

CR2 LONG

2" CYLINDER

Spectrum's 2" cylinder available in 6 standard lengths (8", 12", 18", 35", 48"). Can be specified as Pendant, Surface or Wall Mount. Mix and match for unique specifications and creating chandelier effects. BLANK (no led) option.



LUMENS AND WATTAGE CHART				
PART NUMBER	LUMENS	DELIVERED LUMENS	SYSTEM WATTS	LPW
CR2	05	759	7	108
CR2	10	1211	12.5	97
CR2	15	1842	19.5	94
CR2	20	2338	27	87

All Values Based on 3500K, 80CRI, FL Optic, BS Standard Bezel

PRODUCT SELECTOR GUIDE

SERIES	CRI / CCT	LUMENS ²	VOLTAGE	DIMMING	MOUNTING	FINISH	EM OPTIONS	MTG OPTIONS	SERIES	OPTICS	SERIES	BEZEL TYPE	BEZEL FINISH	SERIES	OPTICAL EFFECT
CR2									RD2		RB2			RA2	
EXAMPLE															
CR2	835	10	X	D5	CD36	TB			RD2	FL	RB2	BK	TB	RA2	LS

SERIES	CRI / CCT	LUMENS ²	VOLTAGE / DIMMING	MOUNTING	BODY FINISH	EM OPTIONS	MOUNTING OPTIONS
CR212 CR218 CR224 CR236 CR248	80 CRI 822 - 2200K 827 - 2700K 830 - 3000K 835 - 3500K 840 - 4000K 90 CRI 927 - 2700K 930 - 3000K 935 - 3500K 940 - 4000K DIM TO WARM ¹ 9DW - 30-16K Dim to Warm 11000 Lm Only For 9DW	05 - 750 Lm 10 - 1200 Lm 15 - 1830 Lm 20 ² - 2320 Lm 2 Nominal Delivered Lumens 3.20 Requires RRM, SRM, Or CK Mounting Option	X - Universal 3 ⁴ - 347V 4 347V Requires RRM, SRM, Or CK Mounting Option. 347V Not Available With 05, 347V Requires D5 Dimming 5 Lutron and Eldorado Require RRM, SRM or CK Mounting Option	D5 - 1%, 0-10V, ELV, & TRIAC L2 ⁵ - .1% Lutron Hi-lume EcoSystem A2 ⁶ - .1%, eldoLED [Remote Mount] 6 WM Not Available With EM, ADA Requires 15 Max. With D5 Dimming, Universal Voltage. All Other Options Will Be Supplied in Remote Wall Surface Canopy	CD_ - Cord & Cable Mount 36" 72" 144" CM_ - Cord Only 60" 120" HM_ - Hang Straight Stem PM_ - Rigid Stem 24" 36" 72" SM - Surface Mount WM ⁶ - Wall Mount 6 WM Not Available With EM, ADA Requires 15 Max. With D5 Dimming, Universal Voltage. All Other Options Will Be Supplied in Remote Wall Surface Canopy	TW - Textured White TB - Textured Black MT - Textured Silver BZ - Textured Bronze CC - Custom Color EM ⁷ - Emergency Battery Pack 7 EM Requires RRM or SRM Mounting Option. EM Not Available With Wall Mount. EM Not Available With 347V. EM Not Available With Conduit Feed Canopy	RRM ^{8,9} - Recessed Remote Driver Box SRM ⁸ - Surface Remote Driver Box CK1 ¹⁰ - 1x Conduit Feed CK2 ¹⁰ - 2x Conduit Feed, Straight CK3 ¹⁰ - 2x Conduit Feed, 90° Corner CK4 ¹⁰ - 3x Conduit Feed, T Pattern CK5 ¹⁰ - 4x Conduit Feed, X Pattern 8 RRM not available with WM 9 RRM & SRM for Use With 20, 30S, XL2, XA2, and EM Options Only 10 Conduit Feeds Not Available With Wall Mount Or EM For Blank Body Versions when SRM or CK_ are selected you will get the 3" deep version
BLANK BODY							
NA - Not Applicable Select Once for Blank Body Long CR2 For Blank Body Versions when SRM or CK_ are selected you will get the 3" deep version							

BS
Standard Bezel



NA w/ BS
Standard Bezel



BK
Bezel with Knurl



BB
Bias



BD
Snoot / Deep Cutout



BSA1
Acrylic .5"



BW
Bias Wall Wash



SERIES	OPTICS	SERIES	BEZEL STYLE	BEZEL FINISH	SERIES	OPTICAL EFFECT ¹⁴
RD2	STANDARD WHITE XS - Extra Narrow Spot (12°) SP - Spot (21°) FL - Flood (34°) XF - Extra Wide Flood (60°) WW ¹¹ - Wall Wash DIM TO WARM XS - Extra Narrow Spot (18°) SP - Spot (29°) FL - Flood (36°) XF - Extra Wide Flood (61°) WW ¹¹ - Wall Wash 11 WW Requires BW Bezel	RB2	BS - Standard Bezel BK - Bezel w/ Knurl BB - Bias BD - Snoot / Deep Cutout BW ^{12,13} - Bias Wall Wash BSA1 ¹³ - Acrylic .5" BSA2 ¹³ - Acrylic 2" BSA3 ¹³ - Acrylic 6" BSA4 ¹³ - Acrylic 12" BKA1 ¹³ - Acrylic .5" w/ Knurl BKA2 ¹³ - Acrylic 2" w/ Knurl BKA3 ¹³ - Acrylic 6" w/ Knurl BKA4 ¹³ - Acrylic 12" w/ Knurl 12 BW Requires WW Optic Option 13 BS, BSA and BKA Series Do Not Take Optical Effects	ASG - Soft Glow, Anodized ARG - Rose Gold, Anodized ABK - Black, Anodized AGD - Gold, Anodized TW - Textured White TB - Textured Black MT - Textured Silver BZ - Textured Bronze CC - Custom Color	RA2	HL - Hex Cell LS - Diffusing Lens LL - Linear Spread Lens LC - Clear Lens 14 Max 2



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BODY FINISH



STANDARD CORD / STEM / CANOPY FINISHES

SM & WM canopies match fixture color.

FIXTURE COLOR	CORD COLOR	CANOPY / STEM COLOR
Textured White	White	Matte White
Textured Black	Black	Matte Black
Textured Silver	Silver	Platinum
Textured Bronze	Black	Matte Black
Custom Color	Black*	Contact Factory

*Unless Otherwise Specified

BEZEL FINISH



PRODUCT FEATURES

- Extremely small diameter, allowing for usage over a wide variety of applications.
- High quality extruded aluminum housing with **Integral** driver in the housing (thru 1500 Lm). Remote driver and/or canopy mounted driver systems are also available as standard for 2000 Lm fixtures.
- 4 standard finish options: Textured White, Textured Black, Textured Silver and Textured Bronze. Custom colors are also available.
- Superior Smooth striation free Beam Patterns, Fixture cutoff at 40° (to 10% of output) or better dependent upon Bezel choice.
- Superior Efficacy up to 116 LPW.
- 4 Field interchangeable Optical Systems from Extra Narrow Spot [12"] to Extra Wide Flood [60"] + Wall Wash Optic.
- 5 CCT's, from 2200K thru 4000K, at 2 step MacAdam Ellipse, with CRI's up to 90, Delivered Lumen packages from 500 Lm to 2000 Lm.
- Multiple mounting options: Surface, Pendant [rigid or 40° Hang straight], Cord or Cord & Cable, and Wall Mounted version.
- Pendants and cords are ultra-slim, proportionately in concert with the smaller 2.5" housing diameter, giving a more pleasing aesthetic.
- Ultra-clean look at the ceiling line due to Hardware-free canopies used on All pendant and cord mounted luminaires [no visible screws, clips, etc.].
- Wall Mounted version, with integral driver meets ADA requirements.
- All Bezels, except acrylics, have low dazzle anti-glare matte black finish and can accept (up to 2) accessories such as Hex cell louver, linear spread lens, etc.
- All fixtures carry cETLus damp location listing, additionally all 90 CRI fixtures have been designed to meet CA Title 24 regulations.
- 90% recyclable materials.
- 5-year warranty is standard. L90 > 67,000 hours.

DIMMING COMPATIBILITY

120V-277V 0-10V Dimming	
MANUFACTURER	PART NUMBERS
Lutron	Nova Series (part number NFTV) Diva Series (part number DVTV)
Leviton	IllumaTech Series (part number IP710-DL)

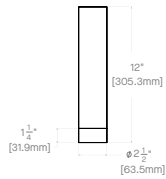
120V ELV & Triac Dimming	
MANUFACTURER	PART NUMBERS
Lutron	DVCL-153P
	DVELV-303P
	MAELV-600
	SELV-300P
Leviton	IPE04 VPE06
Cooper	DAL06P

L2 (.1% Lutron Hi-lume EcoSystem)	
LUTRON CONTROLS	PART NUMBERS
PowPak Dimming Modules	RMJ-ECO32-DV-B FCJ/FCJS-ECO
Energi Savr Node	QSN-1ECO-S QSN-2ECO-S
GRAFIK Eye QS / HomeWorks QS control unit	QSGRJ- _E (wireless) QSGR- _E
Quantum Hub	QP2- _ _2C
	QP2- _ _4C
	QP2- _ _6C
	QP2- _ _8C
HomeWorks QS / myRoom Plus power module	LQSE-2ECO-D

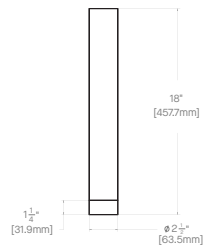
A2 (.1% eIdoLED 0-10V Dimming)	
MANUFACTURER	PART NUMBERS
Busch-Jaeger	2112U-101
Jung	240-10
Leviton	IP710-DLZ
Lightolier Controls	ZP600FAM120
Lutron Electronics	Nova T - NTFTV
	Nova - NFTV
	Diva - DVTV
	GraphicEye - GRX-TVI w GRX3503
	Energy Savr Node - QSN-4T16-S
	TVM2 Module
Merten	5729
Pass & Seymour	CD4FB-W
The Watt Stopper	DCLV1

FIXTURE SIZES

CR212 - 12" Cylinder



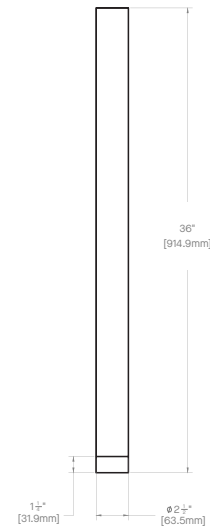
CR218 - 18" Cylinder



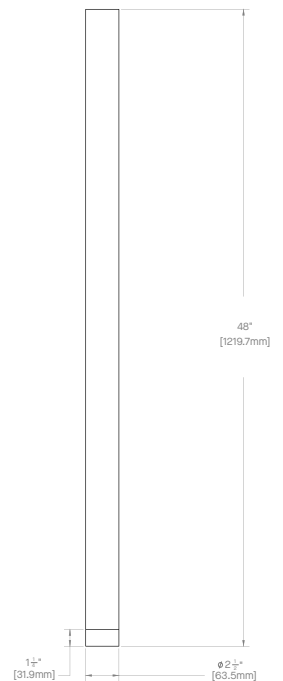
CR224 - 24" Cylinder



CR236 - 36" Cylinder

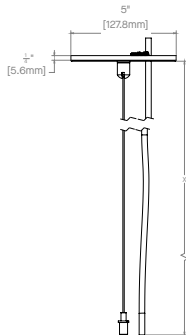


CR248 - 48" Cylinder

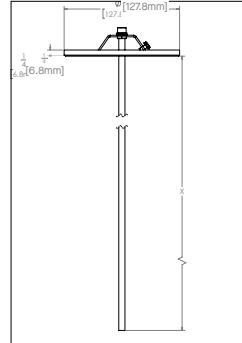


CEILING MOUNT

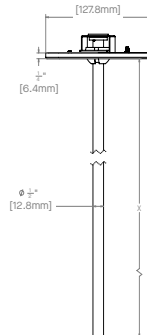
CD - Cord & Cable Mount



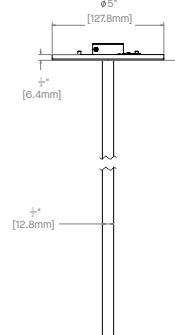
CM - Cord Only



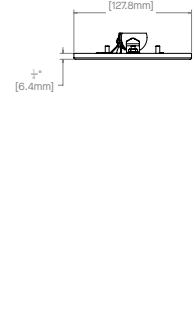
HM - Hang Straight Stem



PM - Rigid Stem



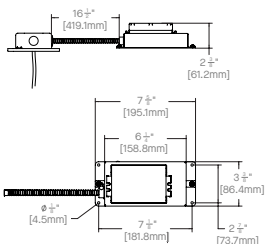
SM - Surface Mount



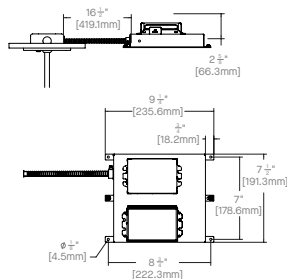
For ease of re-drilling locator pin hole on field cut stems, 1/4 Stem Drill Jig is available

RECESSED REMOTE

RRM - Recessed Remote Drive Box (NON-IC CEILING ONLY)

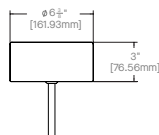


RRM - Recessed Remote Drive Box (For EMERGENCY BATTERY)

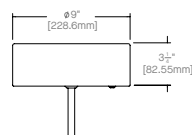


SURFACE REMOTE

SRM - Surface Remote Drive Box

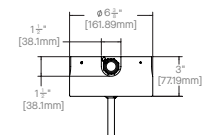


SRM - Surface Remote Drive Box (For EMERGENCY BATTERY)

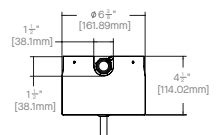


CONDUIT MOUNT

CK - Conduit Canopy Integral



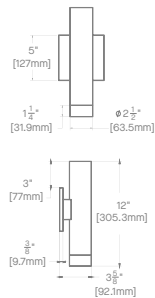
CK - Conduit Canopy Remote



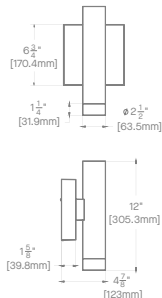
WALL MOUNT

CR212_WM

Integral
ADA COMPLIANT

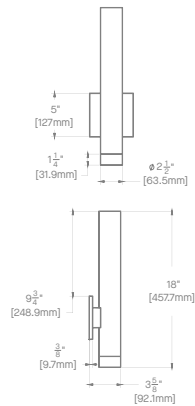


Remote

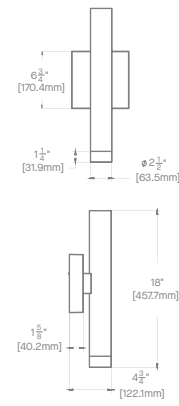


CR218_WM

Integral
ADA COMPLIANT

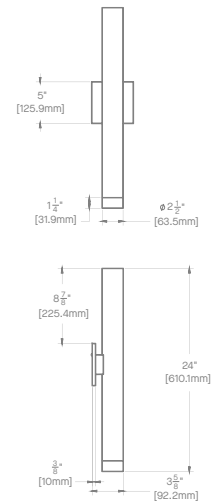


Remote

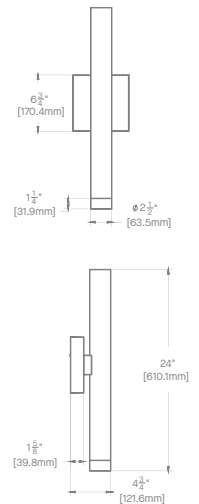


CR224_WM

Integral
ADA COMPLIANT

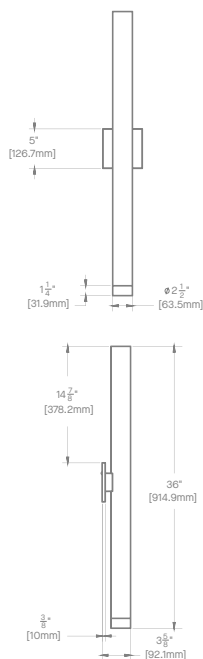


Remote

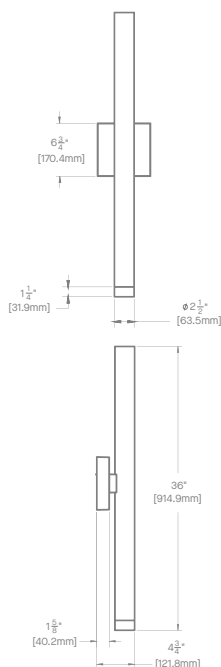


CR236_WM

Integral
ADA COMPLIANT

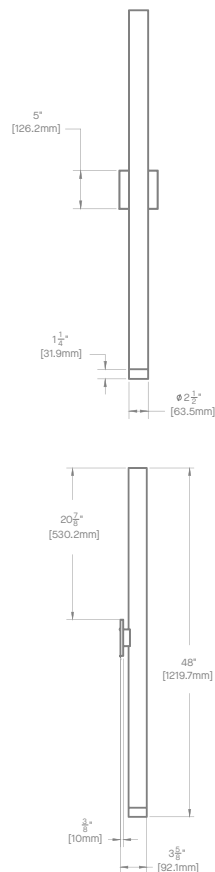


Remote

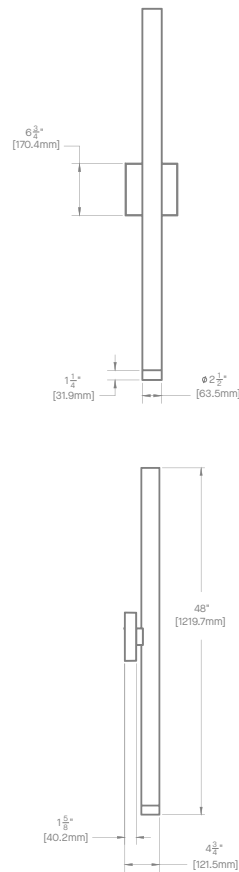


CR248_WM

Integral
ADA COMPLIANT



Remote



OPTICS

XS - Extra Narrow Spot (12°)



SP - Spot (21°)



FL - Flood (34°)



XF - Extra Wide Flood (60°)

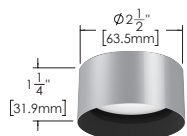


WW - Wall Wash

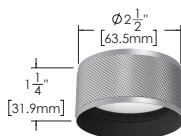


BEZEL STYLE

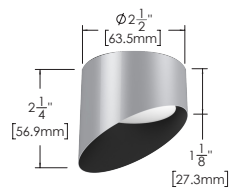
BS - Standard Bezel



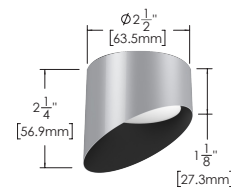
BK - Bezel with Knurl



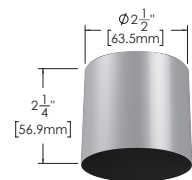
BB - Bias



BW - Bias Wall Wash

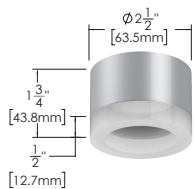


BD - Snoot / Deep Cutoff

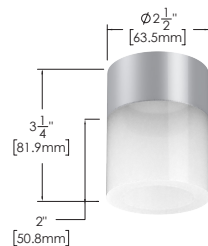


ACRYLIC SIZES

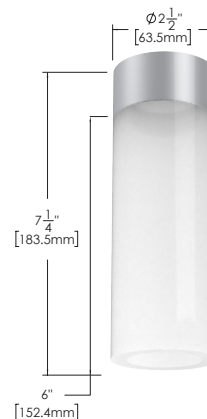
BSA1 - Acrylic .5"



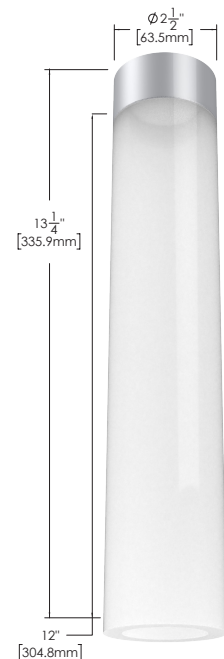
BSA2 - Acrylic 2"



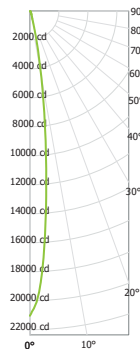
BSA3 - Acrylic 6"



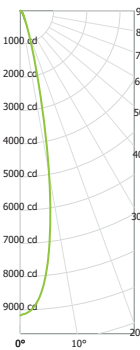
BSA4 - Acrylic 12"



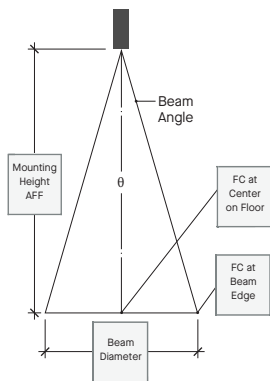
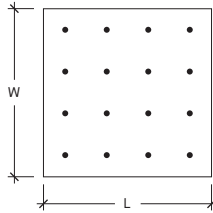
CR2 835 15 xx xx RD2XS RB2BS xx xx

CANDLEPOWER CURVE TEST SP-01276	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS	SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY	MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT								
	0°	0° - 10° 968 59%	Mounting Height AFF	FC at Center on Floor	Beam Diameter	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 6		RCR 8	
	0° 21034	0° - 20° 1342 81%	10 ' 210 fc	2.1 ' 103 fc			18'	3"	151	1.90	187	2.47
	5° 12918	0° - 30° 1467 89%	12 ' 146 fc	2.6 ' 72 fc			22'	4"	90	1.13	111	1.47
	15° 1017	0° - 40° 1552 94%	14 ' 107 fc	3.0 ' 53 fc			26'	5"	59	0.75	51	0.67
	25° 263	0° - 60° 1634 99%	16 ' 82 fc	3.4 ' 40 fc			Delivered Illuminance Rating: (DIR)		79 FC per W/Sq. Ft.		76 FC per W/Sq. Ft.	
	35° 139	0° - 80° 1641 99%	20 ' 53 fc	4.3 ' 26 fc			2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 6: Length & Width = Ceiling Ht. - 4.5' x 1.66 RCR 8: Length & Width = Ceiling Ht. - 4.5' x 1.25					
	45° 69	0° - 90° 1643 100%	24 ' 37 fc	5.1 ' 18 fc			* Average Footcandles at 2.5' Above Floor					
	55° 28	Total 1650 100%	28 ' 27 fc	6.0 ' 13 fc			** Exceeds Spacing Ratio by 9%					
	90° 1		32 ' 21 fc	6.8 ' 10 fc			*** Exceeds Spacing Ratio by 11%					
	Delivered Lumens: 1650 Luminaire Watts: 19.5 LER: 84.62	CP at 0° (Nadir): 21034	Beam Angle: 12° Spacing Ratio: 0.21	Lumen Multiplier: 05 x 0.41, 10L x 0.66, 20L x 1.27 CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87								

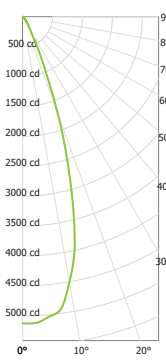
CR2 835 15 xx xx RD2SP RB2BS xx xx

CANDLEPOWER CURVE TEST SP-01274	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS	SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY	MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT									
	0°	0° - 10° 684 41%	Mounting Height AFF	FC at Center on Floor	Beam Diameter	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 4		RCR 6		
	0° 9167	0° - 20° 1251 75%	8 ' 143 fc	3.0 ' 68 fc			15'	4"	114	1.39	78	1.03	
	5° 8224	0° - 30° 1439 87%	10 ' 92 fc	3.7 ' 44 fc			18'	5"	69	0.84	74	0.97	
	15° 1859	0° - 40° 1543 93%	12 ' 64 fc	4.4 ' 30 fc			22'	6"	41	0.50	44	0.58	
	25° 380	0° - 60° 1641 99%	14 ' 47 fc	5.2 ' 22 fc			Delivered Illuminance Rating: (DIR)		82 FC per W/Sq. Ft.		76 FC per W/Sq. Ft.		
	35° 149	0° - 80° 1651 99%	16 ' 36 fc	5.9 ' 17 fc			2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 4: Length & Width = Ceiling Ht. - 4.5' x 2.50 RCR 6: Length & Width = Ceiling Ht. - 4.5' x 1.66						
	45° 79	0° - 90° 1652 99%	20 ' 23 fc	7.4 ' 11 fc			* Average Footcandles at 2.5' Above Floor						
	55° 33	Total 1663 100%	24 ' 16 fc	8.9 ' 8 fc			* Exceeds Spacing Ratio by 9%						
	90° 2		28 ' 12 fc	10.3 ' 6 fc			** Exceeds Spacing Ratio by 6%						
Delivered Lumens: 1663 Luminaire Watts: 19.5 LER: 85.28	CP at 0° (Nadir): 9167	Beam Angle: 21° Spacing Ratio: 0.35	Lumen Multiplier: 05 x 0.41, 10 x 0.66, 20 x 1.27 CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87										

HOW TO USE PERFORMANCE DATA

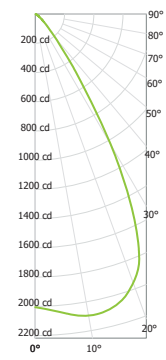
SINGLE UNIT	MULTIPLE UNITS
 Cone of Light of a single, symmetrical beam luminaire. Direct initial illumination (FC) and Beam Angle diameter directly beneath fixture; shown at different distances from aperture to horizontal plane. Calculated using Inverse Square Law. $FC_{\theta} = CP \times (\cos \theta) \div D^2$ Beam Diam. = $\frac{1}{2}$ Beam Angle (Tan) x 2D • CP Candela at 0° (Nadir) • Cos θ Cosine of θ Angle • D Distance (Mounting Height AFF) • FC_{θ} Footcandles, Horizontal • Beam Angle Cone of light to 50% max. CP • Beam Diam. Pattern of light at Beam Angle	Square grid layout of multiple luminaires in unfurnished, square rooms of different proportions (Room Cavity Ratios) with 80/50/20% room surface reflectances. 2' Suspension Length to aperture. Initial average illumination (FC) calculated at 2.5' above floor, using Zonal Cavity Method. W/Sq. Ft. of layout shown for each ceiling height and RCR. Delivered Illuminance Rating (DIR*): System performance indicator expressed as ratio of approximate initial FC per W/Sq. Ft. delivered to horizontal plane below, for the range of ceiling heights indicated. • To estimate FC for Fixture Spacing that is different than shown (do not exceed Spacing Ratio): $FC = \text{Chart Spacing}^2 \div \text{Different Spacing}^2 \times \text{Chart FC}$ • To estimate Sq. Ft. per fixture for a specific target FC: $\text{Sq. Ft.} / \text{Fixture} = \text{Chart FC} \times \text{Chart Spacing}^2 \div \text{Target FC}$ • To estimate Fixture Quantity in a room: $\text{Fixture Qty.} = \text{Sq. Ft. of Rm.} \div \text{Sq. Ft. per fixture}$ • To estimate Watts/Sq. Ft.: $W / \text{Sq. Ft.} = \text{Luminaire Watts} \times \text{Qty.} \div \text{Sq. Ft. of Rm.}$ 

CR2 835 15 xx xx RD2FL RB2BS xx xx

CANDLEPOWER CURVE TEST SP-01273	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS	SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY	MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT																																									
	0°	0° - 10°	473	26%	<table><thead><tr><th rowspan="2">Ceiling Height</th><th rowspan="2">Fixture Spacing</th><th colspan="2">RCR 3</th><th colspan="2">RCR 5</th></tr><tr><th>FC *</th><th>W/Sq. Ft.</th><th>FC *</th><th>W/Sq. Ft.</th></tr></thead><tbody><tr><td>15'</td><td>5'</td><td>73</td><td>0.78</td><td>61</td><td>0.71</td></tr><tr><td>18'</td><td>6'</td><td>44</td><td>0.47</td><td>37</td><td>0.43</td></tr><tr><td>22'</td><td>8'</td><td>26</td><td>0.28</td><td>22</td><td>0.25</td></tr><tr><td colspan="2">Delivered Illuminance Rating: (DIR)</td><td colspan="2">94 FC per W/Sq. Ft.</td><td colspan="2">86 FC per W/Sq. Ft.</td></tr><tr><td colspan="6">2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 3: Length & Width = Ceiling Ht. - 4.5' x 3.33 RCR 5: Length & Width = Ceiling Ht. - 4.5' x 2.00 + Average Footcandles at 2.5' Above Floor</td></tr></tbody></table>	Ceiling Height	Fixture Spacing	RCR 3		RCR 5		FC *	W/Sq. Ft.	FC *	W/Sq. Ft.	15'	5'	73	0.78	61	0.71	18'	6'	44	0.47	37	0.43	22'	8'	26	0.28	22	0.25	Delivered Illuminance Rating: (DIR)		94 FC per W/Sq. Ft.		86 FC per W/Sq. Ft.		2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 3: Length & Width = Ceiling Ht. - 4.5' x 3.33 RCR 5: Length & Width = Ceiling Ht. - 4.5' x 2.00 + Average Footcandles at 2.5' Above Floor					
	Ceiling Height	Fixture Spacing	RCR 3					RCR 5																																					
			FC *	W/Sq. Ft.		FC *	W/Sq. Ft.																																						
	15'	5'	73	0.78		61	0.71																																						
	18'	6'	44	0.47		37	0.43																																						
	22'	8'	26	0.28		22	0.25																																						
	Delivered Illuminance Rating: (DIR)		94 FC per W/Sq. Ft.			86 FC per W/Sq. Ft.																																							
	2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 3: Length & Width = Ceiling Ht. - 4.5' x 3.33 RCR 5: Length & Width = Ceiling Ht. - 4.5' x 2.00 + Average Footcandles at 2.5' Above Floor																																												
	0°	5123	0° - 20°	1331		72%																																							
	5°	5035	0° - 30°	1664		90%																																							
	15°	3253	0° - 40°	1757		95%																																							
	25°	677	0° - 60°	1821		99%																																							
	35°	143	0° - 80°	1830		99%																																							
	45°	54	0° - 90°	1831		99%																																							
	55°	23	Total	1842		100%																																							
	90°	1																																											

Delivered Lumens:	1842	CP at 0° (Nadir):	5123	Beam Angle:	34°	Lumen Multiplier:	05 x 0.41, 10 x 0.66, 20 x 1.27
Luminaire Watts:	19.5			Spacing Ratio:	0.57	CCT Multiplier:	822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
LER:	94.46	CRI:	80+				927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

CR2 835 15 xx xx RD2XF RB2BS xx xx

CANDLEPOWER CURVE TEST SP-01275	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS	SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY	MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES INITIAL FOOTCANDLES AND WATTS PER SQUARE FOOT																																																																				
	0°	0° - 10°	200	10%	<table><tr><th>Mounting Height AFF</th><th>FC at Center on Floor</th><th>Beam Diameter</th><th>FC at Beam Edge</th></tr><tr><td>6 '</td><td>56 fc</td><td>6.9 '</td><td>18 fc</td></tr><tr><td>8 '</td><td>31 fc</td><td>9.1 '</td><td>10 fc</td></tr><tr><td>10 '</td><td>20 fc</td><td>11.4 '</td><td>7 fc</td></tr><tr><td>12 '</td><td>14 fc</td><td>13.7 ' </td><td>5 fc</td></tr><tr><td>14 ' </td><td>10 fc</td><td>16.0 ' </td><td>3 fc</td></tr><tr><td>16 ' </td><td>8 fc</td><td>18.3 ' </td><td>3 fc</td></tr><tr><td>20 ' </td><td>5 fc</td><td>22.9 ' </td><td>2 fc</td></tr><tr><td>24 ' </td><td>3 fc</td><td>27.4 ' </td><td>1 fc</td></tr></table>	Mounting Height AFF	FC at Center on Floor	Beam Diameter	FC at Beam Edge	6 '	56 fc	6.9 '	18 fc	8 '	31 fc	9.1 '	10 fc	10 '	20 fc	11.4 '	7 fc	12 '	14 fc	13.7 '	5 fc	14 '	10 fc	16.0 '	3 fc	16 '	8 fc	18.3 '	3 fc	20 '	5 fc	22.9 '	2 fc	24 '	3 fc	27.4 '	1 fc	<table><tr><th>Ceiling Height</th><th>Fixture Spacing</th><th colspan="2">RCR 2</th><th colspan="2">RCR 4</th></tr><tr><td></td><td></td><th>FC +</th><th>W/Sq. Ft.</th><th>FC +</th><th>W/Sq. Ft.</th></tr><tr><td>12'</td><td>6'</td><td>50</td><td>0.50</td><td>44</td><td>0.50</td></tr><tr><td>15'</td><td>8'</td><td>26</td><td>0.25</td><td>23</td><td>0.25</td></tr><tr><td>18'</td><td>10'</td><td>21</td><td>0.21</td><td>14</td><td>0.15</td></tr></table>	Ceiling Height	Fixture Spacing	RCR 2		RCR 4				FC +	W/Sq. Ft.	FC +	W/Sq. Ft.	12'	6'	50	0.50	44	0.50	15'	8'	26	0.25	23	0.25	18'	10'	21	0.21	14	0.15
	Mounting Height AFF	FC at Center on Floor	Beam Diameter	FC at Beam Edge																																																																				
	6 '	56 fc	6.9 '	18 fc																																																																				
	8 '	31 fc	9.1 '	10 fc																																																																				
	10 '	20 fc	11.4 '	7 fc																																																																				
	12 '	14 fc	13.7 '	5 fc																																																																				
	14 '	10 fc	16.0 '	3 fc																																																																				
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			FC +	W/Sq. Ft.	FC +	W/Sq. Ft.																																																																		
	12'	6'	50	0.50	44	0.50																																																																		
	15'	8'	26	0.25	23	0.25																																																																		
	18'	10'	21	0.21	14	0.15																																																																		
	0° 2006	0° - 20°	784	40%	Delivered Illuminance Rating: (DIR)	101 FC per W/Sq. Ft.	89 FC per W/Sq. Ft.																																																																	
5° 2049	0° - 30°	1503	77%																																																																					
15° 2074	0° - 40°	1823	93%	2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 2: Length & Width = Ceiling Ht. - 4.5' x 5.00 RCR 4: Length & Width = Ceiling Ht. - 4.5' x 2.50 + Average Footcandles at 2.5' Above Floor																																																																				
25° 1641	0° - 60°	1933	99%																																																																					
35° 482	0° - 80°	1941	99%																																																																					
45° 108	0° - 90°	1943	99%																																																																					
55° 28	Total	1954	100%																																																																					
90° 2																																																																								

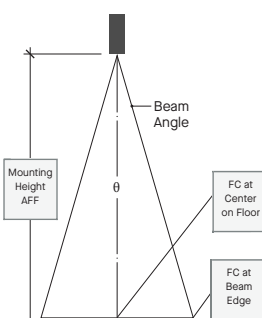
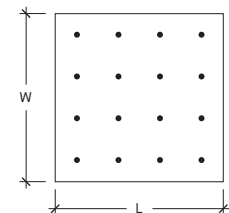
Delivered Lumens: 1954
Luminaire Watts: 19.5
LER: 100.21

CP at 0° (Nadir): 2006
CRI: 80+

Beam Angle: 60°
Spacing Ratio: 1.01

Lumen Multiplier: 05 x 0.41, 10 x 0.66, 20 x 1.27
CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

HOW TO USE PERFORMANCE DATA

SINGLE UNIT		MULTIPLE UNITS	
	Cone of Light of a single, symmetrical beam luminaire. Direct initial illumination (FC) and Beam Angle diameter directly beneath fixture; shown at different distances from aperture to horizontal plane. Calculated using Inverse Square Law.		Square grid layout of multiple luminaires in unfurnished, square rooms of different proportions (Room Cavity Ratios) with 80/50/20% room surface reflectances. 2' Suspension Length to aperture. Initial average illumination (FC) calculated at 2.5' above floor, using Zonal Cavity Method. W/Sq. Ft. of layout shown for each ceiling height and RCR.
	$FC_H = CP \times (\cos \theta) \div D^2$ Beam Diam. = $\frac{1}{2}$ Beam Angle (Tan) x 2D • CP Candela at 0° (Nadir) • Cos θ Cosine of θ Angle • D Distance (Mounting Height AFF) • FC_H Footcandles, Horizontal • Beam Angle Cone of light to 50% max. CP • Beam Diam. Pattern of light at Beam Angle		Delivered Illuminance Rating (DIR*): System performance indicator expressed as ratio of approximate initial FC per W/Sq. Ft. delivered to horizontal plane below, for the range of ceiling heights indicated. • To estimate FC for Fixture Spacing that is different than shown (do not exceed Spacing Ratio): $FC = \text{Chart Spacing}^2 \div \text{Different Spacing}^2 \times \text{Chart FC}$ • To estimate Fixture Quantity in a room: Fixture Qty. = Sq. Ft. of Rm. $\div$ Sq. Ft. per fixture

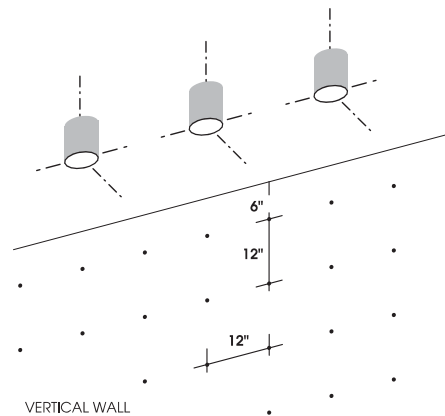
CR2 835 15 xx xx RD2WW RB2BW xx xx

CANDLEPOWER CURVE
TEST SP-01273_7

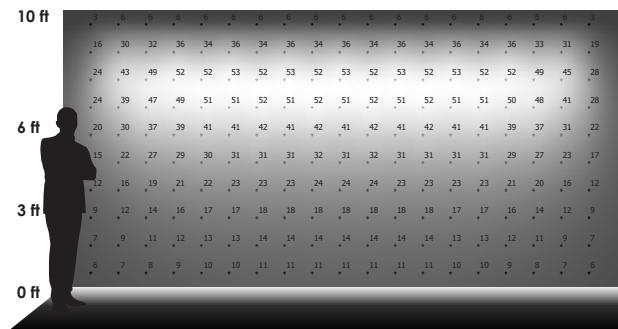
PERFORMANCE SUMMARY

Delivered Lumens: 1167
 Luminaire Watts: 19.5
 LER: 59.85
 CP at Odeg (Nadir): 844
 CRI: 80+
 Lumen Multiplier: 05 x 0.41, 10 x 0.66, 20 x 1.27
 CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

REFERENCE DIAGRAM

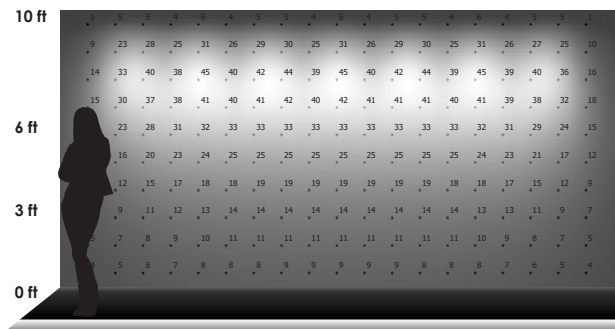


PERFORMANCE DATA - INITIAL ILLUMINATION (FOOTCANDLES) ON WALL - DIRECT LIGHT ONLY



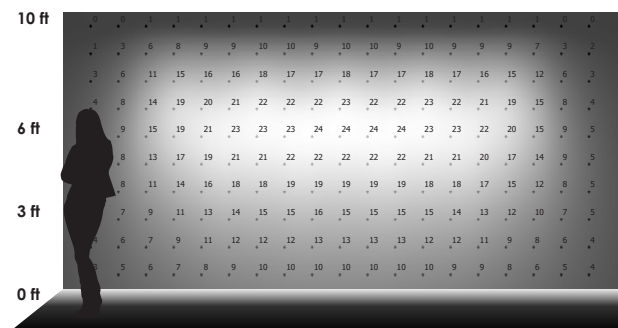
9 LUMINAIRES

2' - 0" away from wall
 2' - 0" between luminaires



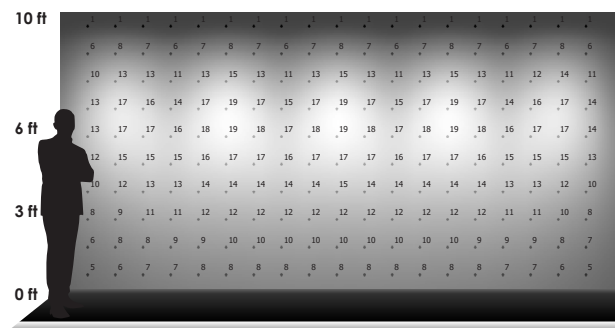
7 LUMINAIRES

2' - 6" away from wall
 2' - 6" between luminaires



5 LUMINAIRES

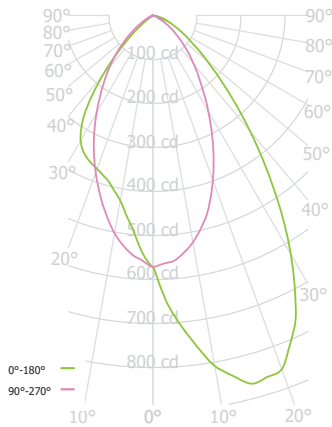
3' - 0" away from wall
 3' - 0" between luminaires



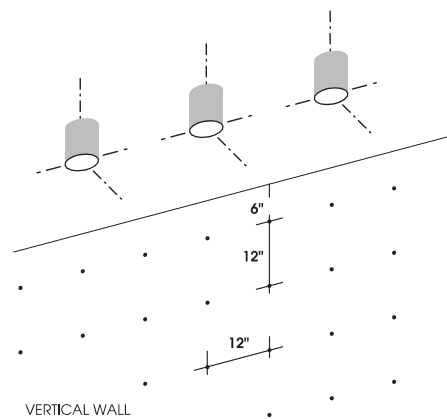
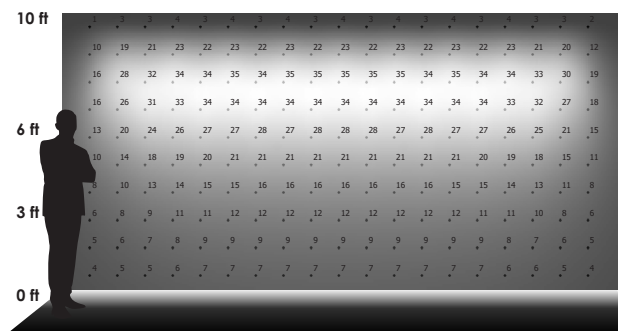
5 LUMINAIRES

3' - 0" away from wall
 4' - 0" between luminaires

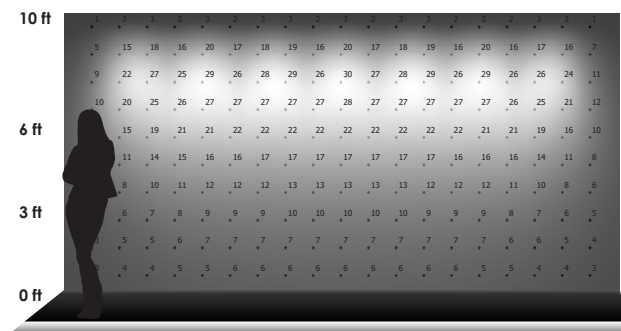
CR2 835 10 xx xx WW BW TB xx

CANDLEPOWER CURVE
 TEST SP-01270_1
**PERFORMANCE SUMMARY**

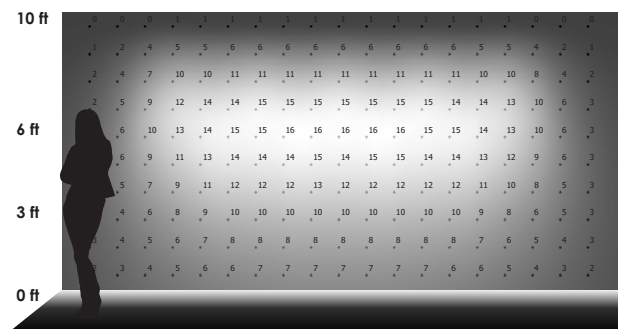
Delivered Lumens: 769
 Luminaire Watts: 12.5
 LER: 61.52
 CP at Odeg (Nadir): 572
 CRI: 80+
 Lumen Multiplier: 05 x 0.62, 15 x 1.52, 20 x 1.92
 CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

REFERENCE DIAGRAM**PERFORMANCE DATA - INITIAL ILLUMINATION (FOOTCANDLES) ON WALL - DIRECT LIGHT ONLY****9 LUMINAIRES**

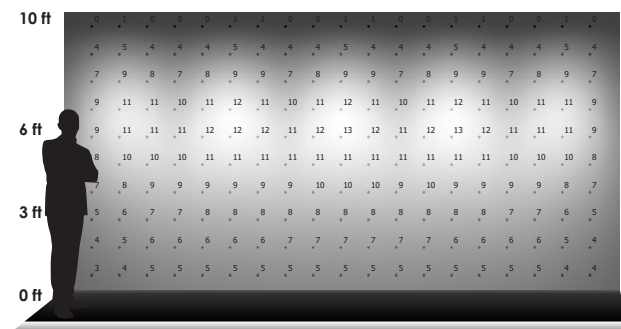
2' - 0" away from wall
 2' - 0" between luminaires

**7 LUMINAIRES**

2' - 6" away from wall
 2' - 6" between luminaires

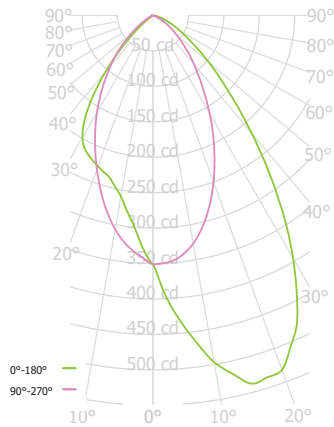
**5 LUMINAIRES**

3' - 0" away from wall
 3' - 0" between luminaires

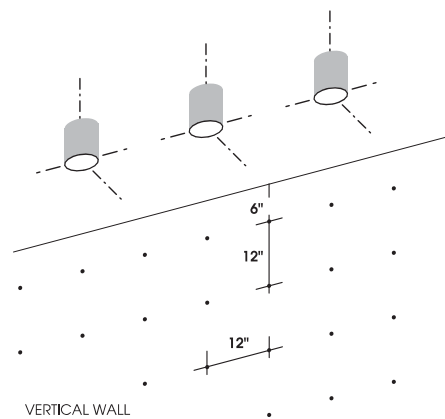
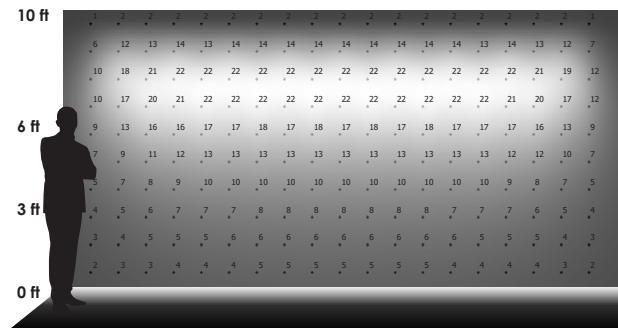
**5 LUMINAIRES**

3' - 0" away from wall
 4' - 0" between luminaires

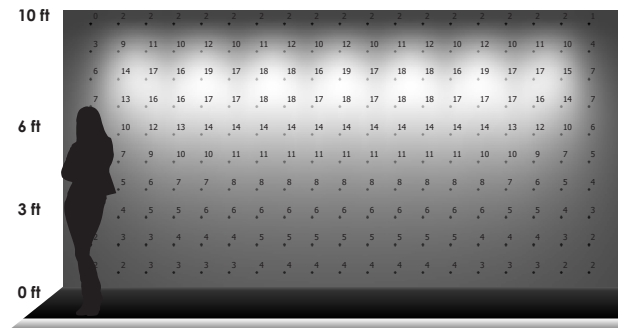
CR2 835 05 xx xx RD2WW RB2BW xx xx

CANDLEPOWER CURVE
 TEST SP-01270
**PERFORMANCE SUMMARY**

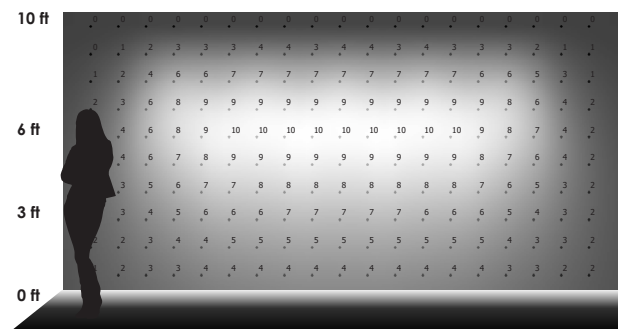
Delivered Lumens: 473
 Luminaire Watts: 7
 LER: 67.57
 CP at 0deg (Nadir): 351
 CRI: 80+
 Lumen Multiplier: 10 x 1.61, 15 x 2.44, 20 x 3.10
 CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
 927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

REFERENCE DIAGRAM**PERFORMANCE DATA - INITIAL ILLUMINATION (FOOTCANDLES) ON WALL - DIRECT LIGHT ONLY****9 LUMINAIRES**

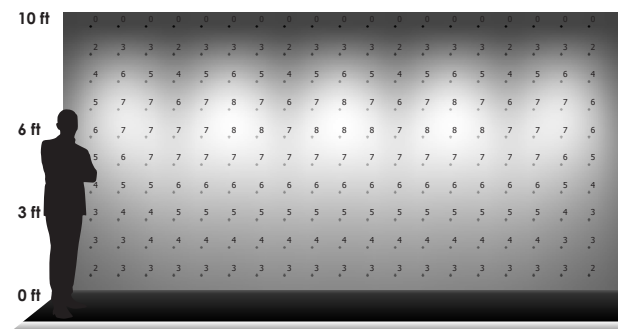
2' - 0" away from wall
 2' - 0" between luminaires

**7 LUMINAIRES**

2' - 6" away from wall
 2' - 6" between luminaires

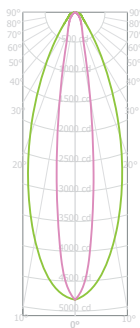
**5 LUMINAIRES**

3' - 0" away from wall
 3' - 0" between luminaires

**5 LUMINAIRES**

3' - 0" away from wall
 4' - 0" between luminaires

CR2 835 15 xx xx RD2XS RB2BS xx RA2LL

CANDLEPOWER CURVE TEST SP-01276_2	INTENSITY CANDELA 0° AZIMUTH				ZONAL LUMENS			SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY				
	0°	90°	180°	270°	0° - 10°	328	24%	Mtg Height AFF	FC at Center	Beam Length	Beam Width	FC at Beam Edge
	0°	4808	4808	4808	0° - 20°	740	55%	10'	48 fc	6.8'	2.6'	20 fc
	5°	4493	3378	4542	0° - 30°	1008	75%	12'	33 fc	8.1'	3.1'	14 fc
	15°	3024	582	3023	0° - 40°	1162	86%	14'	25 fc	9.5'	3.6'	10 fc
	25°	1467	263	1478	0° - 60°	1297	96%	16'	19 fc	10.9'	4.1'	8 fc
	35°	557	155	566	0° - 80°	1333	99%	20'	12 fc	13.6'	5.1'	5 fc
	45°	235	87	233	0° - 90°	1335	99%	24'	8 fc	16.3'	6.1'	4 fc
	55°	146	34	134	Total	1345	100%	28'	6 fc	19.0'	7.2'	3 fc
	90°	2	2	2				32'	5 fc	21.7'	8.2'	2 fc

Delivered Lumens: 1345
Luminaire Watts: 19.5
LER: 68.97

CP at 0° (Nadir): 4808
CRI: 80+

Beam Angle: 38° x 15°
Spacing Ratio: 0.59 x 0.25

Lumen Multiplier: 05 x 0.41, 10 x 0.66, 20 x 1.27
CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

Beam Angle: The included angle between those points on opposite sides of the beam axis at which the luminous intensity (candela) emitted by the luminaire is 50% of the maximum candela.

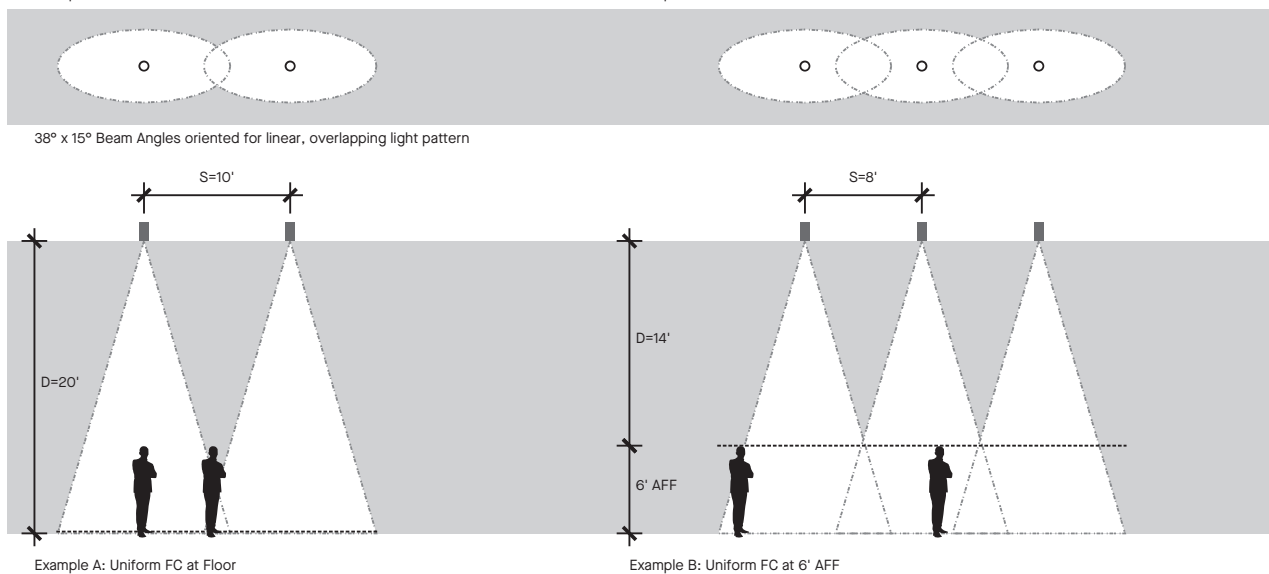
Spacing Ratio: The on-center fixture spacing, divided by the vertical distance from the fixture aperture to the illuminated surface.

To estimate uniform illumination at a horizontal plane, use Spacing Ratio data to determine maximum fixture spacing.

The examples below illustrate concepts for an aisle/hallway, for uniform illumination (FC) at floor, or at 6' above finished floor (AFF). To estimate maximum fixture spacing for uniform illumination, multiply mounting Distance x Spacing Ratio.

Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF



S = Spacing between fixtures
D = Distance from aperture to horizontal plane

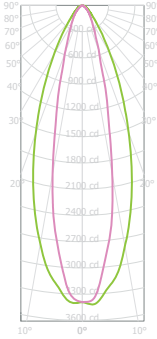
Spacing Ratio for this optic: 0.59 x 0.25
With optic oriented as shown, Spacing Ratio should be ≤ 0.59

$$\frac{S}{D} = \frac{10'}{20'} = 0.50$$

$$\frac{S}{D} = \frac{8'}{14'} = 0.57$$

Note: Illumination will also be uniform at < 6' AFF

CR2 835 15 xx xx RD2SP RB2BS xx RA2LL

CANDLEPOWER CURVE TEST SP-01274_2	INTENSITY CANDELA 0° AZIMUTH				ZONAL LUMENS		SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY				
	0°	90°	180°	270°	0° - 10°		Mtg Height AFF	FC at Center	Beam Length	Beam Width	FC at Beam Edge
	0°	3391	3391	3391	3391		8'	53 fc	5.4'	3.2'	22 fc
	5°	3253	2935	3223	2903		10'	34 fc	6.8'	3.9'	14 fc
	15°	2179	1056	2166	1068		12'	24 fc	8.1'	4.7'	10 fc
	25°	1028	336	1045	361		14'	17 fc	9.5'	5.5'	7 fc
	35°	379	158	397	182		16'	13 fc	10.9'	6.3'	6 fc
	45°	149	84	158	93		20'	8 fc	13.6'	7.9'	4 fc
	55°	75	34	81	33		24'	6 fc	16.3'	9.5'	2 fc
	90°	2	1	2	2		28'	4 fc	19.0'	11.1'	2 fc
					0° - 10°	274	20%				
					0° - 20°	709	51%				
					0° - 30°	1009	73%				
					0° - 40°	1181	85%				
					0° - 60°	1328	96%				
					0° - 80°	1368	99%				
					0° - 90°	1370	99%				
					Total	1381	100%				

Delivered Lumens: 1381
Luminaire Watts: 19.5
LER: 70.82

CP at 0° (Nadir): 3391
CRI: 80+

Beam Angle: 38° x 22°
Spacing Ratio: 0.60 x 0.38

Lumen Multiplier: 05 x 0.41, 10 x 0.66, 20 x 1.27
CCT Multiplier: 822 x 0.75, 827 x 0.93, 830 x 1.0, 840 x 1.0
927 x 0.81, 930 x 0.81, 935 x 0.81, 940 x 0.87

Beam Angle: The included angle between those points on opposite sides of the beam axis at which the luminous intensity (candela) emitted by the luminaire is 50% of the maximum candela.

Spacing Ratio: The on-center fixture spacing, divided by the vertical distance from the fixture aperture to the illuminated surface.

To estimate uniform illumination at a horizontal plane, use Spacing Ratio data to determine maximum fixture spacing.

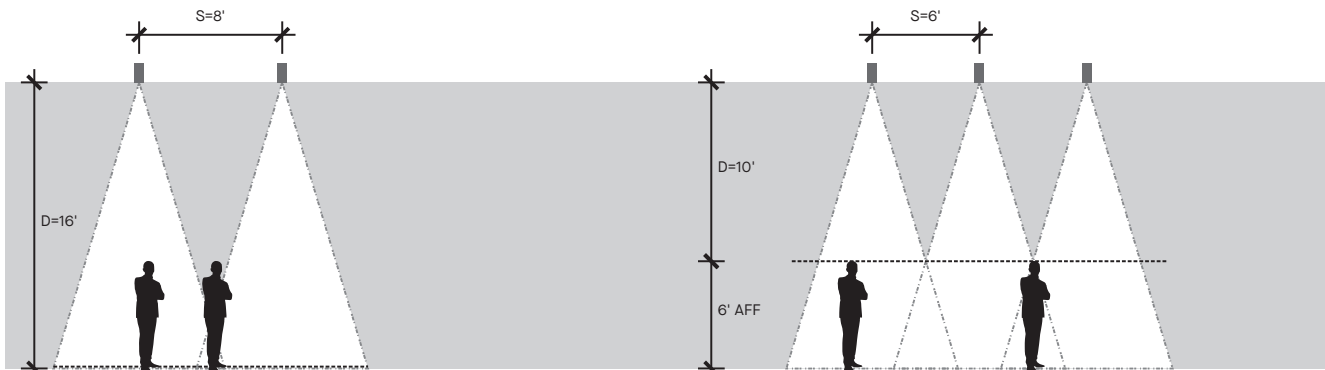
The examples below illustrate concepts for an aisle/hallway, for uniform illumination (FC) at floor, or at 6' above finished floor (AFF). To estimate maximum fixture spacing for uniform illumination, multiply mounting Distance x Spacing Ratio.

Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF



38° x 22° Beam Angles oriented for linear, overlapping light pattern



Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF

S = Spacing between fixtures
D = Distance from aperture to horizontal plane

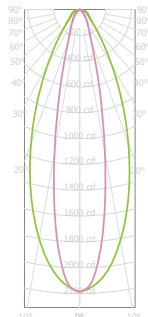
Note: Illumination will also be uniform at < 6' AFF

Spacing Ratio for this optic: 0.60 x 0.38
With optic oriented as shown, Spacing Ratio should be ≤ 0.60

$$\frac{S}{D} = \frac{8'}{16'} = 0.50$$

$$\frac{S}{D} = \frac{6'}{10'} = 0.60$$

CR2 9DW 10 xx xx RD2XS RB2BS xx RA2LL

CANDLEPOWER CURVE TEST SP-01276_5	INTENSITY CANDELA 0° AZIMUTH				ZONAL LUMENS			SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY				
	0°	90°	180°	270°	0° - 10°	172	21%	Mtg Height AFF	FC at Center	Beam Length	Beam Width	FC at Beam Edge
	0°	2186	2186	2186	0° - 20°	432	54%	8'	34 fc	5.9'	2.9'	14 fc
	5°	2081	1861	2068	0° - 30°	602	75%	10'	22 fc	7.3'	3.6'	9 fc
	15°	1469	547	1464	0° - 40°	695	87%	12'	15 fc	8.8'	4.3'	6 fc
	25°	767	169	768	0° - 60°	772	96%	14'	11 fc	10.3'	5.1'	5 fc
	35°	314	88	315	0° - 80°	793	99%	16'	9 fc	11.7'	5.8'	4 fc
	45°	135	45	136	0° - 90°	795	99%	20'	5 fc	14.6'	7.2'	2 fc
	55°	85	16	82				24'	4 fc	17.6'	8.7'	2 fc
	90°	1	1	1	Total	803	100%	28'	3 fc	20.5'	10.1'	1 fc

Delivered Lumens: 803
Luminaire Watts: 16.5
LER: 48.67

CP at 0° (Nadir): 2186
CRI: 90

Beam Angle: 40° x 20°
Spacing Ratio: 0.64 x 0.34

Lumen Multiplier: only 1000 lms available
CCT Multiplier: N/A, dim to warm

Beam Angle: The included angle between those points on opposite sides of the beam axis at which the luminous intensity (candela) emitted by the luminaire is 50% of the maximum candela.

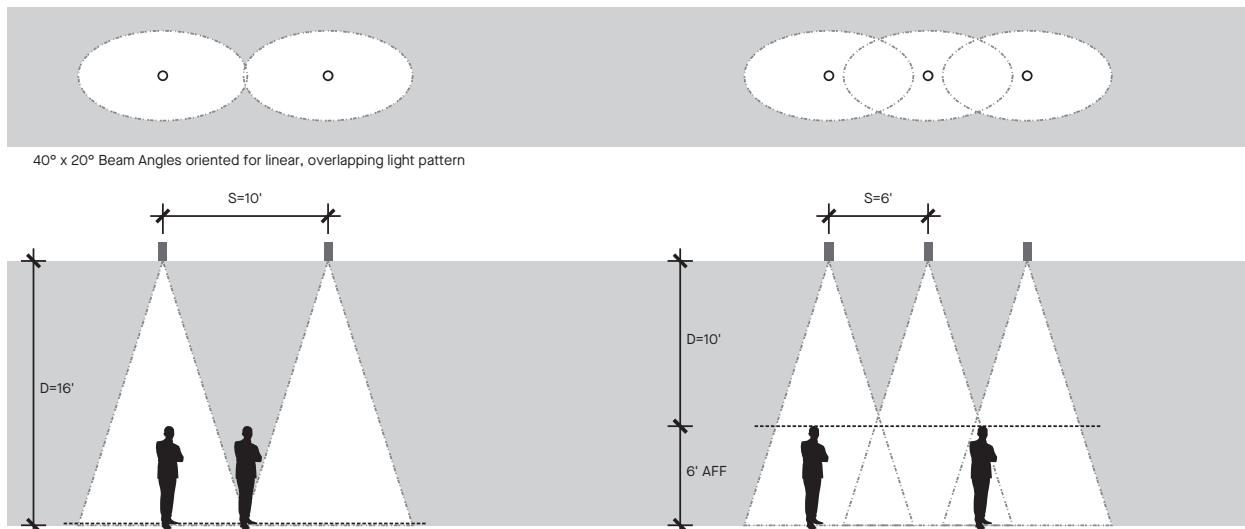
Spacing Ratio: The on-center fixture spacing, divided by the vertical distance from the fixture aperture to the illuminated surface.

To estimate uniform illumination at a horizontal plane, use Spacing Ratio data to determine maximum fixture spacing.

The examples below illustrate concepts for an aisle/hallway, for uniform illumination (FC) at floor, or at 6' above finished floor (AFF). To estimate maximum fixture spacing for uniform illumination, multiply mounting Distance x Spacing Ratio.

Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF



Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF

S = Spacing between fixtures
D = Distance from aperture to horizontal plane

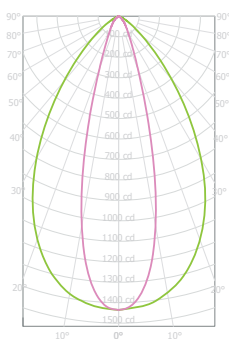
Spacing Ratio for this optic: 0.64 x 0.34
With optic oriented as shown, Spacing Ratio should be ≤ 0.64

$$\frac{S}{D} = \frac{10'}{16'} = 0.63$$

$$\frac{S}{D} = \frac{6'}{10'} = 0.60$$

Note: Illumination will also be uniform at < 6' AFF

CR2 9DW 10 xx xx RD2SP RB2BS xx RA2LL

CANDLEPOWER CURVE TEST SP-01274_5	INTENSITY CANDELA 0° AZIMUTH				ZONAL LUMENS			SINGLE UNIT: PERFORMANCE DIRECT FOOTCANDLES BASED ON DOWNLIGHT ONLY				
	0°	90°	180°	270°	0° - 10°	128	14%	Mtg Height AFF	FC at Center	Beam Length	Beam Width	FC at Beam Edge
	0°	1435	1435	1435	0° - 20°	386	43%	8'	22 fc	10.0'	3.9'	7 fc
	5°	1421	1346	1421	0° - 30°	609	68%	10'	14 fc	12.5'	4.9'	4 fc
	15°	1288	593	1291	0° - 40°	759	84%	12'	10 fc	15.1'	5.8'	3 fc
	25°	1002	151	995	0° - 60°	875	97%	14'	7 fc	17.6'	6.8'	2 fc
	35°	599	64	601	0° - 80°	888	99%	16'	6 fc	20.1'	7.8'	2 fc
	45°	255	31	269	0° - 90°	890	99%	20'	4 fc	25.1'	9.7'	1 fc
	55°	89	11	96	Total	899	100%	24'	2 fc	30.1'	11.6'	1 fc
	90°	1	1	1				28'	2 fc	35.1'	13.6'	1 fc

Delivered Lumens: **899**
 Luminaire Watts: **16.5**
 LER: **54.48**

CP at 0° (Nadir): **1435**
 CRI: **90**

Beam Angle: **64° x 27°**
 Spacing Ratio: **0.95 x 0.45**

Lumen Multiplier: **only 1000 lms available**
 CCT Multiplier: **N/A, dim to warm**

Beam Angle: The included angle between those points on opposite sides of the beam axis at which the luminous intensity (candela) emitted by the luminaire is 50% of the maximum candela.

Spacing Ratio: The on-center fixture spacing, divided by the vertical distance from the fixture aperture to the illuminated surface.

To estimate uniform illumination at a horizontal plane, use Spacing Ratio data to determine maximum fixture spacing.

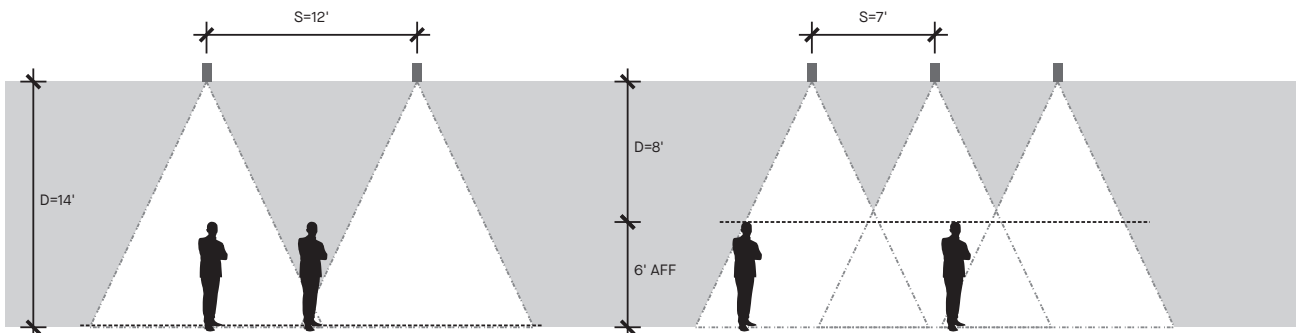
The examples below illustrate concepts for an aisle/hallway, for uniform illumination (FC) at floor, or at 6' above finished floor (AFF). To estimate maximum fixture spacing for uniform illumination, multiply mounting Distance x Spacing Ratio.

Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF



64° x 27° Beam Angles oriented for linear, overlapping light pattern



Example A: Uniform FC at Floor

Example B: Uniform FC at 6' AFF

S = Spacing between fixtures
 D = Distance from aperture to horizontal plane

Note: Illumination will also be uniform at < 6' AFF

Spacing Ratio for this optic: 0.95 x 0.45
 With optic oriented as shown, Spacing Ratio should be ≤ 0.95

$$\frac{S}{D} = \frac{12'}{14'} = 0.86$$

$$\frac{S}{D} = \frac{7'}{8'} = 0.88$$