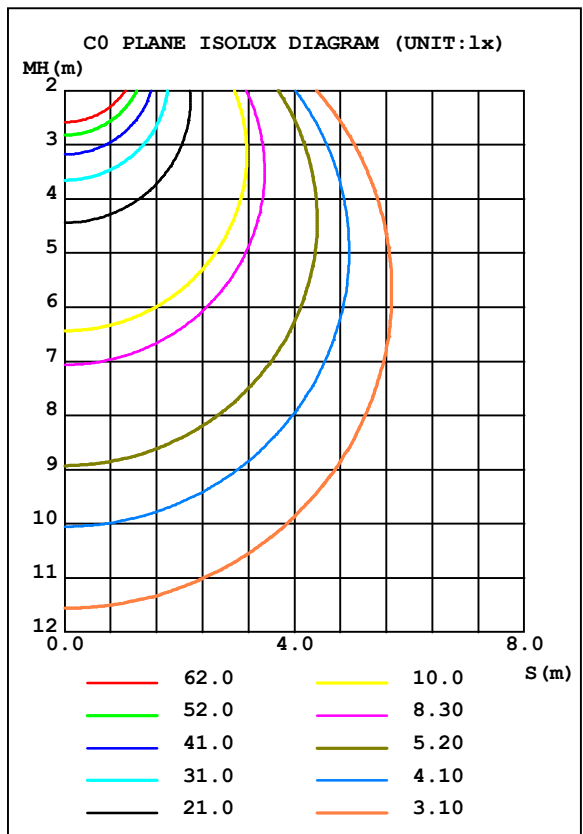
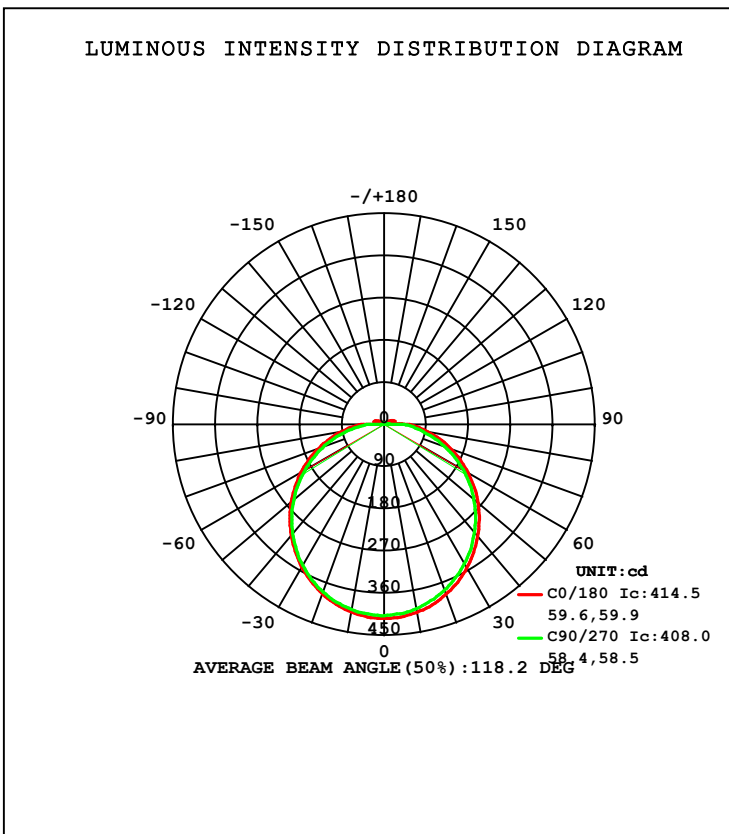


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.31V I:0.0651A P:14.713W PF:0.9809 Freq:49.99Hz Lamp Flux:1363.57x1 lm		
NAME: MPL9 15W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: SEE	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	MPL9	Imax (cd)	414.5	S/MH (C0/180)	1.27
NOMINAL POWER (W)	15	LOR (%)	100.0	S/MH (C90/270)	1.25
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	1363.6	η UP, DN (C0-180)	1.9, 47.7
NOMINAL FLUX (lm)	1363.57	CIE CLASS	DIRECT	η UP, DN (C180-360)	2.3, 48.1
LAMPS INSIDE	1	η up (%)	4.2	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	95.8	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

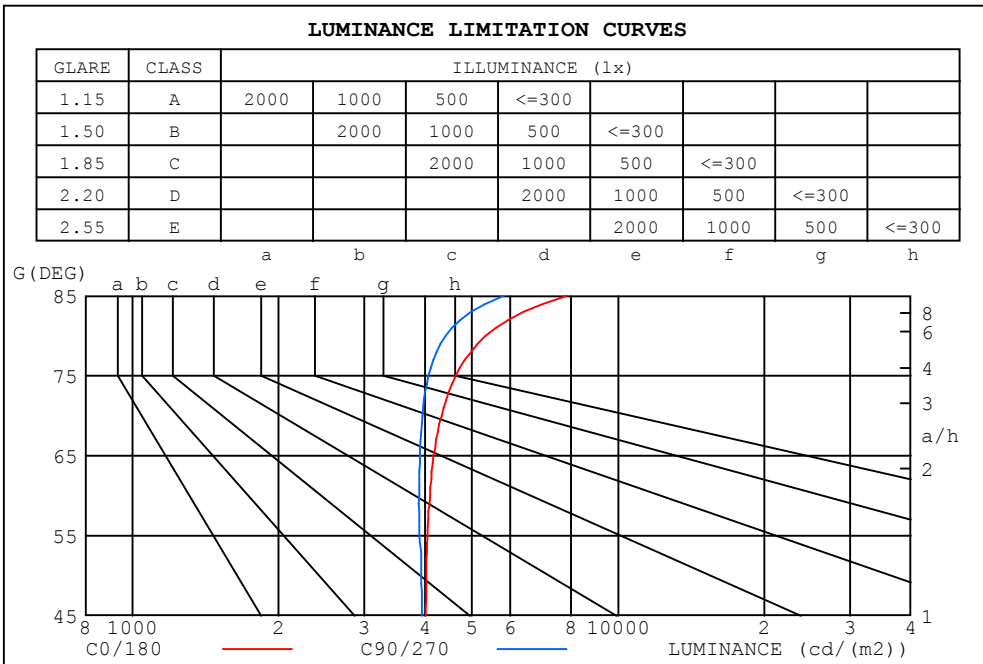
ZONAL FLUX DIAGRAM:

γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum, lamp
10	406.6	401.3	407.8	399.3					0- 10	38.89	38.89	2.85,2.85
20	385.5	380.8	386.4	377.0					10- 20	111.4	150.3	11,11
30	352.0	347.7	353.9	343.3					20- 30	169.2	319.5	23.4,23.4
40	308.6	303.8	311.8	300.9					30- 40	205.7	525.2	38.5,38.5
50	258.5	252.6	262.2	250.9					40- 50	217.6	742.7	54.5,54.5
60	204.7	194.7	206.9	195.3					50- 60	204.6	947.3	69.5,69.5
70	147.9	135.2	150.8	136.8					60- 70	169.9	1117	81.9,81.9
80	92.54	76.63	95.59	81.94					70- 80	120.7	1238	90.8,90.8
90	44.64	29.56	50.10	40.45					80- 90	68.72	1307	95.8,95.8
100	7.680	4.360	10.60	10.41					90-100	20.01	1327	97.3,97.3
110	21.04	2.272	21.17	3.233					100-110	11.63	1338	98.1,98.1
120	14.54	2.622	15.45	3.560					110-120	10.80	1349	98.9,98.9
130	6.686	2.949	7.268	3.946					120-130	6.337	1355	99.4,99.4
140	3.423	3.188	3.261	2.846					130-140	3.146	1359	99.6,99.6
150	3.607	3.362	3.518	3.057					140-150	2.049	1361	99.8,99.8
160	3.731	3.508	3.585	3.301					150-160	1.618	1362	99.9,99.9
170	3.724	3.727	3.752	3.704					160-170	1.026	1363	100,100
180	3.731	3.723	3.781	3.688					170-180	0.3570	1364	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 17.2 %									UNIT:lm		

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:SEE
 Test Date:2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity:60%
 Test Distance:7.630m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES



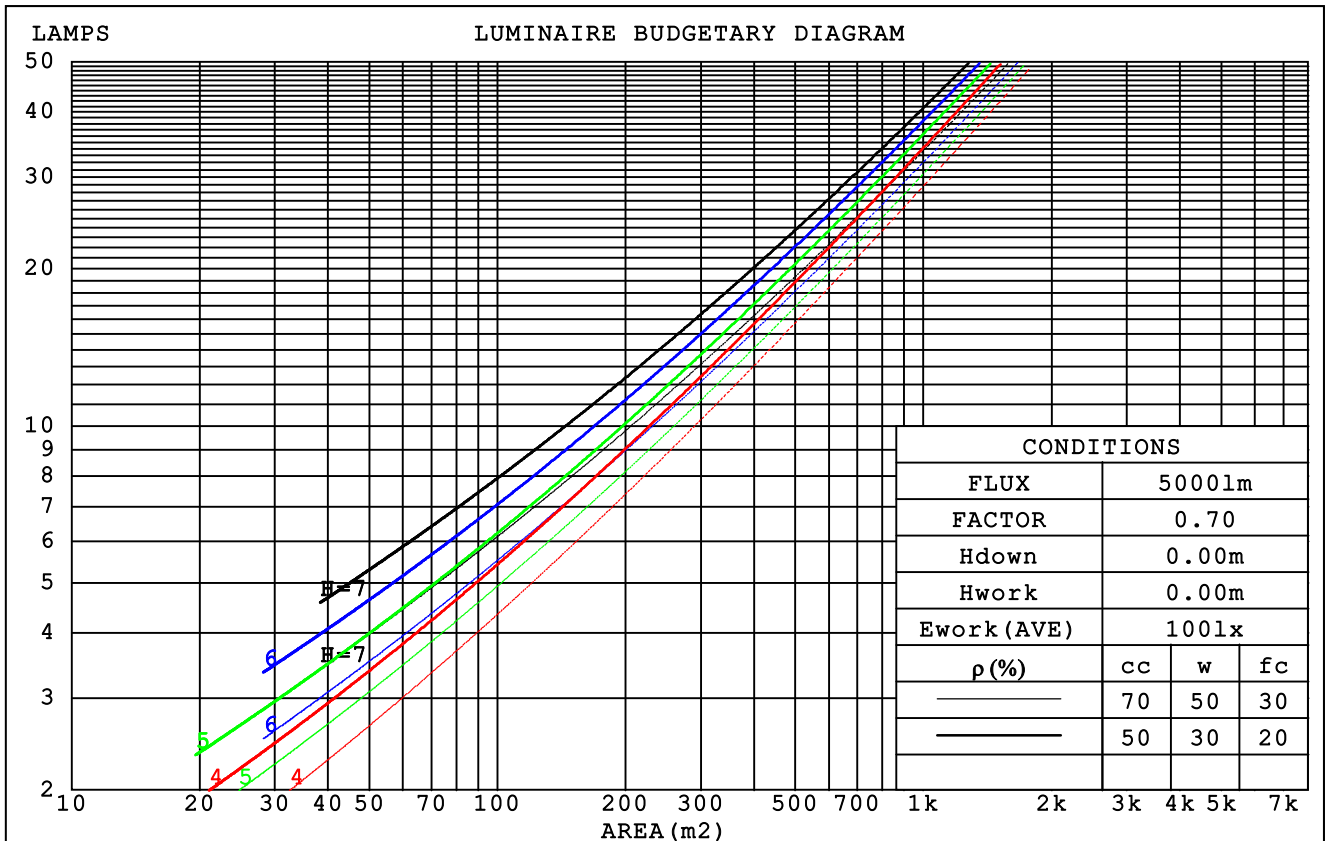
LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	7850	5821
80	5329	4413
75	4630	4067
70	4325	3953
65	4170	3908
60	4095	3895
55	4046	3900
50	4021	3930
45	4020	3948

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.18	1.18	1.18	1.15	1.15	1.15	1.09	1.09	1.09	1.03	1.03	1.03	.98	.98	.98	.96
1.0	1.01	.96	.91	.98	.93	.89	.93	.89	.86	.88	.85	.82	.84	.81	.79	.77
2.0	.87	.79	.73	.84	.78	.72	.80	.74	.69	.76	.71	.67	.72	.69	.65	.63
3.0	.76	.67	.60	.74	.66	.59	.70	.63	.58	.67	.61	.56	.64	.59	.54	.52
4.0	.67	.57	.50	.65	.56	.50	.62	.55	.49	.59	.53	.47	.56	.51	.46	.44
5.0	.59	.50	.43	.58	.49	.43	.55	.48	.42	.53	.46	.41	.51	.45	.40	.38
6.0	.53	.44	.37	.52	.43	.37	.50	.42	.36	.48	.41	.36	.46	.40	.35	.33
7.0	.48	.39	.33	.47	.39	.33	.45	.38	.32	.43	.37	.32	.42	.36	.31	.29
8.0	.44	.35	.29	.43	.35	.29	.41	.34	.29	.40	.33	.28	.38	.32	.28	.26
9.0	.40	.32	.26	.40	.32	.26	.38	.31	.26	.37	.30	.25	.35	.29	.25	.23
10.0	.37	.29	.24	.37	.29	.24	.35	.28	.23	.34	.28	.23	.33	.27	.23	.21



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

WEC AND CCEC

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	.354	.201	.064	.346	.197	.063	.330	.189	.060	.315	.182	.058	.302	.175	.056	
2.0	.318	.174	.053	.310	.171	.053	.296	.165	.051	.283	.159	.050	.271	.153	.048	
3.0	.287	.153	.046	.280	.150	.045	.268	.145	.044	.256	.140	.043	.245	.136	.042	
4.0	.261	.136	.040	.255	.134	.039	.244	.129	.039	.234	.125	.038	.224	.122	.037	
5.0	.239	.122	.035	.234	.120	.035	.224	.117	.034	.214	.113	.034	.206	.110	.033	
6.0	.220	.110	.032	.216	.109	.031	.206	.106	.031	.198	.103	.030	.190	.100	.030	
7.0	.204	.101	.029	.200	.099	.028	.192	.097	.028	.184	.094	.027	.177	.092	.027	
8.0	.190	.093	.026	.186	.092	.026	.178	.089	.025	.172	.087	.025	.165	.085	.025	
9.0	.177	.086	.024	.174	.085	.024	.167	.083	.023	.161	.081	.023	.155	.079	.023	
10.0	.166	.080	.022	.163	.079	.022	.157	.077	.022	.151	.075	.021	.146	.073	.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	.222	.222	.222	.190	.190	.190	.130	.130	.130	.074	.074	.074	.024	.024	.024	
1.0	.215	.188	.163	.184	.161	.140	.126	.111	.097	.073	.064	.056	.023	.021	.018	
2.0	.208	.164	.127	.178	.141	.110	.122	.098	.077	.070	.057	.045	.023	.018	.015	
3.0	.200	.147	.104	.172	.127	.090	.118	.088	.063	.068	.051	.037	.022	.017	.012	
4.0	.192	.134	.089	.165	.116	.077	.114	.081	.055	.066	.047	.032	.021	.015	.011	
5.0	.185	.124	.079	.159	.107	.068	.109	.075	.048	.063	.044	.029	.020	.014	.009	
6.0	.177	.115	.071	.152	.100	.062	.105	.070	.044	.061	.041	.026	.020	.013	.009	
7.0	.170	.109	.065	.146	.094	.057	.101	.066	.040	.059	.039	.024	.019	.013	.008	
8.0	.164	.103	.061	.141	.089	.053	.097	.063	.038	.057	.037	.023	.018	.012	.007	
9.0	.157	.098	.058	.136	.085	.050	.094	.060	.036	.055	.035	.021	.018	.012	.007	
10.0	.151	.094	.055	.131	.081	.048	.091	.057	.034	.053	.034	.020	.017	.011	.007	

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

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	17.5	19.0	17.8	19.3	19.6	17.3	18.8	17.6	19.1	19.4
3H	19.4	20.8	19.7	21.1	21.4	19.1	20.5	19.5	20.8	21.1
4H	20.3	21.7	20.7	22.0	22.3	19.9	21.3	20.3	21.6	22.0
6H	21.2	22.5	21.6	22.9	23.2	20.7	22.0	21.1	22.3	22.7
8H	21.7	22.9	22.1	23.3	23.7	21.0	22.3	21.5	22.6	23.0
12H	22.2	23.4	22.6	23.8	24.1	21.4	22.6	21.8	23.0	23.4
4H 2H	18.1	19.5	18.5	19.8	20.1	18.0	19.3	18.4	19.7	20.0
3H	20.2	21.4	20.7	21.8	22.2	20.0	21.2	20.4	21.6	22.0
4H	21.3	22.4	21.8	22.8	23.3	21.0	22.1	21.4	22.5	22.9
6H	22.4	23.4	22.9	23.8	24.3	21.9	22.9	22.4	23.3	23.8
8H	23.0	23.9	23.5	24.3	24.8	22.4	23.3	22.9	23.7	24.2
12H	23.6	24.4	24.1	24.9	25.4	22.8	23.7	23.3	24.1	24.6
8H 4H	21.7	22.6	22.2	23.1	23.6	21.4	22.3	21.9	22.8	23.3
6H	23.0	23.8	23.6	24.3	24.8	22.6	23.4	23.1	23.8	24.4
8H	23.8	24.4	24.3	24.9	25.5	23.2	23.9	23.7	24.4	24.9
12H	24.6	25.1	25.1	25.7	26.2	23.8	24.4	24.4	24.9	25.5
12H 4H	21.8	22.6	22.3	23.1	23.6	21.5	22.3	22.0	22.8	23.3
6H	23.2	23.9	23.7	24.4	24.9	22.8	23.5	23.3	24.0	24.5
8H	24.0	24.6	24.5	25.1	25.7	23.4	24.0	24.0	24.6	25.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.1 / - 0.3				

CIE Pub.117, 1364 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 1.1)

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

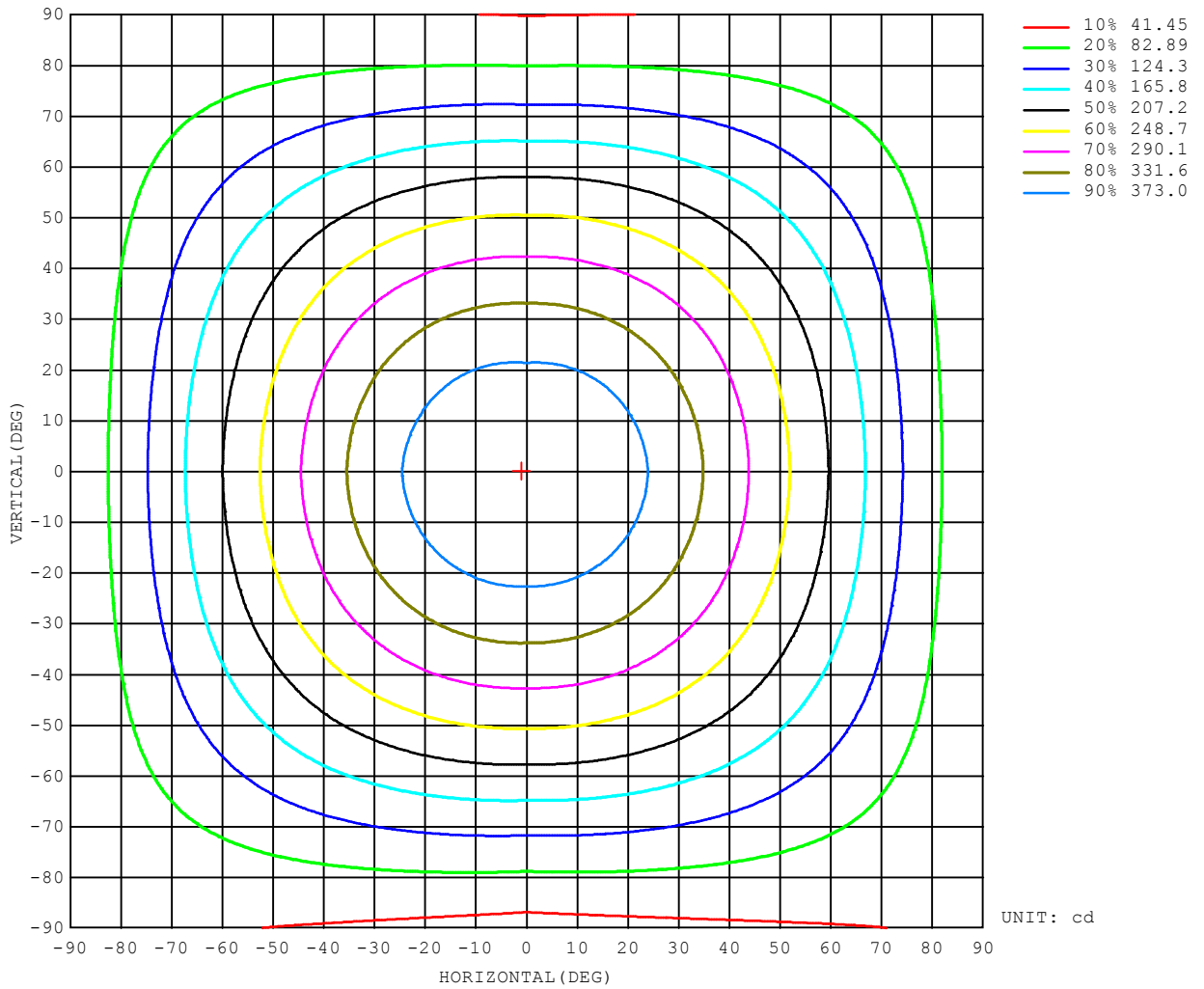
UTILIZATION FACTORS TABLE

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	42	35	53	42	35	52	41	34	28
0.80	64	51	44	62	51	43	60	50	43	36
1.00	72	60	52	70	59	52	68	60	51	43
1.25	79	67	60	77	66	59	74	65	58	50
1.50	84	73	65	82	72	65	78	70	63	55
2.00	91	81	74	89	80	73	85	77	71	62
2.50	95	86	79	93	85	78	88	81	76	66
3.00	99	91	84	96	89	83	91	85	80	70
4.00	103	96	91	100	94	89	95	90	86	76
5.00	106	100	95	103	98	93	97	93	90	79
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

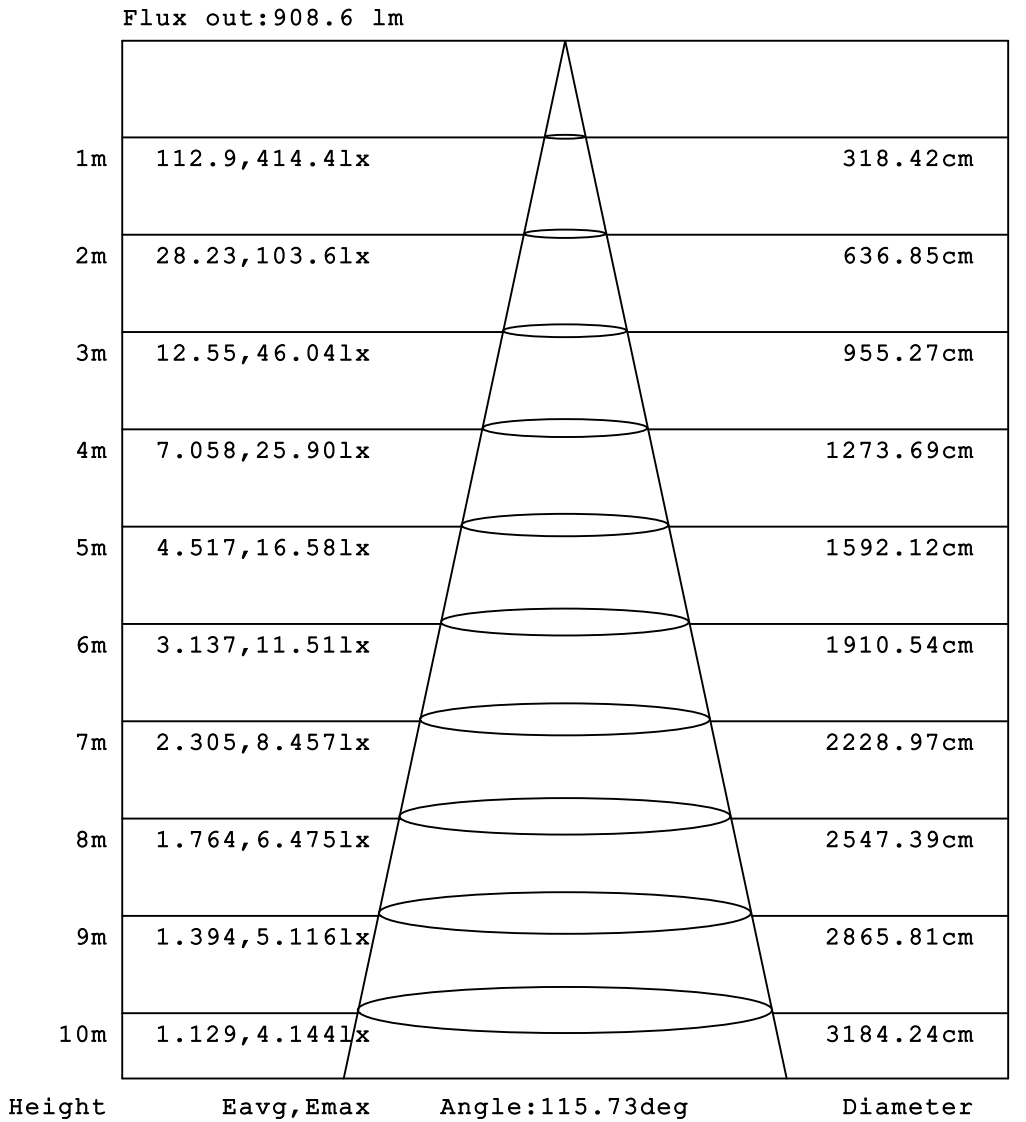
ISOCANDELA DIAGRAM



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

AAI Figure

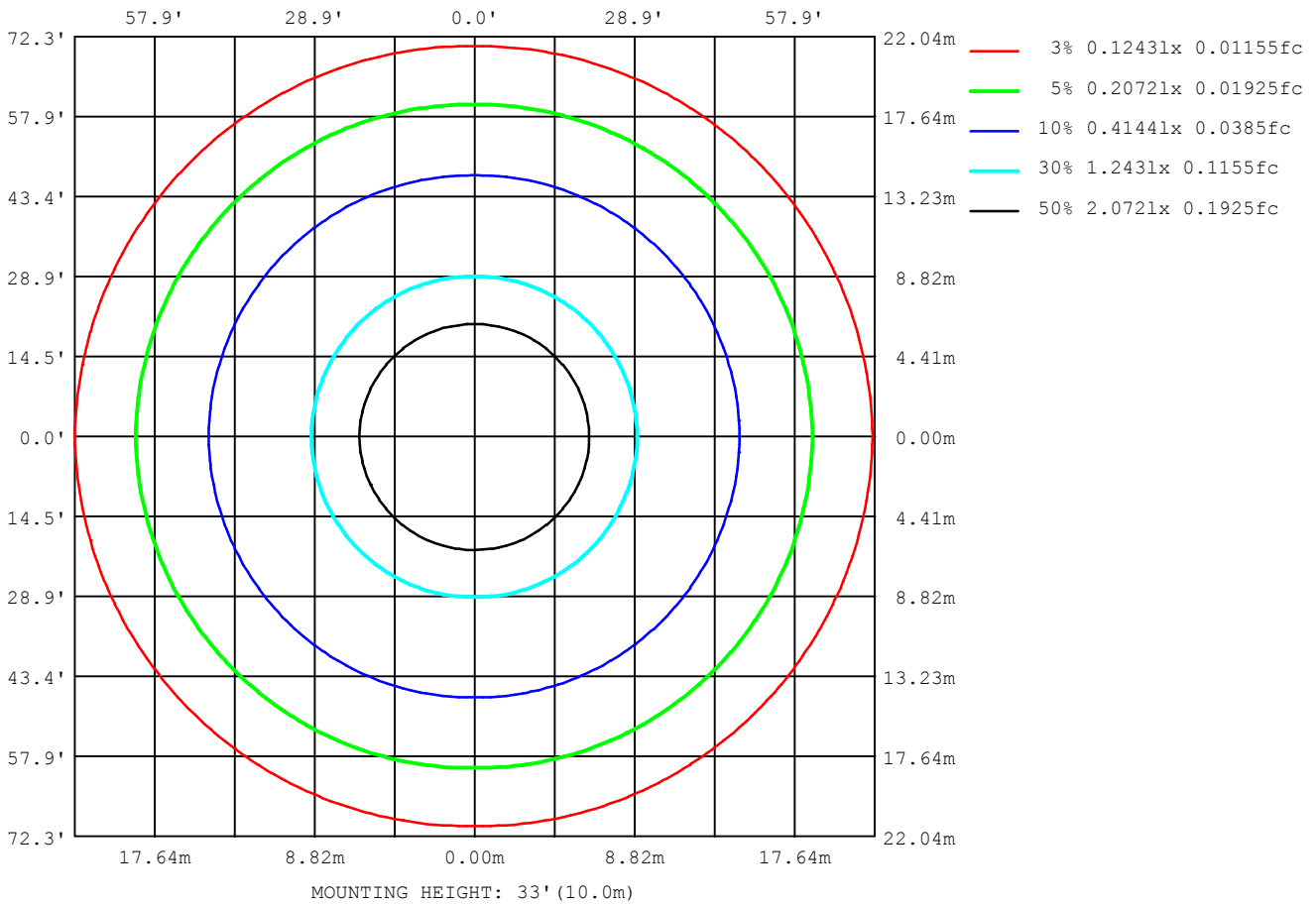


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:SEE
 Test Date:2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity:60%
 Test Distance:7.630m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:230.31V I:0.0651A P:14.713W PF:0.9809 Freq:49.99Hz Lamp Flux:1363.57x1 lm		
NAME: MPL9 15W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: SEE	SUR.:	Shielding Angle:

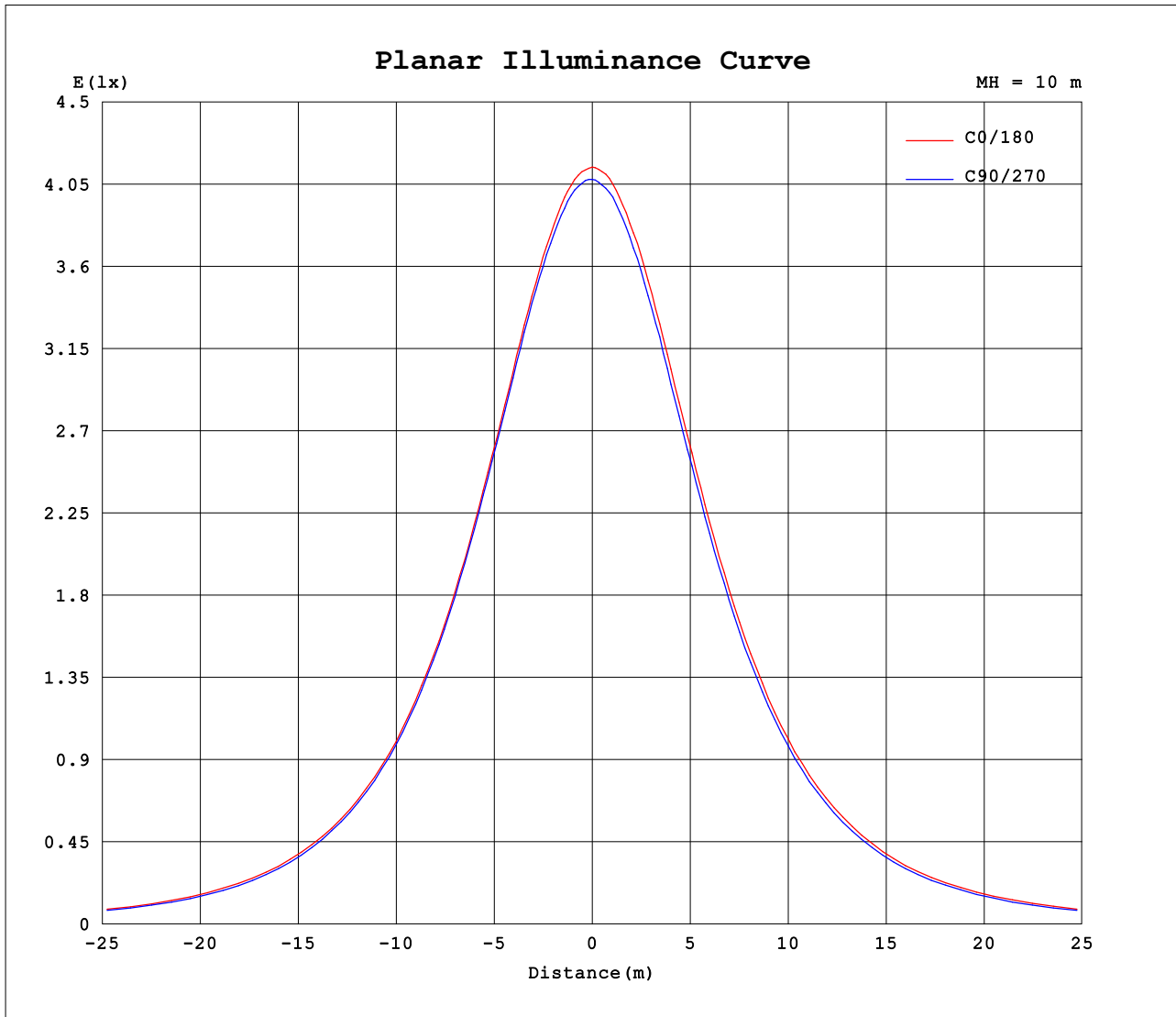
AvgL	cd/m2
L_0~180 (65) av	4205
L_0~180 (75) av	4689
L_0~180 (85) av	8044
L_90~270 (65) av	3916
L_90~270 (75) av	4131
L_90~270 (85) av	6320
L_45 (65) av	4026
L_45 (75) av	4344
L_45 (85) av	6978

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:SEE
 Test Date:2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity:60%
 Test Distance:7.630m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 90.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: SEE
 Test Date: 2020-04-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.366
 Humidity: 60%
 Test Distance: 7.630m [K=1.0000]
 Remarks: