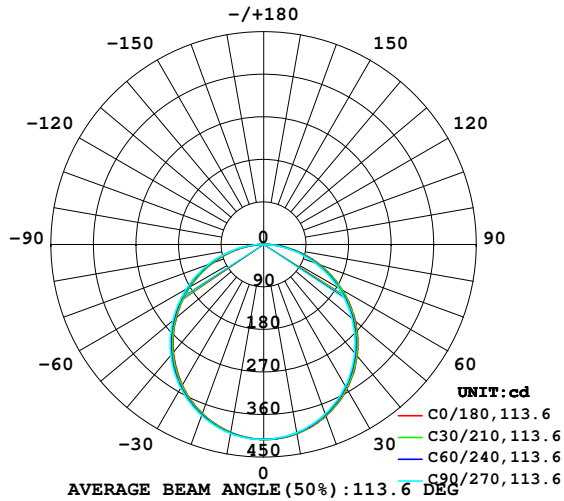


LUMINAIRE PHOTOMETRIC TEST REPORT

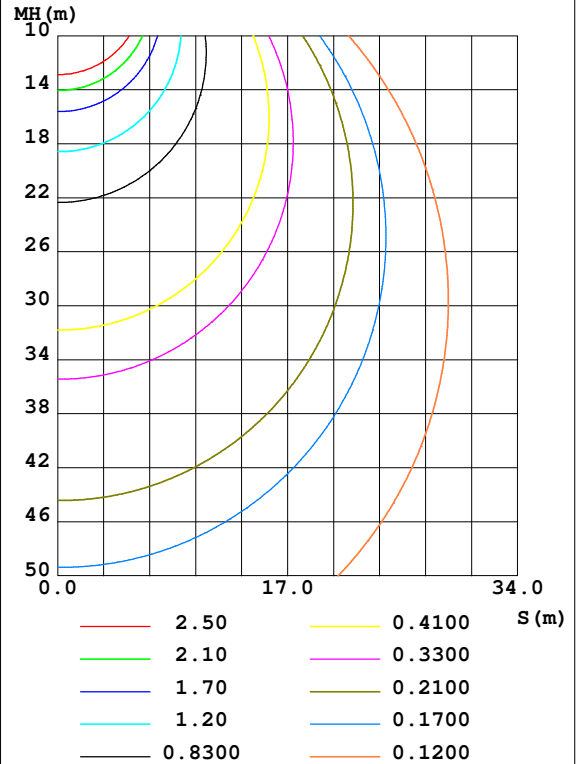
Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 59.11 lm/W			
MODEL	MSG160	I _{max} (cd)	412.6	S/MH (C0/180)	1.24
NOMINAL POWER (W)	20	LOR (%)	100.0	S/MH (C90/270)	1.27
RATED VOLTAGE (V)	230.0	TOTAL FLUX (lm)	1204.1	η UP, DN (C0-180)	0.0, 49.6
NOMINAL FLUX (lm)	1204.1	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.4
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	100.0	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT: lx)



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 7.200m [K=1.0000]
 Remarks: MSG160-3000K-20W-OPAL

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	406.5	405.3	404.1	403.7	403.5	404.6	405.9	406.3	0- 10	39.02	39.02	3.24,3.24
20	386.1	383.8	381.6	380.8	380.4	382.4	384.9	385.8	10- 20	111.7	150.7	12.5,12.5
30	352.6	349.4	346.1	344.9	344.2	347.4	351.0	352.1	20- 30	169.3	320.0	26.6,26.6
40	307.7	303.8	299.8	298.2	297.4	301.4	305.7	307.2	30- 40	204.5	524.5	43.6,43.6
50	253.5	248.8	244.0	242.3	241.5	246.1	251.1	252.8	40- 50	212.9	737.4	61.2,61.2
60	192.0	187.3	182.3	180.3	180.1	184.4	189.3	191.6	50- 60	194.2	931.7	77.4,77.4
70	127.0	122.2	117.1	115.3	114.9	119.3	124.1	126.5	60- 70	151.9	1084	90,90
80	62.96	57.97	51.92	51.12	50.57	54.75	58.25	61.30	70- 80	93.39	1177	97.7,97.7
90	2.545	0.0994	0.0834	0.0871	0.1082	0.1121	0.1196	0.5644	80- 90	27.13	1204	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): 631.66 lm

%lum = 52.5%

%lamp = 52.5%

Conical surface Flux(120deg): 931.68 lm

%lum = 77.4%

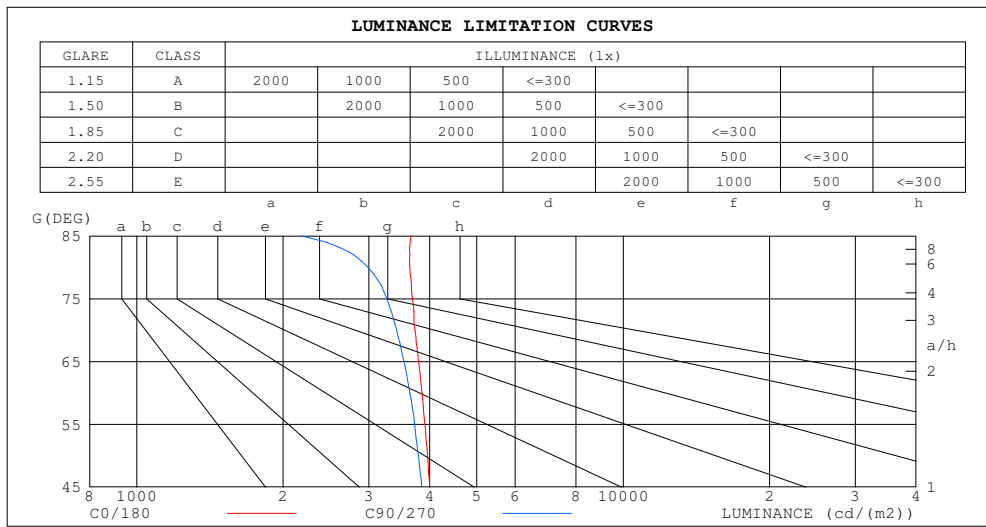
%lamp = 77.4%

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:20DEG
 Operators:LITPA
 Test Date:16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity:65.0%
 Test Distance:7.200m [K=1.0000]
 Remarks: MSG160-3000K-20W-OPAL

LUMINANCE LIMITATION CURVES

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	3659	2182
80	3642	2988
75	3688	3265
70	3729	3422
65	3797	3543
60	3858	3644
55	3912	3726
50	3962	3793
45	4001	3856

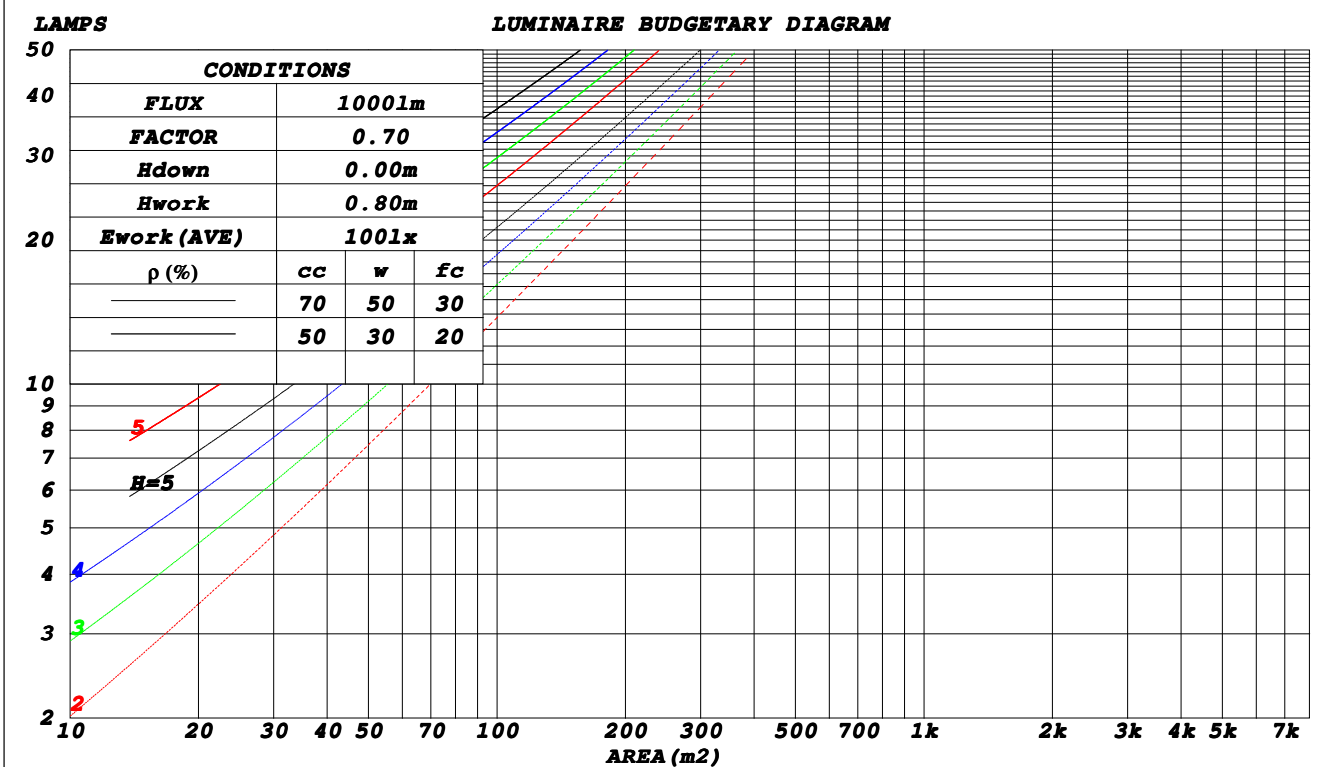
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	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	.00
1.0	1.03	.99	.95	1.01	.97	.93	.97	.94	.90	.93	.90	.88	.89	.87	.85	.83
2.0	.90	.83	.77	.88	.81	.76	.84	.79	.74	.81	.76	.72	.78	.74	.71	.69
3.0	.79	.70	.64	.77	.69	.63	.74	.67	.62	.71	.66	.61	.69	.64	.60	.58
4.0	.70	.61	.54	.68	.60	.53	.66	.58	.53	.63	.57	.52	.61	.56	.51	.49
5.0	.62	.53	.46	.61	.52	.46	.59	.51	.45	.57	.50	.45	.55	.49	.44	.42
6.0	.56	.47	.40	.55	.46	.40	.53	.45	.40	.51	.45	.39	.50	.44	.39	.37
7.0	.51	.42	.35	.50	.41	.35	.48	.41	.35	.47	.40	.35	.45	.39	.35	.33
8.0	.46	.38	.32	.45	.37	.32	.44	.37	.31	.43	.36	.31	.42	.35	.31	.29
9.0	.42	.34	.28	.42	.34	.28	.41	.33	.28	.39	.33	.28	.38	.32	.28	.26
10.0	.39	.31	.26	.39	.31	.26	.38	.30	.26	.37	.30	.25	.36	.30	.25	.24



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

WEC AND CCEC

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE:INDOOR	WEIGHT:450gr
SPEC.:20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0	
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0	
ρ_{fc}	20%			20%			20%			20%			20%			0	
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.318	.181	.057	.311	.178	.056	.298	.171	.055	.286	.165	.053	.274	.159	.051		
2.0	.298	.163	.050	.291	.161	.049	.280	.156	.048	.269	.151	.047	.259	.146	.046		
3.0	.274	.146	.044	.269	.144	.043	.258	.140	.043	.249	.136	.042	.240	.133	.041		
4.0	.252	.131	.039	.248	.130	.038	.238	.126	.038	.230	.123	.037	.222	.121	.037		
5.0	.233	.119	.034	.229	.117	.034	.220	.115	.034	.213	.112	.033	.206	.110	.033		
6.0	.216	.108	.031	.212	.107	.031	.205	.105	.030	.198	.103	.030	.191	.101	.030		
7.0	.200	.099	.028	.197	.098	.028	.191	.096	.028	.184	.095	.028	.179	.093	.027		
8.0	.187	.091	.026	.184	.091	.026	.178	.089	.025	.173	.087	.025	.168	.086	.025		
9.0	.175	.085	.024	.172	.084	.024	.167	.083	.023	.162	.081	.023	.158	.080	.023		
10.0	.165	.079	.022	.162	.078	.022	.157	.077	.022	.153	.076	.022	.149	.075	.021		

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	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	.181	.156	.134	.155	.134	.115	.106	.092	.080	.061	.053	.046	.020	.017	.015	
2.0	.173	.132	.097	.148	.114	.084	.102	.079	.059	.059	.046	.034	.019	.015	.011	
3.0	.165	.114	.074	.142	.099	.064	.097	.069	.045	.056	.040	.026	.018	.013	.009	
4.0	.158	.101	.058	.135	.087	.050	.093	.061	.035	.054	.036	.021	.017	.012	.007	
5.0	.150	.091	.047	.129	.078	.041	.089	.055	.029	.051	.032	.017	.017	.011	.006	
6.0	.143	.082	.039	.123	.071	.034	.085	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.136	.075	.033	.117	.065	.029	.081	.046	.020	.047	.027	.012	.015	.009	.004	
8.0	.130	.070	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.015	.008	.003	
9.0	.123	.065	.025	.106	.056	.022	.074	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.118	.060	.022	.101	.052	.019	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

UGR(Unified Glare Rating) Table

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm											
NAME: MSG160					TYPE: INDOOR			WEIGHT: 450gr			
SPEC.: 20W					DIM.: Ø200-H50mm			SERIAL No.:			
MFR.: LITPA AYDINLATMA					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	17.7	19.2	18.0	19.4	19.6	17.4	19.0	17.7	19.2	19.4	
	3H	19.4	20.8	19.7	21.0	21.3	19.0	20.4	19.3	20.7	20.9
	4H	20.1	21.5	20.4	21.7	22.0	19.7	21.0	20.0	21.3	21.6
	6H	20.7	22.0	21.1	22.3	22.6	20.2	21.5	20.5	21.7	22.0
	8H	21.0	22.2	21.3	22.5	22.8	20.3	21.6	20.7	21.9	22.1
	12H	21.1	22.3	21.5	22.6	22.9	20.4	21.6	20.8	21.9	22.2
4H	2H	18.3	19.7	18.6	19.9	20.2	18.1	19.5	18.4	19.7	20.0
	3H	20.2	21.4	20.5	21.7	22.0	19.9	21.1	20.2	21.4	21.7
	4H	21.1	22.2	21.4	22.5	22.8	20.7	21.8	21.1	22.1	22.4
	6H	21.8	22.8	22.2	23.1	23.5	21.3	22.3	21.7	22.6	23.0
	8H	22.1	23.0	22.5	23.4	23.8	21.5	22.4	21.9	22.8	23.2
	12H	22.4	23.2	22.8	23.6	24.0	21.6	22.5	22.1	22.9	23.3
8H	4H	21.4	22.3	21.8	22.6	23.0	21.0	21.9	21.4	22.3	22.7
	6H	22.3	23.0	22.7	23.5	23.9	21.8	22.6	22.3	23.0	23.4
	8H	22.7	23.4	23.2	23.8	24.2	22.1	22.8	22.6	23.2	23.7
	12H	23.0	23.6	23.5	24.1	24.6	22.3	22.9	22.8	23.3	23.8
12H	4H	21.4	22.2	21.8	22.6	23.0	21.1	21.9	21.5	22.3	22.7
	6H	22.4	23.0	22.8	23.5	23.9	21.9	22.6	22.4	23.0	23.5
	8H	22.8	23.4	23.3	23.8	24.3	22.3	22.9	22.8	23.3	23.8
Variations with the observer position at spacings:											
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, 1204 lm Total Lamp Luminous Flux Corrected ($8\log(F/F_0) = 0.6$)

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 20DEG
 Operators: LITPA
 Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 7.200m [K=1.0000]
 Remarks: MSG160-3000K-20W-OPAL

UTILIZATION FACTORS TABLE

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

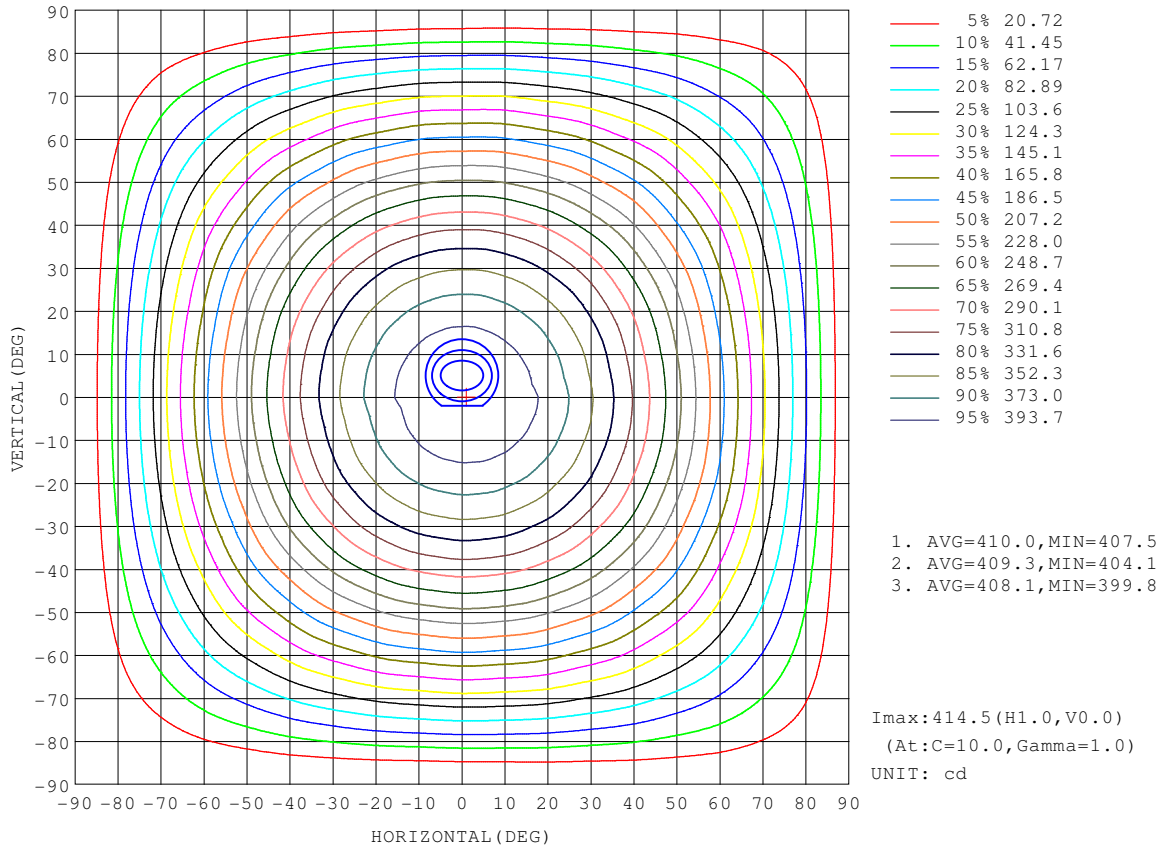
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	57	45	38	56	45	38	55	45	38	31
0.80	67	55	48	66	55	48	64	54	47	40
1.00	75	64	57	74	63	56	72	65	56	49
1.25	82	72	64	81	71	64	78	70	63	56
1.50	87	77	70	86	76	70	83	75	69	61
2.00	94	86	79	93	84	78	89	82	77	69
2.50	98	90	84	96	89	83	92	86	81	73
3.00	102	95	89	100	93	88	95	90	86	77
4.00	106	100	95	103	98	94	99	95	91	82
5.00	108	103	99	106	101	98	101	98	95	85
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: 20DEG
 Operators: LITPA
 Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
 Humidity: 65.0%
 Test Distance: 7.200m [K=1.0000]
 Remarks: MSG160-3000K-20W-OPAL

ISOCANDELA DIAGRAM

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

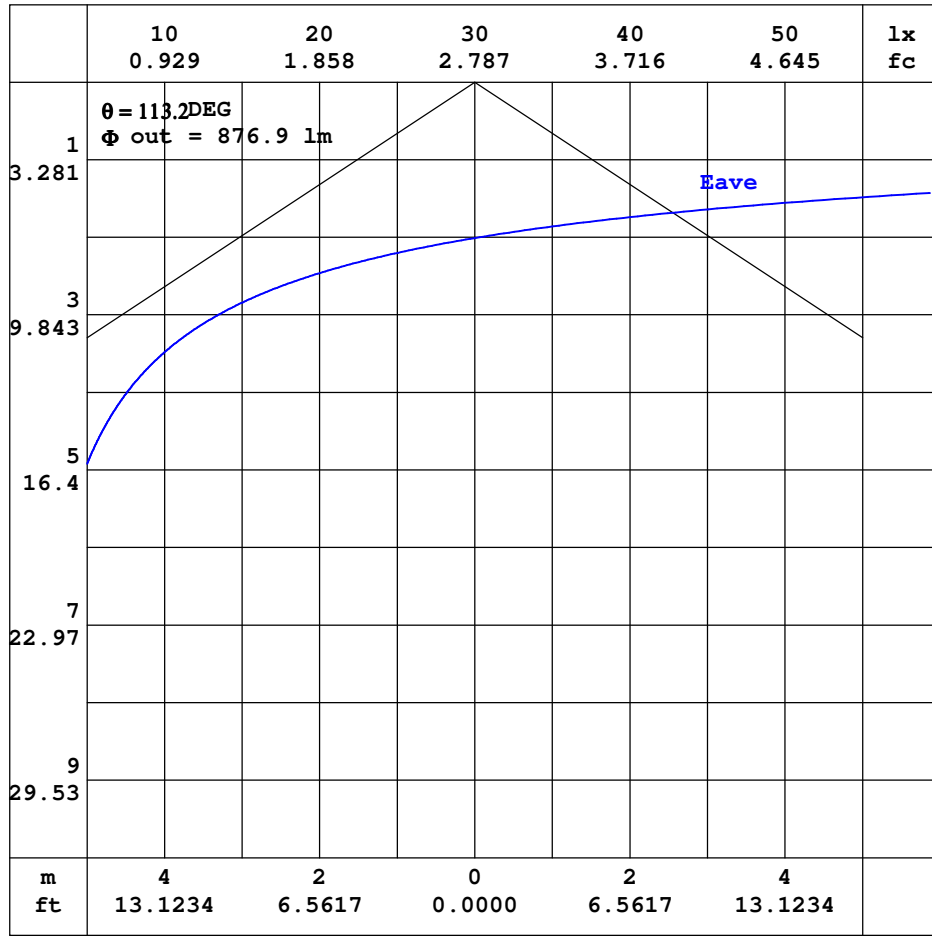


C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

AAI CURVES

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



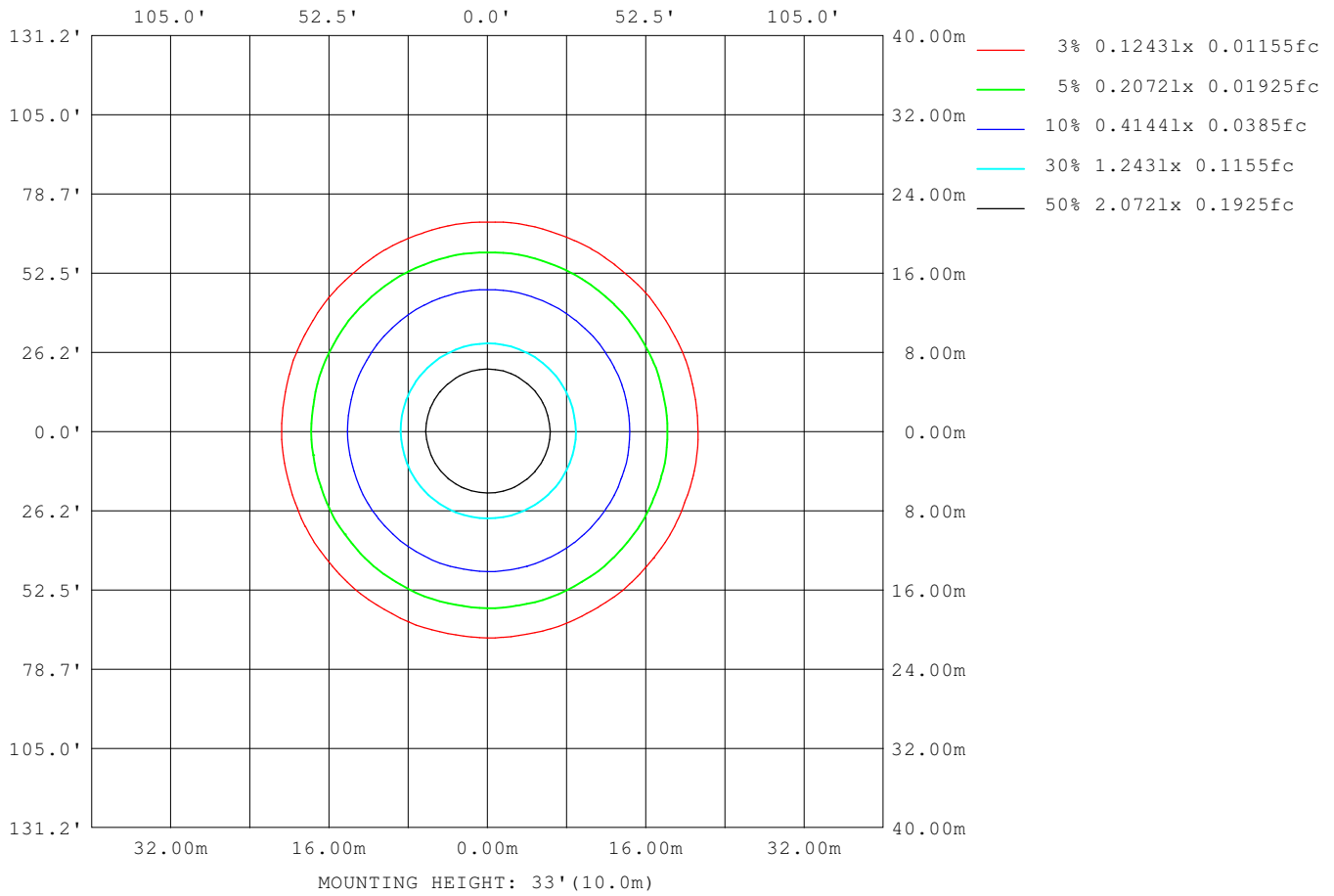
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

ISOLUX DIAGRAM

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

LED Avg.L Report

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

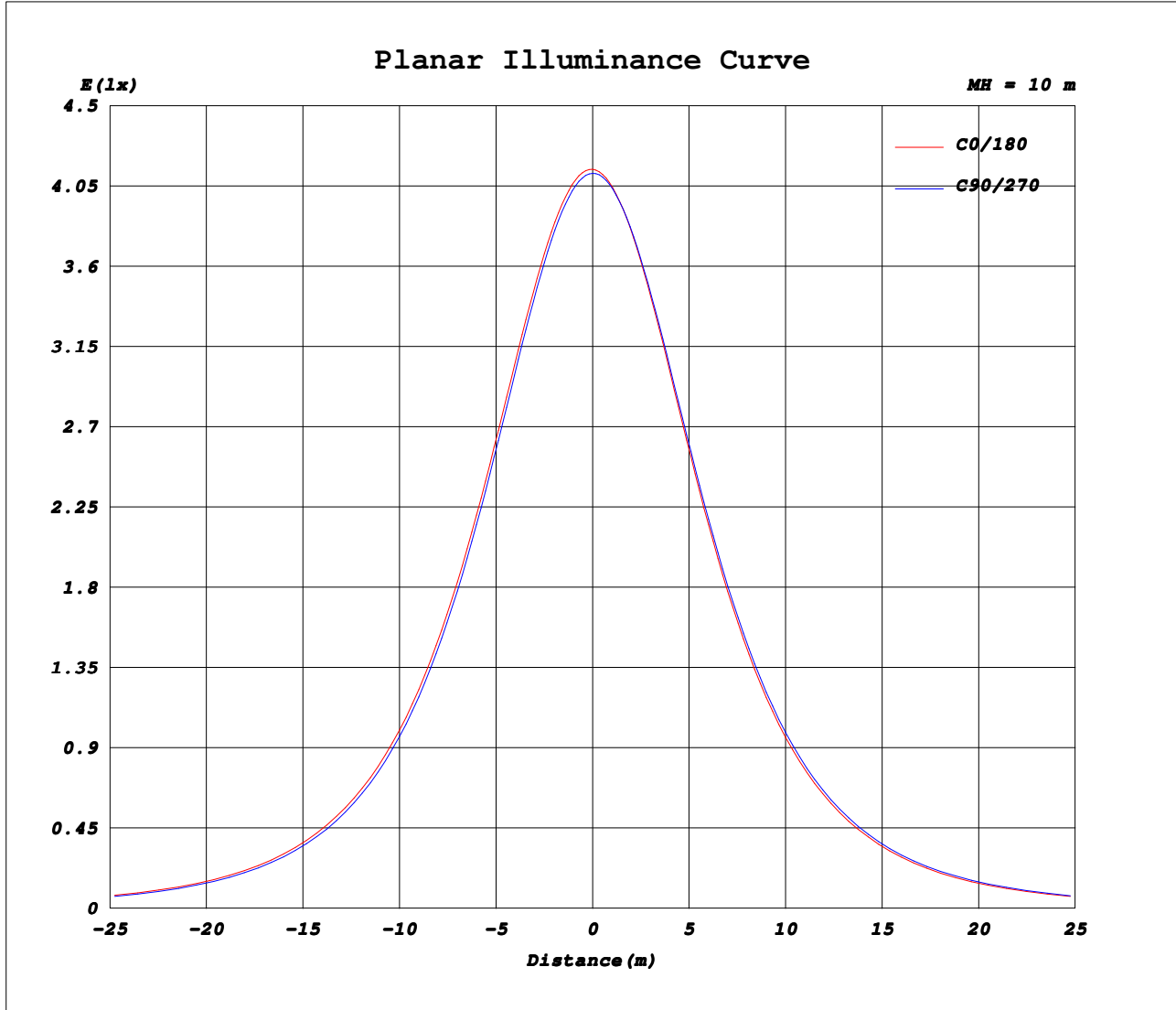
AvgL	cd/m2
L_0~180 (65) av	3637
L_0~180 (75) av	3429
L_0~180 (85) av	2948
L_90~270 (65) av	3629
L_90~270 (75) av	3406
L_90~270 (85) av	2525
L_45 (65) av	3633
L_45 (75) av	3421
L_45 (85) av	2753

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity: 65.0%
Test Distance: 7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE:INDOOR	WEIGHT:450gr
SPEC.:20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

Table--1

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.60V I:0.0950A P:20.369W PF:0.9300 Freq:50.01Hz Lamp Flux:1204.1x1 lm		
NAME: MSG160	TYPE: INDOOR	WEIGHT: 450gr
SPEC.: 20W	DIM.: Ø200-H50mm	SERIAL No.:
MFR.: LITPA AYDINLATMA	SUR.:	Shielding Angle:

Table--2

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature: 20DEG
Operators: LITPA
Test Date: 16/12/2020

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.400
Humidity:65.0%
Test Distance:7.200m [K=1.0000]
Remarks: MSG160-3000K-20W-OPAL