REPORT

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Project No. G100639410 Date: March 31, 2012
Client Ref. No. PH-0076

REPORT NO. 100639410CRT-044

TEST OF ONE LED LUMINAIRE

FIXTURE CATALOG NO.

XBVRD ID LED 24 400 WW UE
XBVRF ID LED 24 400 WW UE

LED DRIVER: 400mA Electronic Driver

RENDERED TO

LSI INDUSTRIES INCORPORATED
10000 ALLIANCE ROAD
CINCINNATI, OH 45242

TEST: Electrical and Photometric tests as required to the IESNA test standard.

AUTHORIZATION: The testing performed was authorized by signed quote number 500358206.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Products

IESNA TM-15-11: Luminaire Classification System for Outdoor Luminaires

DESCRIPTION OF SAMPLE: The submitted test sample was representative of a current production Sample and was received in good condition.

DATE OF TEST: March 2, 2012

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SUMMARY:

Model No.: XBVRx ID LED 24 400 WW UE
Description: 24 LED Circular Optic Unit with Clear Round Glass Lens using 400mA Output Driver.

Criteria	Result
Total Lumen Output	856
Input Voltage (V)	120.0
Total Power (W)	38
Luminaire Efficacy	23
Power Factor	0.992
Driver Output Current (A)	0.391
THD_A	8.6%

Additional Reporting

Test Room Ambient Conditions	25.6 C / 23% RH
Total Luminaire Stabilization Time	53 Minutes

Measurement uncertainty budgets have been determined for applicable test methods and are available upon request.

EQUIPMENT LIST

Equipment Used	Equipment #	Cal. Due Date
Elgar CW1251P-V AC Power Source 0-300V	0943A02235	VBU
Yokogawa WT-230 Power Analyzer	91KA35031	12/31/12
High Speed Moving Mirror Goniophotometer	---	VBU
Temperature/Humidity Sensor/Stopwatch	25223-01	04/30/12

Photometric and Electrical measurements – Distribution Method

A Type C High Speed Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the test sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize per LM-79-08 requirements. Electrical measurements including voltage, current, and power were measured using the Yokogawa Power Analyzer.

Some graphics were created using Lighting Analysts Photometric Toolbox Professional Edition software.

RESULTS OF TESTS

Photometric and Electrical Measurements – Distribution Method

XBVRx ID LED 24 400 WW UE

Intertek Sample No.	Base Orientation	Input Voltage (VAC)	Input Current (A)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
ITK3021	Horizontal	120.0	0.319	38	0.992	856	23

Characteristics

IES Classification	Type VS
Longitudinal Classification	Very Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	856
Downward Total Efficiency	N.A.
Luminaire Efficacy Rating (LER)	23
Total Luminaire Watts	38
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Max. Cd.	400 (40H, 41V)
Max. Cd. (<90 Vert.)	400 (40H, 41V)
Max. Cd. (At 90 Deg. Vert.)	24 (2.8%Lum)
Max. Cd. (80 to <90 Deg. Vert.)	61 (7.1%Lum)
Cutoff Classification (deprecated)	N.A. (absolute)

Lum. Classification System (LCS)

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	17.5	N.A.	2.0
FM (30-60)	289.4	N.A.	33.8
FH (60-80)	100.2	N.A.	11.7
FVH (80-90)	19.3	N.A.	2.3
BL (0-30)	17.5	N.A.	2.0
BM (30-60)	289.4	N.A.	33.8
BH (60-80)	100.2	N.A.	11.7
BVH (80-90)	19.3	N.A.	2.3
UL (90-100)	3.1	N.A.	0.4
UH (100-180)	0.0	N.A.	0.0
Total	855.9	N.A.	100.0

BUG Rating **B1-U1-G1**

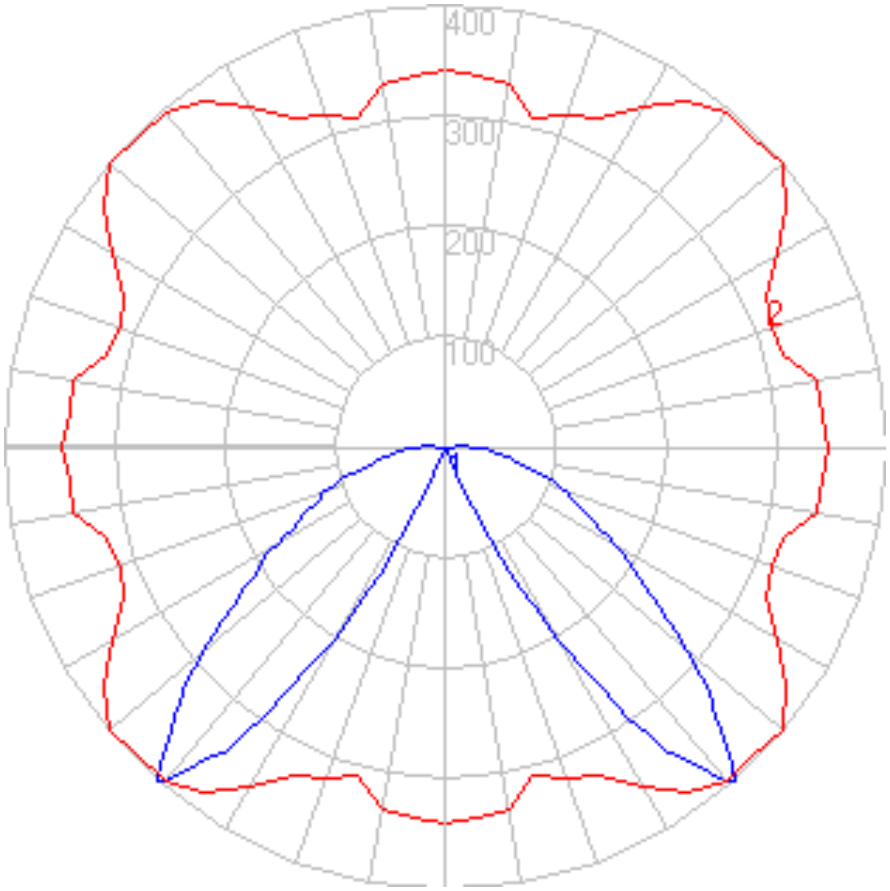
RESULTS OF TESTS (cont'd)

Intensity (Candlepower) Summary

	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
25	44	44	52	54	58	60	61	62	60	64	62	59	60	59	58	45	51	41	40
30	155	156	171	161	163	161	166	179	203	203	194	181	167	163	162	161	166	146	149
35	287	275	279	267	251	255	288	297	318	322	319	305	281	266	260	253	282	276	270
40	350	345	343	312	307	318	344	372	394	387	394	387	356	330	321	307	343	344	348
45	313	303	297	279	277	280	301	326	347	346	341	332	308	283	275	266	297	298	308
50	240	244	242	229	226	227	244	267	287	290	282	269	251	235	231	228	249	236	245
55	182	186	191	180	169	169	181	201	222	229	218	201	184	169	170	175	196	180	179
60	146	154	155	144	139	137	151	165	176	181	179	164	150	140	137	139	155	151	145
65	117	123	123	108	103	110	123	134	141	141	142	137	127	112	105	108	128	123	129
70	101	102	96	89	91	95	104	111	111	111	114	110	103	95	88	89	95	92	87
75	75	70	65	64	63	69	77	80	80	82	81	84	79	68	63	61	67	69	71
80	50	51	47	45	50	55	57	59	58	60	61	59	58	53	50	45	44	45	45
85	29	30	31	29	32	34	35	37	40	41	40	38	36	35	33	30	29	29	29
90	18	18	18	20	21	22	22	23	23	24	23	23	24	23	21	19	17	17	17

