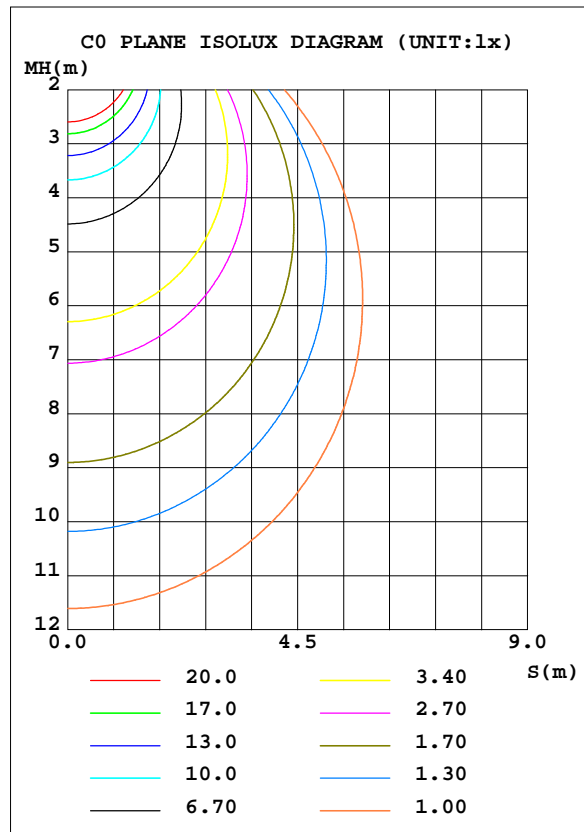
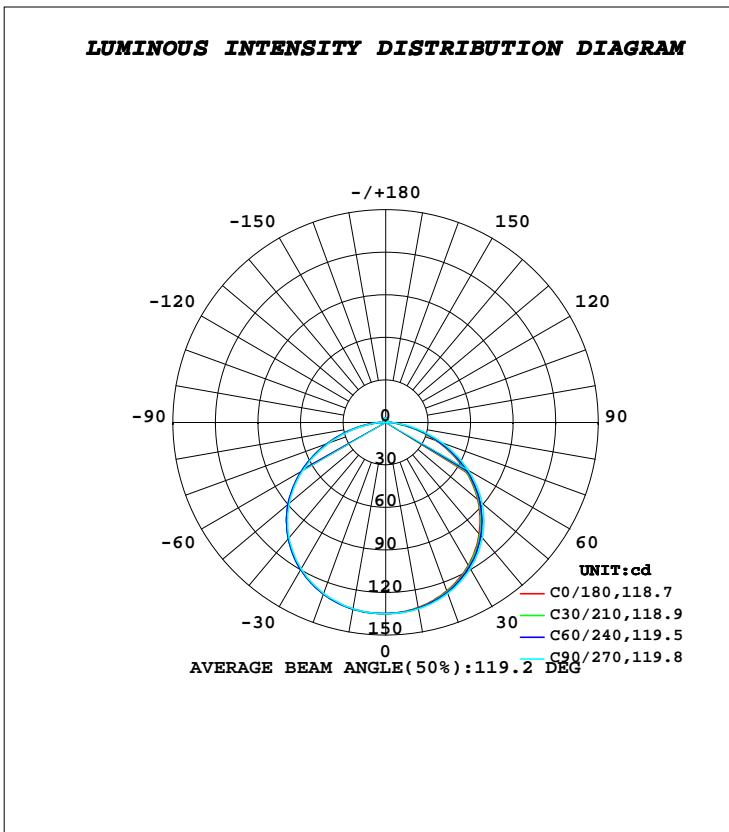


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		I _{max} (cd)	135.2	S/MH(C0/180)	1.29
NOMINAL POWER(W)	4.4	LOR(%)	100.0	S/MH(C90/270)	1.31
RATED VOLTAGE(V)	24	TOTAL FLUX(lm)	428.97	η UP, DN(C0-180)	1.4, 48.3
NOMINAL FLUX(lm)	428.972	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.4, 48.9
LAMPS INSIDE	1	η up(%)	2.8	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	24	η down(%)	97.2	CIBSE SHR MAX	1.50



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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:

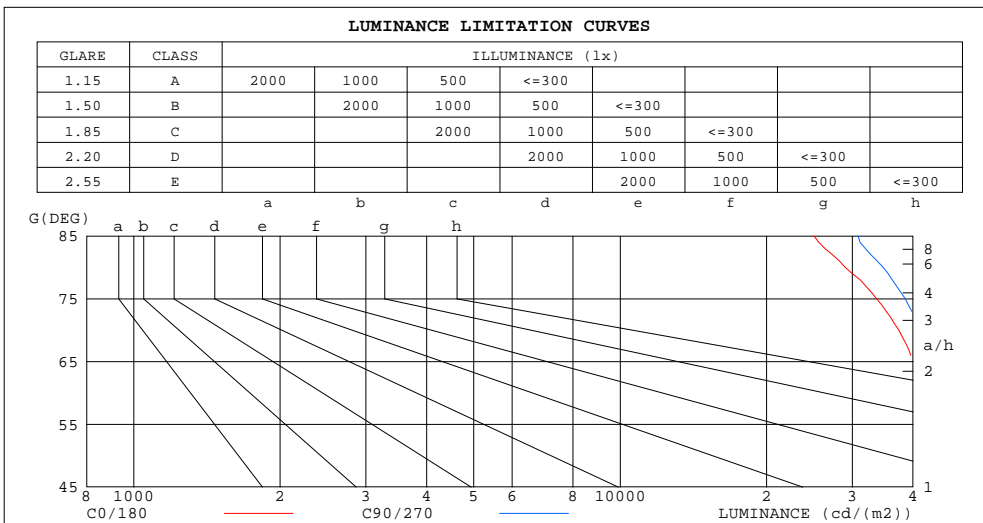
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	132.5	133.0	133.5	133.9	133.6	133.6	133.4	133.2	0- 10	12.81	12.81	2.99,2.99
20	126.4	127.2	128.3	128.9	128.7	128.6	128.2	127.5	10- 20	37.05	49.86	11.6,11.6
30	116.5	117.6	119.2	120.1	119.8	119.8	119.2	118.0	20- 30	57.14	107.0	24.9,24.9
40	102.6	103.9	106.2	107.2	106.9	106.9	106.1	104.4	30- 40	70.51	177.5	41.4,41.4
50	84.73	86.20	88.83	90.01	90.05	89.83	88.76	86.97	40- 50	75.08	252.6	58.9,58.9
60	63.05	64.52	67.30	68.70	68.66	68.39	67.18	65.21	50- 60	69.54	322.1	75.1,75.1
70	38.34	39.76	42.62	44.05	44.31	43.79	42.59	40.61	60- 70	53.94	376.1	87.7,87.7
80	15.10	15.87	18.09	19.37	19.93	19.36	18.15	16.72	70- 80	31.23	407.3	94.9,94.9
90	1.976	1.817	1.288	2.573	2.994	2.717	1.188	2.305	80- 90	9.567	416.9	97.2,97.2
100	1.167	1.162	1.139	1.139	1.279	1.333	1.337	1.356	90-100	1.449	418.3	97.5,97.5
110	1.477	1.448	1.445	1.429	1.530	1.578	1.601	1.602	100-110	1.453	419.8	97.9,97.9
120	1.798	1.746	1.750	1.754	1.823	1.872	1.878	1.877	110-120	1.647	421.4	98.2,98.2
130	2.118	2.058	2.061	2.078	2.110	2.164	2.155	2.149	120-130	1.759	423.2	98.6,98.6
140	2.404	2.355	2.366	2.387	2.378	2.444	2.436	2.418	130-140	1.744	424.9	99.1,99.1
150	2.676	2.637	2.669	2.677	2.645	2.707	2.720	2.683	140-150	1.590	426.5	99.4,99.4
160	2.943	2.911	2.949	2.943	2.908	2.948	2.976	2.936	150-160	1.297	427.8	99.7,99.7
170	3.155	3.136	3.173	3.166	3.108	3.137	3.178	3.138	160-170	0.8606	428.7	99.9,99.9
180	3.212	3.224	3.265	3.246	3.208	3.223	3.264	3.243	170-180	0.3042	429.0	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:2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		



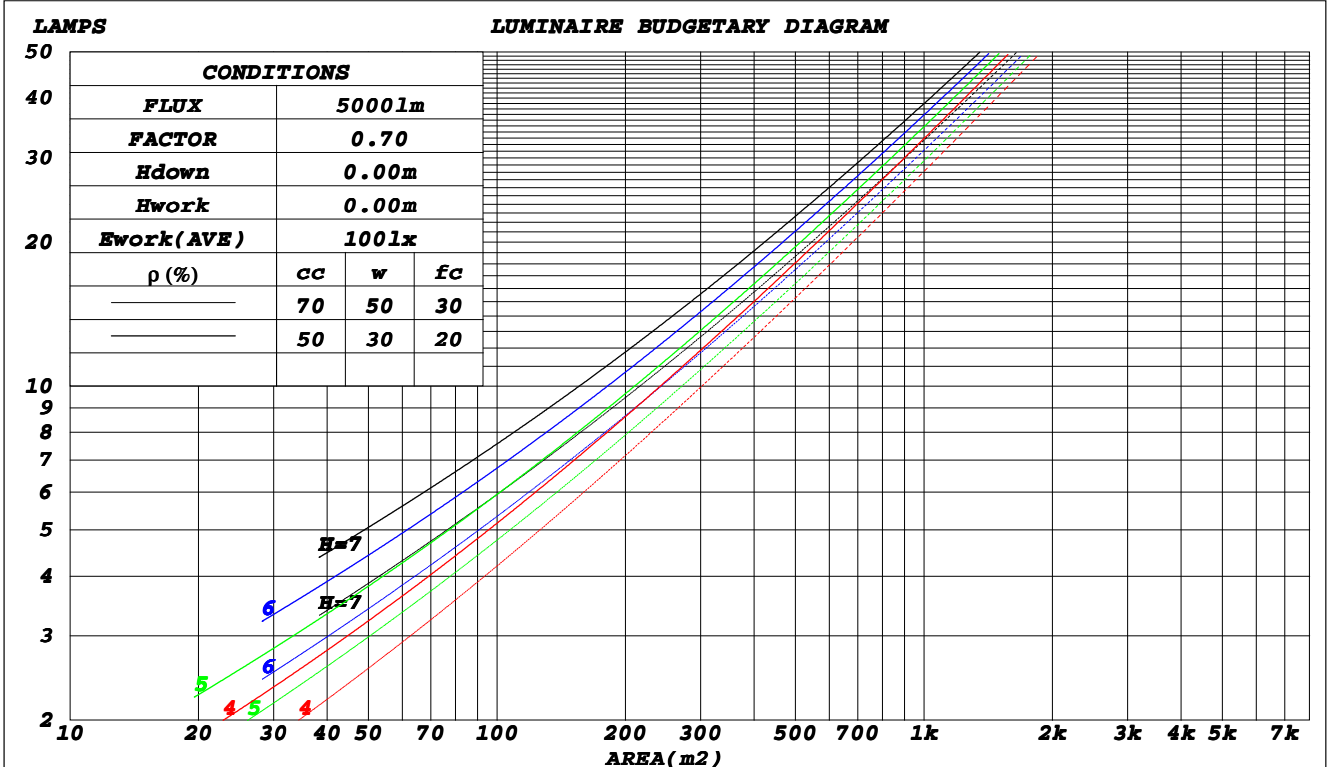
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

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	1.10	1.10	1.10	1.04	1.04	1.04	.99	.99	.99	.97
1.0	1.03	.98	.94	1.00	.96	.93	.95	.92	.89	.91	.88	.86	.87	.85	.83	.81
2.0	.89	.82	.76	.87	.81	.75	.83	.78	.73	.79	.75	.71	.76	.72	.69	.67
3.0	.78	.70	.63	.76	.68	.62	.73	.66	.61	.70	.64	.59	.67	.62	.58	.56
4.0	.69	.60	.53	.67	.59	.53	.64	.57	.51	.62	.56	.50	.59	.54	.49	.47
5.0	.61	.52	.45	.60	.51	.45	.58	.50	.44	.55	.49	.44	.53	.47	.43	.41
6.0	.55	.46	.39	.54	.45	.39	.52	.44	.39	.50	.43	.38	.48	.42	.37	.35
7.0	.50	.41	.35	.49	.40	.34	.47	.40	.34	.45	.39	.34	.44	.38	.33	.31
8.0	.45	.37	.31	.45	.36	.31	.43	.36	.30	.42	.35	.30	.40	.34	.30	.28
9.0	.42	.33	.28	.41	.33	.28	.40	.32	.27	.38	.32	.27	.37	.31	.27	.25
10.0	.38	.30	.25	.38	.30	.25	.36	.29	.25	.35	.29	.24	.34	.28	.24	.22



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2019-03-31

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:

WEC AND CCEC

Test:U:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

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	.318	.181	.057	.310	.177	.056	.295	.169	.054	.281	.162	.052	.269	.156	.050	
2.0	.297	.163	.050	.290	.160	.049	.277	.154	.048	.265	.149	.046	.254	.143	.045	
3.0	.274	.146	.044	.268	.144	.043	.256	.139	.042	.245	.134	.041	.235	.130	.040	
4.0	.253	.131	.039	.247	.129	.038	.236	.125	.037	.227	.122	.037	.218	.118	.036	
5.0	.233	.119	.034	.228	.117	.034	.219	.114	.034	.210	.111	.033	.202	.108	.032	
6.0	.216	.108	.031	.211	.107	.031	.203	.104	.030	.195	.101	.030	.188	.099	.029	
7.0	.201	.099	.028	.197	.098	.028	.189	.096	.028	.182	.093	.027	.175	.091	.027	
8.0	.187	.091	.026	.184	.090	.026	.177	.088	.025	.170	.086	.025	.164	.084	.025	
9.0	.175	.085	.024	.172	.084	.024	.166	.082	.023	.160	.080	.023	.155	.078	.023	
10.0	.165	.079	.022	.162	.078	.022	.156	.076	.022	.151	.075	.021	.146	.073	.021	

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	.212	.212	.212	.181	.181	.181	.124	.124	.124	.071	.071	.071	.023	.023	.023	
1.0	.203	.178	.155	.173	.153	.134	.119	.105	.093	.068	.061	.054	.022	.020	.017	
2.0	.195	.154	.119	.167	.132	.103	.114	.092	.072	.066	.053	.042	.021	.017	.014	
3.0	.187	.136	.096	.161	.118	.083	.110	.082	.058	.064	.048	.034	.020	.015	.011	
4.0	.180	.123	.080	.154	.106	.069	.106	.074	.049	.061	.043	.029	.020	.014	.010	
5.0	.172	.113	.069	.148	.098	.060	.102	.068	.042	.059	.040	.025	.019	.013	.008	
6.0	.165	.105	.061	.142	.091	.053	.098	.063	.038	.057	.037	.022	.018	.012	.007	
7.0	.158	.098	.055	.136	.085	.048	.094	.059	.034	.055	.035	.020	.018	.011	.007	
8.0	.152	.092	.051	.131	.080	.044	.090	.056	.031	.053	.033	.019	.017	.011	.006	
9.0	.146	.087	.047	.126	.076	.041	.087	.053	.029	.051	.031	.017	.016	.010	.006	
10.0	.140	.083	.045	.121	.072	.039	.084	.051	.028	.049	.030	.017	.016	.010	.005	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

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	25.8	27.3	26.1	27.5	27.8	26.0	27.5	26.3	27.8	28.0
3H	27.2	28.6	27.6	28.9	29.2	27.6	29.0	27.9	29.3	29.6
4H	27.8	29.1	28.2	29.4	29.7	28.2	29.5	28.6	29.8	30.1
6H	28.2	29.4	28.5	29.7	30.1	28.6	29.9	29.0	30.2	30.5
8H	28.3	29.5	28.7	29.8	30.2	28.8	30.0	29.2	30.3	30.7
12H	28.3	29.5	28.7	29.8	30.2	28.9	30.0	29.3	30.4	30.7
4H 2H	26.4	27.7	26.8	28.0	28.3	26.6	27.9	26.9	28.2	28.5
3H	28.0	29.2	28.4	29.5	29.9	28.3	29.5	28.7	29.8	30.2
4H	28.7	29.8	29.1	30.1	30.5	29.1	30.1	29.5	30.5	30.9
6H	29.2	30.1	29.6	30.5	31.0	29.6	30.5	30.1	31.0	31.4
8H	29.3	30.2	29.8	30.6	31.1	29.8	30.7	30.3	31.1	31.5
12H	29.4	30.2	29.9	30.7	31.1	29.9	30.7	30.4	31.2	31.6
8H 4H	29.0	29.8	29.4	30.3	30.7	29.3	30.1	29.7	30.6	31.0
6H	29.6	30.3	30.1	30.8	31.3	30.0	30.7	30.4	31.1	31.6
8H	29.8	30.5	30.3	30.9	31.4	30.2	30.9	30.7	31.3	31.9
12H	30.0	30.5	30.5	31.0	31.6	30.4	31.0	31.0	31.5	32.0
12H 4H	29.0	29.8	29.4	30.2	30.7	29.3	30.1	29.7	30.5	31.0
6H	29.6	30.3	30.1	30.8	31.3	30.0	30.6	30.5	31.1	31.6
8H	29.9	30.5	30.4	30.9	31.5	30.3	30.9	30.8	31.4	31.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117, 429.0 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = -2.9)

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

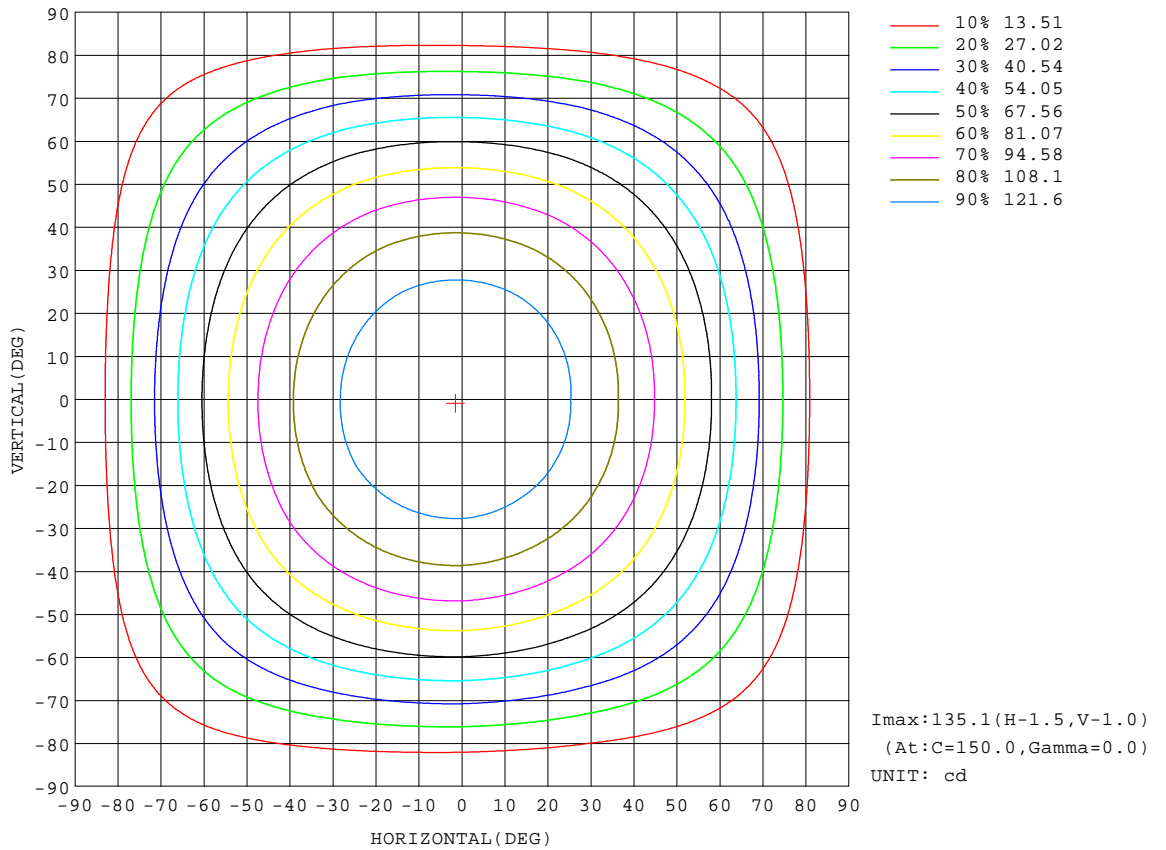
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	56	44	37	55	43	37	53	43	36	30
0.80	66	54	46	64	53	46	62	52	45	38
1.00	74	63	55	73	62	55	70	63	54	47
1.25	81	70	63	80	70	63	77	68	62	54
1.50	86	76	69	84	75	68	81	73	67	59
2.00	93	84	78	91	83	77	87	81	75	67
2.50	97	89	83	95	88	82	91	85	80	71
3.00	101	94	88	98	92	87	94	89	84	75
4.00	105	99	94	102	97	93	98	93	90	80
5.00	107	102	98	105	100	96	100	96	93	83
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:2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		



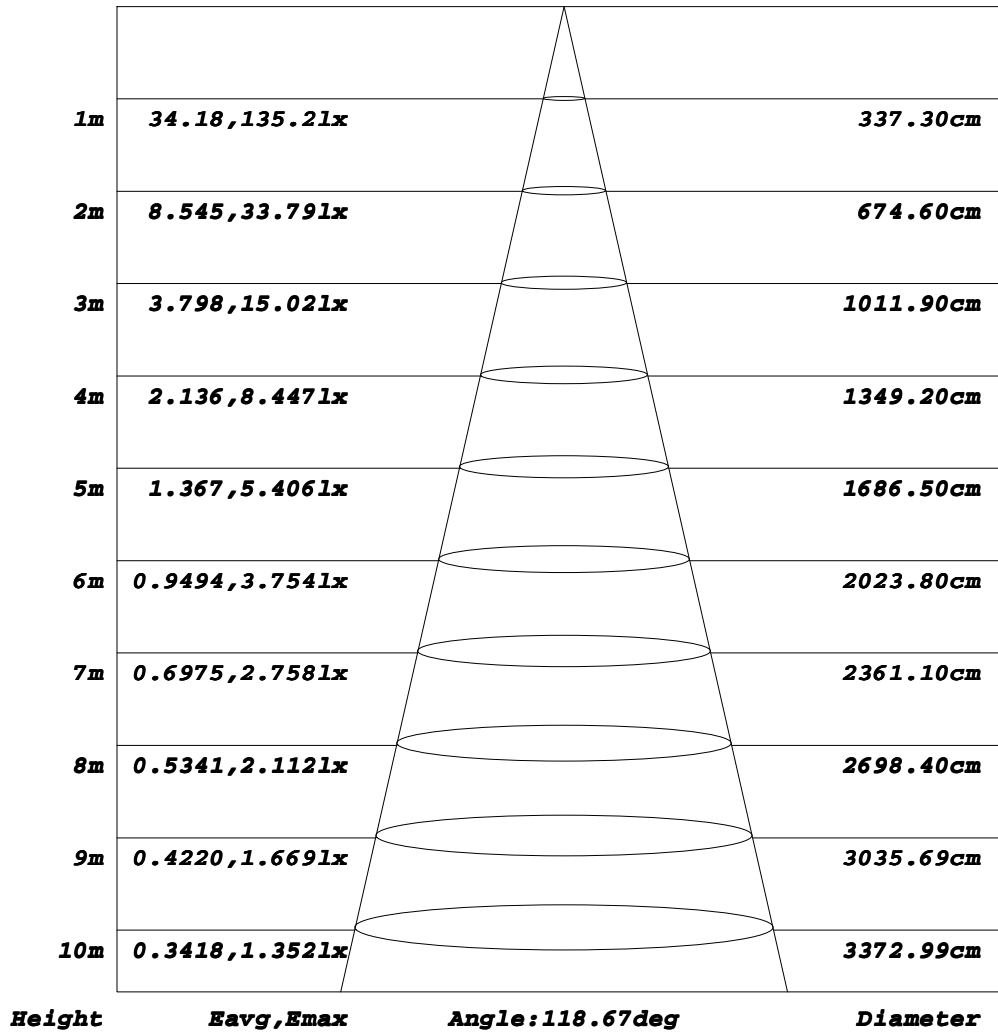
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

Flux out:322.1 lm



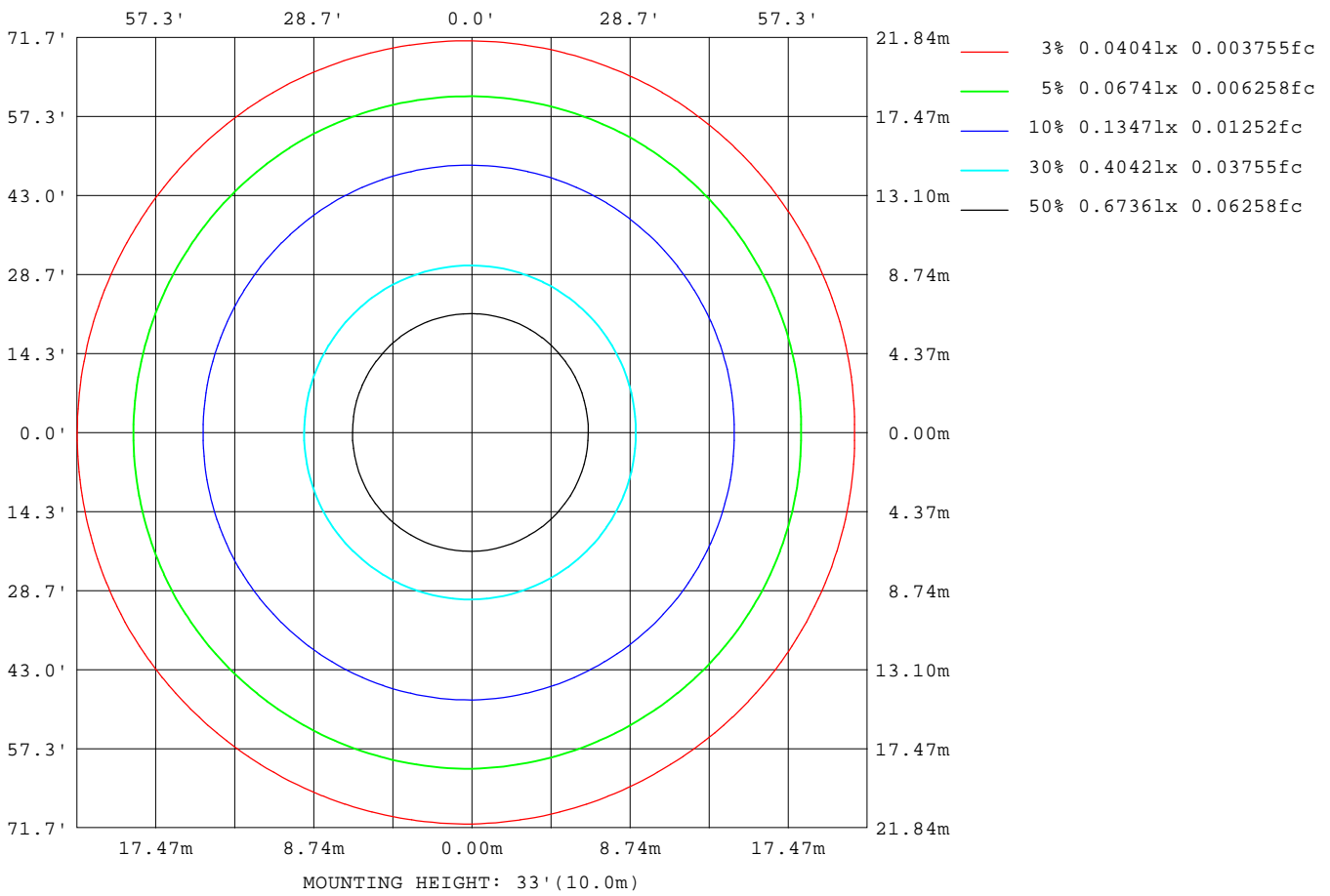
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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

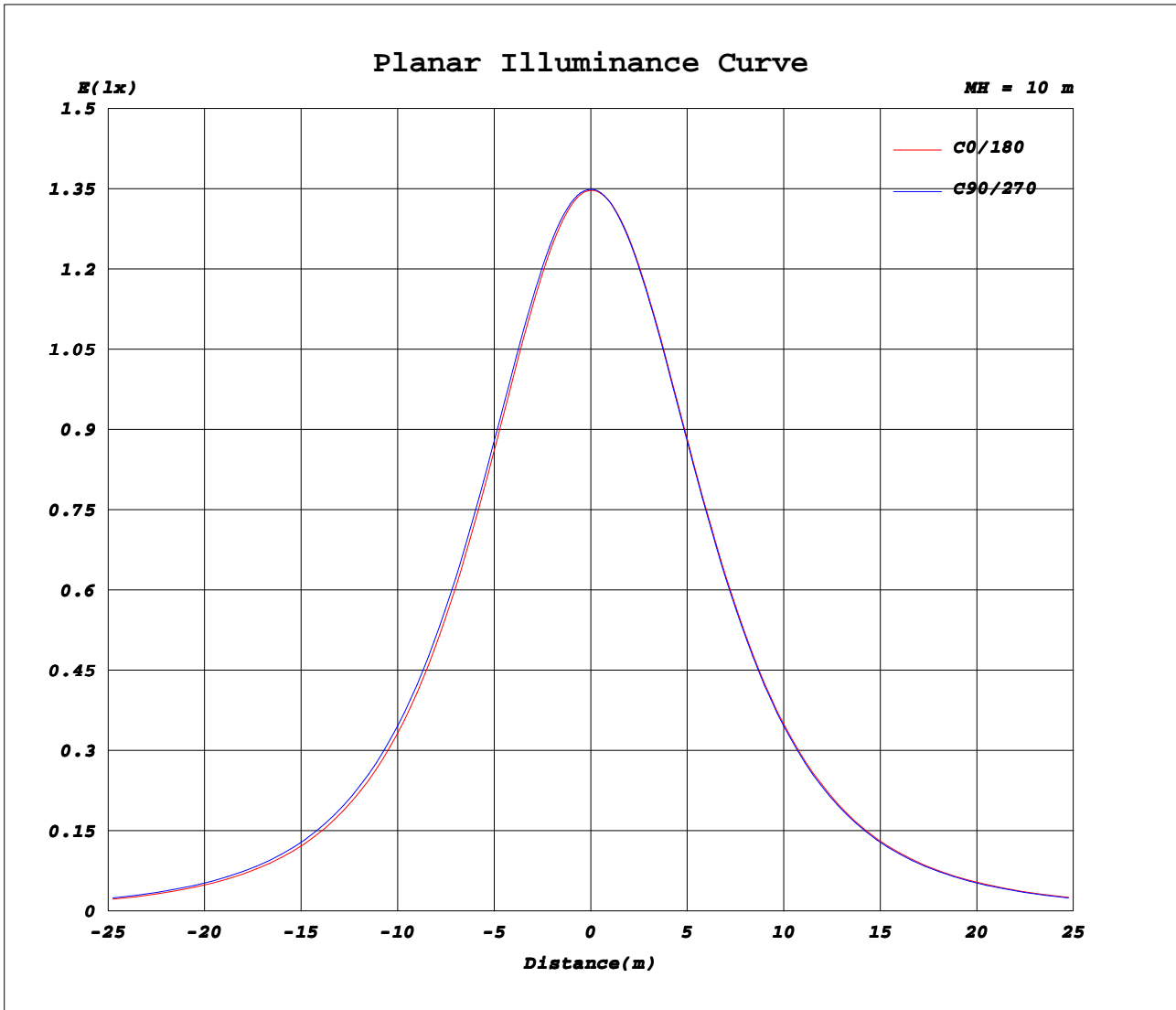
Test:U:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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: 2019-03-31

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:24.000V I:0.1820A P:4.4000W PF:1.0000 Freq:0Hz Lamp Flux:428.972x1 lm		
NAME: 127-001	TYPE:LED	
MFR.: Tronix Lighting.:		

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	135	135	135	135	135	135	135	135	135	135	135	135							
5	134	134	134	135	135	135	135	135	135	135	135	135							
10	133	133	133	133	134	134	134	134	134	134	133	133							
15	130	130	131	131	132	132	132	132	132	132	131	131							
20	126	127	127	128	129	129	129	129	129	129	128	128							
25	122	122	123	124	125	125	125	125	125	125	124	124							
30	116	117	118	119	120	120	120	120	120	120	119	118							
35	110	111	112	113	114	115	114	114	114	114	113	112							
40	103	103	104	106	107	108	107	107	107	107	106	105							
45	94.2	95.0	96.1	98.0	98.8	99.5	98.9	98.7	99.0	97.9	97.1	95.3							
50	84.7	85.6	86.8	88.8	89.6	90.4	90.1	89.6	90.0	88.8	88.0	85.9							
55	74.4	75.2	76.4	78.6	79.5	80.3	79.7	79.4	79.6	78.5	77.5	75.5							
60	63.1	63.9	65.1	67.3	68.2	69.1	68.7	68.3	68.5	67.2	66.3	64.2							
65	50.9	51.8	53.0	55.2	56.2	57.1	56.7	56.3	56.4	55.2	54.2	52.2							
70	38.3	39.2	40.3	42.6	43.5	44.6	44.3	43.8	43.8	42.6	41.7	39.5							
75	26.1	26.8	27.7	29.9	30.7	31.9	31.7	31.1	31.1	29.8	29.2	27.1							
80	15.1	15.6	16.1	18.1	18.7	20.0	19.9	19.4	19.3	18.2	17.5	16.0							
85	6.54	6.63	6.90	8.07	8.76	9.62	9.84	9.34	9.17	8.19	7.99	7.11							
90	1.98	1.85	1.79	1.29	2.37	2.77	2.99	2.75	2.69	1.19	2.33	2.28							
95	1.22	1.17	1.07	0.99	1.10	1.02	1.18	1.22	1.26	1.22	1.32	1.28							
100	1.17	1.17	1.16	1.14	1.14	1.14	1.28	1.33	1.33	1.34	1.35	1.36							
105	1.32	1.31	1.29	1.29	1.28	1.27	1.40	1.44	1.45	1.46	1.46	1.47							
110	1.48	1.46	1.44	1.44	1.44	1.42	1.53	1.57	1.58	1.60	1.60	1.61							
115	1.63	1.60	1.59	1.60	1.60	1.58	1.67	1.71	1.73	1.73	1.73	1.74							
120	1.80	1.76	1.74	1.75	1.76	1.75	1.82	1.87	1.88	1.88	1.87	1.89							
125	1.96	1.92	1.89	1.91	1.92	1.92	1.97	2.02	2.03	2.02	2.00	2.02							
130	2.12	2.07	2.04	2.06	2.08	2.08	2.11	2.16	2.16	2.16	2.14	2.16							
135	2.27	2.22	2.19	2.21	2.23	2.24	2.24	2.30	2.30	2.30	2.27	2.30							
140	2.40	2.37	2.34	2.37	2.39	2.39	2.38	2.44	2.45	2.44	2.41	2.43							
145	2.54	2.51	2.48	2.52	2.53	2.53	2.51	2.56	2.58	2.57	2.54	2.56							
150	2.68	2.65	2.63	2.67	2.68	2.67	2.65	2.70	2.72	2.72	2.68	2.68							
155	2.81	2.78	2.78	2.81	2.82	2.81	2.79	2.82	2.85	2.85	2.82	2.81							
160	2.94	2.91	2.91	2.95	2.95	2.93	2.91	2.93	2.96	2.98	2.95	2.93							
165	3.05	3.03	3.04	3.07	3.07	3.05	3.02	3.03	3.07	3.08	3.06	3.03							
170	3.15	3.13	3.14	3.17	3.18	3.15	3.11	3.12	3.16	3.18	3.15	3.12							
175	3.21	3.20	3.22	3.24	3.24	3.22	3.15	3.16	3.20	3.22	3.21	3.17							
180	3.21	3.20	3.24	3.26	3.26	3.23	3.21	3.21	3.24	3.26	3.26	3.23							

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2019-03-31

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: