

PHILIPS LIGHTOLIER

Downlighting

Calculite LED gen 3

6" round downlight,
1000-6000lm



Calculite LED 6" generation 3 features industry leading visual comfort, excellent uniform illumination over time, and patented installation flexibility.

Complete luminaire = Frame + Engine + Trim + Accessories (optional)

Project: _____

Location: _____

Cat.No: _____

Type: _____

Lamps: _____ Qty: _____

Notes: _____

Frame

example: C6RN

Series	Aperture	Installation	Voltage/Options
C6	R		
C6 Calculite LED 6" aperture	R Round	N New construction ¹ R Remodeler	— Universal 120V/277V (specify for Power Over Ethernet configurations) 3 347V (not compatible with ELV dimming) EM Emergency ^{1,2} LC Chicago Plenum ¹

Engine

example: C6L15835NZ10U

Series	Lumens	CRI	CCT	Beam	Dimming	Voltage
C6L						
C6L Calculite LED 6" aperture	10 1000lm 15 1500lm 20 2000lm 25 2500lm 35 3500lm 48 4800lm ³ 60 6000lm ³	8 80 CRI 9 90 CRI	27 2700K 30 3000K 35 3500K 40 4000K	N Narrow (40°) M Medium (55°) W Wide (72°)	Z10 0-10V 1% ³ SOL EldoLED Solo 0-10V 0.1% D Dali L Lutron LDE1 EcoSystem (fade-to-black) E ELV (120V dimming only) ⁴ P Power over Ethernet Only compatible with 1000 (10) to 2500 (25) lumen configurations.	U Universal 120/277/347V 1 Universal 120V/277V E Ethernet 48V DC

Trim

example: C6RDLCCP

Series	Aperture	Style	Finish	Flange
C6	R	DL		
C6 Calculite LED 6" aperture	R Round	DL Downlight	BK Black (matte) CL Specular clear WH White (matte) CC Comfort clear CD Comfort clear diffuse CZ Champagne bronze	— White (matte) P Polished F Flangeless — White (matte) F Flangeless

Accessories

CA6RFT	Mud-in ring for use with flangeless installations (ordered with a flangeless trim)
CAEM	Field installable EM pack
C6RVPWH	IP65 rated vandal proof matte white accessory that mounts onto a flangeless trim
AMS	ActiLume multi-sensor (optional accessory for Power Over Ethernet configurations)
SWZDT	SpaceWise wireless controller with dwell time functionality, compatible with all 0-10V configurations (for details see "SWZDT" spec sheet)

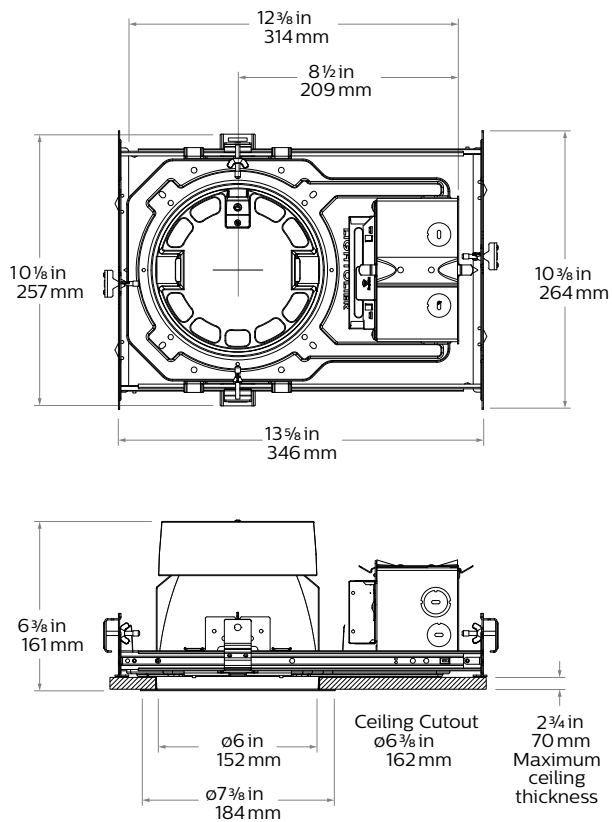
- Emergency (EM) and Chicago Plenum (LC) options are only available with New construction (N) installations.
- Emergency (EM) frame comes with emergency battery pack and ceiling mountable test switch. Reflector mounted test switch requires above ceiling access. For reflector mounted test switch, order emergency frame and add "EM" suffix to reflector (example: C6RDLCCEM).
- The 4800lm (48) and 6000lm (60) packages are only available with 0-10V (Z10) dimming and have marked spacing requirements (see page 3).
- ELV (E) dimming is only compatible with up to 2500lm (25) configurations.



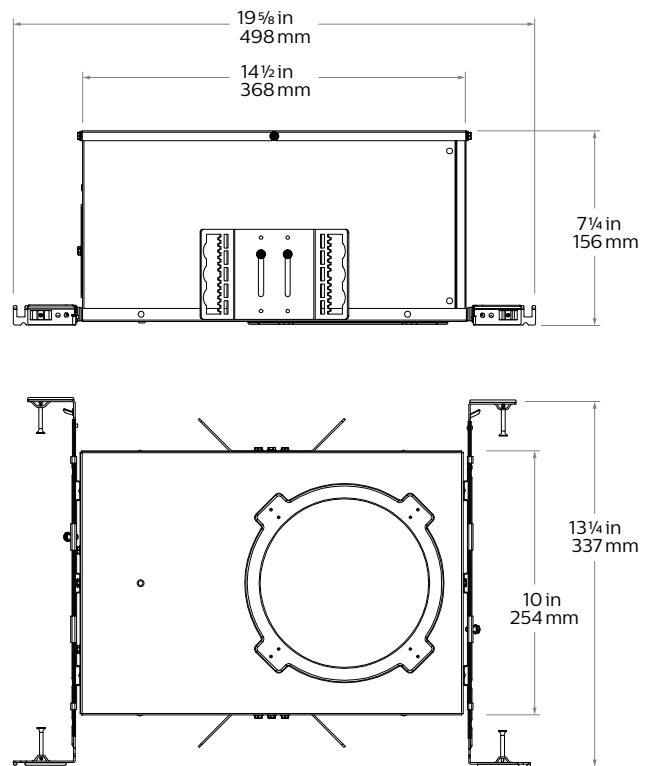
C6RDL Calculite LED generation 3

6" round downlight

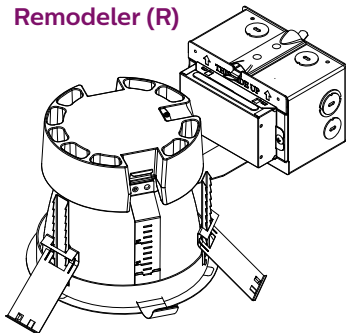
New Construction (N)



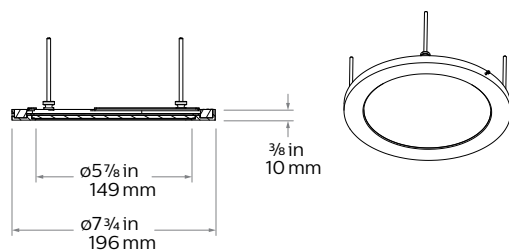
Chicago Plenum (LC)



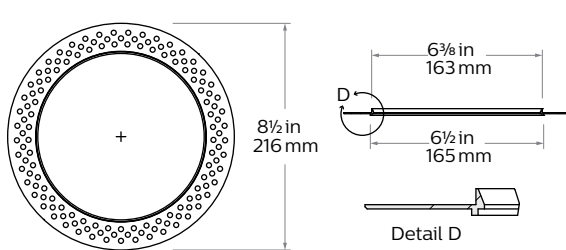
Remodeler (R)



Vandal Proof (VP) accessory

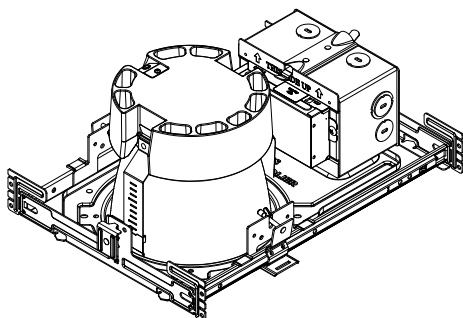


Flangeless mud-in ring (CA6RFT) accessory



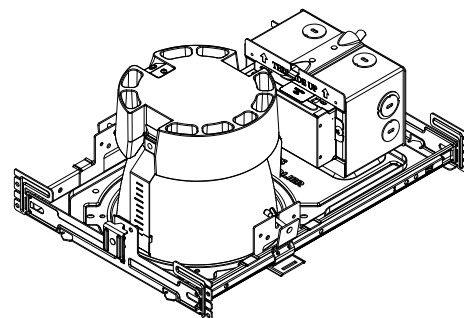
C6RDL Calculite LED generation 3

6" round downlight



Narrow

Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
C6L10_NZ10U	120V	50/60Hz	0.08	230 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
C6L15_NZ10U	120V	50/60Hz	0.11	340 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
C6L20_NZ10U	120V	50/60Hz	0.16	460 mA	22W	16W	<10%	>0.95
	277V		0.08				<15%	>0.95
C6L25_NZ10U	120V	50/60Hz	0.20	590 mA	25W	21W	<10%	>0.95
	277V		0.10				<15%	>0.95
C6L35_NZ10U	120V	50/60Hz	0.30	900 mA	36W	30W	<10%	>0.95
	277V		0.14				<15%	>0.95
C6L48_NZ10U	120V	50/60Hz	0.42	1250 mA	51W	44W	<10%	>0.95
	277V		0.19				<15%	>0.95
C6L60_NZ10U	120V	50/60Hz	0.48	1400 mA	57W	50W	<10%	>0.95
	277V		0.21				<15%	>0.95



Medium/Wide

Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
C6L10_MZ10U	120V	50/60Hz	0.08	210 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
C6L15_MZ10U	120V	50/60Hz	0.11	320 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
C6L20_MZ10U	120V	50/60Hz	0.15	430 mA	19W	15W	<10%	>0.95
	277V		0.07				<15%	>0.95
C6L25_MZ10U	120V	50/60Hz	0.19	550 mA	23W	19W	<10%	>0.95
	277V		0.09				<15%	>0.95
C6L35_MZ10U	120V	50/60Hz	0.25	570 mA	30W	25W	<10%	>0.95
	277V		0.11				<15%	>0.95
C6L48_MZ10U	120V	50/60Hz	0.36	810 mA	40W	34W	<10%	>0.95
	277V		0.16				<15%	>0.95
C6L60_MZ10U	120V	50/60Hz	0.50	1130 mA	57W	50W	<10%	>0.95
	277V		0.22				<15%	>0.95

Narrow (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C6L10___NPE	53V	51-54V	DC	160 mA	8.9 W
C6L15___NPE	53V	51-54V	DC	250 mA	13.7 W
C6L20___NPE	53V	51-54V	DC	330 mA	17.7 W
C6L25___NPE	53V	51-54V	DC	420 mA	22.8 W

Medium (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C6L10___MPE	53V	51-54V	DC	160 mA	8.4 W
C6L15___MPE	53V	51-54V	DC	230 mA	12.5 W
C6L20___MPE	53V	51-54V	DC	310 mA	16.7 W
C6L25___MPE	53V	51-54V	DC	390 mA	21.4 W

Wide (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C6L10___WPE	53V	51-54V	DC	160 mA	8.4 W
C6L15___WPE	53V	51-54V	DC	230 mA	12.5 W
C6L20___WPE	53V	51-54V	DC	310 mA	16.7 W
C6L25___WPE	53V	51-54V	DC	390 mA	21.4 W

1. Nominal input volts.
2. Preferred volt range.

Marked spacing applications

Light engine	4800lm	6000lm
C6L_Z10U series	X	X
C6L_LU series	—	—
C6L_DU series	—	—

Modules marked with an X require marked spacing:
 - Center-to-center of adjacent luminaires: 24" (610mm)
 - Luminaire center to side building member: 12" (305mm)

Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam*
1000lm 1500lm 2000lm 2500lm 3500lm* 4800lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.
6000lm	L90 @ 60,000hrs.	L80 @ 60,000hrs.

* Lutron 3500lm with Medium/Wide beam is L85 @ 60,000hrs.

C6RDL Calculite LED generation 3

6" round downlight

Frame-in-kits

New Construction

Galvanized stamped steel for dry or plaster ceilings. Preinstalled telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

Max ceiling thickness is 2-3/4"

Patented install Mounting frame

With no driver attached, this versatile frame is independent of driver accommodating a wide range of lumen packages, driver types and CCTs, including 120V and 277V inputs.

Pre-installed mounting bars allow for fast and tool-less installation into T-grid and hat channel ceilings.

Close-cut aperture design eliminates the possibility of undesired gap between ceiling opening and reflector flange.

Separate wiring compartment for wiring frame to building allows inspection prior to light engine installation.

Simple plug-and-play connection between the frame and light engine from below the ceiling eliminates the need for wiring between frame and LED driver, and also saves time during installation and future replacements/upgrades. Plug-and-play receptacle accommodates technology upgrade of light engines and replacements for the life of the building.

Drivers

- Advance 0-10V 1% dimming
- Lutron Hi-lume EcoSystem H Series 1% dimming
- EldoLED ECOdrive Dali 1% dimming
- EldoLED SOLOdrive 0-10V 0.1% dimming
- ELV dimming

Power over Ethernet

Powered via Philips PoE lighting controller: complies with FCC rules per Title 47 part 15 (Class A) for EMI / RFI (conducted & radiated). PoE lighting controller accessible from below ceiling.

Rated life: 60,000 hrs at 70% lumen maintenance based on IES LM-80-08 and TM-21-11.

Optical systems

Comfort throughout the space:

Patented optical system combines primary and secondary optics to provide a true 50° physical cutoff and 45° reflected cutoff virtually eliminating the view of the light source and bright spots in the reflector. A new reflector curve reduces reflector brightness by up to 50% compared to existing products, allowing for the use of higher lumen packages in smaller apertures without creating bright spots in the ceiling.

Quality of light: 2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime. Proprietary optical grade silicone lens with patterned surface provides soft, even beam diffusion without hotspots or dark rings.

Light Engine

Quick connect power pack comprised of light source and driver allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- Ease and upgradability of technology.

Options and Accessories

Flangeless mud-in ring: Use **CA6RFT** for use with flangeless plaster installations..

Sloped ceilings: Compatible with sloped ceiling adapters (see **SCA** spec sheet).

Vandal Proof: Use **C6RVPWH** for an IP65 rated vandal proof matte white accessory. Must be ordered with a flangeless trim.

ENERGY STAR® exceptions

90 CRI configurations

Champagne Bronze and Black finishes

347V and Emergency configurations

Dali & EldoLED Solo dimming

Power over Ethernet driver

Labels and Listings

cULus listed for wet location

ENERGY STAR®

CCEA (frames with *LC suffix)

IP65 rated with vandal proof accessory

IBEW Union made (light engines & reflectors)

RoHS compliant

Warranty

5 year warranty on complete system.

Complete warranty available at: http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODLI20150930_003-UPD-en_US-Philips-warranty-indoor-PLS-us.pdf

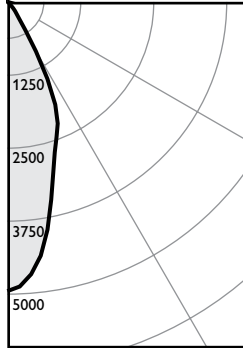


C6RDL Calculite LED generation 3

6" round downlight

Narrow beam, 2500lm Engine, 103.0 lm/W or 108.0 lm/W at 22.8W (Power over Ethernet)

Candela Curve



Frame: **C6RN**
Engine: **C6L25835NZ10U**
Trim: **C6RDLCL**

Output lumens: 2462 lms
Input watts: 23.9 W
CRI: 80 min
CCT¹: 3500K
Spacing Crit.: 0.6
Beam Angle: 40°

Zonal summary

Zone	Lumens	%Luminaire
0-30	2113	85.8%
0-40	2383	96.8%
0-60	2459	99.9%
0-90	2462	100.0%

Angle	Mean CP	Lumens
0	4938	423
5	4667	
10	3948	
15	3027	
20	2456	
25	1936	834
30	977	
35	352	
40	205	270
45	87	
50	13	72
55	4	
60	3	
65	2	2
70	1	
75	1	1
80	0	
85	1	0
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	198	3.0'
6'	137	3.6'
7'	101	4.2'
8'	77	4.8'
9'	61	5.4'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	114.3	1.06
6'	75.0	0.70
7'	53.6	0.50
8'	44.7	0.41
9'	35.7	0.33

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 103.0 lm/w
Report#: F37145

Adjustment factors

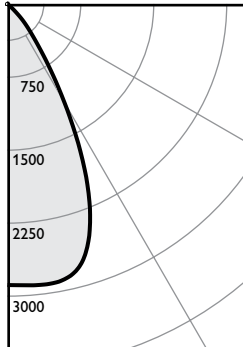
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 103%	6000lm = 202%
CC = 95%	80CRI 3500K = 100%	4800lm = 192%
CD = 87%	80CRI 3000K = 95%	3500lm = 140%
CZ = 63%	80CRI 2700K = 93%	2500lm = 100%
WH = 87%	90CRI 3000K = 83%	2000lm = 80%
BK = 57%	90CRI 2700K = 78%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Ceiling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	100	106	106	100	100
	1	114	112	109	107	110	106	105	102	102	99	95	95	102	99	95	95
	2	109	105	101	98	103	97	100	95	97	93	90	90	97	93	90	90
	3	105	99	95	91	98	90	95	89	93	88	85	85	93	88	85	85
	4	100	94	89	85	93	85	90	84	88	83	80	80	88	83	80	80
	5	96	89	84	80	88	79	86	79	84	78	76	76	84	78	76	76
	6	92	84	79	75	83	75	82	74	81	74	72	72	81	74	72	72
	7	88	80	75	71	79	71	78	71	77	70	69	69	77	70	69	69
	8	85	76	71	67	76	67	75	67	74	67	65	65	74	67	65	65
	9	81	73	68	64	72	64	72	64	71	64	62	62	71	64	62	62
	10	78	70	65	61	69	61	68	61	68	61	59	59	68	61	59	59

Medium beam, 2500lm Engine, 115.2 lm/W or 114.7 lm/W at 21.4W (Power over Ethernet)

Candela Curve



Frame: **C6RN**
Engine: **C6L25835MZ10U**
Trim: **C6RDLCL**

Output lumens: 2454 lms
Input watts: 21.3 W
CRI: 80 min
CCT¹: 3500K
Spacing Crit.: 0.8
Beam Angle: 55°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1896	77.2%
0-40	2319	94.5%
0-60	2450	99.8%
0-90	2454	100.0%

Angle	Mean CP	Lumens
0	2886	277
5	2900	
10	2903	
15	2809	
20	2472	
25	1880	842
30	1178	
35	644	
40	347	423
45	153	
50	23	124
55	6	
60	4	
65	3	3
70	2	
75	1	1
80	1	
85	1	0
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	115	4.0'
6'	80	4.8'
7'	59	5.6'
8'	45	6.4'
9'	36	7.2'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	112.7	0.94
6'	74.0	0.62
7'	52.8	0.44
8'	44.0	0.37
9'	35.2	0.30

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 115.2 lm/w
Report#: F37135

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	6000lm = 240%
CC = 95%	80CRI 3500K = 100%	4800lm = 192%
CD = 87%	80CRI 3000K = 97%	3500lm = 140%
CZ = 63%	80CRI 2700K = 87%	2500lm = 100%
WH = 87%	90CRI 3000K = 77%	2000lm = 80%
BK = 57%	90CRI 2700K = 73%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Ceiling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	100	106	106	100	100
	1	114	111	109	107	109	105	105	102	101	99	94	94	101	99	94	94
	2	108	104	100	97	102	96	99	94	96	92	88	88	96	92	88	88
	3	103	97	92	89	96	88	93	87	91	85	82	82	91	85	82	82
	4	98	91	86	82	90	81	88	80	86	79	77	77	86	79	77	77
	5	94	86	80	76	85	76	83	75	81	74	72	72	81	74	72	72
	6	89	81	75	71	80	71	78	70	77	70	68	68	77	70	68	68
	7	85	76	70	66	76	66	74	66	73	66	64	64	73	66	64	64
	8	81	72	66	62	71	62	70	62	69	62	60	60	69	62	60	60
	9	77	68	63	59	68	59	67	58	66	58	57	57	66	58	57	57
	10	74	65	59	55	64	55	63	55	63	55	54	54	63	55	54	54

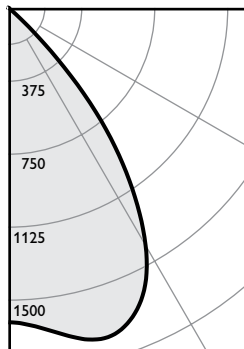
1. Correlated Color Temperature within specs as defined in ANSI_NEMA_ANSI C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

C6RDL Calculite LED generation 3

6" round downlight

Wide beam, 2500lm Engine, 108.3 lm/W or 107.8 lm/W at 21.4W (Power over Ethernet)

Candela Curve



Frame: **C6RN**
Engine: **C6L25835WZ10U**
Trim: **C6RDLCL**

Output lumens: 2307 lms
Input watts: 21.3 W
CRI: 80 min
CCT¹: 3500K
Spacing Crit.: 1.1
Beam Angle: 72°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1394	60.4%
0-40	2059	89.2%
0-60	2302	99.8%
0-90	2307	100.0%

Angle	Mean CP	Lumens
0	1612	
5	1641	159
10	1705	
15	1760	495
20	1740	
25	1629	740
30	1408	
35	1083	665
40	700	
45	270	232
50	39	
55	9	12
60	5	
65	3	3
70	2	
75	1	1
80	1	
85	1	1
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	64	5.5'
6'	45	6.6'
7'	33	7.7'
8'	25	8.8'
9'	20	9.9'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	104.1	0.94
6'	68.3	0.62
7'	48.8	0.44
8'	40.7	0.37
9'	32.5	0.30

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 108.3 lm/w
Report#: F37140

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	6000lm = 240%
CC = 95%	80CRI 3500K = 100%	4800lm = 192%
CD = 87%	80CRI 3000K = 97%	3500lm = 140%
CZ = 63%	80CRI 2700K = 87%	2500lm = 100%
WH = 87%	90CRI 3000K = 77%	2000lm = 80%
BK = 57%	90CRI 2700K = 73%	1500lm = 60%
		1000lm = 40%

Coefficients of utilization

Celling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	106	106	100	97	93
1	113	110	108	105	108	104	104	104	100	100	97	91	94	89	85	85	85
2	107	102	98	94	100	93	93	97	91	94	89	85	88	81	79	79	79
3	101	94	89	85	93	84	84	90	83	88	81	79	82	75	72	72	72
4	95	87	81	77	86	76	76	84	76	82	75	72	77	69	66	66	66
5	90	81	75	70	80	70	70	78	69	77	69	66	72	63	61	61	61
6	85	75	69	64	75	64	64	73	64	72	63	61	67	58	57	57	57
7	80	70	64	59	70	59	59	68	59	67	58	57	63	54	52	52	52
8	76	66	59	55	65	55	55	64	54	63	54	52	59	50	49	49	49
9	72	61	55	51	61	51	51	60	50	59	50	49	55	47	45	45	45
10	68	57	51	47	57	47	47	56	47	55	47	45					

1. Correlated Color Temperature within specs as defined in ANSI_NEMA_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

