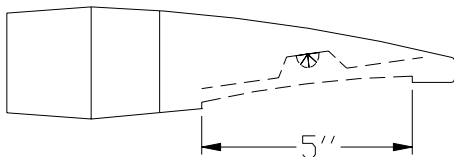
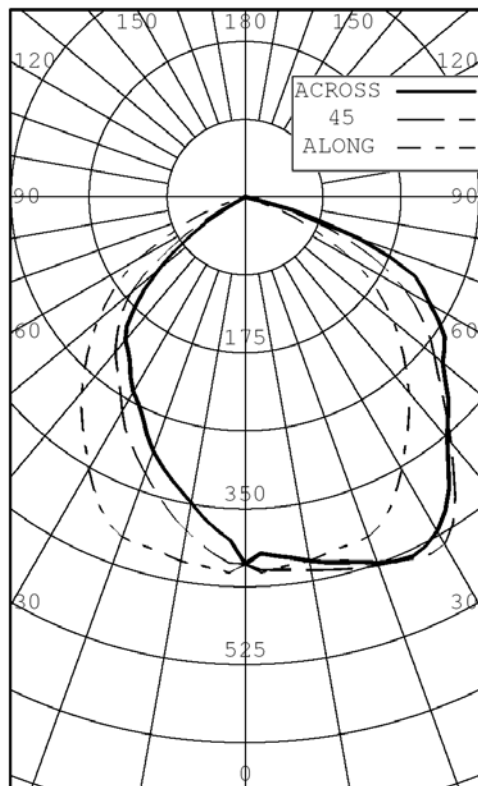




INDEPENDENT TEST LABORATORY REPORT No. 27209

RAB LIGHTING - LED WALLPACK LUMINAIRE, CAT# WPLED20Y  
WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS  
TWO LED ARRAYS. LUMINAIRE OUTPUT = 985 LMS.  
LUMINAIRE OPERATING AT 120 VAC AND 21.7 WATTS



INTENSITY (CANDLEPOWER)				SUMMARY		OUTPUT LUMENS
ANGLE	ALONG	BEAM SIDE	67.5	45	22.5	
					ACROSS	
0	412	412	412	412	412	20
5	418	421	420	413	405	
10	415	422	425	421	415	
15	408	424	433	429	424	60
20	405	423	440	435	437	99
25	385	419	448	441	445	
30	352	403	449	430	432	
35	318	372	411	401	399	120
40	286	328	359	364	352	117
45	251	289	313	322	322	
50	217	254	277	289	289	
55	180	221	244	262	273	106
60	139	174	206	235	239	74
65	81	119	155	191	211	
70	39	66	93	120	137	
75	4	22	34	42	55	20
80	1	3	6	7	5	1
85	0	1	1	1	1	
90	0	0	0	0	0	

BOTH SIDES  
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	321	32.56
0-40	521	52.93
0-60	874	88.82
0-90	985	100.00
40-90	463	47.07
60-90	110	11.18
90-180	0	0.00
0-180	985	100.00

EFFICACY (LUMENS PER WATT): 45.4

\*\*\* THIS IS AN ABSOLUTE TEST \*\*\*

LUMINOUS LENGTH: 8.250 INS  
WIDTH: 5.000 INS

LUMINANCE SUMMARY - CD./SQ.M.

BEAM SIDE			
ANGLE	ALONG	45	ACROSS
45	13338	16685	17200
55	11792	16034	17954
65	7201	13858	18796
75	580	4918	7993
85	0	521	521

CERTIFIED BY:

*James E. Walker III*

DATE:  
JUN 10, 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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LUMINAIRE OPERATING AT 120 VAC AND 21.7 WATTS

BEAM SIDE  
INTENSITY (CANDLEPOWER) DATA  
IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	67.5	45	22.5	ACROSS	AVERAGE	
0.0	412	412	412	412	412	412	
2.5	422	421	419	409	401	415	
5.0	418	421	420	413	405	416	20
7.5	416	422	422	416	409	418	
10.0	415	422	425	421	415	421	
12.5	411	423	429	426	420	423	
15.0	408	424	433	429	424	426	60
17.5	408	424	437	432	430	428	
20.0	405	423	440	435	437	430	
22.5	398	422	443	438	443	431	
25.0	385	419	448	441	445	431	99
27.5	369	413	452	439	441	427	
30.0	352	403	449	430	432	419	
32.5	334	389	434	417	418	404	
35.0	318	372	411	401	399	385	120
37.5	302	350	384	384	374	364	
40.0	286	328	359	364	352	343	
42.5	269	307	335	341	337	321	
45.0	251	289	313	322	322	303	117
47.5	234	273	293	306	304	285	
50.0	217	254	277	289	289	268	
52.5	198	239	262	273	282	254	
55.0	180	221	244	262	273	238	106
57.5	159	198	227	250	257	221	
60.0	139	174	206	235	239	201	
62.5	108	146	183	216	225	178	
65.0	81	119	155	191	211	153	74
67.5	61	88	126	159	175	123	
70.0	39	66	93	120	137	92	
72.5	17	43	56	81	86	58	
75.0	4	22	34	42	55	32	20
77.5	2	6	17	19	15	13	
80.0	1	3	6	7	5	5	
82.5	1	1	2	2	3	2	
85.0	0	1	1	1	1	1	1
87.5	0	0	0	1	0	0	
90.0	0	0	0	0	0	0	

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TWO LED ARRAYS. LUMINAIRE OUTPUT = 985 LMS.  
LUMINAIRE OPERATING AT 120 VAC AND 21.7 WATTS

BEAM SIDE  
AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG		67.5		45		22.5		ACROSS	
0	15476(	4516)	15476(	4516)	15476(	4516)	15476(	4516)	15476(	4516)
30	15272(	4457)	17551(	5122)	19521(	5697)	18705(	5459)	18742(	5470)
40	14028(	4094)	16146(	4712)	17627(	5144)	17895(	5223)	17281(	5043)
45	13338(	3892)	15388(	4491)	16685(	4869)	17162(	5009)	17200(	5020)
50	12685(	3702)	14924(	4355)	16209(	4731)	16917(	4937)	16896(	4931)
55	11792(	3441)	14471(	4223)	16034(	4680)	17209(	5022)	17954(	5240)
60	10446(	3048)	13089(	3820)	15525(	4531)	17736(	5176)	17962(	5242)
65	7201(	2101)	10551(	3079)	13858(	4044)	17056(	4978)	18796(	5486)
70	4284(	1250)	7271(	2122)	10207(	2979)	13214(	3856)	15059(	4395)
75	580(	169)	3212(	937)	4918(	1435)	6183(	1804)	7993(	2332)
80	216(	63)	673(	196)	1365(	398)	1492(	435)	1080(	315)
85	0(	0)	260(	76)	521(	152)	372(	108)	521(	152)

LUMINOUS LENGTH: 8.250 INS  
WIDTH: 5.000 INS

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TWO LED ARRAYS. LUMINAIRE OUTPUT = 985 LMS.  
LUMINAIRE OPERATING AT 120 VAC AND 21.7 WATTS

OPPOSITE SIDE TO BEAM  
INTENSITY (CANDLEPOWER) DATA  
IN 2.5 DEGREE STEPS

ANGLE	PLANE						OUTPUT LUMENS
	ALONG	112.5	135	157.5	ACROSS	AVERAGE	
0.0	412	412	412	412	412	412	
2.5	422	415	411	397	386	407	
5.0	418	407	402	384	375	398	19
7.5	416	400	392	372	363	388	
10.0	415	392	380	358	349	378	
12.5	411	386	369	344	337	368	
15.0	408	377	355	332	326	358	50
17.5	408	369	342	321	315	348	
20.0	405	358	329	310	303	338	
22.5	398	345	317	300	289	326	
25.0	385	330	305	290	273	313	72
27.5	369	314	292	275	261	299	
30.0	352	301	277	261	252	285	
32.5	334	286	261	248	240	271	
35.0	318	274	248	238	226	258	81
37.5	302	263	238	224	216	246	
40.0	286	254	227	212	210	235	
42.5	269	240	214	204	197	223	
45.0	251	226	200	191	176	208	79
47.5	234	210	186	172	154	190	
50.0	217	190	168	144	127	168	
52.5	198	166	143	115	104	144	
55.0	180	144	111	82	74	116	51
57.5	159	120	82	54	49	90	
60.0	139	94	51	24	15	62	
62.5	108	67	32	10	4	41	
65.0	81	46	14	3	2	26	14
67.5	61	24	6	2	1	16	
70.0	39	10	2	1	0	8	
72.5	17	2	1	0	0	3	
75.0	4	1	0	0	0	1	1
77.5	2	1	0	0	0	1	
80.0	1	1	0	0	0	0	
82.5	1	0	0	0	0	0	
85.0	0	0	0	0	0	0	0
87.5	0	0	0	0	0	0	
90.0	0	0	0	0	0	0	

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TWO LED ARRAYS. LUMINAIRE OUTPUT = 985 LMS.  
LUMINAIRE OPERATING AT 120 VAC AND 21.7 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	1.221.221.221.22	1.191.191.191.19	1.161.161.161.16	1.111.111.11	1.061.061.06	1.021.021.02	1.00																		
1	1.141.101.061.03	1.111.081.041.01	1.091.061.031.00	1.010.990.97	0.970.960.94	0.940.920.91	0.89																		
2	1.060.990.930.88	1.030.970.920.87	1.010.950.900.86	0.920.880.84	0.890.860.82	0.860.830.81	0.79																		
3	0.980.890.810.76	0.960.870.810.75	0.940.860.800.75	0.830.780.73	0.800.760.72	0.780.740.71	0.69																		
4	0.910.800.720.66	0.890.790.720.66	0.870.780.710.65	0.750.690.65	0.730.680.64	0.710.670.63	0.61																		
5	0.840.720.640.58	0.820.710.630.57	0.800.700.630.57	0.680.620.57	0.660.600.56	0.640.600.55	0.54																		
6	0.780.650.570.51	0.760.640.560.51	0.740.630.560.50	0.610.550.50	0.600.540.49	0.580.530.49	0.47																		
7	0.710.580.500.45	0.700.580.500.44	0.680.570.490.44	0.550.480.44	0.540.480.43	0.530.470.43	0.41																		
8	0.660.530.450.39	0.650.520.450.39	0.640.510.440.39	0.500.430.39	0.490.430.38	0.480.420.38	0.36																		
9	0.620.480.400.34	0.600.480.400.34	0.590.470.400.34	0.460.390.34	0.450.380.34	0.440.380.34	0.32																		
10	0.570.440.360.31	0.560.430.360.31	0.550.430.360.31	0.420.350.30	0.410.350.30	0.400.340.30	0.28																		

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 21.7

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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LUMINAIRE OPERATING AT 120 VAC AND 21.7 WATTS

**ELECTRICAL MEASUREMENTS**

INPUT VOLTAGE:	120.0	VOLTS AC
INPUT CURRENT:	0.186	AMPS
INPUT POWER:	21.7	WATTS
POWER FACTOR:	97.2	PERCENT
TOTAL HARMONIC DISTORTION:	6.82	PERCENT
OFF STATE POWER:	0.00	WATTS

**LIGHT OUTPUT**

LUMENS:	985	lm
EFFICACY:	45.4	lm/W

**SPECTRAL MEASUREMENTS**

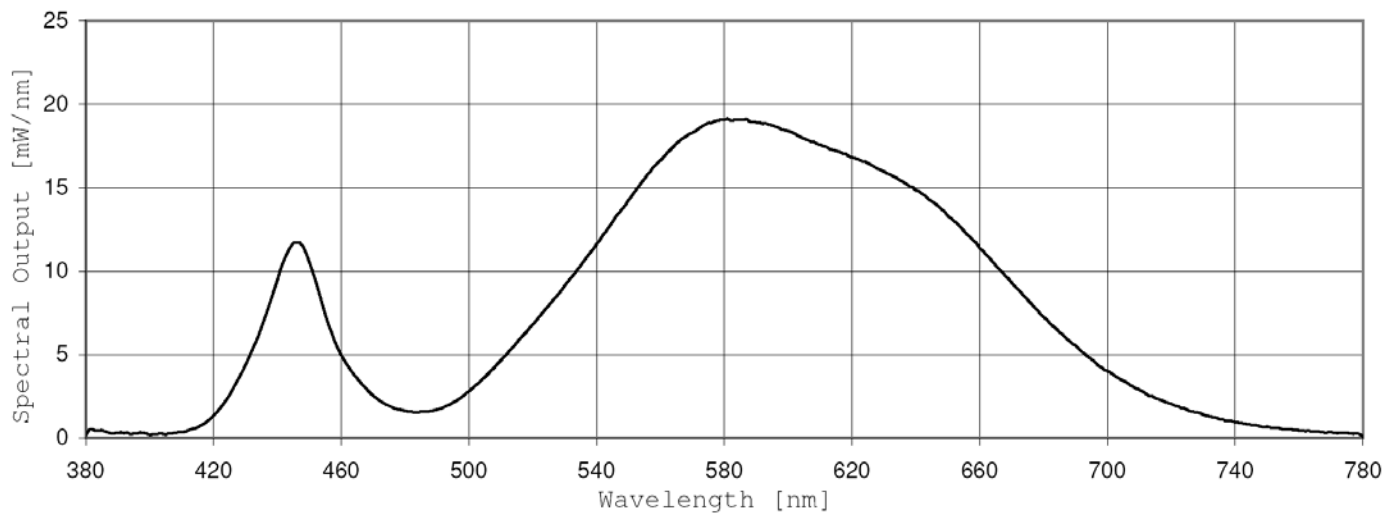
X:	0.4378	
y:	0.3989	
u/u':	0.2534	
v:	0.3463	
v':	0.5195	
Duv:	0.0023	
CRI (R <sub>a</sub> ):	70.7	
CRI (R <sub>g</sub> ):	-6.5	
CCT:	2942	K
RADIANT FLUX:	3032	mW

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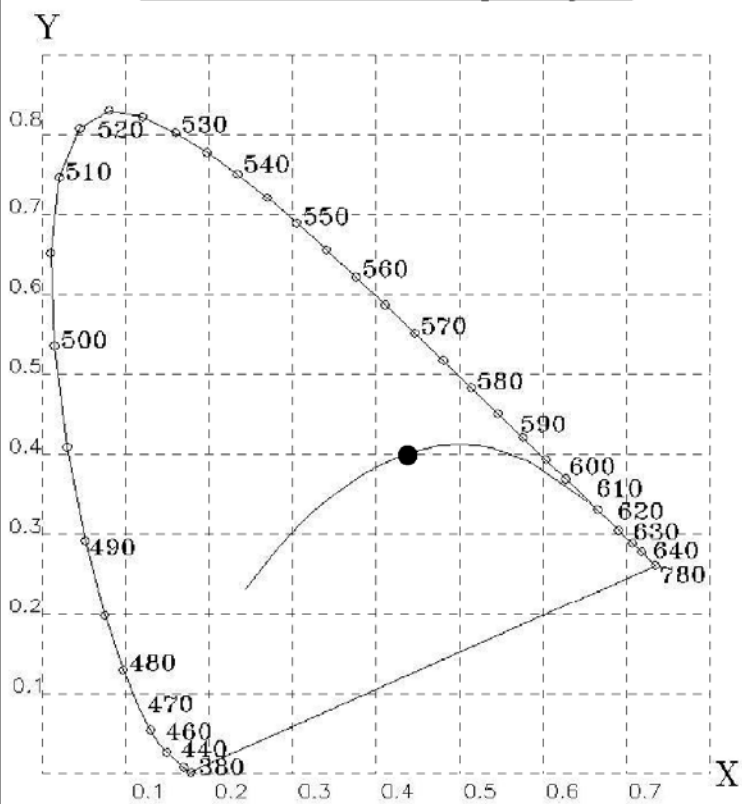
Spectral Power Distribution



Tabulated Spectral Power Distribution

Wavelength [nm]	[mW/nm]	Wavelength [nm]	[mW/nm]
380	0.13774	590	18.91424
390	0.30881	600	18.39126
400	0.18043	610	17.56976
410	0.34481	620	16.81163
420	1.33172	630	15.96009
430	4.36693	640	14.83308
440	9.44632	650	13.29254
450	10.53569	660	11.36418
460	4.96891	670	9.29840
470	2.52766	680	7.24784
480	1.61687	690	5.53036
490	1.69443	700	4.01739
500	2.78359	710	2.88070
510	4.64364	720	2.03575
520	6.78637	730	1.38357
530	9.12064	740	0.94288
540	11.62588	750	0.67563
550	14.26319	760	0.43431
560	16.63141	770	0.34625
570	18.27914	780	0.09351
580	19.06175		

CIE 1931 Chromaticity Diagram



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SIDE VIEW



LUMINOUS OPENING





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**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.  $4\pi$  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.