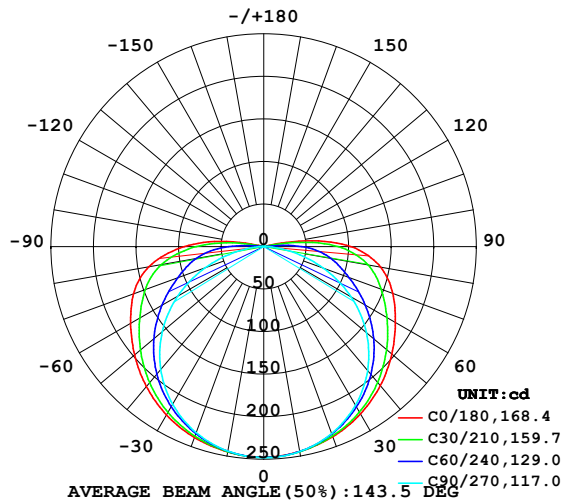


LUMINAIRE PHOTOMETRIC TEST REPORT

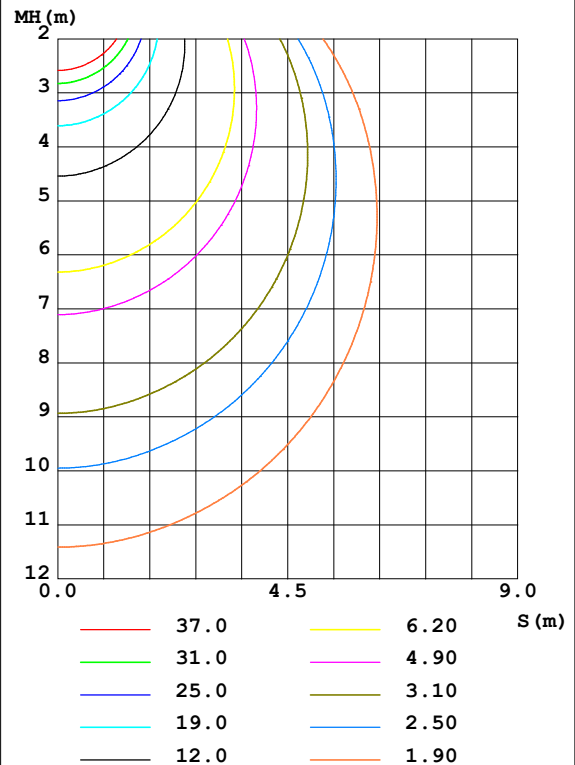
Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 104.25 lm/W			
MODEL		I _{max} (cd)	248.4	S/MH (C0/180)	1.38
NOMINAL POWER (W)	9.7	LOR (%)	100.0	S/MH (C90/270)	1.28
RATED VOLTAGE (V)	24	TOTAL FLUX (lm)	1011.2	η UP, DN (C0-180)	2.3, 47.9
NOMINAL FLUX (lm)	1011.19	CIE CLASS	DIRECT	η UP, DN (C180-360)	2.4, 47.4
LAMPS INSIDE	1	η up (%)	4.7	CIBSE SHR NOM	1.50
TEST VOLTAGE (V)	24	η down (%)	95.3	CIBSE SHR MAX	1.55

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2024-12-10

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity: 65.0%
Test Distance: 8.000m [K=0.7125]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	244.5	244.6	244.6	245.2	244.9	244.5	244.0	245.0	0- 10	23.51	23.51	2.33,2.33
20	237.7	235.5	233.7	236.4	238.6	235.4	232.7	235.8	10- 20	68.08	91.60	9.06,9.06
30	227.3	221.3	215.6	222.5	228.6	221.3	214.1	221.6	20- 30	105.8	197.4	19.5,19.5
40	213.3	202.2	190.1	203.7	214.8	202.2	188.3	202.6	30- 40	133.1	330.6	32.7,32.7
50	196.5	178.7	157.6	180.6	198.2	178.9	155.8	179.3	40- 50	147.5	478.1	47.3,47.3
60	178.8	152.6	118.7	155.2	180.7	153.2	116.9	152.6	50- 60	148.2	626.2	61.9,61.9
70	161.3	126.9	74.84	130.1	162.9	128.0	73.24	126.0	60- 70	136.9	763.2	75.5,75.5
80	139.6	102.5	30.95	103.9	137.1	101.5	29.04	97.51	70- 80	116.9	880.1	87,87
90	102.6	66.29	1.728	61.55	93.34	60.41	1.407	63.42	80- 90	83.91	964.0	95.3,95.3
100	34.24	10.85	0.5516	8.502	29.19	8.692	1.284	12.18	90-100	38.43	1002	99.1,99.1
110	1.062	0.8582	0.5207	1.061	2.138	1.723	1.266	1.699	100-110	4.010	1006	99.5,99.5
120	0.9647	0.7673	0.5424	0.9467	1.914	1.555	1.263	1.583	110-120	1.246	1008	99.7,99.7
130	0.8854	0.6830	0.6067	0.8666	1.628	1.390	1.251	1.417	120-130	1.021	1009	99.8,99.8
140	0.9278	0.7422	0.6827	0.8916	1.497	1.332	1.238	1.400	130-140	0.8400	1010	99.8,99.8
150	0.9829	0.8273	0.7853	0.9496	1.421	1.316	1.243	1.399	140-150	0.6925	1010	99.9,99.9
160	1.012	0.9442	0.9063	1.035	1.352	1.283	1.237	1.375	150-160	0.5253	1011	100,100
170	1.090	1.053	1.008	1.111	1.265	1.220	1.180	1.299	160-170	0.3274	1011	100,100
180	1.186	1.146	1.097	1.201	1.184	1.144	1.101	1.211	170-180	0.1107	1011	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 403.39 lm

%lum = 39.9%

%lamp = 39.9%

Conical surface Flux(120deg): 626.24 lm

%lum = 61.9%

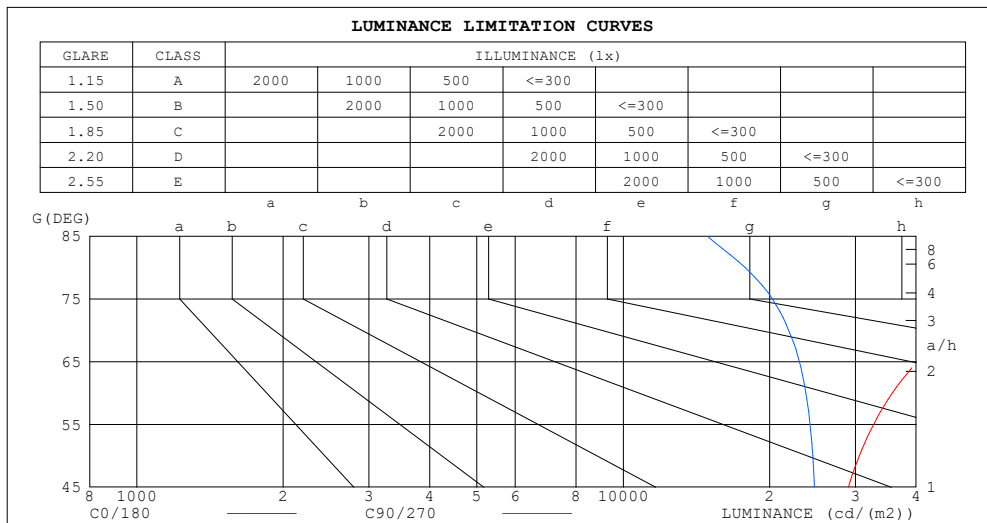
%lamp = 61.9%

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
 Humidity:65.0%
 Test Distance:8.000m [K=0.7125]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	141601	14910
80	80384	17822
75	58613	20272
70	47170	21883
65	40252	23013
60	35755	23746
55	32707	24218
50	30574	24524
45	29013	24708

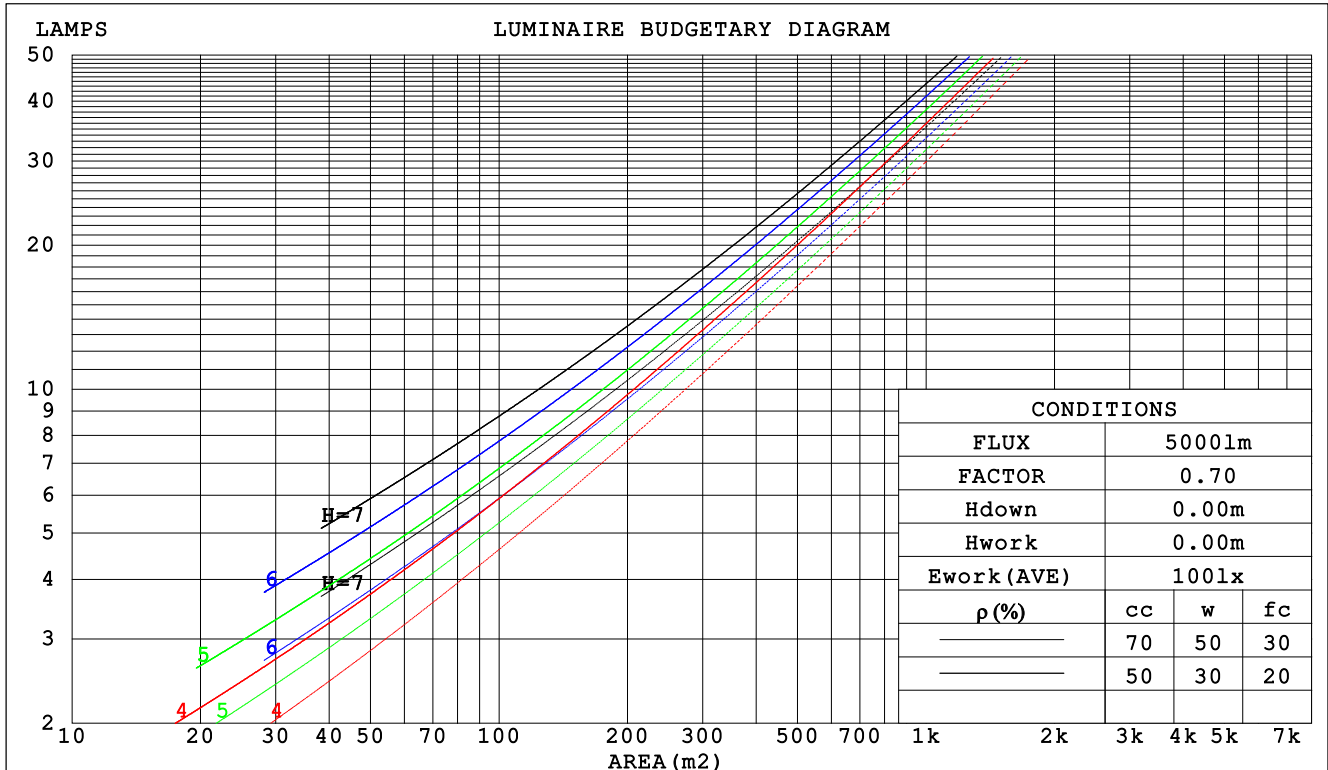
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		

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	1.18	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	.95
1.0	.98	.92	.87	.95	.90	.85	.90	.85	.82	.85	.81	.78	.80	.78	.75	.72
2.0	.83	.75	.68	.81	.73	.67	.76	.70	.64	.72	.67	.62	.68	.64	.60	.57
3.0	.72	.62	.55	.70	.61	.54	.66	.59	.53	.63	.56	.51	.59	.54	.49	.47
4.0	.63	.53	.46	.61	.52	.45	.58	.50	.44	.55	.48	.43	.52	.46	.42	.39
5.0	.56	.46	.39	.54	.45	.38	.52	.44	.37	.49	.42	.36	.47	.41	.36	.33
6.0	.50	.40	.33	.49	.40	.33	.46	.38	.32	.44	.37	.32	.42	.36	.31	.29
7.0	.45	.36	.29	.44	.35	.29	.42	.34	.28	.40	.33	.28	.38	.32	.27	.25
8.0	.41	.32	.26	.40	.32	.26	.38	.31	.25	.37	.30	.25	.35	.29	.24	.22
9.0	.38	.29	.23	.37	.29	.23	.35	.28	.22	.34	.27	.22	.32	.26	.22	.20
10.0	.35	.26	.21	.34	.26	.21	.33	.25	.20	.31	.25	.20	.30	.24	.20	.18



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks:

WEC AND CCEC

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		

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	.406	.231	.073	.397	.226	.072	.381	.218	.070	.366	.211	.068	.352	.204	.066		
2.0	.350	.192	.059	.343	.189	.058	.328	.182	.057	.314	.176	.055	.302	.171	.054		
3.0	.310	.165	.049	.303	.162	.049	.290	.157	.048	.278	.152	.047	.267	.148	.046		
4.0	.278	.145	.043	.272	.142	.042	.260	.138	.041	.250	.134	.040	.239	.130	.040		
5.0	.252	.129	.037	.247	.127	.037	.236	.123	.036	.226	.120	.036	.217	.116	.035		
6.0	.231	.116	.033	.226	.114	.033	.216	.111	.032	.207	.108	.032	.199	.105	.031		
7.0	.212	.105	.030	.208	.104	.030	.199	.101	.029	.191	.098	.029	.184	.096	.028		
8.0	.197	.096	.027	.193	.095	.027	.185	.092	.026	.178	.090	.026	.171	.088	.026		
9.0	.183	.088	.025	.179	.087	.025	.172	.085	.024	.166	.083	.024	.160	.081	.023		
10.0	.171	.082	.023	.168	.081	.023	.161	.079	.022	.155	.077	.022	.150	.075	.022		

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	.226	.226	.226	.193	.193	.193	.132	.132	.132	.076	.076	.076	.024	.024	.024	
1.0	.223	.191	.163	.191	.164	.140	.130	.113	.097	.075	.065	.056	.024	.021	.018	
2.0	.216	.168	.127	.185	.144	.110	.127	.100	.077	.073	.058	.045	.023	.019	.015	
3.0	.209	.151	.105	.179	.130	.091	.123	.090	.064	.071	.053	.038	.023	.017	.012	
4.0	.201	.138	.090	.172	.119	.079	.118	.083	.055	.068	.049	.033	.022	.016	.011	
5.0	.192	.128	.080	.165	.111	.070	.114	.077	.049	.066	.045	.029	.021	.015	.010	
6.0	.185	.120	.073	.159	.104	.064	.110	.073	.045	.064	.043	.027	.021	.014	.009	
7.0	.177	.113	.068	.152	.098	.059	.105	.069	.042	.061	.040	.025	.020	.013	.008	
8.0	.170	.107	.064	.147	.093	.056	.101	.065	.040	.059	.039	.024	.019	.013	.008	
9.0	.164	.102	.061	.141	.089	.053	.098	.062	.038	.057	.037	.023	.018	.012	.007	
10.0	.158	.098	.059	.136	.085	.051	.094	.060	.036	.055	.035	.022	.018	.012	.007	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
 Humidity:65.0%
 Test Distance:8.000m [K=0.7125]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz Lamp Flux:1011.19x1 lm										
Name: FLS48W-CW-COB					Type: LED					
MFR.:										
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	25.0	26.6	25.3	26.9	27.2	23.4	25.0	23.7	25.3	25.6
3H	27.8	29.3	28.2	29.6	29.9	25.1	26.6	25.5	26.9	27.3
4H	29.3	30.8	29.7	31.1	31.5	25.8	27.2	26.2	27.6	27.9
6H	31.0	32.4	31.4	32.8	33.1	26.3	27.7	26.7	28.1	28.4
8H	32.0	33.3	32.4	33.6	34.0	26.5	27.8	26.9	28.2	28.6
12H	33.0	34.2	33.4	34.6	35.0	26.6	27.9	27.0	28.3	28.7
4H 2H	25.7	27.1	26.1	27.4	27.8	24.5	25.9	24.9	26.3	26.6
3H	28.7	30.0	29.1	30.4	30.8	26.5	27.7	26.9	28.1	28.5
4H	30.5	31.6	30.9	32.0	32.5	27.4	28.6	27.8	29.0	29.4
6H	32.4	33.4	32.8	33.9	34.3	28.2	29.2	28.7	29.7	30.2
8H	33.4	34.4	33.9	34.8	35.3	28.5	29.5	29.0	29.9	30.4
12H	34.5	35.5	35.1	35.9	36.5	28.7	29.6	29.2	30.1	30.6
8H 4H	30.9	31.9	31.4	32.3	32.8	28.5	29.4	28.9	29.9	30.4
6H	33.1	33.9	33.6	34.4	35.0	29.6	30.5	30.2	31.0	31.5
8H	34.3	35.1	34.9	35.6	36.2	30.2	30.9	30.7	31.4	32.0
12H	35.7	36.4	36.3	36.9	37.5	30.6	31.3	31.1	31.8	32.4
12H 4H	30.9	31.8	31.4	32.3	32.8	28.8	29.7	29.3	30.2	30.7
6H	33.3	34.0	33.8	34.5	35.1	30.2	31.0	30.7	31.5	32.0
8H	34.6	35.3	35.2	35.8	36.4	30.9	31.6	31.5	32.1	32.7
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.4				

CIE Pub.117, 1011 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 0.0)
Area: 0.01 m2

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		

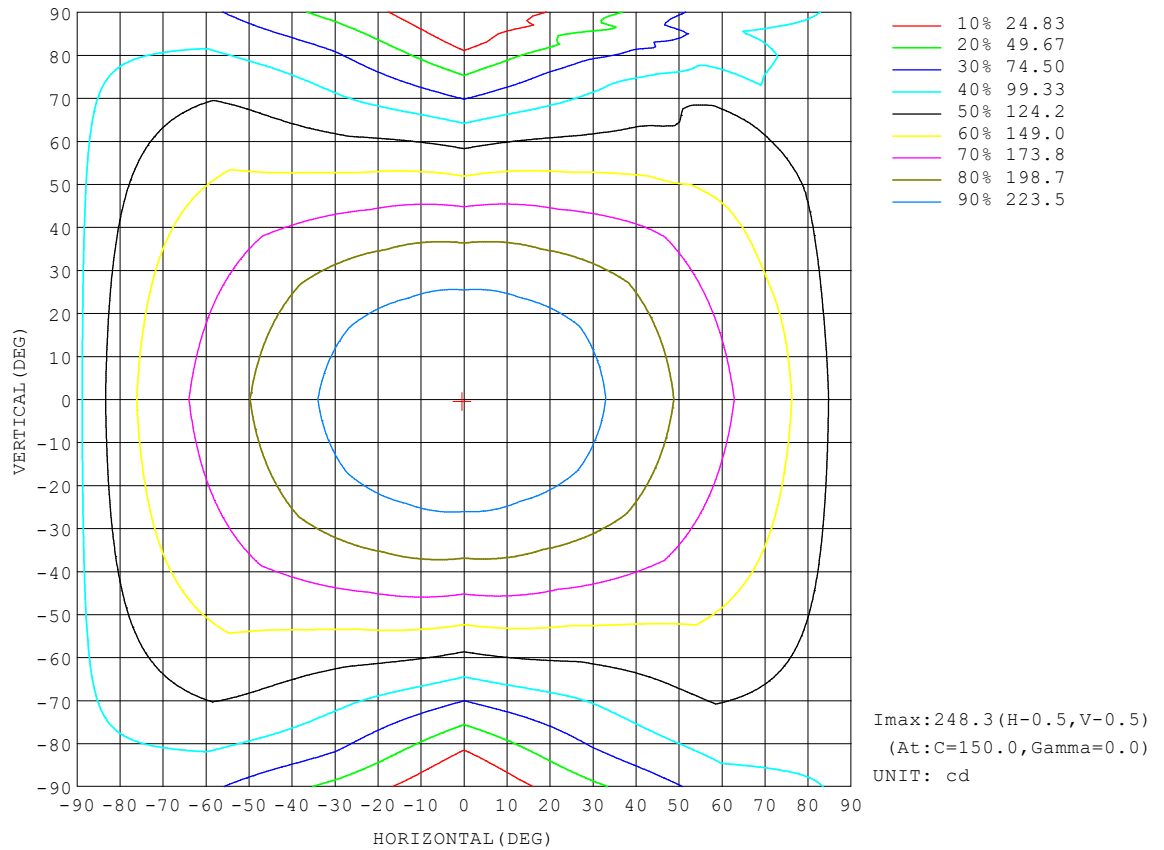
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	51	38	31	50	38	31	49	37	30	24
0.80	60	47	39	59	47	39	57	46	38	31
1.00	68	55	47	67	54	46	64	56	46	38
1.25	75	62	54	73	62	53	70	60	53	44
1.50	80	68	59	78	67	59	74	65	58	49
2.00	87	76	68	85	75	67	81	72	66	56
2.50	92	82	74	89	80	73	85	77	71	61
3.00	95	86	79	93	85	78	88	81	75	65
4.00	100	92	86	97	90	84	92	86	81	71
5.00	103	96	91	100	94	89	95	90	85	74
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks:

ISOCANDELA DIAGRAM

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		

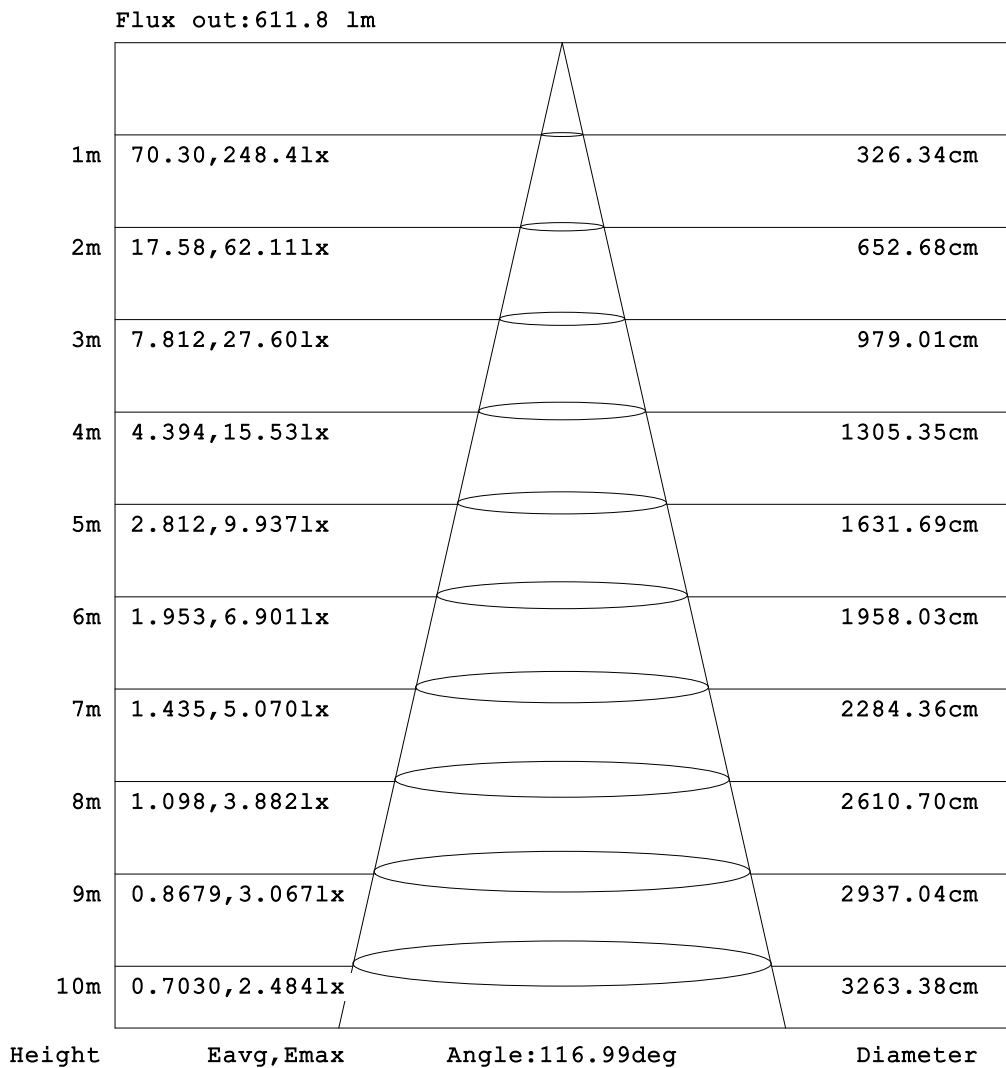


C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks:

AAI Figure

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		



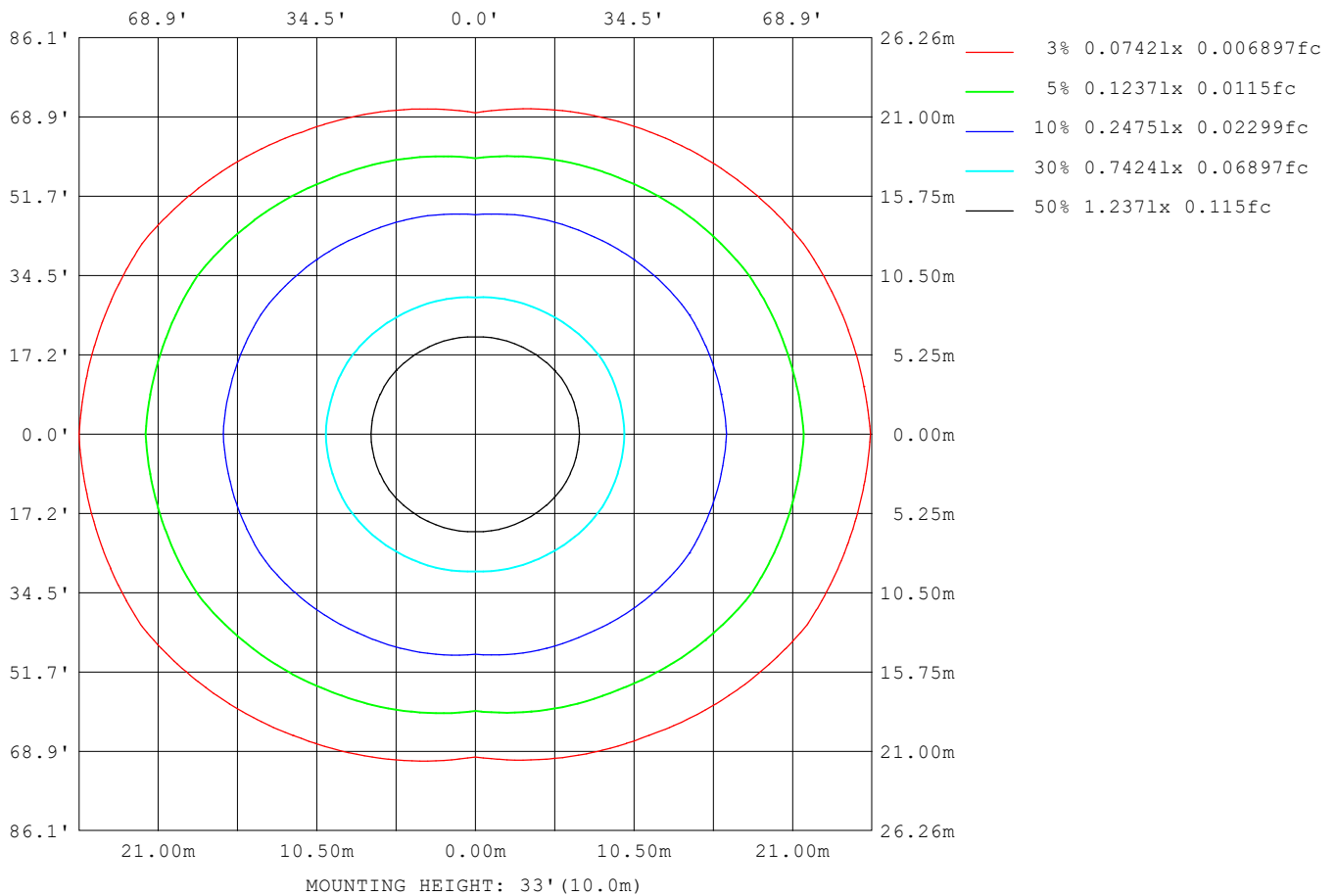
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
 Humidity:65.0%
 Test Distance:8.000m [K=0.7125]
 Remarks:

ISOLUX DIAGRAM

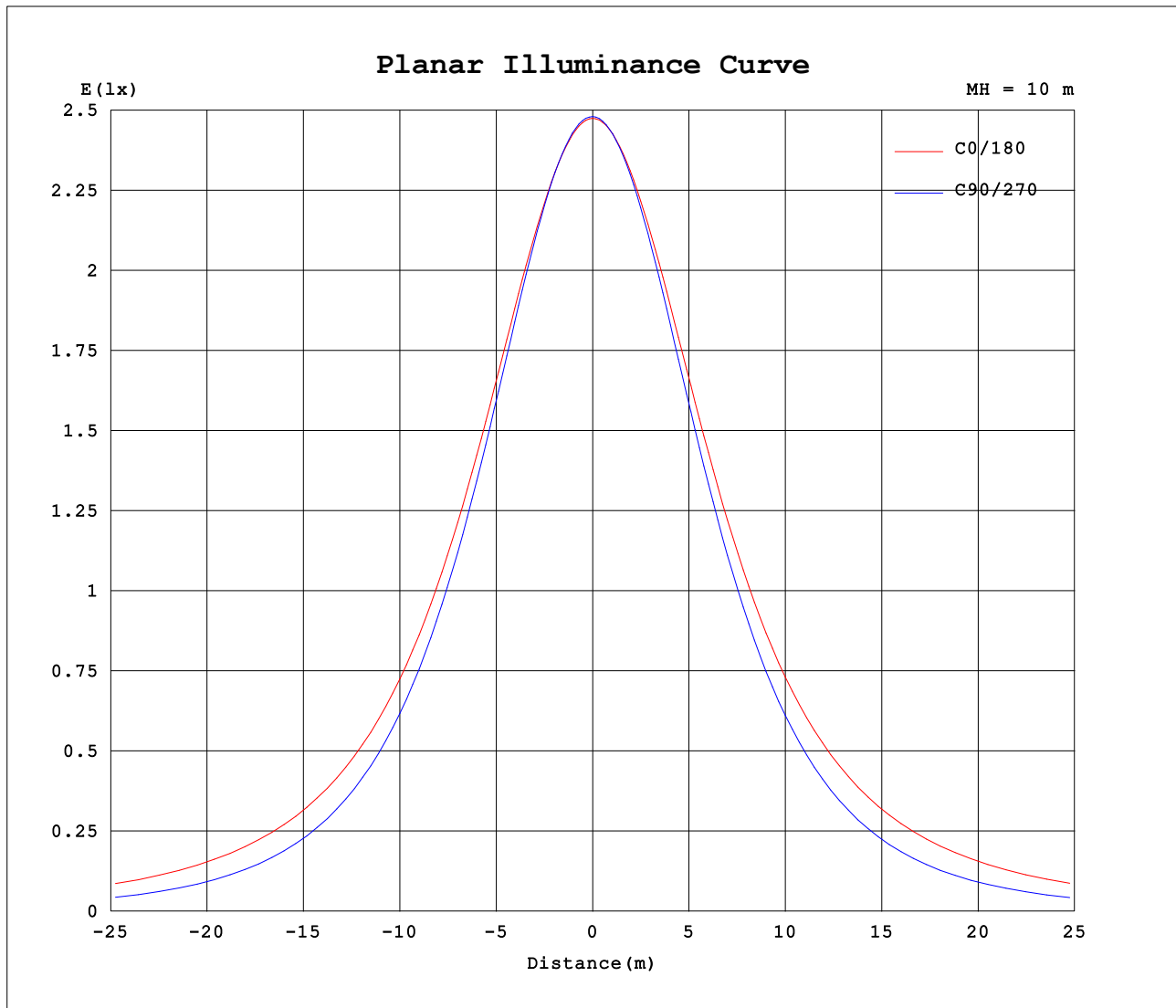
Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz		
Lamp Flux:1011.19x1 lm		
Name: FLS48W-CW-COB	Type: LED	
MFR.:		



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
 Humidity:65.0%
 Test Distance:8.000m [K=0.7125]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2024-12-10

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity: 65.0%
Test Distance: 8.000m [K=0.7125]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:24.00V I:0.4050A P:9.7000W PF:1.000 Freq:0Hz																	
Lamp Flux:1011.19x1 lm																	
Name: FLS48W-CW-COB									Type: LED								
MFR.:																	

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	247	248	248	248	248	248	247	248	248	248	248	248						
5	247	247	247	247	247	248	247	248	247	247	247	248						
10	244	245	244	245	245	246	245	245	244	244	245	245						
15	241	241	240	240	241	242	242	241	240	239	240	242						
20	238	237	234	234	235	238	239	237	234	233	234	238						
25	233	231	227	226	228	233	234	232	226	224	227	232						
30	227	225	218	216	219	226	229	225	217	214	218	226						
35	221	217	208	204	209	218	222	217	207	202	207	218						
40	213	208	196	190	198	210	215	209	196	188	196	209						
45	205	199	183	175	185	200	207	199	183	173	183	200						
50	197	189	169	158	171	190	198	189	169	156	169	190						
55	188	178	154	139	156	180	189	179	154	137	154	179						
60	179	167	138	119	141	170	181	168	138	117	139	167						
65	170	157	122	97.3	125	160	172	158	123	95.5	123	153						
70	161	147	107	74.8	111	150	163	148	108	73.2	108	144						
75	152	137	93.1	52.5	97.4	138	152	137	94.3	50.8	95.1	133						
80	140	125	80.3	30.9	84.0	124	137	122	80.7	29.0	77.2	118						
85	123	108	65.0	13.0	66.7	104	117	103	63.0	10.9	63.5	86.5						
90	103	87.6	45.0	1.73	43.5	79.6	93.3	79.4	41.4	1.41	38.0	88.9						
95	72.2	57.7	16.1	0.60	15.1	50.9	65.3	51.4	13.6	1.32	16.6	58.5						
100	34.2	20.9	0.83	0.55	1.06	15.9	29.2	15.7	1.64	1.28	1.67	22.7						
105	6.63	1.52	0.77	0.54	0.90	2.02	4.00	2.34	1.58	1.26	1.61	2.63						
110	1.06	0.97	0.75	0.52	0.87	1.25	2.14	1.92	1.53	1.27	1.55	1.85						
115	1.00	0.94	0.71	0.53	0.83	1.17	2.03	1.82	1.47	1.27	1.49	1.84						
120	0.96	0.89	0.65	0.54	0.79	1.11	1.91	1.71	1.40	1.26	1.42	1.75						
125	0.92	0.81	0.63	0.57	0.75	1.04	1.77	1.58	1.33	1.26	1.37	1.61						
130	0.89	0.73	0.63	0.61	0.75	0.99	1.63	1.49	1.29	1.25	1.36	1.47						
135	0.89	0.76	0.65	0.64	0.75	0.98	1.55	1.44	1.26	1.24	1.35	1.46						
140	0.93	0.80	0.69	0.68	0.79	1.00	1.50	1.41	1.25	1.24	1.34	1.46						
145	0.96	0.82	0.74	0.73	0.83	1.01	1.46	1.39	1.25	1.24	1.33	1.46						
150	0.98	0.86	0.80	0.79	0.88	1.02	1.42	1.37	1.26	1.24	1.33	1.47						
155	1.01	0.91	0.85	0.85	0.93	1.06	1.39	1.34	1.26	1.25	1.32	1.47						
160	1.01	0.97	0.92	0.91	0.98	1.09	1.35	1.31	1.26	1.24	1.31	1.44						
165	1.04	1.02	0.97	0.96	1.02	1.12	1.32	1.29	1.23	1.22	1.28	1.41						
170	1.09	1.08	1.02	1.01	1.07	1.16	1.26	1.24	1.20	1.18	1.24	1.36						
175	1.14	1.14	1.08	1.05	1.10	1.19	1.22	1.20	1.15	1.14	1.19	1.31						
180	1.19	1.17	1.12	1.10	1.15	1.25	1.18	1.17	1.12	1.10	1.15	1.27						

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2024-12-10

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:8.000m [K=0.7125]
Remarks: