

# PHILIPS LIGHTOLIER

## Downlighting

### Calculite LED gen 3 4" round downlight

500 – 3000lm



Project: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Cat.No: \_\_\_\_\_  
 Type: \_\_\_\_\_  
 Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_  
 Notes: \_\_\_\_\_

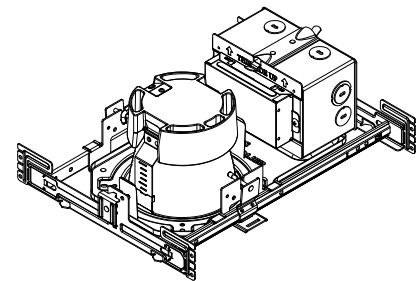
Calculite LED 4" generation 3 features industry leading visual comfort, excellent uniform illumination over time, and patented installation flexibility.

Complete product = Frame + Engine + Trim

#### Frame

example: C4RN

Series	Aperture	Installation	Voltage/Options
<b>C4</b>	<b>R</b>		
<b>C4</b> Calculite LED 4" aperture	<b>R</b> Round	<b>N</b> New construction <b>R</b> Remodeler	— Universal (120/277V) <b>3</b> 347V <sup>1</sup> <b>EM</b> Emergency <sup>2,3</sup> <b>LC</b> Chicago Plenum <sup>2</sup>



#### Engine

example: C4L15835NZ10U

Series	Lumens	CRI	CCT	Beam	Dimming	Voltage
<b>C4L</b>						
<b>C4L</b> Calculite LED 4" aperture	<b>05</b> 500lm <sup>4</sup> <b>10</b> 1000lm <b>15</b> 1500lm <b>20</b> 2000lm <sup>5</sup> <b>25</b> 2500lm <sup>5</sup> <b>30</b> 3000lm <sup>5</sup>	<b>8</b> 80CRI <b>9</b> 90CRI <sup>6</sup>	<b>27</b> 2700K <sup>6</sup> <b>30</b> 3000K <sup>6</sup> <b>35</b> 3500K <b>40</b> 4000K	<b>N</b> Narrow (43°) <b>M</b> Medium (56°) <b>W</b> Wide (76°)	<b>Z10</b> 0-10V 1% <b>SOL</b> EldoLED Solo 0.1% <b>D</b> Dali <b>L</b> Lutron LDE1 EcoSystem fade-to-black <b>E</b> ELV <sup>7</sup> (120V dimming only)	<b>U</b> Universal (120/277/347V) <b>1</b> Universal (120/277V)

#### Trim

example: C4RDLCCP

Series	Aperture	Style	Finish	Flange
<b>C4</b>	<b>R</b>	<b>DL</b>		
<b>C4</b> Calculite LED 4" aperture	<b>R</b> Round	<b>DL</b> Downlight	<b>CL</b> Specular clear <b>CC</b> Comfort clear <b>CD</b> Comfort clear diffuse <b>CZ</b> Champagne bronze <b>BK</b> Black (matte) <b>WH</b> White (matte)	— White (matte) <b>P</b> Polished <b>F</b> Flangeless — White (matte) <b>F</b> Flangeless

#### Accessories (ordered with a flangeless trim)

<b>CA4RFT</b>	Mud-in ring for use with flangeless installations.
<b>CAEM</b>	Field installable EM pack.
<b>C4RVPWH</b>	IP65 rated vandal proof matte white accessory that mounts onto a flangeless trim.

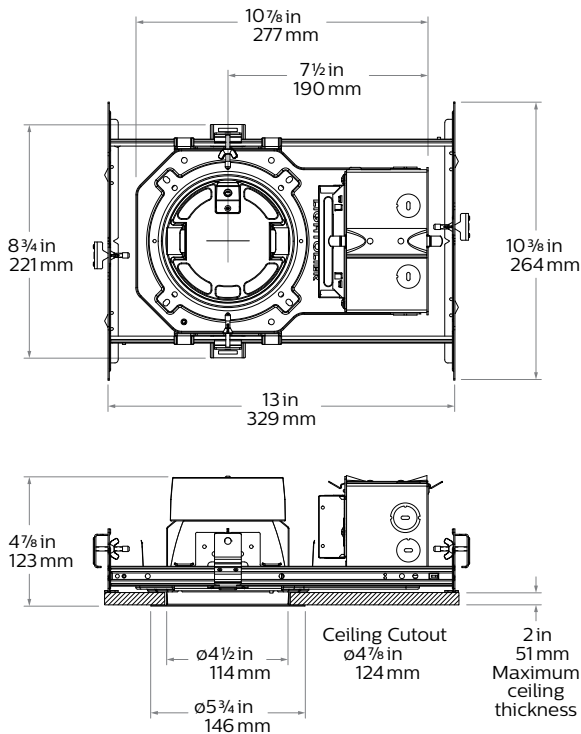
- The 374V is not compatible with ELV dimming.
- Emergency (EM) and Chicago Plenum (LC) options are only available with New construction (N) installations.
- Emergency (EM) frame comes with emergency battery pack and ceiling mountable test switch. Reflector mounted test switch requires above ceiling access. For reflector mounted test switch, order emergency frame and add "EM" suffix to reflector (example: C4RDLCCEM).
- The 500lm (05) option is only compatible with 0-10V (Z10) dimming.
- The 2000, 2500, and 3000 lumen packages have marked spacing requirements (see page 2 for the spacing requirements).
- The 90 (9) CRI option is only available with 2700K (27) and 3000K (30) CCT.
- ELV dimming is only compatible with up to 2000lm.



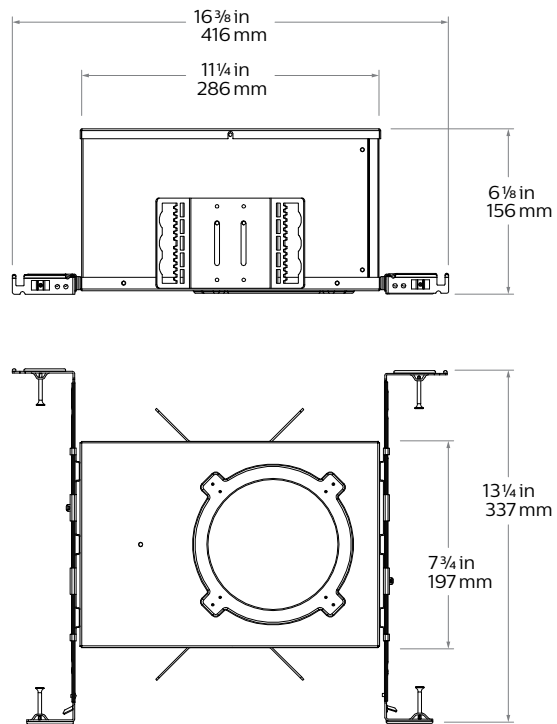
# C4RDL Calculite LED generation 3

## 4" round downlight

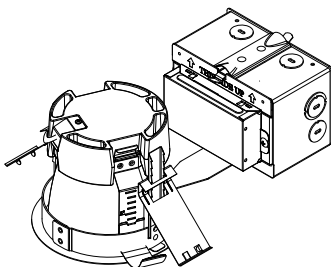
### New Construction (N)



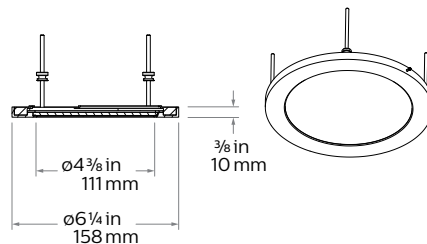
### Chicago Plenum (LC)



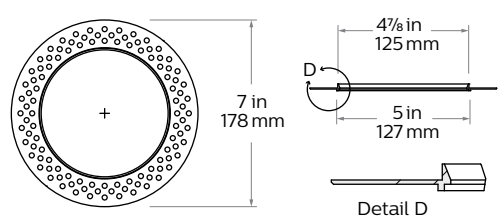
### Remodeler (R)



### Vandal Proof accessory (VP)



### Flangeless mud-in ring (CA4RFT)



### Marked spacing applications

Light engine	2500 lm	3000 lm
C4L_Z10U series	—	X
C4L_LU series	X	X
C4L_DU series	—	X

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*
500lm		
1000lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.
1500lm		
2000lm		
2500lm	L90 @ 60,000hrs.	L85 @ 60,000hrs.
3000lm*		

\* Lutron 3000lm with Medium/Wide beam is L80 @ 60,000hrs.

# C4RDL Calculite LED generation 3

## 4" 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".**

#### 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

### 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 **CA4RFT** for use with flangeless installations.

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

**Vandal Proof:** Use **C4RVPWH** for an IP65 rated vandal proof matte white accessory. Must be ordered with a flangeless trim.

### ENERGY STAR® exceptions

1. Dali configurations
2. 500lm configurations
3. 90 CRI configurations
4. Champagne Bronze and Black finishes
5. 347V and Emergency configurations
6. ELV and EldoLED Solo dimming

### 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/ODL20150930\\_003-UPD-en\\_US-Philips-warranty-indoor-PLS-us.pdf](http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODL20150930_003-UPD-en_US-Philips-warranty-indoor-PLS-us.pdf)

### Narrow

Light engine	Input volts	Input freq	Input current	Drive current	Input power	THD power	Power factor
C4L05_NZ10U	120V	50/60Hz	0.05	110 mA	6W	<20%	>0.95
	277V		0.03			<20%	>0.90
C4L10_NZ10U	120V	50/60Hz	0.08	230 mA	11W	<15%	>0.95
	277V		0.04			<20%	>0.95
C4L15_NZ10U	120V	50/60Hz	0.12	360 mA	16W	<10%	>0.95
	277V		0.06			<15%	>0.95
C4L20_NZ10U	120V	50/60Hz	0.17	490 mA	21W	<10%	>0.95
	277V		0.08			<15%	>0.95
C4L25_NZ10U	120V	50/60Hz	0.22	640 mA	27W	<10%	>0.95
	277V		0.10			<15%	>0.95
C4L30_NZ10U	120V	50/60Hz	0.27	790 mA	33W	<10%	>0.95
	277V		0.13			<15%	>0.95

### Medium/Wide

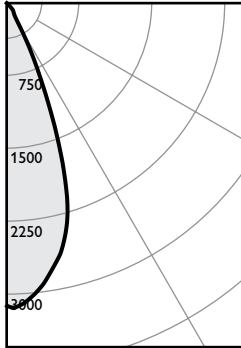
Light engine	Input volts	Input freq	Input current	Drive current	Input power	THD power	Power factor
C4L05_MZ10U	120V	50/60Hz	0.05	110 mA	6W	<20%	>0.95
	277V		0.03			<20%	>0.90
C4L10_MZ10U	120V	50/60Hz	0.08	230 mA	11W	<15%	>0.95
	277V		0.04			<20%	>0.95
C4L15_MZ10U	120V	50/60Hz	0.12	350 mA	16W	<10%	>0.95
	277V		0.06			<15%	>0.95
C4L20_MZ10U	120V	50/60Hz	0.16	470 mA	21W	<10%	>0.95
	277V		0.08			<15%	>0.95
C4L25_MZ10U	120V	50/60Hz	0.21	610 mA	25W	<10%	>0.95
	277V		0.09			<15%	>0.95
C4L30_MZ10U	120V	50/60Hz	0.26	770 mA	31W	<10%	>0.95
	277V		0.12			<15%	>0.95

# C4RDL Calculite LED generation 3

## 4" round downlight

### Narrow beam, 1500lm Engine, 103.8 lm/W

#### Candela Curve



Frame: **C4RN**  
 Engine: **C4L15835NZ10U**  
 Trim: **C4RDLCL**

Output lumens: 1526 lms  
 Input watts: 14.7 W  
 CRI: 80 min  
 CCT<sup>1</sup>: 3500K  
 Spacing Crit.: 0.6  
 Beam Angle: 43°

#### Zonal summary

Zone	Lumens	%Luminaire
0-30	1354	88.7%
0-40	1469	96.3%
0-60	1526	100.0%
0-90	1526	100.0%

Angle	Mean CP	Lumens
0	3112	
5	3044	282
10	2785	
15	2410	652
20	1672	
25	837	420
30	324	
35	163	115
40	128	
45	77	57
50	0	
55	0	0
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	124	3.0'
6'	86	3.6'
7'	64	4.2'
8'	49	4.8'
9'	38	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'	71.3	0.65
6'	46.8	0.43
7'	33.4	0.31
8'	27.8	0.25
9'	22.3	0.20

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

**Efficacy: 103.8 lm/w**  
 Report#: T20161390

#### Adjustment factors

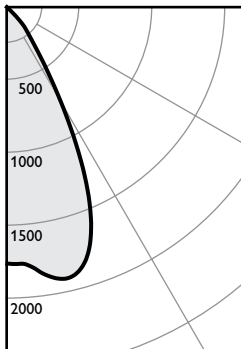
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 107%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 99%	2000lm = 133%
CZ = 63%	80CRI 2700K = 93%	1500lm = 100%
WH = 87%	90CRI 3000K = 87%	1000lm = 67%
BK = 57%	90CRI 2700K = 81%	500lm = 33%

#### Coefficients of utilization

Ceiling	80%					70%					50%					30%					0%				
	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	0		
Wall	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	106	106	100	106	106	100	95			
1	114	112	110	108	110	106	106	103	103	102	100	98	98	94	91	91	88	81	88	81	86	80	78		
2	110	106	102	99	104	98	98	96	90	94	88	81	88	81	79	73	71	73	71	73	71	71			
3	105	100	96	92	99	92	96	90	84	86	85	80	84	82	82	82	82	82	82	82	82	82			
4	101	95	90	87	94	86	92	85	80	85	80	84	82	82	82	82	82	82	82	82	82	82			
5	97	90	85	82	89	81	88	81	88	81	86	80	84	82	82	82	82	82	82	82	82	82			
6	93	86	81	77	85	77	84	77	83	76	74	74	74	74	74	74	74	74	74	74	74	74			
7	90	82	77	74	81	73	80	73	79	73	71	71	71	71	71	71	71	71	71	71	71	71			
8	86	79	74	70	78	70	77	70	76	69	68	68	68	68	68	68	68	68	68	68	68	68			
9	83	75	70	67	75	67	74	67	73	66	65	65	65	65	65	65	65	65	65	65	65	65			
10	80	72	67	64	72	64	71	64	70	64	62	62	62	62	62	62	62	62	62	62	62	62			

### Medium beam, 1500lm Engine, 114.6 lm/W

#### Candela Curve



Frame: **C4RN**  
 Engine: **C4L15835MZ10U**  
 Trim: **C4RDLCL**

Output lumens: 1627 lms  
 Input watts: 14.2 W  
 CRI: 80 min  
 CCT<sup>1</sup>: 3500K  
 Spacing Crit.: 0.9  
 Beam Angle: 56°

#### Zonal summary

Zone	Lumens	%Luminaire
0-30	1269	78.0%
0-40	1537	94.5%
0-60	1627	100.0%
0-90	1627	100.0%

Angle	Mean CP	Lumens
0	1760	
5	1783	174
10	1886	
15	1887	524
20	1702	
25	1283	572
30	762	
35	406	268
40	236	
45	116	89
50	14	
55	0	1
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	70	4.5'
6'	49	5.4'
7'	36	6.3'
8'	28	7.2'
9'	22	8.1'

\* 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'	74.8	0.63
6'	49.1	0.41
7'	35.0	0.30
8'	29.2	0.25
9'	23.4	0.20

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

**Efficacy: 114.6 lm/w**  
 Report#: T20161397

#### Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 97%	2000lm = 133%
CZ = 63%	80CRI 2700K = 87%	1500lm = 100%
WH = 87%	90CRI 3000K = 77%	1000lm = 67%
BK = 57%	90CRI 2700K = 73%	500lm = 33%

#### Coefficients of utilization

Ceiling	80%					70%					50%					30%					0%				
	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	0		
Wall	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	106	106	100	106	106	100	94			
1	108	104	100	97	102	96	99	94	96	92	88	96	92	88	88	88	88	88	88	88	88	88			
2	103	97	93	89	96	88	93	87	91	85	82	91	85	82	82	82	82	82	82	82	82	82			
3	98	91	86	82	90	81	88	81	86	80	77	86	80	77	77	77	77	77	77	77	77	77			
4	94	86	80	76	85	76	83	75	81	74	72	81	74	72	72	72	72	72	72	72	72	72			
5	89	81	75	71	80	71	79	70	77	70	68	77	70	68	68	68	68	68	68	68	68	68			
6	85	76	70	66	76	66	74	66	73	66	64	73	66	64	64	64	64	64	64	64	64	64			
7	81	72	66	62	71	62	70	62	69	62	60	69	62	60	60	60	60	60	60	60	60	60			
8	77	68	63	59	68	59	67	58	66	58	57	66	58	57	57	57	57	57	57	57	57	57			
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10																									

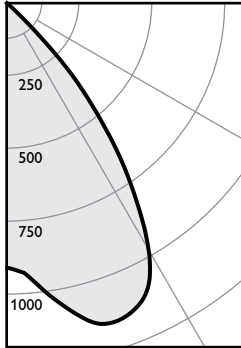
1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.  
 2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State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

# C4RDL Calculite LED generation 3

## 4" round downlight

### Wide beam, 1500lm Engine, 106.6 lm/W

Candela Curve



Frame: **C4RN**  
 Engine: **C4L15835WZ10U**  
 Trim: **C4RDLCL**

Output lumens: 1517 lms  
 Input watts: 14.2 W  
 CRI: 80 min  
 CCT<sup>1</sup>: 3500K  
 Spacing Crit.: 1.2  
 Beam Angle: 76°

#### Zonal summary

Zone	Lumens	%Luminaire
0-30	918	60.5%
0-40	1368	90.2%
0-60	1517	100.0%
0-90	1517	100.0%

Angle	Mean CP	Lumens
0	906	
5	945	93
10	1040	
15	1128	318
20	1153	
25	1114	506
30	978	
35	732	450
40	460	
45	175	148
50	18	
55	0	2
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

#### Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	36	6.0'
6'	25	7.2'
7'	18	8.4'
8'	14	9.6'
9'	11	10.8'

\* 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'	68.5	0.63
6'	45.0	0.41
7'	32.1	0.30
8'	26.8	0.25
9'	21.4	0.20

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

**Efficacy: 106.6 lm/w**  
 Report#: T20161406

#### Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 97%	2000lm = 133%
CZ = 63%	80CRI 2700K = 87%	1500lm = 100%
WH = 87%	90CRI 3000K = 77%	1000lm = 67%
BK = 57%	90CRI 2700K = 73%	500lm = 33%

#### Coefficients of utilization

Ceiling	80%					70%		50%		30%		0%
	70	50	30	10	50	10	50	10	50	10	0	
Wall	70	50	30	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
1	113	110	108	105	108	104	104	100	100	97	97	93
2	107	102	98	94	100	93	97	91	94	89	86	86
3	101	94	89	85	93	84	90	83	88	81	79	79
4	96	87	82	77	86	77	84	76	82	75	72	72
5	90	81	75	70	80	70	78	69	77	69	66	66
6	85	75	69	64	75	64	73	64	72	63	61	61
7	80	70	64	59	69	59	68	59	67	58	56	56
8	76	65	59	55	65	54	64	54	63	54	52	52
9	72	61	55	50	61	50	60	50	59	50	48	48
10	68	57	51	47	57	47	56	47	55	46	45	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.

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