



UL Verification Services Inc.
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300



Photometric Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-2002, UL 1598-2008
CIE 13.3-1995, CIE 15-2004, ANSI C78.377-2015
IES TM-30-2015

Prepared For
H E Williams Inc
831 W Fairview Ave
PO Box 837
Carthage, MO 64836-0837
United States

Catalog Number
4PR-L40/835-DIM-UNV-L-N-OF-WH
Order Number
12316380
Test Number
12316380.36

Test Date

2018-06-14 - 2018-06-20

Prepared By

Jesse Litchfield, Technician

Approved By

Alexa Lambert, Project Handler

The results contained in this report pertain only to the tested sample.
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.
This report must not be used by the client to claim product certification, approval, or endorsement by
NVLAP, NIST, or any agency of the Federal Government.



Table of Contents

Summary of Results	Page 3
Integrating Sphere Results	Page 4
Distribution Results	
Conditions / Summary of Results / Polar Plot / Zonal Lumens	Page 5
Candela Tabulation / Average Luminance	Page 6
Coefficients of Utilization / Cone of Light	Page 7
ISOFootcandle Plot	Page 8
In-Situ Results	Page 9

Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: Black formed aluminum housing, clear plastic optic, white reflector, clear glass patterned lens enclosure
Lamp: One white LED
Mounting: Recessed
Ballast/Driver: Philips XI050C140V054DSM5

Luminaire



Luminaire Characteristics

Luminous Diameter: 4.25 in.

Summary of Results

Integrating Sphere

Luminous Flux: 3436 Lumens
Efficacy: 74.0 lm/w
CCT: 3552 K
CRI (Ra): 83.3

Distribution

Total Luminaire Output: 3516 Lumens
Luminaire Efficacy: 75.5 lm/w
Maximum Candela: 12861 Candela

Electrical Data at 120 VAC

Test Temperature: 25.3 °C
Voltage: 120.0 VAC
Current: 0.3878 A
Power: 46.43 W
Power Factor: 0.998
Frequency: 60 Hz
Current THD: 5.25 %

In-Situ

LED Temperature: 68.0 °C
Driver Temperature: 49.1 °C
Measured LED Current: 1.126 A

Temperature is offset to an ambient temperature of 25°C as described in UL1598-2008.



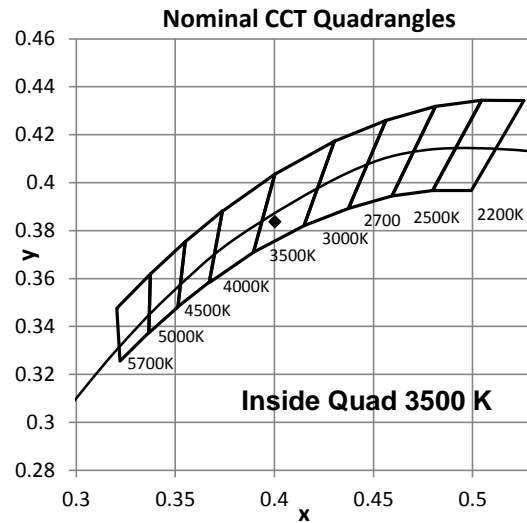
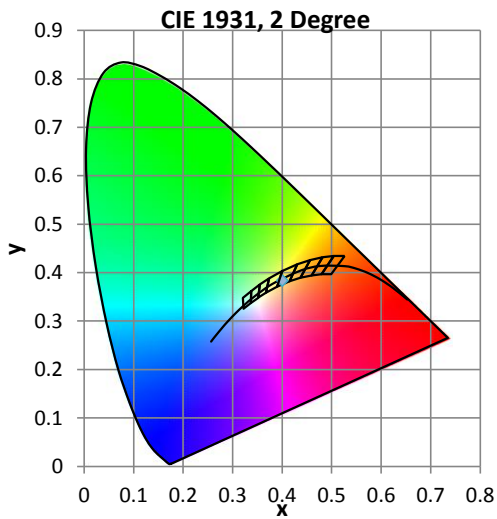
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	120.0 VAC	0.3878 A	46.43 W	0.998	60 Hz	5.25 %

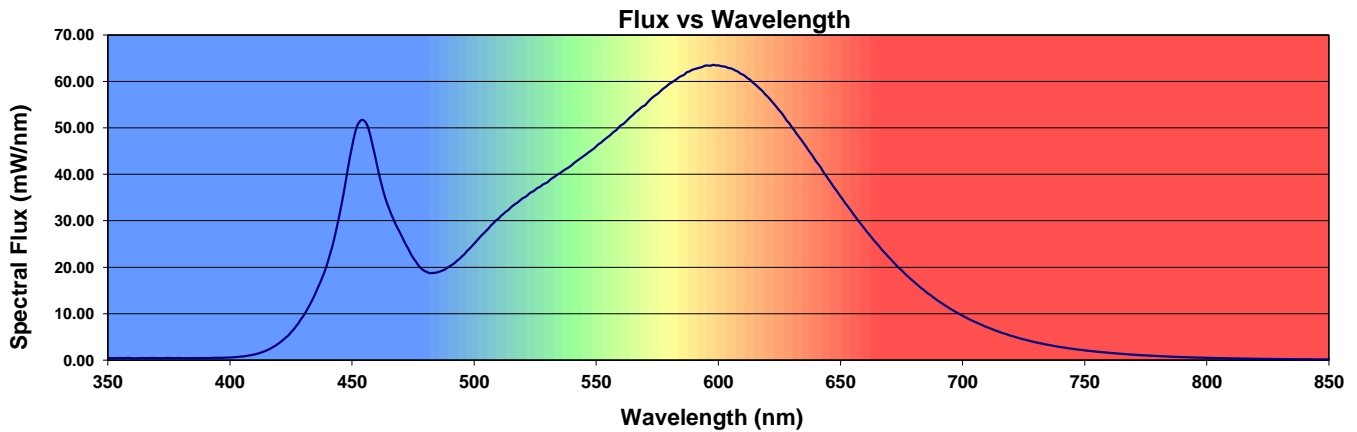
Summary of Results

Total Output:	3436 Lumens	Chromaticity (x):	0.4003
Efficacy:	74.0 lm/w	Chromaticity (y):	0.3837
CCT:	3552 K	Chromaticity (u'):	0.2353
CRI (Ra):	83.3	Chromaticity (v'):	0.5076
CRI (R9):	11.8	TM-30 Rf:	82.5
Peak Wavelength:	598 nm	TM-30 Rg:	95.1
Dominant Wavelength:	582 nm	Duv:	-0.0021
S/P Ratio:	1.57		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
83.3	82.0	91.6	95.8	80.3	82.0	88.0	84.1	62.9	11.8	79.4	78.5	68.3	84.5	98.3	76.4





Distribution - Goniophotometer

Distribution Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.5 °C	120.0 VAC	0.3886 A	46.56 W	0.998	60 Hz	5.20 %

Summary of Results

Spacing Criteria

0-180: 0.43
90-270: 0.43

Total Lumen Output:

3516 Lumens

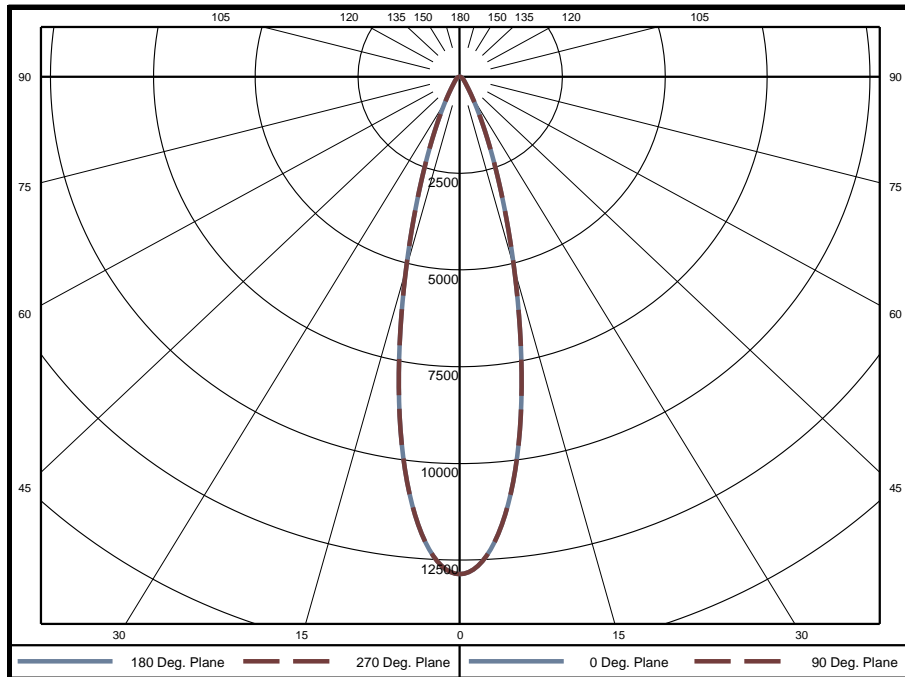
Luminaire Efficacy:

75.5 lm/w

Maximum Candela:

12861 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	292.8	8.3%	60-65	33.4	0.9%	120-125	0	0.0%
5-10	717.4	20.4%	65-70	26.1	0.7%	125-130	0	0.0%
10-15	783.6	22.3%	70-75	19.3	0.5%	130-135	0	0.0%
15-20	593.1	16.9%	75-80	13.0	0.4%	135-140	0	0.0%
20-25	372.0	10.6%	80-85	6.5	0.2%	140-145	0	0.0%
25-30	216.7	6.2%	85-90	1.4	0.0%	145-150	0	0.0%
30-35	131.7	3.7%	90-95	0	0.0%	150-155	0	0.0%
35-40	90.4	2.6%	95-100	0	0.0%	155-160	0	0.0%
40-45	70.4	2.0%	100-105	0	0.0%	160-165	0	0.0%
45-50	58.3	1.7%	105-110	0	0.0%	165-170	0	0.0%
50-55	49.2	1.4%	110-115	0	0.0%	170-175	0	0.0%
55-60	41.2	1.2%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	3198	90.9%
0-60	3417	97.2%
0-90	3517	100.0%
90-180	0	0.0%



Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
	0	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860	12860
	5	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630	11630
	10	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533	8533
	15	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996	4996
	20	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532	2532
	25	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214
	30	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
	35	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337
	40	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222
	45	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164
	50	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
	55	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	60	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
	65	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
	70	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
	75	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
	80	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	85	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

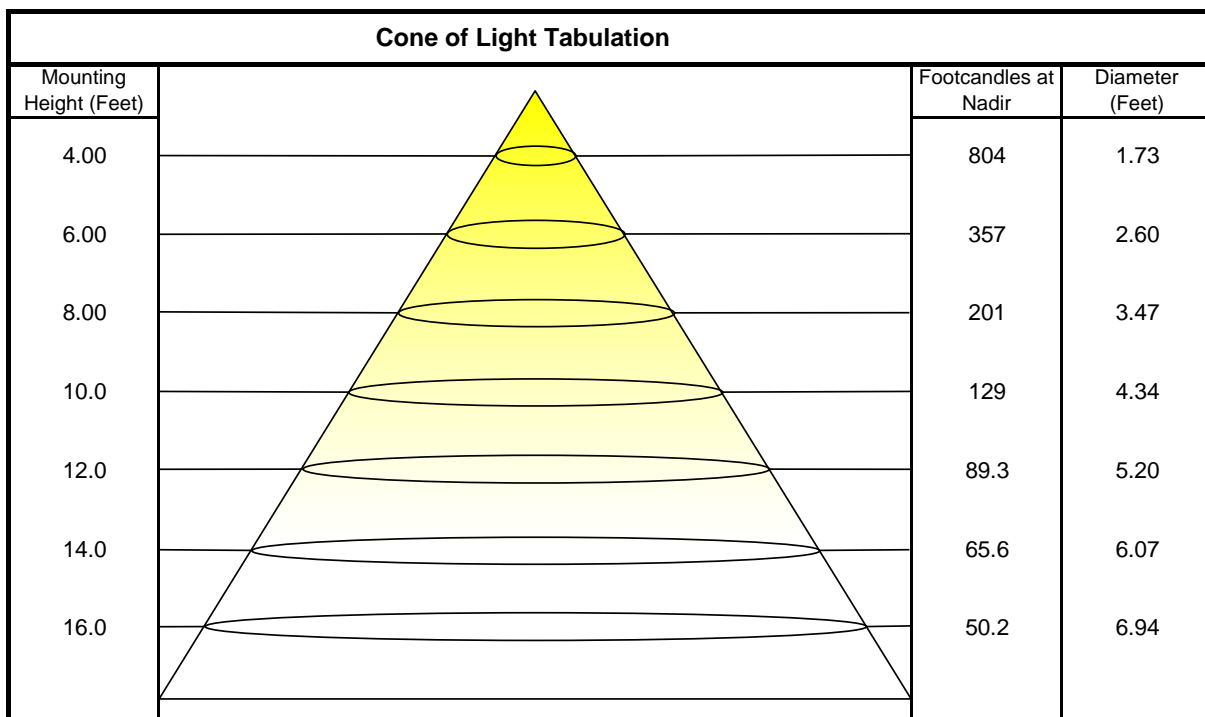
Vertical Angle (Degrees)	0	45	90
	0	1405000	1405000
	45	25370	25370
	55	19120	19120
	65	15400	15400
	75	12880	12880
	85	7957	7957



Coefficients of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as percent of total lumen output delivered to the task surface **																	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	112	109	107	112	109	107	106	105	104	102	102	100	99	98	97	96	95
2	109	105	101	98	107	103	100	97	100	98	95	97	95	93	95	93	91	90
3	105	99	95	92	103	98	94	91	96	92	90	93	90	88	91	89	87	85
4	101	95	90	86	99	93	89	86	91	88	85	89	86	84	88	85	83	81
5	97	90	85	82	96	89	85	81	88	84	81	86	83	80	85	82	79	78
6	94	86	81	78	92	86	81	78	84	80	77	83	79	77	82	79	76	75
7	91	83	78	75	89	82	78	74	81	77	74	80	76	74	79	76	73	72
8	88	80	75	72	87	79	75	72	78	74	71	77	74	71	77	73	71	70
9	85	77	72	69	84	77	72	69	76	72	69	75	71	69	74	71	68	67
10	82	74	70	67	81	74	70	67	73	69	66	73	69	66	72	69	66	65

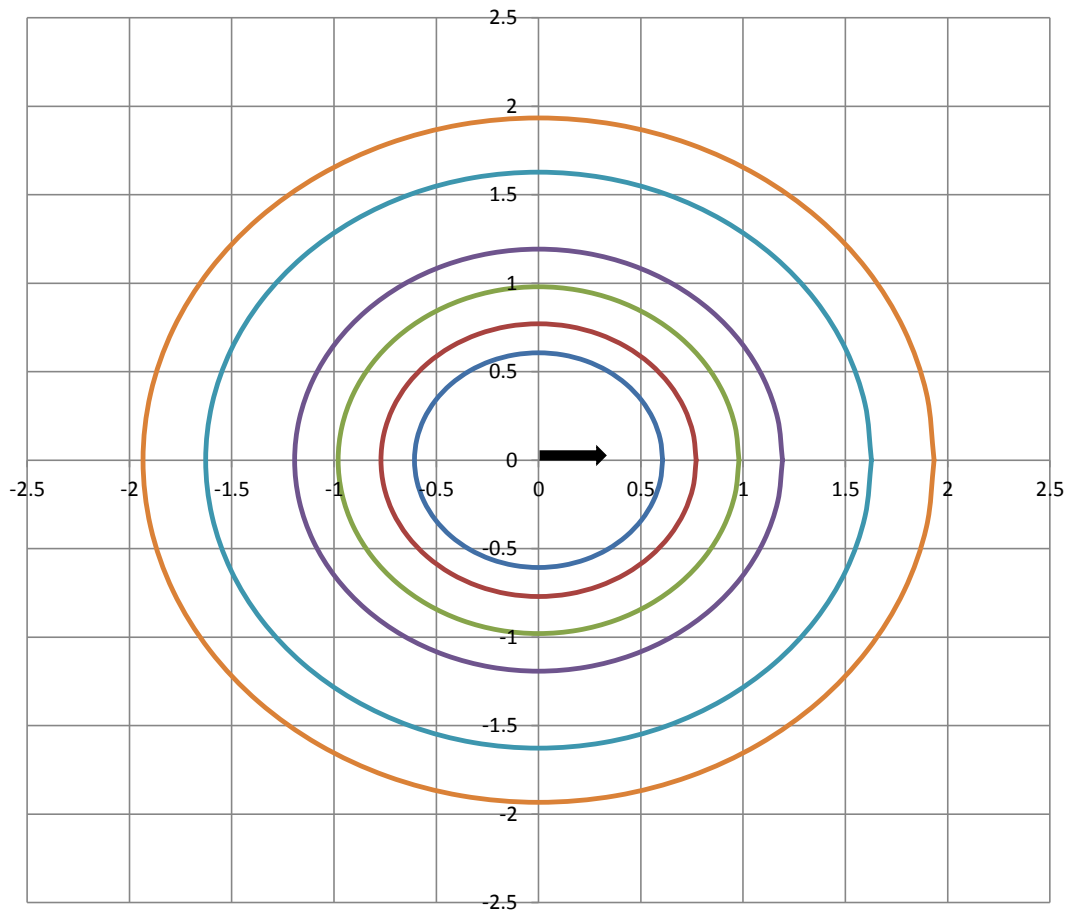
Beam and Field Information	
CIE Type:	Direct
Center Beam Intensity:	12860 Candela
Central Cone Intensity:	12421 Candela
Beam Flux:	1469.7 Lumens
Beam Angle (0-180):	25.7 Degrees
Beam Angle (90-270):	25.7 Degrees
Field Angle (0-180):	49.2 Degrees
Field Angle (90-270):	49.2 Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height





In-Situ Test

In-Situ Test Conditions

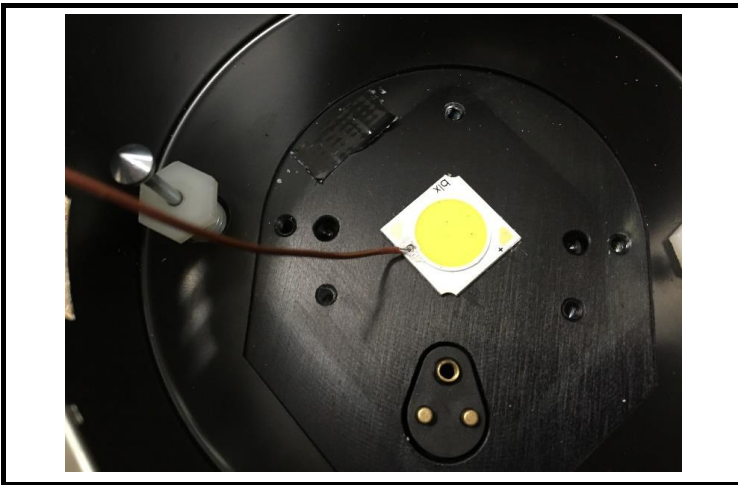
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
20.2 °C	120.0 VAC	N/A	N/A	N/A	60 Hz	N/A

Summary of Results

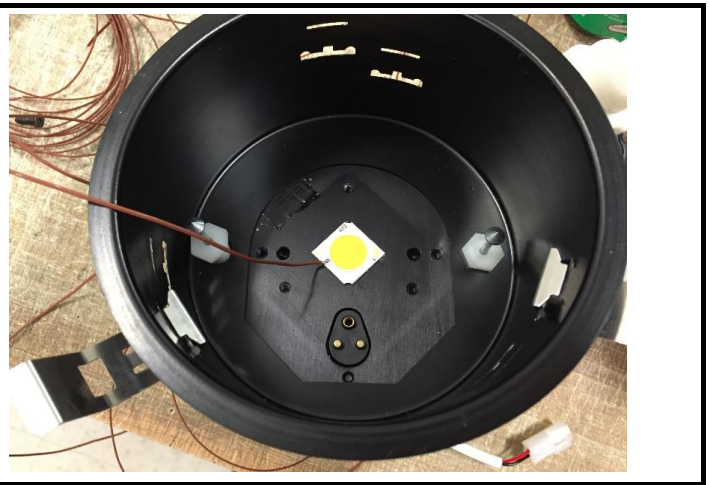
LED Temperature: 68.0 °C
Driver Temperature: 49.1 °C
Measured LED Current: 1.126 A

Temperatures are offset to an ambient temperature of 25°C as described in UL1598-2008

LED Temperature Location



Thermocouple Reference



Driver Temperature Location

