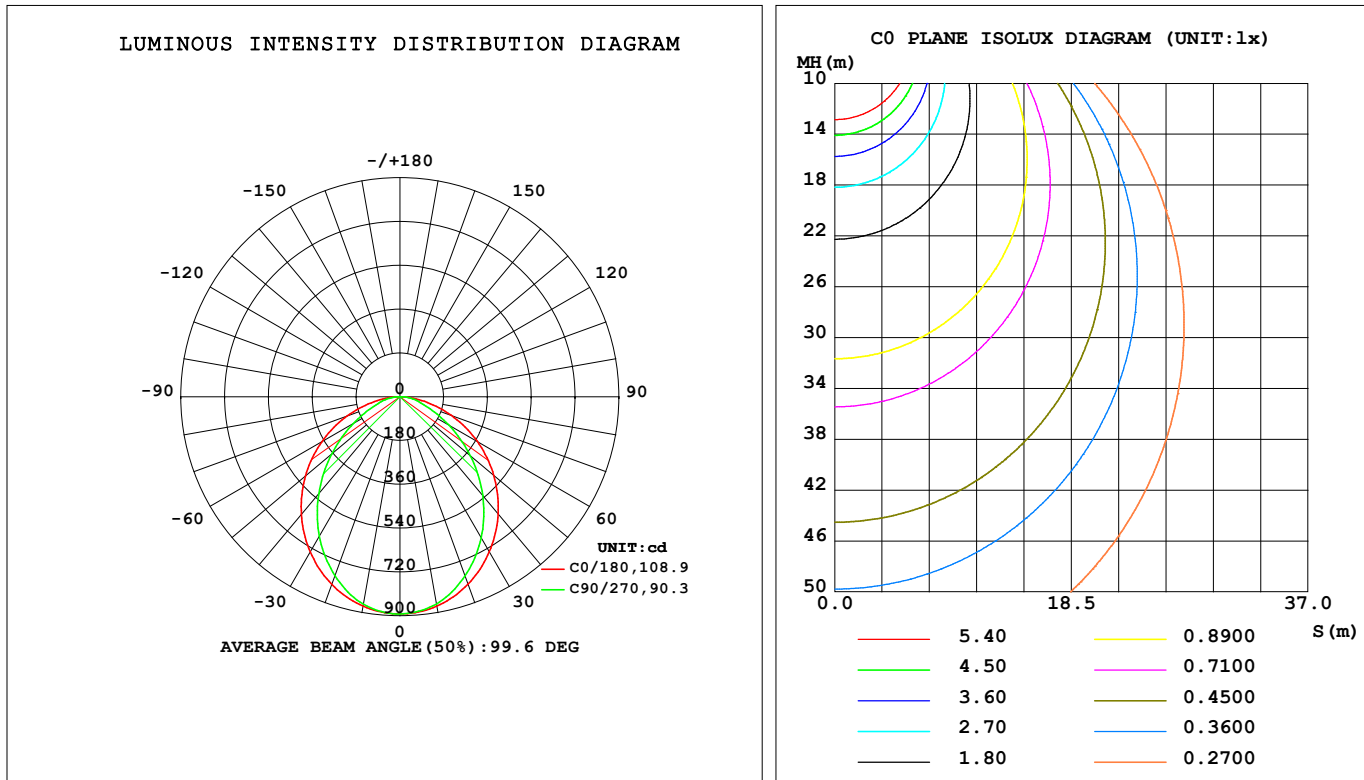


**LUMINAIRE PHOTOMETRIC TEST REPORT**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 83.31 lm/W
IMC024x280mm	650lm 840 HV ADV5	I <sub>max</sub> (cd)	894.2	S/MH (C0/180)	1.23	
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	1.12	
RATED VOLTAGE (V)	220.0	TOTAL FLUX (lm)	2146.6	η UP,DN (C0-180)	0.0,50.1	
NOMINAL FLUX (lm)	2146.59	CIE CLASS	DIRECT	η UP,DN (C180-360)	0.0,49.9	
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25	
TEST VOLTAGE (V)	230	η down (%)	100.0	CIBSE SHR MAX	1.30	



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: JEFF  
Test Date: 24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity: 65.0%  
Test Distance: 7.250m [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	873.4	867.6	864.7	868.0	873.6	871.6	865.8	870.9	0- 10	84.10	84.10	3.92,3.92
20	819.3	798.4	783.1	799.8	820.1	804.8	781.9	803.1	10- 20	236.8	320.9	15,15
30	735.3	695.0	668.4	695.8	736.8	699.9	662.4	699.1	20- 30	347.0	667.9	31.1,31.1
40	628.0	570.4	529.6	571.0	630.4	573.2	519.1	572.7	30- 40	399.5	1067	49.7,49.7
50	503.6	430.9	378.3	431.5	506.9	431.6	366.5	430.8	40- 50	389.7	1457	67.9,67.9
60	367.5	283.9	231.1	285.9	371.4	284.4	222.7	282.3	50- 60	324.1	1781	83,83
70	225.2	143.9	116.0	147.8	229.6	146.9	113.1	143.1	60- 70	220.5	2002	93.3,93.3
80	91.44	54.81	54.58	58.18	95.34	56.47	52.17	53.39	70- 80	112.9	2115	98.5,98.5
90	1.363	1.022	1.307	3.046	1.595	1.307	0.9089	1.078	80- 90	31.98	2147	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		

Conical surface Flux(90deg): 1267.2 lm

%lum = 59.0%

%lamp = 59.0%

Conical surface Flux(120deg): 1781.2 lm

%lum = 83.0%

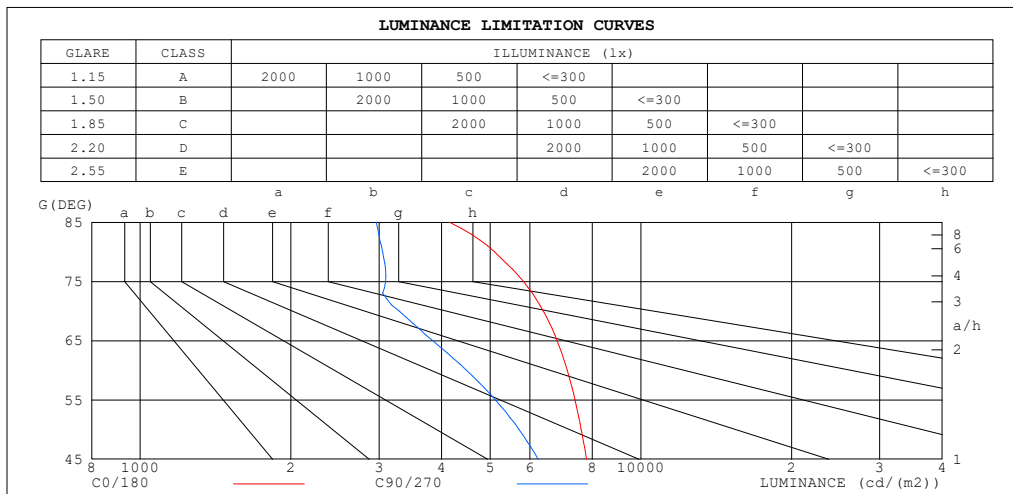
%lamp = 83.0%

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**LUMINANCE LIMITATION CURVES**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	4147	2962
80	5110	3050
75	5828	3091
70	6389	3292
65	6808	3841
60	7132	4486
55	7389	5125
50	7603	5712
45	7790	6237

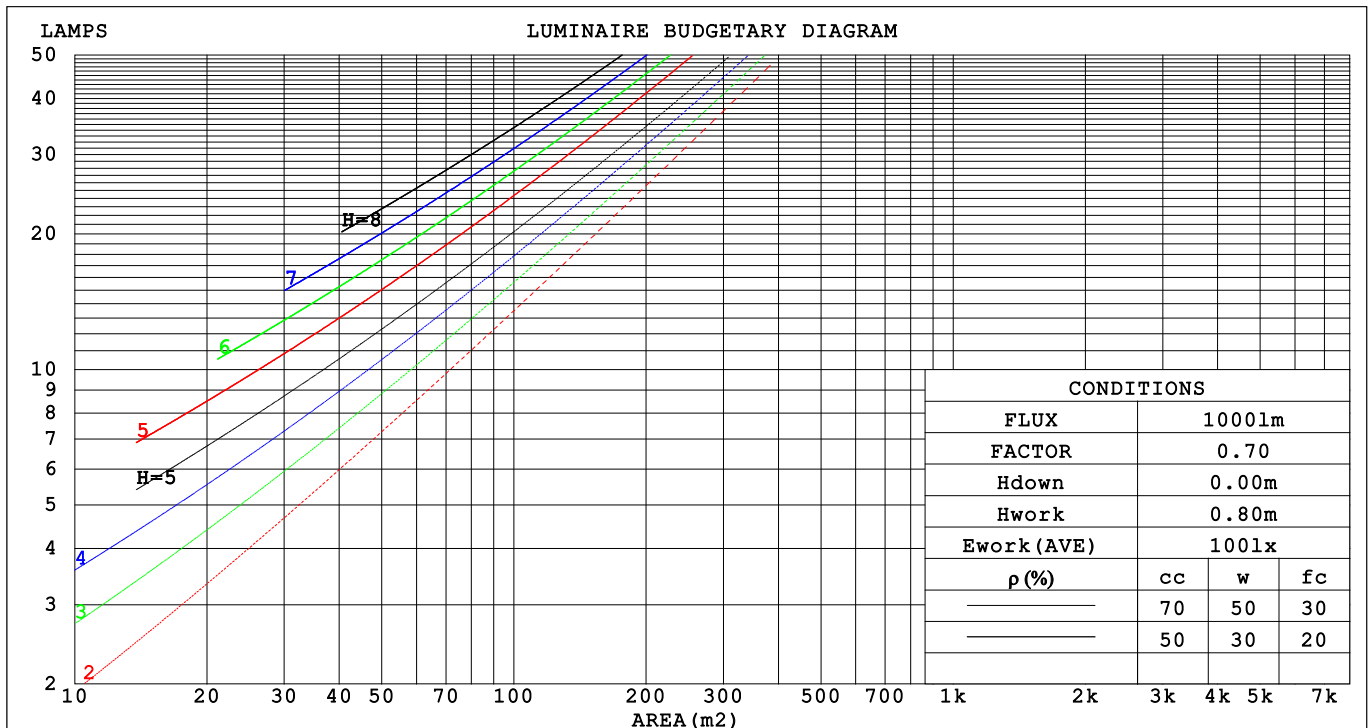
C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500ma	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	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	1.05	1.01	.97	1.03	.99	.96	.98	.95	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.92	.86	.80	.90	.85	.79	.87	.82	.78	.84	.80	.76	.81	.77	.74	.72
3.0	.82	.74	.68	.80	.73	.67	.77	.71	.66	.74	.69	.65	.72	.67	.64	.62
4.0	.73	.64	.58	.71	.64	.58	.69	.62	.57	.67	.61	.56	.65	.59	.55	.53
5.0	.65	.57	.50	.64	.56	.50	.62	.55	.49	.60	.54	.49	.58	.53	.48	.46
6.0	.59	.50	.44	.58	.50	.44	.56	.49	.44	.55	.48	.43	.53	.47	.43	.41
7.0	.54	.45	.39	.53	.45	.39	.51	.44	.39	.50	.43	.39	.49	.43	.38	.36
8.0	.49	.41	.35	.48	.41	.35	.47	.40	.35	.46	.39	.35	.45	.39	.34	.33
9.0	.45	.37	.32	.45	.37	.32	.44	.37	.32	.42	.36	.31	.41	.36	.31	.29
10.0	.42	.34	.29	.41	.34	.29	.40	.34	.29	.39	.33	.29	.39	.33	.29	.27



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**WEC AND CCEC**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	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	.289	.164	.052	.282	.161	.051	.268	.154	.049	.256	.148	.047	.245	.142	.046	
2.0	.274	.150	.046	.268	.147	.045	.256	.142	.044	.245	.138	.043	.236	.133	.042	
3.0	.255	.136	.041	.250	.134	.040	.240	.130	.039	.230	.126	.039	.222	.123	.038	
4.0	.237	.123	.036	.232	.122	.036	.223	.118	.035	.215	.115	.035	.207	.113	.034	
5.0	.220	.112	.033	.216	.111	.032	.208	.108	.032	.201	.106	.032	.194	.104	.031	
6.0	.205	.103	.029	.202	.102	.029	.194	.100	.029	.188	.098	.029	.182	.096	.028	
7.0	.192	.095	.027	.188	.094	.027	.182	.092	.027	.176	.090	.026	.171	.089	.026	
8.0	.180	.088	.025	.177	.087	.025	.171	.085	.024	.166	.084	.024	.161	.082	.024	
9.0	.169	.082	.023	.166	.081	.023	.161	.080	.023	.156	.078	.022	.152	.077	.022	
10.0	.159	.076	.021	.157	.076	.021	.152	.075	.021	.148	.073	.021	.144	.072	.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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.170	.132	.100	.145	.114	.087	.100	.079	.060	.057	.046	.035	.018	.015	.012	
3.0	.162	.114	.076	.139	.099	.066	.095	.068	.046	.055	.040	.027	.018	.013	.009	
4.0	.154	.101	.060	.132	.087	.052	.091	.061	.037	.053	.036	.022	.017	.012	.007	
5.0	.146	.090	.049	.126	.078	.042	.087	.055	.030	.050	.032	.018	.016	.010	.006	
6.0	.139	.082	.040	.120	.071	.035	.083	.050	.025	.048	.029	.015	.015	.010	.005	
7.0	.133	.075	.034	.114	.065	.030	.079	.045	.021	.046	.027	.013	.015	.009	.004	
8.0	.126	.069	.029	.109	.060	.026	.075	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.121	.064	.026	.104	.056	.023	.072	.039	.016	.042	.023	.010	.014	.008	.003	
10.0	.115	.060	.023	.099	.052	.020	.069	.036	.014	.040	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**UGR(Unified Glare Rating) Table**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm										
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA TYPE:LED						WEIGHT:				
SPEC.:						DIM.:		SERIAL No.:		
MFR.: DARKON						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	17.2	18.6	17.4	18.8	19.0	15.4	16.8	15.6	17.0	17.2
3H	18.6	20.0	18.9	20.2	20.5	16.2	17.5	16.5	17.8	18.0
4H	19.2	20.5	19.5	20.7	21.0	16.5	17.8	16.8	18.0	18.3
6H	19.6	20.8	19.9	21.1	21.4	16.8	18.0	17.2	18.3	18.6
8H	19.7	20.9	20.1	21.2	21.5	16.9	18.1	17.3	18.4	18.7
12H	19.8	20.9	20.1	21.2	21.5	17.0	18.1	17.4	18.4	18.7
4H 2H	17.5	18.7	17.8	19.0	19.2	16.0	17.3	16.3	17.5	17.8
3H	19.1	20.2	19.5	20.5	20.8	17.0	18.1	17.3	18.4	18.7
4H	19.8	20.8	20.2	21.1	21.5	17.4	18.4	17.8	18.7	19.0
6H	20.3	21.2	20.7	21.5	21.9	17.8	18.7	18.2	19.0	19.4
8H	20.5	21.3	20.9	21.7	22.1	18.0	18.8	18.4	19.2	19.5
12H	20.6	21.3	21.0	21.7	22.1	18.1	18.9	18.5	19.2	19.6
8H 4H	19.8	20.7	20.3	21.0	21.4	17.6	18.5	18.0	18.8	19.2
6H	20.4	21.1	20.9	21.5	22.0	18.2	18.9	18.6	19.3	19.7
8H	20.7	21.3	21.1	21.7	22.2	18.4	19.0	18.9	19.5	19.9
12H	20.8	21.4	21.3	21.8	22.3	18.6	19.2	19.1	19.6	20.1
12H 4H	19.8	20.6	20.2	21.0	21.4	17.7	18.4	18.1	18.8	19.2
6H	20.5	21.1	20.9	21.5	21.9	18.2	18.8	18.7	19.3	19.7
8H	20.7	21.2	21.2	21.7	22.1	18.5	19.0	19.0	19.5	20.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.3 / - 0.4				
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.3				
2.0H	+ 0.4 / - 0.5					+ 0.4 / - 0.6				

CIE Pub.117, 2147 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 2.7)

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**UTILIZATION FACTORS TABLE**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:

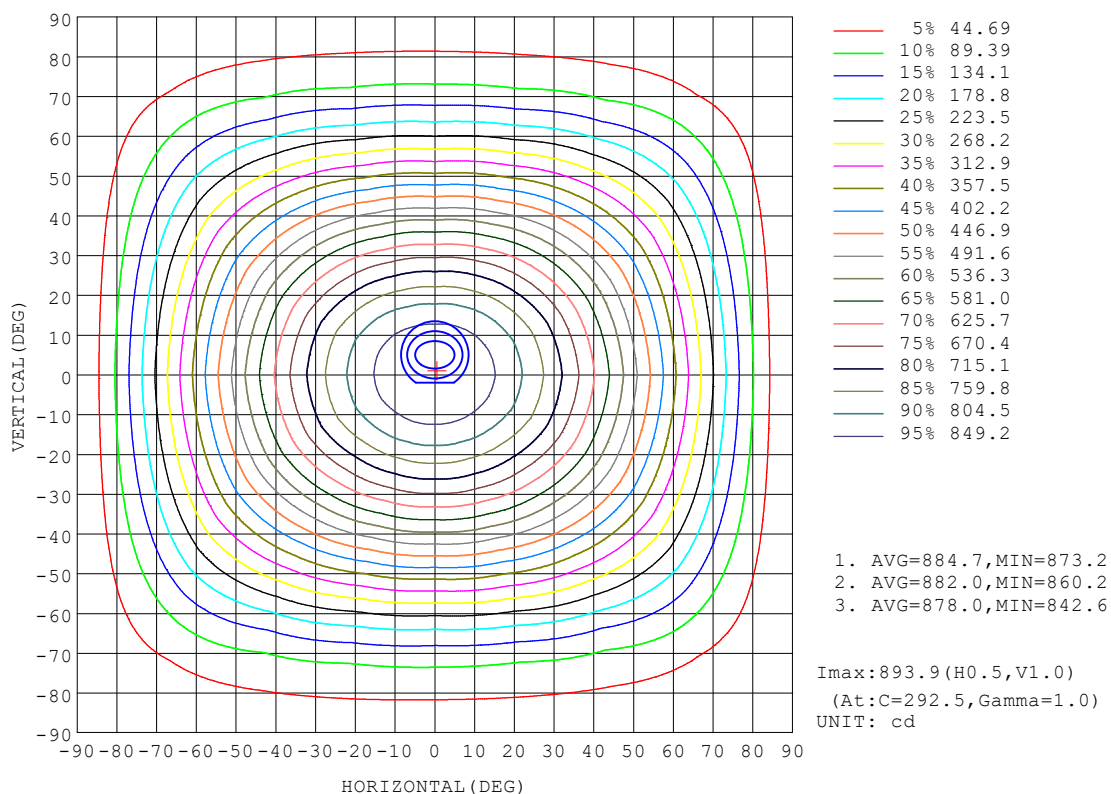
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	60	49	43	60	49	42	59	49	42	36
0.80	70	59	52	69	59	52	68	58	52	45
1.00	79	68	61	78	68	61	75	69	61	54
1.25	86	76	69	84	75	69	82	74	68	61
1.50	90	81	75	89	80	74	86	79	73	66
2.00	97	89	83	95	88	82	92	86	81	73
2.50	100	93	88	98	92	87	95	89	85	77
3.00	104	97	92	102	96	91	98	93	89	81
4.00	107	102	98	105	100	96	101	97	94	85
5.00	110	105	101	107	103	100	103	99	97	88
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

# ISOCANDELA DIAGRAM

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:

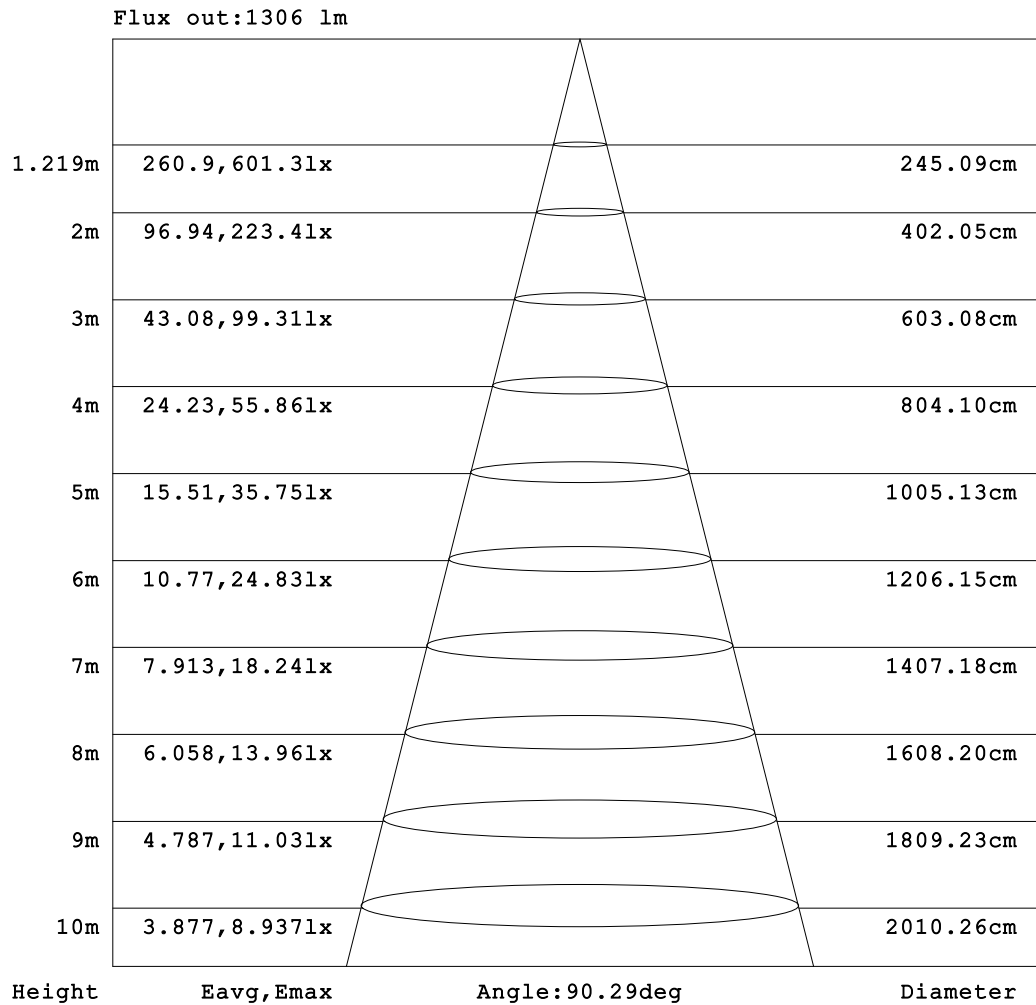


C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

**AAI Figure**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:



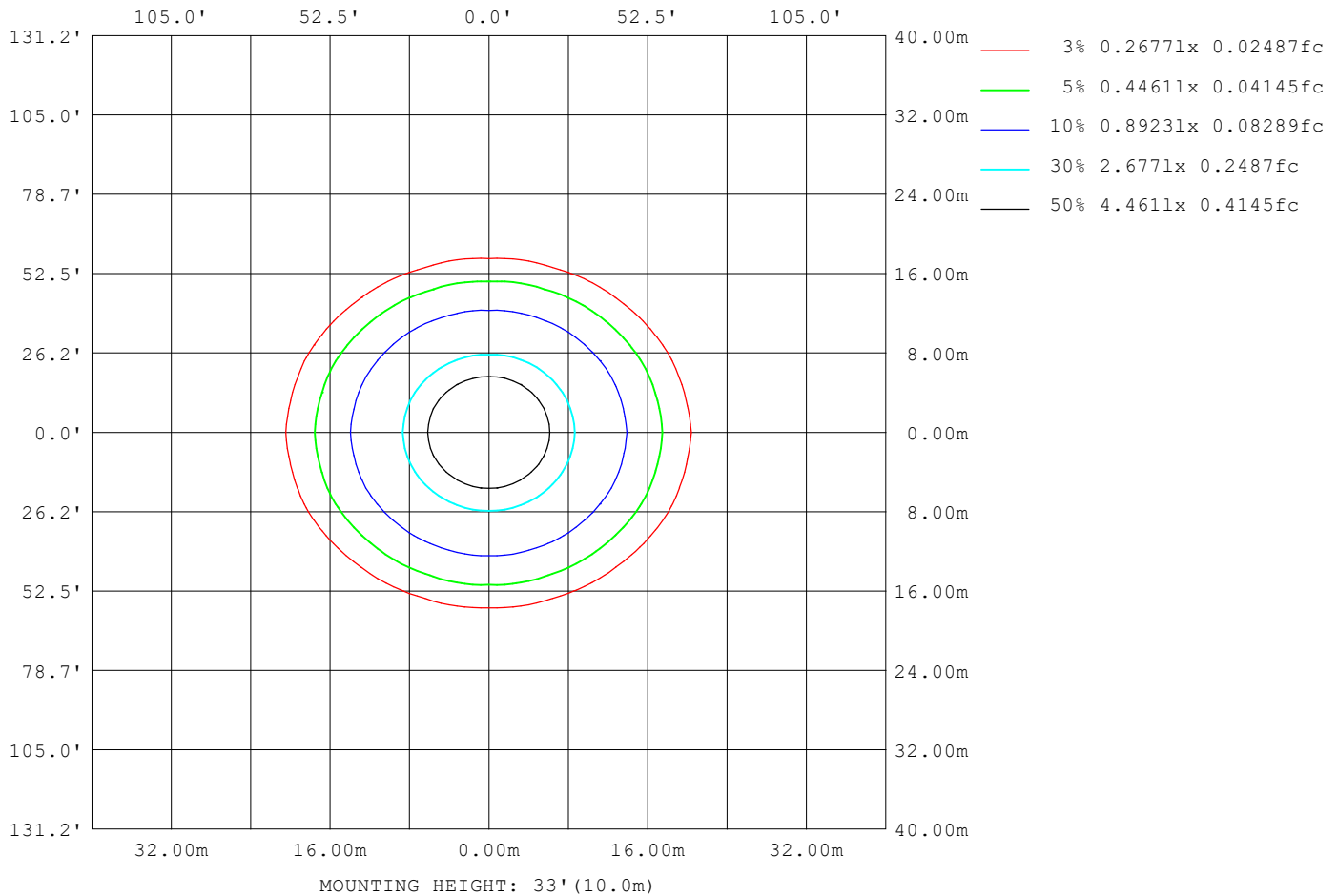
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: JEFF  
Test Date: 24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity: 65.0%  
Test Distance: 7.250m [K=1.0000]  
Remarks:

**ISOLUX DIAGRAM**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:JEFF  
 Test Date:24 December 2019

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity:65.0%  
 Test Distance:7.250m [K=1.0000]  
 Remarks:

**LED Avg.L Report**

Test:U:240.02V I:0.1142A P:25.766W PF:0.9399 Freq:50.09Hz Lamp Flux:2146.59x1 lm		
NAME: MRS T REC LENS_1165_NA_WHT_OPAL V_LT60_HE_500mA	TYPE:LED	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: DARKON	SUR.:	Shielding Angle:

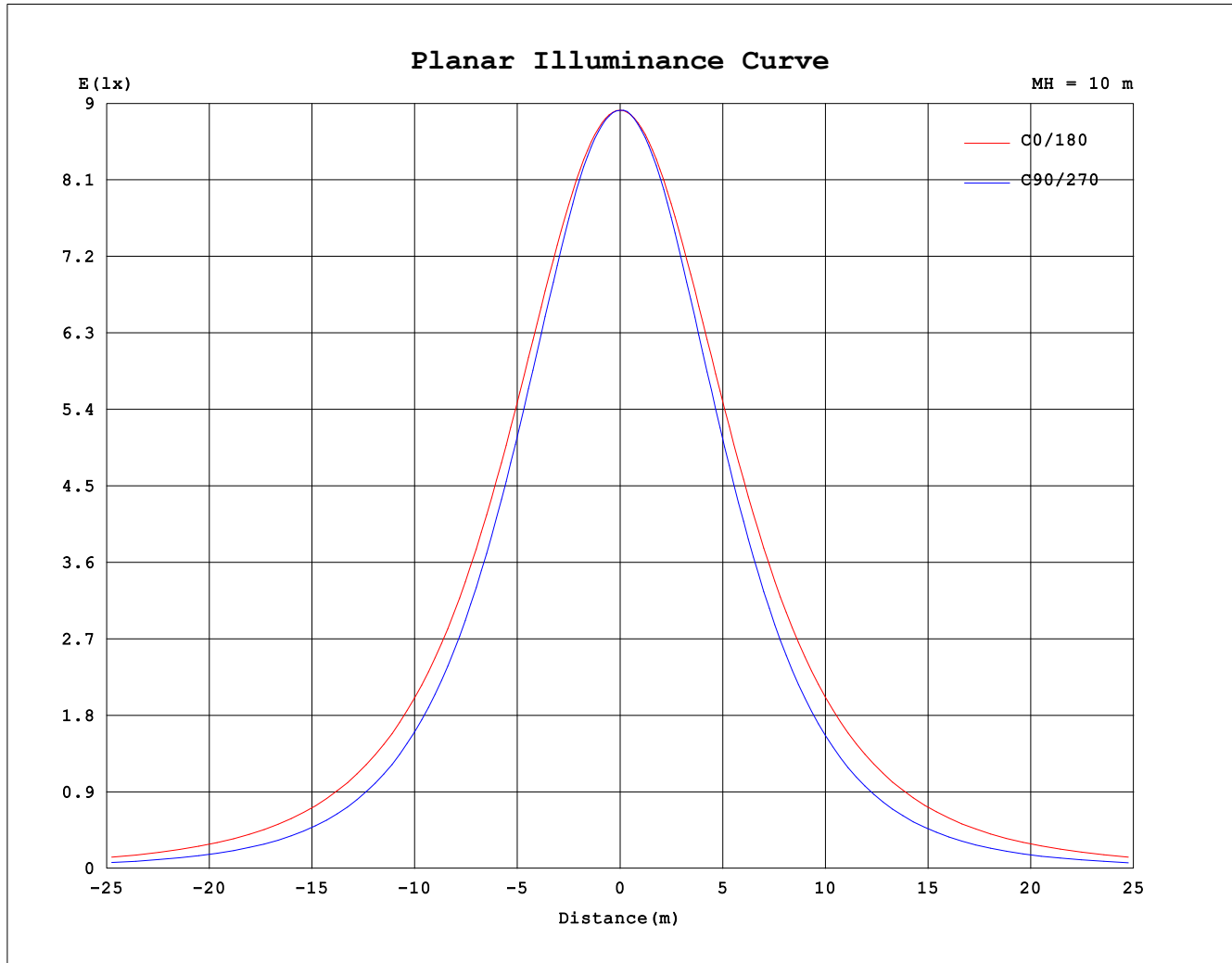
AvgL	cd/m2
L_0~180 (65) av	6857
L_0~180 (75) av	5921
L_0~180 (85) av	4284
L_90~270 (65) av	3779
L_90~270 (75) av	3049
L_90~270 (85) av	2842
L_45 (65) av	4869
L_45 (75) av	3397
L_45 (85) av	2976

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:JEFF  
Test Date:24 December 2019

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity:65.0%  
Test Distance:7.250m [K=1.0000]  
Remarks:

### Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: JEFF  
Test Date: 24 December 2019

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
Humidity: 65.0%  
Test Distance: 7.250m [K=1.0000]  
Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.366
Humidity:65.0%
Test Distance:7.250m [K=1.0000]
Remarks:

```