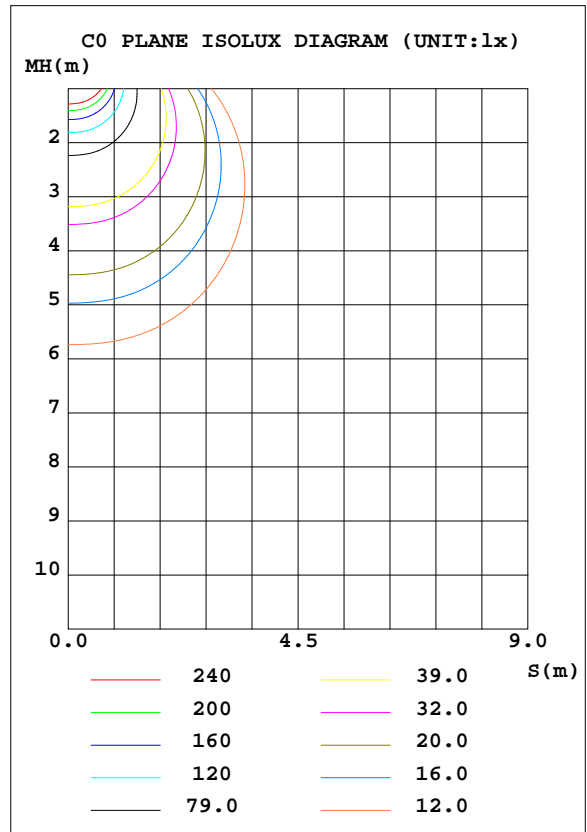
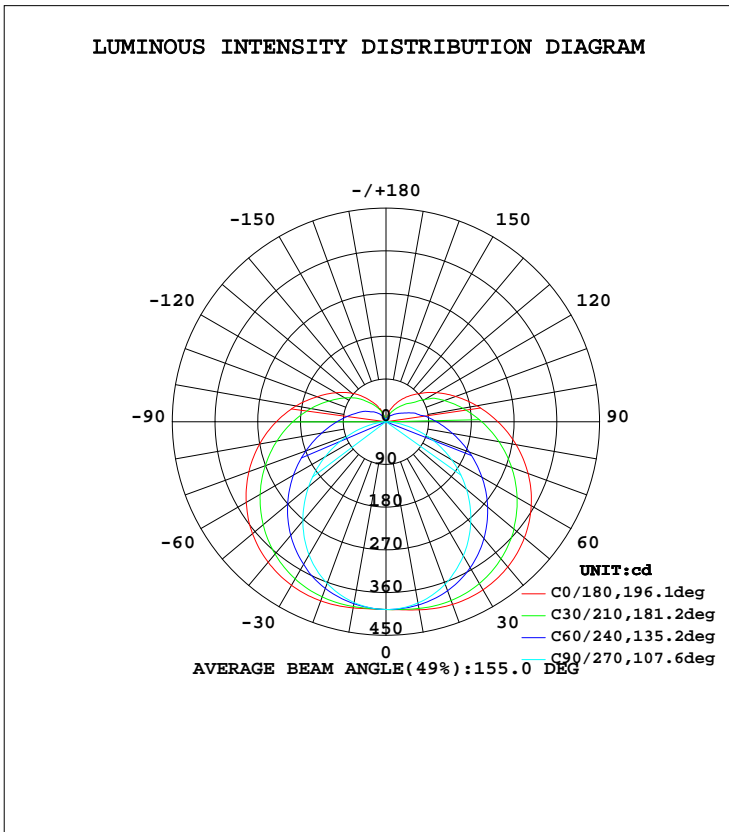


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 111.10 lm/W			
MODEL	177-062_5700K	I <sub>max</sub> (cd)	410.3	S/MH(C0/180)	1.56
NOMINAL POWER(W)	18	LOR(%)	100.0	S/MH(C90/270)	1.23
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	2099.8	η UP, DN(C0-180)	10.3,40.0
NOMINAL FLUX(lm)	2099.81	CIE CLASS	SEMI-D.	η UP, DN(C180-360)	10.2,39.4
LAMPS INSIDE	1	η up(%)	20.5	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	230.2	η down(%)	79.5	CIBSE SHR MAX	1.55



