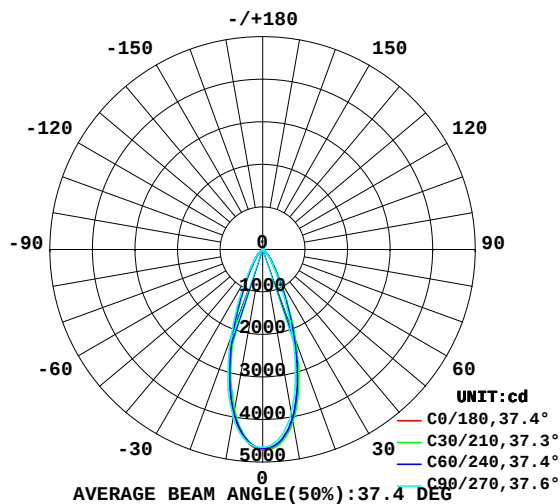


LUMINAIRE PHOTOMETRIC TEST REPORT

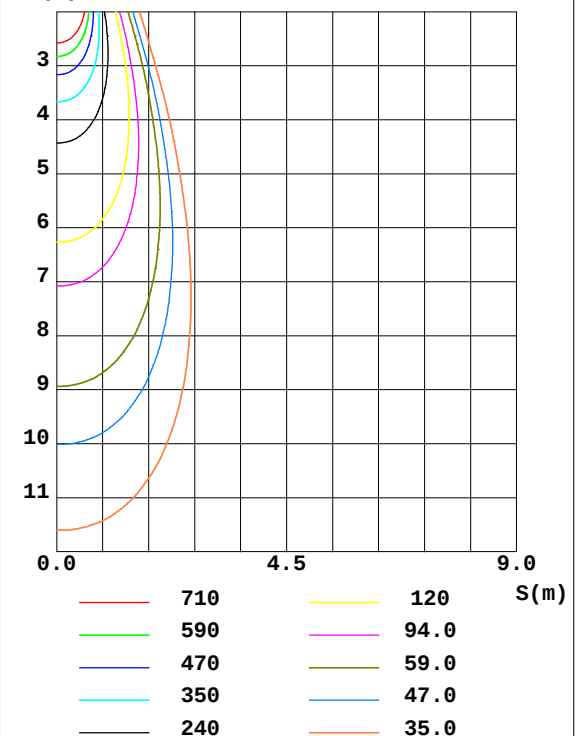
Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	TYPE: LED	
MFR.:		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 122.55 lm/W			
MODEL	PS-TL20W40KD3880RA-G	I _{max} (cd)	4710	S/MH(C0/180)	0.62
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.59
RATED VOLTAGE(V)	222	TOTAL FLUX(lm)	2352.9	η UP, DN(C0-180)	1.8, 46.4
NOMINAL FLUX(lm)	2352.88	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.8, 50.0
LAMPS INSIDE	1	η up(%)	3.5	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	221.1	η down(%)	96.5	CIBSE SHR MAX	0.60

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: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
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	4079	4066	3893	3675	3919	3859	3994	4199	0- 10	412.4	412.4	17.5,17.5
20	2202	2201	1978	1730	1989	1962	2182	2467	10- 20	841.0	1253	53.3,53.3
30	731.2	728.5	641.9	554.8	646.4	648.3	746.9	876.5	20- 30	577.2	1831	77.8,77.8
40	275.6	268.9	241.8	211.9	249.5	245.6	278.6	314.4	30- 40	266.0	2097	89.1,89.1
50	83.81	80.73	69.86	54.61	74.30	69.99	84.15	103.6	40- 50	119.8	2216	94.2,94.2
60	15.22	15.30	13.57	11.96	15.16	15.31	16.92	18.86	50- 60	32.34	2249	95.6,95.6
70	7.428	7.499	7.135	6.158	9.084	9.415	9.802	10.28	60- 70	11.08	2260	96,96
80	2.716	2.838	2.214	1.614	5.443	5.444	5.858	6.287	70- 80	6.547	2266	96.3,96.3
90	1.849	1.943	2.103	2.166	5.551	5.545	5.428	5.258	80- 90	3.825	2270	96.5,96.5
100	3.205	3.344	3.690	3.891	6.378	6.374	6.250	6.062	90-100	4.646	2275	96.7,96.7
110	5.966	6.165	6.726	7.094	7.863	7.844	7.614	7.327	100-110	6.230	2281	96.9,96.9
120	10.14	10.34	10.99	11.49	10.34	10.32	9.947	9.517	110-120	8.565	2290	97.3,97.3
130	15.19	15.26	15.80	16.46	14.26	14.16	13.57	12.96	120-130	11.15	2301	97.8,97.8
140	20.43	20.40	20.72	21.56	19.57	19.38	18.49	17.86	130-140	13.26	2314	98.3,98.3
150	26.06	25.79	25.73	26.79	25.77	25.30	24.03	23.70	140-150	14.12	2328	98.9,98.9
160	31.29	30.67	30.29	30.88	31.06	30.02	28.84	28.87	150-160	12.88	2341	99.5,99.5
170	33.15	32.15	31.43	31.50	32.53	31.04	30.27	30.69	160-170	8.809	2350	99.9,99.9
180	33.92	32.49	31.64	31.96	34.01	32.51	31.57	31.97	170-180	3.027	2353	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

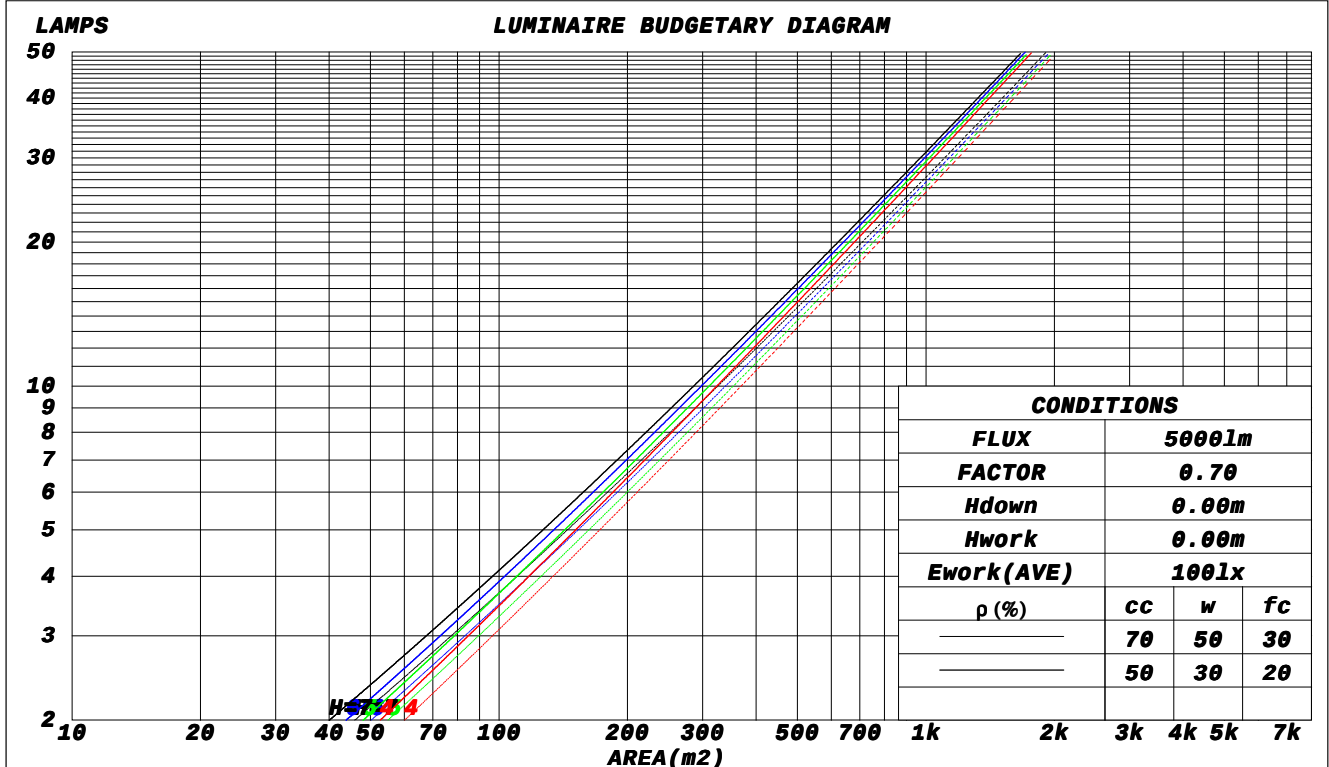
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-11-07

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE G0-2000B_V1 SYSTEM V2.0.267
 Humidity:65.0%
 Test Distance:8.000m [K=0.7063]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	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															



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

WEC AND CCEC

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm											
NAME: PS-TL20W40KD3880RA-G						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						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.170	.097	.031	.162	.093	.029	.148	.085	.027	.134	.078	.025	.122	.071	.023		
2.0	.161	.088	.027	.154	.085	.026	.142	.079	.024	.130	.073	.023	.120	.068	.021		
3.0	.151	.081	.024	.146	.078	.024	.135	.073	.022	.125	.069	.021	.116	.064	.020		
4.0	.143	.074	.022	.138	.072	.021	.129	.068	.020	.120	.065	.020	.112	.061	.019		
5.0	.136	.069	.020	.131	.067	.020	.123	.064	.019	.116	.061	.018	.109	.058	.017		
6.0	.129	.065	.019	.125	.063	.018	.118	.060	.018	.111	.058	.017	.105	.055	.016		
7.0	.123	.061	.017	.119	.060	.017	.113	.057	.016	.107	.055	.016	.101	.053	.015		
8.0	.117	.057	.016	.114	.056	.016	.108	.054	.015	.103	.052	.015	.098	.050	.015		
9.0	.112	.054	.015	.109	.053	.015	.104	.051	.015	.099	.050	.014	.095	.048	.014		
10.0	.107	.051	.014	.105	.051	.014	.100	.049	.014	.096	.047	.014	.091	.046	.013		

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	.217	.217	.217	.186	.186	.186	.127	.127	.127	.073	.073	.073	.023	.023	.023	
1.0	.198	.184	.172	.169	.158	.148	.116	.109	.103	.067	.063	.060	.021	.020	.019	
2.0	.182	.160	.141	.156	.137	.122	.107	.095	.085	.062	.055	.050	.020	.018	.016	
3.0	.169	.141	.118	.145	.121	.103	.099	.084	.072	.057	.049	.042	.018	.016	.014	
4.0	.158	.126	.102	.136	.109	.088	.093	.076	.062	.054	.044	.037	.017	.014	.012	
5.0	.149	.114	.089	.128	.099	.077	.088	.069	.055	.051	.041	.032	.016	.013	.011	
6.0	.141	.105	.079	.121	.091	.069	.084	.064	.049	.049	.037	.029	.016	.012	.010	
7.0	.134	.097	.071	.116	.084	.062	.080	.059	.044	.046	.035	.026	.015	.011	.009	
8.0	.128	.091	.065	.111	.079	.057	.077	.055	.040	.045	.033	.024	.014	.011	.008	
9.0	.123	.086	.060	.106	.074	.053	.074	.052	.037	.043	.031	.022	.014	.010	.007	
10.0	.119	.081	.056	.102	.071	.049	.071	.050	.035	.041	.029	.021	.013	.010	.007	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-11-07

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

Uncorrected UGR Table

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm										
NAME: PS-TL20W40KD3880RA-G					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	18.5	19.4	18.8	19.6	19.8	17.9	18.8	18.2	19.0	19.2
3H	18.4	19.2	18.7	19.5	19.7	17.8	18.6	18.1	18.8	19.1
4H	18.4	19.1	18.7	19.4	19.7	17.8	18.5	18.1	18.8	19.1
6H	18.3	19.0	18.7	19.3	19.6	17.7	18.4	18.0	18.7	19.0
8H	18.3	18.9	18.6	19.2	19.6	17.6	18.3	18.0	18.6	18.9
12H	18.2	18.8	18.6	19.2	19.5	17.6	18.2	18.0	18.6	18.9
4H 2H	18.3	19.1	18.7	19.3	19.6	17.7	18.5	18.0	18.7	19.0
3H	18.2	18.9	18.6	19.2	19.5	17.6	18.3	18.0	18.6	18.9
4H	18.2	18.7	18.6	19.1	19.5	17.6	18.2	18.0	18.5	18.9
6H	18.1	18.6	18.5	19.0	19.4	17.5	18.0	17.9	18.4	18.8
8H	18.1	18.5	18.5	18.9	19.4	17.5	17.9	17.9	18.4	18.8
12H	18.0	18.5	18.5	18.9	19.3	17.4	17.9	17.9	18.3	18.8
8H 4H	18.0	18.5	18.5	18.9	19.4	17.5	17.9	17.9	18.3	18.8
6H	18.0	18.4	18.5	18.8	19.3	17.4	17.8	17.9	18.2	18.7
8H	17.9	18.3	18.4	18.8	19.3	17.4	17.7	17.9	18.2	18.7
12H	17.9	18.2	18.4	18.7	19.2	17.3	17.6	17.9	18.1	18.7
12H 4H	18.0	18.4	18.5	18.8	19.3	17.4	17.8	17.9	18.3	18.7
6H	17.9	18.3	18.4	18.7	19.3	17.3	17.7	17.8	18.2	18.7
8H	17.9	18.2	18.4	18.7	19.2	17.3	17.6	17.8	18.1	18.6
Variations with the observer position at spacings:										
S = 1.0H	+ 2.3 / - 6.8					+ 2.3 / - 6.7				
1.5H	+ 3.4 / - 5.7					+ 3.2 / - 5.5				
2.0H	+ 5.3 / - 5.3					+ 5.0 / - 5.0				

CIE Pub.117 Corrected 2353 lm Total Lamp Luminous Flux. (8log(F/F0) = 3.0)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	TYPE: LED	
MFR.:		

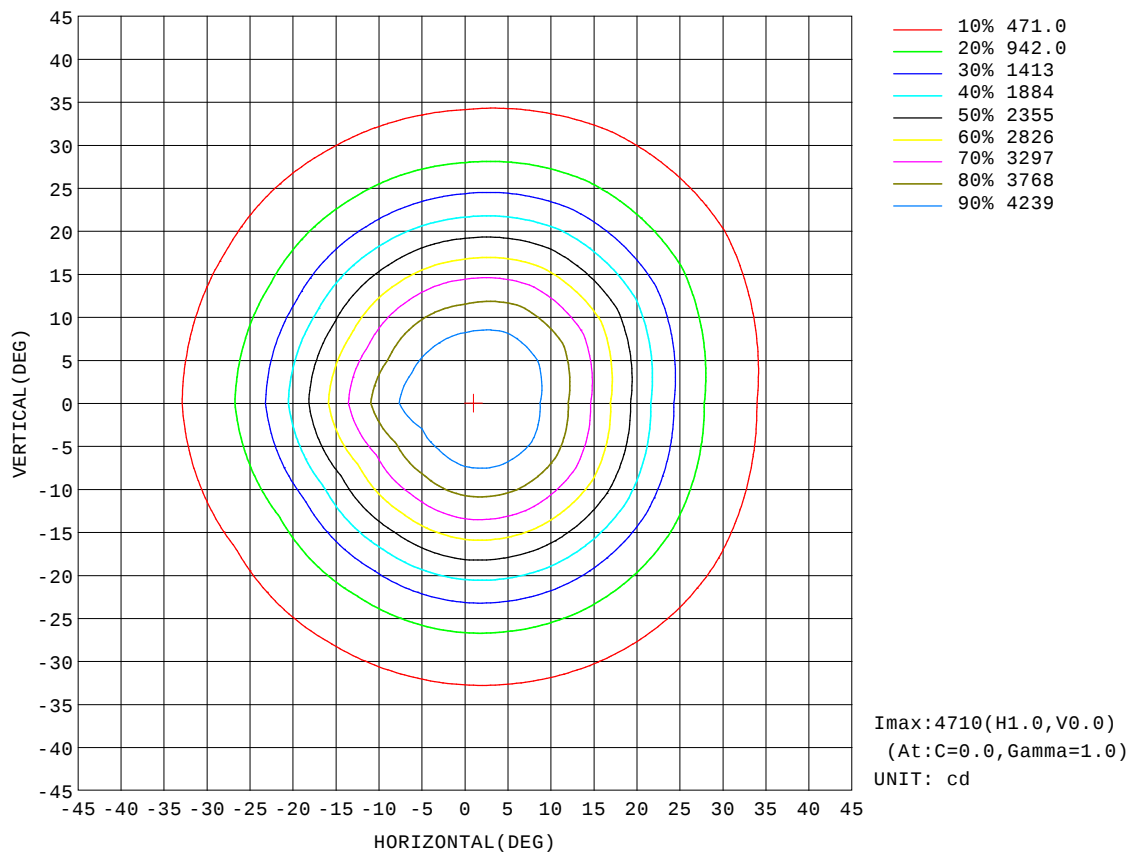
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	85	78	74	84	78	74	83	77	74	70
0.80	92	86	82	91	86	82	90	85	82	77
1.00	97	91	87	96	91	87	94	90	86	82
1.25	101	96	92	100	95	91	98	93	90	86
1.50	104	99	95	103	98	95	100	96	93	88
2.00	107	102	99	105	101	98	102	99	96	90
2.50	109	105	101	107	103	100	103	100	98	91
3.00	110	107	104	108	105	102	104	102	100	92
4.00	112	109	107	110	108	105	106	104	102	94
5.00	114	111	109	111	109	107	107	105	104	95
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: 2018-11-07

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

ISOCANDELA DIAGRAM

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	TYPE: LED	
MFR.:		



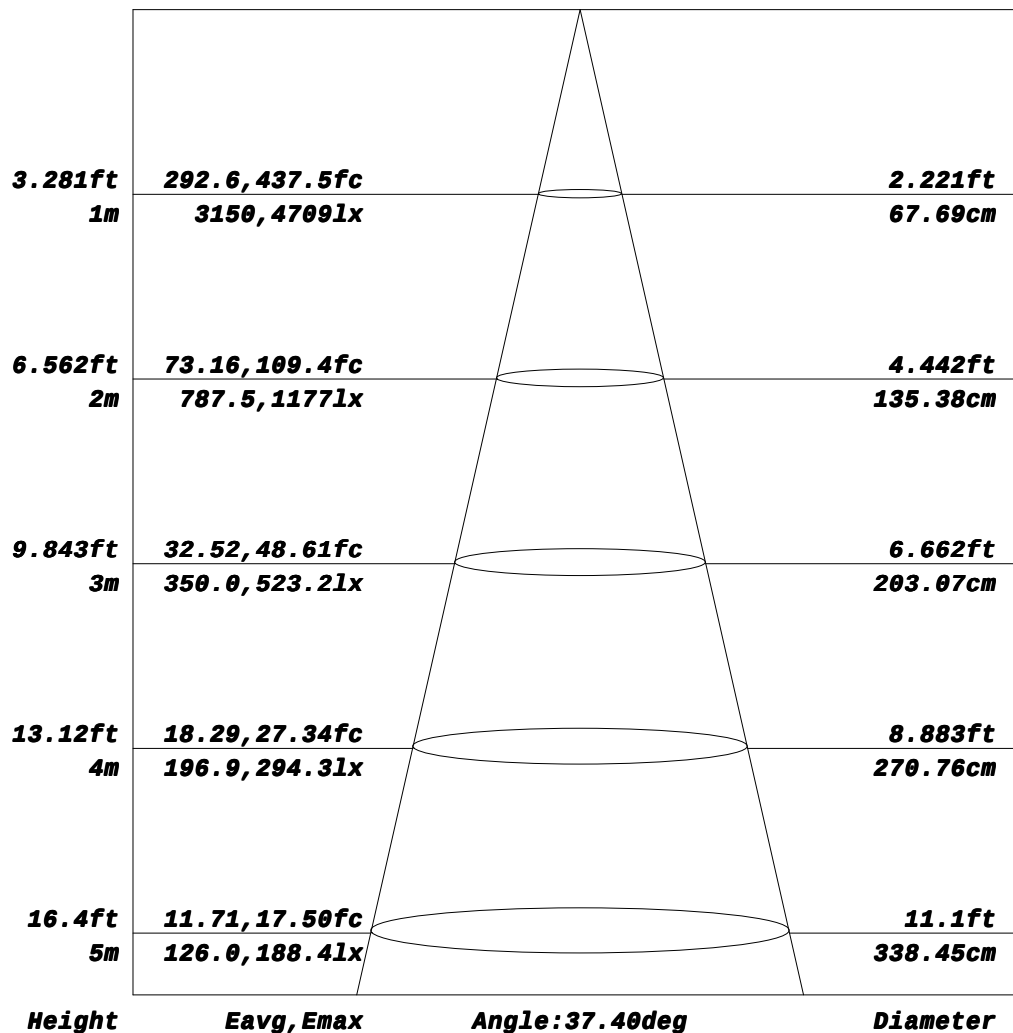
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

AAI Figure

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	TYPE: LED	
MFR.:		

Flux out:1173 lm



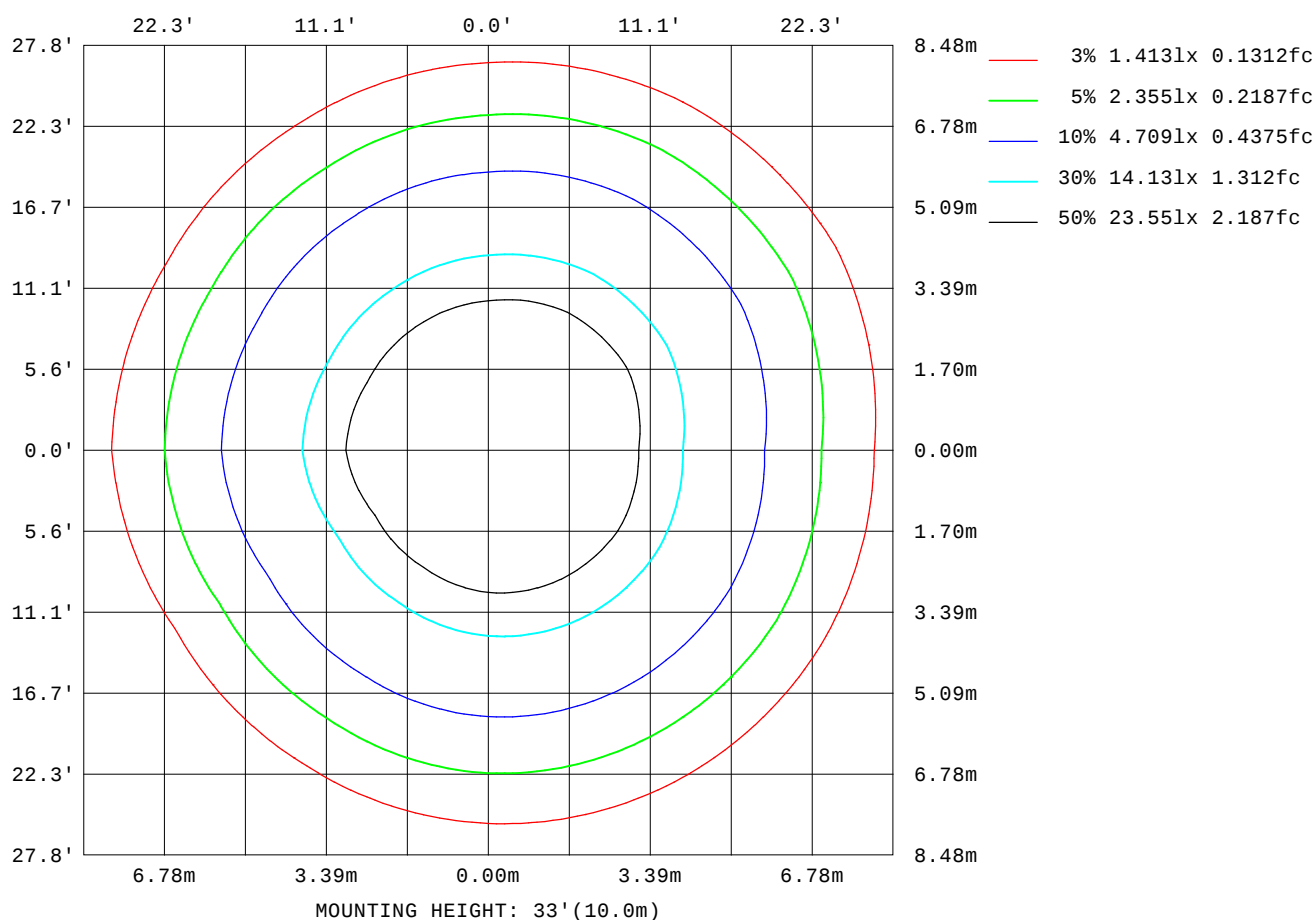
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

ISOLUX DIAGRAM

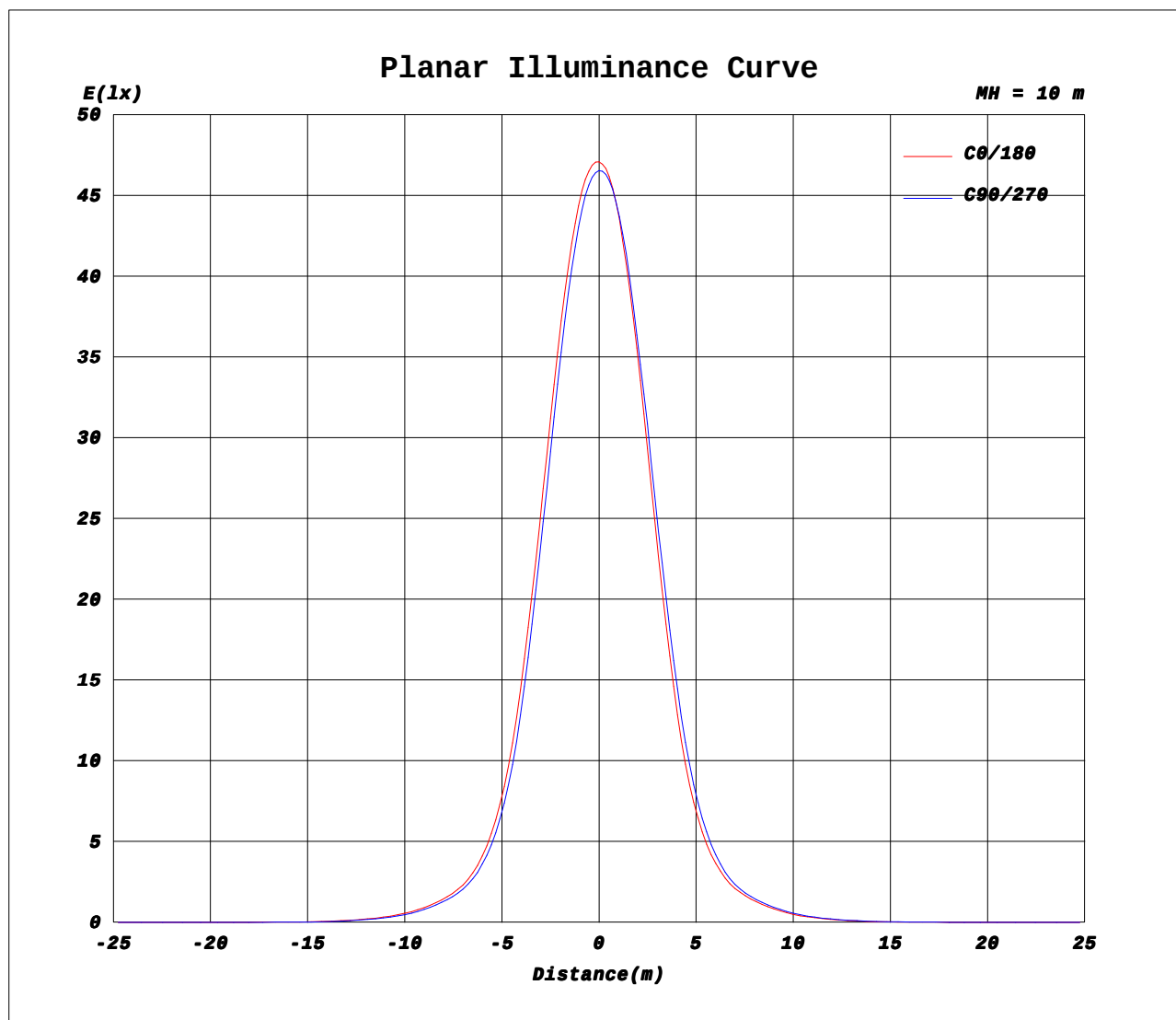
Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm		
NAME: PS-TL20W40KD3880RA-G	TYPE: LED	
MFR.:		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
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: 2018-11-07

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:221.1V I:0.0940A P:19.20W PF:0.9190 Lamp Flux:2352.88x1 lm																	
NAME: PS-TL20W40KD3880RA-G									TYPE: LED								
MFR.:																	

Table--1

UNIT: cd

γ (DEG)	C (DEG)																	
	0	30	60	90	120	150	180	210	240	270	300	330						
0	4709	4692	4673	4654	4638	4634	4709	4692	4673	4654	4638	4634						
5	4584	4589	4539	4465	4361	4327	4512	4451	4483	4513	4586	4600						
10	4079	4105	4028	3893	3708	3642	3919	3813	3905	3994	4184	4215						
15	3222	3276	3163	2987	2764	2680	3011	2913	3020	3173	3423	3476						
20	2202	2250	2151	1978	1771	1688	1989	1906	2017	2182	2440	2494						
25	1301	1336	1258	1145	1001	954	1146	1101	1173	1317	1505	1559						
30	731	754	703	642	566	544	646	628	669	747	865	888						
35	423	430	404	378	341	332	384	368	389	431	492	506						
40	276	275	263	242	215	209	249	239	252	279	309	319						
45	160	163	151	136	116	113	143	133	145	161	191	197						
50	83.8	83.5	78.0	69.9	54.9	54.3	74.3	65.3	74.7	84.1	101	106						
55	33.9	35.2	31.4	24.6	20.0	19.0	26.7	25.9	27.8	34.0	43.9	48.8						
60	15.2	15.6	15.0	13.6	12.2	11.7	15.2	14.9	15.7	16.9	18.7	19.0						
65	10.3	10.6	10.2	9.69	8.91	8.44	11.5	11.5	11.9	12.3	13.0	13.1						
70	7.43	7.60	7.40	7.13	6.42	5.90	9.08	9.22	9.60	9.80	10.2	10.3						
75	5.06	5.26	5.18	4.80	4.10	3.78	7.29	7.31	7.68	7.83	8.23	8.34						
80	2.72	2.96	2.71	2.21	1.68	1.55	5.44	5.32	5.57	5.86	6.21	6.36						
85	1.55	1.59	1.68	1.74	1.77	1.72	5.18	5.20	5.14	5.03	4.91	4.84						
90	1.85	1.89	2.00	2.10	2.19	2.14	5.55	5.58	5.51	5.43	5.28	5.24						
95	2.39	2.42	2.58	2.74	2.89	2.85	5.94	5.95	5.90	5.81	5.68	5.63						
100	3.20	3.24	3.45	3.69	3.90	3.88	6.38	6.41	6.34	6.25	6.09	6.04						
105	4.40	4.43	4.71	5.03	5.32	5.31	7.00	7.05	6.95	6.83	6.63	6.56						
110	5.97	6.01	6.32	6.73	7.09	7.10	7.86	7.90	7.79	7.61	7.38	7.28						
115	7.91	7.95	8.30	8.75	9.17	9.20	8.96	9.00	8.82	8.64	8.32	8.23						
120	10.1	10.2	10.5	11.0	11.5	11.5	10.3	10.4	10.2	9.95	9.58	9.46						
125	12.6	12.5	12.9	13.3	13.9	13.9	12.1	12.2	11.9	11.6	11.1	11.0						
130	15.2	15.1	15.4	15.8	16.4	16.5	14.3	14.3	14.0	13.6	13.0	12.9						
135	17.8	17.7	17.9	18.3	18.9	19.1	16.7	16.8	16.4	15.9	15.3	15.2						
140	20.4	20.3	20.5	20.7	21.4	21.7	19.6	19.6	19.2	18.5	17.9	17.8						
145	23.2	23.0	23.1	23.2	23.9	24.5	22.6	22.6	22.0	21.4	20.8	20.7						
150	26.1	25.9	25.7	25.7	26.4	27.2	25.8	25.7	24.9	24.0	23.7	23.7						
155	28.9	28.7	28.2	28.2	28.7	29.6	28.7	28.5	27.5	26.7	26.4	26.7						
160	31.3	31.0	30.4	30.3	30.5	31.3	31.1	30.5	29.6	28.8	28.7	29.0						
165	32.7	32.3	31.5	31.3	31.3	31.8	32.3	31.3	30.6	30.0	30.1	30.5						
170	33.1	32.5	31.8	31.4	31.3	31.7	32.5	31.4	30.7	30.3	30.4	31.0						
175	33.6	32.9	31.9	31.6	31.5	32.1	32.9	31.7	31.0	30.5	30.7	31.4						
180	33.9	33.0	32.0	31.6	31.6	32.3	34.0	32.9	32.1	31.6	31.7	32.3						

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-11-07

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks: