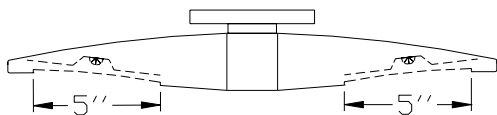
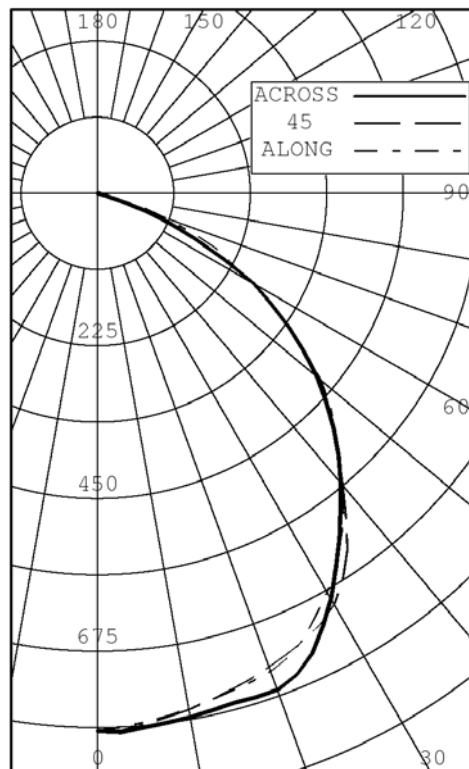




INDEPENDENT TEST LABORATORY REPORT No. 27581

RAB LIGHTING - LED CEILING LUMINAIRE, CAT# CLED/PLED2X20Y
WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENSES
FOUR LED ARRAYS. LUMINAIRE OUTPUT = 1904 LMS
LUMINAIRE OPERATING AT 120 VAC AND 43.7 WATTS



INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	792	792	792	792	792	76
5	783	775	787	788	790	
10	772	765	773	781	785	
15	760	751	758	769	778	
20	749	733	742	754	779	
25	722	714	724	727	748	215
30	677	679	698	683	688	
35	625	621	641	623	620	
40	558	562	561	558	557	
45	494	494	492	495	491	
50	429	421	425	426	421	390
55	339	342	345	349	345	
60	258	253	257	257	266	
65	192	179	165	163	158	
70	111	103	85	76	76	
75	33	32	29	19	9	35
80	4	5	5	2	2	
85	1	1	1	0	0	
90	0	0	0	0	0	

ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	624	32.75
0-40	1014	53.25
0-60	1699	89.26
0-90	1904	100.00
40-90	890	46.75
60-90	205	10.74
90-180	0	0.00
0-180	1904	100.00

EFFICACY (LUMENS PER WATT): 43.6

*** THIS IS AN ABSOLUTE TEST ***

LUMINOUS LENGTH: 10.000 INS
WIDTH: 8.250 INS

LUMINANCE SUMMARY CD./SQ.M.

ANGLE	ALONG	45	ACROSS
45	13138	13130	13106
55	11119	11343	11335
65	8549	7360	7030
75	2384	2135	654
85	138	110	55

S/MH: 1.3
SC: 1.3

CERTIFIED BY:

James E. Walker III

DATE:
AUG 23, 2010

PREPARED FOR:
RAB LIGHTING
NORTHVALE, NJ

TESTED IN ACCORDANCE WITH IES PROCEDURES.

LIGHTING SCIENCES, INC.
7826 E. EVANS RD.
SCOTTSDALE, AZ, USA 85260

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INTENSITY (CANDLEPOWER) DATA
IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	22.5	45	67.5	ACROSS	AVERAGE	
0.0	792	792	792	792	792	792	
2.5	788	779	793	794	796	789	
5.0	783	775	787	788	790	784	76
7.5	778	770	780	784	787	779	
10.0	772	765	773	781	785	774	
12.5	766	759	766	776	781	769	
15.0	760	751	758	769	778	762	215
17.5	755	742	750	762	779	755	
20.0	749	733	742	754	779	748	
22.5	738	723	734	743	768	738	
25.0	722	714	724	727	748	725	333
27.5	698	699	714	707	719	707	
30.0	677	679	698	683	688	686	
32.5	652	650	672	655	653	658	
35.0	625	621	641	623	620	627	390
37.5	593	591	600	590	587	593	
40.0	558	562	561	558	557	560	
42.5	524	529	525	526	525	526	
45.0	494	494	492	495	491	493	380
47.5	464	458	461	462	456	460	
50.0	429	421	425	426	421	424	
52.5	384	384	387	389	382	386	
55.0	339	342	345	349	345	344	306
57.5	298	297	305	305	303	302	
60.0	258	253	257	257	266	257	
62.5	223	216	209	208	209	212	
65.0	192	179	165	163	158	171	169
67.5	150	145	122	114	118	129	
70.0	111	103	85	76	76	89	
72.5	70	63	52	41	32	52	
75.0	33	32	29	19	9	25	35
77.5	9	14	13	6	4	10	
80.0	4	5	5	2	2	4	
82.5	2	2	2	1	1	2	
85.0	1	1	1	0	0	1	1
87.5	1	0	0	0	0	0	
90.0	0	0	0	0	0	0	

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AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG	22.5	45	67.5	ACROSS
0	14885 (4344)	14885 (4344)	14885 (4344)	14885 (4344)	14885 (4344)
30	14676 (4283)	14762 (4308)	15183 (4431)	14862 (4337)	14927 (4356)
40	13687 (3995)	13815 (4032)	13770 (4019)	13724 (4005)	13656 (3985)
45	13138 (3834)	13141 (3835)	13130 (3832)	13183 (3847)	13106 (3825)
50	12532 (3657)	12357 (3606)	12414 (3623)	12473 (3640)	12311 (3593)
55	11119 (3245)	11211 (3272)	11343 (3310)	11465 (3346)	11335 (3308)
60	9704 (2832)	9549 (2787)	9656 (2818)	9686 (2827)	9989 (2915)
65	8549 (2495)	7981 (2329)	7360 (2148)	7261 (2119)	7030 (2052)
70	6075 (1773)	5672 (1655)	4672 (1363)	4167 (1216)	4158 (1213)
75	2384 (695)	2337 (682)	2135 (623)	1383 (403)	654 (191)
80	430 (125)	543 (158)	501 (146)	222 (64)	235 (68)
85	138 (40)	249 (72)	110 (32)	55 (16)	55 (16)

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FOUR LED ARRAYS. LUMINAIRE OUTPUT = 1904 LMS
LUMINAIRE OPERATING AT 120 VAC AND 43.7 WATTS

COEFFICIENTS OF UTILIZATION

ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE = .20

CC WALL	90				80				70				50				30				10				0
	70	50	30	10	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																									
0	1.221	1.221	1.221	1.22	1.191	1.191	1.191	1.19	1.161	1.161	1.161	1.16	1.111	1.111	1.11	1.061	1.061	1.06	1.021	1.021	1.02	1.00			
1	1.141	1.101	1.061	1.03	1.111	1.081	1.041	1.01	1.091	1.061	1.021	1.00	1.010	0.990	0.97	0.970	0.950	0.94	0.940	0.920	0.91	0.89			
2	1.050	0.990	0.930	0.88	1.030	0.970	0.910	0.87	1.010	0.950	0.900	0.86	0.910	0.870	0.84	0.880	0.850	0.82	0.860	0.830	0.80	0.78			
3	0.980	0.880	0.810	0.75	0.950	0.870	0.800	0.75	0.930	0.850	0.790	0.74	0.830	0.770	0.73	0.800	0.760	0.72	0.780	0.740	0.70	0.69			
4	0.900	0.790	0.710	0.65	0.880	0.780	0.700	0.65	0.860	0.770	0.700	0.64	0.740	0.680	0.63	0.720	0.670	0.63	0.700	0.660	0.62	0.60			
5	0.830	0.710	0.620	0.56	0.810	0.700	0.610	0.56	0.790	0.680	0.610	0.55	0.660	0.600	0.55	0.640	0.590	0.54	0.630	0.580	0.54	0.52			
6	0.770	0.640	0.550	0.49	0.750	0.630	0.540	0.49	0.730	0.620	0.540	0.48	0.600	0.530	0.48	0.580	0.520	0.48	0.570	0.510	0.47	0.45			
7	0.700	0.570	0.490	0.43	0.690	0.560	0.480	0.43	0.670	0.560	0.480	0.42	0.540	0.470	0.42	0.530	0.460	0.42	0.510	0.460	0.41	0.40			
8	0.650	0.510	0.430	0.37	0.640	0.510	0.430	0.37	0.620	0.500	0.420	0.37	0.490	0.420	0.37	0.470	0.410	0.36	0.460	0.410	0.36	0.34			
9	0.600	0.460	0.380	0.32	0.580	0.460	0.380	0.32	0.570	0.450	0.370	0.32	0.440	0.370	0.32	0.430	0.360	0.32	0.420	0.360	0.31	0.30			
10	0.550	0.420	0.340	0.28	0.540	0.410	0.340	0.28	0.530	0.410	0.340	0.28	0.400	0.330	0.28	0.390	0.320	0.28	0.380	0.320	0.28	0.26			

THE ABOVE COEFFICIENTS HAVE BEEN CALCULATED BASED ON LUMINAIRE LUMENS
BECAUSE IN AN ABSOLUTE TEST THE BARE LAMP LUMENS ARE UNKNOWN.
LIGHTING DESIGN CALCULATIONS MADE USING THESE COEFFICIENTS SHOULD
THEREFORE USE THE LUMINAIRE LUMENS IN THE CALCULATION FORMULA

LUMINAIRE INPUT WATTS 43.7

LABORATORY RESULTS MAY NOT BE REPRESENTATIVE OF FIELD PERFORMANCE.
BALLAST AND FIELD FACTORS HAVE NOT BEEN APPLIED.

TEST DISTANCE EXCEEDS FIVE TIMES THE GREATEST
LUMINOUS OPENING OF LUMINAIRE.

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ELECTRICAL MEASUREMENTS

INPUT VOLTAGE:	120.0	VOLTS AC
INPUT CURRENT:	0.365	AMPS
INPUT POWER:	43.7	WATTS
POWER FACTOR:	99.8	PERCENT
TOTAL HARMONIC DISTORTION:	6.88	PERCENT
OFF STATE POWER:	0.00	WATTS

LIGHT OUTPUT

LUMENS:	1904	lm
EFFICACY:	43.6	lm/W

SPECTRAL MEASUREMENTS

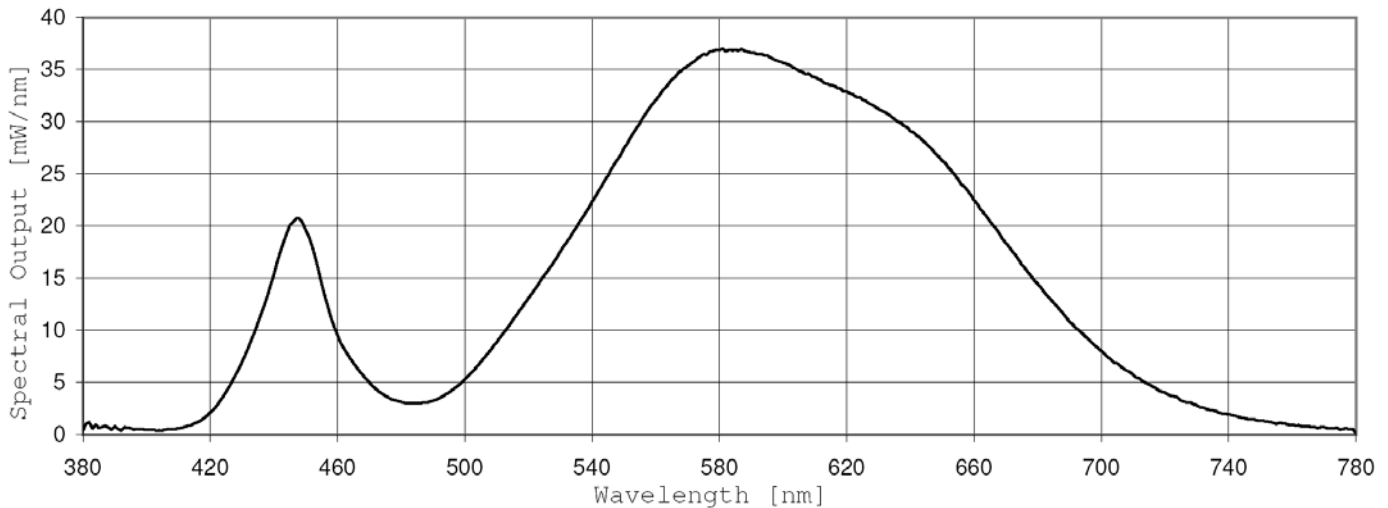
X:	0.4429	
y:	0.4042	
u/u':	0.2544	
v:	0.3482	
v':	0.5223	
Duv:	0.0008	
CRI (R _a):	70.6	
CRI (R _g):	-7.0	
CCT:	2901	K
RADIANT FLUX:	5845	mW

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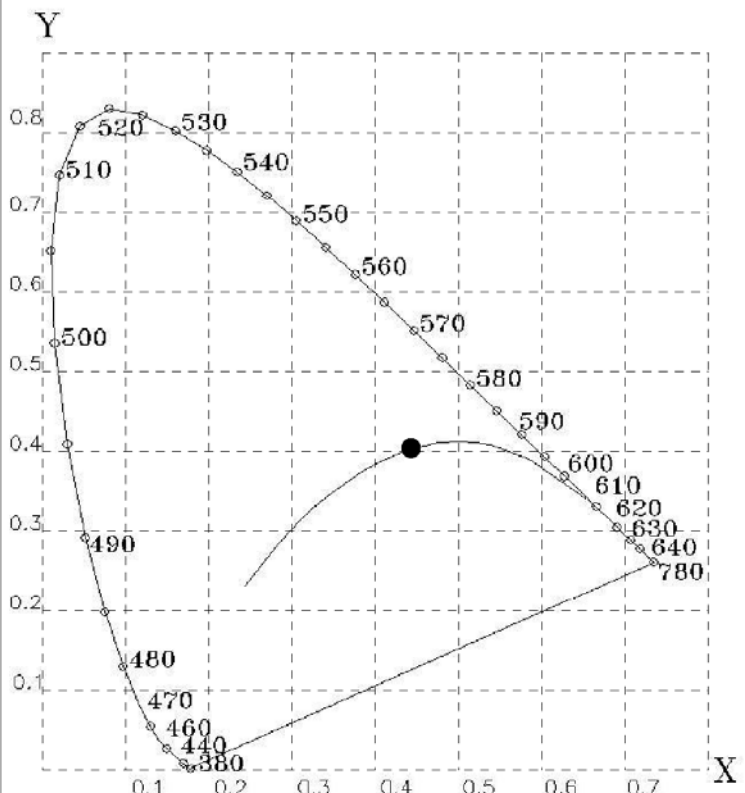
Spectral Power Distribution



Tabulated Spectral Power Distribution

Wavelength [nm]	[mW/nm]	Wavelength [nm]	[mW/nm]
380	0.37886	590	36.62069
390	0.80483	600	35.65334
400	0.42965	610	34.26541
410	0.60859	620	32.88527
420	2.13656	630	31.21596
430	6.97593	640	29.09668
440	15.35706	650	26.25643
450	19.64013	660	22.48514
460	9.55381	670	18.37885
470	5.02177	680	14.46535
480	3.14455	690	10.84059
490	3.25779	700	8.03102
500	5.32563	710	5.73540
510	8.87216	720	4.05744
520	13.07959	730	2.81734
530	17.55241	740	1.94335
540	22.36238	750	1.34038
550	27.45720	760	0.95612
560	32.08174	770	0.72703
570	35.34083	780	0.13680
580	36.87528		

CIE 1931 Chromaticity Diagram



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SIDE VIEW



LUMINOUS OPENING



All testing was conducted in accordance with LM-79-08,

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products as published by the Illuminating Engineering Society of North America (IESNA).

The condition of the item tested was new. Stabilization time before testing exceeded 16 hours.

The test results (luminous distribution and flux) were obtained by using a Lighting Sciences series 6000 Type C Moving Mirror Goniophotometer

- The photometric reference standard used is a set of three incandescent luminous intensity standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.

The test results (colorimetric and luminous flux) were obtained by using a Lighting Sciences model 4000 Integrating Sphere of either 1 or 2 meters diameter, having an internal reflectance exceeding 0.80. 4π geometry was used. Correction factors were applied for spectral mismatch and self-absorption. The spectroradiometer employed was a LSC model 500E having a bandwidth of .84.

- The photometric reference standard used is a set of three incandescent luminous flux standard lamps calibrated and traceable to the U.S. National Institute of Standards and Technology.
- The colorimetric reference standard used is an incandescent spectral standard lamp calibrated and traceable to the U.S. National Institute of Standards and Technology.

Power measurements were obtained with a Yokogawa WT210 power analyzer.

Ambient temperature during testing was $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured using an Omega model DP460.

Calibration certificates are on file at the laboratories of Lighting Sciences Inc.