

TruGroove wall micro louver drives performance beyond the edge. Innovative optics deliver exceptional uniformity from a 1.75" aperture continuous line of light. Unique Quad Optic louver cells offer a wide range of options from graze to stack to asymmetric exceeding the demands of the most challenging spaces.

TruGroove wall micro louver includes AccuRender technology for the highest color quality at the highest efficacy

Project: _____

Location: _____

Cat.No: _____

Type: _____

Line ID: _____ Qty: _____

Notes: _____

Ordering guide ¹²

example: TM25L940NGWFF30W5008DS1NRAW, WA-48

Family	Version	Distribution	Source	CRI/CCT ¹			
	2		L				
TM TruGroove micro	2 Wall	1 Direct 3 Indirect 5 Indirect / Direct 6 Direct / Indirect	L LED	950 CRI 90, 5000K 940 CRI 90, 4000K 935 CRI 90, 3500K	930 CRI 90, 3000K 927 CRI 90, 2700K 9T2 CRI 90, 2700-6500K 2ch Tunable White (confirm controls) ^{5,8}		
Optics (Direct)				Lumens (Direct) ¹	Optics (Indirect)	Lumens (Indirect) ¹	Run Length
Lens		Louver cell (specify Quad Optic, color, length, position)		NN None	N None	NN None	O2 2ft
Optic		Quad Optic		40 4000 lm/4ft	W Performance	60 6000 lm/4ft	C2 2.5ft
N No lens (specify direct louver)		N No louver (specify direct lens)		35 3500 lm/4ft	Asymmetric	50 5000 lm/4ft	O3 3ft
W Performance Asymmetric		G Performance 17° Graze Beam w/MesoOptics		30 3000 lm/4ft		40 4000 lm/4ft	C3 3.5ft
B* Definition Symmetric Flush Black		W Performance 20° Asymmetric w/MesoOptics		25 2500 lm/4ft		30 3000 lm/4ft	O4 4ft
L Definition Symmetric Flush Silk				20 2000 lm/4ft		20 2000 lm/4ft	O5 5ft
D* Definition Symmetric Drop Silk				15 1500 lm/4ft		10 1000 lm/4ft	O6 6ft
Note: To specify a lens/louver combination please select both lens and louver options				10 1000 lm/4ft			O8 8ft
							XX Continuous run in 6" increments (please specify)
							Wall Patterns ⁷
Voltage	Driver	Circuit ^{2,10}		Wiring Option ^{2,10}	System / Controls ^{9,16}	Finish	Mount Type
D UNV 120-277V 3 347V ³	E Advance Xitanium 0-10V (1% Dim)	1 Single Circuit V Single Circuit + 1 Thru Wire (BP Trigger) ¹¹		N None B Battery Pack ³ E Aux. Wiring ⁶ G GTD ³ (please specify voltage)	NN None	W Standard White T Titanium Silver B Black G Graphite Grey C Custom (please specify)	WA Wall mounted
D UNV 120-277V	D Advance Xitanium DALI (5% Dim) ³ H Lutron EcoSystem LDE1 (<1% Dim, Fade-to-Black) ³	F Single Circuit + 4 Thru Wires (Mains & Dimming) ¹¹ G Dual Circuit (Up/Down) W Dual Circuit (Up/Dn) + 1 Thru Wire (BP Trigger) ¹¹					
D UNV 120-277V	S Advance Xitanium SR (1% Dim) ³	1 Single Circuit V Single Circuit + 1 Thru Wire (BP Trigger) ¹¹		N None B Battery Pack ³ R UL924 Sensor Bypass Relay ¹³	NN None RA Interact Pro RF sensor, enables wireless connected lighting control ^{4,14}		

- Nominal values within a range. Not all lumen packages are available with all configurations. Consult photometry data for CRI, color temp, lumens & distribution of chosen configuration.
- Not all wiring types are available with all configurations. Consult Ledalite for a complete list of available options.
- 347V not available with Battery Pack, GTD, DALI, Lutron EcoSystem or Sensor Ready drivers or Interact Pro options. Battery packs available in modules > 4ft (lumen package limits may apply, check with Ledalite)
- Interact Pro options require separate controls hardware by Signify.
- Tunable White is available. Please enquire about options for Tunable White with DALI (DT6 or DT8), 0-10V, Lutron T Series or DMX control (extended lead times may apply).
- Auxiliary Wiring not available with Interact Pro luminaires. Aux sections are wired to one fixture end only.
- Please inquire about options for wall mounted corners, custom angles and intersections (extended lead times may apply).
- Tunable White not available with louver cell optics.
- Sensors are only available in white, but can be combined with any luminaire finish.
- Luminaires are pre-wired to both ends with quick wire connectors at one end for standard circuit & battery pack trigger wire (if applicable). Each circuit has its own neutral conductor. All circuits are clearly labelled at each end.

- Thru Wire options can provide either one additional set of (4) power and dimming wires (Black/White/Purple/Grey or Pink) or one additional battery pack trigger wire (Orange) through a selected module, please consult factory for other Thru Wire options.
- Other options not shown here may also be possible via a custom request. Extended lead times and minimum order quantities may apply, please consult factory.
- UL924 listed sensor bypass relay is factory installed between driver & sensor. Must be ordered in same module as integral sensing option. Must be installed in conjunction with a UL1008 device.
- Must order IRT9015 Interact commissioning remote with each system order.
- Combination modules with louver cells and a flush lens may be specified by using the "Louver Cell Length" and "Louver Cell Position" options.
- Signify sensor options shown in the order guide. Third party sensors also available, please enquire about options for Lutron Athena, Vive, or others.

Note: Due to continuing product improvements, Ledalite reserves the right to change the specifications without notice.

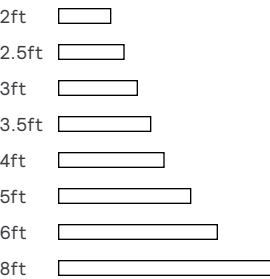
DLC Note: Not all product variations listed on this page are DLC qualified. To ensure that a specific model is qualified, visit www.designlights.org/search

TruGroove wall micro louver

Options and dimensions

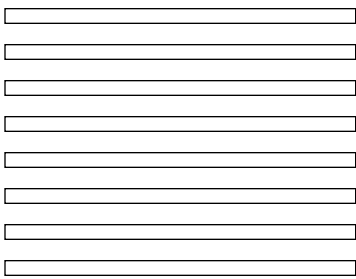
Standalone

Keep it simple with standalone modules, available in 8 standard lengths (consult Ledalite for custom lengths).



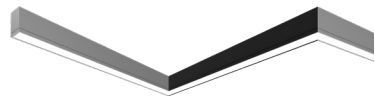
Continuous Run

Create an uninterrupted ribbon of light with continuous runs, specifiable to 6 in.



Patterns

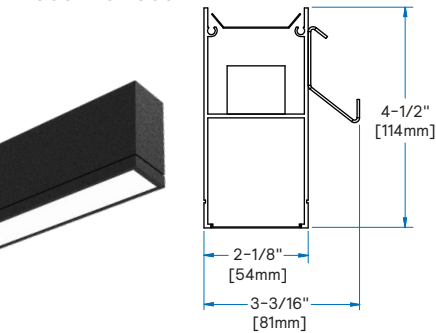
Contact Ledalite for wall mounted corners, custom angles and intersections (extended lead times may apply).



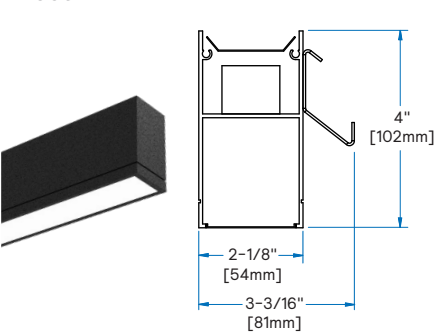
Flush lens

TruGroove wall micro with 1.75" wide Flush MesoOptics or Silk lens.

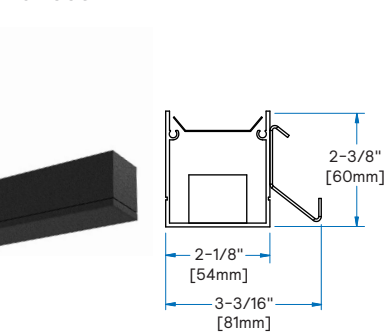
Direct/Indirect



Direct



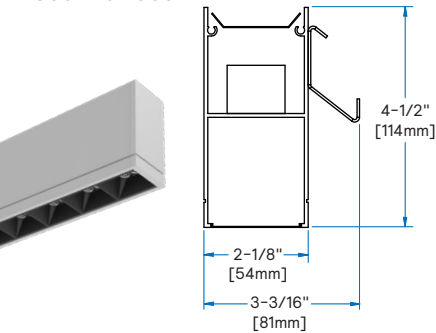
Indirect



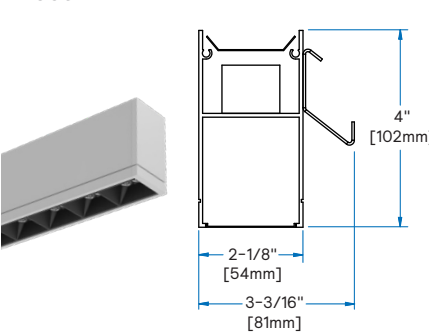
Louver

TruGroove wall micro with Ledalite's unique quad optic louver cells with MesoOptics in 6 distributions.

Direct/Indirect



Direct

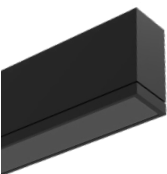
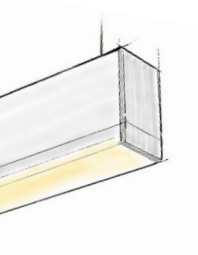


Louvers can be ordered at the full fixture length or in 6 in. or 1 ft sections at one or both ends of a fixture in combination with a lens.



Drop lens and black lens

TruGroove wall micro with drop lens and black lens options.

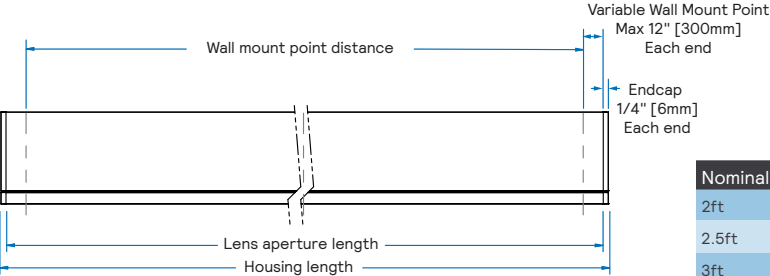


TruGroove wall micro louver

Options and dimensions

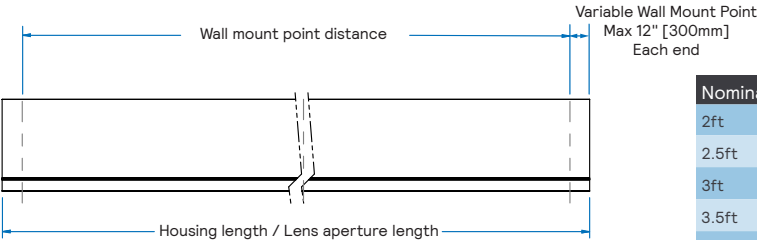
Side Views

Standalone



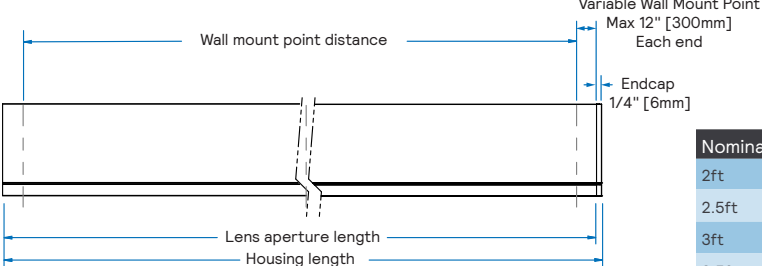
Nominal	Housing	Lens Aperture	Wall Mount Point Distance
2ft	24.5" [622mm]	24.0" [610mm]	Min 2, within 12" of extruded housing ends
2.5ft	30.5" [775mm]	30.0" [762mm]	Min 2, within 12" of extruded housing ends
3ft	36.5" [927mm]	36.0" [914mm]	Min 2, within 12" of extruded housing ends
3.5ft	42.5" [1080mm]	42.0" [1067mm]	Min 2, within 12" of extruded housing ends
4ft	48.5" [1232mm]	48.0" [1219mm]	Min 2, within 12" of extruded housing ends
5ft	60.5" [1537mm]	60.0" [1524mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
6ft	72.5" [1842mm]	72.0" [1829mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
8ft	69.5" [2451mm]	96.0" [2438mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.

Continuous Run (Mid-run)



Nominal	Housing	Lens Aperture	Wall Mount Point Distance
2ft	24.0" [610mm]	24.0" [610mm]	Min 2, within 12" of extruded housing ends
2.5ft	30.0" [762mm]	30.0" [762mm]	Min 2, within 12" of extruded housing ends
3ft	36.0" [914mm]	36.0" [914mm]	Min 2, within 12" of extruded housing ends
3.5ft	42.0" [1067mm]	42.0" [1067mm]	Min 2, within 12" of extruded housing ends
4ft	48.0" [1219mm]	48.0" [1219mm]	Min 2, within 12" of extruded housing ends
5ft	60.0" [1524mm]	60.0" [1524mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
6ft	72.0" [1829mm]	72.0" [1829mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
8ft	96.0" [2438mm]	96.0" [2438mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.

Continuous Run (End-run)



Nominal	Housing	Lens Aperture	Wall Mount Point Distance
2ft	24.25" [616mm]	24.0" [610mm]	Min 2, within 12" of extruded housing ends
2.5ft	30.25" [768mm]	30.0" [762mm]	Min 2, within 12" of extruded housing ends
3ft	36.25" [921mm]	36.0" [914mm]	Min 2, within 12" of extruded housing ends
3.5ft	42.25" [1073mm]	42.0" [1067mm]	Min 2, within 12" of extruded housing ends
4ft	48.25" [1226mm]	48.0" [1219mm]	Min 2, within 12" of extruded housing ends
5ft	60.25" [1530mm]	60.0" [1524mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
6ft	72.25" [1842mm]	72.0" [1829mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.
8ft	96.25" [2445mm]	96.0" [2438mm]	Min 3, within 12" of ends of extruded housing and one centrally located within 12" of center point.