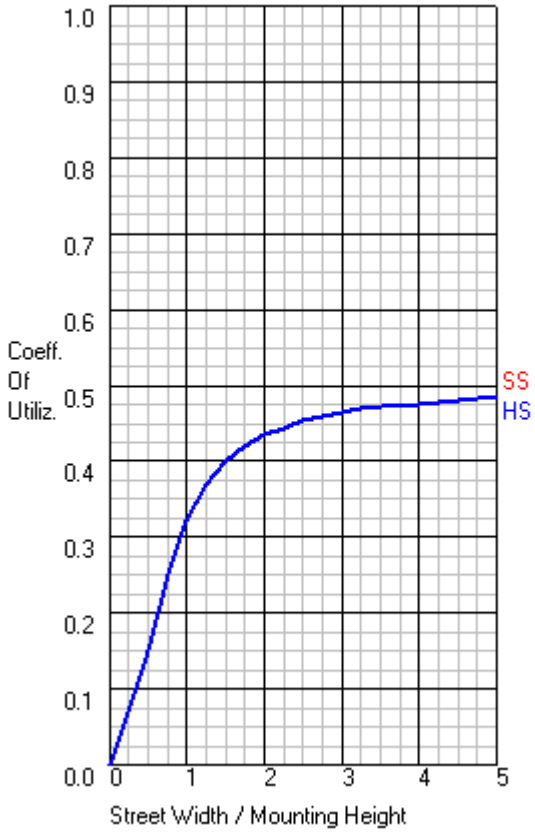
RESULTS OF TESTS (cont'd)

Polar Candela Distribution:



RESULTS OF TESTS (cont'd)

CU Graph:



Flux Distribution

	Lumens	Percent Of Luminaire
Downward Street Side	426.4	49.8
Downward House Side	426.4	49.8
Downward Total	852.8	99.6
Upward Street Side	1.6	0.2
Upward House Side	1.6	0.2
Upward Total	3.2	0.4
Total Flux	856.0	100.0

RESULTS OF TESTS (cont'd)

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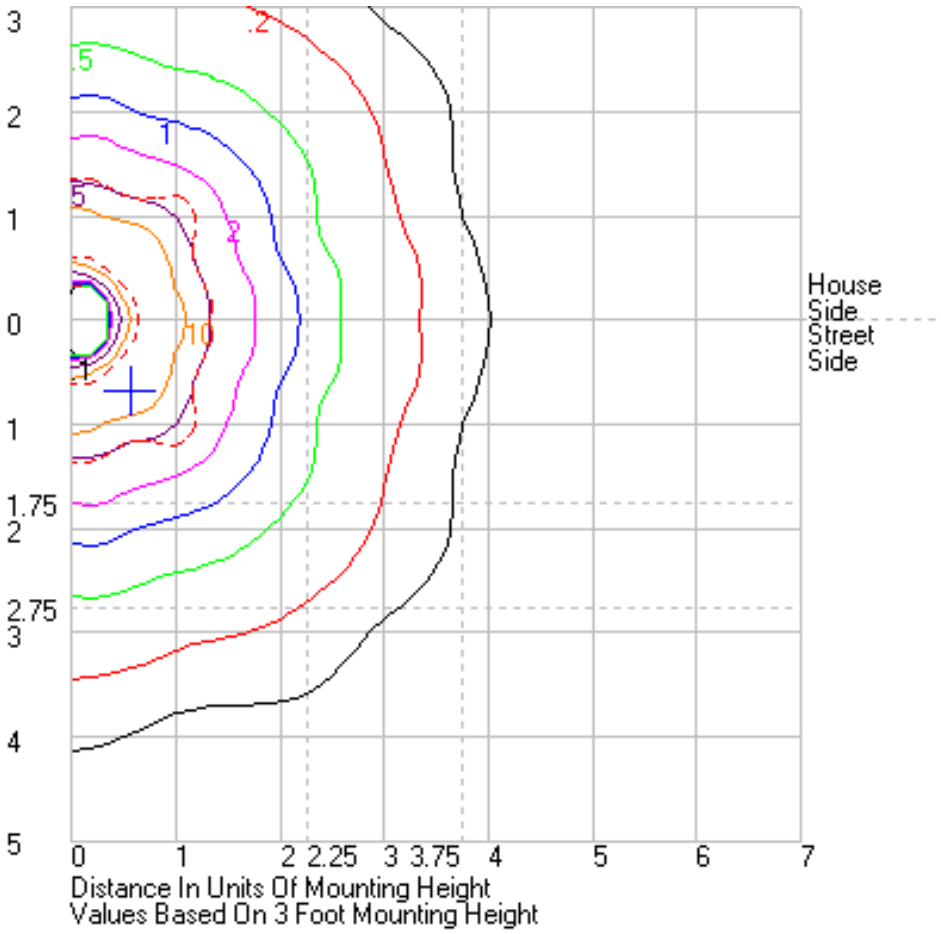

PHOTOGRAPH(S

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