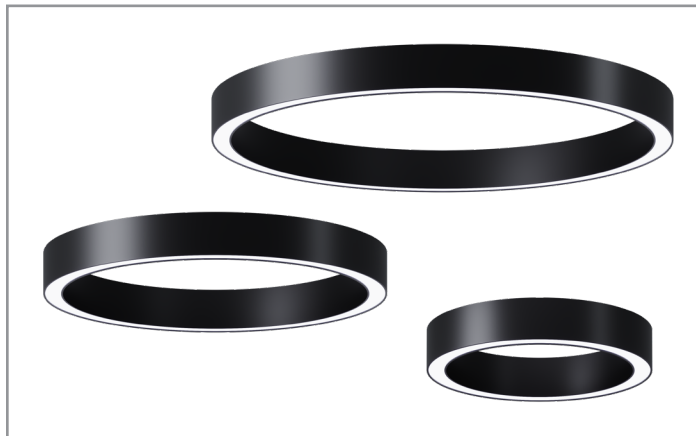


Project		Catalog #		Type	
Prepared by		Notes		Date	



# NeoRay

## Define Geo Ring

Suspended Mount Direct + Indirect  
Surface Mount Direct

### Typical Applications

Education • Healthcare • Hospitality • Office • Retail • Transit

### Interactive Menu

- Order Information [page 2](#)
- Photometric Data [page 5](#)
- Energy and Performance Data [page 6](#)
- Control Systems [page 12](#)
- Product Limited Warranty

### Product Certifications



\* Self-tested by Cooper Lighting. Not a third party certification.

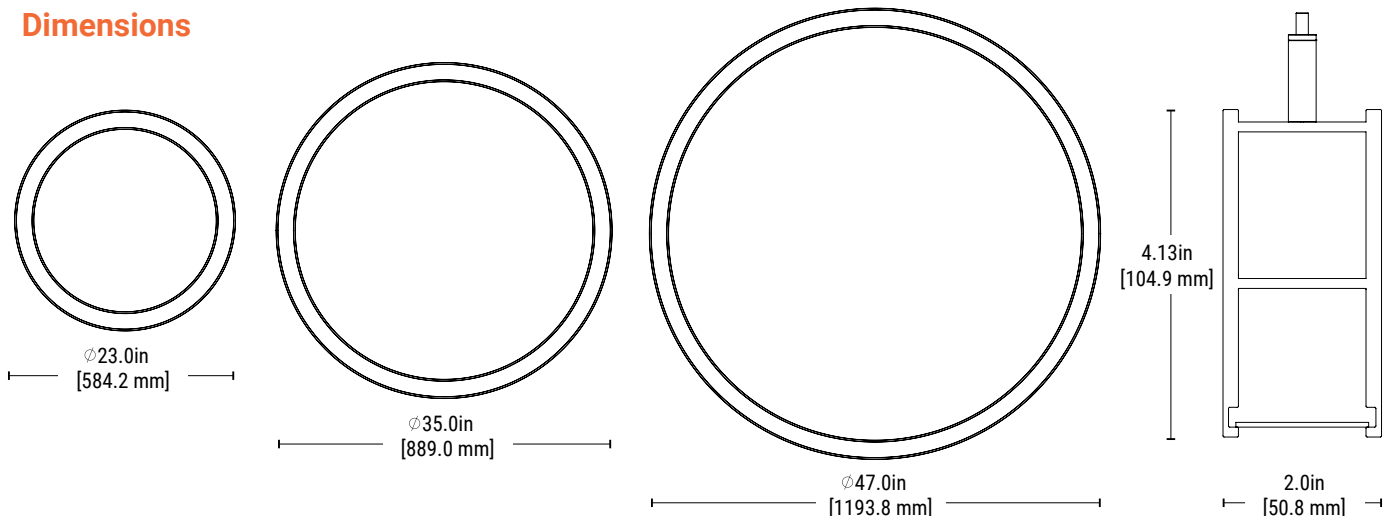
### Product Features



### Top Product Features

- Single-piece luminous ring with direct and direct + indirect output
- Available in 2ft, 3ft, and 4ft diameters
- Direct and Indirect output up to 11,000Lm
- Frosted lens available for direct and indirect illumination
- Available with indirect batwing optic for optimized uniformity of uplight illumination
- Solid aluminum collector option available

### Dimensions



## Order Information

SAMPLE ORDER NUMBER: **DFN2DIP-RG4F0-080D100US935-FLLFLL-1DUDD-WC10T1W**

Domestic Preference	Body		Pattern	
	Series	Direction & Location	Pattern Type	Diameter
<b>[Blank]</b> = Standard <b>BAA</b> = BAA	<b>DFN2</b> = Define Geo Ring 2in Aperture	<b>DIP</b> = Direct & Indirect Suspended <b>DP</b> = Direct Only Suspended <b>DS</b> = Direct Only Surface	<b>RG</b> = Ring	<b>2F0</b> = 2ft <b>3F0</b> = 3ft <b>4F0</b> = 4ft
<b>Notes</b> Only product configurations with this "BAA" designation are built to be compliant with the Buy American Act of 1933 (BAA). Please refer to DOMESTIC PREFERENCES website for more information. Components shipped separately may be separately analyzed under domestic preference requirements.	<b>Notes</b>	<b>Notes</b>	<b>Notes</b>	<b>Notes</b> Diameter is nominal. See Dimensions section for more detail.

Output				Optics																															
Direct Output	Indirect Output	Performance	CRI/CCT	Direct Optics	Indirect Optics																														
<b>020D</b> = 2000 Lm Direct <b>030D</b> = 3000 Lm Direct <b>040D</b> = 4000 Lm Direct <b>050D</b> = 5000 Lm Direct <b>060D</b> = 6000 Lm Direct <b>080D</b> = 8000 Lm Direct <b>090D</b> = 9000 Lm Direct <b>100D</b> = 10000 Lm Direct <b>110D</b> = 11000 Lm Direct <b>_D</b> = Custom Lm Direct <b>RGBD</b> = RGBWW Color Direct*	<b>[Blank]</b> = None <b>020U</b> = 2000 Lm Indirect <b>030U</b> = 3000 Lm Indirect <b>040U</b> = 4000 Lm Indirect <b>050U</b> = 5000 Lm Indirect <b>060U</b> = 6000 Lm Indirect <b>080U</b> = 8000 Lm Indirect <b>090U</b> = 9000 Lm Indirect <b>100U</b> = 10000 Lm Indirect <b>110U</b> = 11000 Lm Indirect <b>_U</b> = Custom Lm Indirect <b>RGBU</b> = RGBWW Color Indirect*	<b>S</b> = Standard	<b>927</b> = 2700K, 90CRI <b>930</b> = 3000K, 90CRI <b>935</b> = 3500K, 90CRI <b>940</b> = 4000K, 90CRI	<b>FLL</b> = Frosted Lens (Diffuse)	<b>[Blank]</b> = None <b>FLL</b> = Frosted Lens (Diffuse) <b>OOB</b> = Batwing (Optic)																														
<table border="1"> <thead> <tr> <th>2ft</th> <th>3ft</th> <th>4ft</th> </tr> </thead> <tbody> <tr> <td>2000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>3000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>4000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>5000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>6000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>8000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>9000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>10000 Lm</td> <td>•</td> <td>•</td> </tr> <tr> <td>11000 Lm</td> <td>•</td> <td>•</td> </tr> </tbody> </table>		2ft	3ft	4ft	2000 Lm	•	•	3000 Lm	•	•	4000 Lm	•	•	5000 Lm	•	•	6000 Lm	•	•	8000 Lm	•	•	9000 Lm	•	•	10000 Lm	•	•	11000 Lm	•	•	<b>Notes</b> Reference the table for available Output levels by Diameter. Leave Indirect Output blank with Direct Only luminaire Specify Custom Lumen Output to the nearest 100Lm Min: 1500Lm *RGBD and RGBU is used for RGBWW with 2 Channel Tunable White controllable with WIZ available soon	<b>Notes</b>	<b>Notes</b>	<b>Notes</b> Leave blank with Direct Only luminaire Batwing (OOB) is a Batwing Optic with Open top (ie. no dust cover)
2ft	3ft	4ft																																	
2000 Lm	•	•																																	
3000 Lm	•	•																																	
4000 Lm	•	•																																	
5000 Lm	•	•																																	
6000 Lm	•	•																																	
8000 Lm	•	•																																	
9000 Lm	•	•																																	
10000 Lm	•	•																																	
11000 Lm	•	•																																	

Electrical			
Circuiting	Emergency Options	Voltage	Controls
<b>1</b> = Single Circuit <b>2</b> = Dual Circuit	<b>D</b> = None (Standard) <b>E</b> = Emergency Circuit <b>T</b> = UL924 Bypass Relay Device	<b>U</b> = Universal (120V-277V) <b>3</b> = 347V	<b>DD</b> = Standard 0-10V (1%-100%) <b>WaveLinx Wireless</b> <b>WPS</b> = WaveLinx Pro Integrated Sensor (formerly WAA) <b>WLS</b> = WaveLinx Lite Integrated Sensor (formerly WAB)
<b>Notes</b> Dual Circuit (2) allows for independent Direct and Indirect Circuits	<b>Notes</b>	<b>Notes</b> 347V (3) available with Standard 0-10V (DD) Controls option only with remote transformer	<b>Notes</b> Sensors are mounted on the inside of the luminaire ring with Suspended/Pendant (P) luminaires only. See Controls details below. Tilemount Sensors are provided with Surface (S) luminaires. Sensors combined with Emergency Circuit require one UL924 Bypass Relay per emergency fixture. Sensors are available with Single Circuit (1) option only

Options				Special Options
Body Finish	Suspension Type	Ceiling Type	Mounting Hardware Color	
<b>W</b> = White <b>S</b> = Silver <b>B</b> = Black  <b>C</b> = Custom Color (RAL) <b>CM</b> = Custom Color (Match)	<b>N04</b> = 4ft Air Craft Cable (No Collector) <b>N10</b> = 10ft Air Craft Cable (No Collector) <b>N20</b> = 20ft Air Craft Cable (No Collector) <b>N30</b> = 30ft Air Craft Cable (No Collector)  <b>C04</b> = 4ft Air Craft Cable (with Collector) <b>C10</b> = 10ft Air Craft Cable (with Collector) <b>C20</b> = 20ft Air Craft Cable (with Collector) <b>C30</b> = 30ft Air Craft Cable (with Collector) <b>SMT</b> = Surface Mount (Ceiling)	<b>T1</b> = 15/16in T-Grid <b>T9</b> = 9/16in T-Grid <b>TS</b> = 9/16in Slotted, Tegular, or Interlude T-Grid <b>JB</b> = J-Box / Structure	<b>W</b> = White <b>B</b> = Black	
<b>Notes</b> Custom colors and finishes are available as ETO	<b>Notes</b> The No Collector options (N) have three independent mounting points. The Collector options (C) collect three cables to a single mounting point. See Mounting Section below Surface Mount (SMT) available with Surface (S) luminaire only	<b>Notes</b> All T-Grid options (T1, T9, and TS) are compatible with Flat Lay-In Panels and Tegular Panels	<b>Notes</b>	<b>Notes</b>

## Product Specifications

### Construction

- Extruded 6063 Aluminum welded to 5052 aluminum brace
- Single piece Polycarbonate substrate lensing for down-light
- Driver accessible from above. Removable 22 gauge cold rolled steel top trays for up-light

### Diameters

- Available in 2ft, 3ft, and 4ft

### Finish

- Electrostatically applied polyester powder coat paint
- White, silver, and black finishes are standard.
- RAL custom colors are available

### Optics

- **FLL:** Frosted lens (Diffuse) with lambertian distribution
- **OOB:** 96° peak intensity beam spread and excellent color over angle uniformity

### LED and Light Engine

- Available in 2700K, 3000K, 3500K, 4000K
- CRI ≥90CRI
- Refer to the lumen adjustment factor tables
- Extrapolated LED lifetime per TM-21:  
Greater than L90 at 44,000 hrs  
L70 exceeding 102,000 hrs
- Available in 120-277V
- 347V available with Standard 0-10V (DD) Controls option only with remote transformer

### Mounting

- Minimum suspension height from ceiling to top of fixture is 5"
- Recommended 18"+ for optimal ceiling uniformity with Indirect Batwing Optic
- Adjustable aircraft cables for balancing
- Refer to installation instructions for various ceiling interface details

### Integrated Controls

- 0-10V dimming to 1% standard
- WaveLinx sensor compatible for IoT capability

### Emergency Options

- UL 924 emergency/generator transfer options available

### Weight

- Max weight:  
2ft: 17 pounds  
3ft: 23 pounds  
4ft: 30 pounds

### Compliance

- UL listed for damp locations
- Tested to IESNA LM-79 and LM-80
- Stated life per TM21 standards
- Can be used for State of California Title 24 high efficacy luminaire

### Warranty

- Five year warranty standard  
[www.cooperlighting.com/legal](http://www.cooperlighting.com/legal)

## Mounting



Air Craft Cable (No Collector)

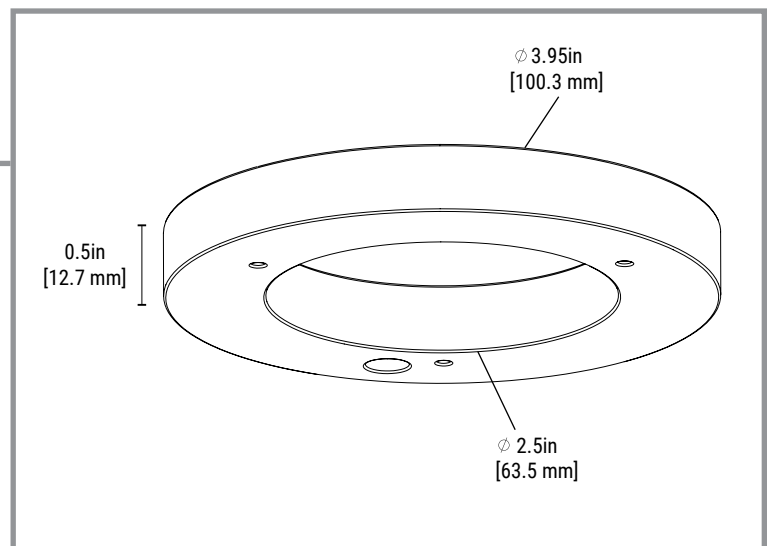
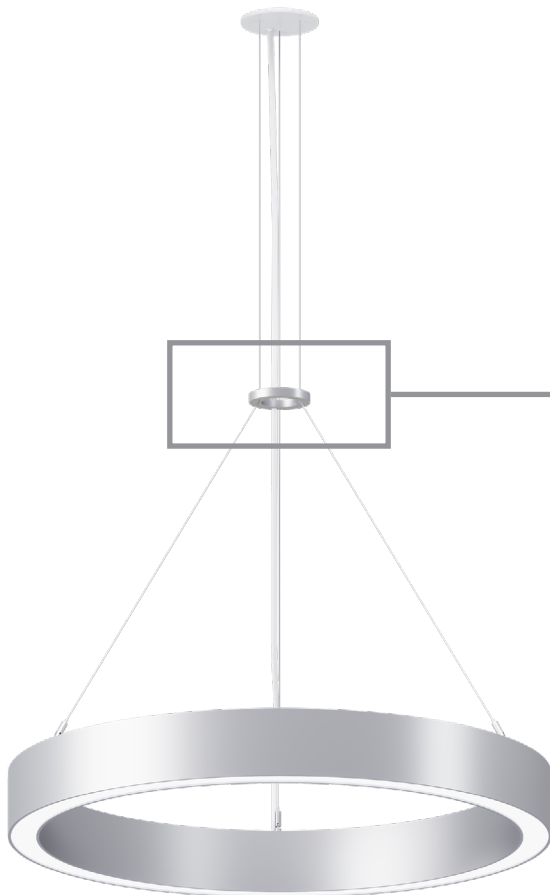


Surface



Air Craft Cable with Collector

## Mounting - Collector



## Sizes



## Finishes



Custom Color RAL



Custom Color Match

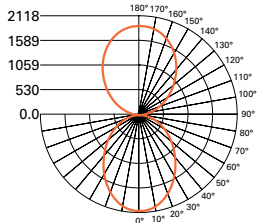


Note: Not all available finish combinations are shown. Custom Colors available as ETO.

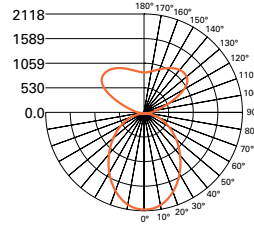
## Photometric Data

View IES files

### 2ft

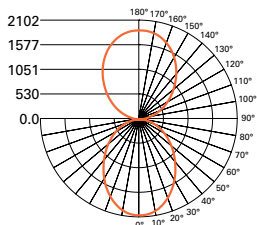


**FILE NAME:**  
DFN2DIP-RG2F0-050D050US935-  
FLLFLL-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9690.4 Lm  
**WATTS:** 141.3W  
**EFFICACY:** 68.6 Lm/W  
**TEST NO.:** P77872  
50% UP / 50% DOWN

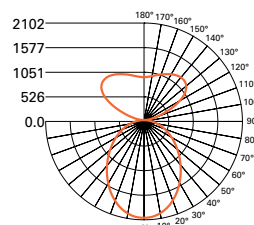


**FILE NAME:**  
DFN2DIP-RG2F0-050D050US935-  
FLLOOB-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9530.7 Lm  
**WATTS:** 141.3 W  
**EFFICACY:** 67.4 Lm/W  
**TEST NO.:** P77728  
49% UP / 51% DOWN

### 3ft

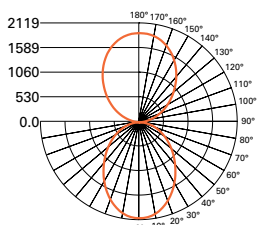


**FILE NAME:**  
DFN2DIP-RG3F0-050D050US935-  
FLLFLL-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9688.3 Lm  
**WATTS:** 117.5 W  
**EFFICACY:** 82.5 Lm/W  
**TEST NO.:** P78426  
50% UP / 50% DOWN

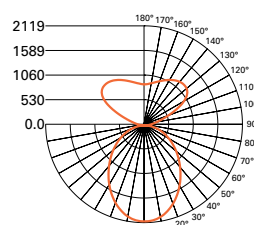


**FILE NAME:**  
DFN2DIP-RG3F0-050D050US935-  
FLLOOB-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9529.4 Lm  
**WATTS:** 117.5 W  
**EFFICACY:** 81.1 Lm/W  
**TEST NO.:** P78230  
49% UP / 51% DOWN

### 4ft



**FILE NAME:**  
DFN2DIP-RG4F0-050D050US935-  
FLLFLL-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9689.3 Lm  
**WATTS:** 120.2W  
**EFFICACY:** 80.6 Lm/W  
**TEST NO.:** P79154  
50% UP / 50% DOWN



**FILE NAME:**  
DFN2DIP-RG4F0-050D050US935-  
FLLOOB-1DUDD-W.ies  
**CCT/CRI:** 3500K / 90 CRI  
**LUMENS:** 9530 Lm  
**WATTS:** 120.2 W  
**EFFICACY:** 79.3 Lm/W  
**TEST NO.:** P78898  
49% UP / 51% DOWN

Note: Refer to IES files for more product data.



### Lumen Maintenance

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours) <sup>(1)</sup>	Theoretical L70 (Hours) <sup>(2)</sup>
25°C	>86%	>102,000

**Notes:** (1) Supported by IES TM-21 standards. (2) Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, that explains proper use of IES TM-21 and LM-80.

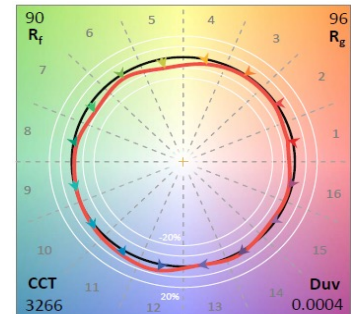
### Lumen Adjustment Factors

CCT	Adjustment Factor
2700K	0.975
3000K	0.975
3500K	1.000
4000K	1.032

### Color Data (3500K)

		90CRI
TM-30-15	R <sub>f</sub>	89.7
	R <sub>g</sub>	96
CRI/CIE	R <sub>a</sub>	94.3
	R <sub>9</sub>	70.9

### 90CRI



## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)

2FT RING   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)**								Glare	
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)
020D	-	1986	0	1986	19.2	103.5	100%/0%	22.7	2127
	020U	1986	1945	3931	44.3	88.7	51%/49%	18.7	2127
	030U	1986	2918	4904	55.3	88.7	41%/59%	17.7	2127
	040U	1986	3807	5793	67.1	86.3	34%/66%	16.9	2127
	050U	1986	4845	6831	92.1	74.2	29%/71%	16.2	2127
	060U	1986	5771	7758	105.7	73.4	26%/74%	15.7	2127
030D	-	2835	0	2835	37.1	76.4	100%/0%	23.9	3036
	020U	2835	1945	4780	56.3	84.9	59%/41%	20.7	3036
	030U	2835	2918	5753	67.3	85.5	49%/51%	19.8	3036
	040U	2835	3807	6642	79.1	84.0	43%/57%	19.1	3036
	050U	2835	4845	7680	105.1	73.1	37%/63%	18.5	3036
	060U	2835	5771	8606	117.7	73.1	33%/67%	18.0	3036
040D	-	3927	0	3927	55.4	70.9	100%/0%	25.1	4205
	020U	3927	1945	5872	74.6	78.7	67%/33%	22.6	4205
	030U	3927	2918	6845	85.6	80.0	57%/43%	21.8	4205
	040U	3927	3807	7734	97.4	79.4	51%/49%	21.2	4205
	050U	3927	4845	8772	122.4	71.7	45%/55%	20.6	4205
	060U	3927	5771	9698	136.0	71.3	40%/60%	20.1	4205
050D	-	4845	0	4845	74.3	65.2	100%/0%	25.8	5188
	020U	4845	1945	6790	93.5	72.6	71%/29%	23.6	5188
	030U	4845	2918	7762	104.5	74.3	62%/38%	22.8	5188
	040U	4845	3807	8652	116.3	74.4	56%/44%	22.3	5188
	050U	4845	4845	9690	141.3	68.6	50%/50%	21.7	5188
	060U	4845	5771	10616	154.9	68.5	46%/54%	21.3	5188
060D	-	5594	0	5594	91.2	61.3	100%/0%	26.3	5990
	020U	5594	1945	7539	110.4	68.3	74%/26%	24.3	5990
	030U	5594	2918	8511	121.4	70.1	66%/34%	23.6	5990
	040U	5594	3807	9401	133.2	70.6	60%/40%	23.1	5990
	050U	5594	4845	10439	158.2	66.0	54%/46%	22.6	5990
	060U	5594	5771	11365	171.8	66.2	49%/51%	22.2	5990

### KEY:

	Meets WELL v2 (2)
TEXT	Meets LEED v4.1 (3)

### Notes:

- UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane
- UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only)
- UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.

\*\* Photometry reflects white housing

## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)

2FT RING   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)**								Glare		KEY:
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)	
020D	-	1986	0	1986	19.2	103.5	100%/0%	22.7	2127	Meets WELL v2 (2)
	020U	1986	1881	3867	44.3	87.3	51%/49%	18.8	2127	Meets LEED v4.1 (3)
	030U	1986	2821	4808	55.3	86.9	41%/59%	17.8	2127	
	040U	1986	3682	5668	67.1	84.5	35%/65%	17.0	2127	
	050U	1986	4685	6671	92.1	72.4	30%/70%	16.3	2127	
	060U	1986	5581	7567	105.7	71.6	26%/74%	15.8	2127	
030D	-	2835	0	2835	37.1	76.4	100%/0%	23.9	3036	
	020U	2835	1881	4716	56.3	40%	60%/40%	20.8	3036	
	030U	2835	2821	5657	67.3	50%	50%/50%	19.9	3036	
	040U	2835	3682	6517	79.1	56%	44%/56%	19.2	3036	
	050U	2835	4685	7520	105.1	62%	38%/62%	18.6	3036	
	060U	2835	5581	8416	117.7	66%	34%/66%	18.1	3036	
040D	-	3927	0	3927	55.4	70.9	100%/0%	25.1	4205	
	020U	3927	1881	5808	74.6	32%	68%/32%	22.6	4205	
	030U	3927	2821	6749	85.6	42%	58%/42%	21.8	4205	
	040U	3927	3682	7609	97.4	48%	52%/48%	21.2	4205	
	050U	3927	4685	8612	122.4	54%	46%/54%	20.6	4205	
	060U	3927	5581	9508	136.0	59%	41%/59%	20.1	4205	
050D	-	4845	0	4845	74.3	65.2	100%/0%	25.8	5188	
	020U	4845	1881	6725	93.5	28%	72%/28%	23.6	5188	
	030U	4845	2821	7666	104.5	37%	63%/37%	22.9	5188	
	040U	4845	3682	8526	116.3	43%	57%/43%	22.4	5188	
	050U	4845	4685	9530	141.3	49%	51%/49%	21.8	5188	
	060U	4845	5581	10426	154.9	54%	46%/54%	21.4	5188	
060D	-	5594	0	5594	91.2	61.3	100%/0%	26.3	5990	
	020U	5594	1881	7474	110.4	25%	75%/25%	24.4	5990	
	030U	5594	2821	8415	121.4	34%	66%/34%	23.7	5990	
	040U	5594	3682	9275	133.2	40%	60%/40%	23.2	5990	
	050U	5594	4685	10279	158.2	46%	54%/46%	22.6	5990	
	060U	5594	5581	11175	171.8	50%	50%/50%	22.2	5990	

- Notes:**
- (1) UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane
  - (2) UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only)
  - (3) UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.

\*\* Photometry reflects white housing



## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)

3FT Ring   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)**								Glare		KEY:
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)	
030D	-	2930	0	2930	35.8	81.8	100%/0%	22.4	1392	Meets WELL v2 (2)
	030U	2930	2887	5817	64.1	90.7	50%/50%	18.4	1392	Meets LEED v4.1 (3)
	040U	2930	3919	6850	75.5	90.7	43%/57%	17.6	1392	
	050U	2930	4845	7775	88.6	87.8	38%/62%	17.1	1392	
	060U	2930	5982	8913	102.4	87.0	33%/67%	16.5	1392	
	080U	2930	7822	10753	130.2	82.6	27%/73%	15.7	1392	
	090U	2930	8721	11651	155.8	74.8	25%/75%	15.4	1392	
040D	-	3794	0	3794	48.1	78.9	100%/0%	23.3	1803	Notes: (1) UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane (2) UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only) (3) UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)
	030U	3794	2887	6681	76.4	87.4	57%/43%	19.9	1803	
	040U	3794	3919	7714	87.8	87.9	49%/51%	19.2	1803	
	050U	3794	4845	8639	100.9	85.6	44%/56%	18.6	1803	
	060U	3794	5982	9777	114.7	85.2	39%/61%	18.1	1803	
	080U	3794	7822	11617	142.5	81.5	33%/67%	17.3	1803	
	090U	3794	8721	12515	168.1	74.5	30%/70%	17	1803	
050D	-	4845	0	4845	64.7	74.9	100%/0%	24.2	2302	
	030U	4845	2887	7731	93.0	83.1	63%/37%	21.2	2302	
	040U	4845	3919	8764	104.4	83.9	55%/45%	20.6	2302	
	050U	4845	4845	9690	117.5	82.5	50%/50%	20.1	2302	
	060U	4845	5982	10827	131.3	82.5	45%/55%	19.6	2302	
	080U	4845	7822	12667	159.1	79.6	38%/62%	18.9	2302	
	090U	4845	8721	13565	184.7	73.4	36%/64%	18.6	2302	
060D	-	5763	0	5763	77.7	74.2	100%/0%	24.8	2738	
	030U	5763	2887	8650	106.0	81.6	67%/33%	22.2	2738	
	040U	5763	3919	9683	117.4	82.5	60%/40%	21.6	2738	
	050U	5763	4845	10608	130.5	81.3	54%/46%	21.1	2738	
	060U	5763	5982	11746	144.3	81.4	49%/51%	20.6	2738	
	080U	5763	7822	13586	172.1	78.9	42%/58%	19.9	2738	
	090U	5763	8721	14484	197.7	73.3	40%/60%	19.7	2738	
080D	-	7706	0	7706	113.1	68.1	100%/0%	25.8	3661	
	030U	7706	2887	10593	141.6	74.8	73%/27%	23.7	3661	
	040U	7706	3919	11626	153.0	76.0	66%/34%	23.2	3661	
	050U	7706	4845	12551	166.1	75.6	61%/39%	22.7	3661	
	060U	7706	5982	13689	179.9	76.1	56%/44%	22.3	3661	
	080U	7706	7822	15529	207.7	74.8	50%/50%	21.7	3661	
	090U	7706	8721	16427	233.3	70.4	47%/53%	21.4	3661	
090D	-	8647	0	8647	133.0	65.0	100%/0%	26.2	4107	
	030U	8647	2887	11534	161.3	71.5	75%/25%	24.3	4107	
	040U	8647	3919	12566	172.7	72.8	69%/31%	23.8	4107	
	050U	8647	4845	13492	185.8	72.6	64%/36%	23.4	4107	
	060U	8647	5982	14629	199.6	73.3	59%/41%	22.9	4107	
	080U	8647	7822	16469	227.4	72.4	53%/47%	22.3	4107	
	090U	8647	8721	17368	253.0	68.6	50%/50%	22.1	4107	

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.

\*\* Photometry reflects white housing

## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)

3FT Ring   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)*								Glare	
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)
030D	-	2930	0	2930	35.8	81.8	100%/0%	22.4	1392
	030U	2930	2791	5721	64.1	89.3	51%/49%	18.5	1392
	040U	2930	3790	6720	75.5	89.0	44%/56%	17.7	1392
	050U	2930	4685	7615	88.6	86.0	38%/62%	17.2	1392
	060U	2930	5785	8715	102.4	85.1	34%/66%	16.6	1392
	080U	2930	7564	10495	130.2	80.6	28%/72%	15.8	1392
090U	2930	8433	11363	155.8	72.9	26%/74%	15.5	1392	
040D	-	3794	0	3794	48.1	78.9	100%/0%	23.3	1803
	030U	3794	2791	6586	76.4	86.2	58%/42%	20.0	1803
	040U	3794	3790	7585	87.8	86.4	50%/50%	19.3	1803
	050U	3794	4685	8480	100.9	84.0	45%/55%	18.7	1803
	060U	3794	5785	9580	114.7	83.5	40%/60%	18.2	1803
	080U	3794	7564	11359	142.5	79.7	33%/67%	17.4	1803
090U	3794	8433	12228	168.1	72.7	31%/69%	17.1	1803	
050D	-	4845	0	4845	64.7	74.9	100%/0%	24.2	2302
	030U	4845	2791	7636	93.0	82.1	63%/37%	21.3	2302
	040U	4845	3790	8635	104.4	82.7	56%/44%	20.7	2302
	050U	4845	4685	9530	117.5	81.1	51%/49%	20.2	2302
	060U	4845	5785	10630	131.3	81.0	46%/54%	19.7	2302
	080U	4845	7564	12409	159.1	78.0	39%/61%	19.0	2302
090U	4845	8433	13278	184.7	71.9	36%/64%	18.7	2302	
060D	-	5763	0	5763	77.7	74.2	100%/0%	24.8	2738
	030U	5763	2791	8555	106.0	80.7	67%/33%	22.2	2738
	040U	5763	3790	9554	117.4	81.4	60%/40%	21.6	2738
	050U	5763	4685	10448	130.5	80.1	55%/45%	21.2	2738
	060U	5763	5785	11548	144.3	80.0	50%/50%	20.7	2738
	080U	5763	7564	13328	172.1	77.4	43%/57%	20.0	2738
090U	5763	8433	14196	197.7	71.8	41%/59%	19.7	2738	
080D	-	7706	0	7706	113.1	68.1	100%/0%	25.8	3661
	030U	7706	2791	10498	141.6	74.1	73%/27%	23.7	3661
	040U	7706	3790	11496	153.0	75.1	67%/33%	23.2	3661
	050U	7706	4685	12391	166.1	74.6	62%/38%	22.8	3661
	060U	7706	5785	13491	179.9	75.0	57%/43%	22.4	3661
	080U	7706	7564	15271	207.7	73.5	50%/50%	21.8	3661
090U	7706	8433	16139	233.3	69.2	48%/52%	21.5	3661	
090D	-	8647	0	8647	133.0	65.0	100%/0%	26.2	4107
	030U	8647	2791	11438	161.3	70.9	76%/24%	24.3	4107
	040U	8647	3790	12437	172.7	72.0	70%/30%	23.8	4107
	050U	8647	4685	13332	185.8	71.8	65%/35%	23.4	4107
	060U	8647	5785	14432	199.6	72.3	60%/40%	23.0	4107
	080U	8647	7564	16212	227.4	71.3	53%/47%	22.4	4107
090U	8647	8433	17080	253.0	67.5	51%/49%	22.2	4107	

**KEY:**

	Meets WELL v2 (2)
TEXT	Meets LEED v4.1 (3)

**Notes:**

- (1) UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane
- (2) UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only)
- (3) UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.

\*\* Photometry reflects white housing

## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)

4FT Ring   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Batwing Optic (OOB)								Glare	
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)
040D	-	3733	0	3733	50.8	73.5	100%/0%	22.2	997
	040U	3733	3683	7417	88.1	84.2	50%/50%	18.1	997
	050U	3733	4685	8418	101.3	83.1	44%/56%	17.5	997
	060U	3733	5685	9418	111.8	84.2	40%/60%	17.0	997
	080U	3733	7480	11214	135.4	82.8	33%/67%	16.2	997
	090U	3733	8433	12167	153.5	79.3	31%/69%	15.9	997
	0100U	3733	9419	13152	164.0	80.2	28%/72%	15.5	997
0110U	3733	10307	14041	183.8	76.4	27%/73%	15.3	997	
050D	-	4845	0	4845	69.7	69.51	100%/0%	23.1	1293
	040U	4845	3683	8528	107.0	79.7	57%/43%	19.6	1293
	050U	4845	4685	9530	120.2	79.3	51%/49%	19.0	1293
	060U	4845	5685	10530	130.7	80.6	46%/54%	18.6	1293
	080U	4845	7480	12325	154.3	79.9	39%/61%	17.8	1293
	090U	4845	8433	13278	172.4	77.0	36%/64%	17.5	1293
	0100U	4845	9419	14264	182.9	78.0	34%/66%	17.2	1293
0110U	4845	10307	15152	202.7	74.8	32%/68%	16.9	1293	
060D	-	5841	0	5841	83.7	69.78	100%/0%	23.7	1559
	040U	5841	3683	9524	121.0	78.7	61%/39%	20.6	1559
	050U	5841	4685	10526	134.2	78.4	55%/45%	20.1	1559
	060U	5841	5685	11526	144.7	79.7	51%/49%	19.7	1559
	080U	5841	7480	13321	168.3	79.2	44%/56%	19.0	1559
	090U	5841	8433	14274	186.4	76.6	41%/59%	18.7	1559
	0100U	5841	9419	15260	196.9	77.5	38%/62%	18.4	1559
0110U	5841	10307	16148	216.7	74.5	36%/64%	18.1	1559	
080D	-	7715	0	7715	116.4	66.28	100%/0%	24.7	2059
	040U	7715	3683	11398	153.7	74.2	68%/32%	22.1	2059
	050U	7715	4685	12400	166.9	74.3	62%/38%	21.7	2059
	060U	7715	5685	13400	177.4	75.5	58%/42%	21.3	2059
	080U	7715	7480	15195	201.0	75.6	51%/49%	20.6	2059
	090U	7715	8433	16148	219.1	73.7	48%/52%	20.3	2059
	0100U	7715	9419	17134	229.6	74.6	45%/55%	20.1	2059
0110U	7715	10307	18022	249.4	72.3	43%/57%	19.8	2059	
090D	-	8721	0	8721	140.5	62.07	100%/0%	25.1	2328
	040U	8721	3683	12404	177.8	69.8	70%/30%	22.8	2328
	050U	8721	4685	13406	191.0	70.2	65%/35%	22.3	2328
	060U	8721	5685	14406	201.5	71.5	61%/39%	22.0	2328
	080U	8721	7480	16201	225.1	72.0	54%/46%	21.4	2328
	090U	8721	8433	17154	243.2	70.5	51%/49%	21.1	2328
	0100U	8721	9419	18139	253.7	71.5	48%/52%	20.8	2328
0110U	8721	10307	19028	273.5	69.6	46%/54%	20.6	2328	
100D	-	9505	0	9505	152.9	62.16	100%/0%	25.4	2537
	040U	9505	3683	13188	190.2	69.3	72%/28%	23.2	2537
	050U	9505	4685	14190	203.4	69.8	67%/33%	22.8	2537
	060U	9505	5685	15189	213.9	71.0	63%/37%	22.4	2537
	080U	9505	7480	16985	237.5	71.5	56%/44%	21.9	2537
	090U	9505	8433	17938	255.6	70.2	53%/47%	21.6	2537
	0100U	9505	9419	18923	266.1	71.1	50%/50%	21.3	2537
0110U	9505	10307	19812	285.9	69.3	48%/52%	21.1	2537	
110D	-	10452	0	10452	174.6	59.86	100%/0%	25.8	2790
	040U	10452	3683	14136	211.9	66.7	74%/26%	23.7	2790
	050U	10452	4685	15137	225.1	67.2	69%/31%	23.3	2790
	060U	10452	5685	16137	235.6	68.5	65%/35%	23.0	2790
	080U	10452	7480	17932	259.2	69.2	58%/42%	22.4	2790
	090U	10452	8433	18885	277.3	68.1	55%/45%	22.1	2790
	0100U	10452	9419	19871	287.8	69.0	53%/47%	21.9	2790
0110U	10452	10307	20759	307.6	67.5	50%/50%	21.7	2790	

KEY:	Meets WELL v2 (2)
TEXT	Meets LEED v4.1 (3)

- Notes:**
- (1) UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane
  - (2) UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only)
  - (3) UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.  
 \*\* Photometry reflects white housing

## Energy and Performance Data - Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)

4FT Ring   90CRI   3500K   Direct Frosted Lens (FLL) and Indirect Frosted Lens (FLL)**								Glare	
Direct Lumen Package	Indirect Lumen Package	Direct Lm	Indirect Lm	Total Lm	Total W	Lm/W	% Distribution Direct/Indirect	*Max UGR Ring (4H 8H 70/50/20)	Max Luminance (45-90 deg)
040D	-	3733	0	3733	50.8	73.5	100%/0%	22.2	997
	040U	3733	3809	7542	88.1	85.61	49%/51%	18.1	997
	050U	3733	4845	8578	101.3	84.68	44%/56%	17.5	997
	060U	3733	5879	9612	111.8	85.98	39%/61%	17.0	997
	080U	3733	7735	11469	135.4	84.70	33%/67%	16.2	997
	090U	3733	8721	12454	153.5	81.13	30%/70%	15.9	997
	0100U	3733	9740	13473	164.0	82.16	28%/72%	15.5	997
0110U	3733	10659	14392	183.8	78.30	26%/74%	15.3	997	
050D	-	4845	0	4845	69.7	69.51	100%/0%	23.1	1293
	040U	4845	3809	8654	107.0	80.88	56%/44%	19.6	1293
	050U	4845	4845	9690	120.2	80.61	50%/50%	19.0	1293
	060U	4845	5879	10724	130.7	82.05	45%/55%	18.6	1293
	080U	4845	7735	12580	154.3	81.53	39%/61%	17.8	1293
	090U	4845	8721	13565	172.4	78.69	36%/64%	17.5	1293
	0100U	4845	9740	14585	182.9	79.74	33%/67%	17.2	1293
0110U	4845	10659	15503	202.7	76.48	31%/69%	16.9	1293	
060D	-	5841	0	5841	83.7	69.78	100%/0%	23.7	1559
	040U	5841	3809	9650	121.0	79.75	61%/39%	20.6	1559
	050U	5841	4845	10686	134.2	79.63	55%/45%	20.1	1559
	060U	5841	5879	11720	144.7	80.99	50%/50%	19.7	1559
	080U	5841	7735	13576	168.3	80.67	43%/57%	19.0	1559
	090U	5841	8721	14562	186.4	78.12	40%/60%	18.7	1559
	0100U	5841	9740	15581	196.9	79.13	37%/63%	18.4	1559
0110U	5841	10659	16499	216.7	76.14	35%/65%	18.1	1559	
080D	-	7715	0	7715	116.4	66.28	100%/0%	24.7	2059
	040U	7715	3809	11524	153.7	74.98	67%/33%	22.1	2059
	050U	7715	4845	12560	166.9	75.25	61%/39%	21.7	2059
	060U	7715	5879	13594	177.4	76.63	57%/43%	21.3	2059
	080U	7715	7735	15450	201.0	76.87	50%/50%	20.6	2059
	090U	7715	8721	16436	219.1	75.01	47%/53%	20.3	2059
	0100U	7715	9740	17455	229.6	76.02	44%/56%	20.1	2059
0110U	7715	10659	18373	249.4	73.67	42%/58%	19.8	2059	
090D	-	8721	0	8721	140.5	62.07	100%/0%	25.1	2328
	040U	8721	3809	12530	177.8	70.47	70%/30%	22.8	2328
	050U	8721	4845	13565	191.0	71.02	64%/36%	22.3	2328
	060U	8721	5879	14599	201.5	72.45	60%/40%	22.0	2328
	080U	8721	7735	16456	225.1	73.10	53%/47%	21.4	2328
	090U	8721	8721	17441	243.2	71.72	50%/50%	21.1	2328
	0100U	8721	9740	18461	253.7	72.77	47%/53%	20.8	2328
0110U	8721	10659	19379	273.5	70.86	45%/55%	20.6	2328	
100D	-	9505	0	9505	152.9	62.16	100%/0%	25.4	2537
	040U	9505	3809	13314	190.2	70.00	71%/29%	23.2	2537
	050U	9505	4845	14349	203.4	70.55	66%/34%	22.8	2537
	060U	9505	5879	15383	213.9	71.92	62%/38%	22.4	2537
	080U	9505	7735	17240	237.5	72.59	55%/45%	21.9	2537
	090U	9505	8721	18225	255.6	71.30	52%/48%	21.6	2537
	0100U	9505	9740	19245	266.1	72.32	49%/51%	21.3	2537
0110U	9505	10659	20163	285.9	70.53	47%/53%	21.1	2537	
110D	-	10452	0	10452	174.6	59.86	100%/0%	25.8	2790
	040U	10452	3809	14261	211.9	67.30	73%/27%	23.7	2790
	050U	10452	4845	15297	225.1	67.96	68%/32%	23.3	2790
	060U	10452	5879	16331	235.6	69.32	64%/36%	23.0	2790
	080U	10452	7735	18187	259.2	70.17	57%/43%	22.4	2790
	090U	10452	8721	19173	277.3	69.14	55%/45%	22.1	2790
	0100U	10452	9740	20192	287.8	70.16	52%/48%	21.9	2790
0110U	10452	10659	21111	307.6	68.63	50%/50%	21.7	2790	

**KEY:**

	Meets WELL v2 (2)
TEXT	Meets LEED v4.1 (3)

- Notes:**
- (1) UGR values per CIE 190:2010 with 4H, 8H, Reflectance: 70% Ceiling, 50% Wall, 20% Ref. Plane
  - (2) UGR and Luminance values that meet WELL v2 L04 requirements for Managing Glare are shown with green highlighted cell. (UGR<16, Luminance <6000CD, applies to direct distributions only)
  - (3) UGR and Luminance values that meet LEED v4.1 requirements for Glare Control are shown with green text. (UGR<19, Luminance <7000CD applies to direct distributions only)

\* UGR - Universal Glare Rating is an objective calculation of glare from a standard application of electric lighting. UGR numbers may vary depending as most industry photometric tools will assume this product is a fully luminous circle and not a ring of light. Given the form factor of this product as a luminous ring, assumptions were made to derive UGR to more accurately reflect the area of the luminous ring and not the default method assuming a fully luminous circle.  
 \*\* Photometry reflects white housing

## Control Solutions

- WaveLinx LITE wireless
- WaveLinx PRO wireless
- WaveLinx CAT wired
- WaveLinx Wired



The Define Geo - Rings with WaveLinx offers no-hassle lighting control with multiple luminaire level control solutions.



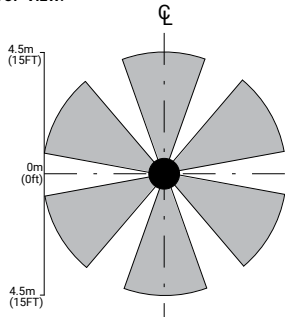
**WaveLinx PRO** is a wireless lighting control solution, for connected spaces, that significantly reduces a building's energy consumption. From a single floor to an entire campus, WaveLinx PRO connects more than lighting assets; it shares aggregated sensor data with the WaveLinx CORE platform and other building systems, so building owners can improve operations, spaces environment, and tenants' experience. WaveLinx PRO offers a rich portfolio of wireless devices, WaveLinx PRO-enabled luminaires, and an intuitive WaveLinx mobile app for office, education, warehouse, and parking garage applications.



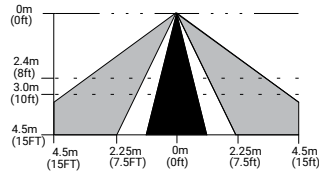
**WaveLinx LITE** is a cost effective, wireless digital lighting control solution, with out-of-the-box functionality, that saves energy and meets code. It's designed for applications that require occupancy-based, daylighting, or manual light control. Customize installations for office, education, warehouse and parking garages using the secure, simple mobile app.

### Integrated Sensor Coverage Pattern

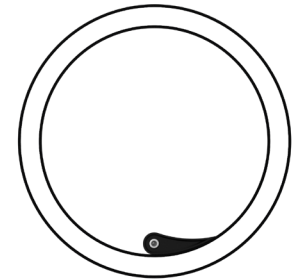
TOP VIEW:



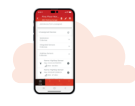
SIDE VIEW:



**Note:** Installation of integrated sensors within 3-ft (1m) of HVAC air vents is not recommended. The pattern shown is intended solely as a general guide and is not to scale.



**Luminaire with standalone sensor**



**Standalone Spaces WaveLinx LITE**



**Standalone Spaces WaveLinx CAT**



**Networked Spaces WaveLinx PRO**



**Enterprise WaveLinx CORE**

<b>Occupancy</b>	Yes	Yes	Yes	Yes	Yes
<b>Daylighting</b>	Yes	Yes	Yes	Yes	Yes
<b>Wallstations</b>	-	Yes	Yes	Yes	Yes
<b>Gateways</b>	-	-	-	1 WAC	300 WACs
<b>Devices (MAX)</b>	-	40 per Area (1120 per space)	40 per Area	200 per WAC2	32,500 per CORE Enterprise
<b>Software</b>	-	WaveLinx LITE Mobile App	WaveLinx CAT Mobile App	WaveLinx Mobile App	CORE
<b>Areas</b>	-	28 per Space	Unlimited	50 per WAC2	up to 3,000
<b>Zones</b>	-	16 per Area	16 per Area	16 per Area	up to 9,000
<b>Scheduling</b>	-	-	-	Local	Global
<b>VividTune™</b>	-	-	-	Yes	Yes
<b>Plug-Load Control</b>	-	Yes	Yes	Yes	Yes
<b>Low-Voltage Power</b>	-	-	Yes	Yes	Yes
<b>Integration</b>	-	-	-	-	BACnet, API
<b>Dashboards</b>	-	-	-	-	Energy, Occupancy
<b>Configuration</b>	-	Installer	Installer	Technician	Technician / IT

## SCALABILITY



**WaveLinx expands from a single standalone device up to Enterprise with 32,500 devices**

*\*Note: WaveLinx LITE devices can be upgraded to WaveLinx PRO via an OTA firmware update. The OTA and system configuration can only be performed by Cooper Lighting Solutions specialists. WaveLinx Area Controller(s) would also need to be added to complete the solution.*