

itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY

PAGE: 1 OF 8

ISSUE DATE: 06/16/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: FSLEDV3YYS/120 - FSLEDV3YYS/120/TL

LUMINAIRE: CAST SILVER PAINTED METAL HOUSING/FACEPLATE, CAST SILVER PAINTED METAL CIRCUIT BOARD MOUNTING BASE WITH UNFINISHED CIRCUIT BOARD MOUNTING SURFACE, 1 WHITE CIRCUIT BOARD WITH 3 LEDS, CLEAR FLAT GLASS LENS.

LAMPS: THREE WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

LED DRIVER: INTEGRAL TO CIRCUIT BOARD

INPUT ELECTRICAL: 120.0 VOLTS, 3.02 WATTS, 0.0265 AMPS

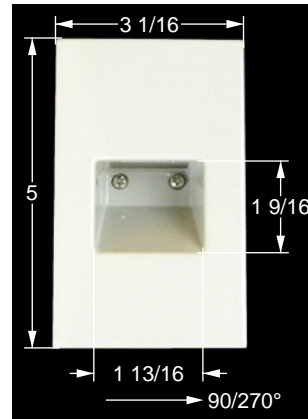
MOUNTING: RECESSED WALL

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE LUMINAIRE.

NOTE 2: THIS REPORT WAS PRORATED FROM ITL REPORT NUMBER 87586. BOTH REPORTS REPRESENT A LUMINAIRE WITH 3 LEDS. FACTORS GENERATED FROM COMPARATIVE TESTING HAVE BEEN DERIVED FOR LIGHT OUTPUT, COLOR TEMPERATURE AND WATTAGE AND APPLIED TO THIS REPORT. ACTUAL PERFORMANCE MAY VARY.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET



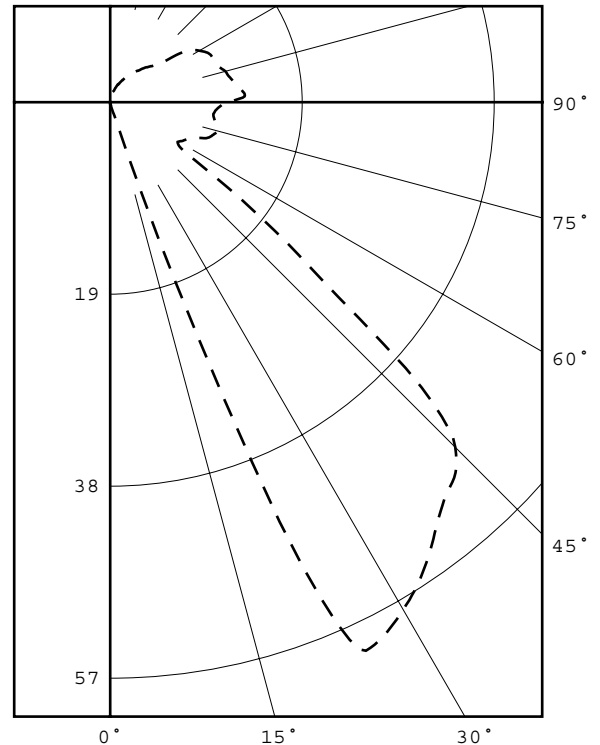
CANDELA DISTRIBUTION

FLUX

	0.0	45.0	90.0	135.0	180.0	
0	0.0	0.0	0.0	0.0	0.0	
5	0.1	0.1	0.0	0.0	0.0	0.0
15	0.9	0.4	0.0	0.0	0.0	0.1
25	59.9	1.8	0.0	0.0	0.0	4.9
35	54.9	42.8	0.0	0.0	0.0	9.7
45	48.3	36.0	0.0	0.0	0.0	10.5
55	11.5	27.6	0.0	0.0	0.0	6.1
65	8.5	6.1	0.0	0.0	0.0	2.8
75	11.0	5.2	0.0	0.0	0.0	2.9
85	10.4	5.5	0.0	0.0	0.0	3.1
90	11.7	5.7	0.0	0.0	0.0	
95	13.1	5.6	0.0	0.0	0.0	3.3
105	11.8	5.4	0.0	0.0	0.0	3.0
115	11.0	4.6	0.0	0.0	0.0	2.5
125	8.4	3.6	0.0	0.0	0.0	1.7
135	4.8	2.7	0.0	0.0	0.0	1.0
145	3.3	1.9	0.0	0.0	0.0	0.6
155	2.0	1.2	0.0	0.0	0.0	0.3
165	1.1	0.6	0.0	0.0	0.0	0.1
175	0.3	0.2	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5.0	9.6
0- 40	14.8	28.0
0- 60	31.3	59.5
0- 90	40.1	76.1
90-120	8.9	16.9
90-130	10.6	20.2
90-150	12.2	23.2
90-180	12.6	23.9
0-180	52.7	100.0



LEGEND:
 0-deg - - - - -
 90-deg = = = = =
 180-deg - - - - -

EFFICACY = 17.5 lm/W
 CIE TYPE - SEMI-DIRECT
 PLANE : 0-DEG 90-DEG
 BEAM ANGLE (50%) : 28.6 X N/A DEGREES
 FIELD ANGLE (10%) : 110.3 X N/A DEGREES

Checked J. VILLANUEVA
 Approved R. BEATTIE
 Lighting Engineer



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

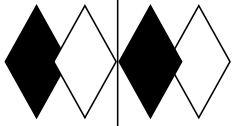
INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
ISSUE DATE: 06/16/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 8

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	37433.	39857.	0.
55	7750.	26738.	0.
65	5067.	5253.	0.
75	6315.	4242.	0.
85	5757.	4263.	0.



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
ISSUE DATE: 06/16/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8

CANDELA DISTRIBUTION LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0	112.5	135.0	157.5
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.5	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.0	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
12.5	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
15.0	0.9	0.9	0.8	0.7	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
17.5	1.4	1.4	1.2	1.1	0.8	0.5	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0
20.0	19.0	17.1	7.8	1.9	1.2	0.8	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0
22.5	49.7	48.8	42.4	30.5	3.4	1.1	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0
25.0	59.9	60.1	59.7	54.0	34.5	1.8	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0
27.5	59.2	59.2	59.5	59.5	56.2	13.4	1.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0
30.0	58.0	58.1	58.4	58.4	60.4	29.0	1.7	0.6	0.3	0.0	0.0	0.0	0.0	0.0
32.5	56.6	56.7	56.9	57.0	58.8	41.8	9.5	0.7	0.3	0.1	0.0	0.0	0.0	0.0
35.0	54.9	54.9	55.4	55.5	57.2	42.8	18.8	0.8	0.4	0.1	0.0	0.0	0.0	0.0
37.5	53.0	53.1	53.4	53.6	55.2	41.8	20.1	1.0	0.4	0.1	0.0	0.0	0.0	0.0
40.0	51.4	51.3	51.5	51.6	53.1	40.1	20.7	1.1	0.4	0.1	0.0	0.0	0.0	0.0
42.5	50.4	50.4	50.0	49.6	50.8	38.0	20.4	1.3	0.4	0.1	0.0	0.0	0.0	0.0
45.0	48.3	48.2	48.7	48.1	48.3	36.0	19.4	1.6	0.5	0.1	0.0	0.0	0.0	0.0
47.5	41.8	41.9	44.2	46.1	45.8	33.9	18.2	1.9	0.5	0.1	0.0	0.0	0.0	0.0
50.0	27.4	28.0	33.0	40.6	43.2	31.9	17.2	2.6	0.6	0.1	0.0	0.0	0.0	0.0
52.5	19.1	19.3	21.1	28.1	38.5	29.8	16.2	2.9	0.6	0.1	0.0	0.0	0.0	0.0
55.0	11.5	11.8	14.4	18.3	27.3	27.6	15.2	2.9	0.7	0.1	0.0	0.0	0.0	0.0
57.5	8.1	8.1	8.6	11.5	16.8	23.5	14.3	2.8	0.8	0.2	0.0	0.0	0.0	0.0
60.0	7.8	7.7	7.7	7.5	10.7	16.9	13.0	2.7	0.9	0.2	0.0	0.0	0.0	0.0
62.5	8.2	8.1	7.9	7.2	6.3	12.1	11.1	2.7	0.9	0.2	0.0	0.0	0.0	0.0
65.0	8.5	8.5	8.3	7.5	6.0	6.1	7.0	2.7	1.0	0.2	0.0	0.0	0.0	0.0
67.5	9.2	9.1	8.7	7.7	6.2	4.8	4.2	2.6	1.0	0.2	0.0	0.0	0.0	0.0
70.0	10.3	10.1	9.5	8.2	6.3	4.9	3.9	2.6	1.1	0.2	0.0	0.0	0.0	0.0
72.5	10.7	10.6	9.9	8.7	6.6	5.0	3.9	2.6	1.1	0.2	0.0	0.0	0.0	0.0
75.0	11.0	10.9	10.3	8.9	6.8	5.2	4.0	2.5	1.1	0.2	0.0	0.0	0.0	0.0
77.5	10.7	10.7	10.2	8.8	6.9	5.3	4.0	2.5	1.1	0.2	0.0	0.0	0.0	0.0
80.0	10.5	10.5	10.0	8.6	7.0	5.4	4.0	2.5	1.1	0.3	0.0	0.0	0.0	0.0
82.5	10.3	10.3	9.9	8.6	7.0	5.5	4.0	2.6	1.1	0.3	0.0	0.0	0.0	0.0
85.0	10.4	10.3	9.9	8.8	7.3	5.5	4.1	2.6	1.2	0.3	0.0	0.0	0.0	0.0
87.5	10.8	10.7	10.4	9.1	7.5	5.8	4.2	2.6	1.2	0.3	0.0	0.0	0.0	0.0
90.0	11.7	11.7	11.4	9.2	7.3	5.7	4.1	2.6	1.2	0.3	0.0	0.0	0.0	0.0
92.5	13.3	13.2	12.5	10.0	7.2	5.6	4.1	2.6	1.2	0.3	0.0	0.0	0.0	0.0
95.0	13.1	13.1	12.4	9.7	7.1	5.6	4.1	2.6	1.2	0.3	0.0	0.0	0.0	0.0
97.5	12.6	12.5	12.1	9.3	7.0	5.6	4.0	2.6	1.2	0.3	0.0	0.0	0.0	0.0
100.0	12.3	12.2	11.8	9.2	6.9	5.5	4.0	2.5	1.1	0.3	0.0	0.0	0.0	0.0
102.5	12.0	12.0	11.6	9.0	6.8	5.5	3.9	2.4	1.1	0.3	0.0	0.0	0.0	0.0
105.0	11.8	11.8	11.3	8.8	6.6	5.4	3.7	2.3	1.1	0.3	0.0	0.0	0.0	0.0
107.5	11.4	11.4	11.0	8.5	6.4	5.2	3.6	2.2	1.1	0.2	0.0	0.0	0.0	0.0
110.0	11.2	11.3	10.7	8.5	6.3	5.1	3.4	2.1	1.1	0.2	0.0	0.0	0.0	0.0
112.5	11.1	11.1	10.6	8.3	6.2	4.8	3.3	2.0	1.0	0.2	0.0	0.0	0.0	0.0
115.0	11.0	11.0	10.4	8.1	6.0	4.6	3.2	1.9	1.0	0.2	0.0	0.0	0.0	0.0
117.5	10.7	10.7	10.2	7.7	5.6	4.3	3.1	1.9	1.0	0.2	0.0	0.0	0.0	0.0
120.0	10.2	10.2	9.8	7.2	5.2	4.0	2.9	1.8	0.9	0.2	0.0	0.0	0.0	0.0
122.5	9.6	9.6	9.0	6.6	4.9	3.9	2.7	1.8	0.9	0.2	0.0	0.0	0.0	0.0
125.0	8.4	8.3	7.3	5.5	4.6	3.6	2.6	1.7	0.8	0.2	0.0	0.0	0.0	0.0
127.5	6.3	6.3	5.7	5.1	4.3	3.4	2.5	1.6	0.8	0.2	0.0	0.0	0.0	0.0
130.0	5.6	5.5	5.3	4.8	4.0	3.2	2.3	1.5	0.7	0.2	0.0	0.0	0.0	0.0
132.5	5.2	5.1	4.8	4.4	3.7	3.0	2.2	1.4	0.7	0.2	0.0	0.0	0.0	0.0
135.0	4.8	4.7	4.5	4.0	3.4	2.7	2.0	1.3	0.6	0.1	0.0	0.0	0.0	0.0
137.5	4.3	4.3	4.0	3.7	3.2	2.6	1.8	1.2	0.6	0.1	0.0	0.0	0.0	0.0
140.0	4.0	4.0	3.8	3.4	2.9	2.4	1.8	1.1	0.6	0.1	0.0	0.0	0.0	0.0
142.5	3.6	3.6	3.4	3.1	2.6	2.1	1.6	1.1	0.5	0.1	0.0	0.0	0.0	0.0
145.0	3.3	3.3	3.1	2.8	2.4	1.9	1.5	1.0	0.5	0.1	0.0	0.0	0.0	0.0
147.5	2.9	2.9	2.8	2.6	2.2	1.8	1.3	0.9	0.4	0.1	0.0	0.0	0.0	0.0
150.0	2.6	2.6	2.5	2.3	1.9	1.6	1.2	0.8	0.4	0.1	0.0	0.0	0.0	0.0
152.5	2.3	2.3	2.2	2.0	1.8	1.4	1.1	0.7	0.4	0.1	0.0	0.0	0.0	0.0
155.0	2.0	2.0	1.9	1.8	1.5	1.2	1.0	0.6	0.4	0.1	0.0	0.0	0.0	0.0
157.5	1.8	1.8	1.7	1.5	1.3	1.1	0.8	0.5	0.3	0.1	0.0	0.0	0.0	0.0



INDEPENDENT TESTING LABORATORIES, INC.
 4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

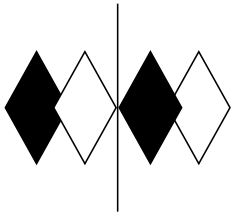
PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
 ISSUE DATE: 06/16/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 8

CANDELA DISTRIBUTION
 LATERAL ANGLE

	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0	112.5	135.0	157.5
160.0	1.5	1.5	1.4	1.3	1.1	1.0	0.7	0.5	0.3	0.1	0.0	0.0	0.0	0.0
162.5	1.2	1.2	1.2	1.1	1.0	0.8	0.6	0.4	0.2	0.0	0.0	0.0	0.0	0.0
165.0	1.1	1.0	1.0	0.9	0.8	0.6	0.5	0.4	0.2	0.0	0.0	0.0	0.0	0.0
167.5	0.9	0.8	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
170.0	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0
172.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0
175.0	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
177.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
ISSUE DATE: 06/16/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 8

CANDELA DISTRIBUTION
LATERAL ANGLE

	180.0
0.0	0.0
2.5	0.0
5.0	0.0
7.5	0.0
10.0	0.0
12.5	0.0
15.0	0.0
17.5	0.0
20.0	0.0
22.5	0.0
25.0	0.0
27.5	0.0
30.0	0.0
32.5	0.0
35.0	0.0
37.5	0.0
40.0	0.0
42.5	0.0
45.0	0.0
47.5	0.0
50.0	0.0
52.5	0.0
55.0	0.0
57.5	0.0
60.0	0.0
62.5	0.0
65.0	0.0
67.5	0.0
70.0	0.0
72.5	0.0
75.0	0.0
77.5	0.0
80.0	0.0
82.5	0.0
85.0	0.0
87.5	0.0
90.0	0.0
92.5	0.0
95.0	0.0
97.5	0.0
100.0	0.0
102.5	0.0
105.0	0.0
107.5	0.0
110.0	0.0
112.5	0.0
115.0	0.0
117.5	0.0
120.0	0.0
122.5	0.0
125.0	0.0
127.5	0.0
130.0	0.0
132.5	0.0
135.0	0.0
137.5	0.0
140.0	0.0
142.5	0.0
145.0	0.0
147.5	0.0
150.0	0.0
152.5	0.0
155.0	0.0
157.5	0.0



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
ISSUE DATE: 06/16/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8

CANDELA DISTRIBUTION
LATERAL ANGLE

	180.0
160.0	0.0
162.5	0.0
165.0	0.0
167.5	0.0
170.0	0.0
172.5	0.0
175.0	0.0
177.5	0.0
180.0	0.0



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY
ISSUE DATE: 06/16/16
PREPARED FOR: RAB LIGHTING INC.

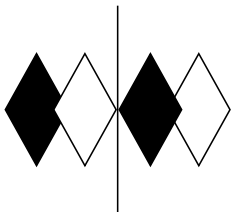
PAGE: 7 OF 8

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	0.0
5- 10	0.0
10- 15	0.0
15- 20	0.1
20- 25	1.5
25- 30	3.4
30- 35	4.6
35- 40	5.2
40- 45	5.4
45- 50	5.1
50- 55	3.8
55- 60	2.3
60- 65	1.5
65- 70	1.3
70- 75	1.4
75- 80	1.5
80- 85	1.5
85- 90	1.6
90- 95	1.7
95-100	1.6
100-105	1.6
105-110	1.4
110-115	1.3
115-120	1.2
120-125	1.0
125-130	0.7
130-135	0.6
135-140	0.4
140-145	0.3
145-150	0.2
150-155	0.2
155-160	0.1
160-165	0.1
165-170	0.0
170-175	0.0
175-180	0.0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	0.0
0- 20	0.1
0- 30	5.0
0- 40	14.8
0- 50	25.3
0- 60	31.3
0- 70	34.2
0- 80	37.0
0- 90	40.1
0-100	43.5
0-110	46.5
0-120	49.0
0-130	50.7
0-140	51.7
0-150	52.3
0-160	52.6
0-170	52.7
0-180	52.7



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

INDEPENDENT TESTING LABORATORIES, INC.
 4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87618-GONIOPHOTOMETRY

PAGE: 8 OF 8

ISSUE DATE: 06/16/16

PREPARED FOR: RAB LIGHTING INC.

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	113	113	113	113	113	108	108	108	108	98	98	98	89	89	89	80	80	80	76
1	102	96	92	87	87	96	92	87	84	83	80	77	75	72	70	68	66	64	60
2	92	83	76	70	70	87	79	73	67	72	67	62	65	61	57	59	55	53	49
3	83	73	64	57	57	79	69	61	55	63	56	51	57	52	47	51	47	44	40
4	76	64	55	48	48	72	61	52	46	55	48	43	50	44	40	45	41	37	34
5	69	56	47	40	40	65	53	45	39	49	41	36	44	38	34	40	35	31	28
6	63	50	40	34	34	60	47	39	33	43	36	31	39	33	28	35	30	26	24
7	58	44	35	29	29	55	42	34	28	38	31	26	35	29	24	32	27	23	20
8	53	39	31	25	25	50	38	30	24	34	27	22	31	25	21	28	23	19	17
9	49	36	27	21	21	47	34	26	21	31	24	19	28	22	18	26	21	17	15
10	46	32	24	19	19	43	31	23	18	28	21	17	26	20	16	23	18	15	13

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

NOTE: THE ZONAL CAVITY CALCULATION TECHNIQUE IS ACCURATE WHEN LUMINAIRES WITH SYMMETRIC CANDELA DISTRIBUTIONS ARE EMPLOYED AND WHEN THE LUMINAIRES ARE LOCATED SYMMETRICALLY THROUGHOUT THE ROOM. THIS UNIT HAS SPECIAL CHARACTERISTICS AND THEREFORE THESE COEFFICIENTS SHOULD BE USED WITH CAUTION.