



REPORT

LSI INDUSTRIES, INC. 10000 ALLIANCE ROAD CINCINNATI, OH 45242

Project No.: G101617355
Client Ref. No.: PH-0521

Date: June 10, 2014

REPORT NO. 101617355CHI-054

TEST OF ONE LED LUMINAIRE

FIXTURE CATALOG NO.

AUP LED SS WW xx AC16SA
AUD LED SS WW xx AC16SA

LED DRIVER: 2100mA 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 500518865.

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
ANSI C82.77-2002: Harmonic Emission Limits (Power Factor and THD-A)

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

DATE OF TEST: May 16, 2014

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SUMMARY:

Model No.:
AUP LED SS WW xx AC16SA
AUD LED SS WW xx AC16SA
Description: 224 LED luminaire comprised of a die-cast aluminum housing, 16 inch acrylic refractor, and LED driver delivering 75mA per LED.

<u>Criteria</u>	<u>Result</u>
Total Lumen Output	5628
Input Voltage (V)	120.0
Total Power (W)	58.8
Luminaire Efficacy	96
Power Factor	.975
Driver Output Current (A)	2.100
THD _A	10.5%

Additional Reporting

Test Room Ambient Conditions	24.3°C and 35.3% RH
Total Luminaire Stabilization Time	53 Minutes

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

EQUIPMENT LIST

<u>Equipment Used</u>	<u>Equipment #</u>	<u>Cal. Due Date</u>
Elgar CW1251P-V AC Power Source 0-300V	0943A02235	VBV
Yokogawa WT-230 Power Analyzer	91KA35031	12/31/2014
High Speed Moving Mirror Goniophotometer	NA	VBV
General DTH04 Temperature/Humidity	25223-01	4/30/2015

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

Model No.:

AUP LED SS WW xx AC16SA

AUD LED SS WW xx AC16SA

Photometric and Electrical Measurements – Distribution Method

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)
ITK5561	Horizontal	120.0	0.502	58.8	.975	5628	96

Characteristics

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	5628
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	96
Total Luminaire Watts	58.8
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.44
Spacing Criterion (90-270)	1.42
Spacing Criterion (Diagonal)	1.54
Basic Luminous Shape	Circular w/ Sides
Luminous Length (0-180)	1.33 ft (Diameter)
Luminous Width (90-270)	1.33 ft (Diameter)
Luminous Height	0.92 ft

Luminance Data (cd/sq.m)

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	4240	4600	4118
55	3467	3658	3342
65	3186	3205	3091
75	3403	3222	3348
85	3999	3621	3999

RESULTS OF TESTS (cont'd)

Intensity (Candlepower) Summary

	0	22.5	45	67.5	90
0	932	932	932	932	932
2.5	934	934	931	930	929
5	929	923	919	913	910
7.5	927	915	907	909	908
10	949	932	926	930	937
12.5	991	973	968	968	978
15	1006	1008	1004	996	993
17.5	1033	1037	1042	1029	1014
20	1027	1045	1064	1040	1011
22.5	1045	1062	1064	1043	1012
25	1006	1033	1052	1020	978
27.5	1009	1030	1045	1007	973
30	968	1004	1035	998	956
32.5	947	989	1005	962	902
35	867	924	969	924	854
37.5	841	894	930	882	817
40	776	832	874	829	777
42.5	729	780	818	777	727
45	730	778	792	752	709
47.5	647	698	733	696	648
50	654	691	691	662	609
52.5	600	638	662	644	596
55	581	605	613	593	560
57.5	571	588	594	582	549
60	532	550	552	546	517
62.5	516	537	531	527	502
65	503	511	506	505	488
67.5	486	500	494	500	484
70	492	493	478	487	481
72.5	483	479	470	481	481
75	488	476	462	474	480
77.5	478	463	448	462	473
80	487	469	451	467	484
82.5	477	460	437	460	477
85	498	471	451	476	498
87.5	511	484	469	489	504
90	486	455	444	465	483



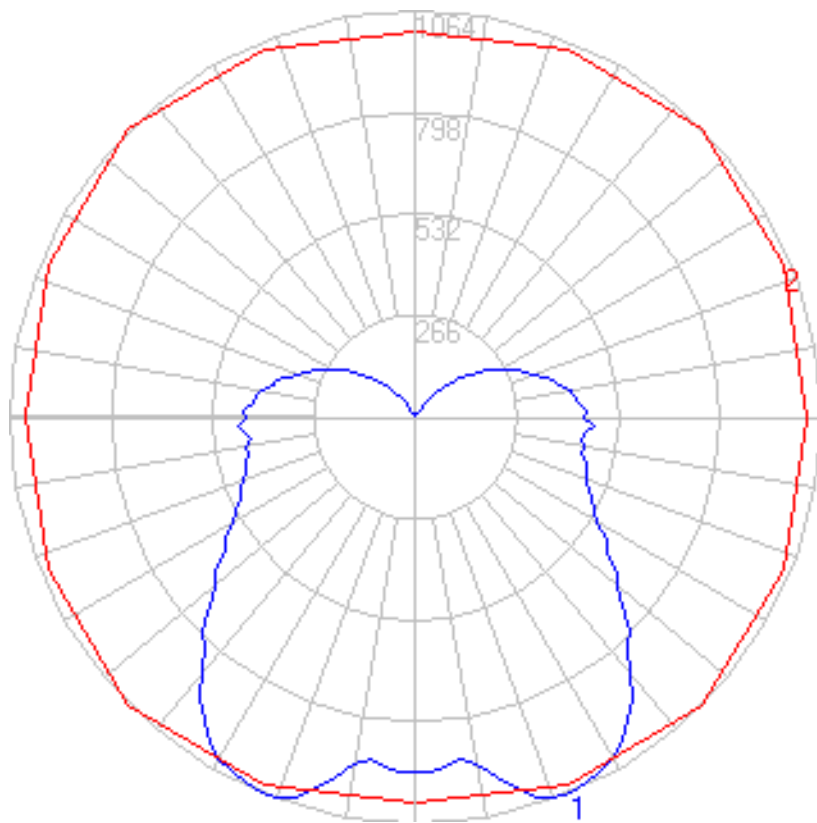
RESULTS OF TESTS (cont'd)

Intensity (Candlepower) Summary (cont'd)

	0	22.5	45	67.5	90
92.5	480	462	450	459	472
95	481	450	428	454	467
97.5	461	430	420	448	468
100	460	423	411	435	457
102.5	429	401	382	404	424
105	425	395	376	399	415
107.5	407	376	355	386	413
110	385	351	327	354	386
112.5	369	335	313	337	360
115	355	316	287	321	341
117.5	320	288	265	296	319
120	292	266	246	270	288
122.5	276	251	226	253	276
125	249	227	203	229	249
127.5	222	202	180	203	220
130	200	181	159	181	202
132.5	177	161	140	159	171
135	151	139	121	139	148
137.5	129	120	104	114	126
140	107	100	84	89	102
142.5	84	77	61	66	74
145	52	49	42	43	48
147.5	31	30	27	27	29
150	17	17	15	14	14
152.5	10	9	8	7	6
155	2	2	2	2	2
157.5	0	0	0	0	0
160	0	0	0	0	0
162.5	0	0	0	0	0
165	0	0	0	0	0
167.5	0	0	0	0	0
170	0	0	0	0	0
172.5	0	0	0	0	0
175	0	0	0	0	0
177.5	0	0	0	0	0
180	0	0	0	0	0

RESULTS OF TESTS (cont'd)

Polar Candela Distribution:





RESULTS OF TESTS (cont'd)

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	372.73	N.A.	6.60
0-30	847.96	N.A.	15.10
0-40	1424.9	N.A.	25.30
0-60	2541.09	N.A.	45.20
0-80	3546.98	N.A.	63.00
0-90	4061.18	N.A.	72.20
10-90	3973.23	N.A.	70.60
20-40	1052.18	N.A.	18.70
20-50	1627.08	N.A.	28.90
40-70	1621.98	N.A.	28.80
60-80	1005.9	N.A.	17.90
70-80	500.10	N.A.	8.90
80-90	514.19	N.A.	9.10
90-110	908.26	N.A.	16.10
90-120	1221.17	N.A.	21.70
90-130	1424.78	N.A.	25.30
90-150	1564.48	N.A.	27.80
90-180	1566.74	N.A.	27.80
110-180	658.47	N.A.	11.70
0-180	5627.91	N.A.	100.00

Total Luminaire Efficiency = N.A. %

Zonal Lumen Summary

Zone	Lumens
0-10	87.95
10-20	284.78
20-30	475.23
30-40	576.95
40-50	574.90
50-60	541.28
60-70	505.80
70-80	500.10
80-90	514.19
90-100	491.26
100-110	417.00
110-120	312.91
120-130	203.61
130-140	107.28
140-150	32.42
150-160	2.26
160-170	0.00
170-180	0.00



RESULTS OF TESTS (cont'd)

Coefficients Of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	112	112	112	112	107	107	107	107	96	96	96	86	86	86	76	76	76	72
1	99	93	87	82	93	88	83	78	78	74	71	70	66	64	62	59	57	53
2	89	79	71	65	83	75	68	62	67	61	56	59	55	51	52	49	46	42
3	80	69	60	53	76	65	57	51	58	52	46	52	46	42	46	41	38	34
4	73	61	51	44	69	57	49	42	51	44	39	46	40	35	40	36	32	29
5	67	54	45	38	63	51	43	36	46	39	33	41	35	30	36	31	27	25
6	62	48	39	32	58	46	37	31	41	34	29	37	31	26	33	28	24	21
7	57	44	35	28	54	41	33	27	37	30	25	34	28	23	30	25	21	19
8	53	40	31	25	50	38	30	24	34	27	22	31	25	21	27	23	19	17
9	50	36	28	22	47	34	27	22	31	25	20	28	23	18	25	20	17	15
10	46	33	25	20	44	32	24	19	29	22	18	26	21	17	23	19	15	13

PHOTOGRAPH(S)



Report Reviewed By:

Beverly Blake

A handwritten signature in black ink that reads "Beverly Blake". The signature is written in a cursive, flowing style.

LSI INDUSTRIES, INC.

Report Reviewed By:

Joe Schledorn

A handwritten signature in black ink that reads "Joe Schledorn". The signature is written in a cursive, flowing style.

Engineering Team Lead
Lighting Division

Attachment: None