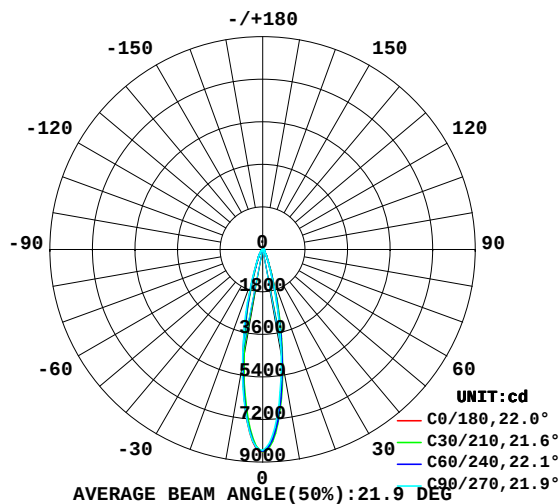


LUMINAIRE PHOTOMETRIC TEST REPORT

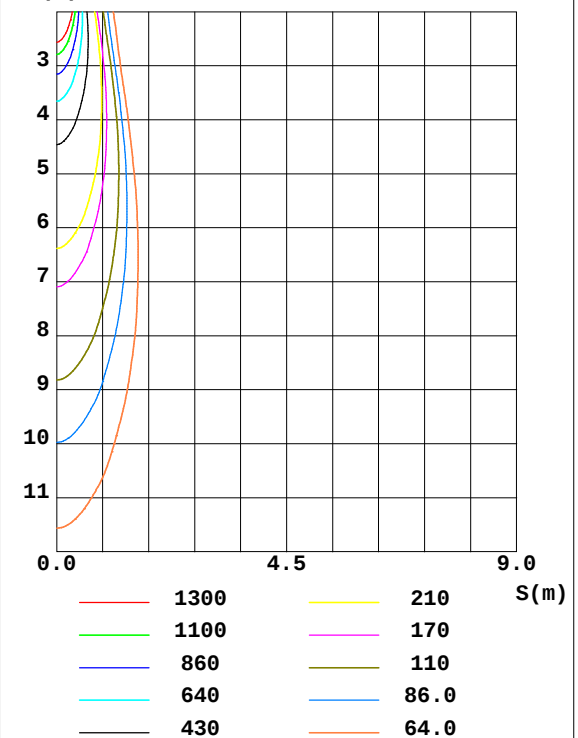
Test:U:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	TYPE: LED	
MFR.:		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 99.89 lm/W			
MODEL	PS-TL20W40KD2480RA-D	I _{max} (cd)	8557	S/MH(C0/180)	0.37
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.36
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	1937.9	η UP, DN(C0-180)	1.7, 45.4
NOMINAL FLUX(lm)	1937.93	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.7, 51.2
LAMPS INSIDE	1	η up(%)	3.4	CIBSE SHR NOM	0.00
TEST VOLTAGE(V)	220.6	η down(%)	96.6	CIBSE SHR MAX	1.00

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	4719	4827	4522	4138	4817	4684	4923	5301	0- 10	609.4	609.4	31.4,31.4
20	1082	1080	996.6	917.1	1100	1083	1202	1379	10- 20	692.6	1302	67.2,67.2
30	345.2	337.9	326.6	311.5	353.5	348.4	376.4	413.3	20- 30	278.1	1580	81.5,81.5
40	136.0	131.6	128.9	124.0	137.0	139.4	153.5	172.9	30- 40	143.6	1724	88.9,88.9
50	60.84	62.27	58.42	59.99	64.93	61.33	68.56	74.28	40- 50	72.14	1796	92.7,92.7
60	32.44	31.14	29.15	30.44	36.00	32.37	34.09	37.01	50- 60	41.87	1838	94.8,94.8
70	13.46	13.21	11.71	11.33	17.37	15.60	16.59	17.79	60- 70	23.10	1861	96,96
80	1.262	1.288	1.184	1.108	4.602	4.614	4.631	4.920	70- 80	7.896	1869	96.4,96.4
90	1.205	1.208	1.262	1.296	4.809	4.771	4.722	4.726	80- 90	3.093	1872	96.6,96.6
100	1.973	1.980	2.081	2.152	4.873	4.837	4.801	4.814	90-100	3.489	1875	96.8,96.8
110	3.918	3.965	4.202	4.396	5.687	5.656	5.560	5.477	100-110	4.238	1880	97,97
120	7.810	7.885	8.219	8.480	7.992	7.984	7.816	7.650	110-120	6.254	1886	97.3,97.3
130	12.32	12.32	12.53	12.84	10.68	10.65	10.44	10.28	120-130	8.723	1895	97.8,97.8
140	16.48	16.40	16.47	16.93	14.98	14.92	14.54	14.23	130-140	10.36	1905	98.3,98.3
150	21.47	21.27	20.68	21.83	21.29	21.11	20.09	20.28	140-150	11.41	1916	98.9,98.9
160	27.54	26.95	25.63	27.20	27.35	26.56	24.73	25.94	150-160	10.96	1927	99.5,99.5
170	30.66	29.46	28.10	28.56	29.79	28.20	26.84	28.08	160-170	7.953	1935	99.9,99.9
180	28.20	26.79	25.94	26.40	28.23	26.80	25.91	26.41	170-180	2.652	1938	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

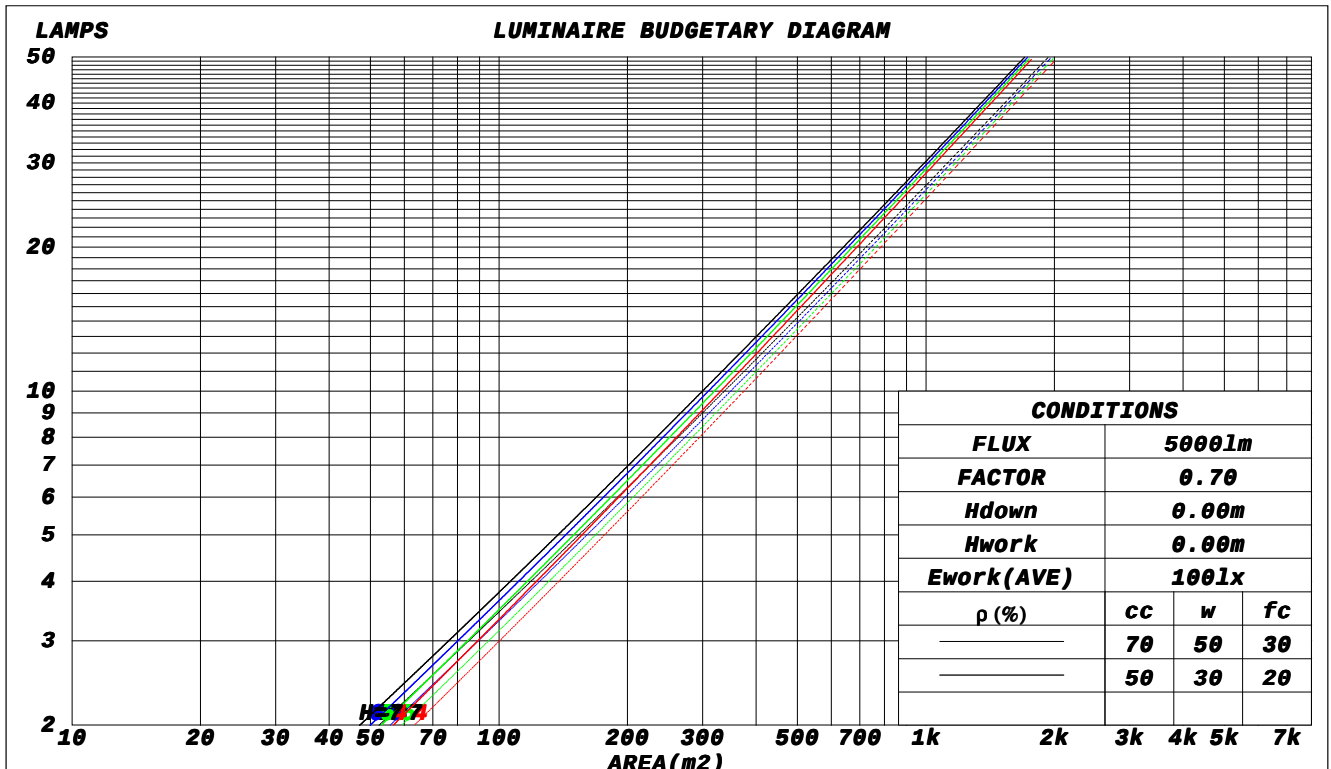
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-11-07

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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	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	1.04	1.04	1.04	.99	.99	.99	.97
1.0	1.11	1.09	1.07	1.08	1.07	1.05	1.04	1.02	1.01	.99	.98	.97	.96	.95	.94	.92
2.0	1.05	1.01	.98	1.03	.99	.97	.99	.96	.94	.95	.93	.92	.92	.91	.89	.88
3.0	.99	.95	.91	.97	.94	.90	.94	.91	.89	.92	.89	.87	.89	.87	.85	.84
4.0	.94	.90	.86	.93	.89	.85	.90	.87	.84	.88	.85	.83	.86	.83	.81	.80
5.0	.90	.85	.82	.89	.84	.81	.87	.83	.80	.85	.82	.79	.83	.80	.78	.77
6.0	.86	.81	.78	.85	.81	.77	.84	.80	.77	.82	.79	.76	.80	.77	.75	.74
7.0	.83	.78	.75	.82	.77	.74	.81	.77	.74	.79	.76	.73	.78	.75	.72	.71
8.0	.80	.75	.72	.79	.75	.71	.78	.74	.71	.77	.73	.71	.76	.72	.70	.69
9.0	.77	.72	.69	.76	.72	.69	.75	.71	.69	.74	.71	.68	.73	.70	.68	.67
10.0	.74	.70	.67	.74	.70	.67	.73	.69	.66	.72	.69	.66	.71	.68	.66	.65



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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm											
NAME: PS-TL20W40KD2480RA-D						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	.159	.090	.029	.151	.086	.027	.137	.078	.025	.123	.071	.023	.111	.064	.021	
2.0	.148	.081	.025	.142	.078	.024	.130	.072	.022	.118	.066	.021	.108	.061	.019	
3.0	.139	.074	.022	.133	.071	.021	.123	.067	.020	.113	.062	.019	.104	.058	.018	
4.0	.130	.068	.020	.125	.066	.019	.116	.062	.018	.108	.058	.017	.100	.054	.017	
5.0	.122	.062	.018	.118	.061	.018	.110	.057	.017	.103	.054	.016	.096	.051	.015	
6.0	.115	.058	.017	.112	.056	.016	.105	.054	.016	.098	.051	.015	.092	.049	.014	
7.0	.109	.054	.015	.106	.053	.015	.100	.050	.015	.094	.048	.014	.089	.046	.014	
8.0	.104	.051	.014	.101	.050	.014	.095	.048	.014	.090	.046	.013	.085	.044	.013	
9.0	.099	.048	.013	.096	.047	.013	.091	.045	.013	.086	.043	.012	.082	.042	.012	
10.0	.094	.045	.013	.092	.044	.012	.087	.043	.012	.083	.041	.012	.079	.040	.011	

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	.185	.185	.185	.126	.126	.126	.073	.073	.073	.023	.023	.023	
1.0	.196	.184	.172	.168	.158	.148	.115	.108	.103	.066	.063	.060	.021	.020	.019	
2.0	.179	.159	.142	.154	.137	.123	.105	.095	.085	.061	.055	.050	.019	.018	.016	
3.0	.166	.140	.119	.142	.121	.103	.098	.084	.073	.056	.049	.043	.018	.016	.014	
4.0	.154	.125	.103	.132	.108	.089	.091	.075	.063	.053	.044	.037	.017	.014	.012	
5.0	.144	.113	.090	.124	.098	.078	.085	.068	.055	.049	.040	.033	.016	.013	.011	
6.0	.136	.103	.080	.117	.089	.070	.080	.063	.049	.047	.037	.029	.015	.012	.010	
7.0	.128	.095	.072	.110	.083	.063	.076	.058	.045	.044	.034	.027	.014	.011	.009	
8.0	.122	.089	.066	.105	.077	.058	.073	.054	.041	.042	.032	.024	.014	.010	.008	
9.0	.116	.083	.061	.100	.072	.053	.069	.051	.038	.040	.030	.023	.013	.010	.007	
10.0	.111	.079	.057	.096	.068	.050	.067	.048	.035	.039	.028	.021	.013	.009	.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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm										
NAME: PS-TL20W40KD2480RA-D						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	16.3	17.0	16.5	17.2	17.4	15.9	16.6	16.1	16.8	17.0
3H	16.6	17.3	16.9	17.6	17.8	16.2	16.9	16.5	17.1	17.4
4H	16.7	17.3	17.0	17.6	17.9	16.2	16.9	16.5	17.1	17.4
6H	16.6	17.2	16.9	17.5	17.8	16.1	16.7	16.5	17.0	17.3
8H	16.5	17.1	16.9	17.4	17.8	16.1	16.7	16.4	17.0	17.3
12H	16.5	17.1	16.9	17.4	17.7	16.0	16.6	16.4	16.9	17.3
4H 2H	16.4	17.0	16.7	17.3	17.6	16.0	16.7	16.4	17.0	17.2
3H	16.8	17.4	17.2	17.7	18.1	16.4	17.0	16.8	17.3	17.7
4H	16.9	17.4	17.3	17.7	18.1	16.5	17.0	16.9	17.3	17.7
6H	16.8	17.2	17.2	17.6	18.0	16.4	16.8	16.8	17.2	17.6
8H	16.7	17.2	17.2	17.6	18.0	16.3	16.7	16.8	17.2	17.6
12H	16.7	17.1	17.1	17.5	18.0	16.3	16.7	16.7	17.1	17.6
8H 4H	16.8	17.2	17.2	17.6	18.0	16.4	16.8	16.8	17.2	17.6
6H	16.7	17.0	17.2	17.5	18.0	16.3	16.6	16.8	17.1	17.6
8H	16.6	16.9	17.1	17.4	17.9	16.2	16.5	16.7	17.0	17.5
12H	16.6	16.9	17.1	17.3	17.9	16.2	16.4	16.7	16.9	17.5
12H 4H	16.7	17.1	17.2	17.5	18.0	16.3	16.7	16.8	17.1	17.6
6H	16.6	16.9	17.1	17.4	17.9	16.2	16.5	16.7	17.0	17.5
8H	16.6	16.8	17.1	17.3	17.9	16.2	16.4	16.7	16.9	17.5
Variations with the observer position at spacings:										
S = 1.0H	+ 1.2 / - 1.6					+ 1.2 / - 1.7				
1.5H	+ 2.0 / - 1.2					+ 1.9 / - 1.1				
2.0H	+ 1.7 / - 1.3					+ 1.8 / - 1.4				

CIE Pub.117 Corrected 1938 lm Total Lamp Luminous Flux. (8log(F/F0) = 2.3)

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:

UTILIZATION FACTORS TABLE

Test:U:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	TYPE: LED	
MFR.:		

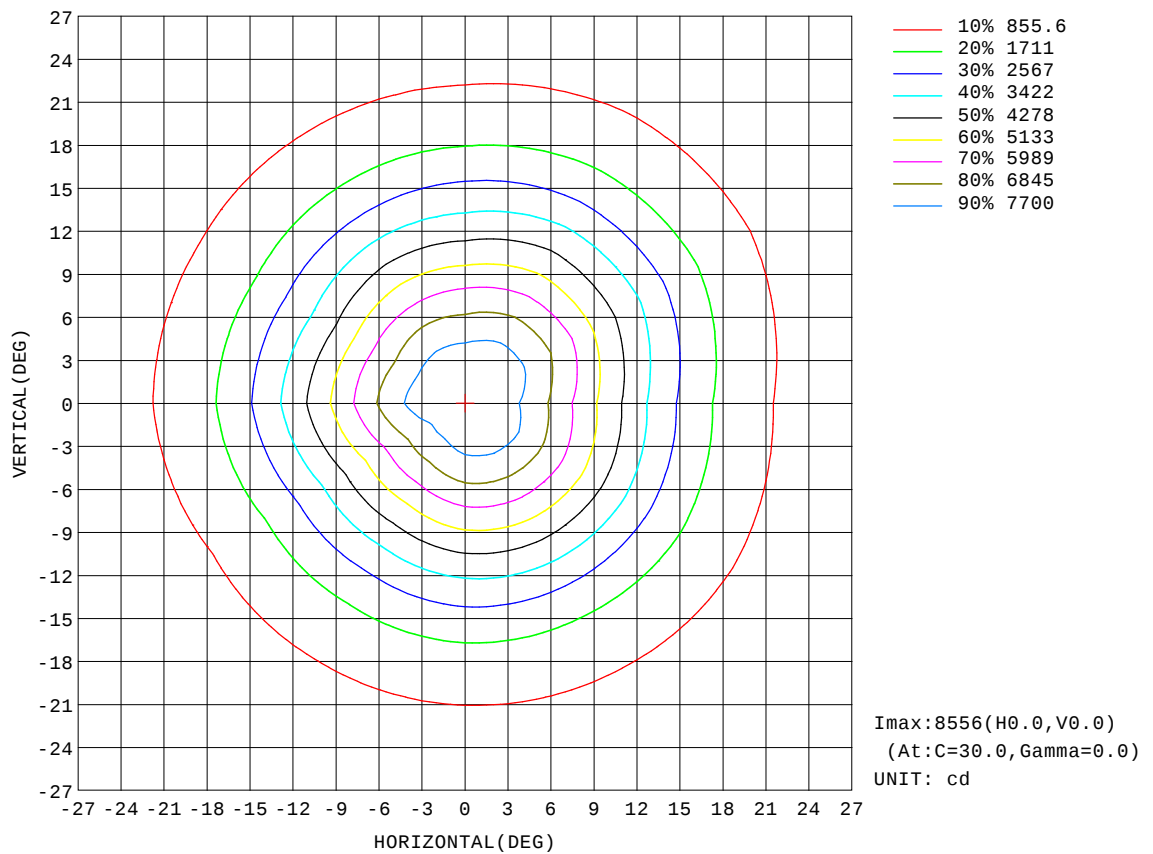
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	85	78	74	84	78	74	83	77	74	70
0.80	92	86	82	91	86	82	90	85	81	77
1.00	97	91	87	96	90	87	94	90	86	81
1.25	101	95	92	100	95	91	97	93	90	85
1.50	104	99	95	102	98	94	100	96	93	88
2.00	107	102	99	105	101	98	102	99	96	90
2.50	109	104	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	107	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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	TYPE: LED	
MFR.:		

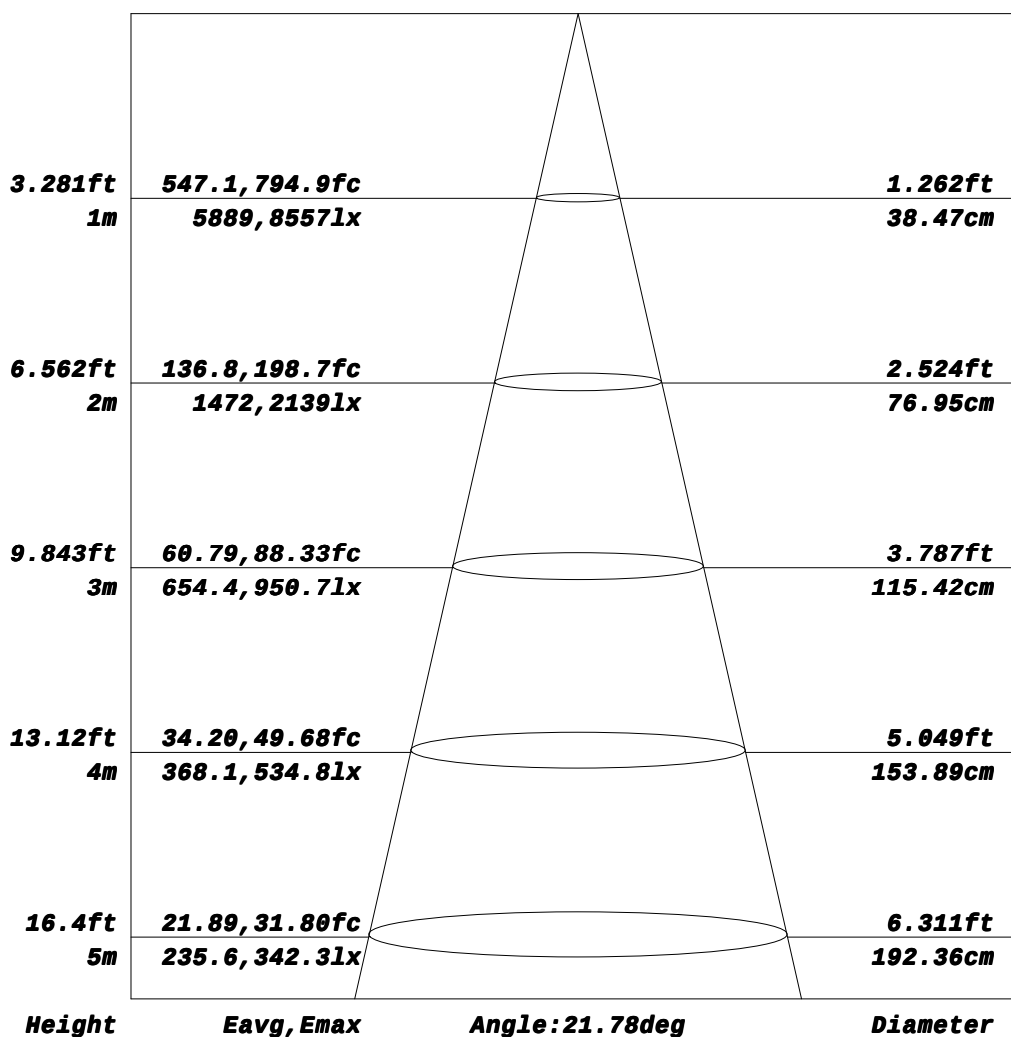


C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-11-07

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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	TYPE: LED	
MFR.:		

Flux out:699.1 lm


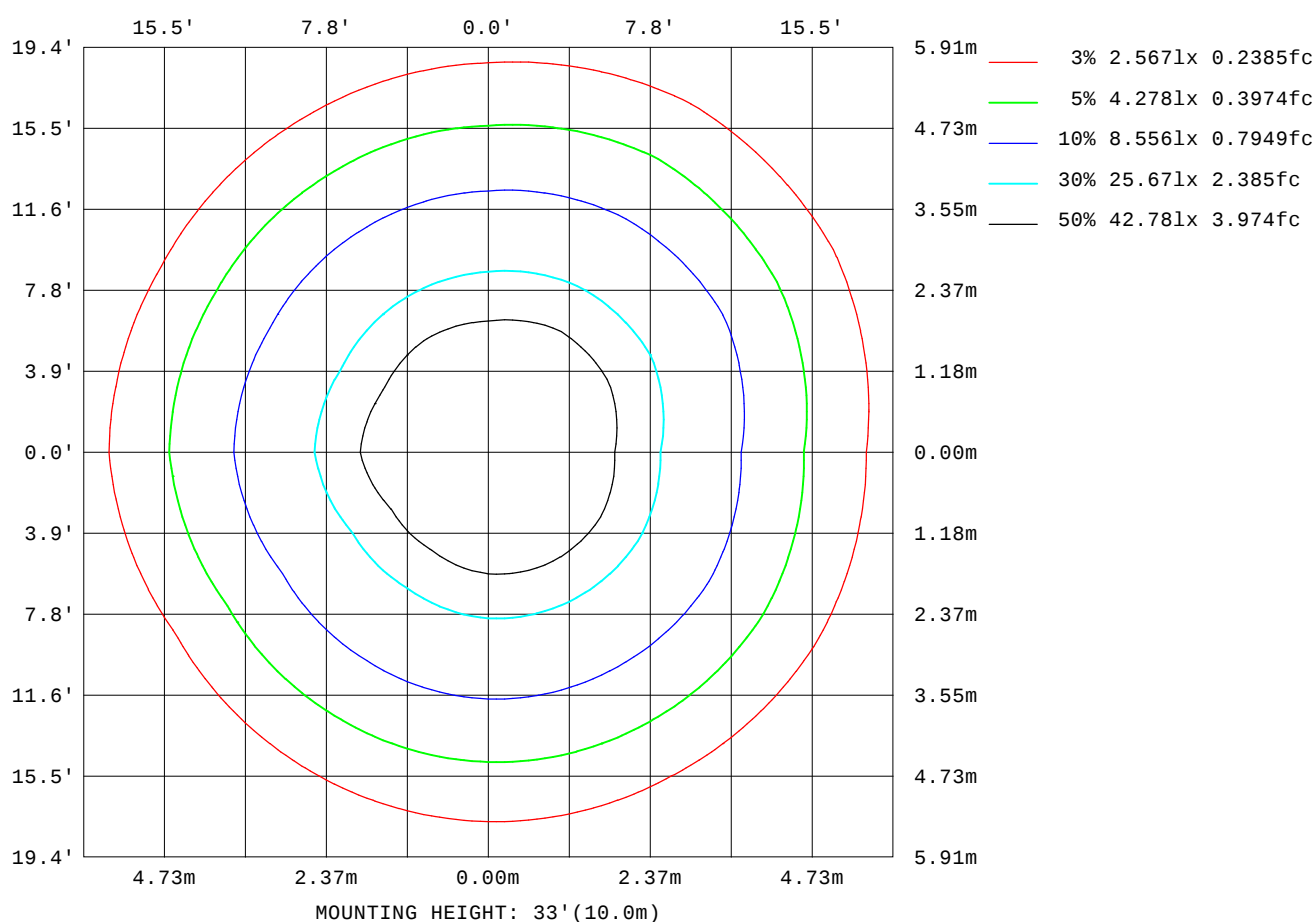
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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

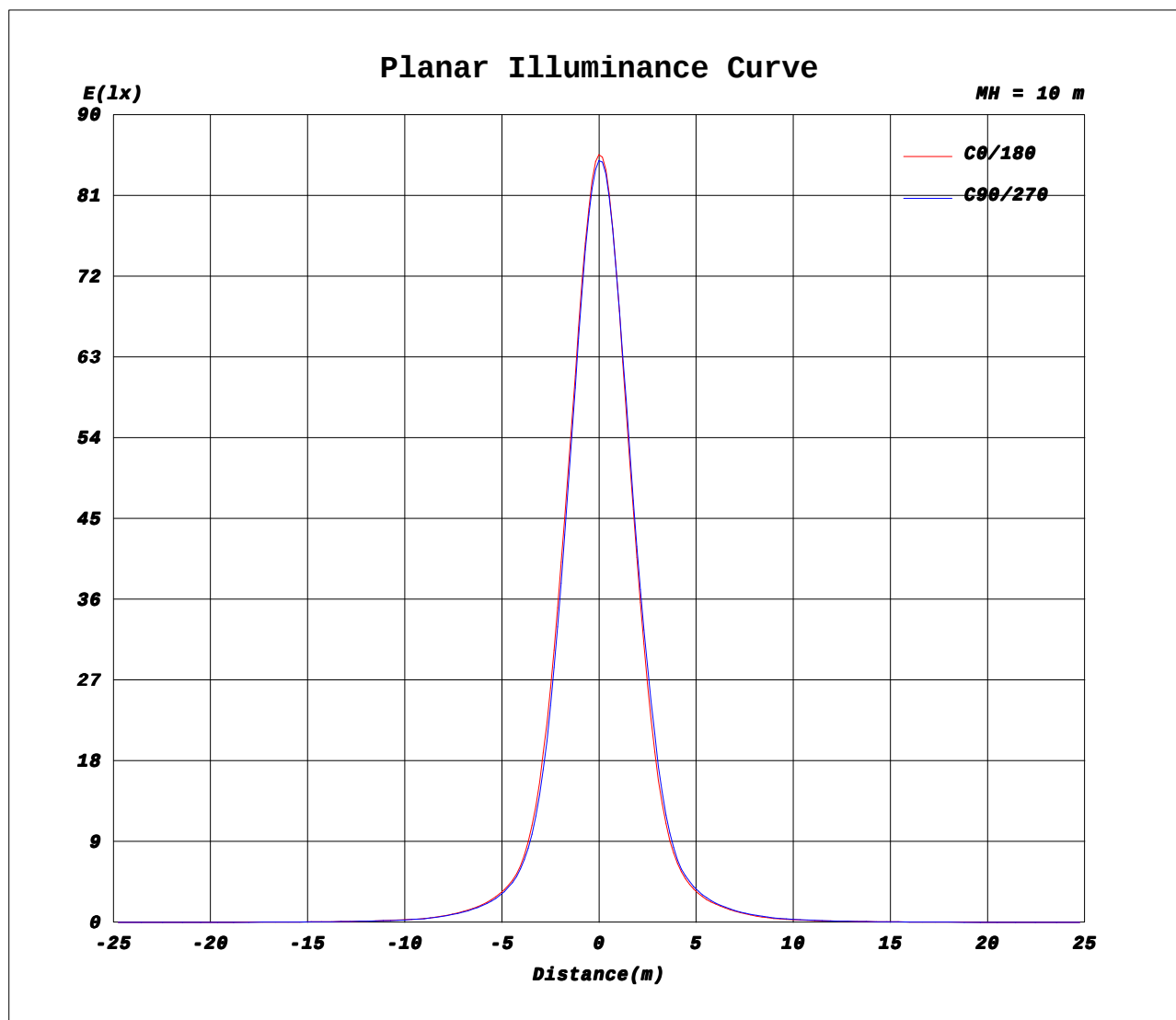
Test:U:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm		
NAME: PS-TL20W40KD2480RA-D	TYPE: LED	
MFR.:		



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:220.6V I:0.0960A P:19.40W PF:0.9180 Lamp Flux:1937.93x1 lm											
NAME: PS-TL20W40KD2480RA-D						TYPE: LED					
MFR.:											

Table--1

UNIT: cd

γ (DEG)	C (DEG)																			
	0	30	60	90	120	150	180	210	240	270	300	330								
0	8556	8557	8534	8490	8436	8443	8556	8557	8534	8490	8436	8443								
5	7237	7413	7300	7117	6746	6701	7390	7164	7355	7381	7672	7647								
10	4719	4897	4758	4522	4156	4120	4817	4531	4837	4923	5318	5284								
15	2467	2513	2361	2247	2076	2024	2519	2363	2542	2741	3047	3045								
20	1082	1116	1044	997	932	902	1100	1052	1114	1202	1371	1387								
25	556	573	546	530	505	490	573	557	577	613	679	669								
30	345	348	327	327	315	308	353	341	356	376	418	409								
35	223	217	205	211	201	203	231	215	231	242	267	263								
40	136	135	128	129	123	125	137	134	144	154	174	172								
45	84.5	89.4	84.4	82.0	81.5	82.7	87.6	86.2	87.6	98.3	112	106								
50	60.8	64.5	60.1	58.4	59.3	60.7	64.9	61.8	60.8	68.6	76.1	72.5								
55	45.0	45.4	43.0	41.5	42.3	44.2	48.2	45.1	43.5	48.1	53.4	52.8								
60	32.4	32.2	30.1	29.2	29.0	31.9	36.0	32.7	32.0	34.1	36.8	37.2								
65	23.1	22.6	21.2	20.1	19.3	21.7	26.3	23.9	23.5	24.7	26.2	27.1								
70	13.5	13.7	12.8	11.7	10.6	12.1	17.4	15.6	15.6	16.6	17.3	18.3								
75	5.66	5.74	5.32	4.74	3.92	4.52	9.69	8.63	8.90	9.33	9.38	9.88								
80	1.26	1.35	1.23	1.18	1.13	1.09	4.60	4.63	4.59	4.63	4.89	4.95								
85	0.99	0.97	0.99	1.01	1.04	1.04	4.63	4.63	4.57	4.52	4.48	4.49								
90	1.21	1.19	1.22	1.26	1.30	1.29	4.81	4.79	4.75	4.72	4.72	4.74								
95	1.52	1.51	1.55	1.59	1.65	1.63	4.84	4.82	4.79	4.77	4.78	4.81								
100	1.97	1.94	2.02	2.08	2.16	2.14	4.87	4.85	4.82	4.80	4.80	4.82								
105	2.72	2.68	2.78	2.89	3.03	3.00	5.10	5.09	5.03	5.01	4.98	5.00								
110	3.92	3.89	4.04	4.20	4.41	4.38	5.69	5.70	5.61	5.56	5.46	5.49								
115	5.67	5.65	5.85	6.07	6.31	6.27	6.68	6.75	6.64	6.54	6.37	6.40								
120	7.81	7.77	8.00	8.22	8.51	8.45	7.99	8.05	7.91	7.82	7.65	7.66								
125	10.1	10.0	10.3	10.4	10.7	10.7	9.31	9.36	9.21	9.12	8.96	8.98								
130	12.3	12.2	12.4	12.5	12.9	12.8	10.7	10.7	10.6	10.4	10.3	10.3								
135	14.4	14.3	14.4	14.5	14.8	14.9	12.4	12.5	12.3	12.2	11.9	11.9								
140	16.5	16.4	16.4	16.5	16.9	17.0	15.0	15.1	14.8	14.5	14.2	14.2								
145	18.8	18.7	18.7	18.5	19.2	19.4	18.0	18.1	17.8	17.8	17.1	17.1								
150	21.5	21.3	21.2	20.7	21.6	22.0	21.3	21.3	20.9	20.1	20.2	20.3								
155	24.4	24.2	24.0	23.0	24.2	24.9	24.4	24.4	23.7	22.5	23.2	23.4								
160	27.5	27.2	26.7	25.6	26.6	27.8	27.3	27.1	26.0	24.7	25.6	26.2								
165	30.1	29.6	28.7	27.7	28.3	29.5	29.5	28.9	27.6	26.4	27.3	28.2								
170	30.7	30.0	28.9	28.1	28.1	29.0	29.8	28.7	27.6	26.8	27.6	28.6								
175	29.2	28.6	27.4	26.8	26.5	27.3	28.3	27.2	26.1	25.7	26.3	27.3								
180	28.2	27.2	26.3	25.9	26.0	26.8	28.2	27.2	26.4	25.9	26.0	26.8								

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: