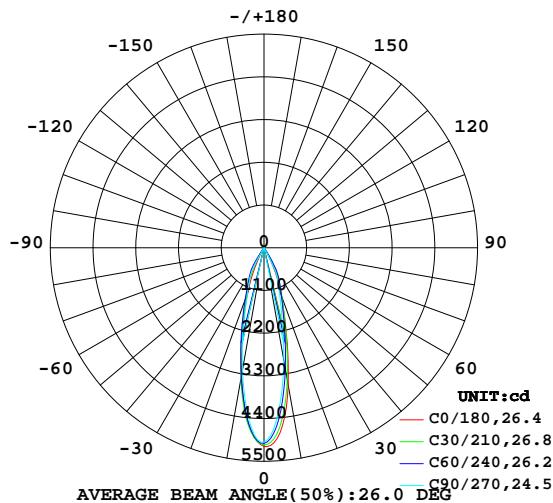


## LUMINAIRE PHOTOMETRIC TEST REPORT

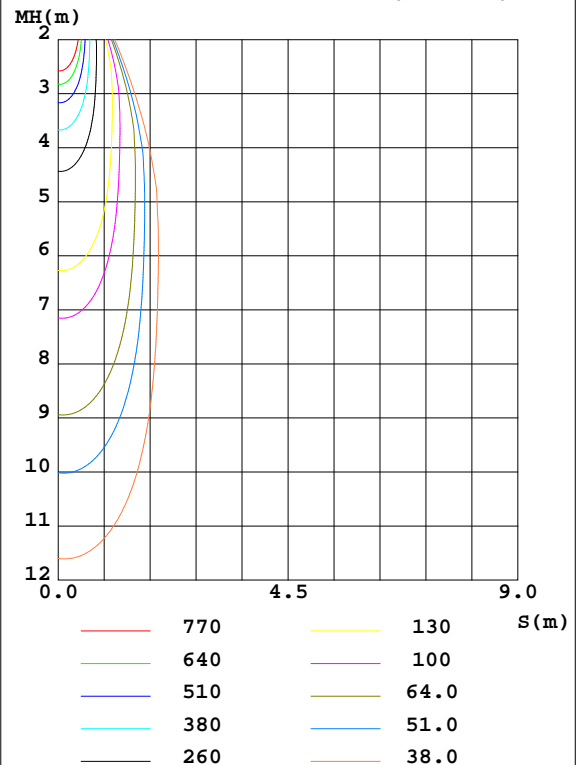
Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm					
NAME: 40013-22W-3000K		TYPE:		WEIGHT:	
SPEC.:		DIM.:		SERIAL No.:	
MFR.:		SUR.:		Shielding Angle:	

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 68.23 lm/W
MODEL	40013	I <sub>max</sub> (cd)	5119	S/MH(C0/180)	0.43	
NOMINAL POWER(W)	21.5W	LOR(%)	100.0	S/MH(C90/270)	0.43	
RATED VOLTAGE(V)	220.0	TOTAL FLUX(lm)	1413.8	η UP,DN(C0-180)	0.0,48.5	
NOMINAL FLUX(lm)	1413.77	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,51.5	
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.00	
TEST VOLTAGE(V)	220.0	η down(%)	100.0	CIBSE SHR MAX	1.00	

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

## ZONAL FLUX DIAGRAM

### ZONAL FLUX DIAGRAM:

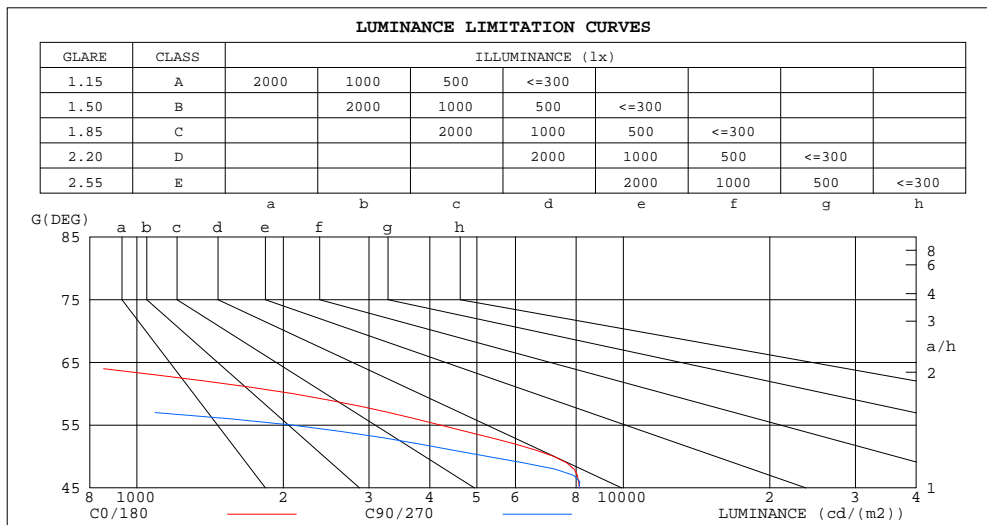
$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\Phi$ lum, lamp
10	3593	3310	2943	3024	3326	3401	3201	3276	0- 10	387.6	387.6	27.4,27.4
20	1321	1339	1136	1241	1222	1381	1241	1362	10- 20	575.9	963.4	68.1,68.1
30	150.7	474.4	111.0	409.3	100.5	498.7	301.5	557.7	20- 30	369.9	1333	94.3,94.3
40	11.28	13.45	9.788	12.53	9.666	13.70	10.62	16.21	30- 40	70.81	1404	99.3,99.3
50	6.941	6.339	5.069	5.737	5.864	6.881	7.438	7.133	40- 50	6.748	1411	99.8,99.8
60	1.571	0.5879	0.2747	0.3730	0.7764	0.6715	0.7524	0.9881	50- 60	2.647	1414	100,100
70	0.0992	0.0514	0.0349	0.0377	0.0663	0.0492	0.0518	0.0546	60- 70	0.2142	1414	100,100
80	0.0175	0	0	0	0.0087	0	0	0.0000	70- 80	0.0217	1414	100,100
90	0	0	0	0	0	0	0	0	80- 90	0.0004	1414	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

## LUMINANCE LIMITATION CURVES

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	0	0
80	67	0
75	129	19
70	193	68
65	640	123
60	2095	366
55	4206	2082
50	7199	5257
45	8125	8107

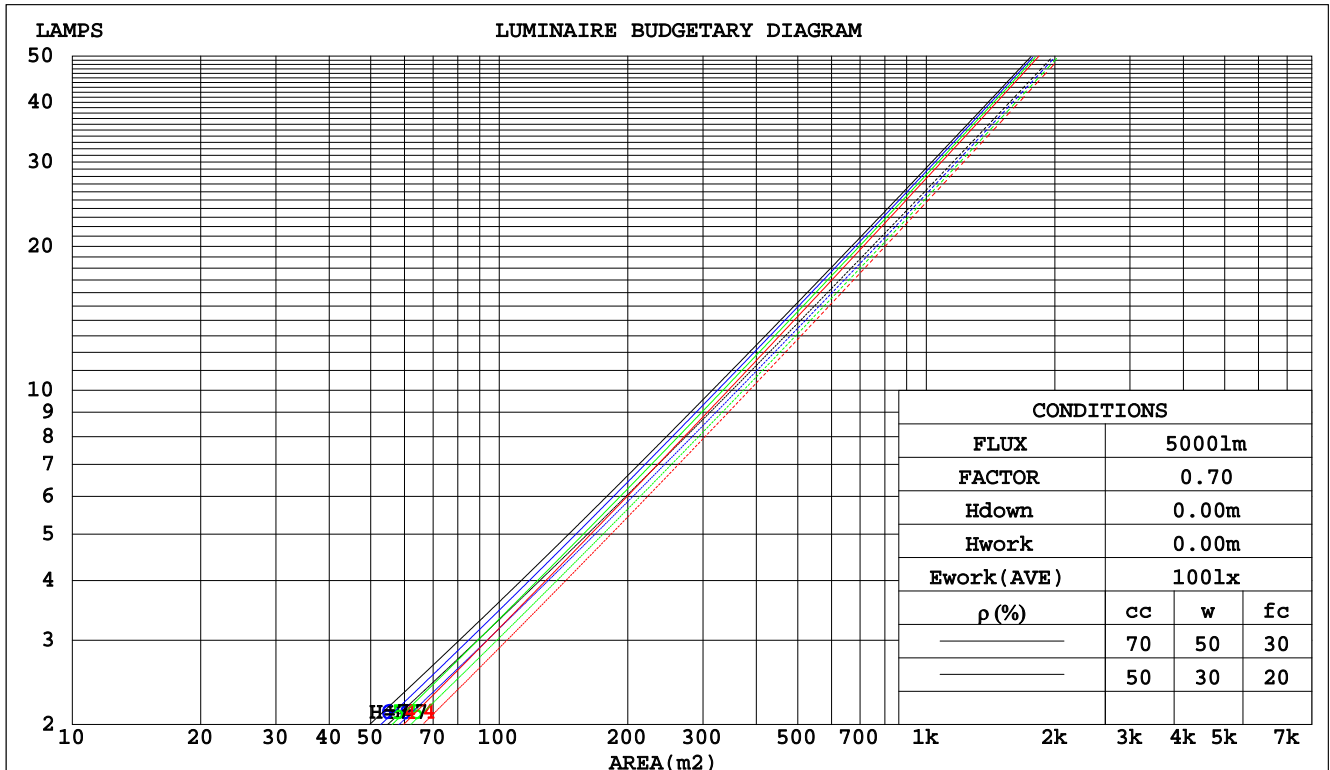
C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: 1  
Test Date: 2022-06-30

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity: 65.0%  
Test Distance: 3.106m [K=1.0000]  
Remarks: 3197-60°

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1.0	1.12	1.10	1.09	1.10	1.09	1.07	1.06	1.05	1.04	1.03	1.02	1.01	.99	.98	.98	.96
2.0	1.07	1.04	1.01	1.05	1.02	.00	1.02	.00	.98	.99	.97	.96	.96	.95	.94	.92
3.0	1.02	.98	.95	1.00	.97	.94	.98	.95	.93	.96	.93	.91	.93	.91	.90	.88
4.0	.97	.93	.90	.96	.92	.89	.94	.91	.88	.92	.89	.87	.90	.88	.86	.85
5.0	.93	.89	.85	.92	.88	.85	.91	.87	.84	.89	.86	.84	.88	.85	.83	.82
6.0	.89	.85	.82	.89	.84	.81	.87	.84	.81	.86	.83	.80	.85	.82	.80	.79
7.0	.86	.81	.78	.85	.81	.78	.84	.80	.78	.83	.80	.77	.82	.79	.77	.76
8.0	.83	.78	.75	.82	.78	.75	.81	.77	.75	.80	.77	.74	.80	.76	.74	.73
9.0	.80	.75	.72	.79	.75	.72	.79	.75	.72	.78	.74	.72	.77	.74	.72	.71
10.0	.77	.73	.70	.77	.73	.70	.76	.72	.70	.75	.72	.69	.75	.72	.69	.68



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:1  
 Test Date:2022-06-30

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
 Humidity:65.0%  
 Test Distance:3.106m [K=1.0000]  
 Remarks: 3197-60°

## WEC AND CCEC

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

pcc	80%			70%			50%			30%			10%			0	
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
pfc	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.145	.082	.026	.138	.079	.025	.126	.072	.023	.114	.066	.021	.104	.060	.019		
2.0	.135	.074	.023	.130	.071	.022	.119	.066	.021	.110	.062	.019	.101	.057	.018		
3.0	.127	.068	.020	.122	.065	.020	.114	.062	.019	.106	.058	.018	.098	.054	.017		
4.0	.120	.062	.018	.116	.061	.018	.108	.058	.017	.102	.055	.016	.095	.052	.016		
5.0	.113	.058	.017	.110	.056	.016	.104	.054	.016	.098	.052	.015	.092	.049	.015		
6.0	.108	.054	.015	.105	.053	.015	.099	.051	.015	.094	.049	.014	.090	.047	.014		
7.0	.103	.051	.014	.100	.050	.014	.095	.048	.014	.091	.047	.014	.087	.045	.013		
8.0	.098	.048	.013	.096	.047	.013	.092	.046	.013	.088	.045	.013	.084	.043	.013		
9.0	.094	.046	.013	.092	.045	.013	.089	.044	.012	.085	.043	.012	.082	.042	.012		
10.0	.090	.043	.012	.089	.043	.012	.085	.042	.012	.082	.041	.012	.079	.040	.011		

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.169	.158	.147	.145	.135	.127	.099	.093	.088	.057	.054	.051	.018	.017	.017	
2.0	.151	.133	.117	.130	.114	.101	.089	.079	.071	.051	.046	.041	.016	.015	.013	
3.0	.137	.113	.095	.117	.098	.082	.081	.068	.057	.047	.040	.034	.015	.013	.011	
4.0	.125	.098	.078	.107	.085	.067	.074	.059	.047	.043	.035	.028	.014	.011	.009	
5.0	.115	.086	.065	.099	.074	.056	.068	.052	.040	.039	.030	.024	.013	.010	.008	
6.0	.106	.076	.054	.091	.066	.047	.063	.046	.034	.037	.027	.020	.012	.009	.007	
7.0	.099	.068	.046	.085	.059	.040	.059	.041	.029	.034	.024	.017	.011	.008	.006	
8.0	.093	.061	.040	.080	.053	.035	.055	.037	.025	.032	.022	.015	.010	.007	.005	
9.0	.087	.056	.035	.075	.049	.030	.052	.034	.021	.030	.020	.013	.010	.007	.004	
10.0	.083	.051	.030	.071	.045	.026	.049	.031	.019	.029	.019	.011	.009	.006	.004	

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

## UGR(Unified Glare Rating) Table

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm											
NAME: 40013-22W-3000K					TYPE:			WEIGHT:			
SPEC.:					DIM.:			SERIAL No.:			
MFR.:					SUR.:			Shielding Angle:			
ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3	
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3	
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Room dimensions		Viewed crosswise					Viewed endwise				
x = 2H y = 2H		9.7	10.4	9.9	10.6	10.7	9.1	9.9	9.3	10.0	10.2
3H		9.6	10.2	9.8	10.4	10.6	9.0	9.6	9.2	9.8	10.0
4H		9.5	10.1	9.7	10.3	10.5	8.9	9.5	9.2	9.7	10.0
6H		9.4	10.0	9.7	10.2	10.5	8.8	9.4	9.1	9.6	9.9
8H		9.3	9.9	9.6	10.2	10.4	8.8	9.3	9.1	9.6	9.8
12H		9.3	9.8	9.6	10.1	10.4	8.7	9.3	9.0	9.5	9.8
4H 2H		9.5	10.1	9.7	10.3	10.5	8.9	9.5	9.2	9.8	10.0
3H		9.3	9.9	9.6	10.1	10.4	8.7	9.3	9.1	9.6	9.8
4H		9.2	9.7	9.5	10.0	10.3	8.6	9.1	9.0	9.4	9.7
6H		9.1	9.6	9.5	9.9	10.2	8.5	9.0	8.9	9.3	9.7
8H		9.1	9.5	9.4	9.8	10.2	8.5	8.9	8.9	9.3	9.6
12H		9.0	9.4	9.4	9.7	10.1	8.4	8.8	8.8	9.2	9.6
8H 4H		9.1	9.5	9.4	9.8	10.2	8.5	8.9	8.9	9.3	9.6
6H		8.9	9.3	9.4	9.7	10.1	8.4	8.7	8.8	9.1	9.5
8H		8.9	9.2	9.3	9.6	10.0	8.3	8.6	8.8	9.0	9.5
12H		8.8	9.1	9.3	9.5	10.0	8.3	8.5	8.7	9.0	9.4
12H 4H		9.0	9.4	9.4	9.7	10.1	8.4	8.8	8.8	9.2	9.6
6H		8.9	9.2	9.3	9.6	10.0	8.3	8.6	8.8	9.0	9.5
8H		8.8	9.1	9.3	9.5	10.0	8.3	8.5	8.7	9.0	9.4
Variations with the observer position at spacings:											
S = 1.0H		+ 3.1 / - 6.1					+ 2.7 / -10.1				
1.5H		+ 3.6 / - 4.8					+ 2.0 / - 5.9				
2.0H		+ 4.0 / -15.1					+ 5.3 / -19.4				

CIE Pub.117, 1414 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 1.2)  
Area: 0.0015 m2

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

### UTILIZATION FACTORS TABLE

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

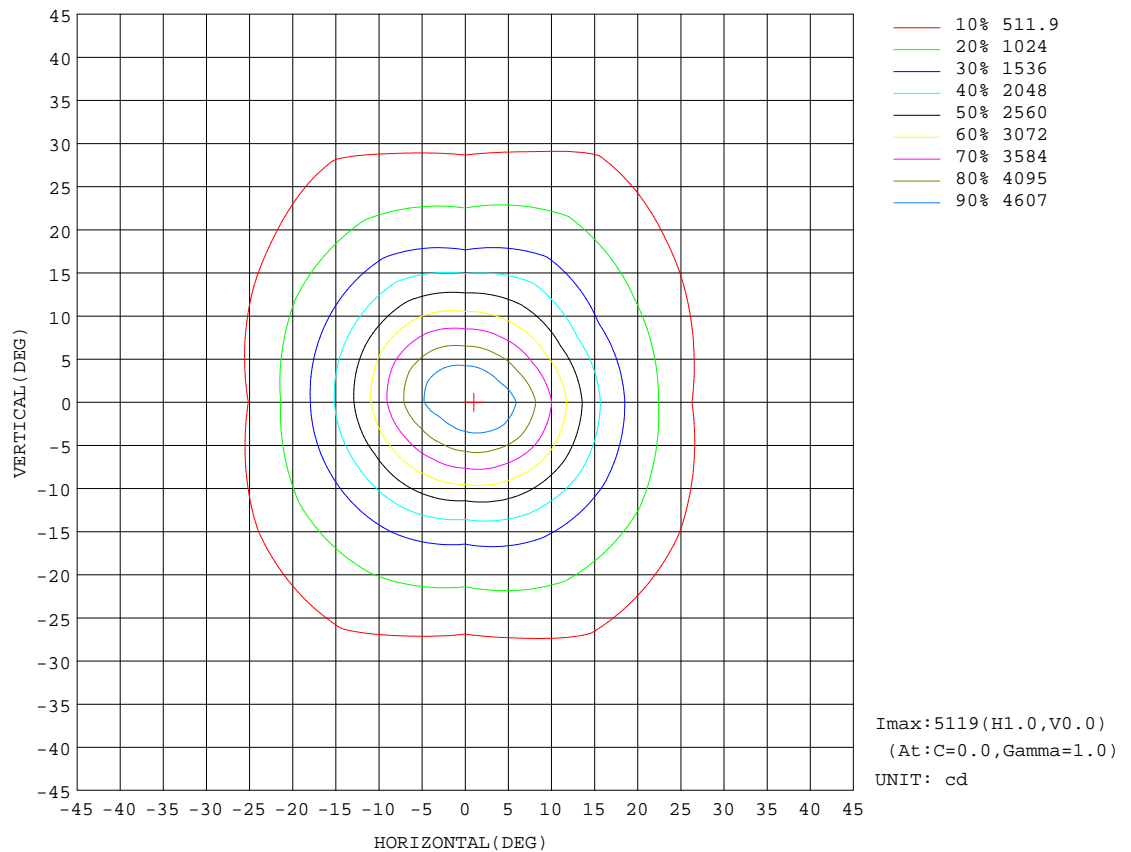
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	91	85	82	91	85	82	90	85	82	79
0.80	98	93	90	97	93	90	96	92	89	86
1.00	102	97	94	101	96	93	100	96	93	89
1.25	105	101	98	104	100	97	102	99	96	93
1.50	108	104	101	107	103	100	104	101	99	95
2.00	110	106	103	109	105	103	106	103	101	96
2.50	111	108	105	110	107	104	107	104	102	97
3.00	113	110	107	111	108	106	108	106	104	98
4.00	115	112	110	113	110	109	109	107	106	99
5.00	116	114	112	114	112	111	110	109	107	100
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

### ISOCANDELA DIAGRAM

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



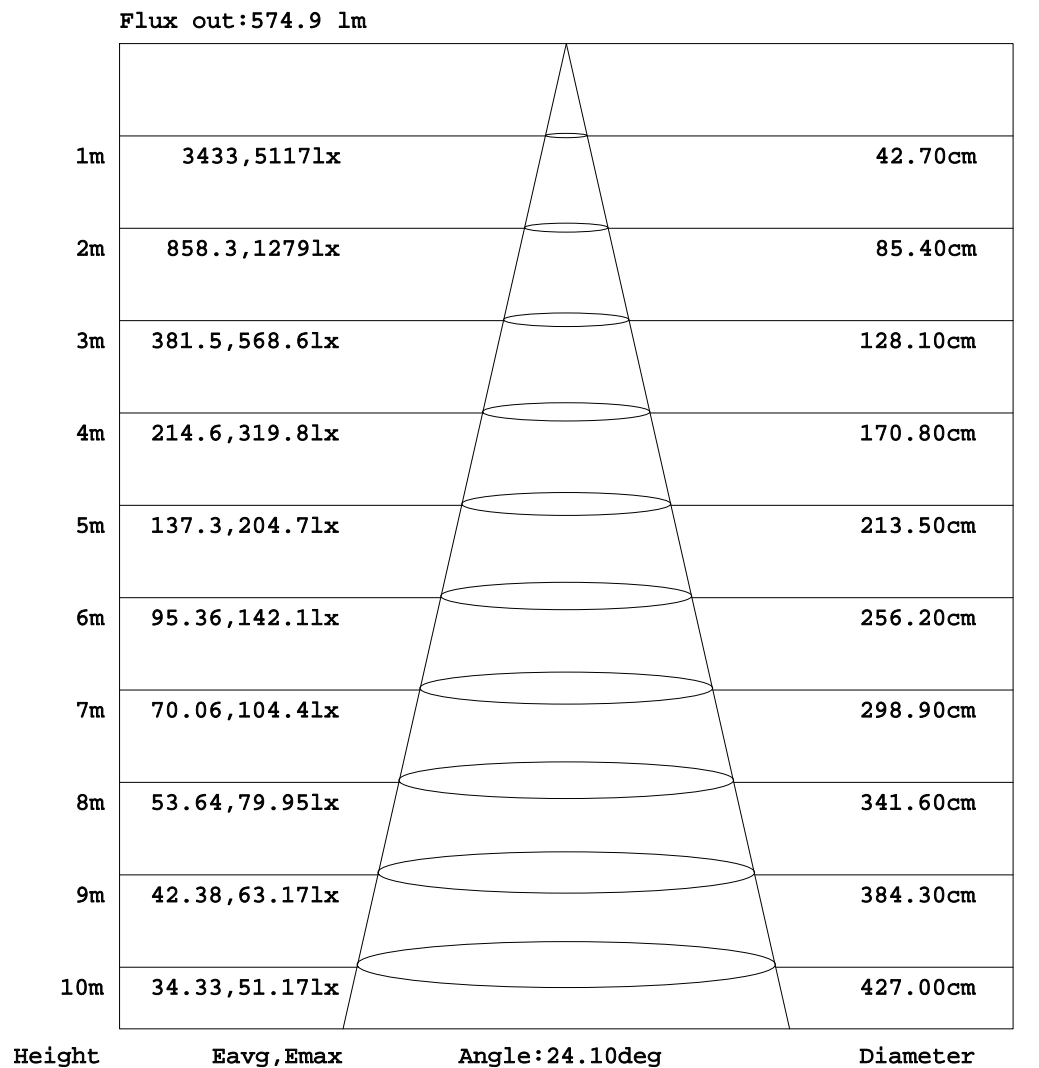
C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°



### AAI Figure

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



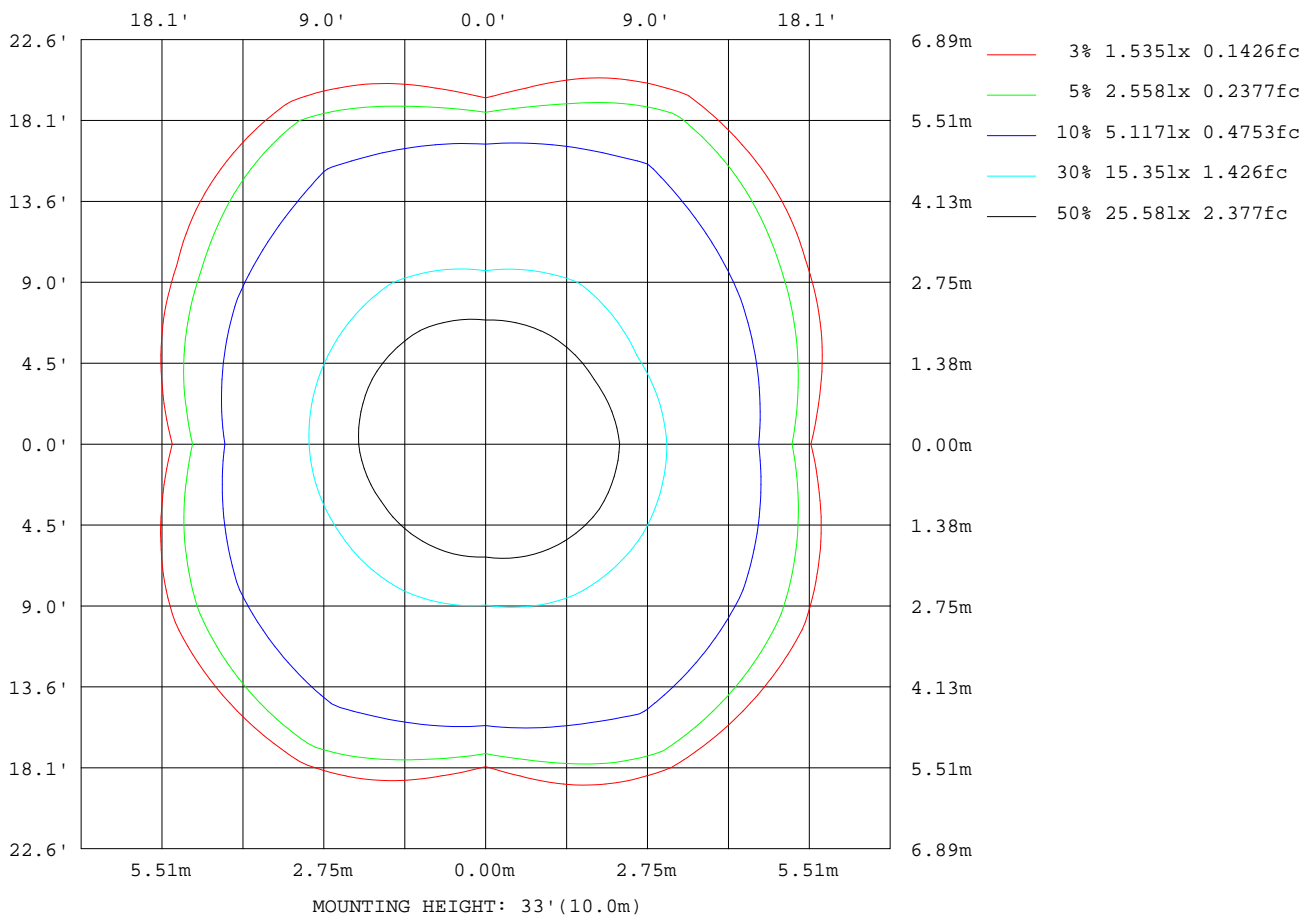
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:1  
 Test Date:2022-06-30

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
 Humidity:65.0%  
 Test Distance:3.106m [K=1.0000]  
 Remarks: 3197-60°

ISOLUX DIAGRAM

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: 1  
 Test Date: 2022-06-30

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
 Humidity: 65.0%  
 Test Distance: 3.106m [K=1.0000]  
 Remarks: 3197-60°

### LED Avg.L Report

Test:U:47.997V I:0.4317A P:20.720W PF:1.0000 Freq:49.99Hz Lamp Flux:1413.77x1 lm		
NAME: 40013-22W-3000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

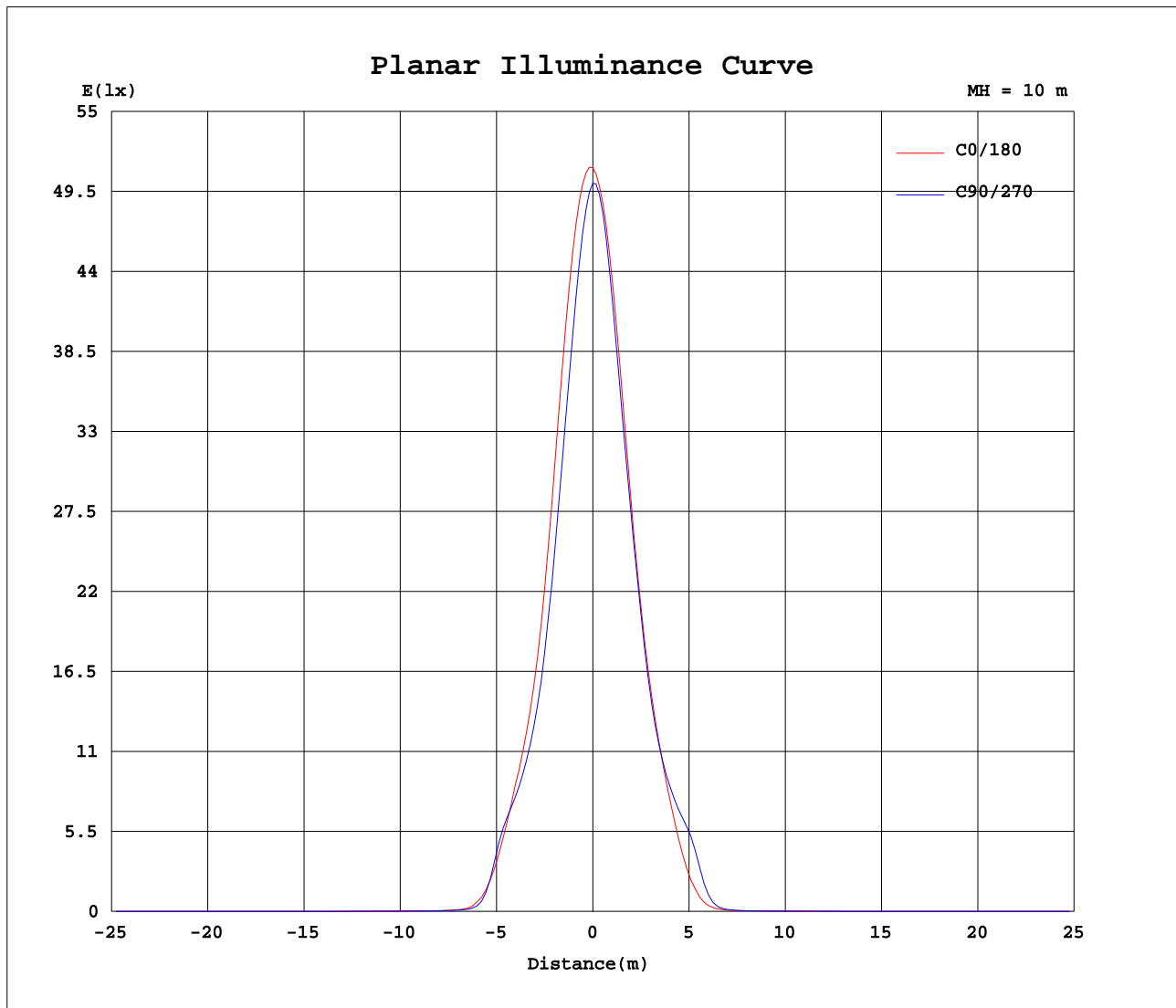
AvgL	cd/m2
L_0~180(65)av	453
L_0~180(75)av	107
L_0~180(85)av	0
L_90~270(65)av	143
L_90~270(75)av	32
L_90~270(85)av	0
L_45(65)av	176
L_45(75)av	27
L_45(85)av	0

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:1  
Test Date:2022-06-30

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity:65.0%  
Test Distance:3.106m [K=1.0000]  
Remarks: 3197-60°

## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: 1  
Test Date: 2022-06-30

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-SPEX500\_V1 SYSTEM V2.00.416  
Humidity: 65.0%  
Test Distance: 3.106m [K=1.0000]  
Remarks: 3197-60°

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.416
Humidity:65.0%
Test Distance:3.106m [K=1.0000]
Remarks: 3197-60°

```