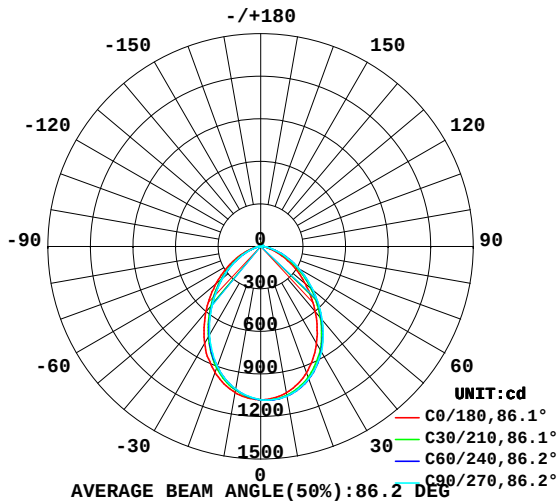


LUMINAIRE PHOTOMETRIC TEST REPORT

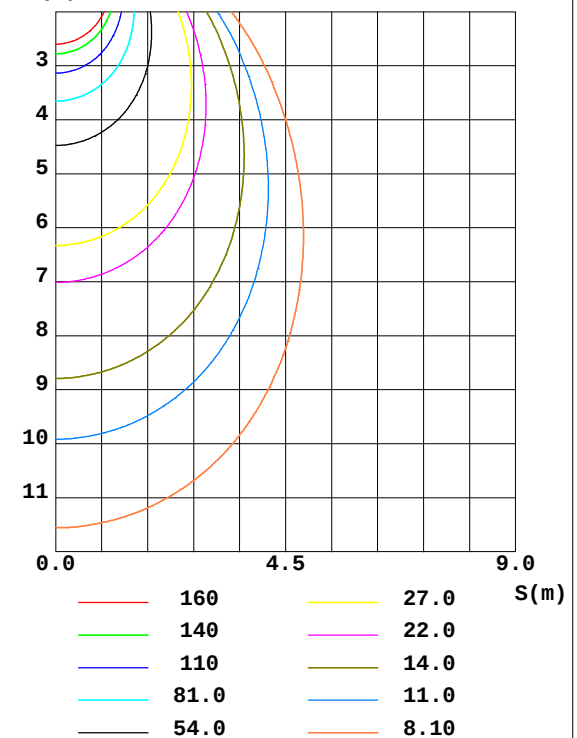
Test:U:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	TYPE: LED	
MFR.:		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 122.61 lm/W			
MODEL	PSJU-DL-20W-SMD	Imax(cd)	1086	S/MH(C0/180)	1.11
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	1.19
RATED VOLTAGE(V)	220.6	TOTAL FLUX(lm)	2256.0	η UP, DN(C0-180)	1.4, 52.0
NOMINAL FLUX(lm)	2256.01	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.6, 45.1
LAMPS INSIDE	1	η up(%)	3.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.6	η down(%)	97.0	CIBSE SHR MAX	1.25

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: 2017-07-19

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	1048	1068	1070	1053	1046	1025	1021	1037	0- 10	101.5	101.5	4.5,4.5
20	948.2	987.9	992.2	960.4	944.7	905.0	898.4	929.7	10- 20	282.3	383.8	17,17
30	788.2	847.3	858.8	810.0	791.1	734.4	723.4	768.1	20- 30	401.3	785.1	34.8,34.8
40	598.7	661.9	674.7	621.9	600.3	541.7	531.3	578.1	30- 40	435.1	1220	54.1,54.1
50	413.3	471.8	483.9	434.9	415.2	362.5	355.6	394.0	40- 50	390.5	1611	71.4,71.4
60	251.4	300.3	308.4	268.7	248.7	206.7	201.4	234.1	50- 60	296.5	1907	84.5,84.5
70	110.2	156.4	162.9	132.0	116.9	87.35	83.99	106.9	60- 70	181.1	2088	92.6,92.6
80	36.33	55.67	59.17	43.16	36.15	24.84	23.45	32.95	70- 80	78.81	2167	96.1,96.1
90	3.997	11.55	13.04	6.400	5.385	5.775	5.934	5.717	80- 90	21.86	2189	97,97
100	5.334	4.906	4.965	5.430	6.636	7.185	7.345	6.968	90-100	6.263	2195	97.3,97.3
110	7.284	6.695	6.708	7.249	8.404	9.028	9.164	8.674	100-110	7.368	2203	97.6,97.6
120	9.570	8.874	8.837	9.400	10.44	11.09	11.20	10.63	110-120	8.856	2211	98,98
130	11.96	11.25	11.17	11.67	12.50	13.10	13.21	12.60	120-130	9.935	2221	98.5,98.5
140	14.17	13.55	13.43	13.81	14.43	14.94	15.01	14.42	130-140	10.20	2232	98.9,98.9
150	16.24	15.73	15.57	15.81	16.22	16.58	16.59	16.05	140-150	9.494	2241	99.3,99.3
160	18.17	17.68	17.49	17.62	18.03	18.12	18.09	17.65	150-160	7.827	2249	99.7,99.7
170	19.81	19.37	19.09	19.11	19.64	19.56	19.42	19.17	160-170	5.256	2254	99.9,99.9
180	20.55	20.23	19.99	19.91	20.56	20.23	19.97	19.91	170-180	1.885	2256	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT: lm		

