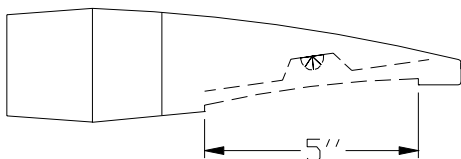
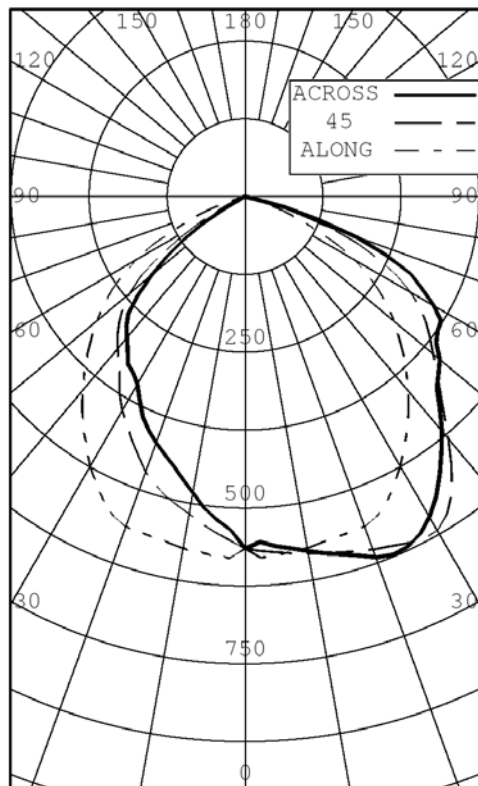




INDEPENDENT TEST LABORATORY REPORT No. 27208

RAB LIGHTING - LED WALLPACK LUMINAIRE, CAT# WPLED20  
WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS  
TWO LED ARRAYS. LUMINAIRE OUTPUT = 1401 LMS  
LUMINAIRE OPERATING AT 120 VAC AND 21.5 WATTS



INTENSITY (CANDLEPOWER)				SUMMARY		OUTPUT LUMENS
ANGLE	ALONG	BEAM SIDE	67.5	45	22.5	
0	565	565	565	565	565	28
5	578	581	574	574	564	
10	573	583	581	588	578	
15	566	585	592	599	595	83
20	563	586	603	606	617	137
25	539	582	615	616	619	
30	498	561	618	602	592	
35	453	521	578	559	544	167
40	407	463	506	503	491	164
45	358	407	442	452	435	
50	311	363	393	407	407	
55	260	319	355	367	376	152
60	202	264	304	339	349	110
65	123	192	234	279	293	
70	60	103	143	176	192	
75	8	37	52	57	66	29
80	2	4	9	9	7	1
85	0	0	1	1	1	
90	0	0	0	0	0	

BOTH SIDES  
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	446	31.84
0-40	728	51.96
0-60	1235	88.18
0-90	1401	100.00
40-90	673	48.04
60-90	166	11.82
90-180	0	0.00
0-180	1401	100.00

EFFICACY (LUMENS PER WATT): 65.2

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

LUMINOUS LENGTH: 8.250 INS  
WIDTH: 5.000 INS

LUMINANCE SUMMARY - CD./SQ.M.

ANGLE	BEAM SIDE			
	ALONG	45	ACROSS	
45	19024	23584	23187	
55	17032	23320	24754	
65	10936	20834	26154	
75	1161	7534	9573	
85	0	221	555	

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

INDEPENDENT TEST LABORATORY REPORT No. 27208

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TWO LED ARRAYS. LUMINAIRE OUTPUT = 1401 LMS  
LUMINAIRE OPERATING AT 120 VAC AND 21.5 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	565	565	565	565	565	565	
2.5	581	580	570	568	556	571	
5.0	578	581	574	574	564	575	28
7.5	575	582	578	580	570	578	
10.0	573	583	581	588	578	582	
12.5	569	585	586	593	586	585	
15.0	566	585	592	599	595	589	83
17.5	565	585	597	602	605	592	
20.0	563	586	603	606	617	596	
22.5	554	584	608	611	622	598	
25.0	539	582	615	616	619	598	137
27.5	519	574	619	613	609	593	
30.0	498	561	618	602	592	582	
32.5	475	544	602	582	570	563	
35.0	453	521	578	559	544	539	167
37.5	430	492	542	534	517	511	
40.0	407	463	506	503	491	480	
42.5	382	433	472	475	462	451	
45.0	358	407	442	452	435	424	164
47.5	334	385	418	428	420	402	
50.0	311	363	393	407	407	381	
52.5	288	342	374	388	386	360	
55.0	260	319	355	367	376	340	152
57.5	232	297	333	352	372	321	
60.0	202	264	304	339	349	296	
62.5	167	231	273	316	319	266	
65.0	123	192	234	279	293	228	110
67.5	94	142	193	234	243	184	
70.0	60	103	143	176	192	137	
72.5	31	67	90	114	124	87	
75.0	8	37	52	57	66	46	29
77.5	3	11	25	24	19	18	
80.0	2	4	9	9	7	6	
82.5	0	1	3	2	3	2	
85.0	0	0	1	1	1	0	1
87.5	0	0	0	0	0	0	
90.0	0	0	0	0	0	0	

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INDEPENDENT TEST LABORATORY REPORT No. 27208

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WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS  
TWO LED ARRAYS. LUMINAIRE OUTPUT = 1401 LMS  
LUMINAIRE OPERATING AT 120 VAC AND 21.5 WATTS

BEAM SIDE  
AVERAGE LUMINANCE DATA

CD./SQ.M (FOOTLAMBERTS)

ANGLE	ALONG		67.5		45		22.5		ACROSS	
0	21245 (	6200)	21245 (	6200)	21245 (	6200)	21245 (	6200)	21245 (	6200)
30	21607 (	6306)	24417 (	7126)	26890 (	7848)	26182 (	7641)	25685 (	7496)
40	19963 (	5826)	22766 (	6644)	24844 (	7251)	24736 (	7219)	24090 (	7031)
45	19024 (	5552)	21667 (	6323)	23584 (	6883)	24069 (	7025)	23187 (	6767)
50	18180 (	5306)	21320 (	6222)	22954 (	6699)	23870 (	6967)	23805 (	6947)
55	17032 (	4971)	20966 (	6119)	23320 (	6806)	24110 (	7037)	24754 (	7225)
60	15180 (	4430)	19930 (	5817)	22893 (	6681)	25520 (	7448)	26226 (	7654)
65	10936 (	3191)	17058 (	4978)	20834 (	6080)	24856 (	7254)	26154 (	7633)
70	6591 (	1923)	11316 (	3302)	15804 (	4612)	19380 (	5656)	21115 (	6162)
75	1161 (	338)	5459 (	1593)	7534 (	2198)	8373 (	2443)	9573 (	2794)
80	432 (	126)	780 (	227)	2006 (	585)	1890 (	551)	1499 (	437)
85	0 (	0)	0 (	0)	221 (	64)	222 (	64)	555 (	162)

LUMINOUS LENGTH: 8.250 INS  
WIDTH: 5.000 INS

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INDEPENDENT TEST LABORATORY REPORT No. 27208

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WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS  
TWO LED ARRAYS. LUMINAIRE OUTPUT = 1401 LMS  
LUMINAIRE OPERATING AT 120 VAC AND 21.5 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	565	565	565	565	565	565	
2.5	581	571	553	544	536	557	
5.0	578	563	541	530	521	546	26
7.5	575	556	530	514	504	535	
10.0	573	547	517	497	483	522	
12.5	569	539	507	482	465	511	
15.0	566	529	497	464	447	499	70
17.5	565	519	483	447	433	487	
20.0	563	506	469	430	420	474	
22.5	554	490	450	413	406	458	
25.0	539	469	431	399	390	441	101
27.5	519	445	412	385	368	421	
30.0	498	423	395	371	347	403	
32.5	475	402	375	353	336	384	
35.0	453	384	352	335	328	365	114
37.5	430	370	333	321	311	349	
40.0	407	358	319	305	295	333	
42.5	382	343	304	286	283	316	
45.0	358	321	286	273	266	298	114
47.5	334	299	267	254	234	276	
50.0	311	271	244	218	196	247	
52.5	288	240	212	177	160	213	
55.0	260	209	170	133	123	176	77
57.5	232	174	127	90	83	137	
60.0	202	138	84	47	40	98	
62.5	167	100	53	22	11	66	
65.0	123	69	27	9	5	42	23
67.5	94	41	14	4	2	27	
70.0	60	19	5	2	1	14	
72.5	31	6	2	1	1	6	
75.0	8	3	1	0	0	2	2
77.5	3	1	0	0	0	1	
80.0	2	0	0	0	0	0	
82.5	0	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 = 1401 LMS  
 LUMINAIRE OPERATING AT 120 VAC AND 21.5 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	1.22	1.22	1.22	1.22	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00			
1	1.14	1.10	1.06	1.03	1.11	1.08	1.04	1.01	1.09	1.06	1.02	0.99	1.01	0.99	0.96	0.97	0.95	0.93	0.94	0.92	0.91	0.89			
2	1.05	0.99	0.93	0.88	1.03	0.97	0.92	0.87	1.01	0.95	0.90	0.86	0.91	0.87	0.84	0.89	0.85	0.82	0.86	0.83	0.80	0.78			
3	0.98	0.88	0.81	0.75	0.95	0.87	0.80	0.75	0.93	0.85	0.79	0.74	0.83	0.77	0.73	0.80	0.76	0.72	0.78	0.74	0.70	0.69			
4	0.91	0.80	0.71	0.66	0.89	0.78	0.71	0.65	0.87	0.77	0.70	0.65	0.75	0.69	0.64	0.73	0.67	0.63	0.70	0.66	0.62	0.60			
5	0.84	0.72	0.63	0.57	0.82	0.71	0.63	0.57	0.80	0.69	0.62	0.56	0.67	0.61	0.56	0.65	0.60	0.55	0.64	0.59	0.55	0.53			
6	0.77	0.64	0.56	0.50	0.76	0.63	0.55	0.50	0.74	0.63	0.55	0.49	0.61	0.54	0.49	0.59	0.53	0.49	0.58	0.52	0.48	0.46			
7	0.71	0.58	0.49	0.44	0.69	0.57	0.49	0.43	0.68	0.56	0.49	0.43	0.55	0.48	0.43	0.53	0.47	0.42	0.52	0.46	0.42	0.40			
8	0.66	0.52	0.44	0.39	0.64	0.52	0.44	0.38	0.63	0.51	0.43	0.38	0.50	0.43	0.38	0.49	0.42	0.38	0.47	0.42	0.37	0.36			
9	0.61	0.48	0.39	0.34	0.60	0.47	0.39	0.34	0.58	0.46	0.39	0.34	0.45	0.38	0.34	0.44	0.38	0.33	0.43	0.37	0.33	0.31			
10	0.56	0.43	0.35	0.30	0.55	0.43	0.35	0.30	0.54	0.42	0.35	0.30	0.41	0.34	0.30	0.40	0.34	0.30	0.40	0.34	0.29	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 21.5

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.

LIGHTING SCIENCES, INC.  
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WITH SPECULAR REFLECTOR AND CLEAR FLAT GLASS LENS  
TWO LED ARRAYS. LUMINAIRE OUTPUT = 1401 LMS  
LUMINAIRE OPERATING AT 120 VAC AND 21.5 WATTS

**ELECTRICAL MEASUREMENTS**

INPUT VOLTAGE:	120.0	VOLTS AC
INPUT CURRENT:	0.184	AMPS
INPUT POWER:	21.5	WATTS
POWER FACTOR:	97.4	PERCENT
TOTAL HARMONIC DISTORTION:	7.35	PERCENT
OFF STATE POWER:	0.00	WATTS

**LIGHT OUTPUT**

LUMENS:	1401	lm
EFFICACY:	65.2	lm/W

**SPECTRAL MEASUREMENTS**

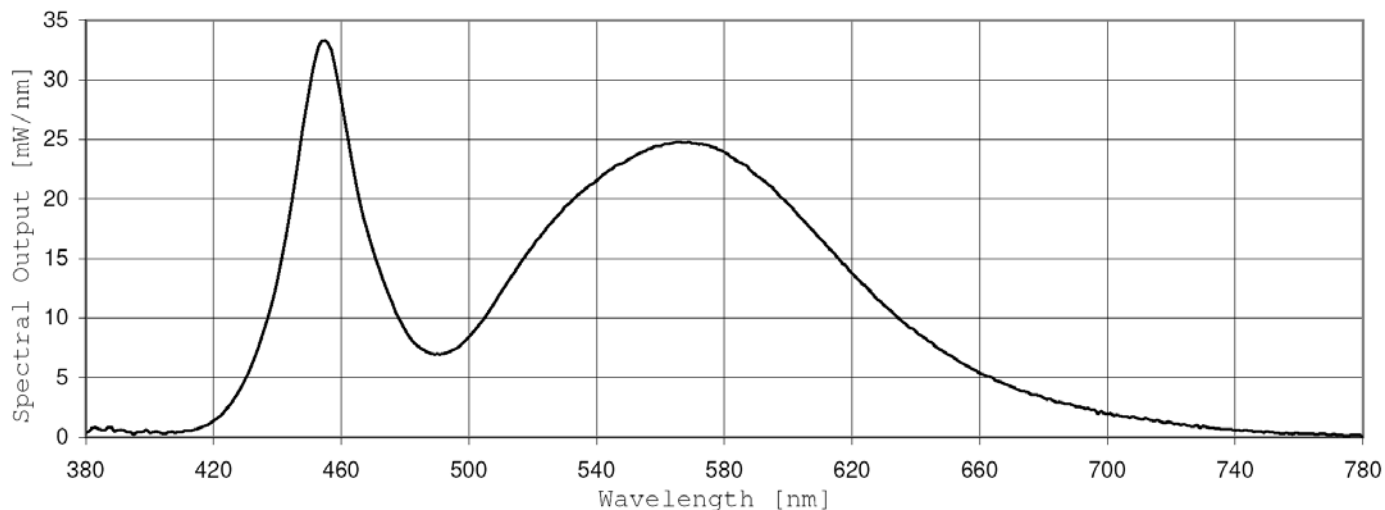
X:	0.3385	
y:	0.3633	
u/u':	0.2026	
v:	0.3262	
v':	0.4893	
Duv:	0.0086	
CRI (R <sub>a</sub> ):	69.6	
CRI (R <sub>9</sub> ):	-54.9	
CCT:	5276	K
RADIANT FLUX:	4064	mW

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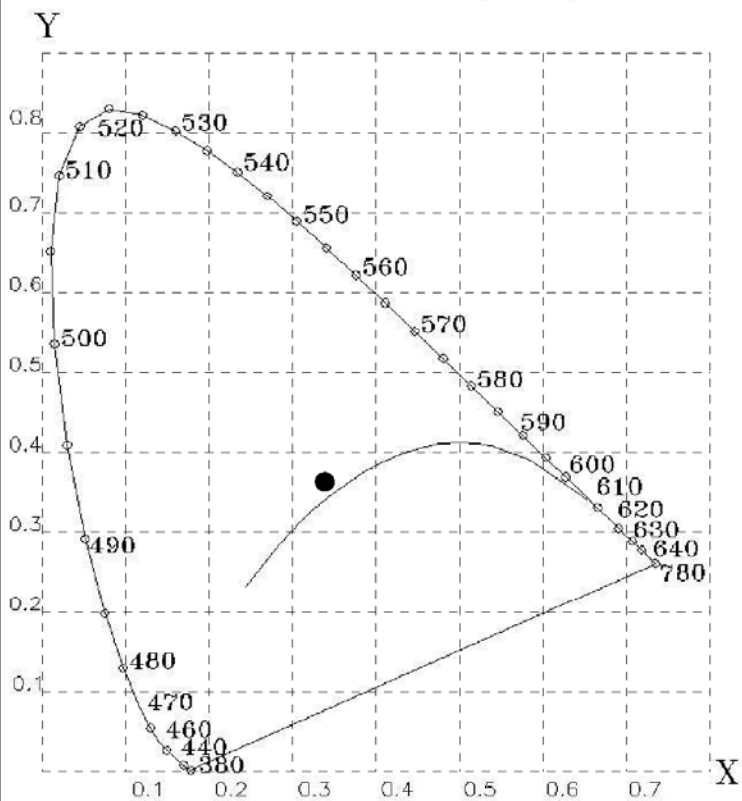
Spectral Power Distribution



Tabulated Spectral Power Distribution

Wavelength [nm]	[mW/nm]	Wavelength [nm]	[mW/nm]
380	0.34725	590	21.97499
390	0.60849	600	19.60854
400	0.36854	610	16.67401
410	0.41799	620	13.76141
420	1.37567	630	11.08232
430	4.91095	640	8.86078
440	13.15593	650	6.95015
450	29.13285	660	5.35216
460	28.34891	670	4.25085
470	15.68021	680	3.29618
480	9.01516	690	2.58362
490	6.98327	700	1.95492
500	8.41914	710	1.52919
510	12.16729	720	1.22602
520	16.00402	730	0.95037
530	19.33203	740	0.56721
540	21.54152	750	0.50400
550	23.32744	760	0.31607
560	24.42832	770	0.18018
570	24.66355	780	0.04515
580	23.92776		

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.