



REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No.3153057

Date: September 4, 2008

REPORT NO. 3153057CRT-001

TEST OF MAXLUX TYPE D2S HEADLIGHT BULBS

RENDERED TO

MAXLUX CO., LTD.

#171-3

GECHRON-RI

SHINAM-MYUM, YESAN-GUN

KOREA, KR

INTRODUCTION

This report contains the results of examination and test of the above device to demonstrate compliance with the applicable test requirements as published in SAE J2009 specification.

Summary

The following is a summary of the results of tests performed in accordance with SAE J2009 Standards.

SAE J2009 Section	Test Type	Test Results
5.1.2	Wattage	Complied
5.1.4	Luminous Flux	Complied
5.1.5	Spherical Color	Complied
5.5	Red Spectrum Content	Complied
5.7	UV Limits	Complied
5.8	Life Test and Lumen Maintenance	Complied

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AUTHORIZATION

This test service was authorized by signed quote numbers 500085486.

DEVICES SUBMITTED

The client submitted ten each of Maxlux D2S HID headlamp bulbs and ten Cyber White Type 9007 automotive headlight bulbs. The samples were received by Intertek on May 7, 2007 in undamaged condition, and tested after seasoning. The sample designations are J5851A through J5855A.

DATES OF TESTS

May 15, 2008 through August 31, 2008

EQUIPMENT LIST

<u>Equipment Used</u>	<u>Model Number</u>	<u>Control Number</u>	<u>Calibration Due Date</u>
Intertek Power Console	Intertek	V124,M133,Y089	02/01/09
Labsphere Spectroradiometer	DAS 1100	Y174	Before Use
Optronic Spectroradiometer	OL 750D	E288	08/25/08
Intertek Two Meter Diameter Sphere	Intertek	N308	Before Use

TESTS AND TEST METHODS

Lumen Output, Red Spectrum Content, Ultraviolet and Wattage Test- Sections 5.1.2, 5.1.4, 5.1.5, 5.5 and 5.7

Five bulbs of each type were tested for luminous flux (lumens) and color. The bulbs were tested using a 2 meter integrating sphere photometer and a Labsphere spectroradiometer. Spectral radiant flux was measured from 390 to 760 nanometer with the sphere-spectroradiometer system. Lumen output, chromaticity coordinates, correlated color temperature, color rendering index and red spectrum content were computed based on the spectral data. The calibration of the sphere is traceable to the National Institute of Standards and Technology. The ambient temperature was maintained at $77 \pm 5^\circ\text{F}$ throughout the test. The bulbs were in a base horizontal position during the tests. The voltage applied to the ballasts was 13.2 DC. Measurements were taken initially and after 1500 hours of operating time. Only lumen output were computed from the spectral data at 1500 hours. The percent lumen retained values were computed based on the lumen values initially and after 1500 hours. Red spectrum content were computed based on the equation in section 5.5 of SAE J2009.

Spectral irradiance measurements from 350 nm to 780 nm were made with the Optronic Spectroradiometer. UV energy for each lamp was computed based on the equations in section 5.7 of SAE J2009.

Life Tests

The life tests on five lamps were conducted in accordance with the test procedures in section 5.8 of SAE J2009. The lamps were measured for lumen output in accordance with the above section on lumen output after 1500 hours of operating time. The life time was ended after 2000 hours of operating time. No failures were noted during the life test.



RESULTS OF TESTS

Lamp No	Ballast Input Voltage	Ballast Input Current (Amperes)	Ballast Input Power (Watts)	Lumen Output	x Coordinate	y Coordinate	CCT	CRI
<u>Maxlux D2S Headlight Bulb</u>								
T08Z009	13.2	3.201	42.26	3300	0.364	0.379	4493	69.89
T08Z010	13.2	3.128	41.26	3215	0.353	0.373	4792	69.11
T08Z011	13.2	3.060	40.40	3300	0.369	0.381	4333	70.93
T08Z011	13.2	3.143	41.49	3278	0.357	0.375	4688	70.15
T08Z012	13.2	3.136	41.39	3308	0.366	0.381	4443	70.72
Specified Minimum		---	---	2750	0.300	0.336	---	60
Specified Maximum		---	---	3650	0.500	0.389	---	---

Lamp No	Ballast Input Voltage	Red Spectrum Content	UV (Watt/Lumen)	Percent Lumen Retained at 1500 Hr	Lumen Output At 1500 Hr	Elapsed Life (Hrs)
<u>Maxlux D2S Headlight Bulb</u>						
T08Z009	13.2	0.87	4.21 x 10 ⁻⁶	98.4	3246	2000*
T08Z010	13.2	0.79	3.91 x 10 ⁻⁶	96.0	3086	2000*
T08Z011	13.2	0.92	4.18 x 10 ⁻⁶	95.9	3164	2000*
T08Z011	13.2	0.88	4.32 x 10 ⁻⁶	98.2	3218	2000*
T08Z012	13.2	0.89	4.21 x 10 ⁻⁶	99.0	3276	2000*
Specified Minimum		0.05	---	75	---	2000
Specified Maximum		---	1.00 x 10 ⁻⁵	---	---	---

* - Indicates that lamp was still operating at the end of the life tests

CONCLUSION

Compliance or non-compliance references in this report apply only to the tests and checks performed for the client.

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Attachment: None