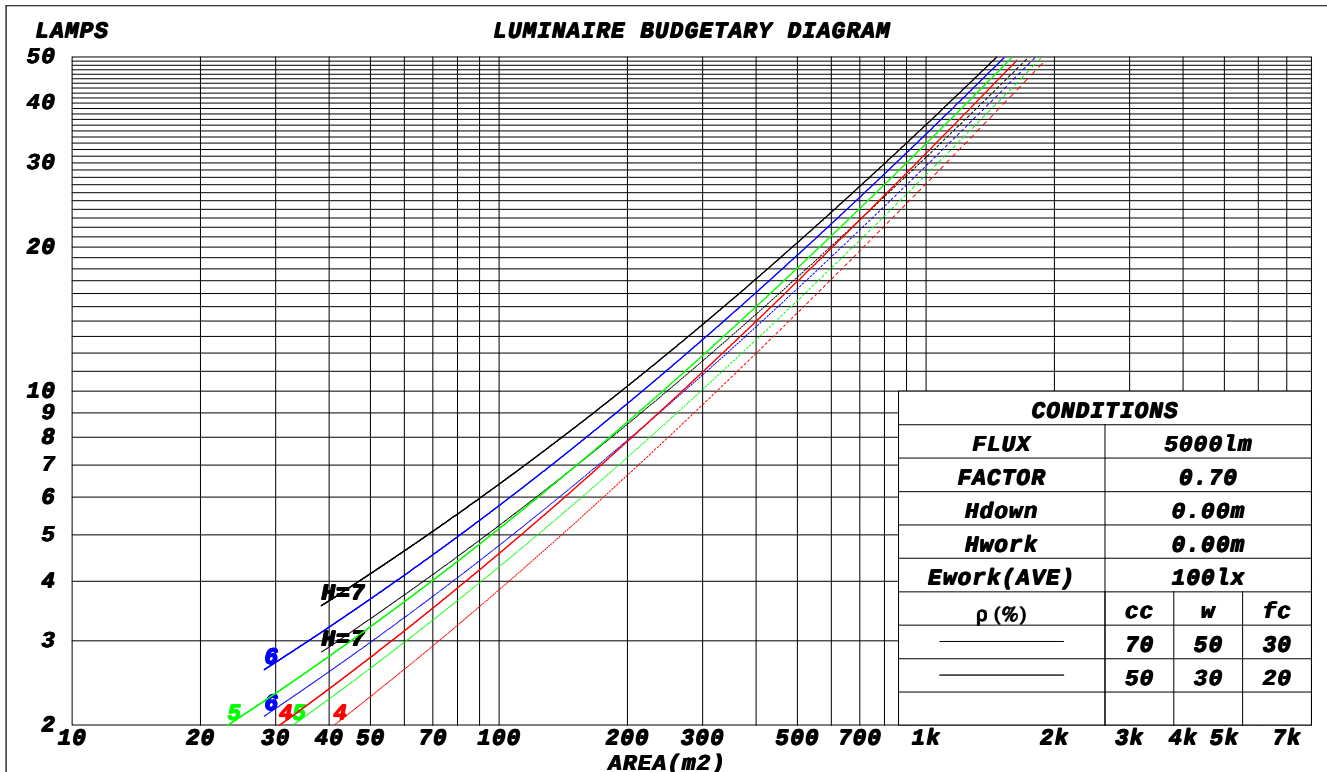
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	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	1.05	1.02	.98	1.03	.99	.97	.98	.96	.93	.94	.92	.90	.90	.88	.87	.84
2.0	.94	.88	.83	.92	.86	.81	.88	.83	.79	.84	.80	.77	.81	.78	.75	.73
3.0	.84	.76	.70	.82	.75	.70	.78	.73	.68	.75	.71	.67	.73	.69	.65	.63
4.0	.75	.67	.61	.73	.66	.60	.71	.64	.59	.68	.63	.58	.66	.61	.57	.55
5.0	.68	.60	.53	.66	.59	.53	.64	.57	.52	.62	.56	.51	.60	.55	.51	.49
6.0	.61	.53	.47	.60	.53	.47	.58	.52	.46	.56	.50	.46	.55	.49	.45	.43
7.0	.56	.48	.42	.55	.48	.42	.53	.47	.42	.52	.46	.41	.50	.45	.41	.39
8.0	.52	.44	.38	.51	.43	.38	.49	.42	.38	.48	.42	.37	.46	.41	.37	.35
9.0	.48	.40	.35	.47	.40	.35	.46	.39	.34	.44	.38	.34	.43	.38	.34	.32
10.0	.44	.37	.32	.44	.36	.32	.42	.36	.31	.41	.35	.31	.40	.35	.31	.29



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm											
NAME: PSJU-DL-20W-SMD						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	.265	.151	.048	.258	.147	.047	.243	.139	.044	.229	.132	.042	.217	.126	.041	
2.0	.254	.139	.043	.247	.136	.042	.234	.130	.040	.222	.125	.039	.211	.119	.038	
3.0	.239	.127	.038	.232	.125	.037	.221	.120	.036	.210	.115	.035	.201	.111	.034	
4.0	.223	.116	.034	.218	.114	.034	.207	.110	.033	.198	.106	.032	.189	.103	.031	
5.0	.208	.106	.031	.204	.105	.030	.195	.101	.030	.186	.098	.029	.178	.095	.029	
6.0	.195	.098	.028	.191	.096	.028	.183	.094	.027	.175	.091	.027	.168	.088	.026	
7.0	.183	.090	.026	.179	.089	.025	.172	.087	.025	.165	.085	.025	.159	.082	.024	
8.0	.172	.084	.024	.169	.083	.023	.162	.081	.023	.156	.079	.023	.150	.077	.022	
9.0	.162	.078	.022	.159	.078	.022	.153	.076	.021	.147	.074	.021	.142	.072	.021	
10.0	.153	.074	.020	.150	.073	.020	.145	.071	.020	.140	.069	.020	.135	.068	.019	

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	.213	.213	.213	.182	.182	.182	.124	.124	.124	.071	.071	.071	.023	.023	.023	
1.0	.200	.179	.161	.171	.154	.138	.117	.106	.096	.067	.061	.056	.022	.020	.018	
2.0	.190	.155	.126	.163	.134	.109	.112	.092	.076	.064	.054	.044	.021	.017	.014	
3.0	.182	.137	.102	.156	.118	.088	.107	.082	.062	.062	.048	.037	.020	.016	.012	
4.0	.174	.124	.085	.149	.107	.074	.102	.074	.052	.059	.044	.031	.019	.014	.010	
5.0	.166	.113	.074	.143	.098	.064	.098	.068	.045	.057	.040	.027	.018	.013	.009	
6.0	.159	.105	.065	.137	.091	.057	.094	.063	.040	.055	.037	.024	.018	.012	.008	
7.0	.153	.098	.059	.132	.085	.051	.091	.059	.036	.053	.035	.022	.017	.011	.007	
8.0	.147	.092	.054	.126	.080	.047	.087	.056	.033	.051	.033	.020	.016	.011	.007	
9.0	.141	.087	.050	.122	.075	.044	.084	.053	.031	.049	.031	.019	.016	.010	.006	
10.0	.136	.083	.047	.117	.072	.041	.081	.050	.029	.047	.030	.017	.015	.010	.006	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm											
NAME: PSJU-DL-20W-SMD					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	2H	23.0	24.3	23.3	24.6	24.8	23.6	24.9	23.9	25.2	25.4
	3H	23.8	25.0	24.1	25.3	25.6	24.6	25.8	24.9	26.1	26.4
	4H	24.0	25.1	24.3	25.4	25.7	25.0	26.1	25.3	26.4	26.7
	6H	24.1	25.2	24.4	25.5	25.8	25.2	26.3	25.5	26.6	26.9
	8H	24.1	25.1	24.5	25.5	25.8	25.2	26.3	25.6	26.6	27.0
	12H	24.1	25.1	24.5	25.4	25.8	25.3	26.3	25.7	26.6	27.0
4H	2H	23.5	24.6	23.8	24.9	25.2	24.0	25.1	24.3	25.4	25.7
	3H	24.5	25.5	24.9	25.8	26.2	25.2	26.2	25.6	26.5	26.9
	4H	24.8	25.7	25.2	26.1	26.5	25.6	26.6	26.0	26.9	27.3
	6H	25.0	25.8	25.4	26.2	26.6	26.0	26.8	26.4	27.2	27.6
	8H	25.0	25.8	25.5	26.2	26.6	26.1	26.8	26.5	27.2	27.7
	12H	25.0	25.7	25.5	26.2	26.6	26.2	26.8	26.6	27.3	27.7
8H	4H	25.0	25.7	25.4	26.1	26.6	25.7	26.5	26.2	26.9	27.3
	6H	25.3	25.9	25.7	26.3	26.8	26.2	26.8	26.7	27.2	27.7
	8H	25.4	25.9	25.9	26.4	26.9	26.4	26.9	26.9	27.4	27.9
	12H	25.5	25.9	26.0	26.4	27.0	26.5	27.0	27.0	27.5	28.0
12H	4H	25.0	25.6	25.4	26.1	26.5	25.7	26.4	26.2	26.8	27.3
	6H	25.3	25.8	25.8	26.3	26.8	26.2	26.7	26.7	27.2	27.7
	8H	25.4	25.9	26.0	26.4	26.9	26.4	26.9	26.9	27.4	27.9
Variations with the observer position at spacings:											
S = 1.0H	+ 0.4 / - 0.5					+ 0.3 / - 0.3					
1.5H	+ 0.2 / - 0.5					+ 0.1 / - 0.3					
2.0H	+ 0.4 / - 0.8					+ 0.4 / - 0.4					

CIE Pub.117 Corrected 2256 lm Total Lamp Luminous Flux. (8log(F/F0) = 2.8)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	TYPE: LED	
MFR.:		

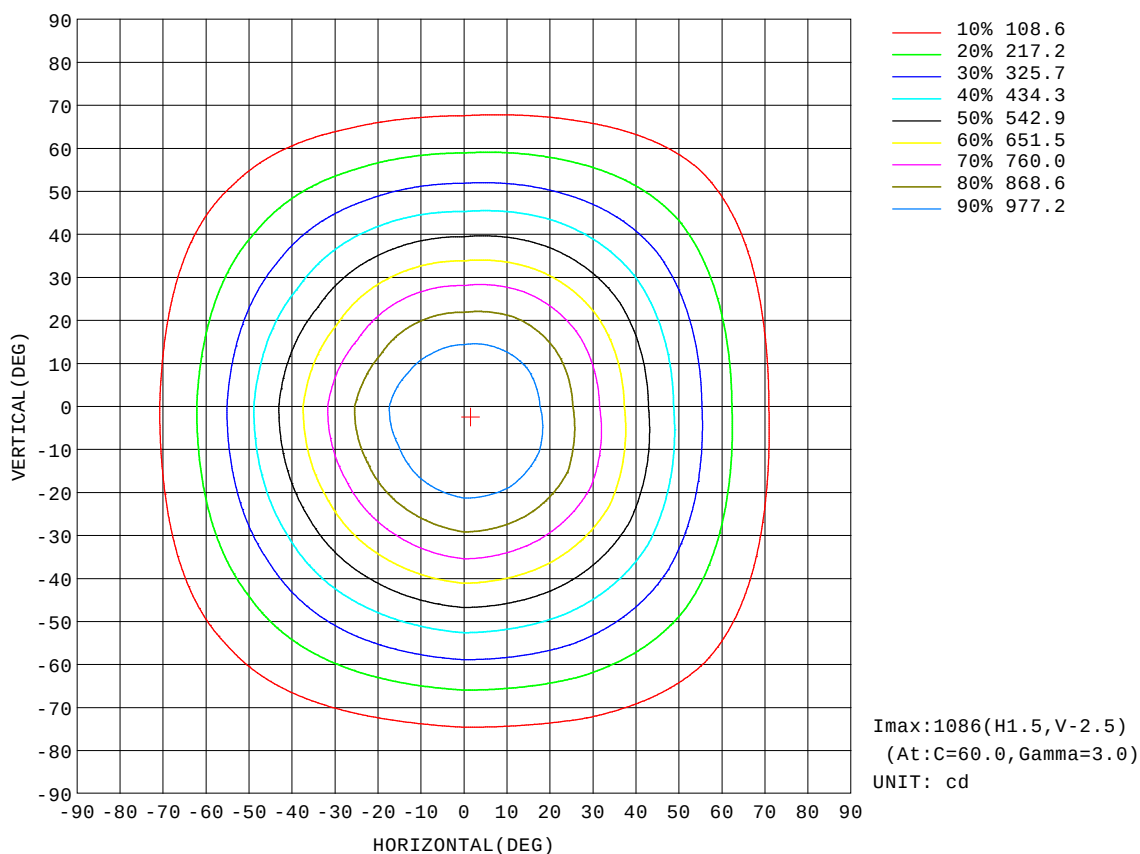
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	63	52	46	62	52	46	61	51	46	40
0.80	73	62	56	72	62	56	70	61	55	49
1.00	81	71	65	80	70	64	77	71	64	57
1.25	87	78	72	86	77	72	83	76	71	64
1.50	92	83	77	90	82	77	87	80	75	68
2.00	98	91	85	96	89	84	92	87	82	75
2.50	101	95	89	99	93	88	95	90	86	78
3.00	104	98	94	102	97	92	98	93	90	81
4.00	108	103	99	105	101	97	100	97	94	85
5.00	110	105	102	107	103	100	102	99	97	87
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNM = 1.25		

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	TYPE: LED	
MFR.:		



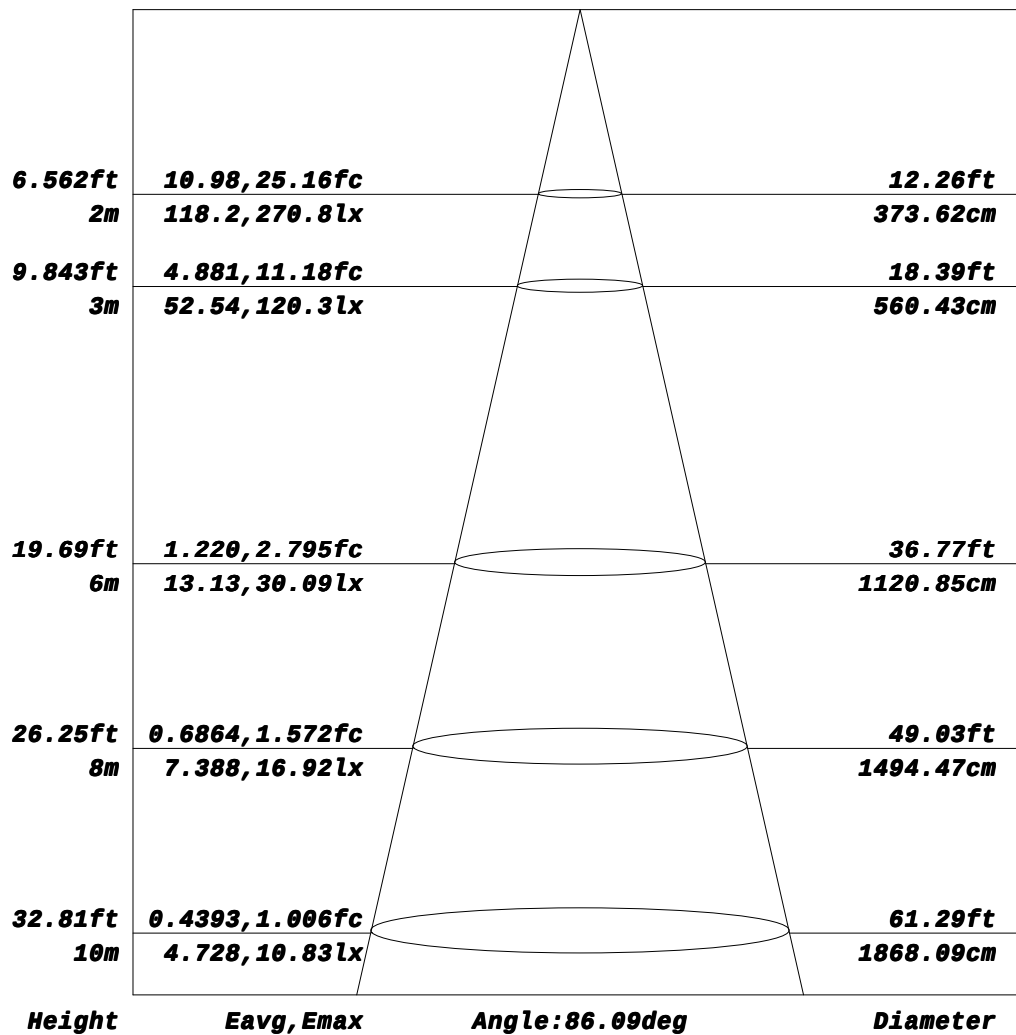
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	TYPE: LED	
MFR.:		

Flux out:1385 lm



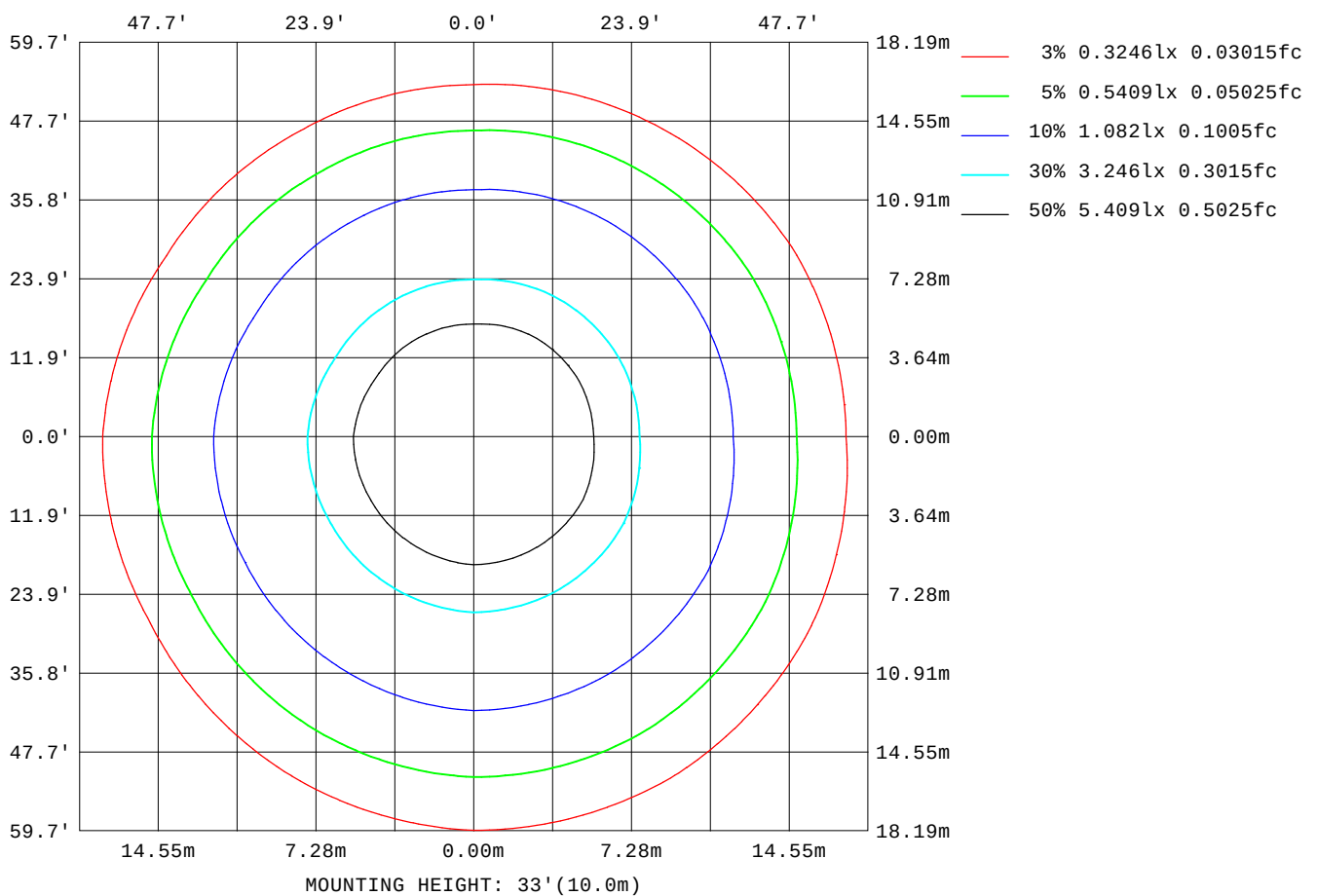
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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

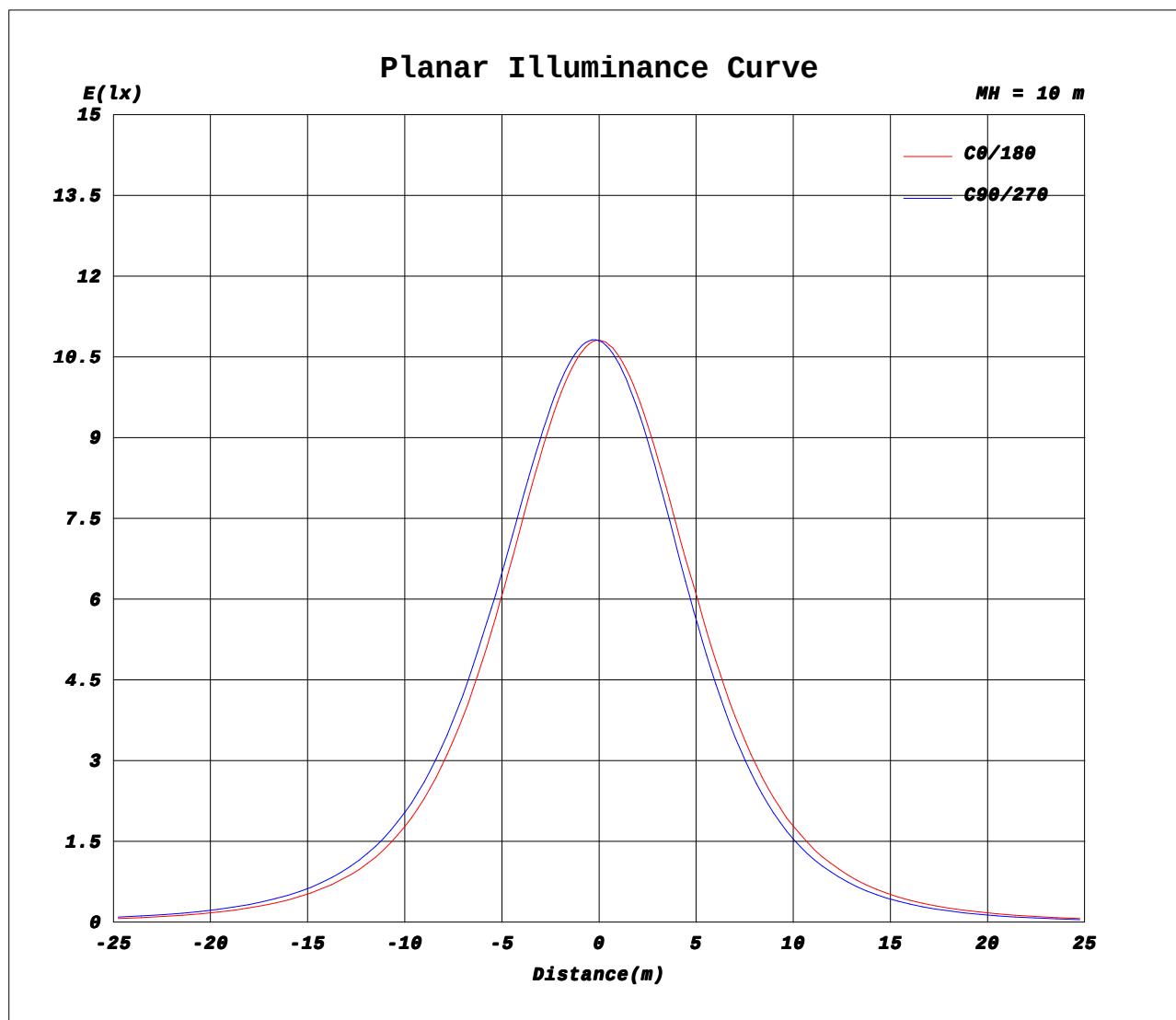
Test:U:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm		
NAME: PSJU-DL-20W-SMD	TYPE: LED	
MFR.:		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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: 2017-07-19

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:220.7V I:0.0880A P:18.40W PF:0.9470 Lamp Flux:2256.01x1 lm																	
NAME: PSJU-DL-20W-SMD									TYPE: LED								
MFR.:																	

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	1082	1081	1081	1080	1080	1080	1082	1081	1081	1080	1080	1080						
5	1073	1082	1085	1084	1078	1071	1072	1063	1060	1059	1065	1070						
10	1048	1065	1072	1070	1059	1046	1046	1028	1023	1021	1033	1042						
15	1006	1032	1040	1039	1024	1005	1003	978	969	969	984	1000						
20	948	981	994	992	973	948	945	911	899	898	919	941						
25	874	915	932	930	905	879	874	830	822	815	847	866						
30	788	842	853	859	823	797	791	739	729	723	757	780						
35	696	751	764	770	732	704	697	644	632	627	661	687						
40	599	655	669	675	637	607	600	547	536	531	565	591						
45	504	558	573	578	541	512	506	454	443	439	470	496						
50	413	464	479	484	449	421	415	369	356	356	382	406						
55	332	375	389	393	365	334	328	288	274	274	297	324						
60	251	291	309	308	283	254	249	213	200	201	221	247						
65	181	216	232	231	209	182	178	147	136	137	155	177						
70	119	149	164	163	143	121	117	91.6	83.1	84.0	97.7	116						
75	69.9	93.9	105	105	88.5	71.3	68.2	50.7	44.9	45.7	55.7	68.3						
80	36.3	51.6	59.7	59.2	48.5	37.8	36.1	26.4	23.3	23.5	29.8	36.2						
85	17.9	26.8	30.6	30.5	25.0	18.4	17.9	10.00	7.46	7.41	12.6	18.0						
90	4.00	9.82	13.3	13.0	8.47	4.33	5.38	5.69	5.86	5.93	5.79	5.64						
95	4.58	4.28	4.22	4.33	4.60	4.88	5.94	6.32	6.50	6.57	6.38	6.17						
100	5.33	4.95	4.86	4.97	5.27	5.59	6.64	7.09	7.28	7.35	7.10	6.84						
105	6.26	5.80	5.67	5.77	6.10	6.47	7.47	7.97	8.18	8.22	7.94	7.63						
110	7.28	6.78	6.61	6.71	7.05	7.45	8.40	8.91	9.14	9.16	8.85	8.50						
115	8.39	7.84	7.65	7.75	8.08	8.50	9.40	9.93	10.2	10.2	9.83	9.44						
120	9.57	8.97	8.78	8.84	9.20	9.60	10.4	11.0	11.2	11.2	10.8	10.4						
125	10.8	10.2	9.95	10.0	10.3	10.7	11.5	12.0	12.2	12.2	11.9	11.4						
130	12.0	11.4	11.1	11.2	11.5	11.9	12.5	13.0	13.2	13.2	12.8	12.4						
135	13.1	12.5	12.3	12.3	12.6	12.9	13.5	14.0	14.1	14.1	13.7	13.3						
140	14.2	13.7	13.4	13.4	13.7	14.0	14.4	14.9	15.0	15.0	14.6	14.2						
145	15.2	14.8	14.5	14.5	14.7	14.9	15.3	15.7	15.8	15.8	15.4	15.1						
150	16.2	15.9	15.6	15.6	15.7	15.9	16.2	16.5	16.6	16.6	16.2	15.9						
155	17.2	16.9	16.6	16.6	16.7	16.8	17.1	17.3	17.4	17.3	17.0	16.7						
160	18.2	17.8	17.5	17.5	17.5	17.7	18.0	18.1	18.1	18.1	17.8	17.5						
165	19.0	18.7	18.5	18.4	18.4	18.5	18.9	18.9	18.9	18.8	18.5	18.4						
170	19.8	19.5	19.2	19.1	19.1	19.2	19.6	19.6	19.5	19.4	19.2	19.1						
175	20.4	20.2	19.8	19.7	19.7	19.7	20.3	20.2	20.1	19.9	19.8	19.8						
180	20.6	20.4	20.1	20.0	19.9	19.9	20.6	20.3	20.1	20.0	19.9	19.9						

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-07-19

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: