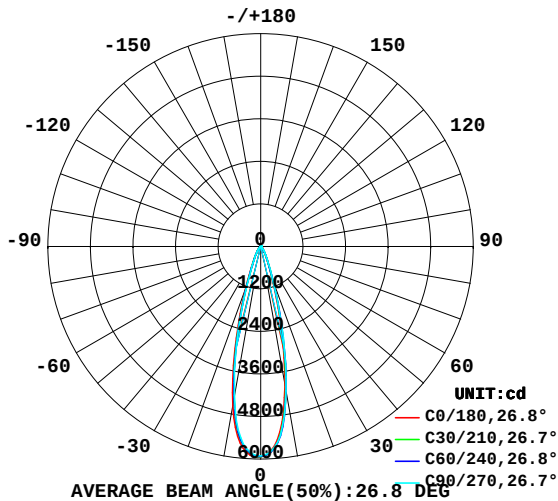


LUMINAIRE PHOTOMETRIC TEST REPORT

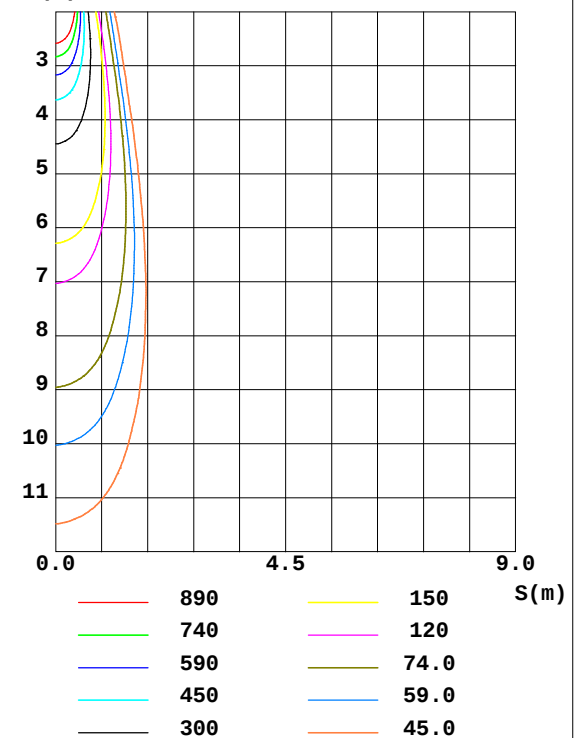
Test:U:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	TYPE: LED	
MFR.:		

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 111.01 lm/W
MODEL	PS-X16-3000K-15W	I _{max} (cd)	5941	S/MH(C0/180)	0.42	
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	0.43	
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	1620.8	η UP, DN(C0-180)	1.5, 45.4	
NOMINAL FLUX(lm)	1620.79	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.8, 51.3	
LAMPS INSIDE	1	η up(%)	3.3	CIBSE SHR NOM	0.00	
TEST VOLTAGE(V)	220.2	η down(%)	96.7	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: 2017-10-27

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	3968	4116	4140	3948	4552	4360	4267	4506	0- 10	489.8	489.8	30.2,30.2
20	935.3	1011	1025	934.1	1227	1134	1093	1231	10- 20	655.0	1145	70.6,70.6
30	268.3	287.2	291.3	277.1	330.2	312.6	307.8	331.3	20- 30	254.8	1400	86.4,86.4
40	96.10	101.0	103.8	96.06	120.5	111.8	111.3	120.2	30- 40	116.4	1516	93.5,93.5
50	14.33	15.42	16.15	13.35	23.09	20.21	20.25	22.12	40- 50	41.07	1557	96.1,96.1
60	1.179	1.124	1.042	0.7718	2.352	2.328	2.781	2.198	50- 60	5.196	1562	96.4,96.4
70	0.4255	0.4093	0.4031	0.4043	2.131	2.186	2.220	2.160	60- 70	1.243	1564	96.5,96.5
80	0.3631	0.3504	0.3613	0.3627	3.089	3.117	3.103	3.059	70- 80	1.585	1565	96.6,96.6
90	0.4370	0.4323	0.4376	0.4443	3.742	3.743	3.683	3.679	80- 90	2.084	1567	96.7,96.7
100	0.9441	0.9098	0.9095	0.9509	3.955	3.950	3.900	3.900	90-100	2.438	1570	96.8,96.8
110	2.253	2.163	2.150	2.257	4.630	4.670	4.649	4.573	100-110	2.991	1573	97,97
120	4.985	4.795	4.737	4.960	6.512	6.621	6.594	6.472	110-120	4.417	1577	97.3,97.3
130	9.177	8.918	8.790	9.078	8.948	9.088	9.065	8.903	120-130	6.494	1584	97.7,97.7
140	13.81	13.54	13.35	13.74	12.75	12.88	12.75	12.58	130-140	8.481	1592	98.2,98.2
150	18.79	18.49	18.00	18.67	18.23	18.31	17.79	17.86	140-150	9.780	1602	98.8,98.8
160	23.95	23.80	23.25	23.86	23.75	23.36	22.23	22.42	150-160	9.605	1611	99.4,99.4
170	25.48	26.05	25.71	25.57	26.07	24.92	23.16	23.25	160-170	6.957	1618	99.9,99.9
180	25.60	25.54	23.80	23.55	25.72	25.58	23.72	23.56	170-180	2.352	1621	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

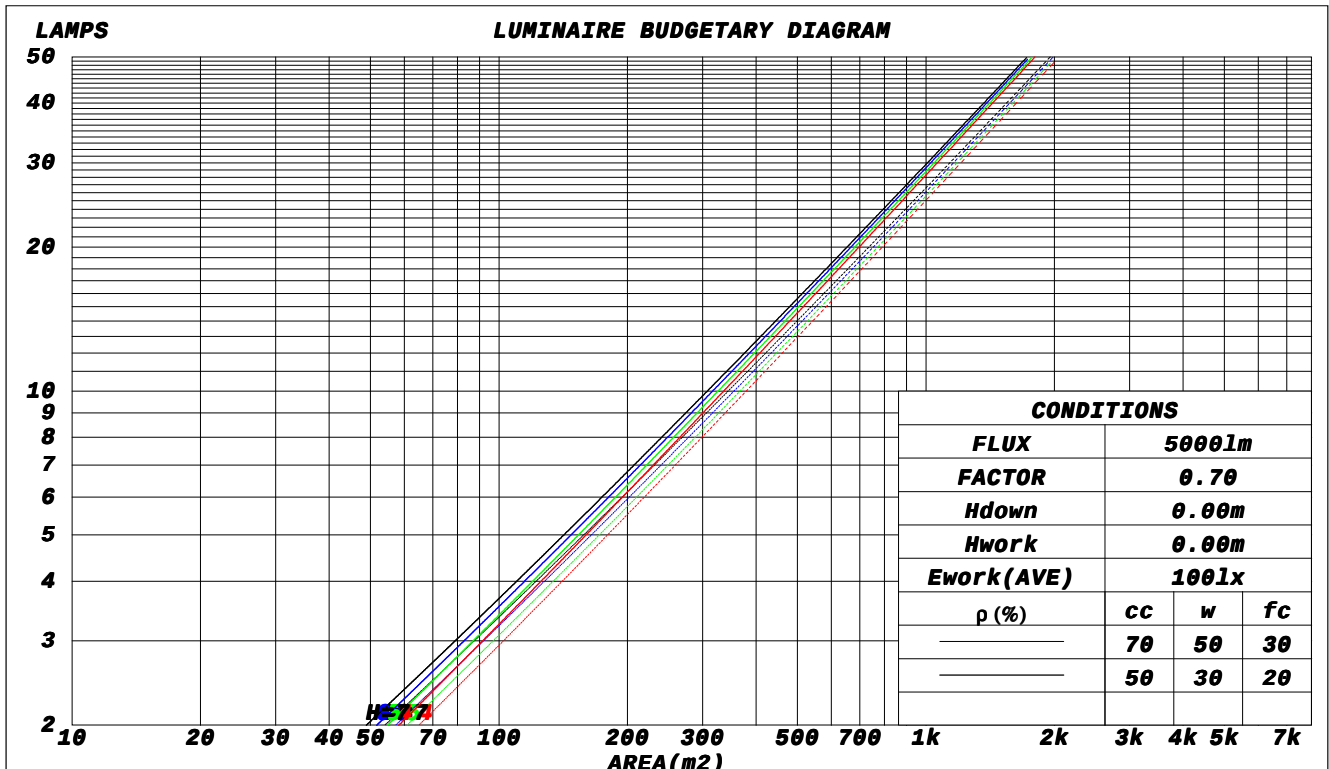
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	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	1.09	1.07	1.05	1.04	1.03	1.02	1.00	.99	.98	.96	.95	.95	.93
2.0	1.06	1.02	.99	1.04	1.01	.98	.99	.98	.96	.97	.95	.93	.93	.92	.91	.89
3.0	1.00	.96	.93	.99	.95	.92	.96	.93	.90	.93	.91	.89	.91	.89	.87	.85
4.0	.96	.92	.88	.95	.91	.88	.92	.89	.86	.90	.87	.85	.88	.85	.84	.82
5.0	.92	.87	.84	.91	.87	.83	.89	.85	.82	.87	.84	.81	.85	.83	.80	.79
6.0	.88	.84	.80	.87	.83	.80	.86	.82	.79	.84	.81	.78	.82	.80	.78	.76
7.0	.85	.80	.77	.84	.80	.77	.83	.79	.76	.81	.78	.75	.80	.77	.75	.74
8.0	.82	.77	.74	.81	.77	.74	.80	.76	.73	.79	.75	.73	.78	.75	.72	.71
9.0	.79	.74	.71	.78	.74	.71	.77	.74	.71	.76	.73	.71	.75	.72	.70	.69
10.0	.76	.72	.69	.76	.72	.69	.75	.71	.69	.74	.71	.68	.73	.70	.68	.67



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm											
NAME: PS-X16-3000K-15W						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	.149	.085	.027	.142	.081	.026	.127	.073	.023	.114	.066	.021	.102	.059	.019	
2.0	.139	.076	.023	.133	.073	.022	.121	.067	.021	.109	.061	.019	.099	.056	.018	
3.0	.130	.069	.021	.125	.067	.020	.114	.062	.019	.105	.057	.018	.096	.053	.016	
4.0	.122	.063	.019	.117	.061	.018	.109	.058	.017	.100	.054	.016	.093	.050	.015	
5.0	.115	.059	.017	.111	.057	.017	.103	.054	.016	.096	.051	.015	.090	.048	.014	
6.0	.109	.055	.016	.106	.053	.015	.099	.051	.015	.092	.048	.014	.087	.046	.014	
7.0	.104	.051	.015	.101	.050	.014	.095	.048	.014	.089	.046	.013	.084	.043	.013	
8.0	.099	.048	.014	.096	.047	.013	.091	.045	.013	.086	.043	.013	.081	.042	.012	
9.0	.094	.046	.013	.092	.045	.013	.087	.043	.012	.083	.041	.012	.078	.040	.011	
10.0	.090	.043	.012	.088	.043	.012	.084	.041	.012	.080	.040	.011	.076	.038	.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	.184	.184	.184	.126	.126	.126	.072	.072	.072	.023	.023	.023	
1.0	.195	.183	.172	.166	.157	.148	.114	.108	.103	.066	.063	.060	.021	.020	.019	
2.0	.177	.158	.142	.152	.136	.123	.104	.094	.086	.060	.055	.050	.019	.018	.016	
3.0	.163	.139	.120	.140	.120	.104	.096	.083	.073	.055	.049	.043	.018	.016	.014	
4.0	.151	.124	.103	.130	.107	.090	.089	.075	.063	.052	.044	.037	.017	.014	.012	
5.0	.141	.112	.090	.121	.097	.078	.084	.068	.055	.048	.040	.033	.016	.013	.011	
6.0	.133	.102	.080	.114	.088	.070	.079	.062	.049	.046	.036	.029	.015	.012	.010	
7.0	.126	.094	.072	.108	.082	.063	.075	.057	.045	.043	.034	.027	.014	.011	.009	
8.0	.119	.088	.066	.103	.076	.057	.071	.053	.041	.041	.031	.024	.013	.010	.008	
9.0	.114	.082	.061	.098	.071	.053	.068	.050	.038	.040	.030	.022	.013	.010	.007	
10.0	.109	.077	.057	.094	.067	.049	.065	.047	.035	.038	.028	.021	.012	.009	.007	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm										
NAME: PS-X16-3000K-15W					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	12.0	12.7	12.3	12.9	13.2	12.3	13.0	12.6	13.2	13.4
3H	11.9	12.5	12.2	12.8	13.0	12.2	12.8	12.4	13.0	13.3
4H	11.8	12.4	12.1	12.7	12.9	12.1	12.7	12.4	13.0	13.2
6H	11.7	12.3	12.0	12.6	12.9	12.0	12.6	12.3	12.8	13.1
8H	11.6	12.2	12.0	12.5	12.8	11.9	12.5	12.3	12.8	13.1
12H	11.6	12.1	12.0	12.5	12.8	11.9	12.4	12.2	12.7	13.1
4H 2H	11.8	12.4	12.1	12.7	12.9	12.1	12.7	12.4	13.0	13.2
3H	11.6	12.1	12.0	12.5	12.8	11.9	12.4	12.2	12.7	13.1
4H	11.5	12.0	11.9	12.3	12.7	11.8	12.3	12.2	12.6	13.0
6H	11.4	11.8	11.8	12.2	12.6	11.7	12.1	12.1	12.5	12.9
8H	11.3	11.7	11.8	12.1	12.6	11.6	12.0	12.1	12.4	12.9
12H	11.3	11.7	11.7	12.1	12.5	11.6	11.9	12.0	12.4	12.8
8H 4H	11.3	11.7	11.8	12.1	12.6	11.6	12.0	12.1	12.4	12.9
6H	11.2	11.6	11.7	12.0	12.5	11.5	11.8	12.0	12.3	12.8
8H	11.2	11.5	11.7	11.9	12.4	11.4	11.7	11.9	12.2	12.7
12H	11.1	11.4	11.6	11.9	12.4	11.4	11.6	11.9	12.1	12.7
12H 4H	11.3	11.6	11.7	12.1	12.5	11.6	11.9	12.0	12.4	12.8
6H	11.2	11.5	11.7	11.9	12.4	11.4	11.7	11.9	12.2	12.7
8H	11.1	11.4	11.6	11.8	12.4	11.4	11.6	11.9	12.1	12.7
Variations with the observer position at spacings:										
S = 1.0H	+ 2.9 / -15.3					+ 3.0 / -15.8				
1.5H	+ 5.0 / -13.9					+ 5.1 / -14.9				
2.0H	+ 7.2 / -11.1					+ 7.5 / -11.4				

CIE Pub.117 Corrected 1621 lm Total Lamp Luminous Flux. (8log(F/F0) = 1.7)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	TYPE: LED	
MFR.:		

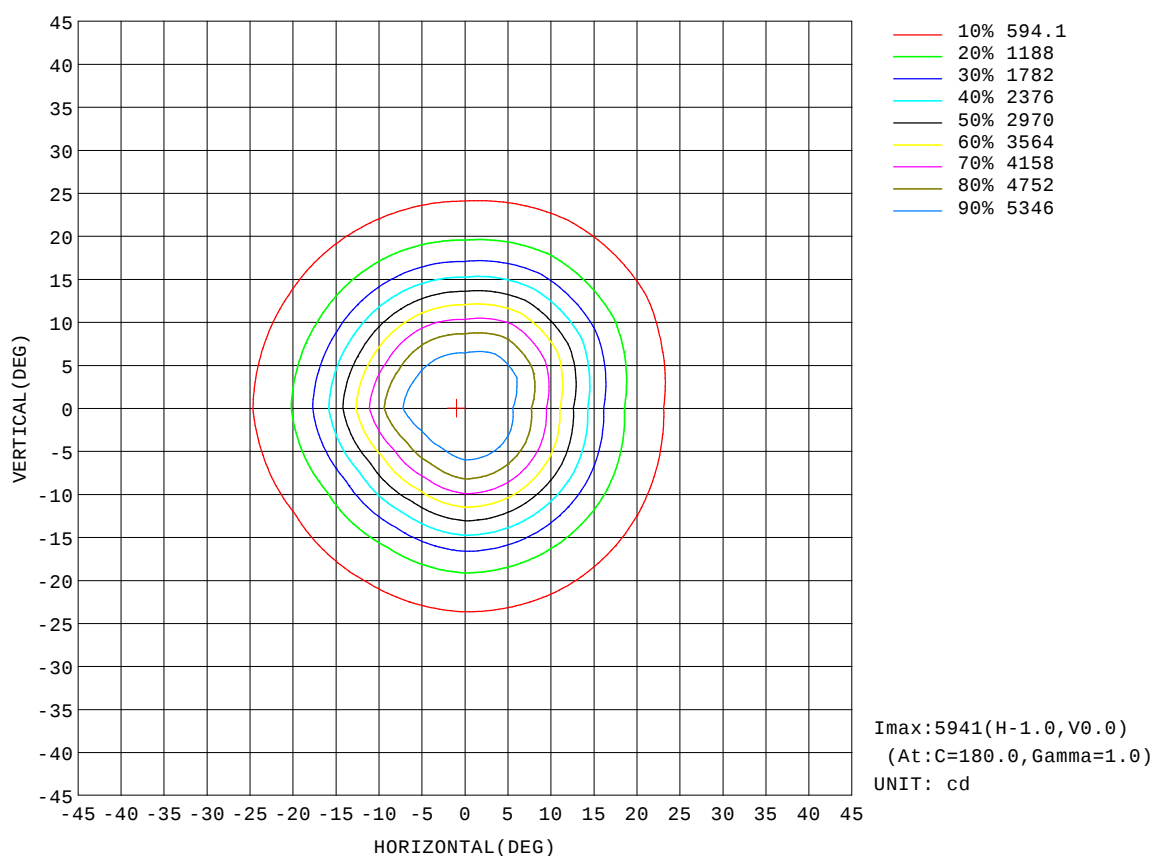
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	88	81	78	87	81	78	86	81	77	74
0.80	95	89	86	94	89	85	93	88	85	81
1.00	99	94	90	98	93	90	96	92	89	85
1.25	103	98	94	102	97	94	99	95	93	88
1.50	105	101	97	104	100	97	101	98	95	91
2.00	108	104	101	106	103	100	103	100	98	92
2.50	110	106	103	108	104	102	104	101	99	93
3.00	111	108	105	109	106	104	105	103	101	94
4.00	113	110	108	111	108	106	107	105	103	95
5.00	114	112	110	112	110	108	107	106	105	96
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: 2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	TYPE: LED	
MFR.:		



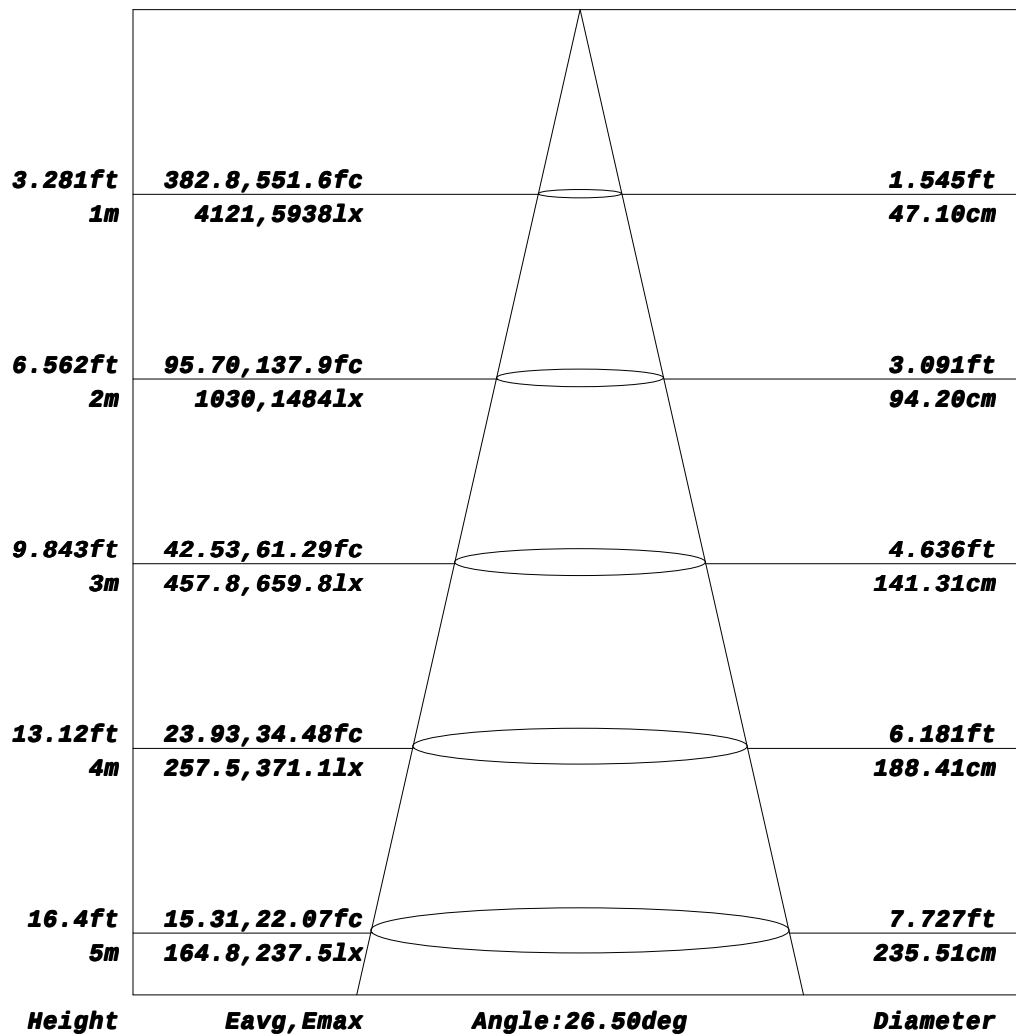
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	TYPE: LED	
MFR.:		

Flux out:804.7 lm



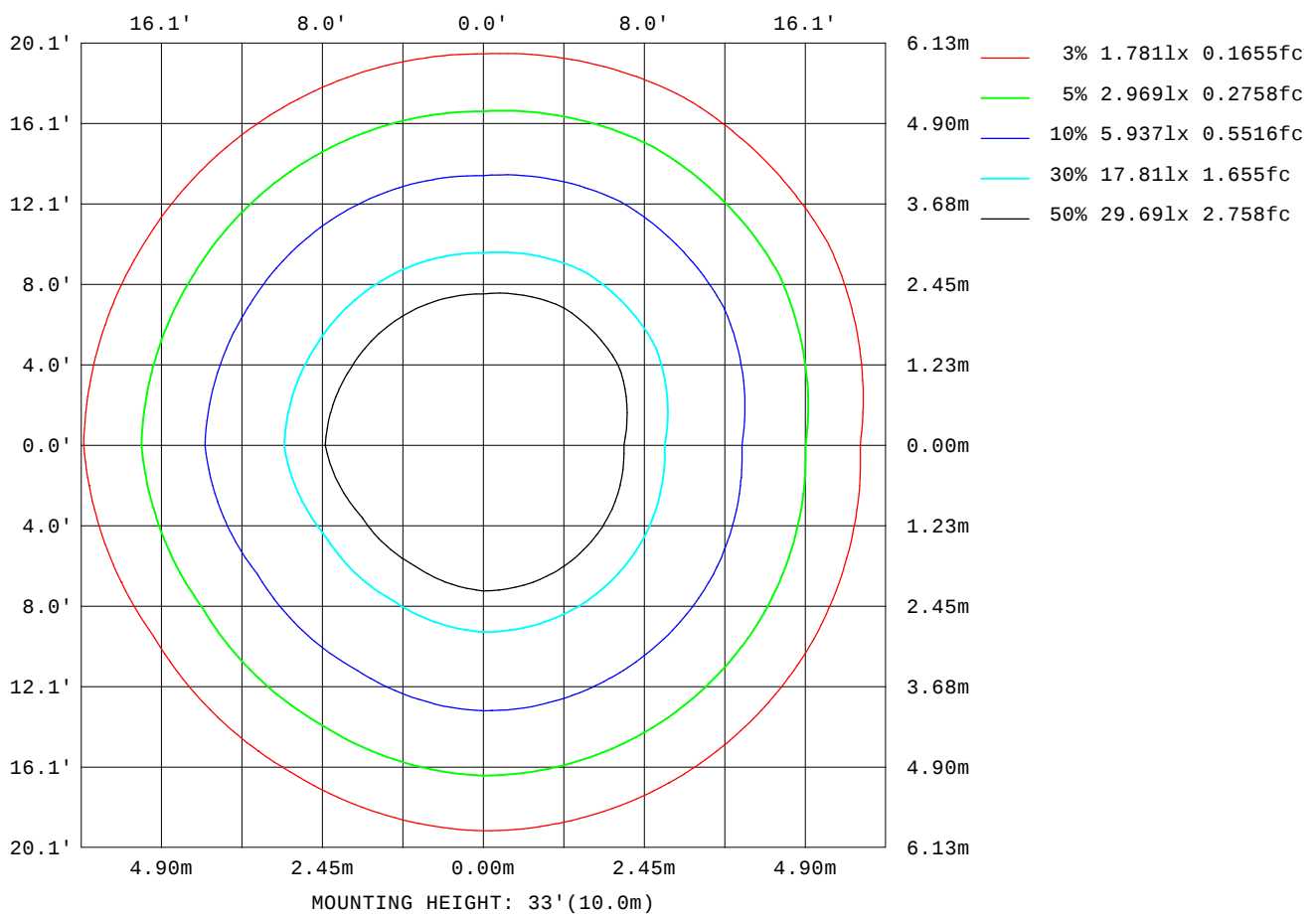
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-10-27

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

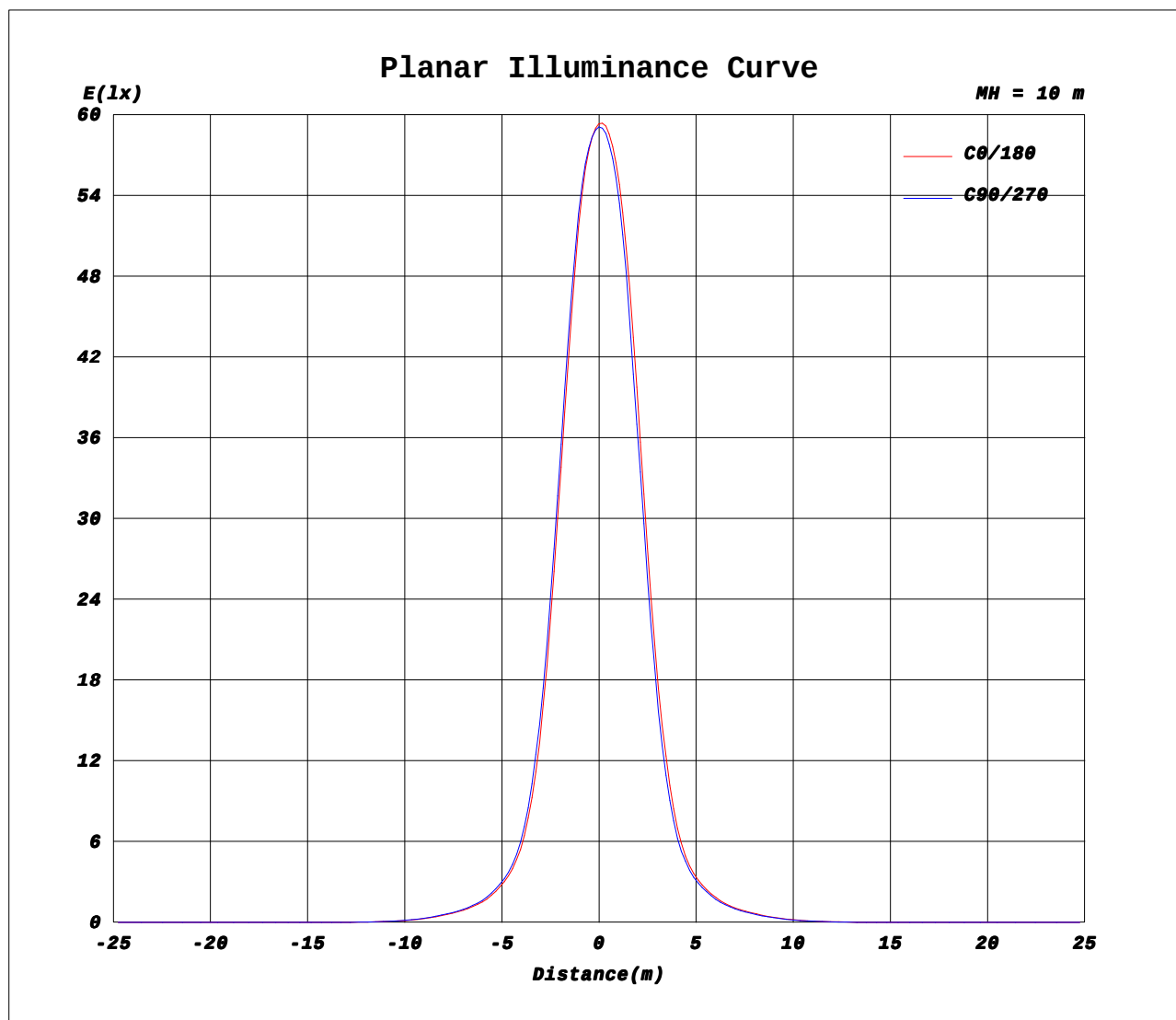
Test:U:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm		
NAME: PS-X16-3000K-15W	TYPE: LED	
MFR.:		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-10-27

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: 2017-10-27

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:220.2V I:0.0680A P:14.60W PF:0.9750 Lamp Flux:1620.79x1 lm																	
NAME: PS-X16-3000K-15W									TYPE: LED								
MFR.:																	

Table--1

UNIT: cd

C (DEG) γ (DEG)	C (DEG)																
	0	30	60	90	120	150	180	210	240	270	300	330					
0	5934	5931	5927	5909	5898	5902	5934	5931	5927	5909	5898	5902					
5	5472	5536	5555	5541	5418	5462	5709	5642	5627	5598	5696	5665					
10	3968	4086	4146	4140	3898	3999	4552	4358	4361	4267	4572	4440					
15	2117	2251	2284	2296	2082	2152	2680	2527	2499	2450	2733	2621					
20	935	997	1026	1025	922	946	1227	1146	1121	1093	1248	1214					
25	468	485	502	502	468	470	566	542	525	522	575	570					
30	268	284	290	291	275	279	330	316	310	308	334	329					
35	166	171	175	176	166	167	198	188	186	185	200	196					
40	96.1	99.8	102	104	95.4	96.7	121	113	111	111	122	118					
45	42.3	44.1	45.3	46.2	40.8	42.1	58.2	53.4	53.1	52.7	60.3	56.7					
50	14.3	15.5	15.4	16.2	13.1	13.6	23.1	20.4	20.1	20.3	23.6	20.6					
55	3.16	3.10	2.67	2.99	2.73	2.43	4.67	4.42	4.15	4.64	4.88	3.74					
60	1.18	1.22	1.03	1.04	0.79	0.76	2.35	2.29	2.37	2.78	2.53	1.87					
65	0.53	0.50	0.52	0.50	0.50	0.50	1.79	1.83	1.92	1.94	1.89	1.83					
70	0.43	0.40	0.42	0.40	0.41	0.40	2.13	2.16	2.21	2.22	2.17	2.15					
75	0.37	0.35	0.37	0.37	0.37	0.37	2.60	2.62	2.65	2.65	2.59	2.59					
80	0.36	0.35	0.35	0.36	0.36	0.37	3.09	3.11	3.12	3.10	3.05	3.06					
85	0.35	0.34	0.34	0.34	0.34	0.34	3.52	3.52	3.53	3.47	3.46	3.48					
90	0.44	0.44	0.42	0.44	0.44	0.45	3.74	3.74	3.75	3.68	3.67	3.69					
95	0.63	0.62	0.60	0.61	0.63	0.64	3.86	3.86	3.86	3.80	3.80	3.81					
100	0.94	0.92	0.90	0.91	0.95	0.95	3.95	3.95	3.95	3.90	3.90	3.90					
105	1.47	1.42	1.39	1.40	1.48	1.46	4.15	4.16	4.17	4.13	4.09	4.10					
110	2.25	2.19	2.14	2.15	2.27	2.25	4.63	4.66	4.68	4.65	4.56	4.59					
115	3.40	3.31	3.23	3.25	3.42	3.39	5.47	5.54	5.57	5.54	5.40	5.45					
120	4.99	4.83	4.76	4.74	5.00	4.92	6.51	6.61	6.63	6.59	6.45	6.50					
125	6.92	6.77	6.65	6.64	6.92	6.86	7.62	7.73	7.75	7.72	7.55	7.61					
130	9.18	8.95	8.88	8.79	9.10	9.05	8.95	9.09	9.08	9.07	8.86	8.94					
135	11.5	11.3	11.1	11.1	11.4	11.4	10.6	10.8	10.7	10.7	10.5	10.6					
140	13.8	13.6	13.4	13.3	13.7	13.7	12.7	12.9	12.9	12.7	12.5	12.6					
145	16.2	16.1	15.8	15.6	16.1	16.2	15.3	15.5	15.5	15.2	15.0	15.1					
150	18.8	18.6	18.3	18.0	18.6	18.7	18.2	18.4	18.3	17.8	17.8	18.0					
155	21.5	21.4	21.0	20.6	21.2	21.5	21.1	21.2	20.9	20.3	20.3	20.6					
160	24.0	24.0	23.6	23.2	23.7	24.1	23.8	23.7	23.1	22.2	22.2	22.7					
165	25.5	25.8	25.6	25.3	25.4	25.7	25.6	25.3	24.3	23.3	23.2	23.7					
170	25.5	26.0	26.1	25.7	25.5	25.7	26.1	25.5	24.3	23.2	23.0	23.5					
175	25.1	25.9	25.6	25.0	24.4	24.5	25.6	25.1	24.0	22.5	22.4	22.8					
180	25.7	25.9	25.1	23.8	23.4	23.7	25.7	25.9	25.3	23.7	23.4	23.7					

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-10-27

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: