

Calculite LED 1.75"

Calculite Specification-grade downlighting

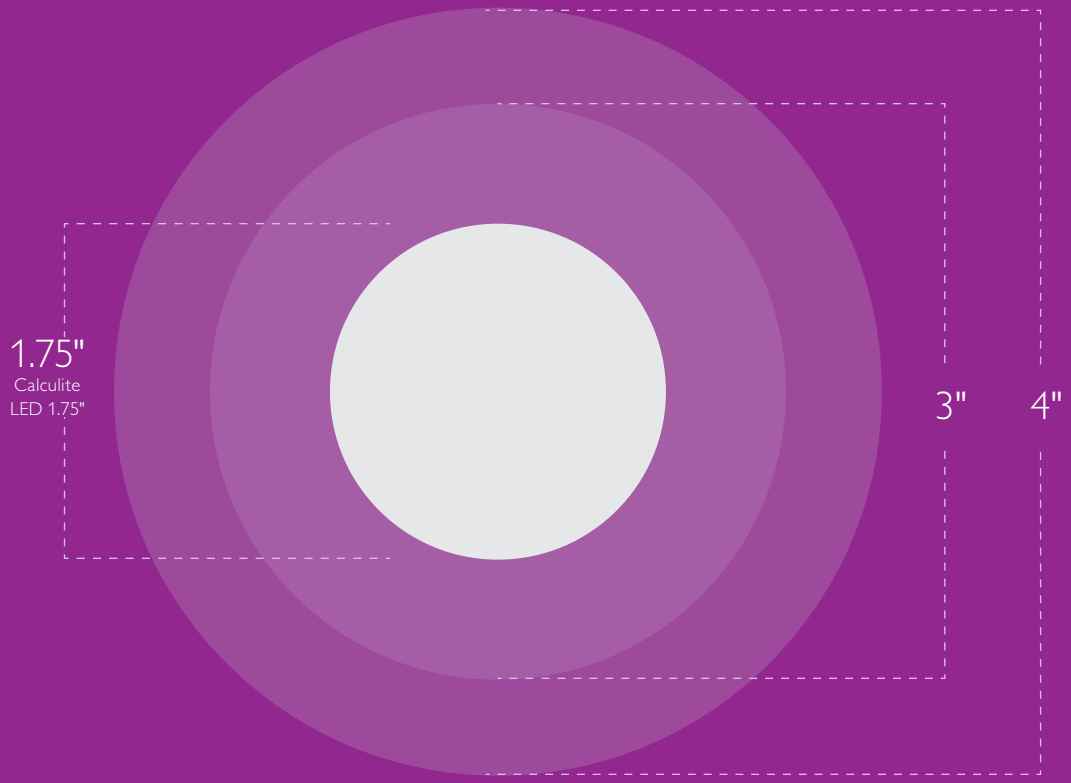
PHILIPS
LIGHTOLIER

Powerful.
Affordable.
Versatile.

It's time to focus on the quality of the lit environment, not just the energy consumed.

Philips Lightolier introduces the Calculite 1.75".

Its scale and performance open up your design possibilities. You might even forget you're saving energy.



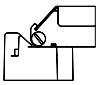
The difference is substantial

Calculite redefines small aperture while delivering MR16 comparable light levels with our LED 1.75".

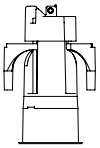
Critical product details

Usable light levels	328 to 412 lumens
Input wattage	11W
Downlight options	12°, 17°, 25°, 38° beam spreads
Wall wash option	Integral lens
Optical accessories	Diffusion, warming, linear spread
Flexible installation	Install-from-below style for new construction or remodel
Installation accessories	New construction mounting pan, IC housing, remote driver

Features at a glance



Dual-hinge construction limits required plenum depth to 5.5".



Drive-actuated swing arms.
Accommodates ⅛" to 2" thick ceilings.



3000K CCT
Field interchangeable optics.
Field replaceable LED board.
50,000 hour rated LED life[1] (L70).



Screws actuate swing arms from below ceiling.



Secure twist and lock reflector.

Wet location rated[2].

50° cutoff 2 ⅛" ceiling cutout (standard hole saw size).

Flanged and flush-mount option.

1. Based on IESNA LM-80-2008
2. Excludes 12° beam

Beam spread options

Calculite LED 1.75" features four beam spreads (plus numerous optical accessories) for varied application requirements.

Beams are determined by factory-installed optic. Beam optics are field-interchangeable for increased flexibility.



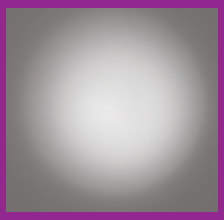
12° Beam Spread
C2L04DL30K**12**R1
5099 CBCP
328 Delivered Lumens



17° Beam Spread
C2L04DL30K**17**R1
3282 CBCP
412 Delivered Lumens



25° Beam Spread
C2L04DL30K**25**R1
1995 CBCP
382 Delivered Lumens



38° Beam Spread
C2L04DL30K**38**R1
936 CBCP
377 Delivered Lumens



Actual size

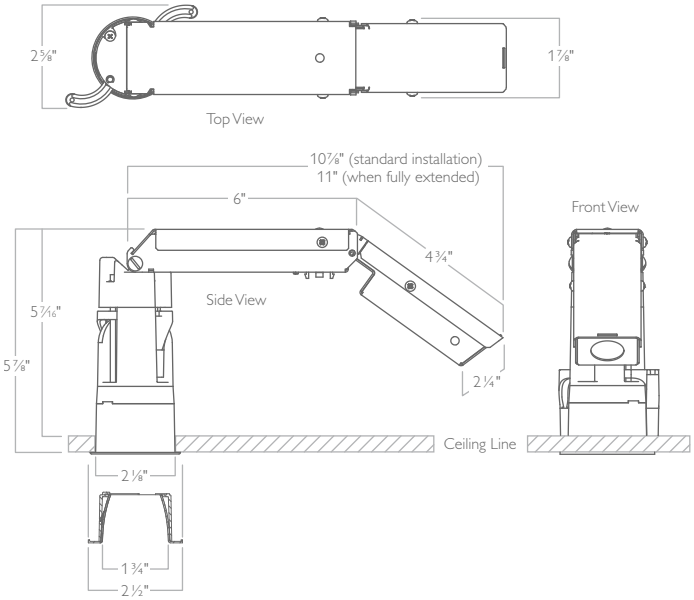


ELV dimming to 10%.
Remote driver option.
50,000 hour rated driver life.
Field replaceable LED driver.



Through-wiring capable with standard 2-1 conduit connector.

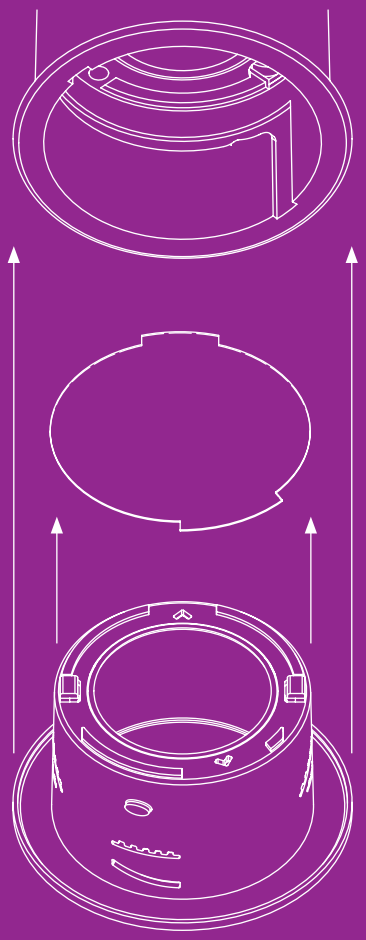
Dimensions



Comparison to MR16 halogen	Calculite LED 1.75" (25° option)	25° Beam Spread	1995 CBCP	382 lumens	11 watts	35 lm/w
Though small in aperture, Calculite LED 1.75" performance compares favorably to MR16 halogen alternatives.	35W MR16 *(10° lamp)*	23° Beam Spread	1491 CBCP	333 lumens	42 watts	8 lm/w
	35W MR16 *(24° lamp)*	28° Beam Spread	1186 CBCP	348 lumens	42 watts	8 lm/w
This comparison is to a magnetic transformer MR16 downlight with a Solite diffusion lens.	50W MR16 *(24° lamp)*	27° Beam Spread	1888 CBCP	511 lumens	58 watts	9 lm/w

Microstructure lenses

To minimize accessory thickness and thus maximize optical performance, microstructure lenses are utilized in lieu of traditional glass lenses.