TruGroove wall micro louver

Specifications

Optical System

Direct hemisphere: Light emitted from a linear array of downward-facing LEDs is laterally redirected using optical microstructures embedded in a layer of MesoOptics DX film to generate an optimal asymmetric distribution and a uniform continuum of light. The available Flush Silk Lens is a value-oriented option that provides a lambertian distribution while maintaining a uniform continuum of light.

Additionally, Ledalite's unique quad optic louver cell provides tailored optical distributions with reduced glare.

Indirect hemisphere: White light emitted from a linear array of upward-facing LEDs is shaped into a homogeneous, wide-throw low peak angle asymmetric distribution using an engineered light guide panel.

Housing

Post painted precision aluminum extrusion.

Endcaps

Diecast flat aluminum endcaps with integral groove to match housing.

Finish

High quality powder coated, available in standard Matte White, Black, Titanium Silver or Graphite Grey. TruGroove can also be specified in any custom color upon request for a one-time setup charge. Optional sensors (such as Interact Pro) available in white only.

Mounting

Wall: A hidden steel rail and bracket system attaches to the existing structure and supports housings close to the wall. Mount positioning is fully variable along the modules to accommodate site conditions, spaced up to 4-1/2" on center and within 12" of an end or joint.

Joints

Self-aligning joining system with hands-free pre-joining wire access.

Weight

Maximum 3.8/ft (wall)

Electrical

Fixtures are factory pre-wired to section ends with quick-wire connectors and tested for all circuits and backup battery packs. LED boards and drivers are easily field replaceable with access from below the ceiling.

Standard Drivers

Advance Xitanium 0-10V, 1% Dimming.
Advance Xitanium DALI, 5% Dimming.
Advance Xitanium Sensor Ready, 1% Dimming.
Lutron EcoSystem LDE1, 1% Dimming with Soft-On and Fade-to-Black.
Class 2 rated output. Consult Ledalite for other available drivers.

Standard Battery Packs

Bodine Battery Pack, 90 min, 10W, Class 2 rated output.
Lumen output = 10W x luminaire efficacy x 1.1. Typical output ~1200lm.

Lumen Maintenance

LEDs have been tested by the manufacturer in accordance with IESNA LM-80-15. At an ambient temperature of 25°C, the LED lumen maintenance expectation according to IES TM-21-11 is:
 $L_{80}(10k) > 60,000$ hours (Reported methodology).

Source Color

LEDs rated for color rendering of:
 $CRI R_a \geq 90, R_g \geq 50, G_a \geq 97, C_g \geq 90$
IES TM-30-18: $R_f \geq 90, R_{f,h1} \geq 89, R_g \geq 99, R_{cs,h1} \geq -5\%$

SPD and TM-30-18 reports available upon request

Fixture to fixture color accuracy within:

2 SDCM for Static White luminaires
3 SDCM for Tunable White luminaires

Approvals

Certified to UL, IES & CSA Standards.

Select TruGroove micro configurations contribute toward satisfying features L03, L04, L06, L07 and L08 under the WELL v2 Building Standard®.

Certain versions without battery packs are DesignLights Consortium® qualified. Please see the DLC QPL list for exact catalog numbers.
www.designlights.org/QPL

Environment

Rated for dry or damp locations in operating ambient temperatures of 0-25°C (32-77°F).

Many luminaire components, such as reflectors, refractors, lenses, and LEDs are made from various types of plastics which can be adversely affected by airborne contaminants. If sulfur-based chemicals, petroleum-based products, cleaning solutions, or other contaminants are expected in the intended area of use, consult factory for compatibility. Damage caused by sulfur, chlorine, petroleum-based solution or other contaminants are not covered under warranty. Not suitable for natatorium environments.

Warranty

Five-year luminaire limited warranty including LED boards and driver:
www.signify.com/warranties

QuickShip

10-day QuickShip available for most configurations upon request. More information available at:
www.signify.com/en-us/brands/ledalite/quickship

TruGroove wall micro louver

Wireless Controls Options

Radio only sensor (RA):

- Integral RADIO only sensor simply enables wireless mesh connectivity to the luminaire without any occupancy or daylight sensing.
- Ideal for applications where sensing functionality is managed by other Interact devices and the luminaire only needs to have wireless connectivity.
- Interact Pro includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- Startup is implemented via Interact Pro App (Android or iPhone) & Bluetooth connectivity. The App provides flexibility to choose between a gateway or non-gateway mode for setup.
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely, identify and group devices together onsite.
- Compatible with UID8451/10 wireless dimmer switch, SWS200 wireless scene switch, wireless Occ sensor (OCC SENSOR IA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1).
- For more information on Interact Pro visit:
www.interact-lighting.com/interactproscalablesystem

Emergency Options (R):

- Power Sensing (Factory default) – Recommended
- UL924 option requires unswitched power sense line, absence of voltage on the normal circuit triggers luminaire to 100% output.
- Power Interruption Detection (Field option)
- Detects AC power interruption >30ms triggers 90 minute emergency mode with luminaire at 100% output.

Wired Controls Options

Tunable White:

- Tunable White is available in control options for Tunable White with DALI (DT6 or DT8), 0-10V, or DMX control are available via an Engineered-to-Order (ETO) request.
- Signify tunable white solutions are designed to help maximize the influence of lighting on your daily life.
- Dynamic behaviors via scheduled lighting recipes mimicking daylight patterns or supporting biorhythms.
- Scene setting via lighting pre-sets based on various combinations of lighting color temperature and intensity.

Interact Pro scalable sensor option codes across Genlyte product lines

	Evokit	Day-Brite	Ledalite	Lightolier
ZeeBee + Bluetooth + Sensing	SWZCS	SWZCS	CS	SBA accessory (external)
ZeeBee + Bluetooth	RADIO	RADIO	RA	RA
ZeeBee + Bluetooth + Sensing + Environmental data	IAOSB	IAOSB	SB	SB
ZeeBee + Highbay + Sensing	-	SWZCSH	-	-

TruGroove wall micro louver

Functionalities overview

The three tiers of Interact			
	Standalone	Gateway	Gateway + IoT
Dimming, grouping, and zoning	✓	✓	✓
Bluetooth and ZigBee enabled	✓	✓	✓
Motion sensing and daylight harvesting	✓	✓	✓
Integration with 0-10V and phase dimming fixtures	✓	✓	✓
Code compliance	✓	✓	✓
Granular dimming and dwell time	✓	✓	✓
New Correlated color temperature (CCT) tuning by switch	✓	✓	✓
New Support for sensor-based Tunable White luminaires	✓	✓	✓
Energy reporting and monitoring		✓	✓
Scheduling		✓	✓
Demand response		✓	✓
BMS integration (BACnet)			✓
Floor plan visualization			✓
IoT sensors for wellness			✓
IoT Apps for productivity			✓

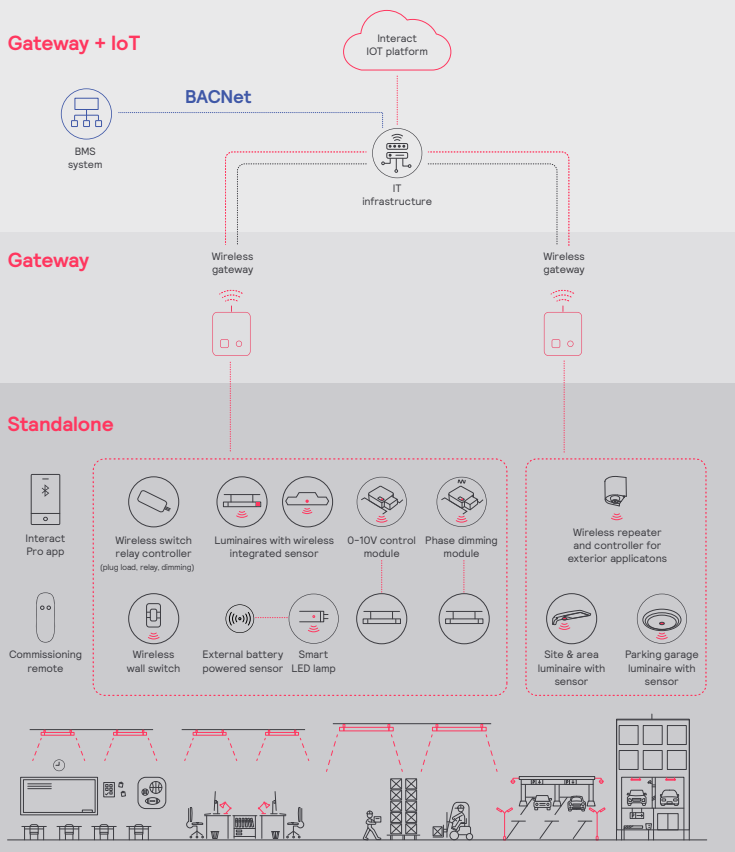
Currently supported maximum system size

To be able to design the lighting system correctly for the customer, it is important to know the prime characteristics of the system, its possibilities and limitations.

System level	
Total number of gateways	Unlimited
Total number of devices	200 per network
• luminaires with integrated sensors	150
• smart TLEDs	150
Total number of ZGP devices (sensors and switches)	50
• sensors	30
• switches	50
• zones and groups	64
Group level	
Recommended number of lights	40 (recommended 25)
Number of ZGP devices	5
Number of scenes	16

Interact system architecture for office, education, healthcare, retail, industrial and parking applications

Gateway + IoT



TruGroove wall micro louver

Colorimetry

TruGroove micro (TMxx) AccuRender Static White

Nominal CRI & CCT		CRI 90, 2700K	CRI 90, 3000K	CRI 90, 3500K	CRI 90, 4000K	CRI 90, 5000K
CIE 013.3-1995 ¹	CRI R_a	94	93	93	93	93
	R_9	55	57	59	64	68
	G_a	99	99	99	99	99
	C_g	93	93	93	93	94
IES TM-30-18 ²	R_f	92	91	91	91	90
	R_f, h_1	90	90	90	91	89
	R_g	100	100	99	100	100
	R_{cs}, h_1	-6%	-5%	-6%	-5%	-5%
MDER ³		0.45	0.51	0.58	0.65	0.81

1. Color Rendering Index (CRI Ra) and Strong Red (R9) are calculated in accordance with CIE 013.3-1995. Color Gamut index (Ga) and red chroma Index (C9) are CIE based properties using the Global Lighting Association's calculation tool.

2. Fidelity Index (Rf), Red Fidelity Index (Rf,h1), Gamut Index (Rg), and Red Local Chroma Shift (Rcs,h1) are calculated in accordance with IES TM-30-18.

3. Melanopic Daylight Efficacy Ratio (MDER) is the measure for "spectral melanopic efficiency" as defined in CIE S 026-2018.

Photometry

The following pages contain photometry for TruGroove suspended micro with louvers.

Photometry for TruGroove suspended micro with lens can be found by scanning the QR code or following the link: https://www.signify.com/api/assets/v1/file/Signify/content/cb6a82bfa0d047b7b5d3ada301476079/TruGroove_Wall_Micro_Lens_SpecSheet_CST.pdf



TruGroove wall micro louver

Photometry

Direct (TM21) Performance 20° Asymmetric Wall Wash w/ MesoOptics louver

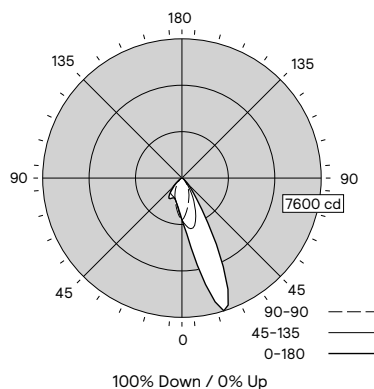
Nominal CRI & CCT			CRI 90, 2700K					CRI 90, 3000K					CRI 90, 3500K					CRI 90, 4000K					CRI 90, 5000K				
Nominal Lumen Package (lm/4ft)		Watts	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File
Direct	Indirect																										
4000	NA	30.9	3,731	120.7	18.1	PDF	IES	3,812	123.4	18.2	PDF	IES	3,960	128.2	18.3	PDF	IES	4,004	129.6	18.3	PDF	IES	4,044	130.9	18.4	PDF	IES
3500	NA	27.0	3,251	120.4	17.6	PDF	IES	3,319	122.9	17.7	PDF	IES	3,451	127.8	17.8	PDF	IES	3,488	129.2	17.8	PDF	IES	3,522	130.4	17.9	PDF	IES
3000	NA	23.3	2,787	119.6	17.1	PDF	IES	2,843	122.0	17.1	PDF	IES	2,958	127.0	17.3	PDF	IES	2,989	128.3	17.3	PDF	IES	3,018	129.5	17.3	PDF	IES
2500	NA	19.1	2,339	122.5	16.5	PDF	IES	2,387	125.0	16.5	PDF	IES	2,485	130.1	16.7	PDF	IES	2,509	131.4	16.7	PDF	IES	2,533	132.6	16.7	PDF	IES
2000	NA	15.6	1,862	119.4	15.7	PDF	IES	1,901	121.9	15.7	PDF	IES	1,979	126.9	15.9	PDF	IES	1,996	127.9	15.9	PDF	IES	2,017	129.3	15.9	PDF	IES
1500	NA	12.2	1,404	115.1	14.7	PDF	IES	1,433	117.5	14.8	PDF	IES	1,494	122.5	14.9	PDF	IES	1,505	123.4	14.9	PDF	IES	1,521	124.7	15.0	PDF	IES
1000	NA	8.8	918	104.3	13.2	PDF	IES	936	106.4	13.3	PDF	IES	978	111.1	13.4	PDF	IES	983	111.7	13.4	PDF	IES	994	113.0	13.5	PDF	IES

Direct (TM21) Performance 17° Graze Beam w/ MesoOptic louver

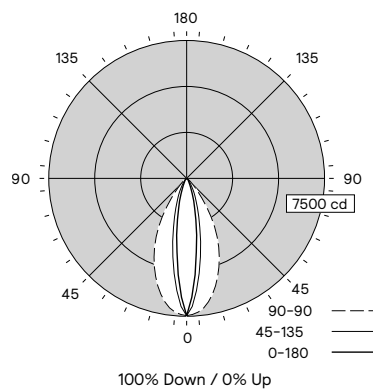
Nominal CRI & CCT			CRI 90, 2700K					CRI 90, 3000K					CRI 90, 3500K					CRI 90, 4000K					CRI 90, 5000K				
Nominal Lumen Package (lm/4ft)		Watts	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File
Direct	Indirect																										
4000	NA	30.9	3,773	122.1	12.7	PDF	IES	3,855	124.8	12.7	PDF	IES	4,004	129.6	12.9	PDF	IES	4,049	131.0	12.9	PDF	IES	4,090	132.4	12.9	PDF	IES
3500	NA	27.0	3,288	121.8	12.2	PDF	IES	3,356	124.3	12.3	PDF	IES	3,490	129.3	12.4	PDF	IES	3,527	130.6	12.4	PDF	IES	3,562	131.9	12.5	PDF	IES
3000	NA	23.3	2,818	120.9	11.6	PDF	IES	2,876	123.4	11.7	PDF	IES	2,992	128.4	11.9	PDF	IES	3,023	129.7	11.9	PDF	IES	3,052	131.0	11.9	PDF	IES
2500	NA	19.1	2,366	123.9	11.0	PDF	IES	2,414	126.4	11.1	PDF	IES	2,513	131.6	11.3	PDF	IES	2,537	132.8	11.3	PDF	IES	2,562	134.1	11.3	PDF	IES
2000	NA	15.6	1,883	120.7	10.2	PDF	IES	1,922	123.2	10.3	PDF	IES	2,002	128.3	10.5	PDF	IES	2,019	129.4	10.5	PDF	IES	2,040	130.8	10.5	PDF	IES
1500	NA	12.2	1,420	116.4	9.3	PDF	IES	1,450	118.9	9.3	PDF	IES	1,511	123.9	9.5	PDF	IES	1,522	124.8	9.5	PDF	IES	1,538	126.1	9.5	PDF	IES
1000	NA	8.8	928	105.5	7.8	PDF	IES	946	107.5	7.9	PDF	IES	989	112.4	8.0	PDF	IES	994	113.0	8.0	PDF	IES	1,005	114.2	8.1	PDF	IES

1. 4ft Luminaire photometry has been conducted in accordance with IES LM-79-08. IES files can be downloaded by clicking the links in the table above, or online at ledalite.com. Luminaires with finishes other than standard white may result in a drop in flux and efficacy.
2. Unified Glare Ratio (UGR) is calculated in accordance with CIE 117-1995. Reference conditions of 4Hx8Hx1H and reflectances of 70/50/20% have been applied using the procedure described in CIE 190-2010.
3. Photometry in tables above is based on white louvers. Photometry data for other color louvers is available for download on our website.
4. Photometry is for full louver configuration. For lens/louver combination, please scale separate IES files for lens and louver sections.

Performance 20° Asymmetric Wall Wash MesoOptics louver Spacing Criteria: 1.29/0.59



Performance 17° Graze Beam MesoOptics louver Spacing Criteria: 0.28/0.82



Candela plot shown are for 3000lm/4ft, CRI 90, 3500K configuration.

TruGroove wall micro louver

Photometry

Direct/Indirect (TM25 & TM26) Performance 20° Asymmetric Wall Wash w/ MesoOptics louver

Nominal CRI & CCT			CRI 90, 2700K						CRI 90, 3000K						CRI 90, 3500K						CRI 90, 4000K						CRI 90, 5000K					
Nominal Lumen Package (lm/4ft)		Watts	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File					
Direct	Indirect																															
4000	6000	88.1	9,333	105.9	12.8	PDF	IES	9,571	108.6	12.7	PDF	IES	9,968	113.1	12.9	PDF	IES	10,082	114.4	12.9	PDF	IES	10,256	116.4	13.0	PDF	IES	9,079	118.8	13.5	PDF	IES
	5000	76.4	8,411	110.1	13.2	PDF	IES	8,626	112.9	13.3	PDF	IES	8,966	117.4	13.4	PDF	IES	9,079	118.8	13.5	PDF	IES	9,231	120.8	13.4	PDF	IES	8,064	121.3	14.1	PDF	IES
	4000	66.5	7,484	112.5	13.8	PDF	IES	7,670	115.3	13.9	PDF	IES	7,959	119.7	14.0	PDF	IES	8,064	121.3	14.1	PDF	IES	8,197	123.3	14.0	PDF	IES	7,054	123.3	14.7	PDF	IES
	3000	57.2	6,555	114.6	14.4	PDF	IES	6,716	117.4	14.5	PDF	IES	6,961	121.7	14.6	PDF	IES	7,054	123.3	14.7	PDF	IES	7,164	125.2	14.6	PDF	IES	6,044	125.9	15.6	PDF	IES
	2000	48.0	5,618	117.0	15.3	PDF	IES	5,757	119.9	15.3	PDF	IES	5,963	124.2	15.5	PDF	IES	6,044	125.9	15.6	PDF	IES	6,126	127.6	15.5	PDF	IES	5,020	124.3	16.6	PDF	IES
	1000	40.4	4,670	115.6	16.4	PDF	IES	4,782	118.4	16.4	PDF	IES	4,954	122.6	16.6	PDF	IES	5,020	124.3	16.6	PDF	IES	5,077	125.7	16.6	PDF	IES	4,445	121.8	16.0	PDF	IES
3500	6000	84.1	8,853	105.3	11.9	PDF	IES	9,078	107.9	12.0	PDF	IES	9,459	112.5	12.0	PDF	IES	9,567	113.8	12.0	PDF	IES	9,735	115.8	12.1	PDF	IES	8,563	118.3	12.6	PDF	IES
	5000	72.4	7,932	109.6	12.4	PDF	IES	8,133	112.3	12.4	PDF	IES	8,458	116.8	12.5	PDF	IES	8,563	118.3	12.6	PDF	IES	8,710	120.3	12.5	PDF	IES	7,548	120.8	13.1	PDF	IES
	4000	62.5	7,004	112.1	13.0	PDF	IES	7,177	114.8	12.9	PDF	IES	7,450	119.2	13.2	PDF	IES	7,548	120.8	13.1	PDF	IES	7,676	122.8	13.2	PDF	IES	6,539	122.7	13.8	PDF	IES
	3000	53.3	6,075	114.0	13.7	PDF	IES	6,223	116.8	13.7	PDF	IES	6,452	121.1	13.9	PDF	IES	6,539	122.7	13.8	PDF	IES	6,642	124.6	13.9	PDF	IES	5,528	125.4	14.7	PDF	IES
	2000	44.1	5,139	116.5	14.5	PDF	IES	5,264	119.4	14.6	PDF	IES	5,454	123.7	14.7	PDF	IES	5,528	125.4	14.7	PDF	IES	5,604	127.1	14.8	PDF	IES	4,505	123.4	15.9	PDF	IES
	1000	36.5	4,191	114.8	15.8	PDF	IES	4,289	117.5	15.8	PDF	IES	4,445	121.8	16.0	PDF	IES	4,505	123.4	15.9	PDF	IES	4,556	124.8	16.0	PDF	IES	3,953	120.2	15.2	PDF	IES
3000	6000	80.3	8,389	104.5	10.9	PDF	IES	8,602	107.1	11.0	PDF	IES	8,967	111.7	11.1	PDF	IES	9,068	112.9	11.1	PDF	IES	9,231	115.0	11.1	PDF	IES	8,064	117.6	11.7	PDF	IES
	5000	68.6	7,468	108.9	11.4	PDF	IES	7,658	111.6	11.5	PDF	IES	7,965	116.1	11.6	PDF	IES	8,064	117.6	11.7	PDF	IES	8,206	119.6	11.6	PDF	IES	7,049	119.9	12.2	PDF	IES
	4000	58.8	6,540	111.2	12.0	PDF	IES	6,702	114.0	12.0	PDF	IES	6,958	118.3	12.2	PDF	IES	7,049	119.9	12.2	PDF	IES	7,171	122.0	12.2	PDF	IES	6,040	121.5	13.0	PDF	IES
	3000	49.7	5,611	112.9	12.8	PDF	IES	5,748	115.7	12.8	PDF	IES	5,959	119.9	13.0	PDF	IES	6,040	121.5	13.0	PDF	IES	6,138	123.5	13.0	PDF	IES	5,029	124.2	13.9	PDF	IES
	2000	40.5	4,675	115.4	13.7	PDF	IES	4,788	118.2	13.7	PDF	IES	4,962	122.5	13.9	PDF	IES	5,029	124.2	13.9	PDF	IES	5,100	125.9	13.9	PDF	IES	4,006	121.8	15.2	PDF	IES
	1000	32.9	3,726	113.3	15.0	PDF	IES	3,813	115.9	15.1	PDF	IES	3,953	120.2	15.2	PDF	IES	4,006	121.8	15.2	PDF	IES	4,052	123.2	15.2	PDF	IES	3,479	121.2	14.3	PDF	IES
2500	6000	76.3	7,942	104.1	9.8	PDF	IES	8,146	106.8	9.8	PDF	IES	8,493	111.3	9.9	PDF	IES	8,587	112.5	10.0	PDF	IES	8,746	114.6	9.9	PDF	IES	7,584	117.4	10.5	PDF	IES
	5000	64.6	7,020	108.7	10.3	PDF	IES	7,201	111.5	10.4	PDF	IES	7,491	116.0	10.5	PDF	IES	7,584	117.4	10.5	PDF	IES	7,721	119.5	10.5	PDF	IES	6,569	120.1	11.1	PDF	IES
	4000	54.7	6,092	111.4	10.9	PDF	IES	6,245	114.2	11.0	PDF	IES	6,484	118.5	11.1	PDF	IES	6,569	120.1	11.1	PDF	IES	6,686	122.2	11.1	PDF	IES	5,559	122.4	11.9	PDF	IES
	3000	45.4	5,163	113.7	11.7	PDF	IES	5,291	116.5	11.7	PDF	IES	5,486	120.8	11.9	PDF	IES	5,559	122.4	11.9	PDF	IES	5,653	124.5	11.9	PDF	IES	4,549	125.0	12.9	PDF	IES
	2000	36.4	4,227	116.1	12.7	PDF	IES	4,332	119.0	12.7	PDF	IES	4,488	123.3	12.9	PDF	IES	4,549	125.0	12.9	PDF	IES	4,615	126.8	12.9	PDF	IES	3,525	122.8	14.3	PDF	IES
	1000	28.7	3,279	114.3	14.0	PDF	IES	3,357	117.0	14.1	PDF	IES	3,479	121.2	14.3	PDF	IES	3,525	122.8	14.3	PDF	IES	3,567	124.3	14.3	PDF	IES	3,013	120.0	13.1	PDF	IES
2000	6000	72.7	7,464	102.7	8.3	PDF	IES	7,660	105.4	8.4	PDF	IES	7,988	109.9	8.5	PDF	IES	8,075	111.1	8.6	PDF	IES	8,229	113.2	8.5	PDF	IES	7,072	115.9	9.0	PDF	IES
	5000	61.0	6,543	107.3	8.8	PDF	IES	6,715	110.1	8.9	PDF	IES	6,986	114.5	9.1	PDF	IES	7,072	115.9	9.0	PDF	IES	7,204	118.1	9.1	PDF	IES	6,057	118.8	9.7	PDF	IES
	4000	51.0	5,615	110.1	9.5	PDF	IES	5,759	112.9	9.6	PDF	IES	5,979	117.2	9.7	PDF	IES	6,057	118.8	9.7	PDF	IES	6,170	121.0	9.7	PDF	IES	5,047	120.5	10.5	PDF	IES
	3000	41.9	4,686	111.8	10.3	PDF	IES	4,805	114.7	10.4	PDF	IES	4,980	118.9	10.5	PDF	IES	5,047	120.5	10.5	PDF	IES	5,137	122.6	10.5	PDF	IES	4,036	123.0	11.5	PDF	IES
	2000	32.8	3,750	114.3	11.4	PDF	IES	3,845	117.2	11.4	PDF	IES	3,983	121.4	11.6	PDF	IES	4,036	123.0	11.5	PDF	IES	4,099	125.0	11.6	PDF	IES	3,013	120.0	13.1	PDF	IES
	1000	25.1	2,802	111.6	12.9	PDF	IES	2,870	114.3	12.9	PDF	IES	2,974	118.5	13.1	PDF	IES	3,013	120.0	13.1	PDF	IES	3,050	121.5	13.1	PDF	IES	2,521	116.2	11.5	PDF	IES
1500	6000	69.2	7,006	101.2	6.8	PDF	IES	7,192	103.9	6.9	PDF	IES	7,502	108.4	7.0	PDF	IES	7,583	109.6	7.0	PDF	IES	7,733	111.7	7.1	PDF	IES	6,580	114.4	7.2	PDF	IES
	5000	57.5	6,085	105.8	7.0	PDF	IES	6,248	108.7	7.1	PDF	IES	6,501	113.1	7.2	PDF	IES	6,580	114.4	7.2	PDF	IES	6,708	116.7	7.2	PDF	IES	5,565	116.7	7.9	PDF	IES
	4000	47.7	5,157	108.1	7.7	PDF	IES	5,292	110.9	7.7	PDF	IES	5,493	115.2	7.9	PDF	IES	5,565	116.7	7.9	PDF	IES	5,674	119.0	7.9	PDF	IES	4,555	118.0	8.8	PDF	IES
	3000	38.6	4,228	109.5	8.5	PDF	IES	4,338	112.4	8.6	PDF	IES	4,495	116.5	8.7	PDF	IES	4,555	118.0	8.8	PDF	IES	4,641	120.2	8.7	PDF	IES	3,545	120.2	9.8	PDF	IES
	2000	29.5	3,292	111.6	9.6	PDF	IES	3,378	114.5	9.6	PDF	IES	3,498	118.6	9.9	PDF	IES	3,545	120.2	9.8	PDF	IES	3,603	122.1	9.9	PDF	IES	2,521	116.2	11.5	PDF	IES
	1000	21.7	2,343	108.0	11.4	PDF	IES	2,403	110.7	11.3	PDF	IES	2,489	114.7	11.6	PDF	IES	2,521	116.2	11.5	PDF	IES	2,554	117.7	11.6	PDF	IES	2,061	107.5	6.8	PDF	IES
1000	6000	65.7	6,520	99.2	6.5	PDF	IES	6,695	101.9	6.6	PDF	IES	6,986	106.3	6.8	PDF	IES	7,061	107.5	6.8	PDF	IES	7,206	109.7	6.9	PDF	IES	6,058	112.2	6.3	PDF	IES
	5000	54.0	5,599	103.7	6.0	PDF	IES	5,750	106.5	6.1	PDF	IES	5,984	110.8	6.2	PDF	IES	6,058	112.2	6.3	PDF	IES	6,181	114.5	6.3	PDF	IES	5,043	113.8	5.6	PDF	IES
	4000	44.3	4,671	105.4	5.4	PDF	IES	4,794	108.2	5.4	PDF	IES	4,977	112.3	5.6	PDF	IES	5,043	113.8	5.6	PDF	IES	5,147	116.2	5.7	PDF	IES	4,033	114.6	5.9	PDF	IES
	3000	35.2	3,742	106.3	5.8	PDF	IES	3,840	109.1	5.8	PDF	IES	3,979	113.0	6.0	PDF	IES	4,033	114.6	5.9	PDF	IES	4,114	116.9	6.0	PDF	IES	3,023	115.8	7.1	PDF	IES
	2000	26.1	2,806	107.5	7.0	PDF	IES	2,881	110.4	7.0	PDF	IES	2,981	114.2	7.2	PDF	IES	3,023	115.8	7.1	PDF	IES	3,076	117.9	7.2	PDF	IES	1,999	108.6	9.0	PDF	IES
	1000	18.4	1,857	100.9	8.9	PDF	IES	1,906	103.6	8.8	PDF	IES	1,972	107.2	9.1	PDF	IES	1,999	108.6	9.0	PDF	IES	2,027	110.2	9.1	PDF	IES					

TruGroove wall micro louver

Photometry

Direct/Indirect (TM25 & TM26) Performance 17° Graze Beam w/ MesoOptic louver

Nominal CRI & CCT			CRI 90, 2700K						CRI 90, 3000K						CRI 90, 3500K						CRI 90, 4000K						CRI 90, 5000K					
Nominal Lumen Package (lm/4ft)		Watts	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File	Flux (lm/4ft) ¹	Efficacy (LPW) ¹	UGR ²	Photometry Report	IES File					
Direct	Indirect																															
4000	6000	88.1	9,375	106.4	7.8	PDF	IES	9,614	109.1	7.9	PDF	IES	10,013	113.7	8.0	PDF	IES	10,127	114.9	8.1	PDF	IES	10,302	116.9	8.1	PDF	IES	10,302	116.9	8.1	PDF	IES
	5000	76.4	8,453	110.6	7.7	PDF	IES	8,669	113.5	7.8	PDF	IES	9,011	117.9	8.0	PDF	IES	9,124	119.4	8.0	PDF	IES	9,277	121.4	8.0	PDF	IES	9,277	121.4	8.0	PDF	IES
	4000	66.5	7,526	113.2	8.3	PDF	IES	7,713	116.0	8.4	PDF	IES	8,004	120.4	8.6	PDF	IES	8,109	121.9	8.6	PDF	IES	8,243	124.0	8.6	PDF	IES	8,243	124.0	8.6	PDF	IES
	3000	57.2	6,597	115.3	9.0	PDF	IES	6,759	118.2	9.1	PDF	IES	7,005	122.5	9.2	PDF	IES	7,100	124.1	9.2	PDF	IES	7,210	126.0	9.3	PDF	IES	7,210	126.0	9.3	PDF	IES
	2000	48.0	5,660	117.9	9.9	PDF	IES	5,800	120.8	9.9	PDF	IES	6,008	125.2	10.1	PDF	IES	6,089	126.9	10.1	PDF	IES	6,172	128.6	10.1	PDF	IES	6,172	128.6	10.1	PDF	IES
	1000	40.4	4,712	116.6	10.9	PDF	IES	4,825	119.4	11.0	PDF	IES	4,999	123.7	11.1	PDF	IES	5,066	125.4	11.2	PDF	IES	5,123	126.8	11.2	PDF	IES	5,123	126.8	11.2	PDF	IES
3500	6000	84.1	8,890	105.7	7.6	PDF	IES	9,115	108.4	7.7	PDF	IES	9,498	112.9	7.8	PDF	IES	9,606	114.2	7.9	PDF	IES	9,774	116.2	7.9	PDF	IES	9,774	116.2	7.9	PDF	IES
	5000	72.4	7,969	110.1	7.2	PDF	IES	8,171	112.9	7.3	PDF	IES	8,496	117.3	7.5	PDF	IES	8,603	118.8	7.5	PDF	IES	8,749	120.8	7.6	PDF	IES	8,749	120.8	7.6	PDF	IES
	4000	62.5	7,041	112.7	7.5	PDF	IES	7,215	115.4	7.6	PDF	IES	7,489	119.8	7.7	PDF	IES	7,588	121.4	7.8	PDF	IES	7,715	123.4	7.7	PDF	IES	7,715	123.4	7.7	PDF	IES
	3000	53.3	6,112	114.7	8.2	PDF	IES	6,261	117.5	8.3	PDF	IES	6,491	121.8	8.4	PDF	IES	6,578	123.4	8.5	PDF	IES	6,682	125.4	8.4	PDF	IES	6,682	125.4	8.4	PDF	IES
	2000	44.1	5,176	117.4	9.1	PDF	IES	5,301	120.2	9.1	PDF	IES	5,493	124.6	9.4	PDF	IES	5,567	126.2	9.3	PDF	IES	5,644	128.0	9.3	PDF	IES	5,644	128.0	9.3	PDF	IES
	1000	36.5	4,227	115.8	10.3	PDF	IES	4,326	118.5	10.3	PDF	IES	4,484	122.8	10.6	PDF	IES	4,544	124.5	10.5	PDF	IES	4,595	125.9	10.5	PDF	IES	4,595	125.9	10.5	PDF	IES
3000	6000	76.3	7,968	104.4	7.2	PDF	IES	8,173	107.1	7.3	PDF	IES	8,521	111.7	7.5	PDF	IES	8,616	112.9	7.5	PDF	IES	8,774	115.0	7.6	PDF	IES	8,774	115.0	7.6	PDF	IES
	5000	68.6	7,499	109.3	7.0	PDF	IES	7,690	112.1	7.1	PDF	IES	7,999	116.6	7.2	PDF	IES	8,098	118.0	7.3	PDF	IES	8,240	120.1	7.3	PDF	IES	8,240	120.1	7.3	PDF	IES
	4000	58.8	6,571	111.8	6.6	PDF	IES	6,734	114.5	6.6	PDF	IES	6,991	118.9	6.8	PDF	IES	7,083	120.5	6.8	PDF	IES	7,206	122.6	6.9	PDF	IES	7,206	122.6	6.9	PDF	IES
	3000	49.7	5,643	113.5	7.3	PDF	IES	5,780	116.3	7.3	PDF	IES	5,993	120.6	7.5	PDF	IES	6,074	122.2	7.5	PDF	IES	6,172	124.2	7.5	PDF	IES	6,172	124.2	7.5	PDF	IES
	2000	40.5	4,706	116.2	8.2	PDF	IES	4,820	119.0	8.3	PDF	IES	4,995	123.3	8.4	PDF	IES	5,063	125.0	8.5	PDF	IES	5,135	126.8	8.5	PDF	IES	5,135	126.8	8.5	PDF	IES
	1000	32.9	3,758	114.2	9.5	PDF	IES	3,845	116.9	9.6	PDF	IES	3,987	121.2	9.7	PDF	IES	4,040	122.8	9.8	PDF	IES	4,086	124.2	9.8	PDF	IES	4,086	124.2	9.8	PDF	IES
2500	6000	72.7	7,485	103.0	7.0	PDF	IES	7,681	105.7	7.1	PDF	IES	8,010	110.2	7.2	PDF	IES	8,098	111.4	7.3	PDF	IES	8,252	113.5	7.3	PDF	IES	8,252	113.5	7.3	PDF	IES
	5000	64.6	7,046	109.1	6.8	PDF	IES	7,228	111.9	6.9	PDF	IES	7,520	116.4	7.0	PDF	IES	7,612	117.8	7.1	PDF	IES	7,749	120.0	7.1	PDF	IES	7,749	120.0	7.1	PDF	IES
	4000	54.7	6,119	111.9	6.3	PDF	IES	6,272	114.7	6.4	PDF	IES	6,512	119.0	6.5	PDF	IES	6,597	120.6	6.6	PDF	IES	6,715	122.8	6.6	PDF	IES	6,715	122.8	6.6	PDF	IES
	3000	45.4	5,190	114.3	6.2	PDF	IES	5,318	117.1	6.3	PDF	IES	5,514	121.5	6.5	PDF	IES	5,588	123.1	6.5	PDF	IES	5,682	125.2	6.5	PDF	IES	5,682	125.2	6.5	PDF	IES
	2000	36.4	4,253	116.8	7.3	PDF	IES	4,359	119.8	7.2	PDF	IES	4,516	124.1	7.5	PDF	IES	4,577	125.7	7.4	PDF	IES	4,644	127.6	7.5	PDF	IES	4,644	127.6	7.5	PDF	IES
	1000	28.7	3,305	115.2	8.7	PDF	IES	3,384	117.9	8.7	PDF	IES	3,508	122.2	8.9	PDF	IES	3,554	123.8	8.8	PDF	IES	3,595	125.3	8.9	PDF	IES	3,595	125.3	8.9	PDF	IES
2000	6000	72.7	7,485	103.0	7.0	PDF	IES	7,681	105.7	7.1	PDF	IES	8,010	110.2	7.2	PDF	IES	8,098	111.4	7.3	PDF	IES	8,252	113.5	7.3	PDF	IES	8,252	113.5	7.3	PDF	IES
	5000	61.0	6,564	107.6	6.6	PDF	IES	6,737	110.4	6.6	PDF	IES	7,009	114.9	6.8	PDF	IES	7,094	116.3	6.8	PDF	IES	7,227	118.5	6.9	PDF	IES	7,227	118.5	6.9	PDF	IES
	4000	51.0	5,636	110.5	6.0	PDF	IES	5,781	113.4	6.1	PDF	IES	6,001	117.7	6.2	PDF	IES	6,079	119.2	6.3	PDF	IES	6,193	121.4	6.4	PDF	IES	6,193	121.4	6.4	PDF	IES
	3000	41.9	4,707	112.3	5.4	PDF	IES	4,826	115.2	5.5	PDF	IES	5,003	119.4	5.6	PDF	IES	5,070	121.0	5.7	PDF	IES	5,160	123.2	5.7	PDF	IES	5,160	123.2	5.7	PDF	IES
	2000	32.8	3,771	115.0	5.9	PDF	IES	3,867	117.9	5.9	PDF	IES	4,005	122.1	6.1	PDF	IES	4,059	123.8	6.1	PDF	IES	4,122	125.7	6.1	PDF	IES	4,122	125.7	6.1	PDF	IES
	1000	25.1	2,823	112.5	7.4	PDF	IES	2,892	115.2	7.4	PDF	IES	2,997	119.4	7.6	PDF	IES	3,036	121.0	7.7	PDF	IES	3,073	122.4	7.6	PDF	IES	3,073	122.4	7.6	PDF	IES
1500	6000	69.2	7,022	101.5	6.8	PDF	IES	7,209	104.2	6.9	PDF	IES	7,519	108.7	7.0	PDF	IES	7,600	109.8	7.1	PDF	IES	7,750	112.0	7.1	PDF	IES	7,750	112.0	7.1	PDF	IES
	5000	57.5	6,101	106.1	6.3	PDF	IES	6,264	108.9	6.4	PDF	IES	6,518	113.4	6.5	PDF	IES	6,597	114.7	6.6	PDF	IES	6,725	117.0	6.6	PDF	IES	6,725	117.0	6.6	PDF	IES
	4000	47.7	5,173	108.4	5.7	PDF	IES	5,308	111.3	5.8	PDF	IES	5,510	115.5	5.9	PDF	IES	5,582	117.0	6.0	PDF	IES	5,691	119.3	6.1	PDF	IES	5,691	119.3	6.1	PDF	IES
	3000	38.6	4,244	109.9	5.0	PDF	IES	4,354	112.8	5.1	PDF	IES	4,512	116.9	5.3	PDF	IES	4,572	118.4	5.3	PDF	IES	4,658	120.7	5.4	PDF	IES	4,658	120.7	5.4	PDF	IES
	2000	29.5	3,308	112.1	4.2	PDF	IES	3,394	115.1	4.3	PDF	IES	3,514	119.1	4.4	PDF	IES	3,562	120.7	4.4	PDF	IES	3,620	122.7	4.5	PDF	IES	3,620	122.7	4.5	PDF	IES
	1000	21.7	2,359	108.7	5.9	PDF	IES	2,419	111.5	5.9	PDF	IES	2,506	115.5	6.1	PDF	IES	2,538	117.0	6.1	PDF	IES	2,571	118.5	6.1	PDF	IES	2,571	118.5	6.1	PDF	IES
1000	6000	65.7	6,530	99.4	6.5	PDF	IES	6,705	102.1	6.6	PDF	IES	6,997	106.5	6.8	PDF	IES	7,072	107.6	6.8	PDF	IES	7,217	109.8	6.9	PDF	IES	7,217	109.8	6.9	PDF	IES
	5000	54.0	5,609	103.9	6.0	PDF	IES	5,761	106.7	6.1	PDF	IES	5,995	111.0	6.2	PDF	IES	6,069	112.4	6.3	PDF	IES	6,192	114.7	6.3	PDF	IES	6,192	114.7	6.3	PDF	IES
	4000	44.3	4,681	105.7	5.4	PDF	IES	4,805	108.5	5.5	PDF	IES	4,988	112.6	5.6	PDF	IES	5,054	114.1	5.6	PDF	IES	5,158	116.4	5.7	PDF	IES	5,158	116.4	5.7	PDF	IES
	3000	35.2	3,752	106.6	4.6	PDF	IES	3,851	109.4	4.7	PDF	IES	3,990	113.4	4.8	PDF	IES	4,044	114.9	4.9	PDF	IES	4,125	117.2	4.9	PDF	IES	4,125	117.2	4.9	PDF	IES
	2000	26.1	2,816	107.9	3.6	PDF	IES	2,891	110.8	3.7	PDF	IES	2,992	114.6	3.8	PDF	IES	3,034	116.2	3.9	PDF	IES	3,087	118.3	3.9	PDF	IES	3,087	118.3	3.9	PDF	IES
	1000	18.4	1,868	101.5	3.4	PDF	IES	1,916	104.1	3.5	PDF	IES	1,983	107.8	3.6	PDF	IES	2,010	109.2	3.7	PDF	IES	2,038	110.8	3.7	PDF	IES	2,038	110.8	3.7	PDF	IES