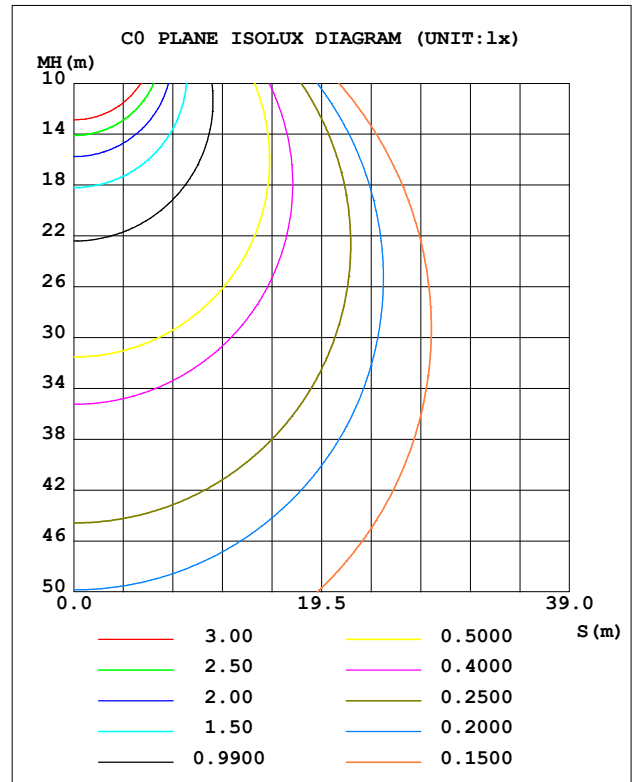
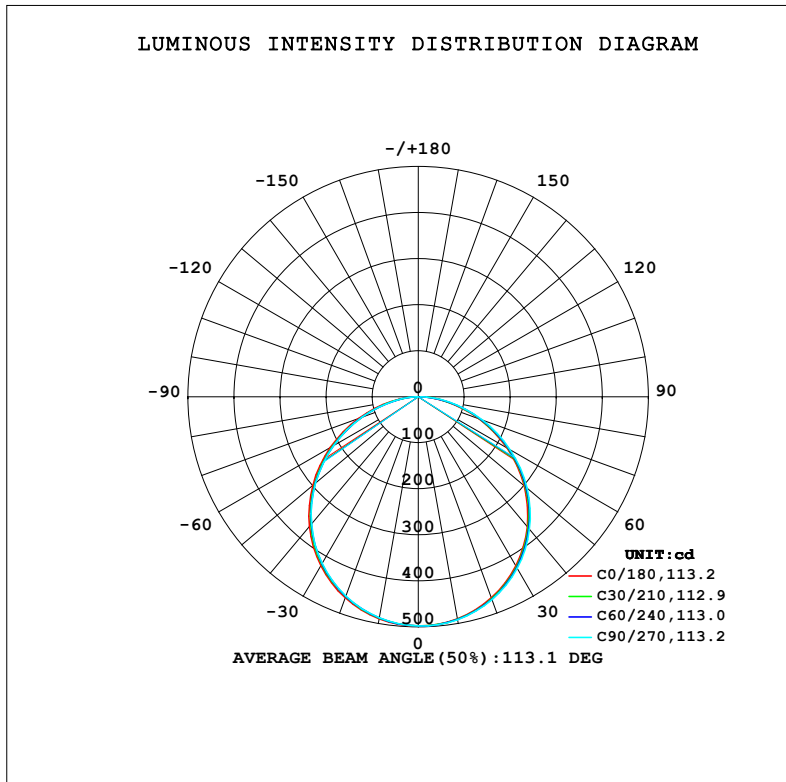


## LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	99LED965CW	Imax(cd)	497.9	S/MH(C0/180)	1.26
NOMINAL POWER(W)	18	LOR(%)	94.4	S/MH(C90/270)	1.25
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1444.0	$\eta$ UP,DN(C0-180)	0.0,48.2
NOMINAL FLUX(lm)	1530	CIE CLASS	DIRECT	$\eta$ UP,DN(C180-360)	0.0,46.2
LAMPS INSIDE	1	$\eta$ up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230	$\eta$ down (%)	94.4	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:11 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:

### ZONAL FLUX DIAGRAM

#### ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	489.7	490.9	491.7	491.1	489.5	488.1	487.5	488.1	0- 10	47.13	47.13	3.26,3.08
20	464.7	467.3	468.8	467.9	464.4	461.7	460.6	461.9	10- 20	135.3	182.4	12.6,11.9
30	424.0	427.5	429.9	428.6	423.4	419.4	418.0	420.0	20- 30	205.6	388.0	26.9,25.4
40	368.4	372.7	375.8	374.3	367.7	362.5	360.8	363.7	30- 40	248.8	636.8	44.1,41.6
50	300.1	304.9	308.4	306.9	299.1	292.9	291.0	294.7	40- 50	258.6	895.5	62,58.5
60	222.2	227.0	230.9	229.5	220.8	213.7	212.2	216.7	50- 60	233.8	1129	78.2,73.8
70	139.9	144.1	148.6	147.4	138.3	130.6	129.7	134.8	60- 70	178.6	1308	90.6,85.5
80	62.13	64.96	69.21	68.42	60.25	53.54	52.93	57.40	70- 80	104.8	1413	97.8,92.3
90	1.023	3.425	4.971	3.445	0.7527	0.7368	0.7374	0.7453	80- 90	31.35	1444	100,94.4
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): 767.11 lm

%lum = 53.1%

%lamp = 50.1%

Conical surface Flux(130deg): 1227 lm

%lum = 85.0%

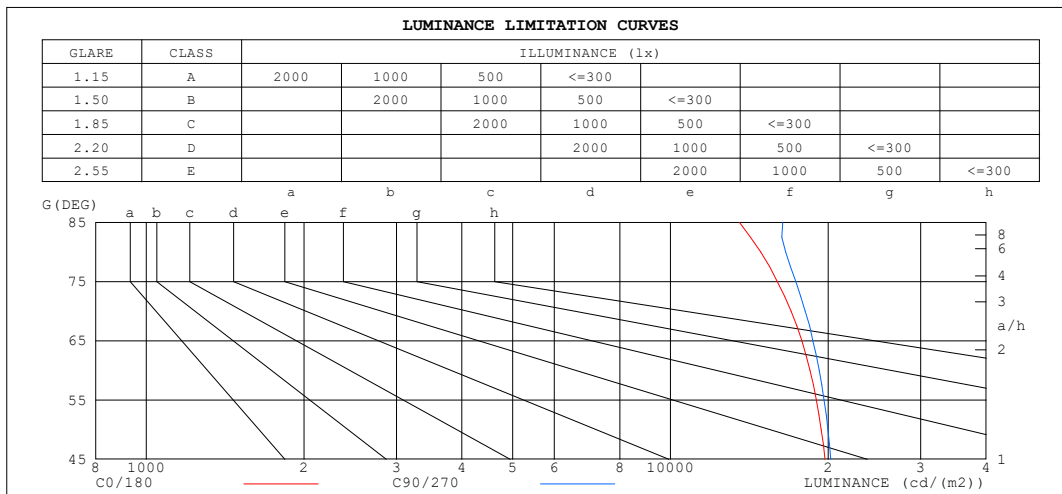
%lamp = 80.2%

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.3°C  
 Operators:  
 Test Date:11 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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	13545	16368
80	14856	16584
75	15991	17332
70	16978	18075
65	17801	18696
60	18453	19218
55	18979	19640
50	19386	19965
45	19714	20223

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 11 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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	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	.297	.169	.053	.290	.165	.053	.277	.159	.051	.266	.153	.049	.255	.148	.048	
2.0	.278	.152	.047	.272	.150	.046	.261	.145	.045	.251	.141	.044	.241	.137	.043	
3.0	.257	.137	.041	.252	.135	.041	.242	.131	.040	.233	.128	.039	.224	.124	.038	
4.0	.237	.123	.036	.232	.121	.036	.223	.118	.035	.215	.116	.035	.208	.113	.034	
5.0	.219	.111	.032	.214	.110	.032	.207	.108	.032	.200	.105	.031	.193	.103	.031	
6.0	.203	.102	.029	.199	.100	.029	.192	.098	.029	.186	.096	.028	.180	.095	.028	
7.0	.188	.093	.026	.185	.092	.026	.179	.091	.026	.173	.089	.026	.168	.087	.026	
8.0	.176	.086	.024	.173	.085	.024	.168	.084	.024	.162	.082	.024	.158	.081	.024	
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	.071	.020	.140	.070	.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	.180	.180	.180	.154	.154	.154	.105	.105	.105	.060	.060	.060	.019	.019	.019	
1.0	.170	.147	.126	.146	.126	.109	.100	.087	.075	.057	.050	.044	.018	.016	.014	
2.0	.163	.124	.092	.140	.107	.080	.096	.074	.056	.055	.043	.033	.018	.014	.011	
3.0	.156	.108	.070	.133	.093	.061	.092	.065	.042	.053	.038	.025	.017	.012	.008	
4.0	.148	.095	.055	.127	.082	.048	.088	.057	.034	.051	.034	.020	.016	.011	.007	
5.0	.141	.086	.044	.121	.074	.039	.084	.052	.027	.048	.030	.016	.016	.010	.005	
6.0	.135	.078	.037	.116	.067	.032	.080	.047	.023	.046	.028	.013	.015	.009	.004	
7.0	.128	.071	.031	.110	.062	.027	.076	.043	.019	.044	.025	.011	.014	.008	.004	
8.0	.122	.066	.027	.105	.057	.024	.073	.040	.017	.042	.024	.010	.014	.008	.003	
9.0	.116	.061	.024	.100	.053	.021	.069	.037	.015	.040	.022	.009	.013	.007	.003	
10.0	.111	.057	.021	.096	.049	.018	.066	.035	.013	.039	.021	.008	.013	.007	.003	

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:11 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: 99LED965CW					TYPE: 99LED965CW			WEIGHT: 1			
SPEC.:					DIM.: F210			SERIAL No.: 0			
MFR.: Elmark Industries JSC					SUR.: circular			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	21.7	23.2	22.0	23.4	23.6	21.8	23.4	22.1	23.6	23.8
	3H	23.2	24.6	23.5	24.9	25.1	23.4	24.8	23.7	25.1	25.3
	4H	23.8	25.2	24.2	25.4	25.7	24.1	25.4	24.4	25.7	25.9
	6H	24.3	25.6	24.6	25.9	26.1	24.6	25.9	24.9	26.2	26.4
	8H	24.5	25.7	24.8	26.0	26.3	24.8	26.0	25.1	26.3	26.6
	12H	24.6	25.8	24.9	26.0	26.4	24.9	26.1	25.3	26.4	26.7
4H	2H	22.3	23.7	22.6	23.9	24.2	22.4	23.8	22.8	24.0	24.3
	3H	24.0	25.2	24.4	25.5	25.8	24.2	25.4	24.6	25.7	26.0
	4H	24.8	25.9	25.2	26.2	26.5	25.0	26.1	25.4	26.4	26.8
	6H	25.4	26.4	25.8	26.7	27.1	25.7	26.6	26.1	27.0	27.4
	8H	25.6	26.5	26.0	26.9	27.3	25.9	26.8	26.3	27.2	27.6
	12H	25.8	26.6	26.2	27.0	27.4	26.1	26.9	26.5	27.3	27.7
8H	4H	25.1	26.0	25.5	26.4	26.8	25.3	26.2	25.7	26.6	26.9
	6H	25.9	26.6	26.3	27.0	27.4	26.1	26.9	26.6	27.3	27.7
	8H	26.2	26.8	26.6	27.3	27.7	26.5	27.1	26.9	27.5	28.0
	12H	26.4	27.0	26.9	27.4	27.9	26.8	27.3	27.2	27.8	28.2
12H	4H	25.1	26.0	25.6	26.3	26.7	25.3	26.1	25.7	26.5	26.9
	6H	25.9	26.6	26.4	27.0	27.5	26.2	26.8	26.6	27.3	27.7
	8H	26.3	26.9	26.8	27.3	27.8	26.6	27.1	27.0	27.6	28.1
Variations with the observer position at spacings(CIE Pub.117):											
S = 1.0H		+ 0.1 / - 0.2					+ 0.1 / - 0.2				
1.5H		+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H		+ 0.1 / - 0.3					+ 0.1 / - 0.3				

CIE Pub.117, 1530 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 1.5)  
Area: 0.0240406 m2

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:11 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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:

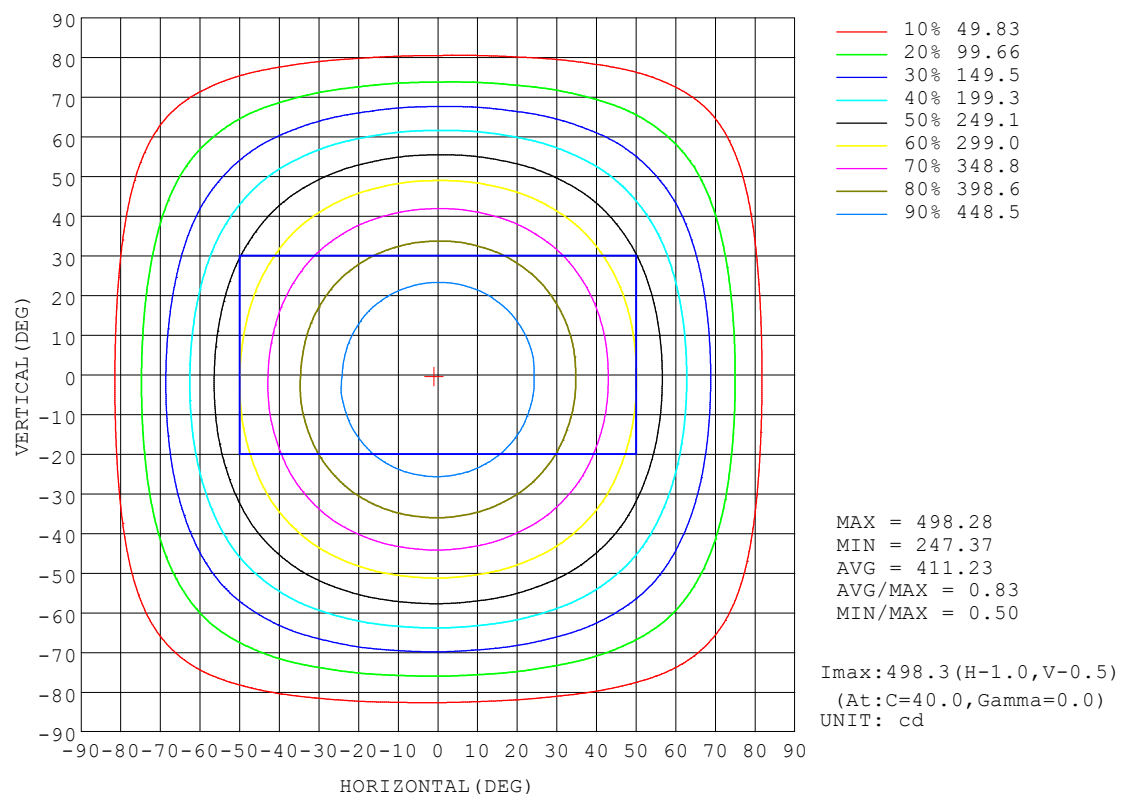
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	54	43	36	53	43	36	52	42	36	30
0.80	63	52	45	62	52	45	61	51	45	38
1.00	71	61	54	70	60	54	68	62	53	46
1.25	78	68	61	77	67	61	74	66	60	53
1.50	83	73	67	81	73	66	78	71	65	58
2.00	89	81	75	88	80	74	84	78	73	65
2.50	93	86	80	91	84	79	87	82	77	69
3.00	96	90	84	94	88	83	90	85	81	73
4.00	100	95	90	98	93	89	94	90	86	78
5.00	102	98	94	100	96	92	96	92	89	81
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: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 11 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:

# ISOCANDELA DIAGRAM

NAME: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:



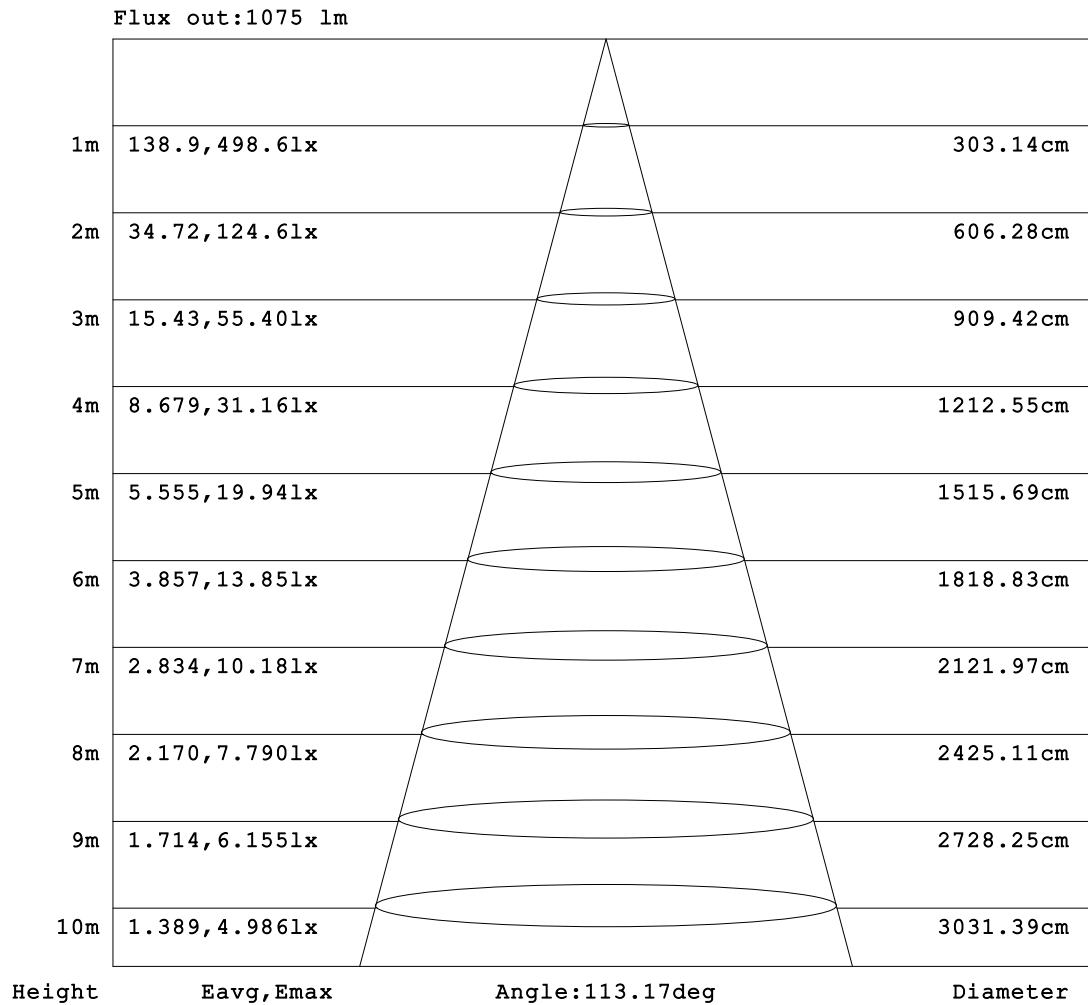
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 11 August 2022

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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:



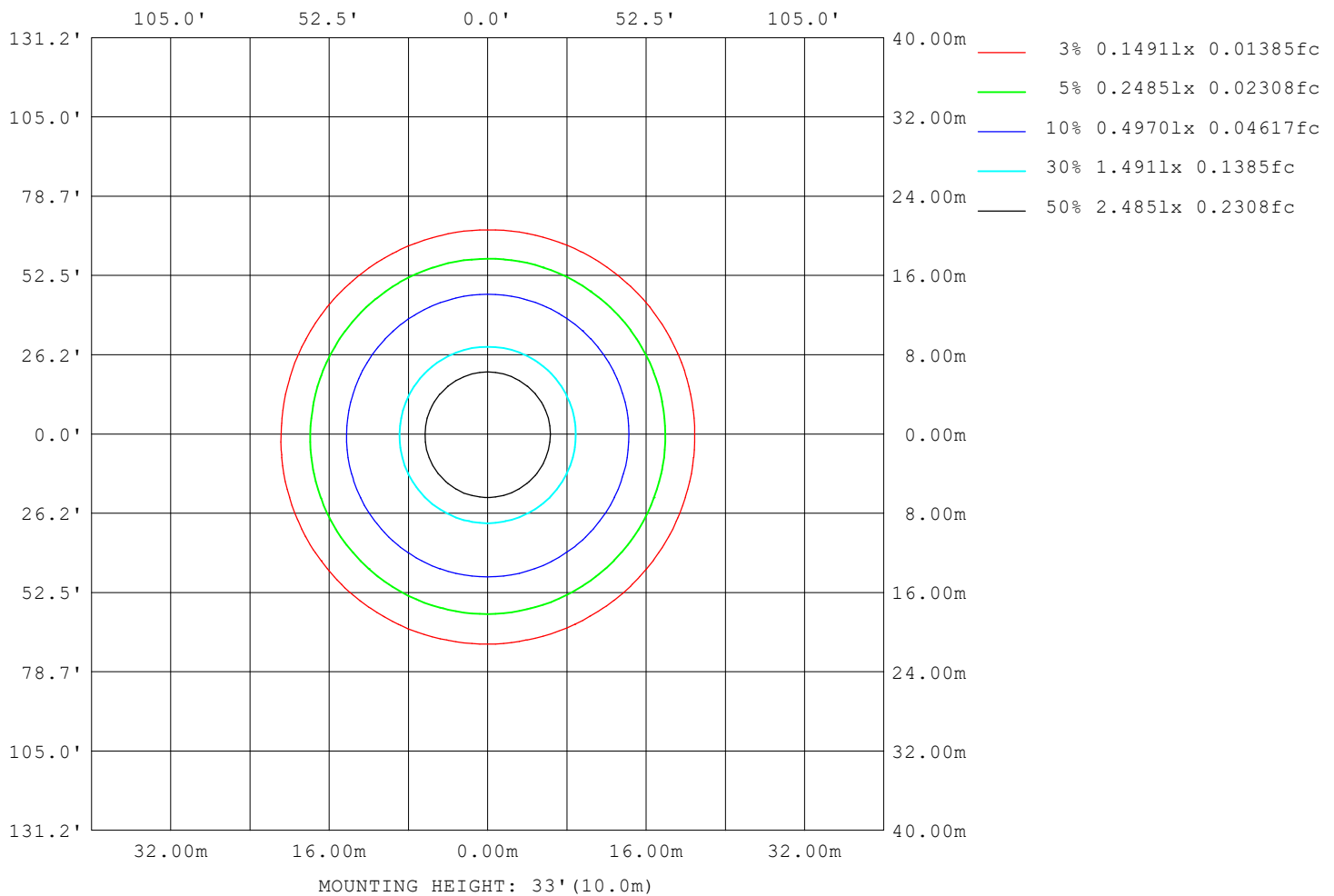
**Note:** The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 11 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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 11 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: 99LED965CW	TYPE: 99LED965CW	WEIGHT: 1
SPEC.:	DIM.: F210	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: circular	Shielding Angle:

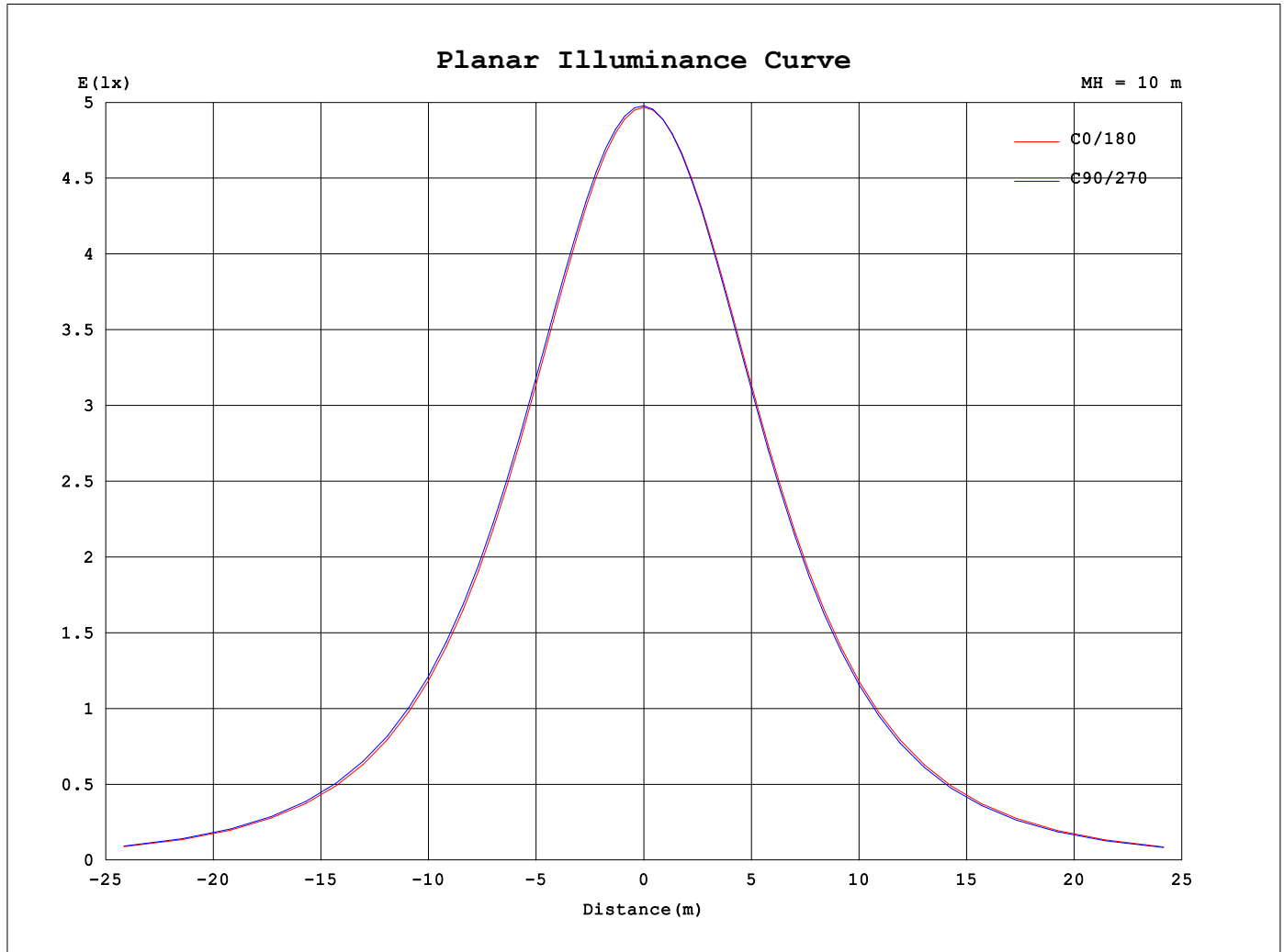
AvgL	cd/m2
L_0~180 (65) av	17758
L_0~180 (75) av	15885
L_0~180 (85) av	13135
L_90~270 (65) av	17754
L_90~270 (75) av	15881
L_90~270 (85) av	13042
L_45 (65) av	17773
L_45 (75) av	15887
L_45 (85) av	13075

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:11 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: HIGH  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 11 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:

```

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:

```