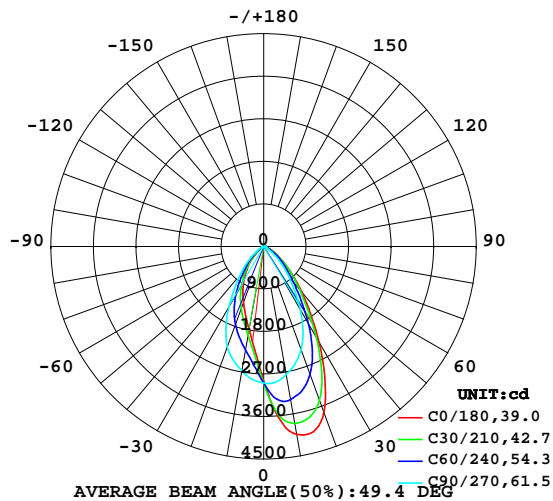


LUMINAIRE PHOTOMETRIC TEST REPORT

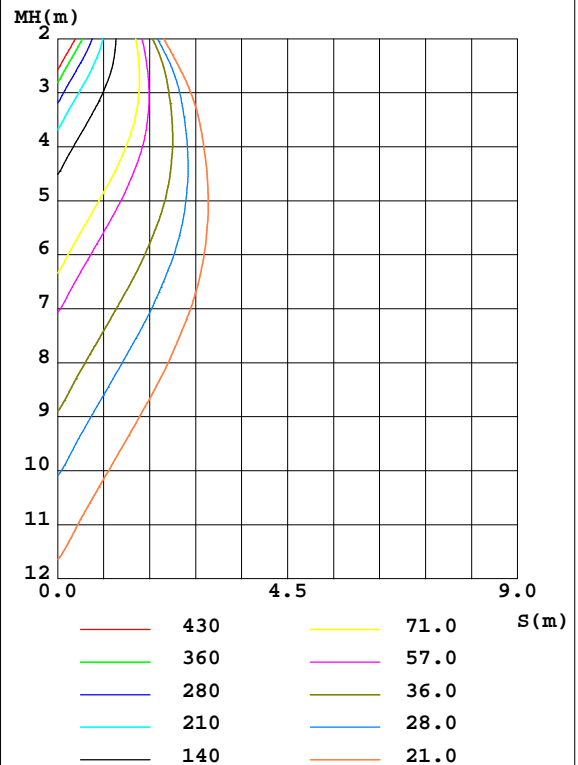
Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	

DATA OF LAMP		PHOTOMETRIC DATA Eff: 130.30 lm/W			
MODEL		Imax(cd)	4084	S/MH(C0/180)	0.50
NOMINAL POWER(W)	30	LOR(%)	100.0	S/MH(C90/270)	0.92
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	3557.1	η UP,DN(C0-180)	1.7,43.6
NOMINAL FLUX(lm)	3557.13	CIE CLASS	DIRECT	η UP,DN(C180-360)	1.6,53.1
LAMPS INSIDE	1	η up(%)	3.3	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	220	η down(%)	96.7	CIBSE SHR MAX	0.85

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:2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

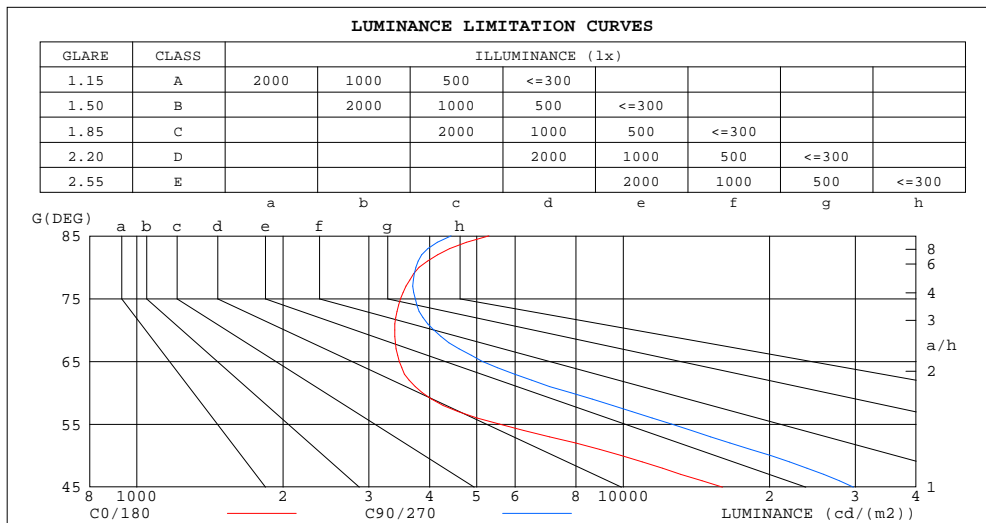
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1788	2067	2672	3423	4034	3545	2755	2093	0- 10	272.3	272.3	7.65,7.65
20	1266	1580	2258	3102	3735	3165	2323	1613	10- 20	734.3	1007	28.3,28.3
30	842.2	1060	1475	2008	2346	2069	1559	1090	20- 30	907.2	1914	53.8,53.8
40	475.4	560.8	760.6	1050	1255	1077	823.8	602.8	30- 40	720.3	2634	74.1,74.1
50	159.1	209.6	323.1	541.0	608.9	557.3	356.1	245.9	40- 50	448.2	3082	86.7,86.7
60	48.30	63.48	97.51	226.1	266.0	228.6	105.6	73.82	50- 60	215.2	3297	92.7,92.7
70	29.01	33.35	34.88	79.68	106.2	80.36	38.94	38.03	60- 70	90.76	3388	95.3,95.3
80	16.53	17.86	16.27	20.96	30.93	23.69	19.15	21.63	70- 80	38.20	3426	96.3,96.3
90	8.024	6.728	4.269	3.730	7.277	7.252	7.723	10.02	80- 90	13.35	3440	96.7,96.7
100	10.33	8.704	6.607	5.469	8.659	8.742	9.496	10.95	90-100	8.136	3448	96.9,96.9
110	15.26	13.16	10.28	8.307	10.61	10.91	12.25	14.24	100-110	10.67	3459	97.2,97.2
120	21.29	18.78	15.11	12.39	13.43	14.09	16.05	18.70	110-120	13.75	3472	97.6,97.6
130	27.98	25.09	20.95	17.85	17.43	18.35	20.83	24.07	120-130	16.78	3489	98.1,98.1
140	34.12	31.09	27.10	23.95	22.08	23.36	26.20	29.64	130-140	18.77	3508	98.6,98.6
150	38.49	35.94	32.64	29.68	27.23	28.63	31.50	34.37	140-150	18.64	3527	99.1,99.1
160	40.40	38.97	37.25	35.07	32.97	34.01	35.98	37.42	150-160	15.88	3542	99.6,99.6
170	41.32	41.01	40.85	39.83	38.85	39.20	40.01	40.00	160-170	10.81	3553	99.9,99.9
180	41.99	42.21	42.38	42.12	42.09	42.21	42.34	42.12	170-180	3.913	3557	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
 Humidity:65.0%
 Test Distance:8.000m [K=0.7063]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	5293	4431
80	3807	3748
75	3487	3740
70	3393	4079
65	3466	5131
60	3864	7801
55	5564	12582
50	9898	20106
45	15995	29741

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

```

Range: 0 - 180DEG
Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

```

WEC AND CCEC

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	

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	.212	.121	.038	.205	.117	.037	.190	.109	.035	.176	.102	.033	.164	.095	.031	
2.0	.204	.112	.034	.197	.109	.033	.184	.103	.032	.173	.097	.030	.162	.092	.029	
3.0	.193	.103	.031	.188	.100	.030	.177	.096	.029	.166	.091	.028	.157	.087	.027	
4.0	.183	.095	.028	.178	.093	.028	.168	.089	.027	.159	.085	.026	.151	.082	.025	
5.0	.173	.088	.026	.169	.087	.025	.160	.083	.025	.152	.080	.024	.145	.077	.023	
6.0	.164	.082	.024	.160	.081	.023	.152	.078	.023	.145	.075	.022	.138	.073	.022	
7.0	.156	.077	.022	.152	.076	.022	.145	.073	.021	.139	.071	.021	.132	.069	.020	
8.0	.148	.072	.020	.145	.071	.020	.138	.069	.020	.132	.067	.019	.127	.065	.019	
9.0	.141	.068	.019	.138	.067	.019	.132	.065	.018	.127	.063	.018	.122	.062	.018	
10.0	.134	.064	.018	.131	.063	.018	.126	.062	.017	.121	.060	.017	.117	.059	.017	

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	.216	.216	.216	.184	.184	.184	.126	.126	.126	.072	.072	.072	.023	.023	.023		
1.0	.199	.182	.167	.170	.156	.144	.116	.108	.100	.067	.062	.058	.021	.020	.019		
2.0	.186	.158	.134	.159	.136	.116	.109	.094	.081	.063	.055	.047	.020	.018	.015		
3.0	.175	.139	.111	.150	.120	.096	.103	.084	.067	.060	.049	.040	.019	.016	.013		
4.0	.166	.125	.094	.143	.108	.082	.098	.075	.057	.057	.044	.034	.018	.014	.011		
5.0	.158	.114	.082	.136	.099	.071	.094	.069	.050	.054	.041	.030	.017	.013	.010		
6.0	.151	.105	.072	.130	.091	.063	.090	.064	.044	.052	.038	.026	.017	.012	.009		
7.0	.145	.098	.065	.125	.085	.057	.086	.060	.040	.050	.035	.024	.016	.011	.008		
8.0	.139	.092	.060	.120	.080	.052	.083	.056	.037	.048	.033	.022	.016	.011	.007		
9.0	.134	.087	.055	.116	.076	.048	.080	.053	.034	.047	.031	.020	.015	.010	.007		
10.0	.129	.083	.052	.112	.072	.045	.077	.051	.032	.045	.030	.019	.015	.010	.006		

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm										
NAME: LC-LL1603-30W-Asymmetricrlc					TYPE:LED					
MFR.: LOW-CARBON					DIM.: 650*40*95mm					
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	16.4	17.5	16.7	17.8	18.0	18.8	19.9	19.1	20.2	20.4
3H	16.5	17.5	16.8	17.8	18.0	18.8	19.8	19.2	20.1	20.4
4H	16.6	17.5	16.9	17.8	18.1	18.8	19.8	19.2	20.1	20.4
6H	16.7	17.5	17.0	17.8	18.2	18.8	19.7	19.2	20.0	20.4
8H	16.7	17.6	17.1	17.9	18.2	18.8	19.7	19.2	20.0	20.3
12H	16.8	17.6	17.2	17.9	18.3	18.8	19.7	19.2	20.0	20.3
4H 2H	16.4	17.3	16.7	17.6	17.9	18.6	19.6	19.0	19.9	20.2
3H	16.5	17.4	16.9	17.7	18.0	18.7	19.5	19.1	19.9	20.2
4H	16.7	17.4	17.1	17.8	18.2	18.8	19.5	19.2	19.9	20.3
6H	16.9	17.5	17.3	17.9	18.4	18.9	19.5	19.3	19.9	20.3
8H	17.0	17.6	17.5	18.0	18.5	18.9	19.5	19.3	19.9	20.3
12H	17.1	17.7	17.6	18.1	18.6	18.9	19.5	19.4	19.9	20.4
8H 4H	16.7	17.3	17.2	17.7	18.2	18.7	19.3	19.2	19.7	20.2
6H	17.0	17.5	17.5	18.0	18.5	18.9	19.4	19.4	19.8	20.3
8H	17.2	17.7	17.7	18.1	18.7	19.0	19.4	19.5	19.9	20.4
12H	17.5	17.8	18.0	18.3	18.9	19.1	19.4	19.6	19.9	20.5
12H 4H	16.7	17.2	17.2	17.7	18.1	18.7	19.2	19.2	19.7	20.1
6H	17.1	17.5	17.6	18.0	18.5	18.9	19.3	19.4	19.8	20.3
8H	17.3	17.7	17.8	18.2	18.7	19.0	19.3	19.5	19.8	20.4
Variations with the observer position at spacings:										
S = 1.0H	+ 1.5 / - 2.4					+ 2.0 / - 2.6				
1.5H	+ 2.0 / - 2.1					+ 2.8 / - 3.2				
2.0H	+ 3.0 / - 1.9					+ 4.4 / - 3.2				

CIE Pub.117, 3557 lm Total Lamp Luminous Flux Corrected ($8\log(F/F_0) = 4.4$)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetricrlc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	

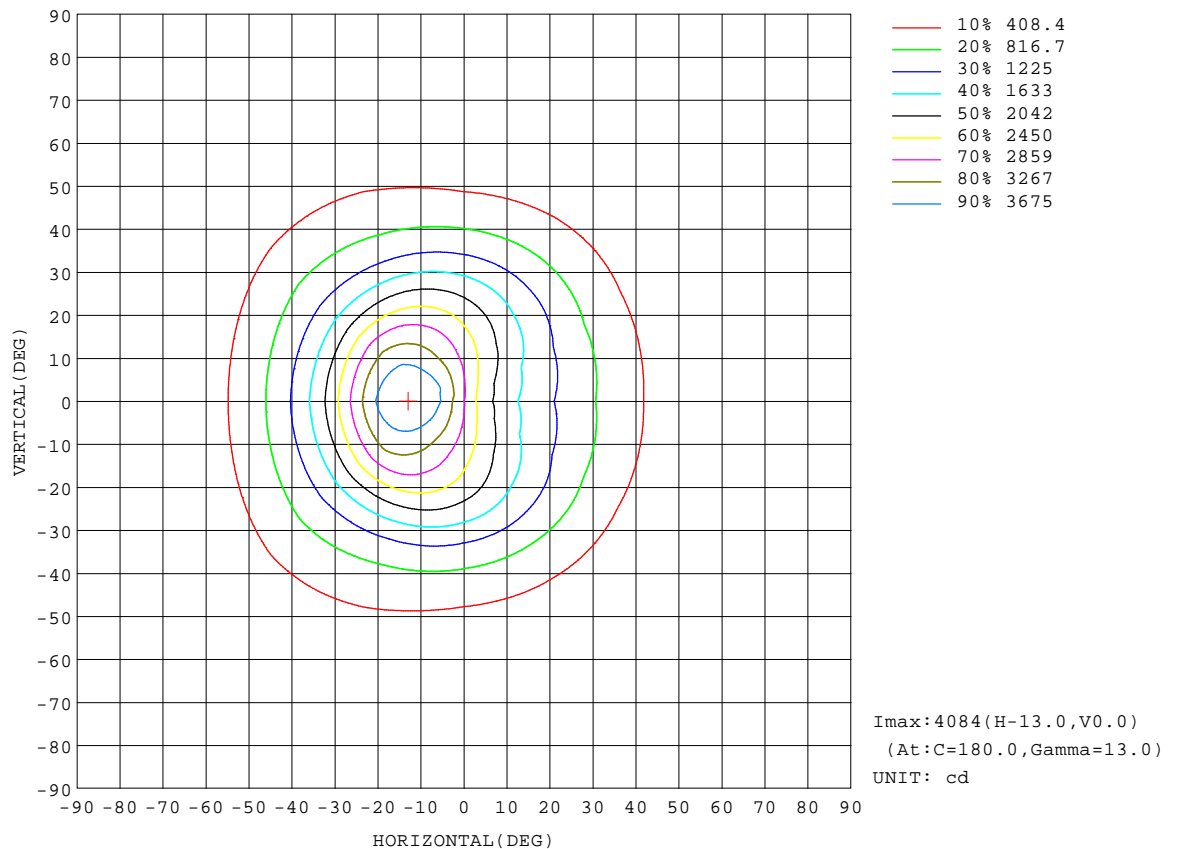
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	75	67	62	74	67	62	73	66	61	57
0.80	84	76	71	83	76	71	81	75	70	65
1.00	90	83	78	89	82	78	87	82	77	72
1.25	96	89	84	94	88	84	92	86	83	77
1.50	99	93	88	98	92	88	95	90	86	80
2.00	103	98	94	102	97	93	98	94	91	84
2.50	106	101	97	104	99	96	100	96	93	86
3.00	108	103	100	106	102	99	102	99	96	88
4.00	111	107	104	108	105	102	104	101	99	90
5.00	112	109	106	110	107	104	105	103	101	92
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:2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	



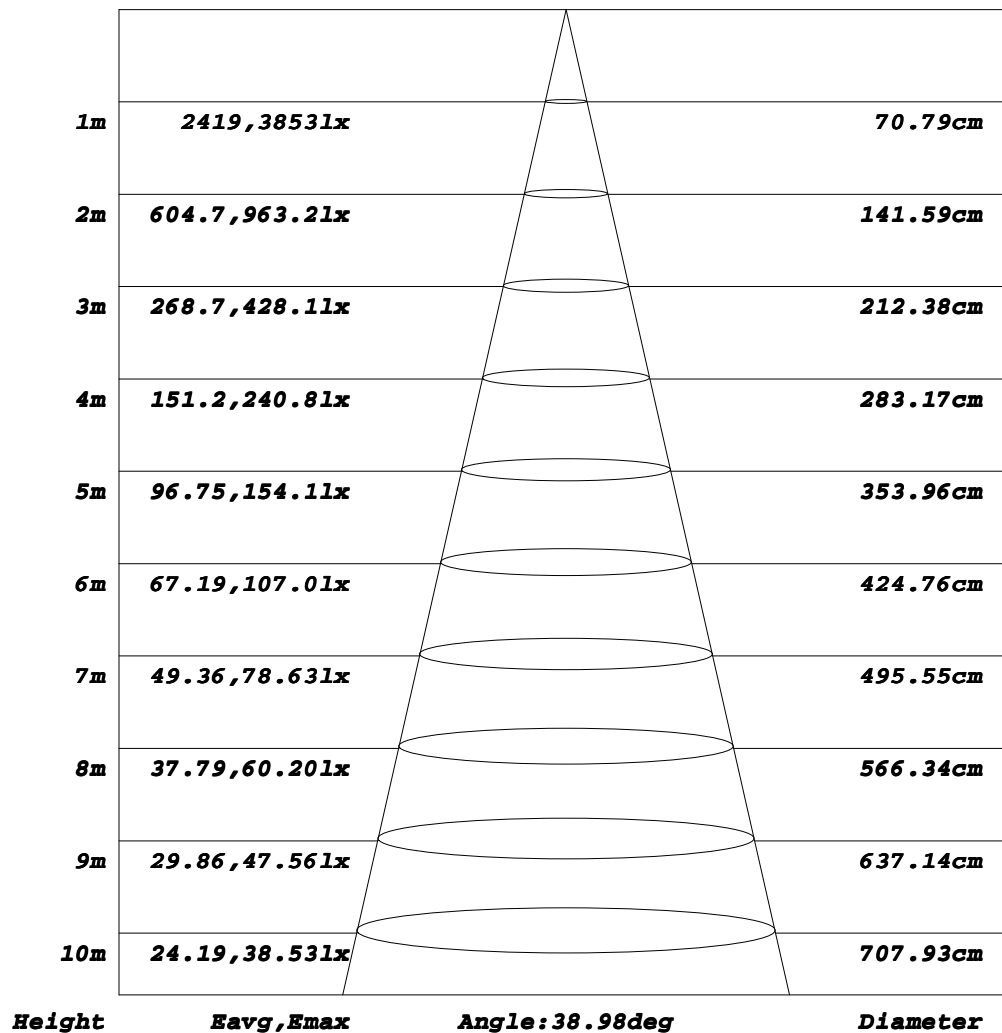
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

AAI Figure

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetrlc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	

Flux out:1007 lm



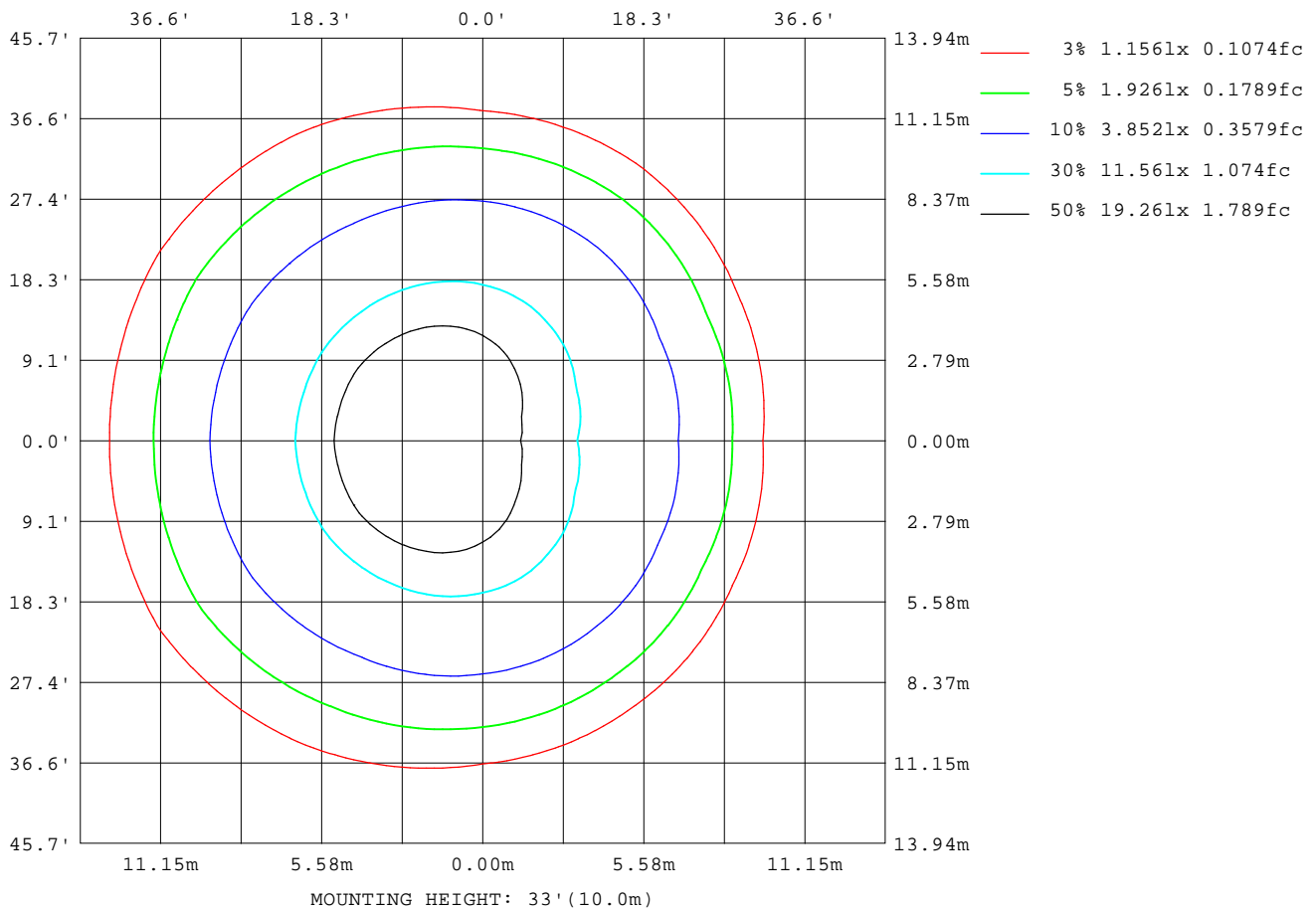
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

ISOLUX DIAGRAM

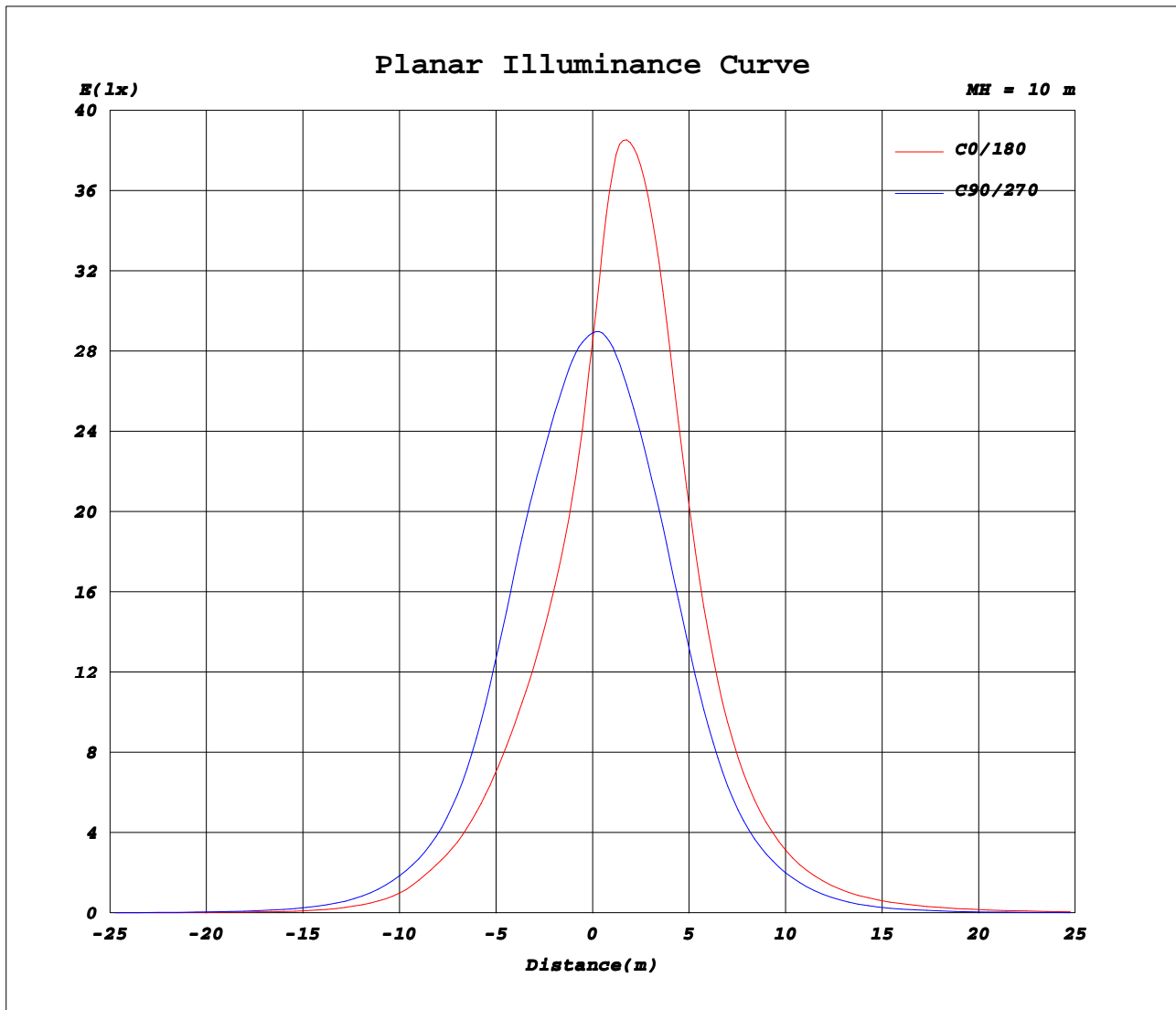
Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-22

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-22

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.50V I:0.1310A P:27.300W PF:0.9460 Freq:50.00Hz Lamp Flux:3557.13x1 lm		
NAME: LC-LL1603-30W-Asymmetriclc	TYPE:LED	
MFR.: LOW-CARBON	DIM.: 650*40*95mm	

Table--1

UNIT: cd

C(DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	2849	2896	2887	2891	2885	2851	2849	2896	2887	2891	2885	2851							
5	2197	2291	2514	2824	3159	3452	3633	3568	3245	2882	2539	2270							
10	1788	1911	2224	2672	3170	3676	4034	3801	3289	2755	2276	1911							
15	1501	1631	1989	2490	3052	3637	4060	3744	3155	2575	2050	1655							
20	1266	1402	1757	2258	2799	3405	3735	3459	2870	2323	1804	1422							
25	1052	1172	1488	1898	2368	2868	3067	2909	2437	1974	1531	1184							
30	842	936	1184	1475	1817	2199	2346	2239	1900	1559	1235	946							
35	644	710	873	1074	1305	1606	1729	1622	1380	1155	942	719							
40	475	503	619	761	927	1172	1255	1181	973	824	683	522							
45	283	325	415	526	665	859	890	861	701	569	476	353							
50	159	179	240	323	474	608	609	609	505	356	292	200							
55	79.8	96.7	124	180	313	406	403	403	334	193	149	109							
60	48.3	57.3	69.7	97.5	194	259	266	255	202	106	83.2	64.4							
65	36.6	41.0	46.4	54.2	116	158	173	156	120	61.1	53.9	46.2							
70	29.0	31.6	35.1	34.9	67.0	92.4	106	91.2	69.5	38.9	39.9	36.1							
75	22.6	24.4	26.1	24.2	36.8	50.6	60.8	50.9	39.7	27.2	30.2	28.3							
80	16.5	17.6	18.1	16.3	18.0	23.9	30.9	26.0	21.4	19.2	21.9	21.3							
85	11.5	11.8	11.1	9.65	7.72	8.01	12.4	11.2	11.5	12.6	14.9	15.2							
90	8.02	7.47	5.98	4.27	3.80	3.66	7.28	7.22	7.29	7.72	9.49	10.6							
95	8.46	7.64	6.48	5.26	4.62	4.33	7.91	7.86	7.97	8.44	9.29	10.2							
100	10.3	9.40	8.01	6.61	5.71	5.23	8.66	8.65	8.84	9.50	10.4	11.5							
105	12.6	11.6	9.95	8.28	7.10	6.41	9.56	9.57	9.88	10.8	11.9	13.1							
110	15.3	14.1	12.2	10.3	8.77	7.85	10.6	10.7	11.1	12.3	13.6	14.9							
115	18.2	16.9	14.8	12.5	10.8	9.60	11.9	12.0	12.7	14.0	15.5	17.1							
120	21.3	20.0	17.6	15.1	13.1	11.7	13.4	13.7	14.5	16.1	17.8	19.6							
125	24.6	23.1	20.6	17.9	15.7	14.2	15.3	15.6	16.6	18.3	20.3	22.3							
130	28.0	26.4	23.8	21.0	18.7	17.0	17.4	17.8	18.9	20.8	23.0	25.2							
135	31.2	29.5	26.8	24.0	21.7	20.0	19.7	20.2	21.4	23.5	25.7	28.1							
140	34.1	32.5	29.6	27.1	24.8	23.1	22.1	22.7	24.0	26.2	28.4	30.9							
145	36.5	35.2	32.2	30.0	27.8	26.0	24.6	25.3	26.8	29.0	30.8	33.5							
150	38.5	37.4	34.5	32.6	30.6	28.7	27.2	27.8	29.5	31.5	33.1	35.6							
155	39.8	38.9	36.5	35.1	33.3	31.5	30.0	30.5	32.1	33.8	35.1	37.2							
160	40.4	39.8	38.1	37.3	35.9	34.2	33.0	33.3	34.7	36.0	36.7	38.1							
165	40.8	40.4	39.6	39.2	38.2	37.0	36.0	36.2	37.3	38.1	38.3	39.0							
170	41.3	41.1	40.9	40.8	40.3	39.4	38.9	38.8	39.6	40.0	40.0	40.0							
175	41.8	41.9	41.9	42.0	41.7	41.2	40.8	40.8	41.2	41.4	41.4	41.0							
180	42.0	42.2	42.3	42.4	42.3	42.0	42.1	42.1	42.3	42.3	42.3	41.9							

C Range: 0 - 360DEG

C Interval: 30.0DEG

Test Speed: HIGH

Temperature:25.3DEG

Operators:DAMIN

Test Date:2018-12-22

γ Range: 0 - 180DEG

γ Interval: 1.0DEG

Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.406.11

Humidity:65.0%

Test Distance:8.000m [K=0.7063]

Remarks: