		0.7	-
5.0D 10.0L		5.12		2.0	-
5.0D V		13.16		4.5	-
5.0D 10.0R		5.46		2.0	-
5.0D 20.0R		2.87		0.7	-
10.0D 5.0L		4.84		1.0	-
10.0D 5.0R		4.98		1.0	-
MX(H-90U/45L-45R)	H 3.0R	12.48		-	25.0
MAXIMUM	2.7D 2.0R	17.45		-	-
Zone 1		14.88		3.5	-
Zone 2		15.60		6.0	-
Zone 3		49.00		24.0	-
Zone 4		15.85		6.0	-
Zone 5		15.39		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH2 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.72		1.0	25.0
10.0U 5.0R		5.25		1.0	25.0
5.0U 20.0L		2.14		0.7	25.0
5.0U 10.0L		4.94		2.0	25.0
5.0U V		7.71		4.5	25.0
5.0U 10.0R		5.73		2.0	25.0
5.0U 20.0R		2.77		0.7	25.0
H 10.0L		5.24		2.0	25.0
H 5.0L		8.11		5.0	25.0
H V		10.09		5.0	25.0
H 5.0R		9.15		5.0	25.0
H 10.0R		6.19		2.0	25.0
5.0D 20.0L		2.21		0.7	-
5.0D 10.0L		4.68		2.0	-
5.0D V		9.68		4.5	-
5.0D 10.0R		6.14		2.0	-
5.0D 20.0R		2.89		0.7	-
10.0D 5.0L		5.00		1.0	-
10.0D 5.0R		5.28		1.0	-
MX(H-90U/45L-45R)	H 0.7L	10.64		-	25.0
MAXIMUM	2.6D 1.2L	12.91		-	-
Zone 1		14.08		3.5	-
Zone 2		14.87		6.0	-
Zone 3		44.74		24.0	-
Zone 4		18.06		6.0	-
Zone 5		16.20		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 22mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH3 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.39		1.0	25.0
10.0U 5.0R		4.99		1.0	25.0
5.0U 20.0L		2.04		0.7	25.0
5.0U 10.0L		4.31		2.0	25.0
5.0U V		5.98		4.5	25.0
5.0U 10.0R		5.48		2.0	25.0
5.0U 20.0R		2.21		0.7	25.0
H 10.0L		5.23		2.0	25.0
H 5.0L		7.75		5.0	25.0
H V		7.66		5.0	25.0
H 5.0R		5.80		5.0	25.0
H 10.0R		5.61		2.0	25.0
5.0D 20.0L		1.93		0.7	-
5.0D 10.0L		4.77		2.0	-
5.0D V		7.37		4.5	-
5.0D 10.0R		5.48		2.0	-
5.0D 20.0R		2.50		0.7	-
10.0D 5.0L		4.80		1.0	-
10.0D 5.0R		4.89		1.0	-
MX(H-90U/45L-45R)	H 1.3L	7.99		-	25.0
MAXIMUM	0.7D 1.1L	8.07		-	-
Zone 1		13.16		3.5	-
Zone 2		14.31		6.0	-
Zone 3		34.56		24.0	-
Zone 4		16.57		6.0	-
Zone 5		14.59		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 22mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH4 (Serial: 372381927)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.54		1.0	25.0
10.0U 5.0R		6.13		1.0	25.0
5.0U 20.0L		1.24		0.7	25.0
5.0U 10.0L		5.58		2.0	25.0
5.0U V		7.37		4.5	25.0
5.0U 10.0R		7.13		2.0	25.0
5.0U 20.0R		3.85		0.7	25.0
H 10.0L		5.69		2.0	25.0
H 5.0L		8.64		5.0	25.0
H V		13.80		5.0	25.0
H 5.0R		11.39		5.0	25.0
H 10.0R		7.85		2.0	25.0
5.0D 20.0L		1.72		0.7	-
5.0D 10.0L		5.50		2.0	-
5.0D V		11.41		4.5	-
5.0D 10.0R		7.54		2.0	-
5.0D 20.0R		4.35		0.7	-
10.0D 5.0L		5.36		1.0	-
10.0D 5.0R		6.21		1.0	-
MX(H-90U/45L-45R)	H 0.7L	14.15		-	25.0
MAXIMUM	2.4D 0.9R	16.76		-	-
Zone 1		13.86		3.5	-
Zone 2		16.77		6.0	-
Zone 3		52.61		24.0	-
Zone 4		22.52		6.0	-
Zone 5		20.54		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH5 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		75.87		22	420
10.0U 5.0R		87.85		22	420
5.0U 20.0L		22.50		15	420
5.0U 10.0L		80.54		40	420
5.0U V		93.25+		95	420
5.0U 10.0R		90.66		40	420
5.0U 20.0R		49.01		15	420
H 10.0L		83.59		55	420
H 5.0L		116.39		110	420
H V		157.31		110	420
H 5.0R		160.31		110	420
H 10.0R		104.94		55	420
5.0D 20.0L		32.64		15	420
5.0D 10.0L		74.29		40	420
5.0D V		214.77		95	420
5.0D 10.0R		91.23		40	420
5.0D 20.0R		53.03		15	420
10.0D 5.0L		72.39		22	420
10.0D 5.0R		78.64		22	420
MAXIMUM	3.3D 2.0R	272.52	[293.78 @ t=1min]	-	420
Zone 1		203.40		70	-
Zone 2		238.41		135	-
Zone 3		742.02		520	-
Zone 4		286.83		135	-
Zone 5		268.54		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.236A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH6 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		74.63		22	420
10.0U 5.0R		76.91		22	420
5.0U 20.0L		29.81		15	420
5.0U 10.0L		71.98		40	420
5.0U V		91.94+		95	420
5.0U 10.0R		72.07		40	420
5.0U 20.0R		34.14		15	420
H 10.0L		78.70		55	420
H 5.0L		121.78		110	420
H V		160.28		110	420
H 5.0R		126.30		110	420
H 10.0R		76.70		55	420
5.0D 20.0L		41.09		15	420
5.0D 10.0L		68.54		40	420
5.0D V		158.25		95	420
5.0D 10.0R		73.45		40	420
5.0D 20.0R		39.97		15	420
10.0D 5.0L		67.13		22	420
10.0D 5.0R		70.12		22	420
MAXIMUM	2.3D 1.2L	208.36	[218.36 @ t=1min]	-	420
Zone 1		212.66		70	-
Zone 2		219.23		135	-
Zone 3		658.57		520	-
Zone 4		222.23		135	-
Zone 5		221.13		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.234A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH7 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		74.07		22	420
10.0U 5.0R		79.38		22	420
5.0U 20.0L		35.93		15	420
5.0U 10.0L		76.09		40	420
5.0U V		96.77		95	420
5.0U 10.0R		84.56		40	420
5.0U 20.0R		36.20		15	420
H 10.0L		88.42		55	420
H 5.0L		120.15		110	420
H V		214.85		110	420
H 5.0R		132.58		110	420
H 10.0R		84.54		55	420
5.0D 20.0L		50.30		15	420
5.0D 10.0L		74.25		40	420
5.0D V		169.36		95	420
5.0D 10.0R		83.31		40	420
5.0D 20.0R		38.03		15	420
10.0D 5.0L		73.93		22	420
10.0D 5.0R		78.87		22	420
MAXIMUM	1.5D 0.4L	260.46	[277.13 @ t=1min]	-	420
Zone 1		234.24		70	-
Zone 2		238.76		135	-
Zone 3		733.72		520	-
Zone 4		252.41		135	-
Zone 5		232.48		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.230A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH8 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		82.65		22	420
10.0U 5.0R		79.77		22	420
5.0U 20.0L		37.42		15	420
5.0U 10.0L		89.26		40	420
5.0U V		106.65		95	420
5.0U 10.0R		81.04		40	420
5.0U 20.0R		35.13		15	420
H 10.0L		101.02		55	420
H 5.0L		142.30		110	420
H V		188.74		110	420
H 5.0R		135.28		110	420
H 10.0R		89.64		55	420
5.0D 20.0L		43.45		15	420
5.0D 10.0L		83.49		40	420
5.0D V		135.13		95	420
5.0D 10.0R		81.99		40	420
5.0D 20.0R		43.43		15	420
10.0D 5.0L		82.00		22	420
10.0D 5.0R		72.15		22	420
MAXIMUM	1.1D 2.1R	221.29	[231.03 @ t=1min]	-	420
Zone 1		245.52		70	-
Zone 2		273.77		135	-
Zone 3		708.10		520	-
Zone 4		252.66		135	-
Zone 5		230.48		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.234A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH5 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		75.04		22	420
10.0U 5.0R		77.94		22	420
5.0U 20.0L		24.92		15	420
5.0U 10.0L		84.16		40	420
5.0U V		104.72		95	420
5.0U 10.0R		77.79		40	420
5.0U 20.0R		36.45		15	420
H 10.0L		88.72		55	420
H 5.0L		109.34+		110	420
H V		136.29		110	420
H 5.0R		131.44		110	420
H 10.0R		84.30		55	420
5.0D 20.0L		36.76		15	420
5.0D 10.0L		84.04		40	420
5.0D V		190.72		95	420
5.0D 10.0R		72.22		40	420
5.0D 20.0R		45.31		15	420
10.0D 5.0L		77.82		22	420
10.0D 5.0R		72.11		22	420
MAXIMUM	4.2D 0.7L	195.26	[209.51 @ t=1min]	-	420
Zone 1		214.54		70	-
Zone 2		256.92		135	-
Zone 3		672.52		520	-
Zone 4		234.31		135	-
Zone 5		231.82		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.239A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH6 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		91.16		22	420
10.0U 5.0R		89.05		22	420
5.0U 20.0L		50.30		15	420
5.0U 10.0L		91.19		40	420
5.0U V		163.67		95	420
5.0U 10.0R		88.27		40	420
5.0U 20.0R		33.62		15	420
H 10.0L		102.21		55	420
H 5.0L		188.02		110	420
H V		310.39		110	420
H 5.0R		139.49		110	420
H 10.0R		95.23		55	420
5.0D 20.0L		49.87		15	420
5.0D 10.0L		87.71		40	420
5.0D V		137.41		95	420
5.0D 10.0R		90.29		40	420
5.0D 20.0R		36.85		15	420
10.0D 5.0L		91.83		22	420
10.0D 5.0R		86.75		22	420
MAXIMUM	0.5D 1.3L	418.91	[440.27 @ t=1min]*	-	420
Zone 1		283.17		70	-
Zone 2		281.12		135	-
Zone 3		938.99		520	-
Zone 4		273.79		135	-
Zone 5		246.27		70	-

*** Denotes a failure (I @ 12.8V & 1 min = 405.0 cd)**

Applied Voltage: 13.50V / 0.239A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH7 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		77.15		22	420
10.0U 5.0R		84.49		22	420
5.0U 20.0L		22.05		15	420
5.0U 10.0L		84.14		40	420
5.0U V		82.30+		95	420
5.0U 10.0R		82.05		40	420
5.0U 20.0R		36.74		15	420
H 10.0L		86.75		55	420
H 5.0L		95.97+		110	420
H V		115.96		110	420
H 5.0R		112.46		110	420
H 10.0R		82.69		55	420
5.0D 20.0L		26.90		15	420
5.0D 10.0L		72.54		40	420
5.0D V		150.95		95	420
5.0D 10.0R		74.64		40	420
5.0D 20.0R		46.10		15	420
10.0D 5.0L		67.67		22	420
10.0D 5.0R		67.85		22	420
MAXIMUM	2.9D 1.6R	190.28	[202.46 @ t=1min]	-	420
Zone 1		193.78		70	-
Zone 2		243.43		135	-
Zone 3		557.64		520	-
Zone 4		239.38		135	-
Zone 5		235.17		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.234A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH8 (Serial: 372381952)

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED - vehicles < 2032 mm in width)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		73.73		22	420
10.0U 5.0R		75.42		22	420
5.0U 20.0L		37.12		15	420
5.0U 10.0L		83.33		40	420
5.0U V		105.44		95	420
5.0U 10.0R		81.80		40	420
5.0U 20.0R		32.57		15	420
H 10.0L		96.42		55	420
H 5.0L		141.21		110	420
H V		181.29		110	420
H 5.0R		153.23		110	420
H 10.0R		88.65		55	420
5.0D 20.0L		52.76		15	420
5.0D 10.0L		83.16		40	420
5.0D V		194.65		95	420
5.0D 10.0R		95.41		40	420
5.0D 20.0R		42.97		15	420
10.0D 5.0L		93.14		22	420
10.0D 5.0R		93.32		22	420
MAXIMUM	2.7D 1.9R	237.89	[250.74 @ t=1min]	-	420
Zone 1		256.75		70	-
Zone 2		262.91		135	-
Zone 3		775.82		520	-
Zone 4		265.86		135	-
Zone 5		244.28		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 0.238A after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH5 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.99		1.0	25.0
10.0U 5.0R		5.76		1.0	25.0
5.0U 20.0L		1.44		0.7	25.0
5.0U 10.0L		5.32		2.0	25.0
5.0U V		6.07		4.5	25.0
5.0U 10.0R		5.97		2.0	25.0
5.0U 20.0R		3.21		0.7	25.0
H 10.0L		5.54		2.0	25.0
H 5.0L		7.56		5.0	25.0
H V		10.06		5.0	25.0
H 5.0R		10.46		5.0	25.0
H 10.0R		6.90		2.0	25.0
5.0D 20.0L		2.09		0.7	-
5.0D 10.0L		4.95		2.0	-
5.0D V		14.24		4.5	-
5.0D 10.0R		6.08		2.0	-
5.0D 20.0R		3.54		0.7	-
10.0D 5.0L		4.88		1.0	-
10.0D 5.0R		5.22		1.0	-
MX(H-90U/45L-45R)	H 3.3R	11.05		-	25.0
MAXIMUM	2.9D 2.9R	17.68		-	-
Zone 1		13.40		3.5	-
Zone 2		15.81		6.0	-
Zone 3		48.39		24.0	-
Zone 4		18.95		6.0	-
Zone 5		17.73		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH6 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.90		1.0	25.0
10.0U 5.0R		5.06		1.0	25.0
5.0U 20.0L		1.90		0.7	25.0
5.0U 10.0L		4.81		2.0	25.0
5.0U V		5.84		4.5	25.0
5.0U 10.0R		4.71		2.0	25.0
5.0U 20.0R		2.20		0.7	25.0
H 10.0L		5.20		2.0	25.0
H 5.0L		7.66		5.0	25.0
H V		10.06		5.0	25.0
H 5.0R		8.18		5.0	25.0
H 10.0R		5.00		2.0	25.0
5.0D 20.0L		2.52		0.7	-
5.0D 10.0L		4.53		2.0	-
5.0D V		10.10		4.5	-
5.0D 10.0R		4.88		2.0	-
5.0D 20.0R		2.55		0.7	-
10.0D 5.0L		4.42		1.0	-
10.0D 5.0R		4.62		1.0	-
MX(H-90U/45L-45R)	H 0.5R	10.18		-	25.0
MAXIMUM	2.7D 0.6R	13.61		-	-
Zone 1		13.75		3.5	-
Zone 2		14.54		6.0	-
Zone 3		41.84		24.0	-
Zone 4		14.60		6.0	-
Zone 5		14.43		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH7 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.68		1.0	25.0
10.0U 5.0R		5.06		1.0	25.0
5.0U 20.0L		2.15		0.7	25.0
5.0U 10.0L		4.82		2.0	25.0
5.0U V		6.15		4.5	25.0
5.0U 10.0R		5.34		2.0	25.0
5.0U 20.0R		2.27		0.7	25.0
H 10.0L		5.65		2.0	25.0
H 5.0L		7.70		5.0	25.0
H V		13.25		5.0	25.0
H 5.0R		8.34		5.0	25.0
H 10.0R		5.34		2.0	25.0
5.0D 20.0L		3.12		0.7	-
5.0D 10.0L		4.75		2.0	-
5.0D V		10.80		4.5	-
5.0D 10.0R		5.35		2.0	-
5.0D 20.0R		2.43		0.7	-
10.0D 5.0L		4.70		1.0	-
10.0D 5.0R		5.09		1.0	-
MX(H-90U/45L-45R)	H 0.2L	13.33		-	25.0
MAXIMUM	1.8D 0.5L	16.57		-	-
Zone 1		14.66		3.5	-
Zone 2		15.23		6.0	-
Zone 3		46.25		24.0	-
Zone 4		16.03		6.0	-
Zone 5		14.86		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 22mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH8 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.29		1.0	25.0
10.0U 5.0R		5.06		1.0	25.0
5.0U 20.0L		2.24		0.7	25.0
5.0U 10.0L		5.68		2.0	25.0
5.0U V		6.45		4.5	25.0
5.0U 10.0R		5.19		2.0	25.0
5.0U 20.0R		2.18		0.7	25.0
H 10.0L		6.47		2.0	25.0
H 5.0L		8.85		5.0	25.0
H V		11.36		5.0	25.0
H 5.0R		8.61		5.0	25.0
H 10.0R		5.66		2.0	25.0
5.0D 20.0L		2.62		0.7	-
5.0D 10.0L		5.39		2.0	-
5.0D V		8.57		4.5	-
5.0D 10.0R		5.32		2.0	-
5.0D 20.0R		2.73		0.7	-
10.0D 5.0L		5.29		1.0	-
10.0D 5.0R		4.66		1.0	-
MX(H-90U/45L-45R)	H 2.1R	12.00		-	25.0
MAXIMUM	1.6D 1.7R	13.93		-	-
Zone 1		15.44		3.5	-
Zone 2		17.54		6.0	-
Zone 3		43.84		24.0	-
Zone 4		16.17		6.0	-
Zone 5		14.63		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH5 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.83		1.0	25.0
10.0U 5.0R		4.98		1.0	25.0
5.0U 20.0L		1.54		0.7	25.0
5.0U 10.0L		5.40		2.0	25.0
5.0U V		6.59		4.5	25.0
5.0U 10.0R		5.02		2.0	25.0
5.0U 20.0R		2.22		0.7	25.0
H 10.0L		5.74		2.0	25.0
H 5.0L		6.87		5.0	25.0
H V		8.49		5.0	25.0
H 5.0R		8.29		5.0	25.0
H 10.0R		5.39		2.0	25.0
5.0D 20.0L		2.27		0.7	-
5.0D 10.0L		5.38		2.0	-
5.0D V		12.28		4.5	-
5.0D 10.0R		4.64		2.0	-
5.0D 20.0R		2.95		0.7	-
10.0D 5.0L		5.00		1.0	-
10.0D 5.0R		4.60		1.0	-
MX(H-90U/45L-45R)	H 3.6R	9.25		-	25.0
MAXIMUM	2.4D 2.0R	13.50		-	-
Zone 1		13.65		3.5	-
Zone 2		16.51		6.0	-
Zone 3		42.52		24.0	-
Zone 4		15.05		6.0	-
Zone 5		14.75		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH6 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.71		1.0	25.0
10.0U 5.0R		5.59		1.0	25.0
5.0U 20.0L		3.12		0.7	25.0
5.0U 10.0L		5.73		2.0	25.0
5.0U V		10.13		4.5	25.0
5.0U 10.0R		5.56		2.0	25.0
5.0U 20.0R		2.07		0.7	25.0
H 10.0L		6.44		2.0	25.0
H 5.0L		11.53		5.0	25.0
H V		18.03		5.0	25.0
H 5.0R		8.35		5.0	25.0
H 10.0R		5.93		2.0	25.0
5.0D 20.0L		3.11		0.7	-
5.0D 10.0L		5.54		2.0	-
5.0D V		8.61		4.5	-
5.0D 10.0R		5.68		2.0	-
5.0D 20.0R		2.28		0.7	-
10.0D 5.0L		5.77		1.0	-
10.0D 5.0R		5.46		1.0	-
MX(H-90U/45L-45R)	H 1.9L	23.78		-	25.0
MAXIMUM	0.6D 1.6L	25.34		-	-
Zone 1		17.71		3.5	-
Zone 2		17.71		6.0	-
Zone 3		56.65		24.0	-
Zone 4		17.17		6.0	-
Zone 5		15.40		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH7 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.15		1.0	25.0
10.0U 5.0R		5.55		1.0	25.0
5.0U 20.0L		1.41		0.7	25.0
5.0U 10.0L		5.51		2.0	25.0
5.0U V		5.40		4.5	25.0
5.0U 10.0R		5.37		2.0	25.0
5.0U 20.0R		2.34		0.7	25.0
H 10.0L		5.73		2.0	25.0
H 5.0L		6.25		5.0	25.0
H V		7.58		5.0	25.0
H 5.0R		7.30		5.0	25.0
H 10.0R		5.42		2.0	25.0
5.0D 20.0L		1.68		0.7	-
5.0D 10.0L		4.83		2.0	-
5.0D V		9.95		4.5	-
5.0D 10.0R		4.93		2.0	-
5.0D 20.0R		2.99		0.7	-
10.0D 5.0L		4.49		1.0	-
10.0D 5.0R		4.54		1.0	-
MX(H-90U/45L-45R)	H 1.4R	8.34		-	25.0
MAXIMUM	3.1D 1.4R	13.16		-	-
Zone 1		12.73		3.5	-
Zone 2		16.07		6.0	-
Zone 3		36.47		24.0	-
Zone 4		15.72		6.0	-
Zone 5		15.43		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

Report No.: 200316-02H

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: RH8 (Serial: 372381952)

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.59		1.0	25.0
10.0U 5.0R		4.67		1.0	25.0
5.0U 20.0L		2.15		0.7	25.0
5.0U 10.0L		5.15		2.0	25.0
5.0U V		6.37		4.5	25.0
5.0U 10.0R		5.04		2.0	25.0
5.0U 20.0R		1.99		0.7	25.0
H 10.0L		5.98		2.0	25.0
H 5.0L		8.64		5.0	25.0
H V		10.77		5.0	25.0
H 5.0R		9.34		5.0	25.0
H 10.0R		5.50		2.0	25.0
5.0D 20.0L		3.11		0.7	-
5.0D 10.0L		5.19		2.0	-
5.0D V		12.23		4.5	-
5.0D 10.0R		5.86		2.0	-
5.0D 20.0R		2.59		0.7	-
10.0D 5.0L		5.77		1.0	-
10.0D 5.0R		5.78		1.0	-
MX(H-90U/45L-45R)	H 2.2R	11.45		-	25.0
MAXIMUM	2.8D 2.4R	14.74		-	-
Zone 1		15.61		3.5	-
Zone 2		16.31		6.0	-
Zone 3		47.35		24.0	-
Zone 4		16.39		6.0	-
Zone 5		15.04		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 23mA after 10 min stabilization per SAE J1889

Aim: Sample mounted on level goniometer with LED center at goniometer center of rotation and tilt. Sample housing laser-aimed normal to detector axis at HV.

PHOTOGRAPH SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

PHOTOGRAPH SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Report No.: 200103-02C

TEST REPORT

Report Date: 06 February 2020

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Submitted by: Harbor Freight Tools
Calabasas, CA 91302

Test Laboratory: Calcoast – ITL
San Leandro, CA 94577

Samples Submitted: Three (3) kits submitted 03 January 2020

SUMMARY

TESTS (FMVSS 108/CMVSS 108)

Photometric Tests – Combination Lamp
- Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) ...4 Passed/2 Failed
- Tail Lamp - S7.2.13 / Table VII .....5 Passed/1 Failed
- Stop Lamp - S7.3.13 / Table IX .....4 Passed/2 Failed

Lens Area Tests (EPLLA) – Table IV-a.....Not Tested
Visibility Tests – Table V-c, Luminous Intensity Method.....Passed
Bulb Socket Test- S14.2.....Not Applicable
Color Tests – S14.4.1.....Passed
Plastic Optical Material Tests – S14.4.2† .....Passed
Physical (Mechanical) Tests – S14.5.....Not Tested

† Based on *AMECA for list of acceptable plastics.*

Written and Approved by:

Mark A. Evans
Laboratory Director

DESCRIPTION SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Kit contains a lamp system consisting of one (1) pair of rear mounted combination lamps (RCLs) with Tail, Stop, and Rear Turn Signal functions using LEDs as light sources.
The Stop and Rear Turn Signal are optically combined.

Devices are to be temporarily mounted on vehicles using magnets. Devices are wired to provide separate LH and RH Turn Signal activation.

MARKINGS:

LENS:

Outer: None

Inner: "DOT", "SAE IST02"

HOUSING: "Kenway", "Item: 64282", "Serial: 372381946"
Sticker – "Kenway 12 VOLT LED MAGNETIC TOWING LIGHT KIT", "64282", additional text

MATERIAL:

LENS:

Outer Chimei Corporation Acryrex CM-205 PMMA with R-001 Red Pigment

Inner: Chimei Corporation Acryrex CM-205 PMMA with N-000 Clear Pigment

Lens material formulation and pigments are listed in the AMECA List of Acceptable Plastics indicating compliance with FMVSS 108 S14.4.2 Plastic optical materials requirements.

HOUSING: Plastic, Black

MOUNTING: One (1) large magnet to vehicle

BULBS:

FUNCTION	QUANTITY	TYPE	VOLTAGE	POWER @ 13.5V	FLUX
IS	12	LED SMD2835R	13.5V	3W	-
T				0.15W	-

BULB SOCKET REQUIRMENTS – SAE J567b

FMVSS 108 S14.2.1.6.2 / SAE J567b does not apply to LED systems.

Note: Material information provided by manufacturer.

Report No.: 200103-02C

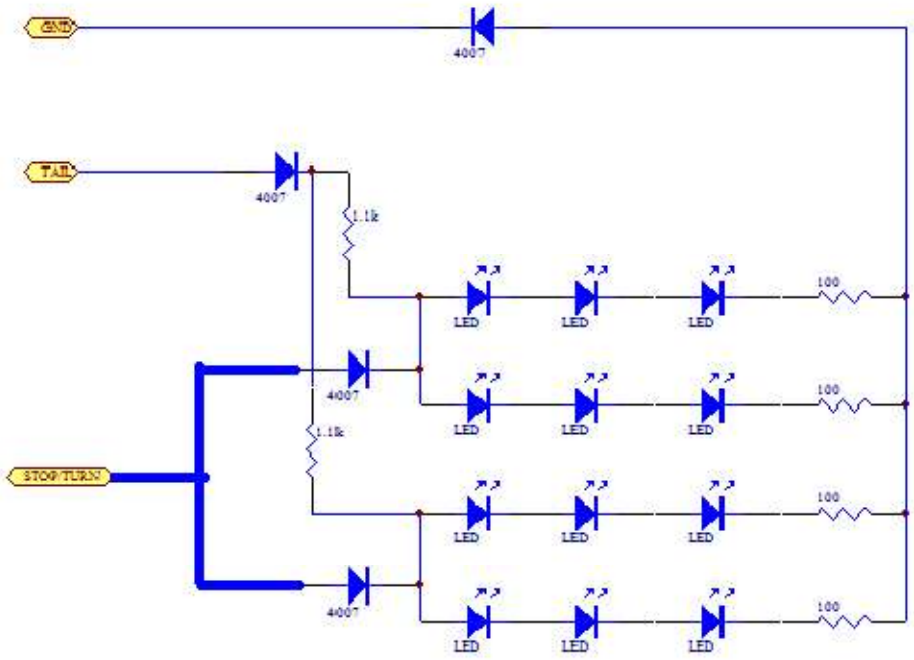
PHOTOMETRIC TEST SUMMARY SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

SUMMARY OF PHOTOMETRIC TESTS

Specification(s): FMVSS 108 / CMVSS 108
Tests performed by: MAE Date: 05 January 2020

Turn Signal Lamp, Rear - S7.1.2.13 / Table VII (Red) .. 4 Passed/2 Failed
Tail Lamp - S7.2.13 / Table VII ..... 5 Passed/1 Failed
Stop Lamp - S7.3.13 / Table IX ..... 4 Passed/2 Failed



Wiring Diagram Submitted by Manufacturer

NHTSA has interpreted LED lamps as having a single light source if all the LEDs are in series and as having multiple light sources if all the LEDs are not in series. Each parallel series of LEDs is considered a separate light source. Each light source is then considered a "lighted section".

FMVSS 108 has multiple lighted section requirements for rear turn signal lamps for vehicle less than 2032 mm wide (see S7.1.2.11.2 and Table VII).

FMVSS 108 has multiple lighted section requirements for tail lamps for vehicle less than 2032 mm wide (see S7.2.11.2 and Table VIII).

FMVSS 108 has multiple lighted section requirements for stop lamps for vehicle less than 2032 mm wide (see S7.3.11.2 and Table IX).

Report No.: 200103-02C

PHOTOMETRIC TEST SUMMARY SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

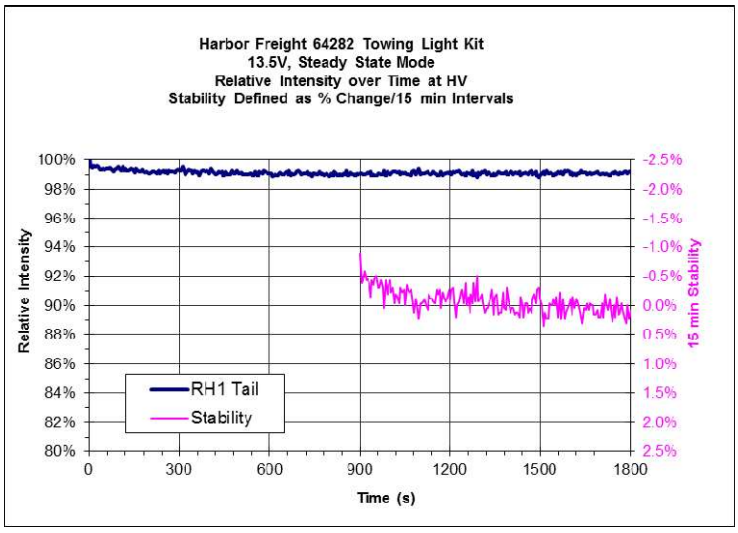
SUMMARY OF PHOTOMETRIC TESTS (Cont.)

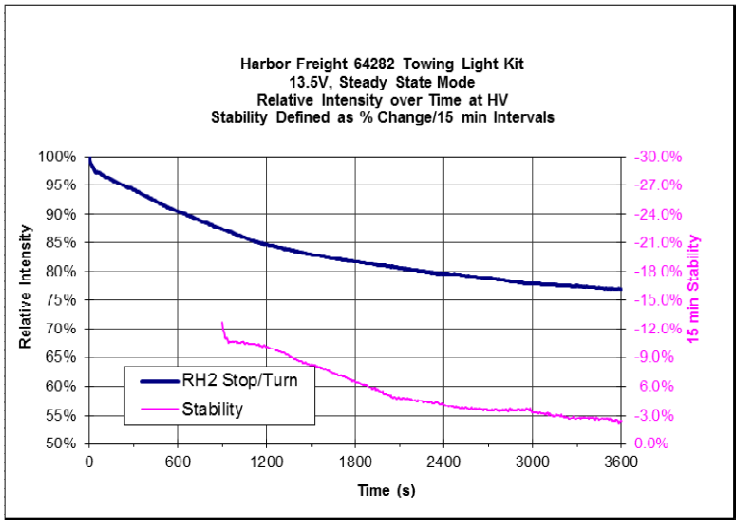
Specification(s): FMVSS 108 / CMVSS 108
Tests performed by: MAE Date: 05 January 2020

Reference detector control number: NIST P181-2
Test distance: 100 feet

Samples tested using LEDs at designated voltage (13.5V). Samples mounted on CCITL universal fixture with function source located at goniometer center of rotation and tilt.

LED functions tested after output stabilized. Stop/Turn Signal functions were then multiplied by a factor to achieve the performance at 10 minutes (SAE J1889 methodology). After testing, the intensities at HV were measured through a voltage range and the ratios compared to design voltage tabulated below.:





Tail Had No Degradation
Stop/Turn Required >30 min to reach 3% Stabilization

Intensity vs. Voltage

	12.0V	12.8V	13.5V	14.0V
Tail	79.1	90.2	100	107.1
Stop/Turn	85	94	100	105.3
Above values do not take into account any heat effect				

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH1

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		73.23		22	420
10.0U	5.0R		74.94		22	420
5.0U	20.0L		37.96		15	420
5.0U	10.0L		77.59		40	420
5.0U	V		114.40		95	420
5.0U	10.0R		83.94		40	420
5.0U	20.0R		37.28		15	420
H	10.0L		81.89		55	420
H	5.0L		158.48		110	420
H	V		220.82		110	420
H	5.0R		153.33		110	420
H	10.0R		85.95		55	420
5.0D	20.0L		37.56		15	420
5.0D	10.0L		75.46		40	420
5.0D	V		140.25		95	420
5.0D	10.0R		79.69		40	420
5.0D	20.0R		39.78		15	420
10.0D	5.0L		72.82		22	420
10.0D	5.0R		71.87		22	420
MAXIMUM		1.9D 1.2L	288.55	(318.56 @ t = 1 min)	-	420
Zone 1			221.57		70	-
Zone 2			234.95		135	-
Zone 3			787.27		520	-
Zone 4			249.58		135	-
Zone 5			223.87		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 248mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.137 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH2

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		75.64		22	420
10.0U 5.0R		77.50		22	420
5.0U 20.0L		34.18		15	420
5.0U 10.0L		75.93		40	420
5.0U V		85.09+		95	420
5.0U 10.0R		84.43		40	420
5.0U 20.0R		36.50		15	420
H 10.0L		91.27		55	420
H 5.0L		139.42		110	420
H V		152.48		110	420
H 5.0R		134.37		110	420
H 10.0R		89.22		55	420
5.0D 20.0L		43.57		15	420
5.0D 10.0L		84.45		40	420
5.0D V		261.93		95	420
5.0D 10.0R		90.26		40	420
5.0D 20.0R		46.06		15	420
10.0D 5.0L		85.29		22	420
10.0D 5.0R		85.55		22	420
MAXIMUM	3.2D V	342.73	(370.56 @ t = 1 min)	-	420
Zone 1		238.68		70	-
Zone 2		251.65		135	-
Zone 3		773.29		520	-
Zone 4		263.92		135	-
Zone 5		245.61		70	-

+ Test point meets 60% of specified intensity
Sample meets test requirements at all points.

Applied Voltage: 13.50V / 250mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.106 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH3

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		88.83		22	420
10.0U	5.0R		94.25		22	420
5.0U	20.0L		45.71		15	420
5.0U	10.0L		88.98		40	420
5.0U	V		152.64		95	420
5.0U	10.0R		91.76		40	420
5.0U	20.0R		42.31		15	420
H	10.0L		105.13		55	420
H	5.0L		126.21		110	420
H	V		131.84		110	420
H	5.0R		127.77		110	420
H	10.0R		91.73		55	420
5.0D	20.0L		46.08		15	420
5.0D	10.0L		97.73		40	420
5.0D	V		111.13		95	420
5.0D	10.0R		89.98		40	420
5.0D	20.0R		43.93		15	420
10.0D	5.0L		92.46		22	420
10.0D	5.0R		90.89		22	420
MAXIMUM		0.3D 2.2R	151.50	(166.65 @ t = 1 min)	-	420
Zone 1			273.09		70	-
Zone 2			291.84		135	-
Zone 3			649.60		520	-
Zone 4			273.47		135	-
Zone 5			271.37		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 244mA after 10 minute warmup per SAE J1889

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH1

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		75.95		22	420
10.0U	5.0R		80.61		22	420
5.0U	20.0L		40.30		15	420
5.0U	10.0L		70.50		40	420
5.0U	V		236.14		95	420
5.0U	10.0R		82.67		40	420
5.0U	20.0R		63.46		15	420
H	10.0L		76.21		55	420
H	5.0L		148.08		110	420
H	V		418.36		110	420
H	5.0R		248.13		110	420
H	10.0R		88.77		55	420
5.0D	20.0L		35.14		15	420
5.0D	10.0L		67.09		40	420
5.0D	V		124.41		95	420
5.0D	10.0R		77.29		40	420
5.0D	20.0R		60.40		15	420
10.0D	5.0L		66.25		22	420
10.0D	5.0R		74.11		22	420
MAXIMUM		1.0U 0.7R	520.48	(579.81 @ t = 1 min)*	-	420
Zone 1			217.63		70	-
Zone 2			213.80		135	-
Zone 3			1175.12		520	-
Zone 4			248.72		135	-
Zone 5			278.58		70	-

*** - Denotes Failure.**

Applied Voltage: 13.50V / 254after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.101 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH2

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		79.09		22	420
10.0U	5.0R		81.18		22	420
5.0U	20.0L		50.21		15	420
5.0U	10.0L		84.21		40	420
5.0U	V		130.11		95	420
5.0U	10.0R		83.74		40	420
5.0U	20.0R		53.62		15	420
H	10.0L		91.53		55	420
H	5.0L		152.98		110	420
H	V		373.64		110	420
H	5.0R		182.78		110	420
H	10.0R		95.59		55	420
5.0D	20.0L		51.67		15	420
5.0D	10.0L		79.80		40	420
5.0D	V		169.58		95	420
5.0D	10.0R		87.68		40	420
5.0D	20.0R		53.58		15	420
10.0D	5.0L		82.81		22	420
10.0D	5.0R		81.12		22	420
MAXIMUM		0.7D 0.3L	385.61	(426.87 @ t = 1 min)*	-	420
Zone 1			263.78		70	-
Zone 2			255.53		135	-
Zone 3			1009.09		520	-
Zone 4			267.01		135	-
Zone 5			269.50		70	-

*** - Denotes Failure.**

Applied Voltage: 13.50V / 250A after 60 minute warmup per SAE J1889
Measured Values multiplied by 1.176 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH3

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test	Point	Location	Measured	Reaim	Minimum	Maximum
10.0U	5.0L		80.26		22	420
10.0U	5.0R		80.19		22	420
5.0U	20.0L		57.00		15	420
5.0U	10.0L		89.72		40	420
5.0U	V		112.26		95	420
5.0U	10.0R		81.82		40	420
5.0U	20.0R		41.93		15	420
H	10.0L		102.74		55	420
H	5.0L		144.21		110	420
H	V		233.40		110	420
H	5.0R		151.58		110	420
H	10.0R		94.59		55	420
5.0D	20.0L		62.60		15	420
5.0D	10.0L		94.95		40	420
5.0D	V		234.97		95	420
5.0D	10.0R		95.28		40	420
5.0D	20.0R		44.80		15	420
10.0D	5.0L		95.54		22	420
10.0D	5.0R		98.67		22	420
MAXIMUM		3.3D 1.7L	261.11	(277.82 @ t = 1 min)	-	420
Zone 1			295.40		70	-
Zone 2			287.40		135	-
Zone 3			876.40		520	-
Zone 4			271.69		135	-
Zone 5			265.59		70	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 244mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.11 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH1

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.02		1.0	25.0
10.0U 5.0R		5.20		1.0	25.0
5.0U 20.0L		2.51		0.7	25.0
5.0U 10.0L		5.23		2.0	25.0
5.0U V		7.21		4.5	25.0
5.0U 10.0R		5.68		2.0	25.0
5.0U 20.0R		2.39		0.7	25.0
H 10.0L		5.52		2.0	25.0
H 5.0L		10.46		5.0	25.0
H V		14.45		5.0	25.0
H 5.0R		10.00		5.0	25.0
H 10.0R		5.81		2.0	25.0
5.0D 20.0L		2.44		0.7	-
5.0D 10.0L		5.08		2.0	-
5.0D V		9.06		4.5	-
5.0D 10.0R		5.37		2.0	-
5.0D 20.0R		2.55		0.7	-
10.0D 5.0L		4.88		1.0	-
10.0D 5.0R		4.80		1.0	-
MX(H-90U/45L-45R)	H 1.3R	14.86		-	25.0
MAXIMUM	1.9D V	18.21		-	-
Zone 1		14.85		3.5	-
Zone 2		15.84		6.0	-
Zone 3		51.18		24.0	-
Zone 4		16.86		6.0	-
Zone 5		14.93		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH2

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.28		1.0	25.0
10.0U 5.0R		5.28		1.0	25.0
5.0U 20.0L		2.09		0.7	25.0
5.0U 10.0L		5.24		2.0	25.0
5.0U V		5.33		4.5	25.0
5.0U 10.0R		5.79		2.0	25.0
5.0U 20.0R		2.38		0.7	25.0
H 10.0L		6.24		2.0	25.0
H 5.0L		8.82		5.0	25.0
H V		9.47		5.0	25.0
H 5.0R		8.32		5.0	25.0
H 10.0R		6.15		2.0	25.0
5.0D 20.0L		2.81		0.7	-
5.0D 10.0L		5.72		2.0	-
5.0D V		17.58		4.5	-
5.0D 10.0R		6.24		2.0	-
5.0D 20.0R		3.06		0.7	-
10.0D 5.0L		5.78		1.0	-
10.0D 5.0R		5.84		1.0	-
MX(H-90U/45L-45R)	H 1.6L	9.86		-	25.0
MAXIMUM	3.3D 0.3L	22.57		-	-
Zone 1		15.97		3.5	-
Zone 2		17.20		6.0	-
Zone 3		49.52		24.0	-
Zone 4		18.18		6.0	-
Zone 5		16.56		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH3

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		5.27		1.0	25.0
10.0U 5.0R		5.62		1.0	25.0
5.0U 20.0L		2.68		0.7	25.0
5.0U 10.0L		5.29		2.0	25.0
5.0U V		9.17		4.5	25.0
5.0U 10.0R		5.57		2.0	25.0
5.0U 20.0R		2.55		0.7	25.0
H 10.0L		6.19		2.0	25.0
H 5.0L		7.84		5.0	25.0
H V		8.06		5.0	25.0
H 5.0R		7.91		5.0	25.0
H 10.0R		5.55		2.0	25.0
5.0D 20.0L		2.74		0.7	-
5.0D 10.0L		5.85		2.0	-
5.0D V		6.91		4.5	-
5.0D 10.0R		5.38		2.0	-
5.0D 20.0R		2.65		0.7	-
10.0D 5.0L		5.51		1.0	-
10.0D 5.0R		5.46		1.0	-
MX(H-90U/45L-45R)	H 2.7R	9.73		-	25.0
MAXIMUM	0.4D 2.7R	9.78		-	-
Zone 1		16.21		3.5	-
Zone 2		17.33		6.0	-
Zone 3		39.88		24.0	-
Zone 4		16.49		6.0	-
Zone 5		16.28		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after stabilization warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH1

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.56		1.0	25.0
10.0U 5.0R		4.92		1.0	25.0
5.0U 20.0L		2.46		0.7	25.0
5.0U 10.0L		4.21		2.0	25.0
5.0U V		14.57		4.5	25.0
5.0U 10.0R		5.00		2.0	25.0
5.0U 20.0R		3.94		0.7	25.0
H 10.0L		4.53		2.0	25.0
H 5.0L		8.71		5.0	25.0
H V		25.70*		5.0	25.0
H 5.0R		14.66		5.0	25.0
H 10.0R		5.35		2.0	25.0
5.0D 20.0L		2.14		0.7	-
5.0D 10.0L		4.06		2.0	-
5.0D V		7.29		4.5	-
5.0D 10.0R		4.67		2.0	-
5.0D 20.0R		3.72		0.7	-
10.0D 5.0L		4.01		1.0	-
10.0D 5.0R		4.50		1.0	-
MX(H-90U/45L-45R)	1.0U 0.9R	31.87*		-	25.0
MAXIMUM	1.0U 0.8R	31.87		-	-
Zone 1		13.17		3.5	-
Zone 2		12.79		6.0	-
Zone 3		70.94		24.0	-
Zone 4		15.03		6.0	-
Zone 5		17.08		3.5	-

*** - Denotes Failure.**

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH2

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.79		1.0	25.0
10.0U 5.0R		4.93		1.0	25.0
5.0U 20.0L		3.07		0.7	25.0
5.0U 10.0L		5.05		2.0	25.0
5.0U V		7.77		4.5	25.0
5.0U 10.0R		5.04		2.0	25.0
5.0U 20.0R		3.18		0.7	25.0
H 10.0L		5.45		2.0	25.0
H 5.0L		9.47		5.0	25.0
H V		22.29		5.0	25.0
H 5.0R		10.95		5.0	25.0
H 10.0R		5.64		2.0	25.0
5.0D 20.0L		3.13		0.7	-
5.0D 10.0L		4.85		2.0	-
5.0D V		9.85		4.5	-
5.0D 10.0R		5.30		2.0	-
5.0D 20.0R		3.16		0.7	-
10.0D 5.0L		4.98		1.0	-
10.0D 5.0R		4.94		1.0	-
MX(H-90U/45L-45R)	H 0.2L	22.39		-	25.0
MAXIMUM	0.8D V	23.77		-	-
Zone 1		15.96		3.5	-
Zone 2		15.36		6.0	-
Zone 3		60.32		24.0	-
Zone 4		15.98		6.0	-
Zone 5		16.20		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH3

Specification: FMVSS 108 Table VIII: Tail Lamp
Color: Red, 3 Lighted Sections (LED Array has 3 or more Series)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
10.0U 5.0L		4.37		1.0	25.0
10.0U 5.0R		4.36		1.0	25.0
5.0U 20.0L		3.02		0.7	25.0
5.0U 10.0L		4.89		2.0	25.0
5.0U V		5.83		4.5	25.0
5.0U 10.0R		4.49		2.0	25.0
5.0U 20.0R		2.24		0.7	25.0
H 10.0L		5.59		2.0	25.0
H 5.0L		7.79		5.0	25.0
H V		12.26		5.0	25.0
H 5.0R		8.05		5.0	25.0
H 10.0R		5.12		2.0	25.0
5.0D 20.0L		3.42		0.7	-
5.0D 10.0L		5.21		2.0	-
5.0D V		12.72		4.5	-
5.0D 10.0R		5.14		2.0	-
5.0D 20.0R		2.46		0.7	-
10.0D 5.0L		5.28		1.0	-
10.0D 5.0R		5.37		1.0	-
MX(H-90U/45L-45R)	H 0.7R	12.40		-	25.0
MAXIMUM	3.1D 1.4L	14.66		-	-
Zone 1		16.09		3.5	-
Zone 2		15.68		6.0	-
Zone 3		46.65		24.0	-
Zone 4		14.75		6.0	-
Zone 5		14.42		3.5	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH1

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option
Color: Red, Rear Turn Signal (LH) + Stop Lamp
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 45.0L		2.90		0.30	-
15.0U 80.0R		2.34		0.30	-
15.0U 45.0L TO 80.0R	80.0R	2.34		0.30	-
10.0U 45.0L		2.95		0.30	-
10.0U 80.0R		2.57		0.30	-
10.0U 45.0L TO 80.0R	78.0R	2.18		0.30	-
5.0U 45.0L		3.12		0.30	-
5.0U 80.0R		3.10		0.30	-
5.0U 45.0L TO 80.0R	77.5R	2.01		0.30	-
H 45.0L		3.15		0.30	-
H 80.0R		2.89		0.30	-
H 45.0L TO 80.0R	77.5R	1.99		0.30	-
5.0D 45.0L		2.99		0.30	-
5.0D 80.0R		2.75		0.30	-
5.0D 45.0L TO 80.0R	76.5R	2.34		0.30	-
10.0D 45.0L		2.86		0.30	-
10.0D 80.0R		2.46		0.30	-
10.0D 45.0L TO 80.0R	79.9R	2.39		0.30	-
15.0D 45.0L		2.74		0.30	-
15.0D 80.0R		2.78		0.30	-
15.0D 45.0L TO 80.0R	79.5R	2.56		0.30	-
15.0U TO 15.0D 45.0L 15.0D		2.74		0.30	-
15.0U TO 15.0D 80.0R 14.9U		2.32		0.30	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 248mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.137 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH3

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option
Color: Red, Rear Turn Signal (RH) + Stop Lamp
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		3.43		0.30	-
15.0U 45.0R		3.44		0.30	-
15.0U 80.0L TO 45.0R	56.1L	3.12		0.30	-
10.0U 80.0L		3.38		0.30	-
10.0U 45.0R		3.47		0.30	-
10.0U 80.0L TO 45.0R	78.5L	2.77		0.30	-
5.0U 80.0L		3.82		0.30	-
5.0U 45.0R		4.07		0.30	-
5.0U 80.0L TO 45.0R	78.5L	2.98		0.30	-
H 80.0L		3.19		0.30	-
H 45.0R		4.22		0.30	-
H 80.0L TO 45.0R	75.7L	3.07		0.30	-
5.0D 80.0L		3.47		0.30	-
5.0D 45.0R		4.13		0.30	-
5.0D 80.0L TO 45.0R	56.5L	2.99		0.30	-
10.0D 80.0L		3.16		0.30	-
10.0D 45.0R		3.94		0.30	-
10.0D 80.0L TO 45.0R	60.7L	2.63		0.30	-
15.0D 80.0L		2.71		0.30	-
15.0D 45.0R		3.65		0.30	-
15.0D 80.0L TO 45.0R	59.3L	2.59		0.30	-
15.0U TO 15.0D 80.0L 15.0D		2.75		0.30	-
15.0U TO 15.0D 45.0R 15.0U		3.39		0.30	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 244mA after 30 minute warmup per SAE J1889
Measured Values multiplied by 1.11 to acquire t = 10 minute values.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: LH1

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option
Color: Red, Tail (LH)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 45.0L		0.19		0.05	-
15.0U 80.0R		0.15		0.05	-
15.0U 45.0L TO 80.0R	80.0R	0.14		0.05	-
10.0U 45.0L		0.20		0.05	-
10.0U 80.0R		0.15		0.05	-
10.0U 45.0L TO 80.0R	78.1R	0.14		0.05	-
5.0U 45.0L		0.21		0.05	-
5.0U 80.0R		0.20		0.05	-
5.0U 45.0L TO 80.0R	77.4R	0.13		0.05	-
H 45.0L		0.21		0.05	-
H 80.0R		0.17		0.05	-
H 45.0L TO 80.0R	77.4R	0.13		0.05	-
5.0D 45.0L		0.21		0.05	-
5.0D 80.0R		0.17		0.05	-
5.0D 45.0L TO 80.0R	76.4R	0.15		0.05	-
10.0D 45.0L		0.19		0.05	-
10.0D 80.0R		0.16		0.05	-
10.0D 45.0L TO 80.0R	79.6R	0.15		0.05	-
15.0D 45.0L		0.19		0.05	-
15.0D 80.0R		0.17		0.05	-
15.0D 45.0L TO 80.0R	79.6R	0.16		0.05	-
15.0U TO 15.0D 45.0L	12.8U	0.18		0.05	-
15.0U TO 15.0D 80.0R	15.0U	0.14		0.05	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic Towing Light Kit (SAE STI)
for Vehicles <2032 mm Wide

Sample Number: RH2

Specification: FMVSS 108 Table V-c: Visibility - Luminous Intensity Option
Color: Red, Tail (RH)
Luminous Intensity, Candela

Test Point	Location	Measured	Reaim	Minimum	Maximum
15.0U 80.0L		0.15		0.05	-
15.0U 45.0R		0.19		0.05	-
15.0U 80.0L TO 45.0R	80.0L	0.15		0.05	-
10.0U 80.0L		0.15		0.05	-
10.0U 45.0R		0.20		0.05	-
10.0U 80.0L TO 45.0R	79.3L	0.14		0.05	-
5.0U 80.0L		0.16		0.05	-
5.0U 45.0R		0.21		0.05	-
5.0U 80.0L TO 45.0R	80.0L	0.17		0.05	-
H 80.0L		0.17		0.05	-
H 45.0R		0.25		0.05	-
H 80.0L TO 45.0R	79.1L	0.15		0.05	-
5.0D 80.0L		0.16		0.05	-
5.0D 45.0R		0.23		0.05	-
5.0D 80.0L TO 45.0R	79.3L	0.16		0.05	-
10.0D 80.0L		0.16		0.05	-
10.0D 45.0R		0.21		0.05	-
10.0D 80.0L TO 45.0R	79.3L	0.15		0.05	-
15.0D 80.0L		0.18		0.05	-
15.0D 45.0R		0.20		0.05	-
15.0D 80.0L TO 45.0R	51.7L	0.16		0.05	-
15.0U TO 15.0D 80.0L 10.2U		0.14		0.05	-
15.0U TO 15.0D 45.0R 14.6U		0.19		0.05	-

Sample meets test requirements at all points.

Applied Voltage: 13.50V / 11mA after 30 minute warmup per SAE J1889
No significant degradation.

Aim: Lamp mounted magnet down on level goniometer with rectangular base face perpendicular to HV.

Report No.: 200103-02C

PHOTOMETRIC TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI) for Vehicles <2032 mm Wide

Sample Number: LH1 & RH3

Specification: FMVSS 108 Table IX: Stop Lamp; Table VII: Rear Turn Signal Lamp Stop/Tail and Turn/Tail Ratio

	Tail			Stop/Turn			SI/T Ratio		
	LH1	RH3		LH1	RH3		LH	RH	Required
10.0U 5.0L	5.0	4.4		73.2	80.3		14.6	18.4	3
10.0U 5.0R	5.2	4.4		74.9	80.2		14.4	18.4	3
5.0U 20.0L	2.5	3.0		38.0	57.0		15.1	18.9	3
5.0U 10.0L	5.2	4.9		77.6	89.7		14.8	18.3	3
5.0U V	7.2	5.8		114.4	112.3		15.9	19.3	5
5.0U 10.0R	5.7	4.5		83.9	81.8		14.8	18.2	3
5.0U 20.0R	2.4	2.2		37.3	41.9		15.6	18.7	3
H 10.0L	5.5	5.6		81.9	102.7		14.8	18.4	3
H 5.0L	10.5	7.8		158.5	144.2		15.2	18.5	5
H V	14.5	12.3		220.8	233.4		15.3	19.0	5
H 5.0R	10.0	8.1		153.3	151.6		15.3	18.8	5
H 10.0R	5.8	5.1		86.0	94.6		14.8	18.5	3
5.0D 20.0L	2.4	3.4		37.6	62.6		15.4	18.3	3
5.0D 10.0L	5.1	5.2		75.5	95.0		14.9	18.2	3
5.0D V	9.1	12.7		140.3	235.0		15.5	18.5	3
5.0D 10.0R	5.4	5.1		79.7	95.3		14.8	18.5	3
5.0D 20.0R	2.6	2.5		39.8	44.8		15.6	18.2	3
10.0D 5.0L	4.9	5.3		72.8	95.5		14.9	18.1	3
10.0D 5.0R	4.8	5.4		71.9	98.7		15.0	18.4	3

Sample meets test requirements at all points.

Applied Voltage: 13.50V

Aim: Lamp mounted with base down on level goniometer with base face aligned horizontally to be perpendicular to the HV axis in the L/R plane.

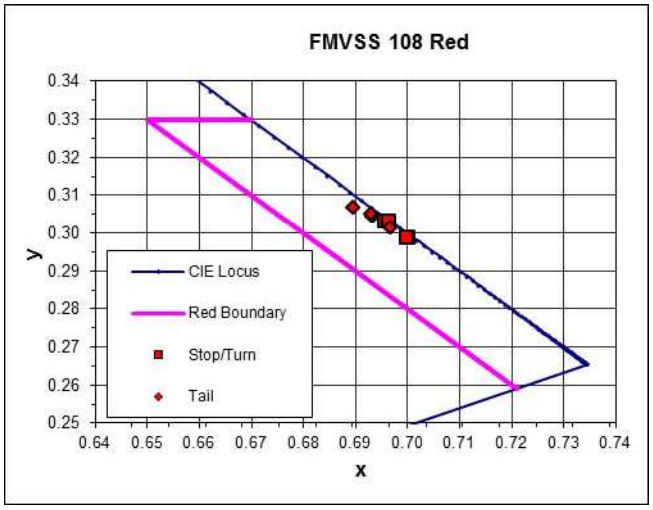
Report No.: 200103-02C

COLORIMETRY TEST DATA SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Sample Number: LH2 & RH1

Requirement: FMVSS 108 S14.4.1 Color Test
Test Method: FMVSS 108 S14.4.1.4 Tristimulus Method
Average of 3 reads using supplied bulb at design voltage
Instrument: Photo Research PR-655 Spectroradiometer with SRS-3 Target
Location: HV, 2 ft
Voltage: 13.5V

Measured (x, y)	Required & Chart
Tail LH2 t = 0 (0.6898, 0.3069) t = 30 min (0.6970, 0.3015) RH1 t = 0 (0.6936, 0.3045) t = 30 min (0.6932, 0.3052) Stop/Turn Signal LH2 t = 0 (0.6957, 0.3032) t = 30 min (0.7001, 0.2986) RH1 t = 0 (0.6964, 0.3030) t = 30 min (0.6999, 0.2988)	y ≤ 0.33 y ≥ 0.98 - x 

Samples meets Color requirements.

PHOTOGRAPH SHEET

Project Name: Harbor Freight 64282 12V Magnetic LED Towing Light Kit (SAE STI)

Test	Batch	Month/Year	Eagle King testing (max 420 Candela) SAE J 586	Eagle King testing (max 25 Candela) SAE J585	Table 7 and 9 '@ stabilization' result	Table 7 and 9 result @ t=1 min result (max 420 Candela)	Zone 3 (min 520 candela)
Eagle King Sample 1	PO-6519623-64274 - test date 1/19/19	Jan-19	225.6	13.47			
Eagle King Sample 2	PO-6519623-64274 - test date 1/19/19	Jan-19	242.2	14.63			
Eagle King Sample 1	PO-6589288-64274 - test date 2/27/19	Feb-19	259.2	16.71			
Eagle King Sample 2	PO-6589288-64274 - test date 2/27/19	Feb-19	349.2	19.1			
Eagle King Sample 3	PO-6589288-64274 - test date 2/27/19	Feb-19	230.1	14.16			
Eagle King Sample 4	PO-6589288-64274 - test date 2/27/19	Feb-19	212.6	11.45			
Eagle King Sample 1	PO-6589292-64274 - test date 3/23/19	Mar-19	198.1	11.31			
Eagle King Sample 2	PO-6589292-64274 - test date 3/23/19	Mar-19	254.2	12.27			
Eagle King Sample 3	PO-6589292-64274 - test date 3/23/19	Mar-19	221.7	13.57			
Eagle King Sample 4	PO-6589292-64274 - test date 3/23/19	Mar-19	216.4	15.35			
Eagle King Sample 5	PO-6589292-64274 - test date 3/23/19	Mar-19	202.2	13.58			
Eagle King Sample 6	PO-6589292-64274 - test date 3/23/19	Mar-19	250.8	16.98			
Eagle King Sample 1	PO-6590379-64274 - test date 4/22/19	Apr-19	246.8	17.33			
Eagle King Sample 2	PO-6590379-64274 - test date 4/22/19	Apr-19	286.2	18.91			
Eagle King Sample 3	PO-6590379-64274 - test date 4/22/19	Apr-19	278	17.95			
Eagle King Sample 4	PO-6590379-64274 - test date 4/22/19	Apr-19	266.1	13.62			
Eagle King Sample 5	PO-6590379-64274 - test date 4/22/19	Apr-19	251	13.78			
Eagle King Sample 6	PO-6590379-64274 - test date 4/22/19	Apr-19	266.5	12.78			
Eagle King Sample 1	PO-6591713-64274 - test date 4/2/19	Apr-19	163.9	9.511			
Eagle King Sample 2	PO-6591713-64274 - test date 4/2/19	Apr-19	175.7	8.358			
Eagle King Sample 3	PO-6591713-64274 - test date 4/2/19	Apr-19	327	16.88			
Eagle King Sample 4	PO-6591713-64274 - test date 4/2/19	Apr-19	193.5	13.16			
Eagle King Sample 5	PO-6591713-64274 - test date 4/2/19	Apr-19	227.1	12.49			
Eagle King Sample 6	PO-6591713-64274 - test date 4/2/19	Apr-19	225.7	14.94			
Eagle King Sample 1	PO-6616179-64274 - test date 5/21/19	May-19	236.9	15.11			
Eagle King Sample 2	PO-6616179-64274 - test date 5/21/19	May-19	207.8	12.05			
Eagle King Sample 3	PO-6616179-64274 - test date 5/21/19	May-19	236.4	15.06			
Eagle King Sample 4	PO-6616179-64274 - test date 5/21/19	May-19	141	10.31			
Eagle King Sample 5	PO-6616179-64274 - test date 5/21/19	May-19	138.8	10.06			
Eagle King Sample 6	PO-6616179-64274 - test date 5/21/19	May-19	179.3	12.72			
Eagle King Sample 1	PO-6616183-64274 - test date 5/19/19	May-19	266.7	14.5			
Eagle King Sample 2	PO-6616183-64274 - test date 5/19/19	May-19	346.2	20.24			
Eagle King Sample 3	PO-6616183-64274 - test date 5/19/19	May-19	293.3	18.02			
Eagle King Sample 4	PO-6616183-64274 - test date 5/19/19	May-19	211.1	13.5			
Eagle King Sample 5	PO-6616183-64274 - test date 5/19/19	May-19	186.8	11.66			
Eagle King Sample 6	PO-6616183-64274 - test date 5/19/19	May-19	156.2	10.88			
Eagle King Sample 1	PO-6626414-64274 - test date 6/19/19	Jun-19	162.9	10.9			
Eagle King Sample 2	PO-6626414-64274 - test date 6/19/19	Jun-19	198.6	12.93			
Eagle King Sample 3	PO-6626414-64274 - test date 6/19/19	Jun-19	191.2	12.16			
Eagle King Sample 4	PO-6626414-64274 - test date 6/19/19	Jun-19	240.2	16.57			
Eagle King Sample 5	PO-6626414-64274 - test date 6/19/19	Jun-19	249.8	15.79			
Eagle King Sample 6	PO-6626414-64274 - test date 6/19/19	Jun-19	222.8	15.25			
Week 24 2019 LH 1	PO-6626425, Date Code 24-2019	Jun-19			219.41	256.93	984.58
Week 24 2019 LH 2	PO-6626425, Date Code 24-2019	Jun-19			248.72	285.28	1037.11
Week 24 2019 LH 3	PO-6626425, Date Code 24-2019	Jun-19			230.03	266.37	1026.93
Week 24 2019 LH 4	PO-6626425, Date Code 24-2019	Jun-19			276.48	326.52	1152.65
Week 24 2019 LH 5	PO-6626425, Date Code 24-2019	Jun-19			265.80	308.59	1036.63
Week 24 2019 RH 1	PO-6626425, Date Code 24-2019	Jun-19			201.77	240.31	835.56
Week 24 2019 RH 2	PO-6626425, Date Code 24-2019	Jun-19			305.92	359.46	1220.34
Week 24 2019 RH 3	PO-6626425, Date Code 24-2019	Jun-19			223.14	266.43	872.26
Week 24 2019 RH 4	PO-6626425, Date Code 24-2019	Jun-19			280.98	338.58	1150.1
Week 24 2019 RH 5	PO-6626425, Date Code 24-2019	Jun-19			220,81	267.40	912.82
Eagle King Sample 1	PO-6629761-64274 - test date 7/6/19	Jul-19	184.7	12.75			
Eagle King Sample 2	PO-6629761-64274 - test date 7/6/19	Jul-19	184.7	10.25			
Eagle King Sample 3	PO-6629761-64274 - test date 7/6/19	Jul-19	173.4	9.673			
Eagle King Sample 4	PO-6629761-64274 - test date 7/6/19	Jul-19	174.9	12.54			
Eagle King Sample 5	PO-6629761-64274 - test date 7/6/19	Jul-19	231.8	11.92			
Eagle King Sample 6	PO-6629761-64274 - test date 7/6/19	Jul-19	197.6				
Eagle King Sample 7	PO-6629761-64274 - test date 7/6/19	Jul-19	162.8				
Eagle King Sample 1	PO-6629757-64274 - test date 7/9/19	Jul-19	164.9	13.17			
Eagle King Sample 2	PO-6629757-64274 - test date 7/9/19	Jul-19	198.7	10.75			
Eagle King Sample 3	PO-6629757-64274 - test date 7/9/19	Jul-19	223.2	21.98			
Eagle King Sample 4	PO-6629757-64274 - test date 7/9/19	Jul-19	171	14.37			
Eagle King Sample 5	PO-6629757-64274 - test date 7/9/19	Jul-19	166.2	11.69			
Eagle King Sample 6	PO-6629757-64274 - test date 7/9/19	Jul-19	171.6	11.62			
Week 27 2019 LH 1	PO-6629762, Date Code 27- 2019	Jul-19			166.63	190.46	743.16
Week 27 2019 LH 2	PO-6629762, Date Code 27- 2019	Jul-19			206.43	No data	908.25
Week 27 2019 LH 3	PO-6629762, Date Code 27- 2019	Jul-19			175.72	No data	790.48
Week 27 2019 RH1	PO-6629762, Date Code 27- 2019	Jul-19			118.35	137.52	466.33
Week 27 2019 RH2	PO-6629762, Date Code 27- 2019	Jul-19			118.28	No data	497.39
Week 27 2019 RH3	PO-6629762, Date Code 27- 2019	Jul-19			191.19	No data	833.46
Eagle King Sample 1	PO-6644286-64274 - test date 8/6/19	Aug-19	184.9	12.13			
Eagle King Sample 2	PO-6644286-64274 - test date 8/6/19	Aug-19	185.5	12.13			
Eagle King Sample 3	PO-6644286-64274 - test date 8/6/19	Aug-19	173.2	12.01			
Eagle King Sample 4	PO-6644286-64274 - test date 8/6/19	Aug-19	170.2	12.01			
Eagle King Sample 5	PO-6644286-64274 - test date 8/6/19	Aug-19	176.6	13.34			
Eagle King Sample 6	PO-6644286-64274 - test date 8/6/19	Aug-19		11.42			

Eagle King Sample 7	PO-6644286-64274 - test date 8/6/19	Aug-19		12.64			
Eagle King Sample 1	PO-6644309-64274 - test date 8/24/19	Aug-19	174.7	11.29			
Eagle King Sample 2	PO-6644309-64274 - test date 8/24/19	Aug-19	164.9	12.7			
Eagle King Sample 3	PO-6644309-64274 - test date 8/24/19	Aug-19	192.2	17.8			
Eagle King Sample 4	PO-6644309-64274 - test date 8/24/19	Aug-19	211.8	12.76			
Eagle King Sample 5	PO-6644309-64274 - test date 8/24/19	Aug-19	189.4	12.63			
Eagle King Sample 6	PO-6644309-64274 - test date 8/24/19	Aug-19	198.2	13.39			
Eagle King Sample 1	PO-6649685-64274 - test date 9/17/19	Sep-19	210.7	11.35			
Eagle King Sample 2	PO-6649685-64274 - test date 9/17/19	Sep-19	253.9	11.35			
Eagle King Sample 3	PO-6649685-64274 - test date 9/17/19	Sep-19	221.4	12.48			
Eagle King Sample 4	PO-6649685-64274 - test date 9/17/19	Sep-19	190.7	13.73			
Eagle King Sample 5	PO-6649685-64274 - test date 9/17/19	Sep-19	209.2	12.01			
Eagle King Sample 6	PO-6649685-64274 - test date 9/17/19	Sep-19		11.16			
Eagle King Sample 7	PO-6649685-64274 - test date 9/17/19	Sep-19		13.07			
Eagle King Sample 1	PO-6649697-64274 - test date 10/5/19	Oct-19	215.8	13.15			
Eagle King Sample 2	PO-6649697-64274 - test date 10/5/19	Oct-19	185.3	13.89			
Eagle King Sample 3	PO-6649697-64274 - test date 10/5/19	Oct-19	160.2	11.07			
Eagle King Sample 4	PO-6649697-64274 - test date 10/5/19	Oct-19	339.4	17.94			
Eagle King Sample 5	PO-6649697-64274 - test date 10/5/19	Oct-19	299.6	19.73			
Eagle King Sample 6	PO-6649697-64274 - test date 10/5/19	Oct-19	219.3	13.14			
Week 41 2019 LH 13	PO-6649697, Date Code 41-2019	Oct-19			284.72	334.26	1186.72
Week 41 2019 LH 14	PO-6649697, Date Code 41-2019	Oct-19			275.09	315.80	1185.98
Week 41 2019 LH 15	PO-6649697, Date Code 41-2019	Oct-19			256.16	300.22	1041.13
Week 41 2019 LH 16	PO-6649697, Date Code 41-2019	Oct-19			232.28	272.46	905.34
Week 41 2019 LH 17	PO-6649697, Date Code 41-2019	Oct-19			283.82	331.79	1126.93
Week 41 2019 RH 13	PO-6649697, Date Code 41-2019	Oct-19			240.80	288.48	1111.54
Week 41 2019 RH 14	PO-6649697, Date Code 41-2019	Oct-19			269.69	327.13	1149.86
Week 41 2019 RH 15	PO-6649697, Date Code 41-2019	Oct-19			335.12	410.19	1411.55
Week 41 2019 RH 16	PO-6649697, Date Code 41-2019	Oct-19			244.05	285.54	1123.64
Week 41 2019 RH 17	PO-6649697, Date Code 41-2019	Oct-19			194.74	232.71	821.83
Eagle King Sample 1	PO-6671627-64274 - test date 12/10/19	Dec-19	277.6	15.69			
Eagle King Sample 2	PO-6671627-64274 - test date 12/10/19	Dec-19	209.5	13			
Eagle King Sample 3	PO-6671627-64274 - test date 12/10/19	Dec-19	234.2	16			
Eagle King Sample 4	PO-6671627-64274 - test date 12/10/19	Dec-19	237.2	13.44			
Eagle King Sample 1	PO-6676302-64274 - test date 12/15/19	Dec-19	242.4	14.36			
Eagle King Sample 2	PO-6676302-64274 - test date 12/15/19	Dec-19	314.7	19.65			
Eagle King Sample 3	PO-6676302-64274 - test date 12/15/19	Dec-19	279.3	17.17			
Eagle King Sample 4	PO-6676302-64274 - test date 12/15/19	Dec-19	263.7	16.08			
Eagle King Sample 5	PO-6676302-64274 - test date 12/15/19	Dec-19	290.2	15.85			
Eagle King Sample 6	PO-6676302-64274 - test date 12/15/19	Dec-19	231.4	14.07			
Eagle King Sample 1	PO-6690450-64274 - test date 3/26/20	Mar-20	188.4	11.84			
Eagle King Sample 2	PO-6690450-64274 - test date 3/26/20	Mar-20	210.2	14.01			
Eagle King Sample 3	PO-6690450-64274 - test date 3/26/20	Mar-20	191.2	12.6			
Eagle King Sample 4	PO-6690450-64274 - test date 3/26/20	Mar-20	224.8	13.46			
Eagle King Sample 5	PO-6690450-64274 - test date 3/26/20	Mar-20	243.4	15.47			
Eagle King Sample 6	PO-6690450-64274 - test date 3/26/20	Mar-20	224.1	14.8			
Eagle King Sample 1	PO-6690452-64274 - test date 3/13/20	Mar-20	263	14.01			
Eagle King Sample 2	PO-6690452-64274 - test date 3/13/20	Mar-20	222.8	12.48			
Eagle King Sample 3	PO-6690452-64274 - test date 3/13/20	Mar-20	221.7	11.72			
Eagle King Sample 4	PO-6690452-64274 - test date 3/13/20	Mar-20	249.3	16			
Eagle King Sample 5	PO-6690452-64274 - test date 3/13/20	Mar-20	233.4	13.44			
Eagle King Sample 6	PO-6690452-64274 - test date 3/13/20	Mar-20	203.9	10.74			
Eagle King Sample 1	PO-6703387-64274 - test date 4/14/20	Apr-20	155.2	9.731			
Eagle King Sample 2	PO-6703387-64274 - test date 4/14/20	Apr-20	185.6	11.65			
Eagle King Sample 3	PO-6703387-64274 - test date 4/14/20	Apr-20	177.1	11.58			
Eagle King Sample 4	PO-6703387-64274 - test date 4/14/20	Apr-20	245.1	14.8			
Eagle King Sample 5	PO-6703387-64274 - test date 4/14/20	Apr-20	254.9	15.03			
Eagle King Sample 6	PO-6703387-64274 - test date 4/14/20	Apr-20	227.3	14.25			
Eagle King Sample 1	PO-6704904-64274 - test date 4/14/20	Apr-20	184.7	11.92			
Eagle King Sample 2	PO-6704904-64274 - test date 4/14/20	Apr-20	177.9	10.86			
Eagle King Sample 3	PO-6704904-64274 - test date 4/14/20	Apr-20	176.2	11.13			
Eagle King Sample 4	PO-6704904-64274 - test date 4/14/20	Apr-20	233.8	15.24			
Eagle King Sample 5	PO-6704904-64274 - test date 4/14/20	Apr-20	241.1	14.55			
Eagle King Sample 6	PO-6704904-64274 - test date 4/14/20	Apr-20	270	17.37			
Eagle King Sample 1	PO-6708215-64274 - test date 5/18/20	May-20	289.3	15.41			
Eagle King Sample 2	PO-6708215-64274 - test date 5/18/20	May-20	245.1	13.73			
Eagle King Sample 3	PO-6708215-64274 - test date 5/18/20	May-20	243.9	12.89			
Eagle King Sample 4	PO-6708215-64274 - test date 5/18/20	May-20	208.5	13.58			
Eagle King Sample 5	PO-6708215-64274 - test date 5/18/20	May-20	180.2	10.1			
Eagle King Sample 6	PO-6708215-64274 - test date 5/18/20	May-20	251.1	15.31			
Eagle King Sample 1	PO-6709916-64274 - test date 5/11/20	May-20	195.8	12.12			
Eagle King Sample 2	PO-6709916-64274 - test date 5/11/20	May-20	214.5	14.17			
Eagle King Sample 3	PO-6709916-64274 - test date 5/11/20	May-20	221.2	13.11			
Eagle King Sample 4	PO-6709916-64274 - test date 5/11/20	May-20	187.5	11.82			
Eagle King Sample 5	PO-6709916-64274 - test date 5/11/20	May-20	198.1	12.78			
Eagle King Sample 6	PO-6709916-64274 - test date 5/11/20	May-20	206.1	13.02			

Test	Batch	Month/Year	Eagle King testing (max 420 Candela) SAE J 586	Eagle King testing (max 25 Candela) SAE J585	Table 7 and 9 '@stabilization' result	Table 7 and 9 result @ t=1 min result (max 420 Candela) SAE J 586	Table 8 result (max 25 Candela) SAE J585
Week 27 2019 LH 1	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			352.12	367.61	13.74
Week 27 2019 LH 2	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			367.60	No Data	14.77
Week 27 2019 LH 3	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			359.45	389.42	21.56
Week 27 2019 LH 4	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			240.16	249.62	12.41
Week 27 2019 RH1	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			306.09	326.55	12.48
Week 27 2019 RH2	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			226.87	232.11	10.64
Week 27 2019 RH3	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			146.50	155.90	7.99
Week 27 2019 RH4	PO-6629762, Date Code 27-2019 - test date 7/13/19	Jul-19			278.87	289.86	14.15
Week 46 2019 LH 1	week 46.19	Nov-19			288.55	318.56	14.86
Week 46 2019 LH 2	week 46.19	Nov-19			342.73	370.56	9.86
Week 46 2019 LH 3	week 46.19	Nov-19			151.50	166.65	9.73
Week 46 2019 RH1	week 46.19 (Nov. 11- 17)	Nov-19			520.48	579.81	31.87
Week 46 2019 RH2	week 46.19 (Nov. 11- 17)	Nov-19			385.61	426.87	22.39
Week 46 2019 RH3	week 46.19	Nov-19			261.11	277.82	12.40
Eagle King Sample 1	PO-6519634-64282 - test date 1/22/19	Jan-19	347.90	9.98			
Eagle King Sample 2	PO-6519634-64282 - test date 1/22/19	Jan-19	195.00	17.70			
Eagle King Sample 3	PO-6519634-64282 - test date 1/22/19	Jan-19	280.00	14.00			
Eagle King Sample 4	PO-6519634-64282 - test date 1/22/19	Jan-19	311.30	15.98			
Eagle King Sample 1	PO-6519672-64282 - test date 1/13/19	Jan-19	252.00	17.83			
Eagle King Sample 2	PO-6519672-64282 - test date 1/13/19	Jan-19	328.20	12.59			
Eagle King Sample 3	PO-6519672-64282 - test date 1/13/19	Jan-19	270.50	15.35			
Eagle King Sample 4	PO-6519672-64282 - test date 1/13/19	Jan-19	300.80	13.92			
Eagle King Sample 1	PO-6587247 -64282 - test date 1/12/19	Jan-19	336.70	16.57			
Eagle King Sample 2	PO-6587247 -64282 - test date 1/12/19	Jan-19	283.40	14.05			
Eagle King Sample 3	PO-6587247 -64282 - test date 1/12/19	Jan-19	225.50	11.86			
Eagle King Sample 4	PO-6587247 -64282 - test date 1/12/19	Jan-19	393.20	20.38			
Eagle King Sample 5	PO-6587247 -64282 - test date 1/12/19	Jan-19	303.10	15.16			
Eagle King Sample 6	PO-6587247 -64282 - test date 1/12/19	Jan-19	226.60	11.30			
Eagle King Sample 7	PO-6587247 -64282 - test date 1/12/19	Jan-19	171.00	23.55			
Eagle King Sample 8	PO-6587247 -64282 - test date 1/12/19	Jan-19	226.60	22.24			
Eagle King Sample 1	PO-6589294-64282 - test date 3/16/2019	Mar-19	259.70	13.11			
Eagle King Sample 2	PO-6589294-64282 - test date 3/16/2019	Mar-19	318.60	16.38			
Eagle King Sample 3	PO-6589294-64282 - test date 3/16/2019	Mar-19	250.00	12.96			
Eagle King Sample 4	PO-6589294-64282 - test date 3/16/2019	Mar-19	327.20	16.67			
Eagle King Sample 5	PO-6589294-64282 - test date 3/16/2019	Mar-19	238.30	12.59			
Eagle King Sample 6	PO-6589294-64282 - test date 3/16/2019	Mar-19	149.30	9.81			
Eagle King Sample 7	PO-6589294-64282 - test date 3/16/2019	Mar-19	210.70	10.63			
Eagle King Sample 8	PO-6589294-64282 - test date 3/16/2019	Mar-19	171.80	8.45			
Eagle King Sample 1	PO-6587248-64282 - test date 3/2/19	Mar-19	178.20	8.98			
Eagle King Sample 2	PO-6587248-64282 - test date 3/2/19	Mar-19	199.20	10.14			
Eagle King Sample 3	PO-6587248-64282 - test date 3/2/19	Mar-19	174.30	8.37			
Eagle King Sample 4	PO-6587248-64282 - test date 3/2/19	Mar-19	280.20	14.21			
Eagle King Sample 5	PO-6587248-64282 - test date 3/2/19	Mar-19	270.70	13.05			
Eagle King Sample 6	PO-6587248-64282 - test date 3/2/19	Mar-19	212.20	10.87			
Eagle King Sample 7	PO-6587248-64282 - test date 3/2/19	Mar-19	197.60	9.87			
Eagle King Sample 8	PO-6587248-64282 - test date 3/2/19	Mar-19	283.80	9.96			
Eagle King Sample 1	PO-6587249-64282 - test date 2/27/19	Feb-19	247.30	12.89			
Eagle King Sample 2	PO-6587249-64282 - test date 2/27/19	Feb-19	320.70	16.22			
Eagle King Sample 3	PO-6587249-64282 - test date 2/27/19	Feb-19	262.50	12.96			
Eagle King Sample 4	PO-6587249-64282 - test date 2/27/19	Feb-19	246.90	13.88			
Eagle King Sample 5	PO-6587249-64282 - test date 2/27/19	Feb-19	171.80	19.17			
Eagle King Sample 6	PO-6587249-64282 - test date 2/27/19	Feb-19	371.70	10.56			
Eagle King Sample 7	PO-6587249-64282 - test date 2/27/19	Feb-19	162.50	17.38			
Eagle King Sample 8	PO-6587249-64282 - test date 2/27/19	Feb-19	371.70	14.88			
Eagle King Sample 1	PO-6587251-64282 - test date 3/12/19	Mar-19	264.00	13.99			
Eagle King Sample 2	PO-6587251-64282 - test date 3/12/19	Mar-19	210.00	10.30			
Eagle King Sample 3	PO-6587251-64282 - test date 3/12/19	Mar-19	255.10	19.02			
Eagle King Sample 4	PO-6587251-64282 - test date 3/12/19	Mar-19	320.40	17.40			
Eagle King Sample 5	PO-6587251-64282 - test date 3/12/19	Mar-19	188.00	13.25			
Eagle King Sample 6	PO-6587251-64282 - test date 3/12/19	Mar-19	268.80	13.27			
Eagle King Sample 7	PO-6587251-64282 - test date 3/12/19	Mar-19	358.10	12.31			
Eagle King Sample 8	PO-6587251-64282 - test date 3/12/19	Mar-19	325.60	15.09			
Eagle King Sample 1	PO-6589290-64282 - test date 4/2/19	Apr-19	330.10	17.58			
Eagle King Sample 2	PO-6589290-64282 - test date 4/2/19	Apr-19	208.50	16.87			
Eagle King Sample 3	PO-6589290-64282 - test date 4/2/19	Apr-19	255.30	14.52			
Eagle King Sample 4	PO-6589290-64282 - test date 4/2/19	Apr-19	253.70	13.79			
Eagle King Sample 5	PO-6589290-64282 - test date 4/2/19	Apr-19	338.30	12.86			
Eagle King Sample 6	PO-6589290-64282 - test date 4/2/19	Apr-19	240.70	19.72			
Eagle King Sample 7	PO-6589290-64282 - test date 4/2/19	Apr-19	364.50	19.19			
Eagle King Sample 8	PO-6589290-64282 - test date 4/2/19	Apr-19	365.80	16.91			
Eagle King Sample 1	PO-6591714-64282 - test date 4/23/19	Apr-19	277.00	10.90			

Eagle King Sample 2	PO-6591714-64282 - test date 4/23/19	Apr-19	269.90	14.95			
Eagle King Sample 3	PO-6591714-64282 - test date 4/23/19	Apr-19	214.80	14.67			
Eagle King Sample 4	PO-6591714-64282 - test date 4/23/19	Apr-19	243.17	11.07			
Eagle King Sample 5	PO-6591714-64282 - test date 4/23/19	Apr-19	216.80	11.99			
Eagle King Sample 6	PO-6591714-64282 - test date 4/23/19	Apr-19	310.90	16.44			
Eagle King Sample 7	PO-6591714-64282 - test date 4/23/19	Apr-19	216.10	16.14			
Eagle King Sample 8	PO-6591714-64282 - test date 4/23/19	Apr-19	203.00	12.18			
Eagle King Sample 9	PO-6591714-64282 - test date 4/23/19	Apr-19	253.00	13.19			
Eagle King Sample 10	PO-6591714-64282 - test date 4/23/19	Apr-19	246.00	18.09			
Eagle King Sample 11	PO-6591714-64282 - test date 4/23/19	Apr-19	240.90	17.75			
Eagle King Sample 12	PO-6591714-64282 - test date 4/23/19	Apr-19	254.90	13.40			
Eagle King Sample 13	PO-6591714-64282 - test date 4/23/19	Apr-19	224.20	12.93			
Eagle King Sample 14	PO-6591714-64282 - test date 4/23/19	Apr-19	389.30	19.90			
Eagle King Sample 15	PO-6591714-64282 - test date 4/23/19	Apr-19	258.20	17.39			
Eagle King Sample 16	PO-6591714-64282 - test date 4/23/19	Apr-19	314.90	14.74			
Eagle King Sample 1	PO-6591727-64282 - test date 4/19/19	Apr-19	261.90	13.29			
Eagle King Sample 2	PO-6591727-64282 - test date 4/19/19	Apr-19	204.20	9.76			
Eagle King Sample 3	PO-6591727-64282 - test date 4/19/19	Apr-19	200.30	12.91			
Eagle King Sample 4	PO-6591727-64282 - test date 4/19/19	Apr-19	301.80	12.57			
Eagle King Sample 5	PO-6591727-64282 - test date 4/19/19	Apr-19	244.10	11.10			
Eagle King Sample 6	PO-6591727-64282 - test date 4/19/19	Apr-19	244.10	8.03			
Eagle King Sample 7	PO-6591727-64282 - test date 4/19/19	Apr-19	217.80	12.55			
Eagle King Sample 8	PO-6591727-64282 - test date 4/19/19	Apr-19	166.10				
Eagle King Sample 9	PO-6591727-64282 - test date 4/19/19	Apr-19	249.00				
Eagle King Sample 1	PO-65892984-64282 - test date 4/9/19	Apr-19	249.80	12.74			
Eagle King Sample 2	PO-65892984-64282 - test date 4/9/19	Apr-19	239.30	12.43			
Eagle King Sample 3	PO-65892984-64282 - test date 4/9/19	Apr-19	352.50	12.59			
Eagle King Sample 4	PO-65892984-64282 - test date 4/9/19	Apr-19	215.60	7.43			
Eagle King Sample 5	PO-65892984-64282 - test date 4/9/19	Apr-19	352.50	18.41			
Eagle King Sample 6	PO-65892984-64282 - test date 4/9/19	Apr-19	215.60	11.03			
Eagle King Sample 7	PO-65892984-64282 - test date 4/9/19	Apr-19	233.50	12.48			
Eagle King Sample 8	PO-65892984-64282 - test date 4/9/19	Apr-19	280.40	14.17			
Eagle King Sample 1	PO-6608542-64282 - test date 5/7/19	May-19	185.80	9.69			
Eagle King Sample 2	PO-6608542-64282 - test date 5/7/19	May-19	221.20	11.58			
Eagle King Sample 3	PO-6608542-64282 - test date 5/7/19	May-19	251.40	11.95			
Eagle King Sample 4	PO-6608542-64282 - test date 5/7/19	May-19	280.90	14.16			
Eagle King Sample 5	PO-6608542-64282 - test date 5/7/19	May-19	202.00	8.21			
Eagle King Sample 6	PO-6608542-64282 - test date 5/7/19	May-19	164.70	10.09			
Eagle King Sample 7	PO-6608542-64282 - test date 5/7/19	May-19	197.70	10.39			
Eagle King Sample 8	PO-6608542-64282 - test date 5/7/19	May-19	339.40	17.21			
Eagle King Sample 1	PO-6612362-64282 - test date 5/21/19	May-19	255.20	13.44			
Eagle King Sample 2	PO-6612362-64282 - test date 5/21/19	May-19	156.50	7.89			
Eagle King Sample 3	PO-6612362-64282 - test date 5/21/19	May-19	259.30	13.15			
Eagle King Sample 4	PO-6612362-64282 - test date 5/21/19	May-19	246.10	12.48			
Eagle King Sample 5	PO-6612362-64282 - test date 5/21/19	May-19	170.80	8.89			
Eagle King Sample 6	PO-6612362-64282 - test date 5/21/19	May-19	197.40	10.60			
Eagle King Sample 7	PO-6612362-64282 - test date 5/21/19	May-19	227.00	11.71			
Eagle King Sample 8	PO-6612362-64282 - test date 5/21/19	May-19	365.70	19.85			
Eagle King Sample 1	PO-6612363-64282 - test date 5/11/19	May-19	232.10	17.42			
Eagle King Sample 2	PO-6612363-64282 - test date 5/11/19	May-19	239.70	19.91			
Eagle King Sample 3	PO-6612363-64282 - test date 5/11/19	May-19	286.60	16.43			
Eagle King Sample 4	PO-6612363-64282 - test date 5/11/19	May-19	332.00	11.81			
Eagle King Sample 5	PO-6612363-64282 - test date 5/11/19	May-19	312.00	14.86			
Eagle King Sample 6	PO-6612363-64282 - test date 5/11/19	May-19	194.90	16.01			
Eagle King Sample 7	PO-6612363-64282 - test date 5/11/19	May-19	301.70	16.59			
Eagle King Sample 8	PO-6612363-64282 - test date 5/11/19	May-19	261.40	16.57			
Eagle King Sample 1	PO-6616279-64282 - test date 5/19/19	May-19	263.90	20.34			
Eagle King Sample 2	PO-6616279-64282 - test date 5/19/19	May-19	324.50	23.48			
Eagle King Sample 3	PO-6616279-64282 - test date 5/19/19	May-19	330.40	19.19			
Eagle King Sample 4	PO-6616279-64282 - test date 5/19/19	May-19	251.60	13.92			
Eagle King Sample 5	PO-6616279-64282 - test date 5/19/19	May-19	364.20	13.20			
Eagle King Sample 6	PO-6616279-64282 - test date 5/19/19	May-19	372.10	18.17			
Eagle King Sample 7	PO-6616279-64282 - test date 5/19/19	May-19	359.50	17.97			
Eagle King Sample 8	PO-6616279-64282 - test date 5/19/19	May-19	232.20	14.38			
Eagle King Sample 1	PO-6625090-64282 - test date 6/11/19	Jun-19	233.30	16.12			
Eagle King Sample 2	PO-6625090-64282 - test date 6/11/19	Jun-19	281.50	10.19			
Eagle King Sample 3	PO-6625090-64282 - test date 6/11/19	Jun-19	374.50	13.06			
Eagle King Sample 4	PO-6625090-64282 - test date 6/11/19	Jun-19	357.00	11.92			
Eagle King Sample 5	PO-6625090-64282 - test date 6/11/19	Jun-19	310.00	16.34			
Eagle King Sample 6	PO-6625090-64282 - test date 6/11/19	Jun-19	320.20	11.19			
Eagle King Sample 7	PO-6625090-64282 - test date 6/11/19	Jun-19	345.30	17.42			
Eagle King Sample 8	PO-6625090-64282 - test date 6/11/19	Jun-19	199.80	11.83			
Eagle King Sample 9	PO-6625090-64282 - test date 6/11/19	Jun-19	239.90	13.11			

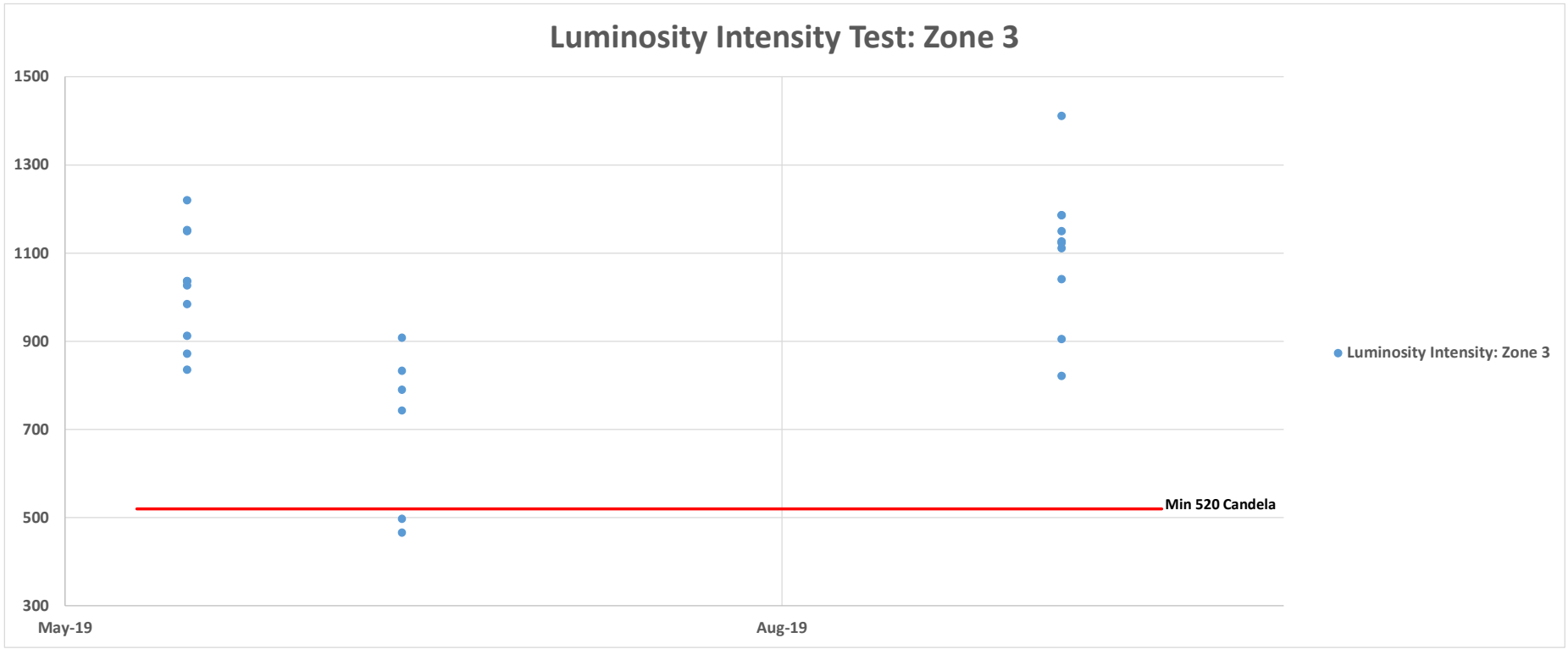
Eagle King Sample 10	PO-6625090-64282 - test date 6/11/19	Jun-19	348.70	10.66			
Eagle King Sample 11	PO-6625090-64282 - test date 6/11/19	Jun-19	379.60	13.79			
Eagle King Sample 12	PO-6625090-64282 - test date 6/11/19	Jun-19	272.60	15.40			
Eagle King Sample 13	PO-6625090-64282 - test date 6/11/19	Jun-19	353.30	15.42			
Eagle King Sample 14	PO-6625090-64282 - test date 6/11/19	Jun-19	230.70	12.06			
Eagle King Sample 15	PO-6625090-64282 - test date 6/11/19	Jun-19	277.60	14.62			
Eagle King Sample 16	PO-6625090-64282 - test date 6/11/19	Jun-19	291.50	16.44			
Eagle King Sample 17	PO-6625090-64282 - test date 6/11/19	Jun-19	331.50	10.37			
Eagle King Sample 18	PO-6625090-64282 - test date 6/11/19	Jun-19	235.90	9.88			
Eagle King Sample 19	PO-6625090-64282 - test date 6/11/19	Jun-19	349.90	13.38			
Eagle King Sample 20	PO-6625090-64282 - test date 6/11/19	Jun-19	377.60	18.24			
Eagle King Sample 1	PO-6625101-64282 - test date 6/22/19	Jun-19	163.90	8.64			
Eagle King Sample 2	PO-6625101-64282 - test date 6/22/19	Jun-19	272.30	14.42			
Eagle King Sample 3	PO-6625101-64282 - test date 6/22/19	Jun-19	178.10	9.38			
Eagle King Sample 4	PO-6625101-64282 - test date 6/22/19	Jun-19	270.60	14.81			
Eagle King Sample 5	PO-6625101-64282 - test date 6/22/19	Jun-19	254.40	12.46			
Eagle King Sample 6	PO-6625101-64282 - test date 6/22/19	Jun-19	319.10	16.78			
Eagle King Sample 7	PO-6625101-64282 - test date 6/22/19	Jun-19	192.60	22.78			
Eagle King Sample 8	PO-6625101-64282 - test date 6/22/19	Jun-19	164.90	12.19			
Eagle King Sample 9	PO-6625101-64282 - test date 6/22/19	Jun-19	229.50	11.95			
Eagle King Sample 10	PO-6625101-64282 - test date 6/22/19	Jun-19	243.20	12.59			
Eagle King Sample 11	PO-6625101-64282 - test date 6/22/19	Jun-19	195.70	14.61			
Eagle King Sample 12	PO-6625101-64282 - test date 6/22/19	Jun-19	283.80	9.77			
Eagle King Sample 13	PO-6625101-64282 - test date 6/22/19	Jun-19	185.30	9.76			
Eagle King Sample 14	PO-6625101-64282 - test date 6/22/19	Jun-19	242.30	12.91			
Eagle King Sample 15	PO-6625101-64282 - test date 6/22/19	Jun-19	229.40	12.20			
Eagle King Sample 16	PO-6625101-64282 - test date 6/22/19	Jun-19	156.30	8.15			
Eagle King Sample 17	PO-6625101-64282 - test date 6/22/19	Jun-19	282.00	15.09			
Eagle King Sample 18	PO-6625101-64282 - test date 6/22/19	Jun-19	202.60	10.77			
Eagle King Sample 19	PO-6625101-64282 - test date 6/22/19	Jun-19	281.40	14.89			
Eagle King Sample 20	PO-6625101-64282 - test date 6/22/19	Jun-19	286.40	14.30			
Eagle King Sample 1	PO-6629758-64282 - test date 6/25/19	Jun-19	149.00	17.73			
Eagle King Sample 2	PO-6629758-64282 - test date 6/25/19	Jun-19	345.90	11.31			
Eagle King Sample 3	PO-6629758-64282 - test date 6/25/19	Jun-19	379.60	14.49			
Eagle King Sample 4	PO-6629758-64282 - test date 6/25/19	Jun-19	351.90	13.23			
Eagle King Sample 5	PO-6629758-64282 - test date 6/25/19	Jun-19	353.00	16.67			
Eagle King Sample 6	PO-6629758-64282 - test date 6/25/19	Jun-19	364.90	11.52			
Eagle King Sample 7	PO-6629758-64282 - test date 6/25/19	Jun-19	222.30	19.34			
Eagle King Sample 8	PO-6629758-64282 - test date 6/25/19	Jun-19	344.60	14.19			
Eagle King Sample 9	PO-6629758-64282 - test date 6/25/19	Jun-19	178.20	14.56			
Eagle King Sample 10	PO-6629758-64282 - test date 6/25/19	Jun-19	203.50	11.83			
Eagle King Sample 11	PO-6629758-64282 - test date 6/25/19	Jun-19	213.40	15.31			
Eagle King Sample 12	PO-6629758-64282 - test date 6/25/19	Jun-19	175.40	17.10			
Eagle King Sample 13	PO-6629758-64282 - test date 6/25/19	Jun-19	391.50	15.42			
Eagle King Sample 14	PO-6629758-64282 - test date 6/25/19	Jun-19	378.10	13.26			
Eagle King Sample 15	PO-6629758-64282 - test date 6/25/19	Jun-19	339.30	16.38			
Eagle King Sample 16	PO-6629758-64282 - test date 6/25/19	Jun-19	297.20	17.88			
Eagle King Sample 17	PO-6629758-64282 - test date 6/25/19	Jun-19	369.20	11.51			
Eagle King Sample 18	PO-6629758-64282 - test date 6/25/19	Jun-19	332.70	10.86			
Eagle King Sample 19	PO-6629758-64282 - test date 6/25/19	Jun-19	342.30	13.78			
Eagle King Sample 20	PO-6629758-64282 - test date 6/25/19	Jun-19	349.70	16.42			
Eagle King Sample 1	PO-6629762-64282 - test date 7/13/19	Jul-19	171.60	15.48			
Eagle King Sample 2	PO-6629762-64282 - test date 7/13/19	Jul-19	320.90	19.13			
Eagle King Sample 3	PO-6629762-64282 - test date 7/13/19	Jul-19	274.50	16.50			
Eagle King Sample 4	PO-6629762-64282 - test date 7/13/19	Jul-19	253.20	19.81			
Eagle King Sample 5	PO-6629762-64282 - test date 7/13/19	Jul-19	226.40	10.97			
Eagle King Sample 6	PO-6629762-64282 - test date 7/13/19	Jul-19	292.20	12.67			
Eagle King Sample 7	PO-6629762-64282 - test date 7/13/19	Jul-19	225.90	13.99			
Eagle King Sample 8	PO-6629762-64282 - test date 7/13/19	Jul-19	316.10	18.82			
Eagle King Sample 9	PO-6629762-64282 - test date 7/13/19	Jul-19	300.70	16.01			
Eagle King Sample 10	PO-6629762-64282 - test date 7/13/19	Jul-19	230.80	10.63			
Eagle King Sample 11	PO-6629762-64282 - test date 7/13/19	Jul-19	259.40	16.55			
Eagle King Sample 12	PO-6629762-64282 - test date 7/13/19	Jul-19	285.40	11.35			
Eagle King Sample 13	PO-6629762-64282 - test date 7/13/19	Jul-19	184.30	17.12			
Eagle King Sample 14	PO-6629762-64282 - test date 7/13/19	Jul-19	248.50	10.97			
Eagle King Sample 15	PO-6629762-64282 - test date 7/13/19	Jul-19	333.70	13.93			
Eagle King Sample 16	PO-6629762-64282 - test date 7/13/19	Jul-19	262.30	13.06			
Eagle King Sample 17	PO-6629762-64282 - test date 7/13/19	Jul-19	263.30	16.67			
Eagle King Sample 18	PO-6629762-64282 - test date 7/13/19	Jul-19	234.40	13.44			
Eagle King Sample 19	PO-6629762-64282 - test date 7/13/19	Jul-19	293.90	17.59			
Eagle King Sample 20	PO-6629762-64282 - test date 7/13/19	Jul-19	235.80	13.58			
Eagle King Sample 1	PO-6640023-64282 - test date 8/21/19	Aug-19	340.90	16.77			
Eagle King Sample 2	PO-6640023-64282 - test date 8/21/19	Aug-19	275.20	14.39			

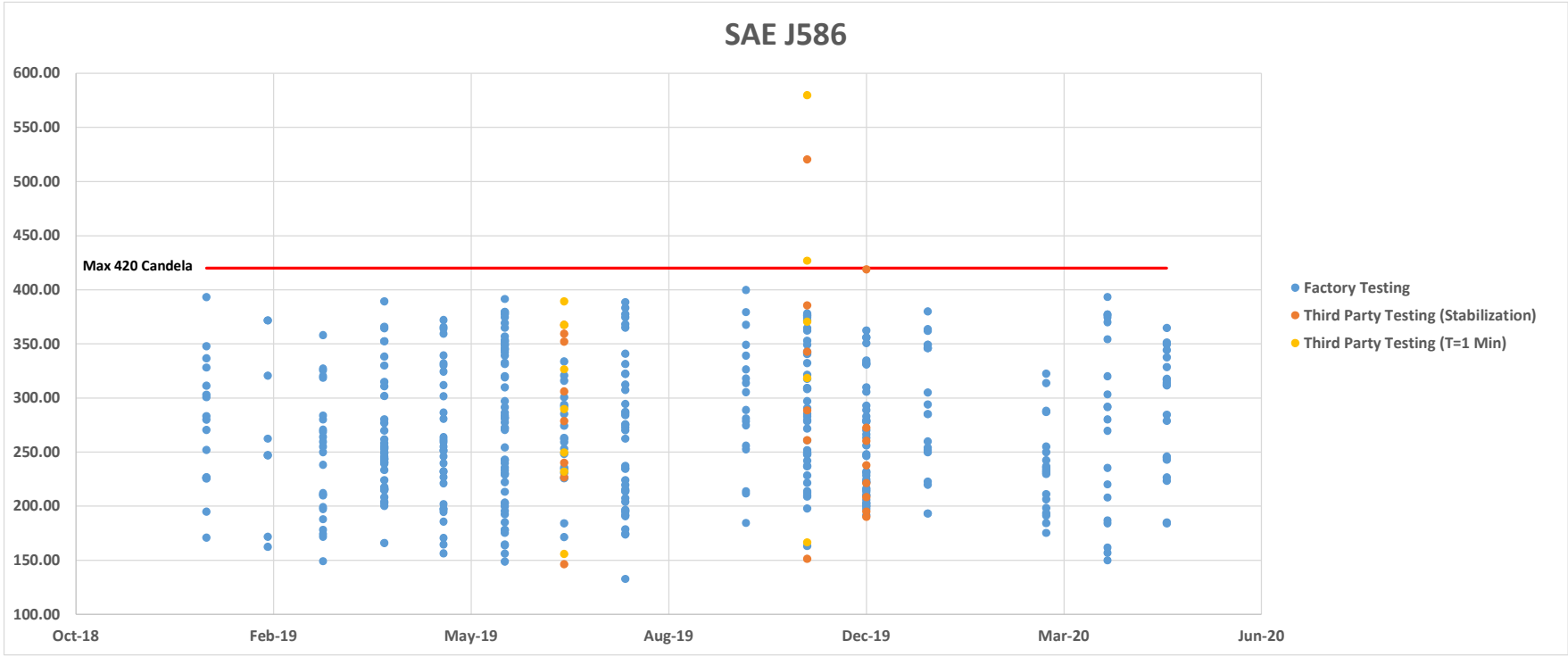
Eagle King Sample 3	PO-6640023-64282 - test date 8/21/19	Aug-19	190.90	9.77			
Eagle King Sample 4	PO-6640023-64282 - test date 8/21/19	Aug-19	374.60	19.06			
Eagle King Sample 5	PO-6640023-64282 - test date 8/21/19	Aug-19	234.60	11.53			
Eagle King Sample 6	PO-6640023-64282 - test date 8/21/19	Aug-19	322.60	16.82			
Eagle King Sample 7	PO-6640023-64282 - test date 8/21/19	Aug-19	322.30	15.56			
Eagle King Sample 8	PO-6640023-64282 - test date 8/21/19	Aug-19	132.90	7.03			
Eagle King Sample 9	PO-6640023-64282 - test date 8/21/19	Aug-19	312.40	12.39			
Eagle King Sample 10	PO-6640023-64282 - test date 8/21/19	Aug-19	237.40	13.33			
Eagle King Sample 11	PO-6640023-64282 - test date 8/21/19	Aug-19	262.50	13.50			
Eagle King Sample 12	PO-6640023-64282 - test date 8/21/19	Aug-19	365.00	18.28			
Eagle King Sample 13	PO-6640023-64282 - test date 8/21/19	Aug-19	270.20	13.89			
Eagle King Sample 14	PO-6640023-64282 - test date 8/21/19	Aug-19	388.60	19.77			
Eagle King Sample 15	PO-6640023-64282 - test date 8/21/19	Aug-19	284.10	14.92			
Eagle King Sample 16	PO-6640023-64282 - test date 8/21/19	Aug-19	272.90	15.16			
Eagle King Sample 17	PO-6640023-64282 - test date 8/21/19	Aug-19	275.90	13.69			
Eagle King Sample 18	PO-6640023-64282 - test date 8/21/19	Aug-19	287.20	14.40			
Eagle King Sample 19	PO-6640023-64282 - test date 8/21/19	Aug-19	377.50	20.01			
Eagle King Sample 20	PO-6640023-64282 - test date 8/21/19	Aug-19	286.00	13.97			
Eagle King Sample 1	PO-6641655-64282 - test date 8/3/19	Aug-19	174.00	11.41			
Eagle King Sample 2	PO-6641655-64282 - test date 8/3/19	Aug-19	207.50	10.86			
Eagle King Sample 3	PO-6641655-64282 - test date 8/3/19	Aug-19	224.10	14.72			
Eagle King Sample 4	PO-6641655-64282 - test date 8/3/19	Aug-19	178.90	18.06			
Eagle King Sample 5	PO-6641655-64282 - test date 8/3/19	Aug-19	174.60	17.11			
Eagle King Sample 6	PO-6641655-64282 - test date 8/3/19	Aug-19	383.30	12.42			
Eagle King Sample 7	PO-6641655-64282 - test date 8/3/19	Aug-19	204.10	14.92			
Eagle King Sample 8	PO-6641655-64282 - test date 8/3/19	Aug-19	195.90	15.78			
Eagle King Sample 9	PO-6641655-64282 - test date 8/3/19	Aug-19	194.90	13.77			
Eagle King Sample 10	PO-6641655-64282 - test date 8/3/19	Aug-19	213.80	10.98			
Eagle King Sample 11	PO-6641655-64282 - test date 8/3/19	Aug-19	235.30	14.20			
Eagle King Sample 12	PO-6641655-64282 - test date 8/3/19	Aug-19	196.80	15.86			
Eagle King Sample 13	PO-6641655-64282 - test date 8/3/19	Aug-19	192.10	15.88			
Eagle King Sample 14	PO-6641655-64282 - test date 8/3/19	Aug-19	368.20	12.30			
Eagle King Sample 15	PO-6641655-64282 - test date 8/3/19	Aug-19	214.30	14.92			
Eagle King Sample 16	PO-6641655-64282 - test date 8/3/19	Aug-19	215.50	16.76			
Eagle King Sample 17	PO-6641655-64282 - test date 8/3/19	Aug-19	294.50	17.45			
Eagle King Sample 18	PO-6641655-64282 - test date 8/3/19	Aug-19	307.40	12.79			
Eagle King Sample 19	PO-6641655-64282 - test date 8/3/19	Aug-19	331.50	15.21			
Eagle King Sample 20	PO-6641655-64282 - test date 8/3/19	Aug-19	219.70	16.09			
Eagle King Sample 1	PO-6651542-64282 - test date 10/13/19	Oct-19	211.80	11.29			
Eagle King Sample 2	PO-6651542-64282 - test date 10/13/19	Oct-19	252.60	12.98			
Eagle King Sample 3	PO-6651542-64282 - test date 10/13/19	Oct-19	278.60	13.10			
Eagle King Sample 4	PO-6651542-64282 - test date 10/13/19	Oct-19	349.20	13.82			
Eagle King Sample 5	PO-6651542-64282 - test date 10/13/19	Oct-19	367.70	16.84			
Eagle King Sample 6	PO-6651542-64282 - test date 10/13/19	Oct-19	281.10	11.54			
Eagle King Sample 7	PO-6651542-64282 - test date 10/13/19	Oct-19	339.20	14.78			
Eagle King Sample 8	PO-6651542-64282 - test date 10/13/19	Oct-19	288.90	13.53			
Eagle King Sample 9	PO-6651542-64282 - test date 10/13/19	Oct-19	379.40	15.95			
Eagle King Sample 10	PO-6651542-64282 - test date 10/13/19	Oct-19	213.90	20.09			
Eagle King Sample 11	PO-6651542-64282 - test date 10/13/19	Oct-19	305.50	17.32			
Eagle King Sample 12	PO-6651542-64282 - test date 10/13/19	Oct-19	255.90	20.61			
Eagle King Sample 13	PO-6651542-64282 - test date 10/13/19	Oct-19	313.80	15.26			
Eagle King Sample 14	PO-6651542-64282 - test date 10/13/19	Oct-19	184.60	9.03			
Eagle King Sample 15	PO-6651542-64282 - test date 10/13/19	Oct-19	274.80	13.50			
Eagle King Sample 16	PO-6651542-64282 - test date 10/13/19	Oct-19	399.80	20.06			
Eagle King Sample 17	PO-6651542-64282 - test date 10/13/19	Oct-19	318.00	18.32			
Eagle King Sample 18	PO-6651542-64282 - test date 10/13/19	Oct-19	326.40	18.34			
Eagle King Sample 1	PO-6658714 - test date 11/10/19	Nov-19	285.30	17.01			
Eagle King Sample 2	PO-6658714 - test date 11/10/19	Nov-19	332.40	14.16			
Eagle King Sample 3	PO-6658714 - test date 11/10/19	Nov-19	260.90	9.463			
Eagle King Sample 4	PO-6658714 - test date 11/10/19	Nov-19	198.00	16			
Eagle King Sample 5	PO-6658714 - test date 11/10/19	Nov-19	353.00	14.57			
Eagle King Sample 6	PO-6658714 - test date 11/10/19	Nov-19	210.30	10.87			
Eagle King Sample 7	PO-6658714 - test date 11/10/19	Nov-19	242.00	13.01			
Eagle King Sample 8	PO-6658714 - test date 11/10/19	Nov-19	279.70	14.93			
Eagle King Sample 9	PO-6658714 - test date 11/10/19	Nov-19	278.60	13.6			
Eagle King Sample 10	PO-6658714 - test date 11/10/19	Nov-19	349.20	14.32			
Eagle King Sample 11	PO-6658714 - test date 11/10/19	Nov-19	248.30	11.91			
Eagle King Sample 12	PO-6658714 - test date 11/10/19	Nov-19	221.60	10.42			
Eagle King Sample 13	PO-6658714 - test date 11/10/19	Nov-19	309.40	19.67			
Eagle King Sample 14	PO-6658714 - test date 11/10/19	Nov-19	376.10	14.78			
Eagle King Sample 15	PO-6658714 - test date 11/10/19	Nov-19	271.80	15.65			
Eagle King Sample 16	PO-6658714 - test date 11/10/19	Nov-19	297.20	16.01			
Eagle King Sample 17	PO-6658714 - test date 11/10/19	Nov-19	362.20	19.61			

Eagle King Sample 18	PO-6658714 - test date 11/10/19	Nov-19	378.10	22.61			
Eagle King Sample 19	PO-6658714 - test date 11/10/19	Nov-19	290.70	15.71			
Eagle King Sample 20	PO-6658714 - test date 11/10/19	Nov-19	364.60	18.28			
Eagle King Sample 20	PO-6658714 - test date 11/10/19	Nov-19	321.40	16.85			
Eagle King Sample 20	PO-6658714 - test date 11/10/19	Nov-19	341.70	16.95			
Eagle King Sample 1	PO-6658818 - test date 11/19/19	Nov-19	228.50	12.94			
Eagle King Sample 2	PO-6658818 - test date 11/19/19	Nov-19	309.00	17.64			
Eagle King Sample 3	PO-6658818 - test date 11/19/19	Nov-19	317.70	17.11			
Eagle King Sample 4	PO-6658818 - test date 11/19/19	Nov-19	237.30	13.69			
Eagle King Sample 5	PO-6658818 - test date 11/19/19	Nov-19	371.70	19.75			
Eagle King Sample 6	PO-6658818 - test date 11/19/19	Nov-19	376.60	22.58			
Eagle King Sample 7	PO-6658818 - test date 11/19/19	Nov-19	374.50	18.63			
Eagle King Sample 8	PO-6658818 - test date 11/19/19	Nov-19	237.00	13.39			
Eagle King Sample 9	PO-6658818 - test date 11/19/19	Nov-19	251.80	14.01			
Eagle King Sample 10	PO-6658818 - test date 11/19/19	Nov-19	249.90	14.56			
Eagle King Sample 11	PO-6658818 - test date 11/19/19	Nov-19	342.80	18.41			
Eagle King Sample 12	PO-6658818 - test date 11/19/19	Nov-19	283.20	15.94			
Eagle King Sample 13	PO-6658818 - test date 11/19/19	Nov-19	212.40	11.84			
Eagle King Sample 14	PO-6658818 - test date 11/19/19	Nov-19	247.80	12.39			
Eagle King Sample 15	PO-6658818 - test date 11/19/19	Nov-19	214.10	11.64			
Eagle King Sample 16	PO-6658818 - test date 11/19/19	Nov-19	308.20	15.17			
Eagle King Sample 17	PO-6658818 - test date 11/19/19	Nov-19	340.60	18.98			
Eagle King Sample 18	PO-6658818 - test date 11/19/19	Nov-19	208.90	10.46			
Eagle King Sample 19	PO-6658818 - test date 11/19/19	Nov-19	163.20	9.349			
Eagle King Sample 20	PO-6658818 - test date 11/19/19	Nov-19	248.90	12.92			
Eagle King Sample 1	PO-6658715-64282 - test date 12/10/19	Dec-19	213.60	13.89			
Eagle King Sample 2	PO-6658715-64282 - test date 12/10/19	Dec-19	278.30	10.77			
Eagle King Sample 3	PO-6658715-64282 - test date 12/10/19	Dec-19	215.10	12.94			
Eagle King Sample 4	PO-6658715-64282 - test date 12/10/19	Dec-19	309.90	17.3			
Eagle King Sample 5	PO-6658715-64282 - test date 12/10/19	Dec-19	283.10	15.67			
Eagle King Sample 6	PO-6658715-64282 - test date 12/10/19	Dec-19	330.90	18.4			
Eagle King Sample 7	PO-6658715-64282 - test date 12/10/19	Dec-19	305.70	16.9			
Eagle King Sample 8	PO-6658715-64282 - test date 12/10/19	Dec-19	222.40	12.59			
Eagle King Sample 9	PO-6658715-64282 - test date 12/10/19	Dec-19	270.20	14.35			
Eagle King Sample 10	PO-6658715-64282 - test date 12/10/19	Dec-19	200.30	9.391			
Eagle King Sample 11	PO-6658715-64282 - test date 12/10/19	Dec-19	205.90	13.32			
Eagle King Sample 12	PO-6658715-64282 - test date 12/10/19	Dec-19	266.30	8.758			
Eagle King Sample 13	PO-6658715-64282 - test date 12/10/19	Dec-19	256.30	11.46			
Eagle King Sample 14	PO-6658715-64282 - test date 12/10/19	Dec-19	355.90	20.07			
Eagle King Sample 15	PO-6658715-64282 - test date 12/10/19	Dec-19	362.50	19.95			
Eagle King Sample 16	PO-6658715-64282 - test date 12/10/19	Dec-19	232.10	11.91			
Eagle King Sample 17	PO-6658715-64282 - test date 12/10/19	Dec-19	197.60	16.79			
Eagle King Sample 18	PO-6658715-64282 - test date 12/10/19	Dec-19	350.70	9.708			
Eagle King Sample 19	PO-6658715-64282 - test date 12/10/19	Dec-19	228.50	12.43			
Eagle King Sample 20	PO-6658715-64282 - test date 12/10/19	Dec-19	216.70	11.46			
Week 52 2019 LH 5	PO-6658819, Date Code 52-2019	Dec-19			272.52	293.78	11.05
Week 52 2019 LH 6	PO-6658819, Date Code 52-2019	Dec-19			208.36	218.36	10.18
Week 52 2019 LH 7	PO-6658819, Date Code 52-2019	Dec-19			260.46	277.13	13.33
Week 52 2019 LH 8	PO-6658819, Date Code 52-2019	Dec-19			221.29	231.03	12.00
Week 52 2019 RH5	PO-6658819, Date Code 52-2019	Dec-19			195.26	209.51	9.25
Week 52 2019 RH6	PO-6658819, Date Code 52-2019	Dec-19			418.91	440.27	23.78
Week 52 2019 RH7	PO-6658819, Date Code 52-2019	Dec-19			190.28	202.46	8.34
Week 52 2019 RH8	PO-6658819, Date Code 52-2019	Dec-19			237.89	250.74	11.45
Eagle King Sample 1	PO-6658819-64282 - test date 12/16/19	Dec-19	231.00	12.48			
Eagle King Sample 2	PO-6658819-64282 - test date 12/16/19	Dec-19	356.10	17.93			
Eagle King Sample 3	PO-6658819-64282 - test date 12/16/19	Dec-19	331.60	18.27			
Eagle King Sample 4	PO-6658819-64282 - test date 12/16/19	Dec-19	293.00	16.41			
Eagle King Sample 5	PO-6658819-64282 - test date 12/16/19	Dec-19	334.70	18.16			
Eagle King Sample 6	PO-6658819-64282 - test date 12/16/19	Dec-19	210.60	11.65			
Eagle King Sample 7	PO-6658819-64282 - test date 12/16/19	Dec-19	332.80	18.15			
Eagle King Sample 8	PO-6658819-64282 - test date 12/16/19	Dec-19	224.80	12.45			
Eagle King Sample 9	PO-6658819-64282 - test date 12/16/19	Dec-19	248.20	13.66			
Eagle King Sample 10	PO-6658819-64282 - test date 12/16/19	Dec-19	203.10	11.46			
Eagle King Sample 11	PO-6658819-64282 - test date 12/16/19	Dec-19	263.40	14.39			
Eagle King Sample 12	PO-6658819-64282 - test date 12/16/19	Dec-19	278.70	15.4			
Eagle King Sample 13	PO-6658819-64282 - test date 12/16/19	Dec-19	200.00	9.097			
Eagle King Sample 14	PO-6658819-64282 - test date 12/16/19	Dec-19	191.80	7.596			
Eagle King Sample 15	PO-6658819-64282 - test date 12/16/19	Dec-19	202.50	7.557			
Eagle King Sample 16	PO-6658819-64282 - test date 12/16/19	Dec-19	279.60	15.2			
Eagle King Sample 17	PO-6658819-64282 - test date 12/16/19	Dec-19	222.30	10.76			
Eagle King Sample 18	PO-6658819-64282 - test date 12/16/19	Dec-19	209.90	11.44			
Eagle King Sample 19	PO-6658819-64282 - test date 12/16/19	Dec-19	289.00	14.86			
Eagle King Sample 20	PO-6658819-64282 - test date 12/16/19	Dec-19	246.50	13.84			

Eagle King Sample 1	PO-6658820-64282 - test date 1/9/20	Jan-20	254.20	12.05			
Eagle King Sample 2	PO-6658820-64282 - test date 1/9/20	Jan-20	260.00	12.06			
Eagle King Sample 3	PO-6658820-64282 - test date 1/9/20	Jan-20	380.00	11.19			
Eagle King Sample 4	PO-6658820-64282 - test date 1/9/20	Jan-20	361.90	14.09			
Eagle King Sample 5	PO-6658820-64282 - test date 1/9/20	Jan-20	346.20	13.61			
Eagle King Sample 6	PO-6658820-64282 - test date 1/9/20	Jan-20	285.20	14.09			
Eagle King Sample 7	PO-6658820-64282 - test date 1/9/20	Jan-20	349.20	21.52			
Eagle King Sample 8	PO-6658820-64282 - test date 1/9/20	Jan-20	193.30	21.81			
Eagle King Sample 9	PO-6658820-64282 - test date 1/9/20	Jan-20	346.20	15.54			
Eagle King Sample 10	PO-6658820-64282 - test date 1/9/20	Jan-20	285.20	19.47			
Eagle King Sample 11	PO-6658820-64282 - test date 1/9/20	Jan-20	349.20	16.64			
Eagle King Sample 12	PO-6658820-64282 - test date 1/9/20	Jan-20	193.30	9.968			
Eagle King Sample 13	PO-6658820-64282 - test date 1/9/20	Jan-20	305.10	17.07			
Eagle King Sample 14	PO-6658820-64282 - test date 1/9/20	Jan-20	252.10	16.22			
Eagle King Sample 15	PO-6658820-64282 - test date 1/9/20	Jan-20	294.10	13.82			
Eagle King Sample 16	PO-6658820-64282 - test date 1/9/20	Jan-20	222.90	12.53			
Eagle King Sample 17	PO-6658820-64282 - test date 1/9/20	Jan-20	219.90	12.38			
Eagle King Sample 18	PO-6658820-64282 - test date 1/9/20	Jan-20	249.80	13.95			
Eagle King Sample 19	PO-6658820-64282 - test date 1/9/20	Jan-20	346.20	19.04			
Eagle King Sample 20	PO-6658820-64282 - test date 1/9/20	Jan-20	363.70	19.81			
Eagle King Sample 1	PO-6658716-64282 - test date 3/24/20	Mar-20	193.60	9.91			
Eagle King Sample 2	PO-6658716-64282 - test date 3/24/20	Mar-20	250.00	13.59			
Eagle King Sample 3	PO-6658716-64282 - test date 3/24/20	Mar-20	242.60	13.34			
Eagle King Sample 4	PO-6658716-64282 - test date 3/24/20	Mar-20	198.40	10.07			
Eagle King Sample 5	PO-6658716-64282 - test date 3/24/20	Mar-20	255.20	13.94			
Eagle King Sample 6	PO-6658716-64282 - test date 3/24/20	Mar-20	313.80	18.64			
Eagle King Sample 7	PO-6658716-64282 - test date 3/24/20	Mar-20	235.90	18.11			
Eagle King Sample 8	PO-6658716-64282 - test date 3/24/20	Mar-20	184.50	14.69			
Eagle King Sample 9	PO-6658716-64282 - test date 3/24/20	Mar-20	237.00	17.77			
Eagle King Sample 10	PO-6658716-64282 - test date 3/24/20	Mar-20	175.40	20.32			
Eagle King Sample 11	PO-6658716-64282 - test date 3/24/20	Mar-20	322.50	16.77			
Eagle King Sample 12	PO-6658716-64282 - test date 3/24/20	Mar-20	234.00	12.05			
Eagle King Sample 13	PO-6658716-64282 - test date 3/24/20	Mar-20	211.30	15.01			
Eagle King Sample 14	PO-6658716-64282 - test date 3/24/20	Mar-20	191.50	15.56			
Eagle King Sample 15	PO-6658716-64282 - test date 3/24/20	Mar-20	287.10	19.41			
Eagle King Sample 16	PO-6658716-64282 - test date 3/24/20	Mar-20	206.40	16.94			
Eagle King Sample 17	PO-6658716-64282 - test date 3/24/20	Mar-20	232.40	13.5			
Eagle King Sample 18	PO-6658716-64282 - test date 3/24/20	Mar-20	229.80	16.34			
Eagle King Sample 19	PO-6658716-64282 - test date 3/24/20	Mar-20	288.10	17.47			
Eagle King Sample 20	PO-6658716-64282 - test date 3/24/20	Mar-20	231.20	17.44			
Eagle King Sample 1	PO-6696397-64282 - test date 4/30/20	Apr-20	303.40	15.18			
Eagle King Sample 2	PO-6696397-64282 - test date 4/30/20	Apr-20	377.10	21.26			
Eagle King Sample 3	PO-6696397-64282 - test date 4/30/20	Apr-20	320.00	18.33			
Eagle King Sample 4	PO-6696397-64282 - test date 4/30/20	Apr-20	374.80	21.3			
Eagle King Sample 5	PO-6696397-64282 - test date 4/30/20	Apr-20	187.00	9.146			
Eagle King Sample 6	PO-6696397-64282 - test date 4/30/20	Apr-20	184.30	9.048			
Eagle King Sample 7	PO-6696397-64282 - test date 4/30/20	Apr-20	292.00	11.66			
Eagle King Sample 8	PO-6696397-64282 - test date 4/30/20	Apr-20	235.50	15.69			
Eagle King Sample 9	PO-6696397-64282 - test date 4/30/20	Apr-20	157.00	7.967			
Eagle King Sample 10	PO-6696397-64282 - test date 4/30/20	Apr-20	280.20	19.15			
Eagle King Sample 11	PO-6696397-64282 - test date 4/30/20	Apr-20	220.30	18.4			
Eagle King Sample 12	PO-6696397-64282 - test date 4/30/20	Apr-20	354.40	20.25			
Eagle King Sample 13	PO-6696397-64282 - test date 4/30/20	Apr-20	150.00	14.28			
Eagle King Sample 14	PO-6696397-64282 - test date 4/30/20	Apr-20	377.00	9.301			
Eagle King Sample 15	PO-6696397-64282 - test date 4/30/20	Apr-20	269.80	17.77			
Eagle King Sample 16	PO-6696397-64282 - test date 4/30/20	Apr-20	393.40	10.24			
Eagle King Sample 17	PO-6696397-64282 - test date 4/30/20	Apr-20	291.80				
Eagle King Sample 18	PO-6696397-64282 - test date 4/30/20	Apr-20	161.80				
Eagle King Sample 19	PO-6696397-64282 - test date 4/30/20	Apr-20	370.00				
Eagle King Sample 20	PO-6696397-64282 - test date 4/30/20	Apr-20	208.10				
Eagle King Sample 1	PO-6658717-64282 - test date 5/10/20	May-20	328.60	17.58			
Eagle King Sample 2	PO-6658717-64282 - test date 5/10/20	May-20	311.60	15.89			
Eagle King Sample 3	PO-6658717-64282 - test date 5/10/20	May-20	317.00	15.53			
Eagle King Sample 4	PO-6658717-64282 - test date 5/10/20	May-20	185.10	9			
Eagle King Sample 5	PO-6658717-64282 - test date 5/10/20	May-20	317.70	16.99			
Eagle King Sample 6	PO-6658717-64282 - test date 5/10/20	May-20	223.60	11.94			
Eagle King Sample 7	PO-6658717-64282 - test date 5/10/20	May-20	244.90	17.1			
Eagle King Sample 8	PO-6658717-64282 - test date 5/10/20	May-20	284.50	14.95			
Eagle King Sample 9	PO-6658717-64282 - test date 5/10/20	May-20	364.80	18.02			
Eagle King Sample 10	PO-6658717-64282 - test date 5/10/20	May-20	184.20	11.97			
Eagle King Sample 11	PO-6658717-64282 - test date 5/10/20	May-20	245.90	14.48			
Eagle King Sample 12	PO-6658717-64282 - test date 5/10/20	May-20	226.70	13.44			
Eagle King Sample 13	PO-6658717-64282 - test date 5/10/20	May-20	349.70	17.37			

Eagle King Sample 14	PO-6658717-64282 - test date 5/10/20	May-20	351.30	19.12			
Eagle King Sample 15	PO-6658717-64282 - test date 5/10/20	May-20	279.00	16.7			
Eagle King Sample 16	PO-6658717-64282 - test date 5/10/20	May-20	243.00	12.44			
Eagle King Sample 17	PO-6658717-64282 - test date 5/10/20	May-20	337.70	17.53			
Eagle King Sample 18	PO-6658717-64282 - test date 5/10/20	May-20	314.30	17.54			
Eagle King Sample 19	PO-6658717-64282 - test date 5/10/20	May-20	344.40	17.38			
Eagle King Sample 20	PO-6658717-64282 - test date 5/10/20	May-20	312.70	16.73			


Luminosity Intensity Test: Zone 3
1500
1300
1100
900
700
500
300
May-19
Aug-19
Min 520 Candela
Luminosity Intensity: Zone 3


SAE J586
600.00
550.00
500.00
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
Max 420 Candela
Oct-18
Feb-19
May-19
Aug-19
Dec-19
Mar-20
Jun-20
Factory Testing
Third Party Testing (Stabilization)
Third Party Testing (T=1 Min)

Month/Year	Factory Testing
Jan-19	347.90
Jan-19	195.00
Jan-19	280.00
Jan-19	311.30
Jan-19	252.00
Jan-19	328.20
Jan-19	270.50
Jan-19	300.80
Jan-19	336.70
Jan-19	283.40
Jan-19	225.50
Jan-19	393.20
Jan-19	303.10
Jan-19	226.60
Jan-19	171.00
Jan-19	226.60
Mar-19	259.70
Mar-19	318.60
Mar-19	250.00
Mar-19	327.20
Mar-19	238.30
Mar-19	149.30
Mar-19	210.70
Mar-19	171.80
Mar-19	178.20
Mar-19	199.20
Mar-19	174.30
Mar-19	280.20
Mar-19	270.70
Mar-19	212.20
Mar-19	197.60
Mar-19	283.80
Feb-19	247.30
Feb-19	320.70
Feb-19	262.50
Feb-19	246.90
Feb-19	171.80
Feb-19	371.70
Feb-19	162.50
Feb-19	371.70
Mar-19	264.00
Mar-19	210.00
Mar-19	255.10
Mar-19	320.40
Mar-19	188.00
Mar-19	268.80

Month/Year	Factory Testing
Mar-19	358.10
Mar-19	325.60
Apr-19	330.10
Apr-19	208.50
Apr-19	255.30
Apr-19	253.70
Apr-19	338.30
Apr-19	240.70
Apr-19	364.50
Apr-19	365.80
Apr-19	277.00
Apr-19	269.90
Apr-19	214.80
Apr-19	243.17
Apr-19	216.80
Apr-19	310.90
Apr-19	216.10
Apr-19	203.00
Apr-19	253.00
Apr-19	246.00
Apr-19	240.90
Apr-19	254.90
Apr-19	224.20
Apr-19	389.30
Apr-19	258.20
Apr-19	314.90
Apr-19	261.90
Apr-19	204.20
Apr-19	200.30
Apr-19	301.80
Apr-19	244.10
Apr-19	244.10
Apr-19	217.80
Apr-19	166.10
Apr-19	249.00
Apr-19	249.80
Apr-19	239.30
Apr-19	352.50
Apr-19	215.60
Apr-19	352.50
Apr-19	215.60
Apr-19	233.50
Apr-19	280.40
May-19	185.80
May-19	221.20
May-19	251.40

Month/Year	Factory Testing
May-19	280.90
May-19	202.00
May-19	164.70
May-19	197.70
May-19	339.40
May-19	255.20
May-19	156.50
May-19	259.30
May-19	246.10
May-19	170.80
May-19	197.40
May-19	227.00
May-19	365.70
May-19	232.10
May-19	239.70
May-19	286.60
May-19	332.00
May-19	312.00
May-19	194.90
May-19	301.70
May-19	261.40
May-19	263.90
May-19	324.50
May-19	330.40
May-19	251.60
May-19	364.20
May-19	372.10
May-19	359.50
May-19	232.20
Jun-19	233.30
Jun-19	281.50
Jun-19	374.50
Jun-19	357.00
Jun-19	310.00
Jun-19	320.20
Jun-19	345.30
Jun-19	199.80
Jun-19	239.90
Jun-19	348.70
Jun-19	379.60
Jun-19	272.60
Jun-19	353.30
Jun-19	230.70
Jun-19	277.60
Jun-19	291.50
Jun-19	331.50

Month/Year	Factory Testing
Jun-19	235.90
Jun-19	349.90
Jun-19	377.60
Jun-19	163.90
Jun-19	272.30
Jun-19	178.10
Jun-19	270.60
Jun-19	254.40
Jun-19	319.10
Jun-19	192.60
Jun-19	164.90
Jun-19	229.50
Jun-19	243.20
Jun-19	195.70
Jun-19	283.80
Jun-19	185.30
Jun-19	242.30
Jun-19	229.40
Jun-19	156.30
Jun-19	282.00
Jun-19	202.60
Jun-19	281.40
Jun-19	286.40
Jun-19	149.00
Jun-19	345.90
Jun-19	379.60
Jun-19	351.90
Jun-19	353.00
Jun-19	364.90
Jun-19	222.30
Jun-19	344.60
Jun-19	178.20
Jun-19	203.50
Jun-19	213.40
Jun-19	175.40
Jun-19	391.50
Jun-19	378.10
Jun-19	339.30
Jun-19	297.20
Jun-19	369.20
Jun-19	332.70
Jun-19	342.30
Jun-19	349.70
Jul-19	171.60
Jul-19	320.90
Jul-19	274.50

Month/Year	Factory Testing
Jul-19	253.20
Jul-19	226.40
Jul-19	292.20
Jul-19	225.90
Jul-19	316.10
Jul-19	300.70
Jul-19	230.80
Jul-19	259.40
Jul-19	285.40
Jul-19	184.30
Jul-19	248.50
Jul-19	333.70
Jul-19	262.30
Jul-19	263.30
Jul-19	234.40
Jul-19	293.90
Jul-19	235.80
Aug-19	340.90
Aug-19	275.20
Aug-19	190.90
Aug-19	374.60
Aug-19	234.60
Aug-19	322.60
Aug-19	322.30
Aug-19	132.90
Aug-19	312.40
Aug-19	237.40
Aug-19	262.50
Aug-19	365.00
Aug-19	270.20
Aug-19	388.60
Aug-19	284.10
Aug-19	272.90
Aug-19	275.90
Aug-19	287.20
Aug-19	377.50
Aug-19	286.00
Aug-19	174.00
Aug-19	207.50
Aug-19	224.10
Aug-19	178.90
Aug-19	174.60
Aug-19	383.30
Aug-19	204.10
Aug-19	195.90
Aug-19	194.90

Month/Year	Factory Testing
Aug-19	213.80
Aug-19	235.30
Aug-19	196.80
Aug-19	192.10
Aug-19	368.20
Aug-19	214.30
Aug-19	215.50
Aug-19	294.50
Aug-19	307.40
Aug-19	331.50
Aug-19	219.70
Oct-19	211.80
Oct-19	252.60
Oct-19	278.60
Oct-19	349.20
Oct-19	367.70
Oct-19	281.10
Oct-19	339.20
Oct-19	288.90
Oct-19	379.40
Oct-19	213.90
Oct-19	305.50
Oct-19	255.90
Oct-19	313.80
Oct-19	184.60
Oct-19	274.80
Oct-19	399.80
Oct-19	318.00
Oct-19	326.40
Nov-19	285.30
Nov-19	332.40
Nov-19	260.90
Nov-19	198.00
Nov-19	353.00
Nov-19	210.30
Nov-19	242.00
Nov-19	279.70
Nov-19	278.60
Nov-19	349.20
Nov-19	248.30
Nov-19	221.60
Nov-19	309.40
Nov-19	376.10
Nov-19	271.80
Nov-19	297.20
Nov-19	362.20

Month/Year	Factory Testing
Nov-19	378.10
Nov-19	290.70
Nov-19	364.60
Nov-19	321.40
Nov-19	341.70
Nov-19	228.50
Nov-19	309.00
Nov-19	317.70
Nov-19	237.30
Nov-19	371.70
Nov-19	376.60
Nov-19	374.50
Nov-19	237.00
Nov-19	251.80
Nov-19	249.90
Nov-19	342.80
Nov-19	283.20
Nov-19	212.40
Nov-19	247.80
Nov-19	214.10
Nov-19	308.20
Nov-19	340.60
Nov-19	208.90
Nov-19	163.20
Nov-19	248.90
Dec-19	213.60
Dec-19	278.30
Dec-19	215.10
Dec-19	309.90
Dec-19	283.10
Dec-19	330.90
Dec-19	305.70
Dec-19	222.40
Dec-19	270.20
Dec-19	200.30
Dec-19	205.90
Dec-19	266.30
Dec-19	256.30
Dec-19	355.90
Dec-19	362.50
Dec-19	232.10
Dec-19	197.60
Dec-19	350.70
Dec-19	228.50
Dec-19	216.70
Dec-19	231.00

Month/Year	Factory Testing
Dec-19	356.10
Dec-19	331.60
Dec-19	293.00
Dec-19	334.70
Dec-19	210.60
Dec-19	332.80
Dec-19	224.80
Dec-19	248.20
Dec-19	203.10
Dec-19	263.40
Dec-19	278.70
Dec-19	200.00
Dec-19	191.80
Dec-19	202.50
Dec-19	279.60
Dec-19	222.30
Dec-19	209.90
Dec-19	289.00
Dec-19	246.50
Jan-20	254.20
Jan-20	260.00
Jan-20	380.00
Jan-20	361.90
Jan-20	346.20
Jan-20	285.20
Jan-20	349.20
Jan-20	193.30
Jan-20	346.20
Jan-20	285.20
Jan-20	349.20
Jan-20	193.30
Jan-20	305.10
Jan-20	252.10
Jan-20	294.10
Jan-20	222.90
Jan-20	219.90
Jan-20	249.80
Jan-20	346.20
Jan-20	363.70
Mar-20	193.60
Mar-20	250.00
Mar-20	242.60
Mar-20	198.40
Mar-20	255.20
Mar-20	313.80
Mar-20	235.90

Month/Year	Factory Testing
Mar-20	184.50
Mar-20	237.00
Mar-20	175.40
Mar-20	322.50
Mar-20	234.00
Mar-20	211.30
Mar-20	191.50
Mar-20	287.10
Mar-20	206.40
Mar-20	232.40
Mar-20	229.80
Mar-20	288.10
Mar-20	231.20
Apr-20	303.40
Apr-20	377.10
Apr-20	320.00
Apr-20	374.80
Apr-20	187.00
Apr-20	184.30
Apr-20	292.00
Apr-20	235.50
Apr-20	157.00
Apr-20	280.20
Apr-20	220.30
Apr-20	354.40
Apr-20	150.00
Apr-20	377.00
Apr-20	269.80
Apr-20	393.40
Apr-20	291.80
Apr-20	161.80
Apr-20	370.00
Apr-20	208.10
May-20	328.60
May-20	311.60
May-20	317.00
May-20	185.10
May-20	317.70
May-20	223.60
May-20	244.90
May-20	284.50
May-20	364.80
May-20	184.20
May-20	245.90
May-20	226.70
May-20	349.70

Month/Year	Factory Testing
May-20	351.30
May-20	279.00
May-20	243.00
May-20	337.70
May-20	314.30
May-20	344.40
May-20	312.70

Month/Year	Third Party Testing (Stabilization)
Jul-19	352.12
Jul-19	367.60
Jul-19	359.45
Jul-19	240.16
Jul-19	306.09
Jul-19	226.87
Jul-19	146.50
Jul-19	278.87
Nov-19	288.55
Nov-19	342.73
Nov-19	151.50
Nov-19	520.48
Nov-19	385.61
Nov-19	261.11
Dec-19	272.52
Dec-19	208.36
Dec-19	260.46
Dec-19	221.29
Dec-19	195.26
Dec-19	418.91
Dec-19	190.28
Dec-19	237.89

Max 420 Candela

x	y
Jan-19	420
May-20	420
Dec-19	May-20

Month/Year	Third Party Testing (T=1 Min)
Jul-19	367.61
Jul-19	No Data
Jul-19	389.42
Jul-19	249.62
Jul-19	326.55
Jul-19	232.11
Jul-19	155.90
Jul-19	289.86
Nov-19	318.56
Nov-19	370.56
Nov-19	166.65
Nov-19	579.81
Nov-19	426.87

Part 573 Safety Recall Report 20E-081

Manufacturer Name : Harbor Freight Tools
Submission Date : OCT 26, 2020
NHTSA Recall No. : 20E-081
Manufacturer Recall No. : NR

Manufacturer Information :

Manufacturer Name : Harbor Freight Tools
Address : 26541 Agoura Road
Calabasas CA 91302
Company phone : 836 5000

Population :

Number of potentially involved : 3,832
Estimated percentage with defect : 5 %

Equipment Information :

Brand / Trade 1 : Kenway
Model : 12v Magnetic LED Towing Light Kit
Part No. : 64282
Size : 12 Volt
Function : Magnetic brake
Descriptive Information : In certain 12v Magnetic LED Towing Light Kit manufactured by JINHUA EAGLE KING TOOLS Co., Ltd portions of the light emitting diodes (LEDs) used in specific production batches of the lamps had candela values that were either marginally below and/or were slightly above the photometric intensity output provided for in FMVSS 108. Other units in these and other production batches tested at an accredited third party U.S. laboratory were consistent with the photometry requirements. The 573 report and the Petition for Inconsequentiality Determination cover the entire production batch where a minor deviation was found, even though not all units in the batch are affected by the noncompliance.
Production Dates : NOV 13, 2019 - DEC 22, 2019

Brand / Trade 2 :	Kenway
Model :	12v Submersible Trailer Lights
Part No. :	64274
Size :	12 Volt
Function :	LED submersible
Descriptive Information :	In certain 12v Submersible Trailer Lights manufactured by JINHUA EAGLE KING TOOLS Co., Ltd portions of the light emitting diodes (LEDs) used in specific production batches of the lamps had candela values that were either marginally below and/or were slightly above the luminous intensity output provided for in FMVSS 108. Other units in these and other production batches tested at an accredited third party U.S. laboratory were consistent with the photometry requirements. The 573 report and the Petition for Inconsequentiality Determination cover the entire production batch where a minor deviation was found, even though not all units in the batch are affected by the noncompliance.
Production Dates :	JUL 01, 2019 - JUL 08, 2019

Description of Noncompliance :

Description of the Noncompliance :	For certain units, the candela value for certain individual positions and/or zones of light emitting diodes (LEDs) used in specific batches of the lamps were slightly higher and/or lower than the levels of brightness required by FMVSS 108.
FMVSS 1 :	108 - Lamps, reflective devices, and assoc. Equipment
FMVSS 2 :	NR
Description of the Safety Risk :	None. Despite the slight variation in candela values for certain portions of LED lamps in specific production batches, there is no adverse effect on a driver following a trailer. HFT intends to submit an inconsequentiality petition.
Description of the Cause :	NR
Identification of Any Warning that can Occur :	No warning can precede or occur.

Involved Components :

Component Name :	NR
Component Description :	NR
Component Part Number :	NR

Supplier Identification :

Component Manufacturer

Name : JINHUA EAGLE KING TOOLS CO., Ltd

Address : Automotive Industry Park, 2nd Ring South
Jinhua Zhejiang FOREIGN STATES 321000

Country : China

Chronology :

HFT conducts ongoing confirmatory testing of its products through accredited U.S. testing facilities. HFT commissioned Calcoast to conduct testing of its submersible trailer lamps to the requirements of FMVSS 108, including the photometric requirements. HFT received Calcoast's initial report in March 2020, and began to consider it thereafter. After receiving the Cal Coast report, HFT requested the complementary testing data from its overseas product supplier. Due to delays related to the COVID-19 pandemic, HFT did not receive that information until June 2020, and continued to analyze the data. Calcoast reported that at certain test points and/or zones, individual exemplar lamps contained within particular batches of lamps indicated variations in the lamp intensity (candela) values for isolated locations and/or zones of the turn signal, tail lamp and stop lamps. The Calcoast report also indicated that other exemplar lamps from the same batches and from other batches that it tested at the same time met all of the FMVSS 108 requirements. HFT initiated a detailed review of the apparent findings in consultation with Calcoast in Fall 2020, including the basis of the methodology used by Cal Coast to evaluate the photometry values under FMVSS 108 as applied to LED lights. HFT further considered the effect of the deviation in use and whether there would be the potential for actual adverse consequences upon following traffic and evaluated whether any potential customer claims for these units existed. Upon additional consideration, on October 26, 2020 Harbor Freight Tools decided that a non-compliance of the above listed specific lamp SKUs exists, for certain production batches. Harbor Freight Tools intends to submit a petition for inconsequential noncompliance as the isolated instances of deviation from the photometric requirements do not pose an increased safety risk.

Description of Remedy :

Description of Remedy Program :	HFT intends to submit a petition for inconsequential noncompliance because the condition does not present an increased risk to motor vehicle safety.
How Remedy Component Differs from Recalled Component :	Harbor Freight Tools will submit a Petition for Inconsequentiality Determination.
Identify How/When Recall Condition was Corrected in Production :	NR

Recall Schedule :

Description of Recall Schedule :	NR

Planned Dealer Notification Date :	NR - NR
Planned Owner Notification Date :	NR - NR

Purchaser Information :

The following manufacturers purchased this defective/noncompliant equipment for possible use or installation in new motor vehicles or new items of motor vehicle equipment:

Name :	NR
Address :	NR
	NR
Country :	NR
Company Phone :	NR

* NR - Not Reported