Reflector can be rotated 90° to ensure proper alignment. Friction-fit design maintains installation integrity.

For wall washer & linear spread options, lenses are factory-assembled into specified reflector.

Accessories are keyed to ensure proper installation.

Fixtures accept one accessory, which can be field-installed in any reflector assembly.

Durability

Calculite LED 1.75" fixture operating temperature is well below the recommended thermal limit of each optical accessory, eliminating lens degradation and ensuring maximum optical stability.

Diffusion film

CA2DF2
2° clear
Softens beam with limited impact on delivered lumens and CBCP.

CA2DF85
85° frosted
Delivers uniform distribution and wide (66°) beam angle.

CA2OPF
Opal color correction
Warms CCT to 2850K (within 2700K ANSI quadrangle) and wide (80°) beam angle.

The above accessory films are recommended for use primarily with 12° beam option (C2L04DL30K**12**R1).

Color rendering

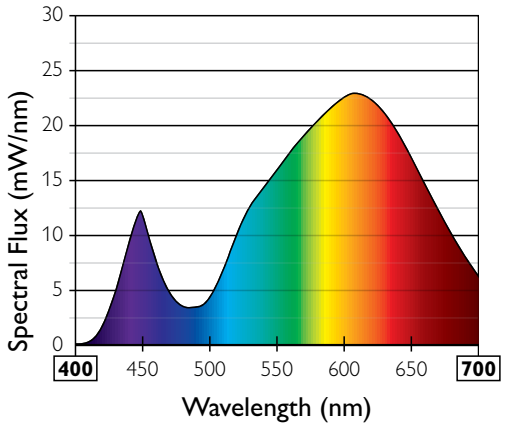
Calculite LED 1.75" features an 82 CRI typical, 80 CRI minimum.
"R" values are listed below.

RA	R1	R2	R3	R4	R5	R6	R7	R8	**R9**	R10	R11	R12	R13	R14
81	80	87	91	79	78	81	86	66	**21**	68	75	62	81	94

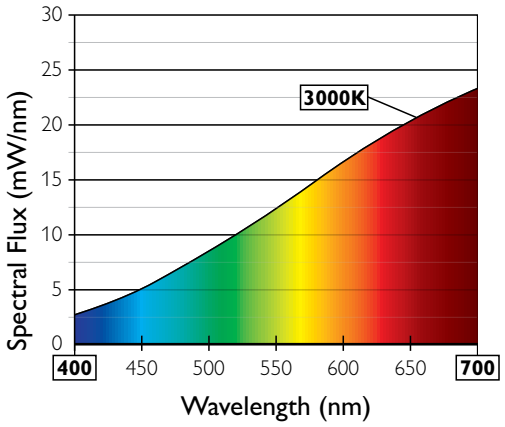
CRI as a metric

While CRI continues to be used as a tool to predict color appearance in objects, the industry understands that CRI is an incomplete metric for many lighting technologies. With LED technology, CRI can be inflated without truly improving the rendering of most colors. Therefore, Calculite's emphasis is the overall color spectrum.

Calculite LED 1.75"
Spectral Distribution

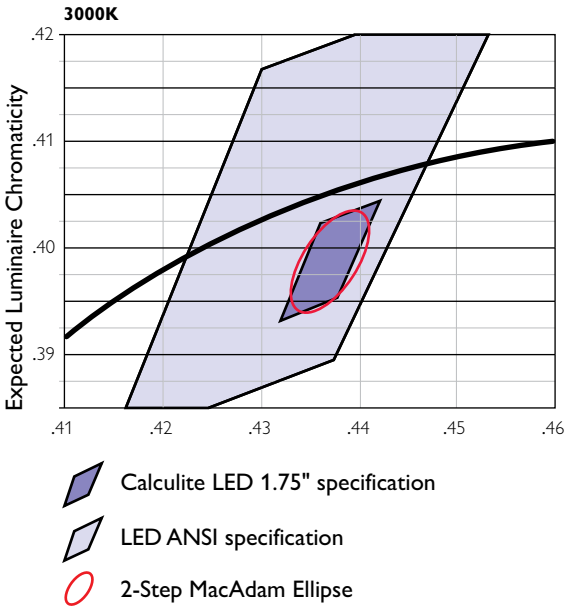


MR16 Halogen
Spectral Distribution



Color consistency

Calculite LED 1.75" features exceptional color consistency across products. Color temperature will be maintained within two MacAdam Ellipse (SDCM) variation, ensuring all fixtures deliver the quality of light specified.



Independent test data

LM-79 An IES-approved method to quantify the performance of the fixture's total luminous flux, electrical input power, luminous intensity distribution (candelas) and chromaticity.

LM-80 An IES-approved method to determine the lumen maintenance of LED light sources. The LED manufacturers provide life ratings for individual LED's at specific drive currents and operating temperatures. In turn, the luminaire manufacturer measures the drive current and temperature in their LED fixture. The data is crossed to estimate LED life in a fixture. L70 is the life at which the fixture delivers 70% of initial light output.

Standard product in Non-IC installation

Calculite LED 1.75" is an install-from-below product for either remodel or new construction. The standard product offering is Non-IC, wet location with no additional "frame-in-kit" required. Install as illustrated below:



Insert fixture through 2 ⅛" cutout in ceiling. 2 ⅛" is standard hole saw size. Hinged design requires only 5 ½" plenum depth (Non-IC).



Using screwdriver (electric or manual), rotate installation screws in aperture to actuate pivoting installation arms. Arms will secure fixture directly to ceiling.



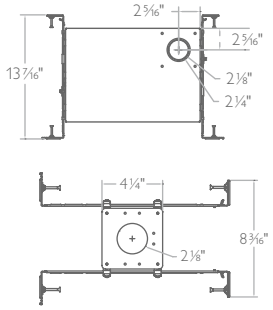
Align bumps on reflector housing with grooves in fixture body. Press flush to ceiling and rotate. Slight force is required to overcome initial resistance, ensuring proper installation.

IC and other installation accessories

New construction — Enhanced mounting configuration

C2LIC Insulated ceiling (IC) rated new construction frame-in kit. Features an off-center fixture installation point.

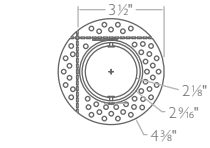
C2LMP New construction mounting pan provides ability to prelocate wiring for easy below-ceiling access. Includes bar hangers with preset screws which accommodate 12"-24" joist spacing. Bars also attach to T-bar ceilings. Width: 5.5", Length (min.): 13.12"

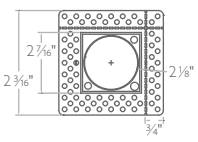


Mud rings (for use with flush mount fixtures)

CA2FMR Round aperture flush-mount mud-in ring. Recommended for gypsum applications. Perforated flange allows installation only 1.4" from vertical structure, including corners.

CA2X2FMR Square aperture flush-mount mud-in ring. Recommended for gypsum applications. Perforated flange allows installation only 1.4" from vertical structure, including corners.





Ordering guide and specifications

Fixture

Series	Lumen Package	Trim Flange	Color Temp	Beam Spread	Installation Style	Input Voltage
C2L	**04**		**30K**		**R**	**1**
C2L	**04** 400lms[1]	**DL** Flanged **DLFT** Flush mount[2]	**30K** 3000K	**12** 12°[3] **17** 17° **25** 25° **38** 38°	**R** Install from below	**1** 120V

Standard fixture is Non-IC, wet location[3]. For IC fixture add mounting accessory. See below.

1. Values are nominal lumens.
2. Requires "FT" selection on Reflectors below.
3. Wet location is not available for 12° beam spread.

Open and lensed reflectors

Series	Style	Finish	Flange
C2L Round	**DL** Downlight-50° cutoff **DLLS** Downlight with linear spread lens-75° cutoff **LW** Lensed wall washer[1]	**BK** Black **CCD** Comfort clear linear diffuse **CCZ** Champagne bronze **WH** Painted white	**P** Aperture-matching **FT** Flush mount[2]
C2X2L Square	**DL** Downlight-50° cutoff **LW** Lensed wall washer[1]	**BK** Black **WH** Painted white	**P** Aperture-matching **FT** Flush mount[2]

1. 17° beam spread recommended.
2. Requires "FT" selector on fixture trim option above.

Microstructure lens accessories[1]

Cat. No.	Description
CA2DF2	2° clear diffusion film
CA2DF85	85° frosted diffusion film
CA2OPF	Opal 2700K color correction with frosted diffusion film

1. Actual diffusion depends on selected beam spread.

Installation accessories[2]

Cat. No.	Description
C2LIC	IC frame (new construction)
C2LMP	New construction mounting pan
CA2FMR	Round aperture flush-mount mud-in ring
CA2X2FMR	Square aperture flush-mount mud-in ring

2. Recommended for specific applications. See specification sheet for details.

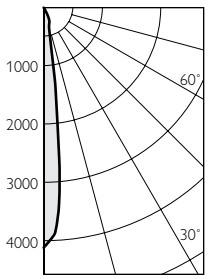
Photometric performance

C2L04DL30K12R1 + C2LDLCCDP (12° beam angle)

Beam Angle: 12°
Spacing Ratio: 0.2
CBCP: 5099
Lumens: 328
Watts: 11
Efficacy (lm/w): 29.8
CCT: 2990
Cutoff: 50°



Candela Plot



Single Unit Data

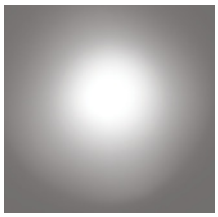
Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	204	142	104	80	63
Beam Diameter	1.0'	1.2'	1.4'	1.6'	1.8'

Candela Table

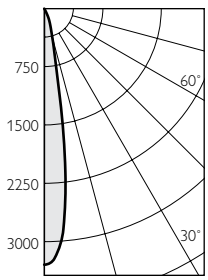
Angle	0	5	15	25	35	45	55	65
Intensity	5099	2829	290	61	14	7	3	1
Lumens	–	118	83	45	9	6	3	1

C2L04DL30K17R1 + C2LDLCCDP (17° beam angle)

Beam Angle: 17°
Spacing Ratio: 0.3
CBCP: 3282
Lumens: 412
Watts: 11
Efficacy (lm/w): 37.3
CCT: 2979
Cutoff: 50°



Candela Plot



Single Unit Data

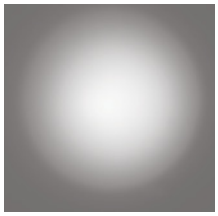
Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	131	91	67	51	41
Beam Diameter	1.5'	1.8'	2.1'	2.4'	2.7'

Candela Table

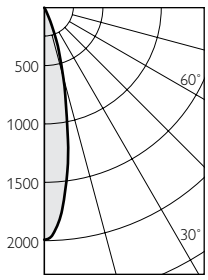
Angle	0	5	15	25	35	45	55	65
Intensity	3282	2835	432	126	13	3	0	0
Lumens	–	212	133	56	9	2	0	0

C2L04DL30K25R1 + C2LDLCCDP (25° beam angle)

Beam Angle: 25°
Spacing Ratio: 0.4
CBCP: 1995
Lumens: 382
Watts: 10.6
Efficacy (lm/w): 36.0
CCT: 2979
Cutoff: 50°



Candela Plot



Single Unit Data

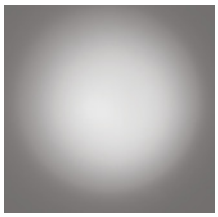
Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	80	55	41	31	25
Beam Diameter	2.0'	2.4'	2.8'	3.2'	3.6'

Candela Table

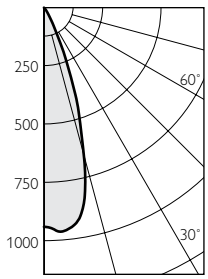
Angle	0	5	15	25	35	45	55	65
Intensity	1995	1742	623	86	12	3	0	0
Lumens	–	147	174	51	8	2	0	0

C2L04DL30K38R1 + C2LDLCCDP (38° beam angle)

Beam Angle: 38°
Spacing Ratio: 0.6
CBCP: 936
Lumens: 377
Watts: 10.8
Efficacy (lm/w): 34.9
CCT: 2977
Cutoff: 50°



Candela Plot



Single Unit Data

Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	37	26	19	15	12
Beam Diameter	3.0'	3.6'	4.2'	4.8'	5.4'

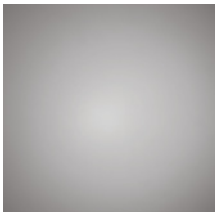
Candela Table

Angle	0	5	15	25	35	45	55	65
Intensity	936	959	668	167	28	4	0	0
Lumens	–	90	180	84	19	4	0	0

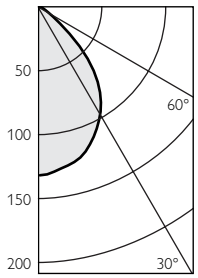
Photometric performance with lenses

C2L04DL30K12R1 + C2LDLCCDP + CA2OPF (opal warming/diffusion lens)

Beam Angle: 80°
Spacing Ratio: 1.1
CBCP: 133
Lumens 190
Watts: 10.7
Efficacy (lm/w): 17.8
CCT: 2840
Cutoff: 50°



Candela Plot



Single Unit Data

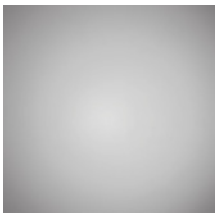
Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	5	4	3	2	2
Beam Diameter	5.5'	6.6'	7.7'	8.8'	9.9'

Candela Table

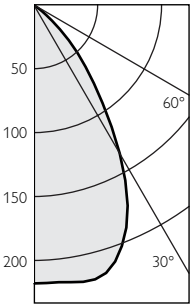
Angle	0	5	15	25	35	45	55	65
Intensity	133	130	123	106	83	44	8	2
Lumens	–	13	34	49	51	33	9	2

C2L04DL30K12R1 + C2LDLCCDP + CA2DF85 (85° diffusion film)

Beam Angle: 66°
Spacing Ratio: 1.0
CBCP: 217
Lumens 256
Watts: 10.7
Efficacy (lm/w): 23.9
CCT: 2990
Cutoff: 50°



Candela Plot



Single Unit Data

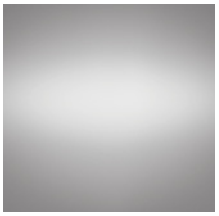
Ceiling Height	5'	6'	7'	8'	9'
Initial Footcandles	9	6	4	3	3
Beam Diameter	5.0'	6.0'	7.0'	8.0'	9.0'

Candela Table

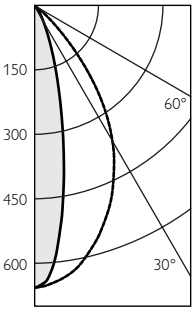
Angle	0	5	15	25	35	45	55	65
Intensity	217	217	216	172	93	38	7	2
Lumens	–	21	60	77	58	29	7	2

C2L04DL30K17R1 + C2LDLLSCCDP (linear diffusion lens)

Beam Angle: 63° x 20°
Spacing Ratio: n/a
CBCP: n/a
Lumens 314
Watts: 10.7
Efficacy (lm/w): 29.3
CCT: 2979
Cutoff: 75°



Candela Plot

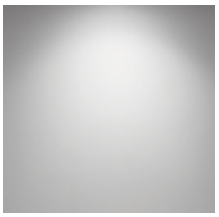


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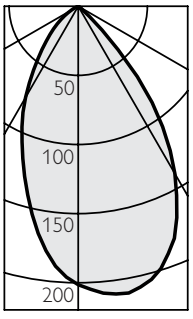
Angle	0	5	15	25	35	45	55	65
Intensity (along)	660	644	562	434	270	83	11	1
Intensity (across)	660	574	216	56	14	5	2	1
Lumens	–	28	51	42	25	9	2	0

C2L04DL30K17R1 + C2LLWCCDP (integral wall wash lens)

Beam Angle: 66°
Spacing Ratio: 1.0
CBCP: 217
Lumens 256
Watts: 10.7
Efficacy (lm/w): 23.9
CCT: 2990
Cutoff: 50°



Candela Plot



Candela Table

Angle	0	5	15	25	35	45	55	65
Intensity (along)	201	189	141	96	56	29	12	3
Intensity (across)	201	208	205	169	106	24	2	1
Lumens	–	9	21	24	19	11	5	1



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