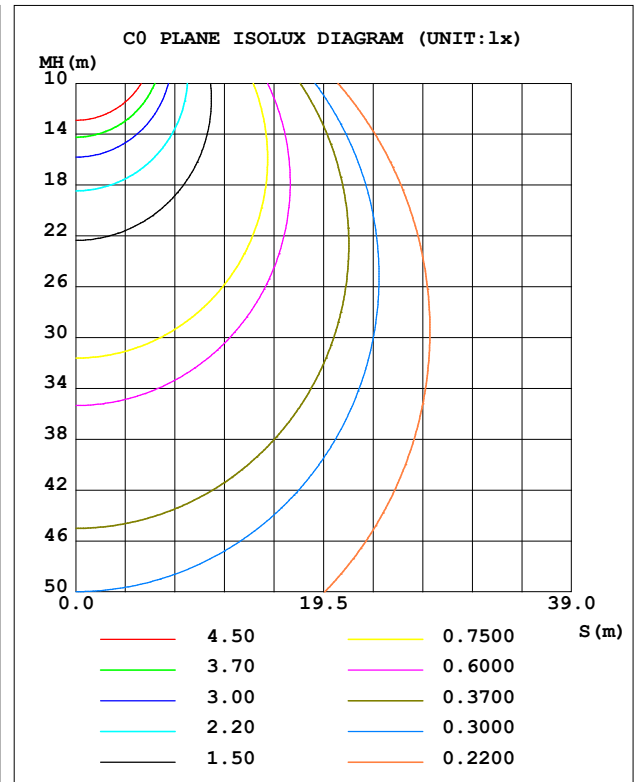
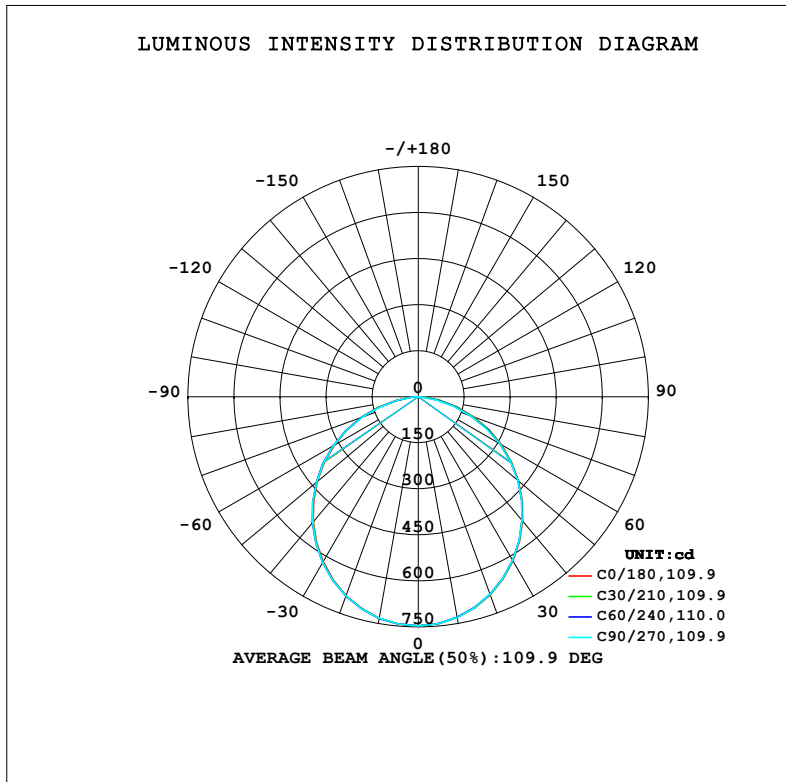


LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	99LED963	I <sub>max</sub> (cd)	746.3	S/MH (C0/180)	1.24
NOMINAL POWER (W)	24	LOR (%)	100.9	S/MH (C90/270)	1.24
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	2058.2	η UP, DN (C0-180)	0.0, 50.0
NOMINAL FLUX (lm)	2040	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.9
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	100.9	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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	730.8	729.9	729.9	730.7	732.0	732.8	732.8	732.1	0- 10	70.53	70.53	3.43,3.46
20	686.6	685.0	685.1	686.4	688.8	690.5	690.6	689.2	10- 20	201.1	271.6	13.2,13.3
30	617.6	615.5	615.6	617.3	620.6	623.0	623.2	621.2	20- 30	302.4	574.0	27.9,28.1
40	529.3	526.8	526.7	528.8	532.7	535.7	535.9	533.6	30- 40	361.2	935.2	45.4,45.8
50	426.6	423.8	423.4	425.7	430.0	433.4	433.8	431.3	40- 50	371.4	1307	63.5,64
60	313.0	309.5	307.2	311.0	316.3	320.0	320.0	318.0	50- 60	333.1	1640	79.7,80.4
70	192.6	186.1	181.0	187.3	195.4	197.0	193.9	195.6	60- 70	250.7	1890	91.8,92.7
80	74.65	66.80	60.06	67.81	75.87	73.95	70.07	73.60	70- 80	137.1	2027	98.5,99.4
90	1.423	1.154	1.100	1.162	1.144	1.002	0.9615	0.9925	80- 90	30.79	2058	100,101
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): 1122.7 lm

%lum = 54.5%

%lamp = 55.0%

Conical surface Flux(130deg): 1777.7 lm

%lum = 86.4%

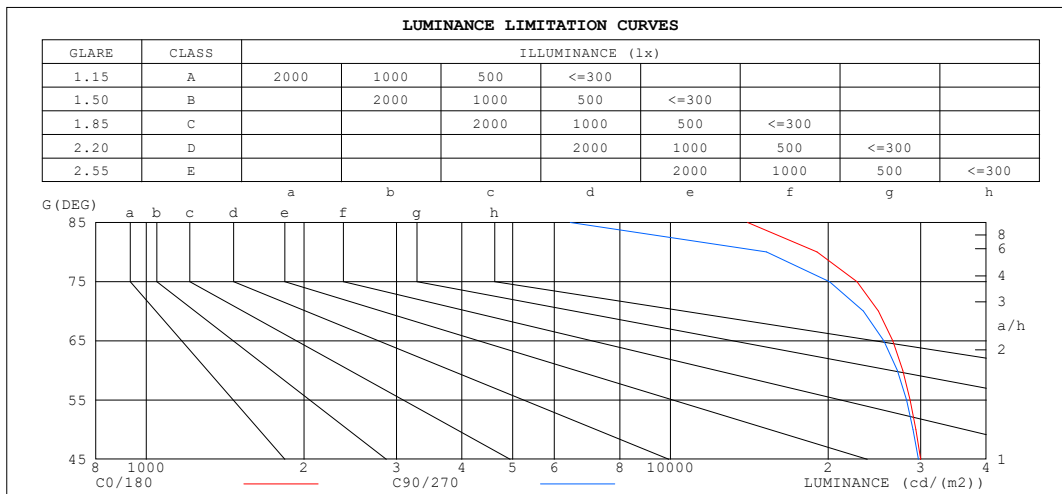
%lamp = 87.1%

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:04 August 2022

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 5.0DEG  
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: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	14029	6441
80	19034	15237
75	22688	20113
70	24934	23315
65	26537	25514
60	27717	27070
55	28629	28208
50	29385	29015
45	30024	29694

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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: 5.0DEG
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: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	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	.306	.174	.055	.299	.170	.054	.286	.164	.052	.273	.158	.051	.262	.152	.049	
2.0	.290	.159	.049	.284	.156	.048	.272	.151	.047	.261	.146	.046	.251	.142	.045	
3.0	.269	.143	.043	.264	.141	.043	.253	.137	.042	.244	.134	.041	.235	.130	.040	
4.0	.249	.129	.038	.244	.128	.038	.235	.125	.037	.226	.122	.037	.218	.119	.036	
5.0	.231	.117	.034	.226	.116	.034	.218	.114	.033	.210	.111	.033	.203	.109	.033	
6.0	.214	.107	.031	.210	.106	.031	.203	.104	.030	.196	.102	.030	.190	.100	.030	
7.0	.199	.099	.028	.196	.098	.028	.189	.096	.028	.183	.094	.027	.178	.092	.027	
8.0	.186	.091	.026	.183	.090	.026	.177	.089	.025	.172	.087	.025	.167	.086	.025	
9.0	.175	.085	.024	.172	.084	.024	.167	.082	.023	.162	.081	.023	.157	.080	.023	
10.0	.164	.079	.022	.162	.078	.022	.157	.077	.022	.153	.076	.022	.148	.075	.021	

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	.192	.192	.192	.164	.164	.164	.112	.112	.112	.064	.064	.064	.021	.021	.021	
1.0	.181	.158	.136	.155	.135	.117	.106	.093	.081	.061	.054	.047	.020	.017	.015	
2.0	.173	.133	.099	.148	.115	.086	.102	.079	.060	.059	.046	.035	.019	.015	.011	
3.0	.165	.115	.075	.142	.099	.065	.097	.069	.046	.056	.040	.027	.018	.013	.009	
4.0	.158	.102	.059	.135	.088	.051	.093	.061	.036	.054	.036	.021	.017	.012	.007	
5.0	.150	.091	.048	.129	.079	.042	.089	.055	.029	.051	.032	.017	.017	.011	.006	
6.0	.143	.083	.040	.123	.072	.035	.085	.050	.024	.049	.030	.015	.016	.010	.005	
7.0	.136	.076	.034	.117	.066	.029	.081	.046	.021	.047	.027	.012	.015	.009	.004	
8.0	.130	.070	.029	.112	.061	.025	.077	.043	.018	.045	.025	.011	.015	.008	.004	
9.0	.124	.065	.026	.106	.056	.022	.074	.040	.016	.043	.023	.009	.014	.008	.003	
10.0	.118	.061	.023	.102	.053	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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: 99LED963					TYPE: 99LED963			WEIGHT: 1			
SPEC.:					DIM.: F 0.225 x 0.024			SERIAL No.: 0			
MFR.: Elmark Industries JSC					SUR.: cylinder			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	22.0	23.5	22.3	23.7	23.9	21.9	23.4	22.2	23.6	23.9
	3H	23.5	24.9	23.8	25.1	25.4	23.3	24.7	23.6	24.9	25.2
	4H	24.0	25.4	24.4	25.6	25.9	23.8	25.1	24.1	25.3	25.6
	6H	24.4	25.6	24.7	25.9	26.2	24.0	25.2	24.3	25.5	25.8
	8H	24.4	25.6	24.8	25.9	26.2	23.9	25.2	24.3	25.4	25.7
	12H	24.5	25.6	24.8	25.9	26.2	23.9	25.1	24.3	25.4	25.7
4H	2H	22.6	23.9	22.9	24.2	24.4	22.5	23.9	22.8	24.1	24.4
	3H	24.2	25.4	24.6	25.7	26.0	24.1	25.2	24.4	25.5	25.8
	4H	24.9	26.0	25.3	26.3	26.6	24.6	25.7	25.0	26.0	26.3
	6H	25.3	26.3	25.7	26.6	27.0	24.9	25.9	25.3	26.2	26.6
	8H	25.4	26.3	25.8	26.7	27.0	24.9	25.8	25.3	26.1	26.5
	12H	25.5	26.3	25.9	26.7	27.1	24.9	25.7	25.3	26.1	26.5
8H	4H	25.1	26.0	25.5	26.3	26.7	24.8	25.7	25.3	26.1	26.5
	6H	25.6	26.3	26.1	26.7	27.2	25.2	25.9	25.6	26.3	26.8
	8H	25.7	26.4	26.2	26.8	27.3	25.2	25.9	25.7	26.3	26.7
	12H	25.9	26.4	26.4	26.9	27.4	25.3	25.8	25.7	26.3	26.7
12H	4H	25.1	25.9	25.5	26.3	26.7	24.8	25.6	25.3	26.0	26.4
	6H	25.6	26.3	26.1	26.7	27.1	25.2	25.9	25.7	26.3	26.7
	8H	25.8	26.3	26.2	26.8	27.2	25.2	25.8	25.7	26.2	26.7
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		+ 0.3 / - 0.4					+ 0.3 / - 0.4				

CIE Pub.117, 2040 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.5)  
Area: 0.0226865 m2

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:

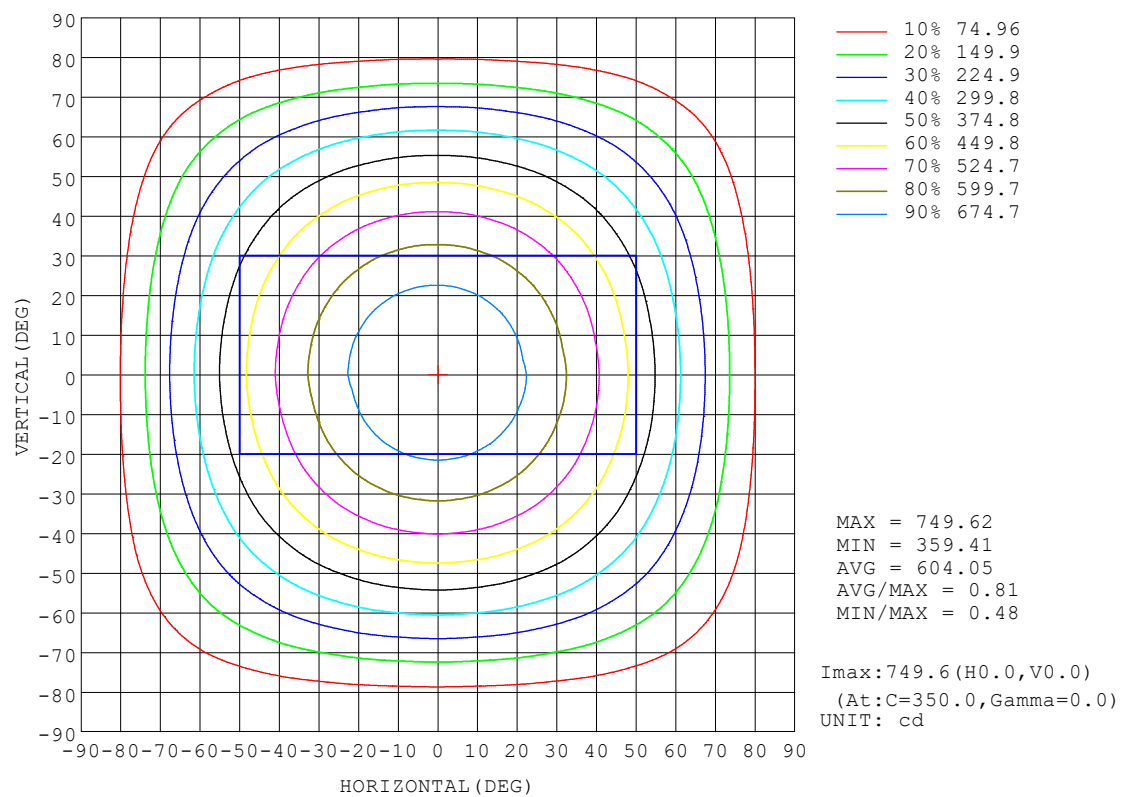
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	47	40	58	47	40	57	46	40	33
0.80	69	57	50	68	57	49	66	56	49	42
1.00	77	66	59	76	65	58	74	67	58	51
1.25	84	74	67	83	73	66	80	72	65	58
1.50	89	79	72	88	79	72	85	77	71	63
2.00	96	88	81	94	87	81	91	84	79	71
2.50	100	92	86	98	91	85	94	88	84	75
3.00	103	97	91	101	95	90	97	92	88	79
4.00	107	102	97	105	100	96	101	97	93	84
5.00	110	105	101	107	103	100	103	99	96	87
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: 04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:

# ISOCANDELA DIAGRAM

NAME: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:



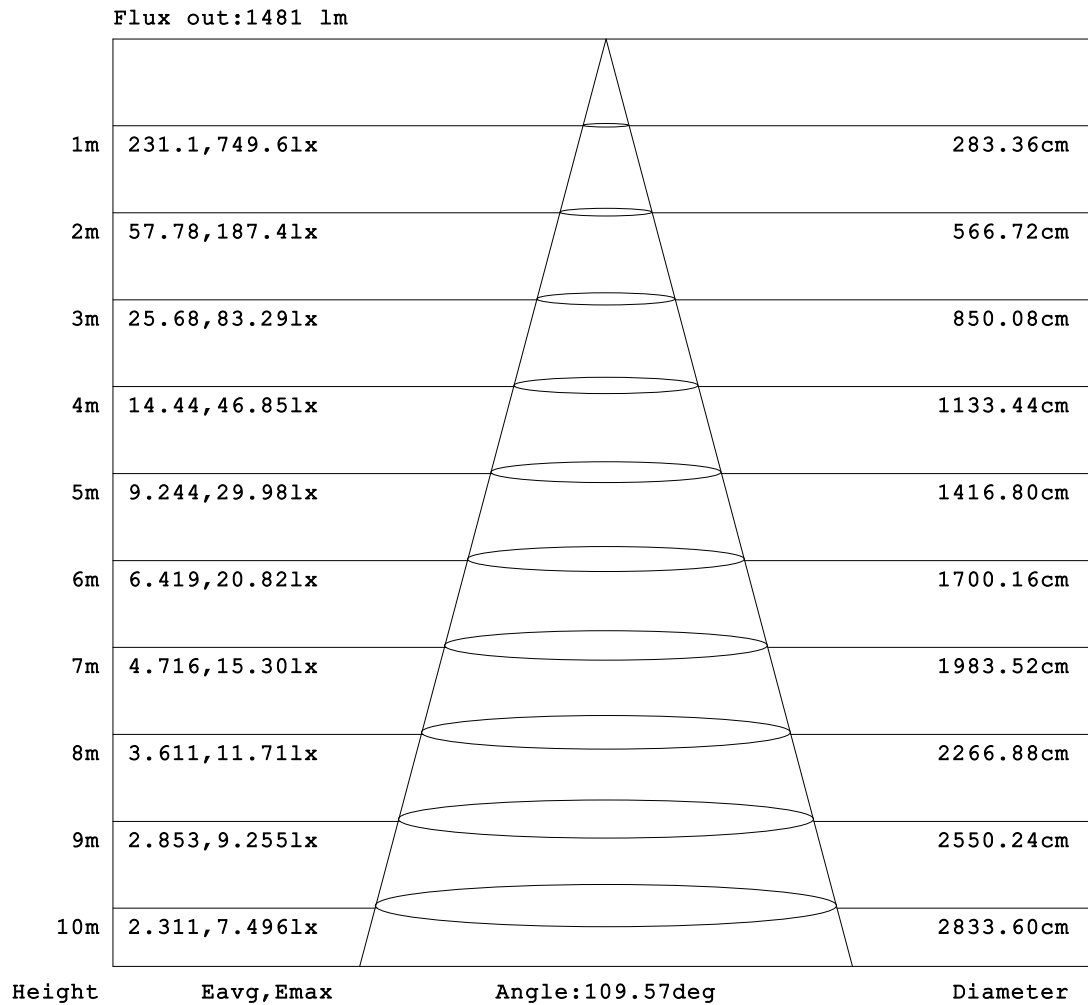
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
Humidity: 65.0%  
Test Distance: 6.265m [K=1.0000]  
Remarks:



**AAI Figure**

NAME: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:



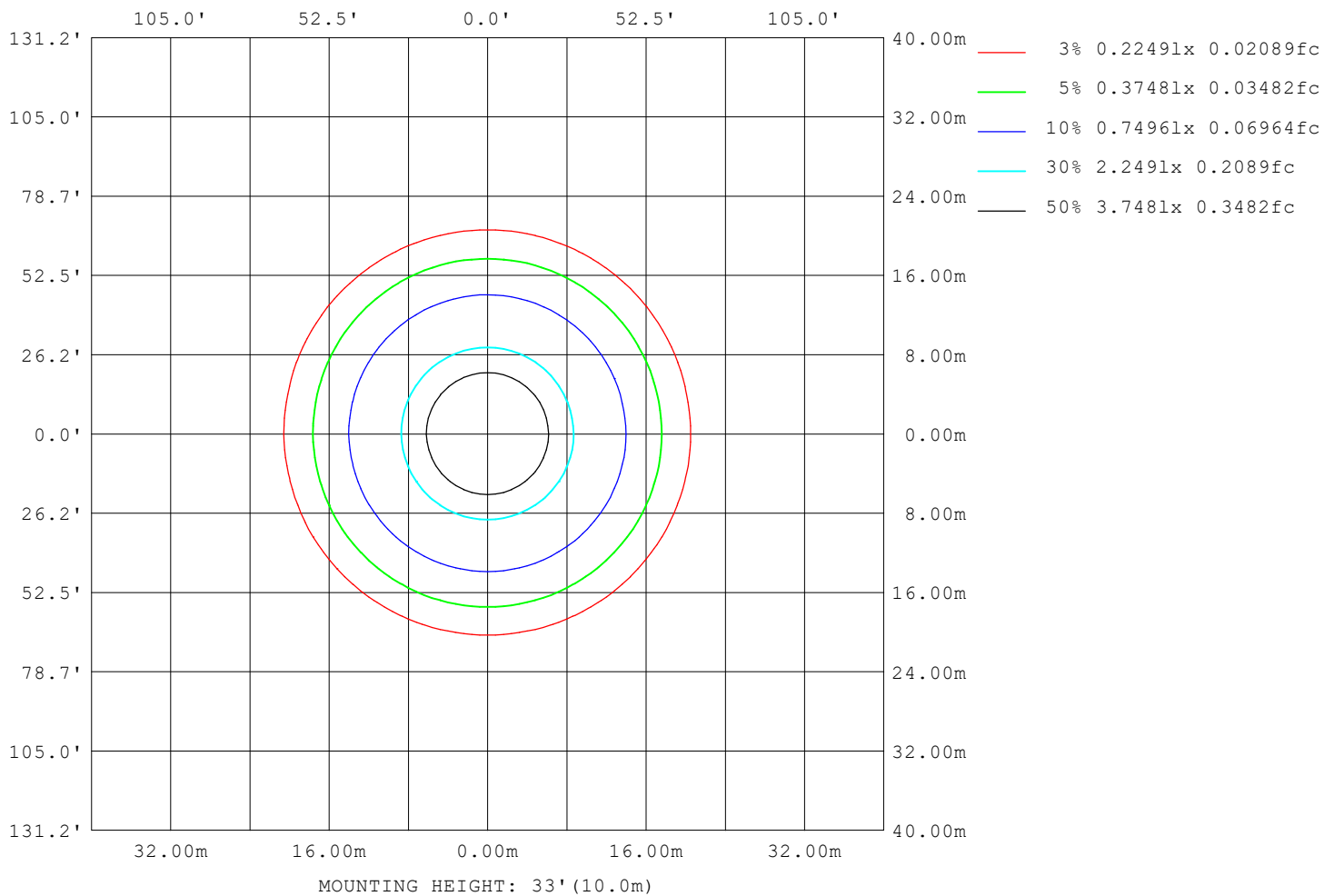
**Note:** The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3°C  
 Operators:  
 Test Date: 04 August 2022

γ Range: 0 - 90DEG  
 γ Interval: 5.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.456  
 Humidity: 65.0%  
 Test Distance: 6.265m [K=1.0000]  
 Remarks:

**ISOLUX DIAGRAM**

NAME: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3°C  
Operators:  
Test Date: 04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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: 99LED963	TYPE: 99LED963	WEIGHT: 1
SPEC.:	DIM.: F 0.225 x 0.024	SERIAL No.: 0
MFR.: Elmark Industries JSC	SUR.: cylinder	Shielding Angle:

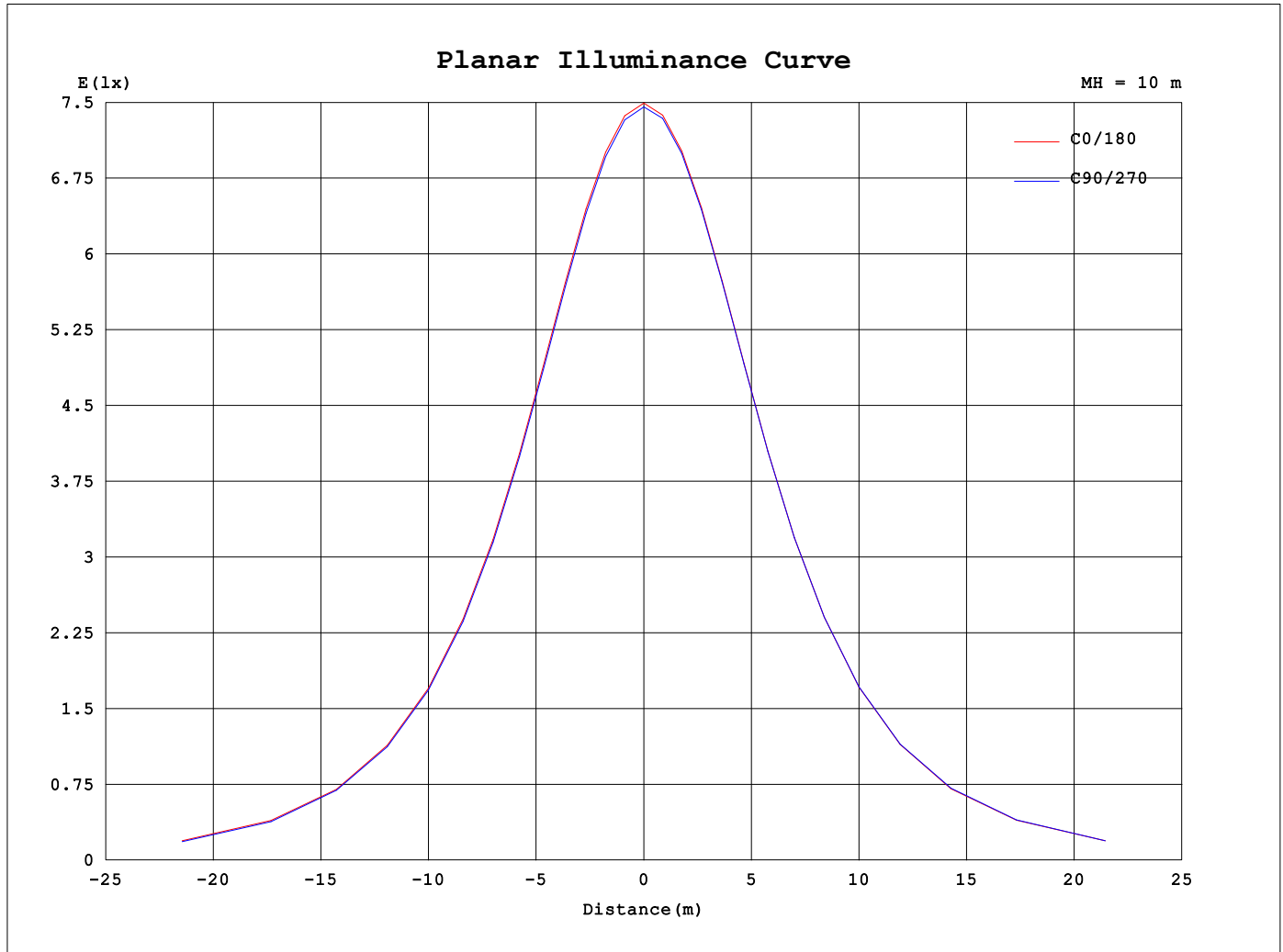
AvgL	cd/m2
L_0~180 (65) av	26582
L_0~180 (75) av	22811
L_0~180 (85) av	14229
L_90~270 (65) av	26216
L_90~270 (75) av	21134
L_90~270 (85) av	8180
L_45 (65) av	26487
L_45 (75) av	22033
L_45 (85) av	10459

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3°C  
Operators:  
Test Date:04 August 2022

γ Range: 0 - 90DEG  
γ Interval: 5.0DEG  
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: 04 August 2022

γ Range: 0 - 90DEG  
 γ Interval: 5.0DEG  
 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: 5.0DEG
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: 5.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.456
Humidity:65.0%
Test Distance:6.265m [K=1.0000]
Remarks:

```