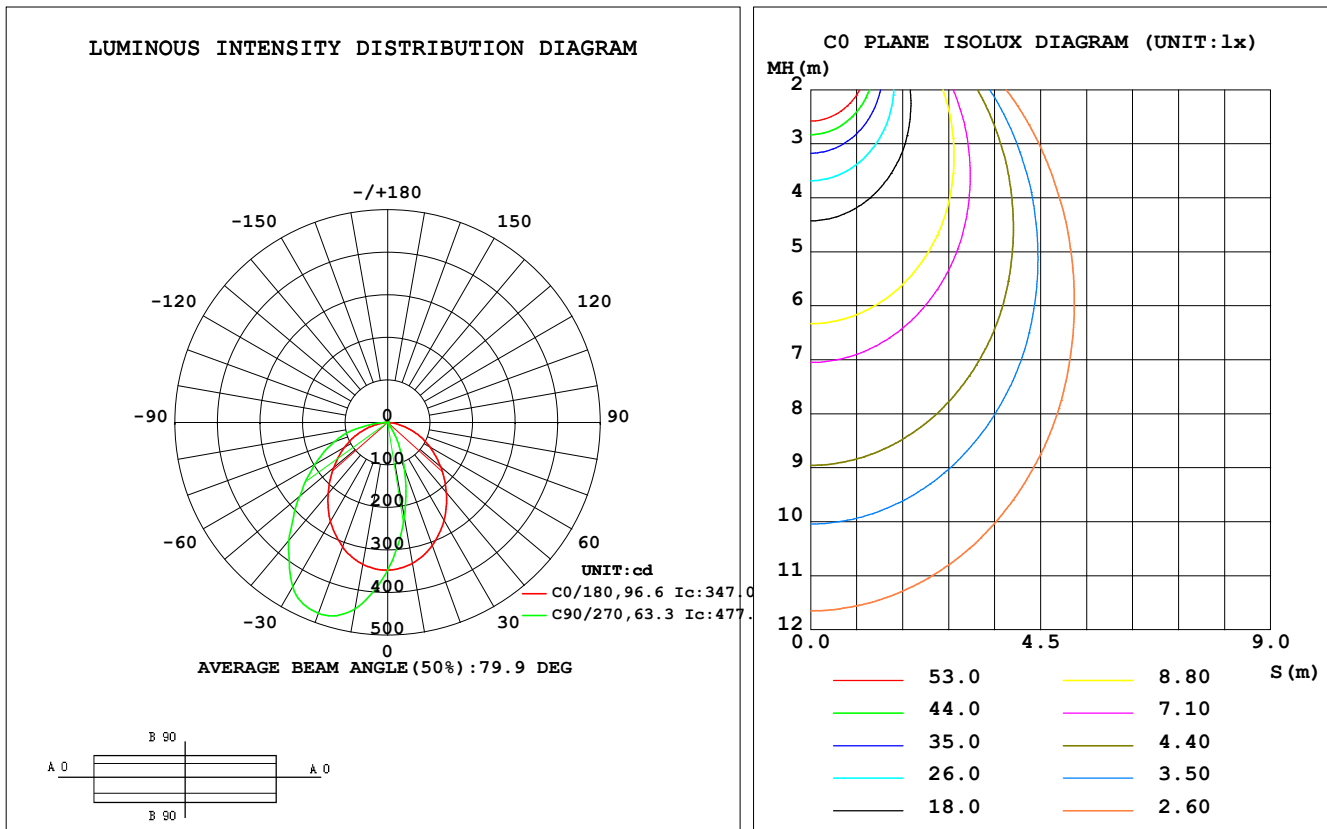


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm					
NAME: M20-T41103-18G40		TYPE:		WEIGHT:	
SPEC.:		DIM.:		SERIAL No.:	
MFR.:		SUR.:328*21.6		Shielding Angle:	

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 52.09 lm/W
MODEL	4000K CRI90	Imax(cd)	477.3	S/MH(C0/180)	1.16	
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	1.57	
RATED VOLTAGE(V)	226	TOTAL FLUX(lm)	770.10	η UP,DN(C0-180)	0.0,19.1	
NOMINAL FLUX(lm)	770.1	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,80.9	
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.00	
TEST VOLTAGE(V)	225.1	η down(%)	100.0	CIBSE SHR MAX	1.10	