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	402.4	395.7	387.8	392.6	398.2	392.3	386.8	395.0	0- 10	37.67	37.67	1.79,1.79
20	409.4	390.0	364.3	383.8	401.6	383.2	362.5	388.3	10- 20	110.6	148.3	7.06,7.06
30	409.0	374.3	326.0	365.9	398.0	364.8	324.1	371.7	20- 30	174.5	322.7	15.4,15.4
40	399.2	349.0	277.8	339.0	386.3	338.0	272.6	345.6	30- 40	222.3	545.0	26,26
50	380.6	315.5	221.5	304.3	367.2	304.1	212.8	311.5	40- 50	249.5	794.5	37.8,37.8
60	353.4	276.2	160.0	265.5	339.8	265.6	148.6	272.2	50- 60	254.6	1049	50,50
70	318.6	234.1	96.47	224.4	307.4	225.1	84.18	230.2	60- 70	239.5	1289	61.4,61.4
80	278.3	192.1	37.15	184.4	270.3	185.4	27.05	188.6	70- 80	208.8	1497	71.3,71.3
90	235.8	154.2	1.405	148.6	231.2	149.9	1.901	150.9	80- 90	171.0	1668	79.5,79.5
100	194.6	120.7	2.051	118.4	192.5	119.4	2.391	116.6	90-100	137.1	1806	86,86
110	156.3	93.09	2.787	93.77	154.3	93.71	3.012	91.68	100-110	105.8	1911	91,91
120	122.8	65.30	3.474	72.02	122.6	72.24	3.616	61.29	110-120	76.77	1988	94.7,94.7
130	92.88	42.81	4.167	53.07	93.83	54.32	4.250	42.39	120-130	51.04	2039	97.1,97.1
140	68.68	28.64	4.735	37.77	64.90	36.69	4.866	28.29	130-140	31.80	2071	98.6,98.6
150	46.75	19.61	5.273	23.83	40.87	23.78	5.362	19.49	140-150	17.70	2089	99.5,99.5
160	27.45	10.72	5.679	12.01	19.18	11.94	5.762	10.61	150-160	8.080	2097	99.9,99.9
170	6.151	6.069	6.038	6.213	6.125	6.150	6.025	6.010	160-170	2.553	2099	100,100
180	6.196	6.174	6.157	6.186	6.190	6.171	6.139	6.171	170-180	0.5855	2100	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

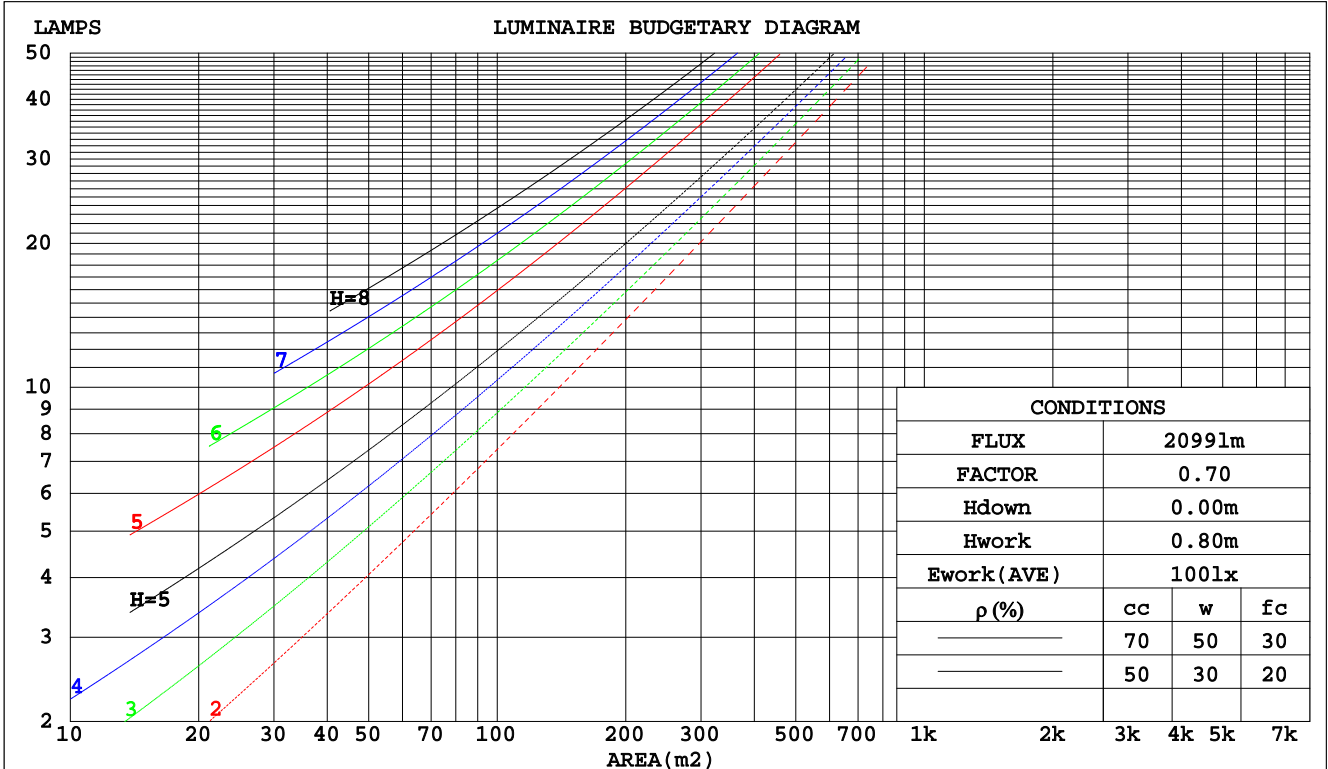
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.14	1.14	1.14	1.09	1.09	1.09	.00	.00	.00	.91	.91	.91	.83	.83	.83	.79
1.0	.94	.89	.84	.90	.85	.81	.82	.78	.74	.74	.71	.68	.68	.65	.63	.59
2.0	.80	.72	.66	.77	.69	.63	.70	.64	.59	.63	.58	.54	.57	.53	.50	.47
3.0	.70	.60	.53	.66	.58	.51	.60	.53	.48	.55	.49	.44	.50	.45	.41	.38
4.0	.61	.51	.44	.58	.49	.43	.53	.46	.40	.48	.42	.37	.44	.39	.34	.31
5.0	.54	.44	.37	.52	.43	.36	.47	.40	.34	.43	.37	.32	.39	.34	.29	.27
6.0	.48	.39	.32	.46	.37	.31	.42	.35	.29	.39	.32	.27	.35	.30	.25	.23
7.0	.43	.34	.28	.42	.33	.27	.38	.31	.25	.35	.29	.24	.32	.27	.22	.20
8.0	.39	.31	.25	.38	.30	.24	.35	.28	.23	.32	.26	.21	.29	.24	.20	.18
9.0	.36	.28	.22	.35	.27	.21	.32	.25	.20	.29	.23	.19	.27	.22	.18	.16
10.0	.33	.25	.20	.32	.24	.19	.29	.23	.18	.27	.21	.17	.25	.20	.16	.14



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2019-12-05

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.443m [K=1.0000]  
Remarks:

WEC AND CCEC

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.396	.225	.071	.383	.218	.069	.357	.205	.065	.334	.193	.062	.312	.181	.058	
2.0	.340	.186	.057	.328	.181	.056	.305	.170	.053	.284	.159	.050	.264	.149	.047	
3.0	.301	.160	.048	.290	.155	.047	.269	.146	.044	.250	.137	.042	.232	.128	.040	
4.0	.270	.140	.041	.260	.136	.040	.241	.128	.038	.223	.120	.036	.207	.113	.034	
5.0	.245	.125	.036	.236	.121	.035	.219	.114	.033	.203	.107	.032	.188	.100	.030	
6.0	.224	.112	.032	.216	.109	.031	.200	.102	.030	.185	.096	.028	.172	.090	.027	
7.0	.206	.102	.029	.199	.099	.028	.184	.093	.027	.171	.088	.025	.158	.082	.024	
8.0	.191	.093	.026	.184	.091	.026	.171	.085	.024	.159	.080	.023	.147	.075	.022	
9.0	.178	.086	.024	.171	.084	.023	.159	.079	.022	.148	.074	.021	.137	.070	.020	
10.0	.166	.080	.022	.160	.077	.022	.149	.073	.021	.139	.069	.020	.128	.065	.019	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.347	.347	.347	.297	.297	.297	.202	.202	.202	.116	.116	.116	.037	.037	.037	
1.0	.344	.313	.285	.294	.269	.246	.201	.185	.170	.116	.107	.099	.037	.034	.032	
2.0	.338	.291	.251	.289	.250	.217	.198	.173	.151	.114	.101	.089	.037	.033	.029	
3.0	.330	.274	.230	.283	.237	.199	.194	.164	.140	.112	.096	.082	.036	.031	.027	
4.0	.322	.262	.216	.277	.226	.187	.190	.158	.132	.110	.092	.078	.035	.030	.026	
5.0	.315	.252	.206	.270	.218	.179	.186	.152	.127	.108	.089	.075	.035	.029	.025	
6.0	.307	.244	.199	.264	.212	.173	.182	.148	.123	.106	.087	.073	.034	.028	.024	
7.0	.300	.238	.194	.258	.206	.169	.178	.144	.120	.104	.085	.071	.033	.028	.024	
8.0	.293	.232	.190	.253	.201	.166	.175	.141	.118	.102	.083	.070	.033	.027	.023	
9.0	.287	.227	.187	.247	.197	.163	.171	.139	.116	.100	.082	.069	.032	.027	.023	
10.0	.281	.223	.185	.242	.194	.161	.168	.136	.115	.098	.081	.068	.032	.027	.023	

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

Uncorrected UGR Table

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm										
NAME: 177-062_5700K					TYPE:18W			WEIGHT:		
DIM.:					SPEC.:5700K			SERIAL No.:1		
MFR.: Tronix Lighting					SUR.:0.0182			PROTECTION ANGLE:		
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	24.6	26.0	25.2	26.5	27.1	21.7	23.0	22.2	23.6	24.2
3H	27.4	28.7	28.0	29.3	29.9	23.2	24.4	23.7	25.0	25.7
4H	29.0	30.2	29.6	30.8	31.5	23.8	25.0	24.4	25.6	26.3
6H	30.7	31.8	31.3	32.5	33.2	24.2	25.3	24.8	26.0	26.7
8H	31.7	32.8	32.3	33.4	34.1	24.3	25.4	25.0	26.0	26.8
12H	32.7	33.8	33.4	34.4	35.2	24.4	25.4	25.0	26.1	26.8
4H 2H	25.1	26.3	25.7	26.9	27.6	23.1	24.3	23.7	24.9	25.5
3H	28.2	29.3	28.9	29.9	30.7	24.9	26.0	25.5	26.6	27.3
4H	30.0	31.0	30.6	31.6	32.4	25.7	26.7	26.4	27.4	28.1
6H	31.9	32.8	32.6	33.5	34.3	26.4	27.3	27.1	28.0	28.8
8H	33.0	33.8	33.7	34.5	35.3	26.7	27.5	27.3	28.2	29.0
12H	34.2	35.0	34.9	35.7	36.5	26.8	27.5	27.5	28.3	29.1
8H 4H	30.3	31.1	31.0	31.8	32.6	27.1	27.9	27.8	28.6	29.4
6H	32.6	33.3	33.3	34.0	34.8	28.2	28.9	28.9	29.6	30.4
8H	33.9	34.5	34.6	35.2	36.1	28.7	29.3	29.4	30.0	30.9
12H	35.4	35.9	36.1	36.7	37.5	29.1	29.6	29.8	30.4	31.2
12H 4H	30.3	31.1	31.1	31.8	32.6	27.5	28.2	28.2	29.0	29.8
6H	32.7	33.3	33.4	34.1	34.9	28.9	29.5	29.6	30.2	31.1
8H	34.1	34.6	34.9	35.4	36.3	29.6	30.1	30.3	30.9	31.8
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.5				

CIE Pub.117 Corrected 2100 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.6)

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

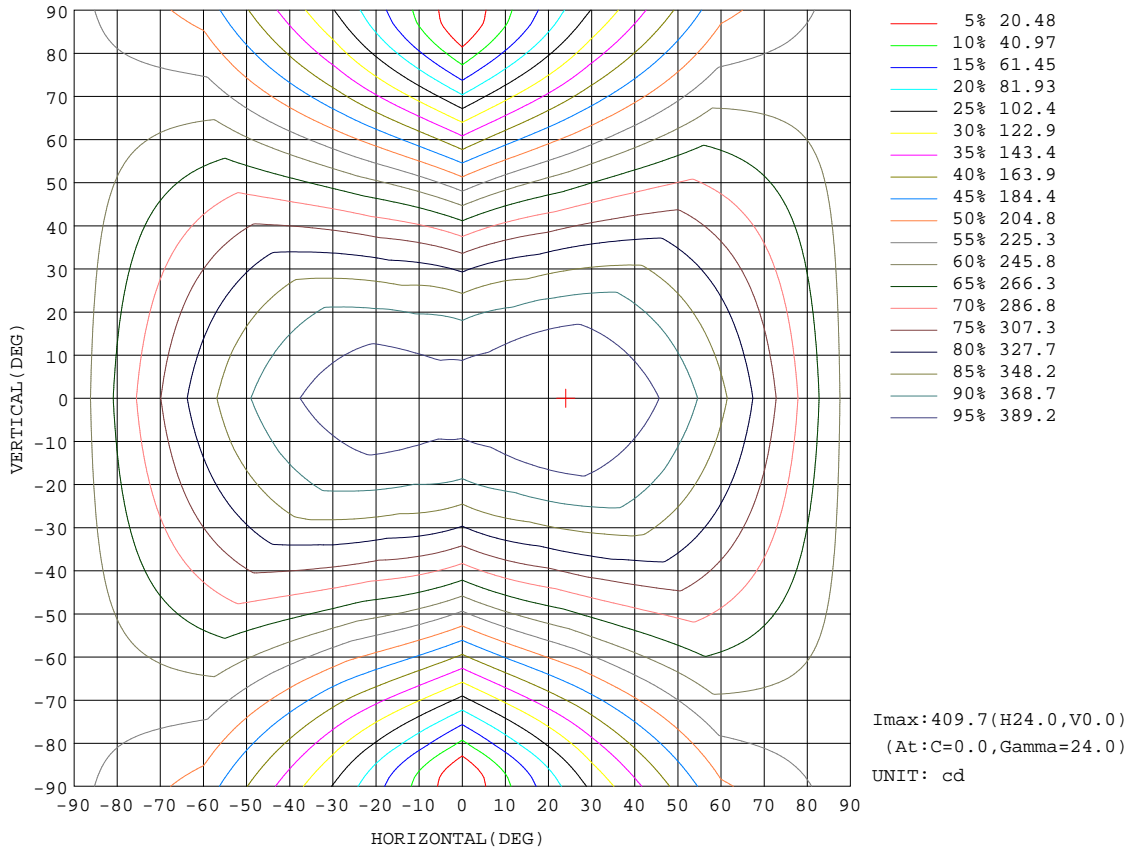
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	46	34	26	45	33	26	43	32	25	19
0.80	55	42	34	53	41	33	51	40	32	24
1.00	63	50	41	61	48	40	57	49	39	30
1.25	70	57	48	67	55	47	63	53	45	35
1.50	75	62	53	72	61	52	67	57	50	39
2.00	82	71	62	79	69	61	73	64	58	45
2.50	87	76	68	83	74	66	77	69	63	49
3.00	91	81	73	87	78	71	80	73	67	53
4.00	96	87	80	91	84	78	84	78	73	58
5.00	99	91	85	94	88	82	86	81	77	61
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:2019-12-05

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

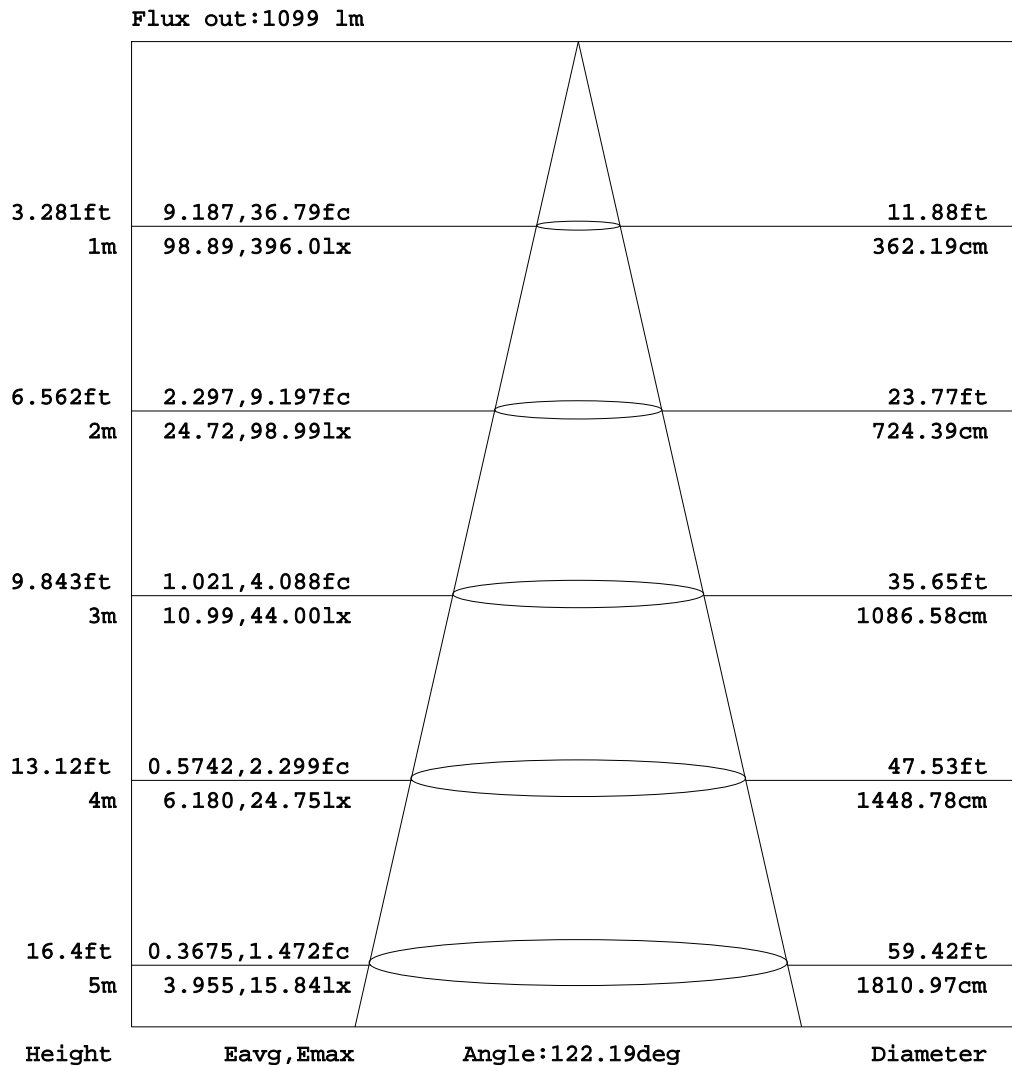


C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity: 65.0%  
 Test Distance: 9.443m [K=1.0000]  
 Remarks:

AAI Figure

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:



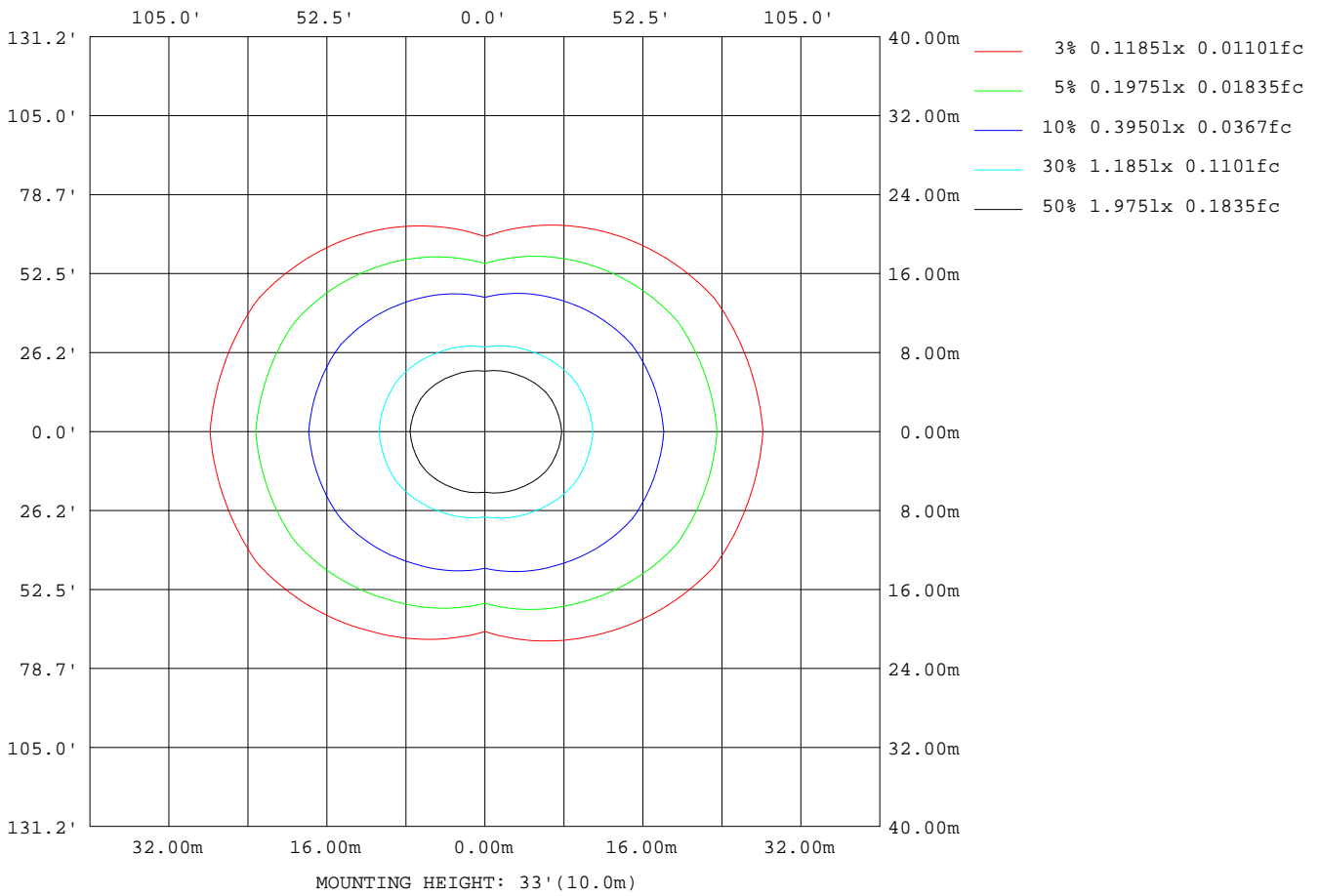
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

**ISOLUX DIAGRAM**

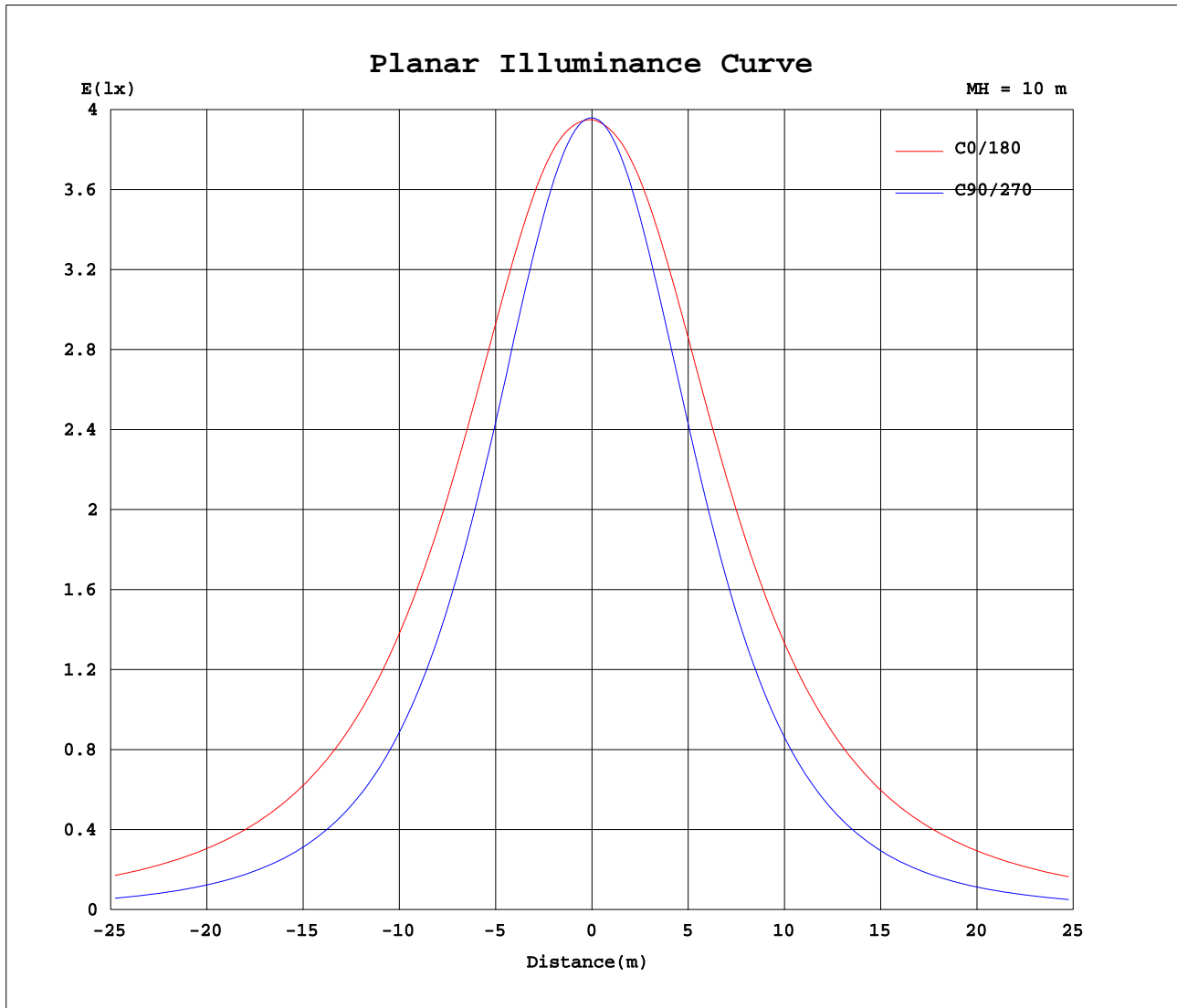
Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2019-12-05

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity: 65.0%  
 Test Distance: 9.443m [K=1.0000]  
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.2V I:0.0900A P:18.90W PF:0.9140 Lamp Flux:2099.81x1 lm		
NAME: 177-062_5700K	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0182	PROTECTION ANGLE:

Table--1

UNIT: cd

C( DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	396	396	396	396	396	396	396	396	396	396	396	396							
5	398	397	395	394	394	395	396	395	393	393	394	397							
10	402	399	392	388	390	395	398	395	389	387	391	399							
15	407	401	387	378	383	395	401	395	383	376	385	400							
20	409	401	379	364	374	393	402	393	374	362	377	399							
25	410	398	368	346	363	389	401	389	362	345	366	397							
30	409	394	355	326	349	383	398	382	347	324	352	391							
35	405	387	339	303	332	375	393	374	331	300	335	384							
40	399	377	321	278	313	365	386	364	312	273	317	374							
45	391	365	301	250	293	352	378	352	292	243	297	362							
50	381	352	279	221	271	338	367	338	271	213	275	348							
55	368	336	257	191	248	322	354	323	248	181	252	333							
60	353	319	233	160	225	306	340	306	225	149	229	316							
65	337	301	210	128	202	289	324	289	202	116	205	297							
70	319	282	186	96.5	178	271	307	271	180	84.2	182	278							
75	299	262	164	65.5	156	252	289	252	158	53.8	160	258							
80	278	242	143	37.2	136	233	270	233	137	27.0	139	238							
85	257	222	123	10.7	117	214	251	215	119	7.44	120	218							
90	236	202	107	1.41	101	196	231	196	103	1.90	103	199							
95	215	183	92.1	1.68	87.6	178	212	178	89.6	2.10	88.9	179							
100	195	164	77.0	2.05	76.1	161	193	161	78.0	2.39	72.0	161							
105	175	147	66.4	2.39	66.5	144	173	144	67.6	2.68	65.2	144							
110	156	131	55.1	2.79	58.5	129	154	128	59.5	3.01	54.9	128							
115	139	116	44.1	3.11	50.4	115	138	114	52.2	3.32	44.0	105							
120	123	94.1	36.5	3.47	42.7	101	123	101	43.7	3.62	36.1	86.5							
125	108	71.7	30.6	3.84	37.5	87.8	108	88.4	36.8	3.94	29.9	73.1							
130	92.9	60.0	25.6	4.17	31.8	74.3	93.8	76.4	32.2	4.25	25.0	59.7							
135	80.5	49.2	21.3	4.45	25.7	64.3	79.6	62.8	26.7	4.57	21.1	48.3							
140	68.7	39.7	17.6	4.73	21.5	54.1	64.9	51.3	22.1	4.87	17.4	39.2							
145	57.4	31.6	15.8	5.02	16.6	44.3	51.8	42.1	17.0	5.13	15.5	31.4							
150	46.8	24.6	14.6	5.27	13.7	34.0	40.9	33.0	14.6	5.36	14.4	24.5							
155	36.2	18.6	12.8	5.48	6.23	25.4	30.6	25.1	6.46	5.58	12.6	18.8							
160	27.4	15.4	6.04	5.68	5.99	18.0	19.2	17.9	5.98	5.76	5.85	15.4							
165	13.7	12.7	5.91	5.86	6.05	6.89	8.37	6.46	6.08	5.92	5.88	12.6							
170	6.15	6.10	6.04	6.04	6.14	6.29	6.12	6.17	6.13	6.03	5.99	6.03							
175	6.14	6.12	6.11	6.12	6.18	6.23	6.17	6.19	6.18	6.12	6.09	6.12							
180	6.20	6.17	6.18	6.16	6.18	6.20	6.19	6.17	6.18	6.14	6.16	6.18							

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-12-05

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.443m [K=1.0000]  
 Remarks: