



## REPORT

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

Project No.: G101617355  
Client Ref. No.: PH-0520

Date: June 10, 2014

REPORT NO. 101617355CHI-053

TEST OF ONE LED LUMINAIRE

FIXTURE CATALOG NO.

AUP LED HO WW xx AC16SA  
AUD LED HO WW xx AC16SA

LED DRIVER: 3130mA 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 20, 2014

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## SUMMARY:

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Model No.:
AUP LED HO WW xx AC16SA
AUD LED HO WW xx AC16SA
Description: 224 LED luminaire comprised of a die-cast aluminum housing, 16 inch acrylic refractor, and LED driver delivering 112mA per LED.

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<u>Criteria</u>	<u>Result</u>
Total Lumen Output	8153
Input Voltage (V)	120.0
Total Power (W)	83.9
Luminaire Efficacy	97
Power Factor	.992
Driver Output Current (A)	3.130
THD <sub>A</sub>	5.7%

## Additional Reporting

Test Room Ambient Conditions	24.4°C and 35.6% RH
Total Luminaire Stabilization Time	72 Minutes

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

## EQUIPMENT LIST

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<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

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## 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 HO WW xx AC16SA

AUD LED HO 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)
ITK5572	Horizontal	120.0	0.705	83.9	.992	8153	97

### Characteristics

Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	8153
Total Luminaire Efficiency	N.A.
Luminaire Efficacy Rating (LER)	97
Total Luminaire Watts	83.9
Ballast Factor	1.00
CIE Type	Semi-Direct
Spacing Criterion (0-180)	1.40
Spacing Criterion (90-270)	1.44
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	5831	6610	6180
55	4840	5198	4816
65	4415	4579	4396
75	4777	4596	4840
85	5661	5259	5797



## RESULTS OF TESTS (cont'd)

### Intensity (Candlepower) Summary

	0	22.5	45	67.5	90
0	1318	1318	1318	1318	1318
2.5	1315	1315	1318	1321	1323
5	1304	1306	1315	1324	1326
7.5	1311	1311	1316	1324	1333
10	1361	1350	1345	1351	1372
12.5	1372	1380	1381	1377	1364
15	1414	1429	1435	1454	1447
17.5	1446	1477	1485	1482	1460
20	1460	1497	1515	1502	1476
22.5	1459	1512	1516	1510	1464
25	1350	1413	1475	1464	1411
27.5	1433	1466	1489	1482	1478
30	1313	1402	1460	1416	1350
32.5	1311	1379	1441	1411	1344
35	1176	1284	1374	1325	1227
37.5	1159	1268	1331	1281	1230
40	1002	1150	1246	1193	1063
42.5	1006	1103	1172	1118	1056
45	1004	1104	1138	1117	1064
47.5	862	954	1033	968	865
50	950	983	1001	1000	954
52.5	798	892	954	902	841
55	811	858	871	852	807
57.5	778	829	855	840	793
60	736	772	786	769	726
62.5	733	763	763	769	726
65	697	722	723	717	694
67.5	689	721	704	726	698
70	693	702	679	692	684
72.5	669	688	671	693	692
75	685	684	659	679	694
77.5	664	657	632	649	664
80	689	680	651	674	688
82.5	677	661	631	650	673
85	705	679	655	677	722
87.5	721	697	668	691	740
90	694	658	631	649	693

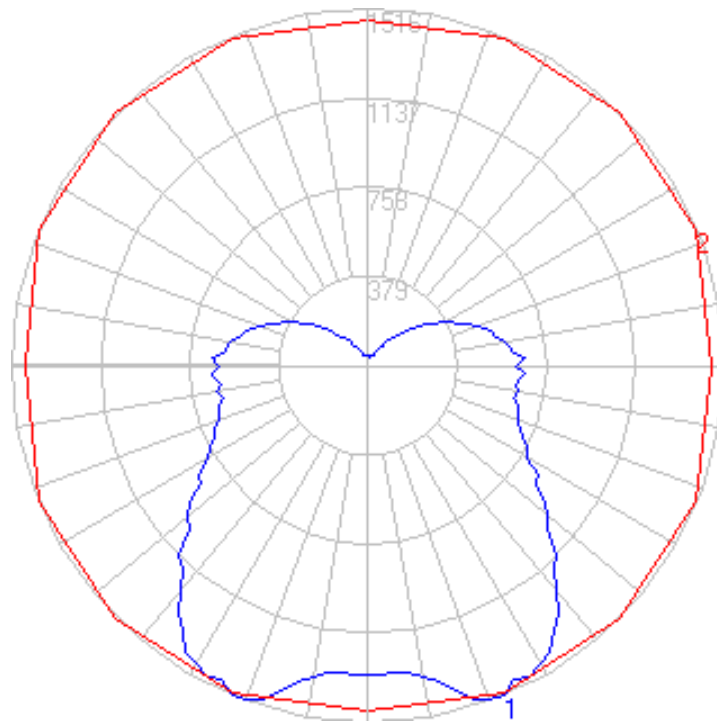
## RESULTS OF TESTS (cont'd)

### Intensity (Candlepower) Summary (cont'd)

	0	22.5	45	67.5	90
92.5	715	680	666	682	736
95	696	655	623	644	699
97.5	665	628	604	618	668
100	666	619	593	615	669
102.5	626	579	560	574	625
105	630	583	553	573	636
107.5	596	560	518	539	596
110	565	515	482	511	580
112.5	525	495	456	488	544
115	506	473	423	459	516
117.5	476	432	396	430	481
120	433	395	365	405	440
122.5	423	375	333	385	419
125	371	338	304	345	376
127.5	336	311	271	313	344
130	307	277	241	279	313
132.5	274	248	214	252	272
135	237	214	189	220	242
137.5	205	187	166	192	207
140	169	157	144	165	175
142.5	138	131	123	134	143
145	109	105	103	111	117
147.5	89	86	84	87	91
150	68	67	68	71	73
152.5	56	56	57	59	61
155	49	49	49	50	50
157.5	44	44	45	46	46
160	42	43	43	43	43
162.5	42	42	42	42	42
165	41	41	42	42	42
167.5	41	41	41	41	41
170	39	40	40	40	39
172.5	38	39	39	39	38
175	36	37	37	37	37
177.5	34	34	35	35	35
180	32	32	32	32	32

RESULTS OF TESTS (cont'd)

Polar Candela Distribution:





## RESULTS OF TESTS (cont'd)

### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	533.65	N.A.	6.50
0-30	1210.13	N.A.	14.80
0-40	2029.01	N.A.	24.90
0-60	3615.55	N.A.	44.30
0-80	5049.13	N.A.	61.90
0-90	5784.99	N.A.	71.00
10-90	5658.51	N.A.	69.40
20-40	1495.36	N.A.	18.30
20-50	2311.7	N.A.	28.40
40-70	2307.93	N.A.	28.30
60-80	1433.58	N.A.	17.60
70-80	712.20	N.A.	8.70
80-90	735.86	N.A.	9.00
90-110	1320.25	N.A.	16.20
90-120	1781.14	N.A.	21.80
90-130	2088.62	N.A.	25.60
90-150	2328.36	N.A.	28.60
90-180	2368.18	N.A.	29.00
110-180	1047.94	N.A.	12.90
0-180	8153.18	N.A.	100.00

Total Luminaire Efficiency = N.A.%

### Zonal Lumen Summary

Zone	Lumens
0-10	126.48
10-20	407.17
20-30	676.48
30-40	818.88
40-50	816.34
50-60	770.21
60-70	721.38
70-80	712.20
80-90	735.86
90-100	712.86
100-110	607.38
110-120	460.89
120-130	307.48
130-140	169.34
140-150	70.40
150-160	24.42
160-170	11.80
170-180	3.61



## 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	106	106	106	106	95	95	95	85	85	85	75	75	75	71
1	99	93	87	82	93	87	82	78	78	74	70	69	66	63	61	58	56	52
2	89	79	71	65	83	75	68	62	66	61	56	59	54	50	52	48	45	41
3	80	69	60	53	75	65	57	50	58	51	46	51	46	41	45	41	37	34
4	73	61	51	44	69	57	49	42	51	44	39	45	40	35	40	35	31	28
5	67	54	44	38	63	51	42	36	46	38	33	40	35	30	36	31	27	24
6	62	48	39	32	58	46	37	31	41	34	29	36	31	26	32	27	24	21
7	57	43	35	28	54	41	33	27	37	30	25	33	27	23	29	25	21	18
8	53	39	31	25	50	38	30	24	34	27	22	30	25	20	27	22	19	16
9	49	36	28	22	47	34	27	21	31	24	20	28	22	18	25	20	17	15
10	46	33	25	20	44	32	24	19	29	22	18	26	20	16	23	18	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