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [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	336.2	259.0	226.6	258.2	338.6	414.5	445.0	414.4	0- 10	32.59	32.59	4.23,4.23
20	307.5	168.9	115.2	165.9	311.0	441.8	477.3	439.2	10- 20	90.59	123.2	16,16
30	265.9	90.98	35.82	87.81	269.4	419.6	446.5	415.2	20- 30	128.7	251.9	32.7,32.7
40	214.8	32.24	2.314	28.76	218.1	360.7	361.7	353.8	30- 40	140.5	392.4	50.9,50.9
50	163.0	4.248	0.6762	1.798	166.4	271.3	270.3	265.1	40- 50	129.9	522.3	67.8,67.8
60	114.2	2.132	0.7373	0.6421	117.6	187.7	198.3	183.4	50- 60	107.5	629.7	81.8,81.8
70	66.64	1.785	1.071	0.9177	69.76	120.2	134.6	117.7	60- 70	78.57	708.3	92,92
80	21.57	1.795	1.528	1.350	24.12	62.59	60.98	60.00	70- 80	47.84	756.2	98.2,98.2
90	1.679	2.152	2.122	1.953	2.778	3.265	3.337	3.095	80- 90	13.95	770.1	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): 459.6 lm

%lum = 59.7%

%lamp = 59.7%

Conical surface Flux(120deg): 629.75 lm

%lum = 81.8%

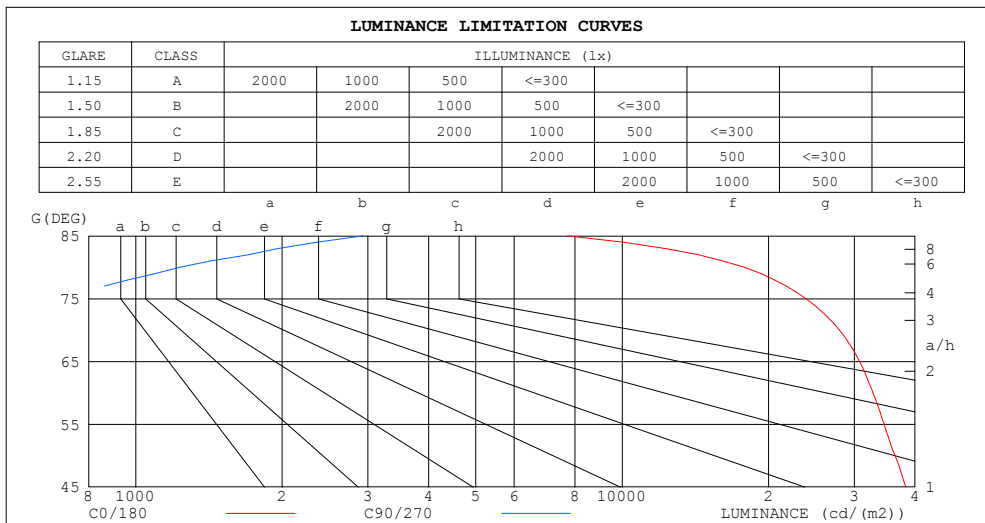
%lamp = 81.8%

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ZR  
 Test Date:2021-08-18

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
 Humidity:65.0%  
 Test Distance:8.402m [K=1.0000]  
 Remarks:

## LUMINANCE LIMITATION CURVES

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	7727	2927
80	17833	1234
75	23859	701
70	27972	439
65	30775	301
60	32792	207
55	34552	168
50	36409	148
45	38281	155

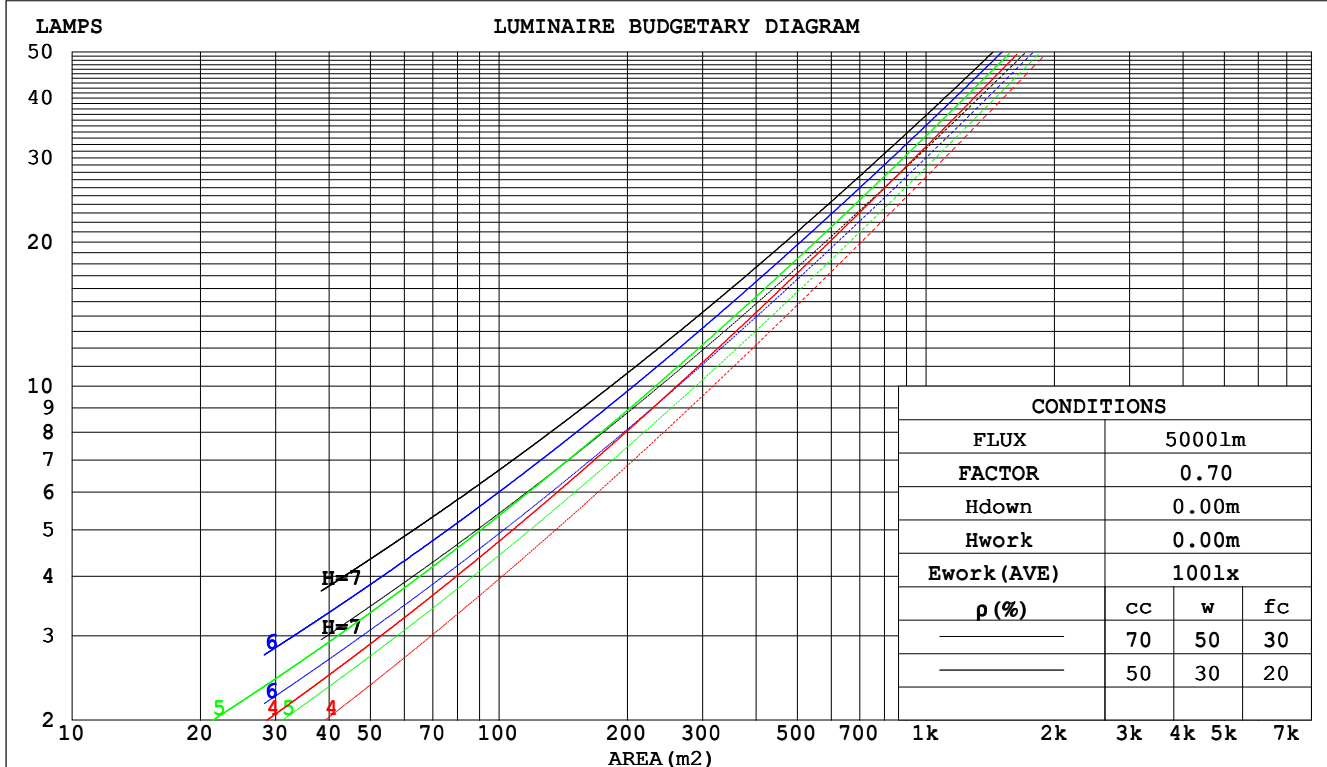
C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	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	1.02	.99	.95	.98	.95	.92	.94	.92	.90	.91	.89	.87	.85
2.0	.92	.86	.80	.90	.84	.79	.87	.82	.77	.83	.79	.76	.80	.77	.74	.72
3.0	.82	.74	.68	.80	.73	.67	.77	.71	.66	.74	.69	.65	.72	.67	.64	.61
4.0	.73	.64	.58	.72	.64	.58	.69	.62	.57	.67	.61	.56	.65	.60	.55	.53
5.0	.66	.57	.51	.64	.56	.50	.62	.55	.50	.60	.54	.49	.59	.53	.49	.47
6.0	.59	.51	.45	.58	.50	.44	.57	.49	.44	.55	.49	.44	.53	.48	.43	.41
7.0	.54	.46	.40	.53	.45	.40	.52	.45	.39	.50	.44	.39	.49	.43	.39	.37
8.0	.50	.41	.36	.49	.41	.36	.48	.41	.36	.46	.40	.35	.45	.39	.35	.33
9.0	.46	.38	.33	.45	.38	.32	.44	.37	.32	.43	.37	.32	.42	.36	.32	.30
10.0	.42	.35	.30	.42	.35	.30	.41	.34	.30	.40	.34	.29	.39	.33	.29	.28



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ZR  
 Test Date:2021-08-18

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
 Humidity:65.0%  
 Test Distance:8.402m [K=1.0000]  
 Remarks:

## WEC AND CCEC

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm					
NAME: M20-T41103-18G40			TYPE:		WEIGHT:
SPEC.:			DIM.:		SERIAL No.:
MFR.:			SUR.:328*21.6		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	.294	.167	.053	.287	.164	.052	.273	.157	.050	.261	.151	.048	.250	.145	.047		
2.0	.276	.151	.046	.270	.149	.046	.258	.144	.045	.248	.139	.043	.238	.135	.042		
3.0	.256	.136	.041	.250	.134	.040	.240	.130	.040	.231	.127	.039	.222	.123	.038		
4.0	.237	.123	.036	.232	.121	.036	.223	.118	.035	.215	.115	.035	.207	.112	.034		
5.0	.219	.112	.032	.215	.111	.032	.207	.108	.032	.200	.105	.031	.193	.103	.031		
6.0	.204	.102	.029	.200	.101	.029	.193	.099	.029	.187	.097	.029	.180	.095	.028		
7.0	.191	.094	.027	.187	.093	.027	.181	.091	.026	.175	.090	.026	.169	.088	.026		
8.0	.178	.087	.025	.175	.086	.024	.170	.085	.024	.164	.083	.024	.159	.082	.024		
9.0	.168	.081	.023	.165	.080	.023	.160	.079	.022	.155	.078	.022	.151	.076	.022		
10.0	.158	.076	.021	.156	.075	.021	.151	.074	.021	.147	.073	.021	.142	.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	.146	.114	.086	.100	.079	.060	.058	.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	.052	.036	.022	.017	.012	.007	
5.0	.146	.090	.049	.126	.078	.042	.086	.054	.030	.050	.032	.018	.016	.010	.006	
6.0	.139	.082	.041	.120	.071	.035	.082	.050	.025	.048	.029	.015	.015	.010	.005	
7.0	.132	.075	.034	.114	.065	.030	.079	.045	.021	.046	.027	.013	.015	.009	.004	
8.0	.126	.069	.030	.108	.060	.026	.075	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.120	.064	.026	.103	.055	.023	.072	.039	.016	.042	.023	.010	.014	.008	.003	
10.0	.114	.060	.023	.099	.052	.020	.068	.036	.014	.040	.022	.009	.013	.007	.003	

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:

## UGR(Unified Glare Rating) Table

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm											
NAME: M20-T41103-18G40						TYPE:		WEIGHT:			
SPEC.:						DIM.:		SERIAL No.:			
MFR.:						SUR.:328*21.6		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	3.4	4.8	3.6	5.0	5.2
	3H	23.4	24.7	23.7	24.9	25.2	3.5	4.8	3.8	5.0	5.3
	4H	24.1	25.4	24.4	25.6	25.9	3.8	5.1	4.1	5.3	5.6
	6H	24.6	25.8	24.9	26.1	26.3	4.6	5.8	4.9	6.1	6.4
	8H	24.7	25.9	25.0	26.1	26.4	5.4	6.5	5.7	6.8	7.1
	12H	24.7	25.8	25.1	26.1	26.4	6.5	7.6	6.8	7.9	8.2
4H	2H	21.4	22.7	21.7	22.9	23.2	5.1	6.4	5.4	6.6	6.9
	3H	23.1	24.2	23.4	24.5	24.8	5.2	6.3	5.6	6.6	6.9
	4H	23.8	24.8	24.2	25.1	25.5	5.6	6.6	6.0	6.9	7.3
	6H	24.4	25.3	24.8	25.6	26.0	6.5	7.4	6.9	7.7	8.1
	8H	24.5	25.4	25.0	25.8	26.1	7.3	8.1	7.7	8.5	8.9
	12H	24.6	25.4	25.0	25.8	26.2	8.4	9.2	8.9	9.6	10.0
8H	4H	23.7	24.5	24.1	24.9	25.3	6.1	7.0	6.5	7.3	7.7
	6H	24.3	25.0	24.7	25.4	25.8	7.3	8.0	7.8	8.4	8.9
	8H	24.4	25.1	24.9	25.5	25.9	8.4	9.0	8.8	9.4	9.9
	12H	24.5	25.1	25.0	25.5	26.0	9.8	10.4	10.3	10.8	11.3
12H	4H	23.6	24.4	24.0	24.8	25.2	6.3	7.1	6.8	7.5	7.9
	6H	24.2	24.8	24.7	25.3	25.7	7.7	8.3	8.1	8.7	9.2
	8H	24.4	24.9	24.9	25.4	25.9	8.9	9.4	9.3	9.8	10.3
Variations with the observer position at spacings:											
S = 1.0H	+ 1.5 / - 1.3					+ 0.9 / - 0.8					
1.5H	+ 2.6 / - 3.5					+ 1.4 / - 0.8					
2.0H	+ 3.7 / - 5.1					+ 0.7 / - 0.6					

CIE Pub.117, 770.1 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -0.9)

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:

### UTILIZATION FACTORS TABLE

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:

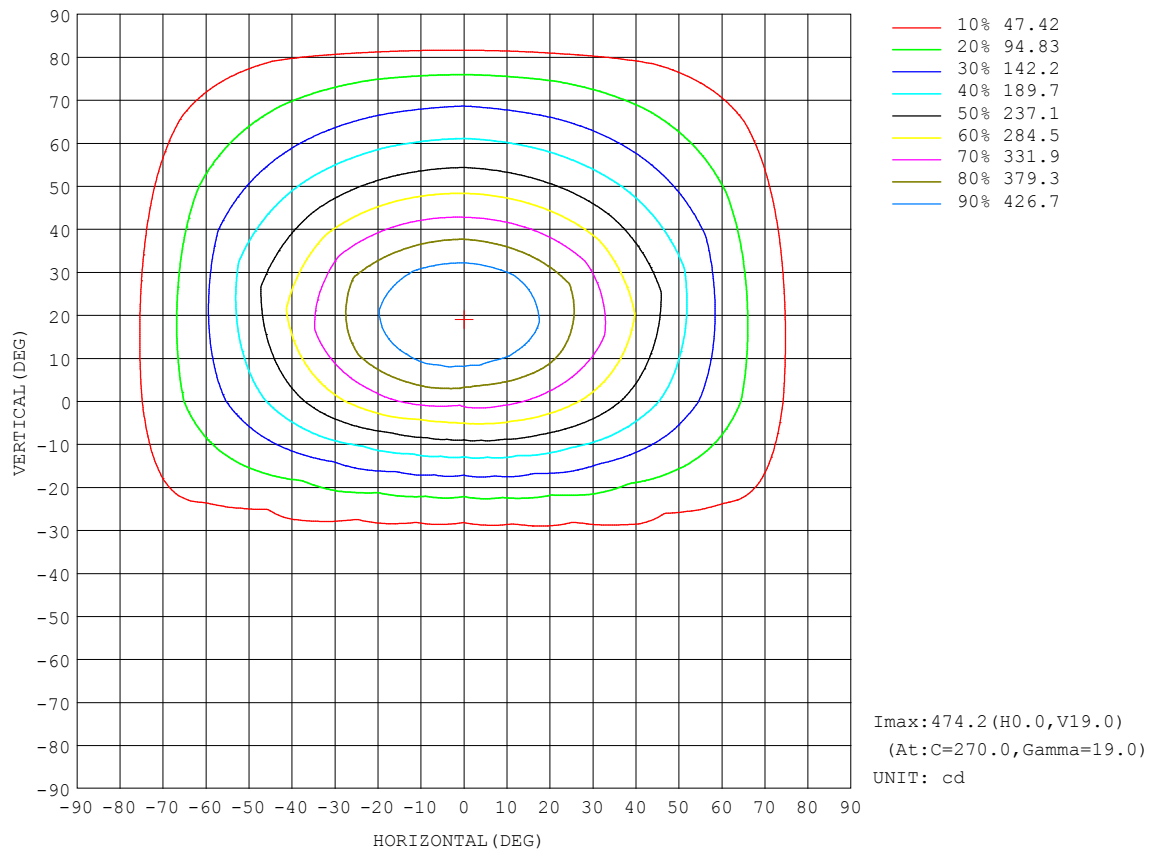
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	61	50	44	61	50	44	60	50	44	38
0.80	71	60	53	70	60	53	68	59	53	46
1.00	79	69	62	78	68	62	76	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	85	80	73
2.50	100	93	87	98	92	87	95	89	85	77
3.00	103	97	92	101	95	91	97	93	89	80
4.00	107	102	97	105	100	96	101	97	93	85
5.00	109	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: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:

## ISOCANDELA DIAGRAM

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:



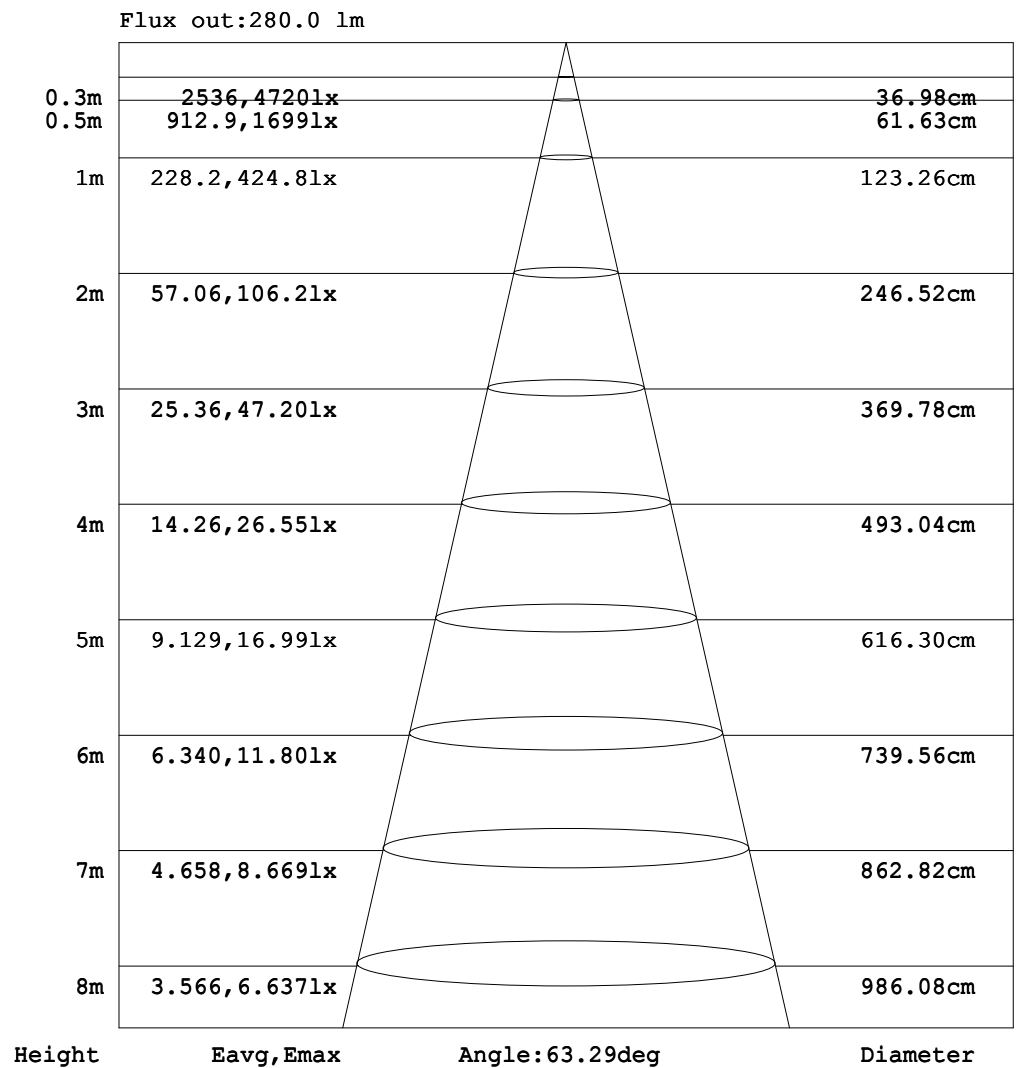
C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:



### AAI Figure

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:



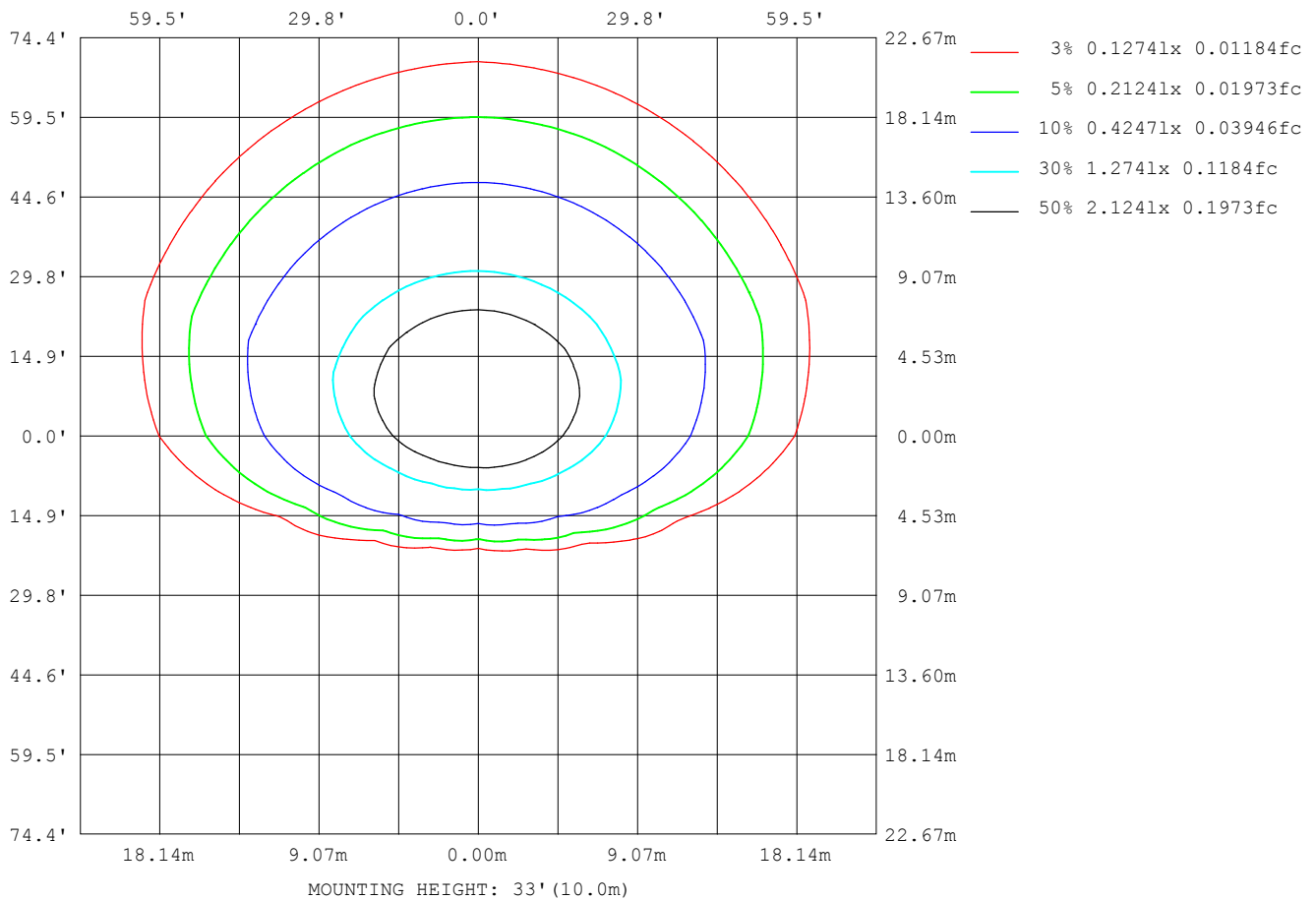
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: ZR  
Test Date: 2021-08-18

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity: 65.0%  
Test Distance: 8.402m [K=1.0000]  
Remarks:

# ISOLUX DIAGRAM

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:ZR  
Test Date:2021-08-18

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity:65.0%  
Test Distance:8.402m [K=1.0000]  
Remarks:

## LED Avg.L Report

Test:U:48.00V I:0.3080A P:14.78W PF:1.000 Freq:50.00Hz Lamp Flux:770.1x1 lm		
NAME: M20-T41103-18G40	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:328*21.6	Shielding Angle:

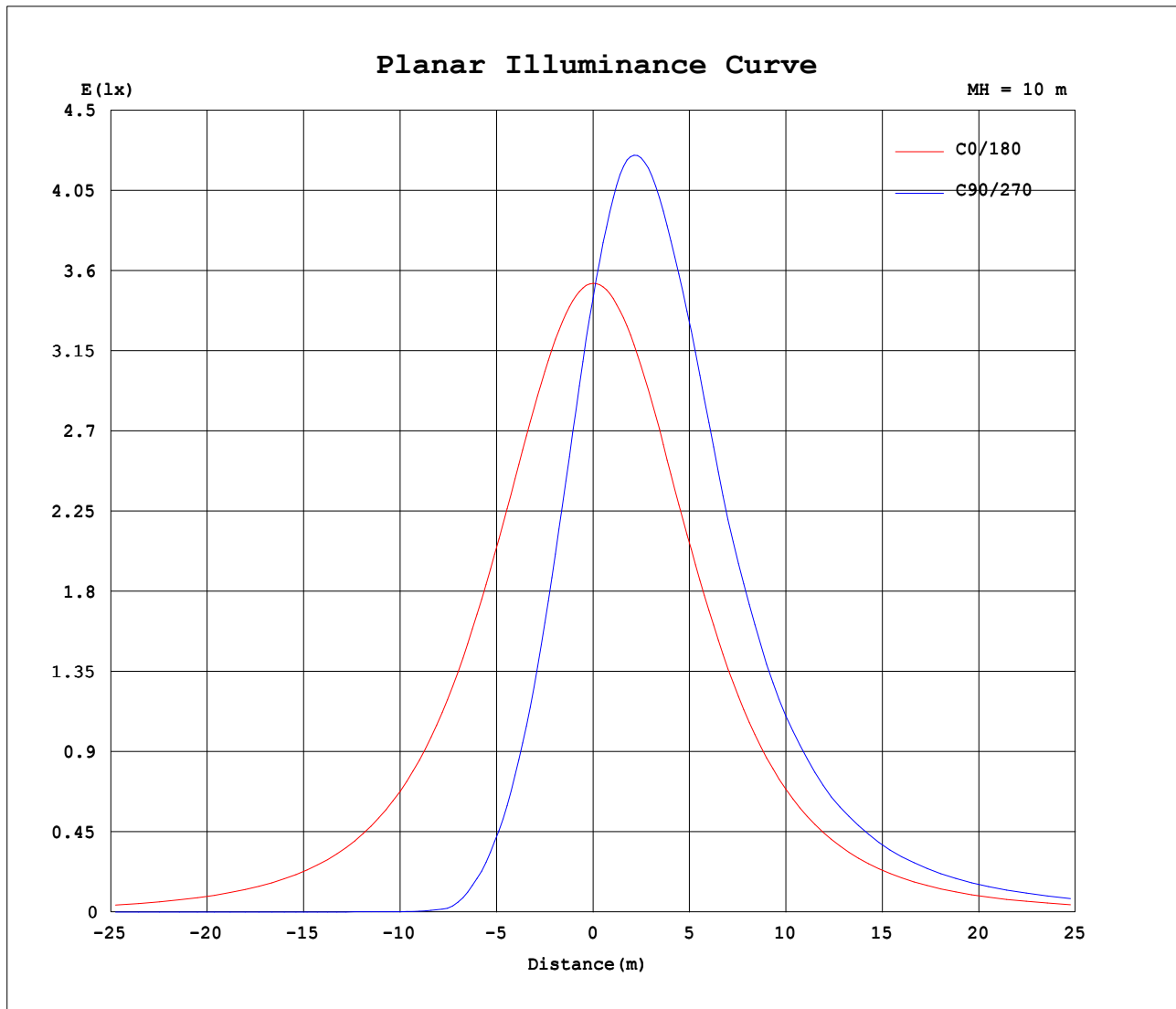
AvgL	cd/m2
L_0~180 (65) av	30792
L_0~180 (75) av	24255
L_0~180 (85) av	9162
L_90~270 (65) av	27884
L_90~270 (75) av	28430
L_90~270 (85) av	18659
L_45 (65) av	25389
L_45 (75) av	24979
L_45 (85) av	22445

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ZR  
 Test Date:2021-08-18

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
 Humidity:65.0%  
 Test Distance:8.402m [K=1.0000]  
 Remarks:

## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: ZR  
Test Date: 2021-08-18

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.354  
Humidity: 65.0%  
Test Distance: 8.402m [K=1.0000]  
Remarks:

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.354
Humidity:65.0%
Test Distance:8.402m [K=1.0000]
Remarks:

```