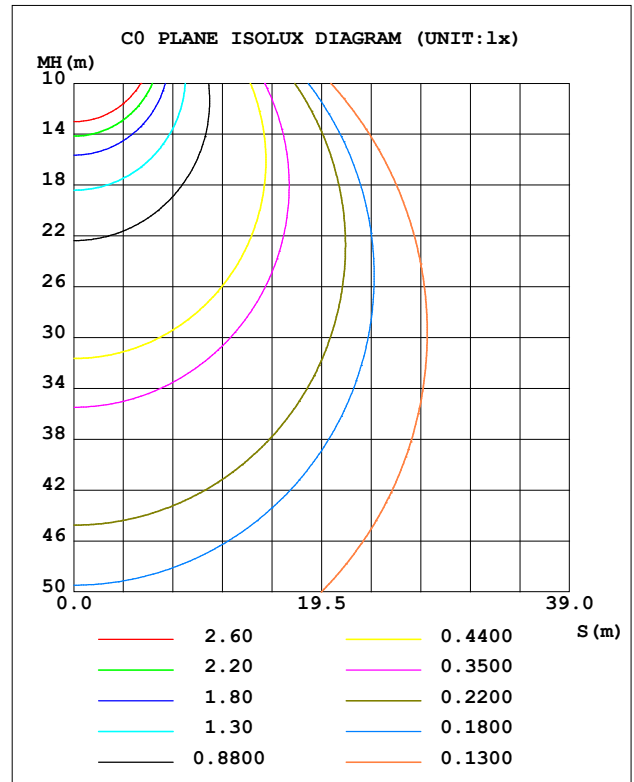
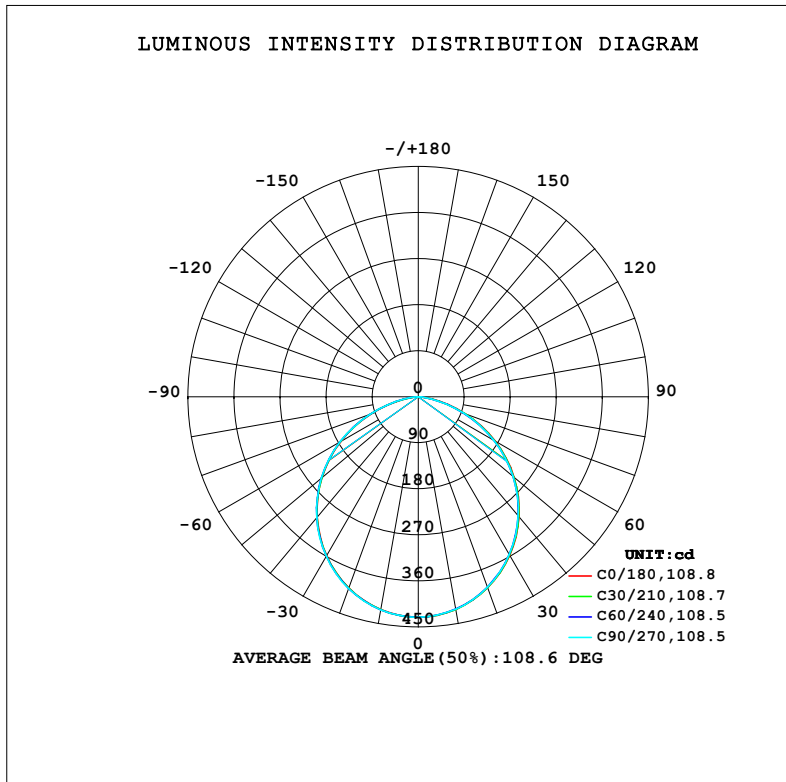


## LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	99LED641	I <sub>max</sub> (cd)	430.8	S/MH (C0/180)	1.24
NOMINAL POWER (W)	18	LOR (%)	96.0	S/MH (C90/270)	1.24
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	1152.2	η UP, DN (C0-180)	0.0, 47.6
NOMINAL FLUX (lm)	1200	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 48.4
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	96.0	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature: 25.3°C  
Operators:  
Test Date: 16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:

## ZONAL FLUX DIAGRAM

### ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	422.1	421.7	421.6	421.7	422.5	422.7	422.8	422.7	0- 10	40.71	40.71	3.53, 3.39
20	397.0	396.3	396.0	396.4	397.6	398.4	398.6	398.2	10- 20	116.1	156.8	13.6, 13.1
30	357.9	356.6	356.2	356.8	358.6	359.5	359.9	359.4	20- 30	174.8	331.6	28.8, 27.6
40	306.4	304.8	304.3	305.0	307.5	308.4	308.8	308.3	30- 40	208.7	540.3	46.9, 45
50	244.7	242.8	241.9	243.0	245.9	247.0	247.2	246.7	40- 50	213.5	753.8	65.4, 62.8
60	174.0	171.7	170.8	172.0	175.2	176.5	176.9	176.3	50- 60	188.0	941.8	81.7, 78.5
70	97.56	95.35	94.68	95.83	98.71	100.1	100.6	100.2	60- 70	134.8	1077	93.4, 89.7
80	28.11	26.87	26.49	27.17	28.63	29.89	30.77	30.00	70- 80	64.76	1141	99.1, 95.1
90	1.075	0.9390	1.297	1.018	1.240	0.7480	0.7879	0.6642	80- 90	10.90	1152	100, 96
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		

Conical surface Flux(90deg): 648.36 lm

%lum = 56.3%

%lamp = 54.0%

Conical surface Flux(130deg): 1017.3 lm

%lum = 88.3%

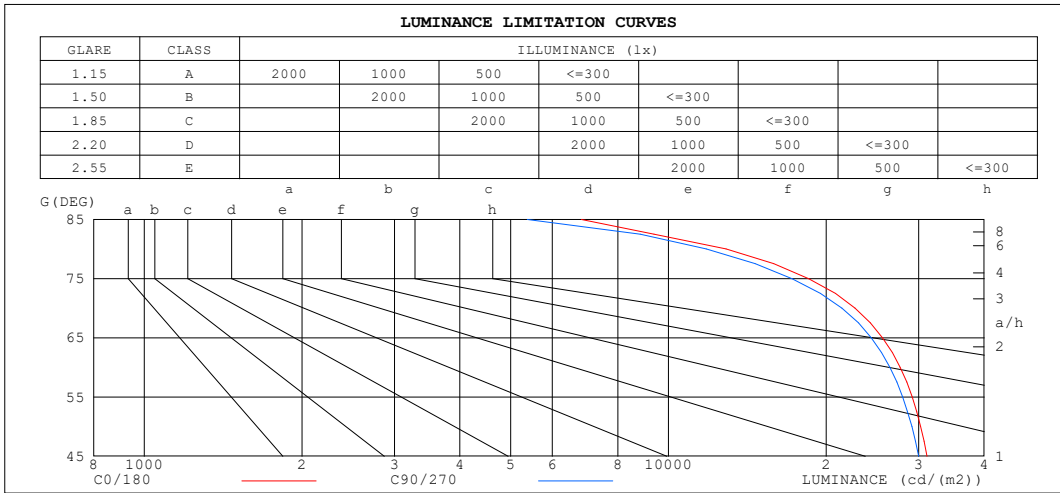
%lamp = 84.8%

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: MEDIUM  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 16 August 2022

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 2.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
 Humidity: 65.0%  
 Test Distance: 6.265m [K=1.0000]  
 Remarks:

**LUMINANCE LIMITATION CURVES**

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	6816	5381
80	12874	11804
75	18500	17207
70	22684	21416
65	25597	24355
60	27676	26424
55	29176	27961
50	30278	29118
45	31134	30005

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: MEDIUM  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 16 August 2022

γ Range: 0 - 90DEG  
 γ Interval: 2.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
 Humidity: 65.0%  
 Test Distance: 6.265m [K=1.0000]  
 Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 2.5DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.456
Humidity:65.0%
Test Distance:6.265m [K=1.0000]
Remarks:

```

## WEC AND CCEC

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	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	.279	.159	.050	.273	.156	.049	.260	.149	.048	.248	.143	.046	.238	.138	.044	
2.0	.268	.147	.045	.262	.144	.044	.251	.139	.043	.241	.135	.042	.231	.131	.041	
3.0	.250	.133	.040	.245	.131	.040	.235	.128	.039	.226	.124	.038	.218	.121	.037	
4.0	.233	.121	.036	.228	.119	.035	.219	.116	.035	.211	.113	.034	.204	.111	.034	
5.0	.216	.110	.032	.212	.109	.032	.204	.106	.031	.197	.104	.031	.190	.102	.031	
6.0	.201	.101	.029	.197	.100	.029	.191	.098	.028	.184	.096	.028	.178	.094	.028	
7.0	.188	.093	.026	.184	.092	.026	.178	.090	.026	.172	.088	.026	.167	.087	.026	
8.0	.176	.086	.024	.173	.085	.024	.167	.084	.024	.162	.082	.024	.157	.081	.023	
9.0	.165	.080	.022	.162	.079	.022	.157	.078	.022	.153	.077	.022	.148	.075	.022	
10.0	.155	.074	.021	.153	.074	.021	.148	.073	.020	.144	.072	.020	.140	.071	.020	

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	.183	.183	.183	.156	.156	.156	.107	.107	.107	.061	.061	.061	.020	.020	.020		
1.0	.172	.150	.130	.147	.129	.112	.101	.089	.078	.058	.051	.045	.019	.017	.015		
2.0	.164	.127	.096	.140	.109	.083	.096	.075	.058	.055	.044	.034	.018	.014	.011		
3.0	.156	.110	.073	.134	.095	.063	.092	.066	.044	.053	.038	.026	.017	.012	.009		
4.0	.149	.097	.057	.128	.084	.050	.088	.058	.035	.051	.034	.021	.016	.011	.007		
5.0	.142	.087	.046	.122	.075	.040	.084	.052	.028	.049	.031	.017	.016	.010	.006		
6.0	.135	.079	.038	.116	.068	.033	.080	.048	.024	.047	.028	.014	.015	.009	.005		
7.0	.129	.072	.032	.111	.062	.028	.077	.044	.020	.044	.026	.012	.014	.008	.004		
8.0	.123	.067	.028	.106	.058	.024	.073	.040	.017	.043	.024	.010	.014	.008	.003		
9.0	.117	.062	.024	.101	.054	.021	.070	.038	.015	.041	.022	.009	.013	.007	.003		
10.0	.112	.058	.022	.096	.050	.019	.067	.035	.013	.039	.021	.008	.013	.007	.003		

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature:25.3°C  
Operators:  
Test Date:16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity:65.0%  
Test Distance:6.265m [K=1.0000]  
Remarks:

## UGR(Unified Glare Rating) Table

NAME: 99LED641					TYPE: 99LED641			WEIGHT: 1			
SPEC.:					DIM.: F200			SERIAL No.: 0			
MFR.: Elmark Industries JSC					SUR.: Round			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	23.9	25.4	24.2	25.6	25.8	23.8	25.2	24.0	25.4	25.6
	3H	25.2	26.6	25.5	26.8	27.1	25.0	26.4	25.3	26.6	26.8
	4H	25.6	26.9	25.9	27.2	27.4	25.4	26.7	25.7	26.9	27.2
	6H	25.8	27.0	26.1	27.3	27.6	25.5	26.7	25.8	27.0	27.3
	8H	25.8	27.0	26.1	27.3	27.5	25.5	26.7	25.8	27.0	27.3
	12H	25.8	26.9	26.1	27.2	27.5	25.5	26.6	25.8	26.9	27.2
4H	2H	24.5	25.8	24.8	26.0	26.3	24.3	25.6	24.6	25.9	26.1
	3H	25.9	27.0	26.2	27.3	27.6	25.7	26.8	26.0	27.1	27.4
	4H	26.4	27.4	26.7	27.7	28.1	26.1	27.2	26.5	27.5	27.8
	6H	26.6	27.5	27.0	27.9	28.2	26.4	27.3	26.8	27.6	28.0
	8H	26.6	27.5	27.1	27.9	28.2	26.4	27.2	26.8	27.6	28.0
	12H	26.6	27.4	27.1	27.8	28.2	26.4	27.2	26.8	27.5	27.9
8H	4H	26.5	27.4	26.9	27.7	28.1	26.3	27.1	26.7	27.5	27.9
	6H	26.8	27.5	27.3	27.9	28.4	26.6	27.3	27.0	27.7	28.1
	8H	26.9	27.5	27.3	27.9	28.4	26.6	27.3	27.1	27.7	28.1
	12H	26.9	27.4	27.4	27.9	28.4	26.6	27.2	27.1	27.6	28.1
12H	4H	26.5	27.3	26.9	27.6	28.0	26.3	27.1	26.7	27.4	27.8
	6H	26.8	27.4	27.3	27.9	28.3	26.6	27.2	27.0	27.6	28.1
	8H	26.9	27.4	27.4	27.9	28.3	26.7	27.2	27.1	27.6	28.1
Variations with the observer position at spacings(CIE Pub.117):											
S = 1.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3					
1.5H	+ 0.2 / - 0.4					+ 0.2 / - 0.4					
2.0H	+ 0.4 / - 0.4					+ 0.3 / - 0.4					

CIE Pub.117, 1200 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.6)  
Area: 0.0128614 m2

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature:25.3°C  
Operators:  
Test Date:16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity:65.0%  
Test Distance:6.265m [K=1.0000]  
Remarks:

### UTILIZATION FACTORS TABLE

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:

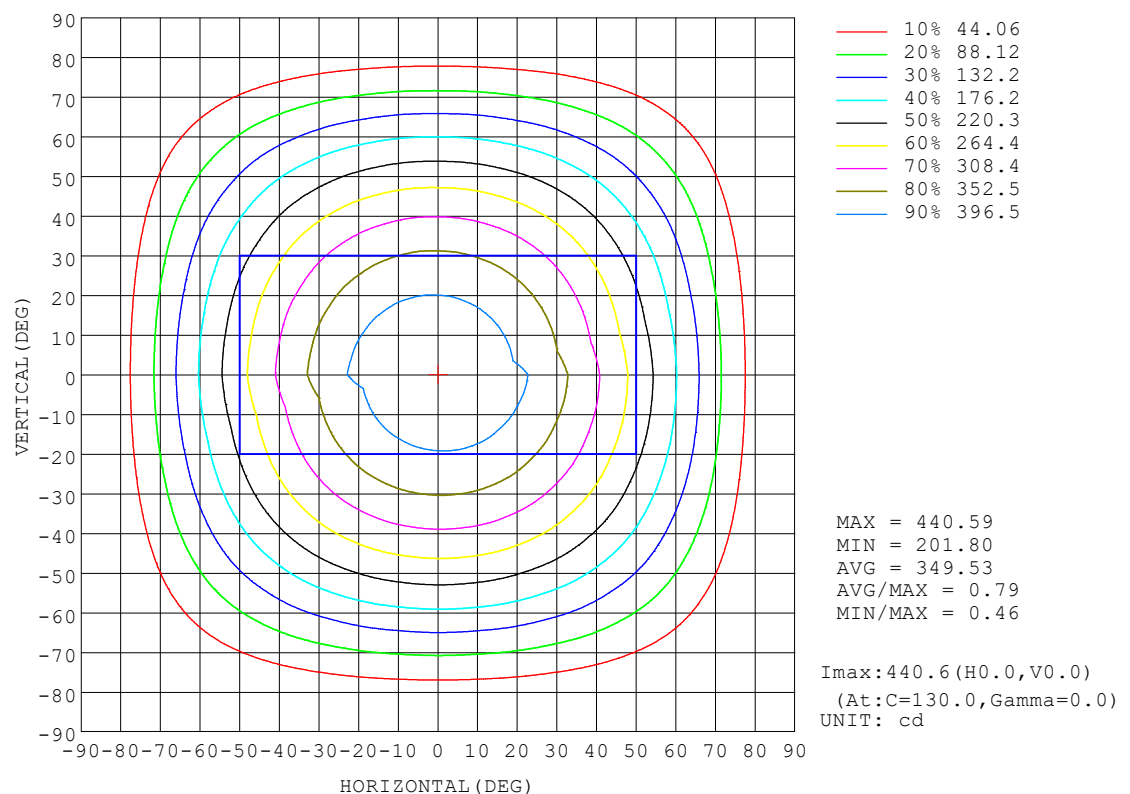
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	56	45	39	56	45	39	55	45	39	32
0.80	66	55	48	65	55	48	63	54	48	41
1.00	74	64	57	73	63	57	71	65	56	50
1.25	81	71	65	80	71	64	77	69	64	57
1.50	86	77	70	84	76	70	81	74	69	62
2.00	92	85	79	91	83	78	87	81	76	69
2.50	96	89	83	94	88	83	90	85	81	73
3.00	99	93	88	97	91	87	93	89	85	77
4.00	103	98	93	101	96	92	97	93	90	81
5.00	105	101	97	103	99	96	98	95	93	84
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature: 25.3°C  
Operators:  
Test Date: 16 August 2022

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 2.5DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:

# ISOCANDELA DIAGRAM

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:



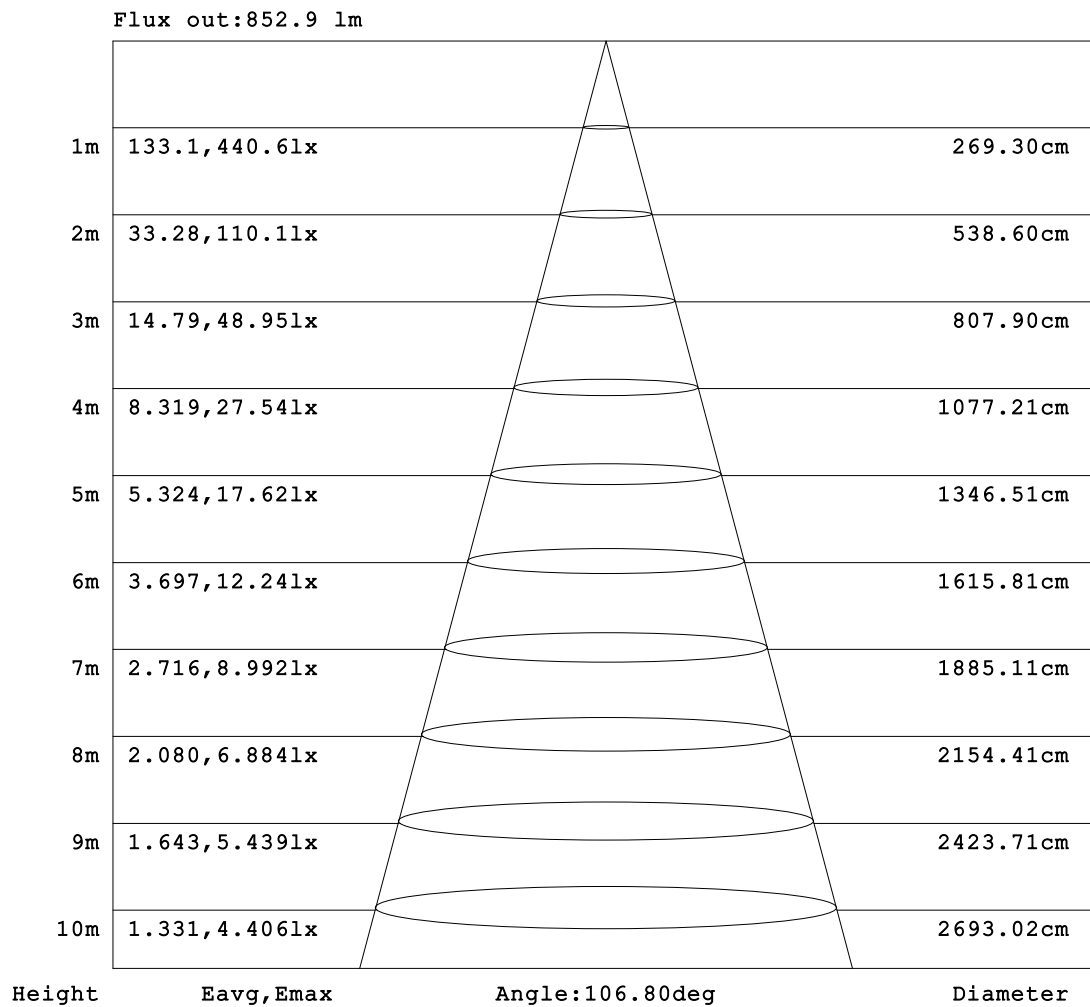
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature: 25.3°C  
Operators:  
Test Date: 16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:



**AAI Figure**

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:



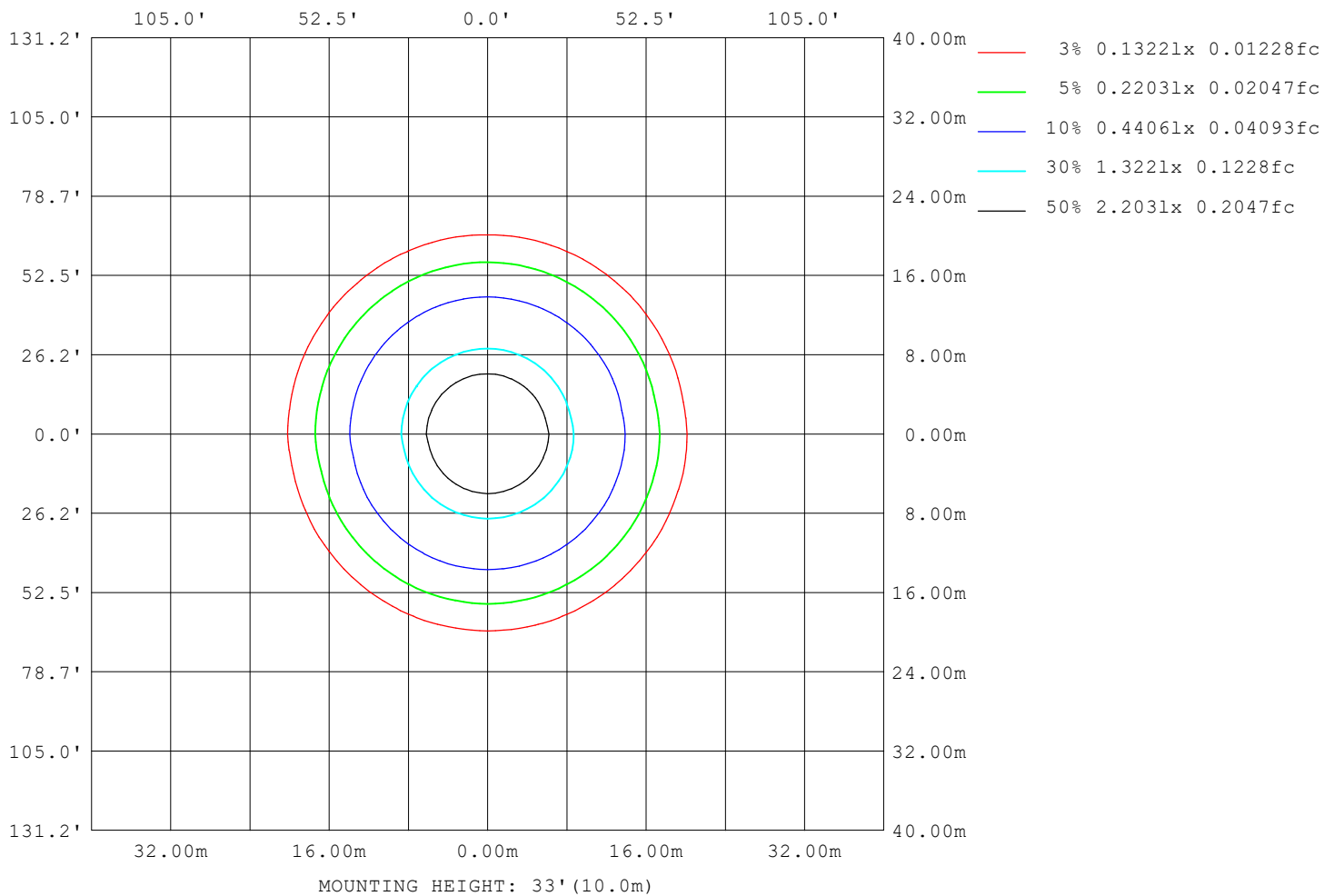
**Note:**The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: MEDIUM  
 Temperature:25.3°C  
 Operators:  
 Test Date:16 August 2022

γ Range: 0 - 90DEG  
 γ Interval: 2.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
 Humidity:65.0%  
 Test Distance:6.265m [K=1.0000]  
 Remarks:

## ISOLUX DIAGRAM

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature: 25.3°C  
Operators:  
Test Date: 16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:

### LED Avg.L Report

NAME: 99LED641	TYPE: 99LED641	WEIGHT: 1
SPEC.:	DIM.: F200	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: Round	Shielding Angle:

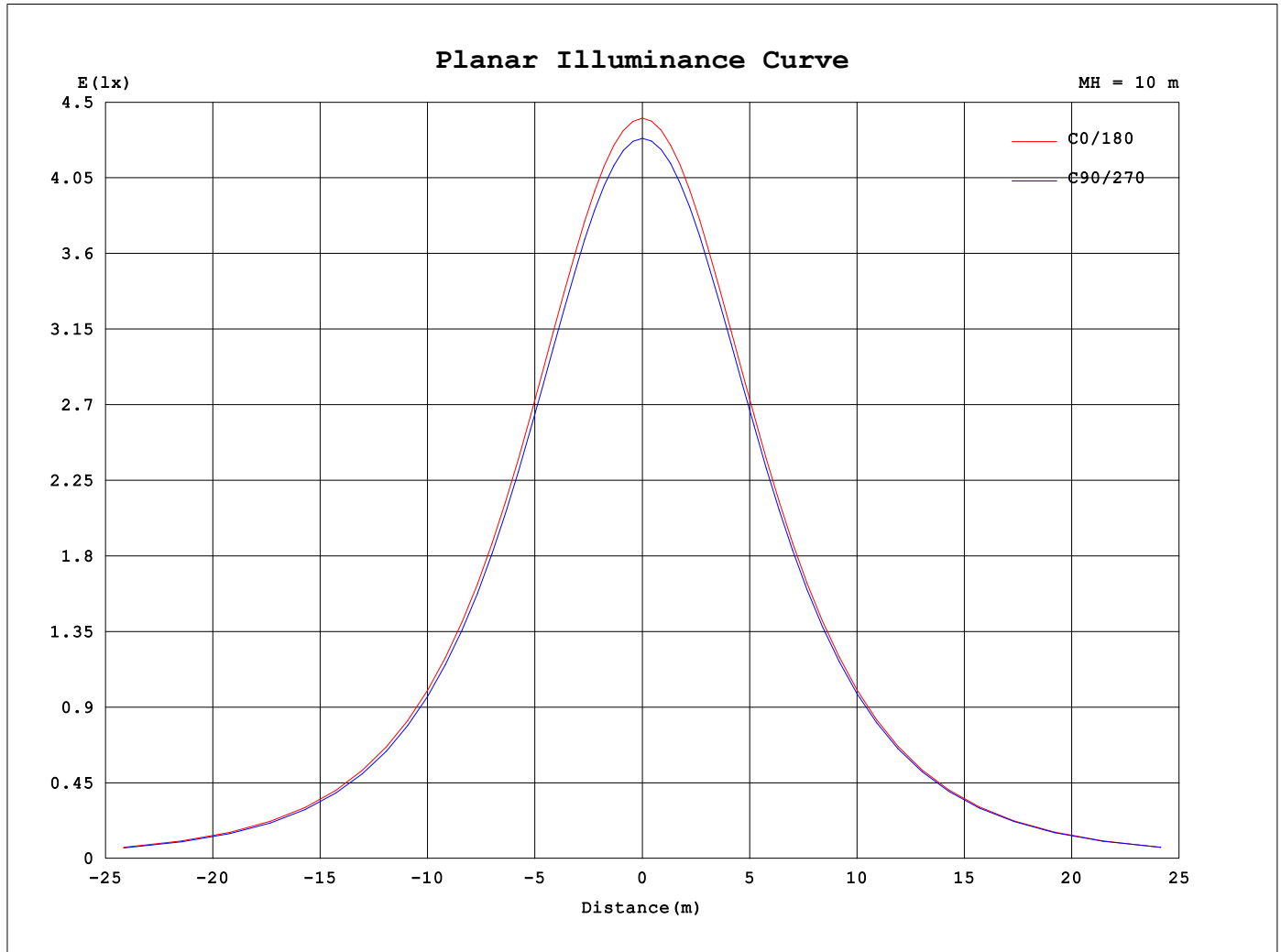
AvgL	cd/m2
L_0~180 (65) av	25156
L_0~180 (75) av	18189
L_0~180 (85) av	6584
L_90~270 (65) av	25028
L_90~270 (75) av	18156
L_90~270 (85) av	6440
L_45 (65) av	25080
L_45 (75) av	18168
L_45 (85) av	6817

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: MEDIUM  
Temperature:25.3°C  
Operators:  
Test Date:16 August 2022

γ Range: 0 - 90DEG  
γ Interval: 2.5DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity:65.0%  
Test Distance:6.265m [K=1.0000]  
Remarks:

# Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: MEDIUM  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 16 August 2022

γ Range: 0 - 90DEG  
 γ Interval: 2.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
 Humidity: 65.0%  
 Test Distance: 6.265m [K=1.0000]  
 Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 2.5DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.456
Humidity:65.0%
Test Distance:6.265m [K=1.0000]
Remarks:

```

```

γ Range: 0 - 90DEG
γ Interval: 2.5DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.456
Humidity:65.0%
Test Distance:6.265m [K=1.0000]
Remarks:

```