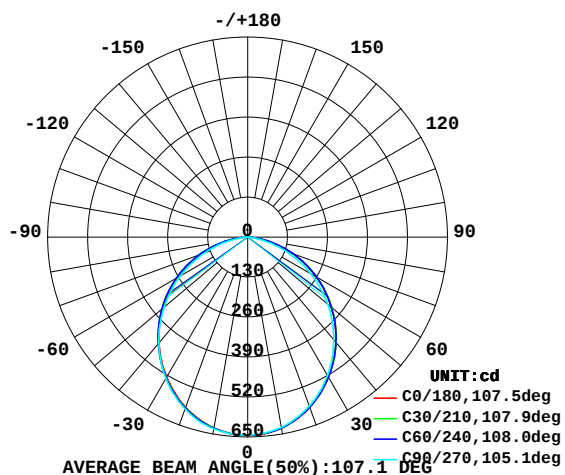


LUMINAIRE PHOTOMETRIC TEST REPORT

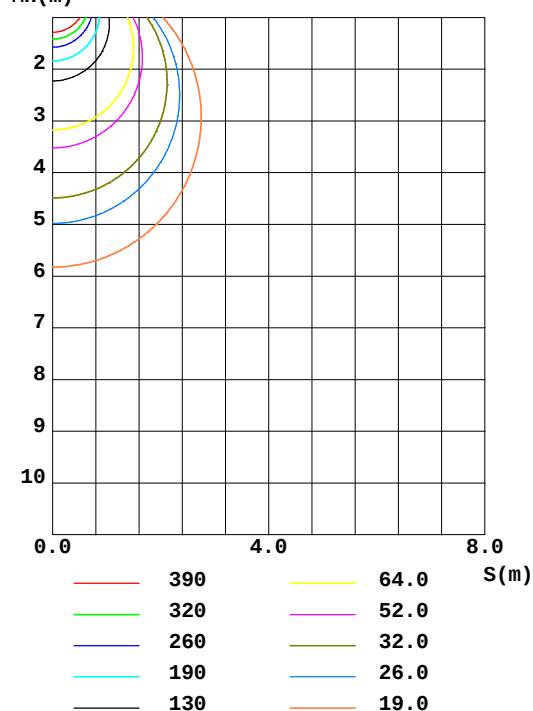
Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 108.54 lm/W			
MODEL	169-308_4000K	I _{max} (cd)	644.8	S/MH(C0/180)	1.22
NOMINAL POWER(W)	16	LOR(%)	100.0	S/MH(C90/270)	1.23
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	1725.7	η UP, DN(C0-180)	0.0, 51.3
NOMINAL FLUX(lm)	1725.71	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 48.7
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.0	η down(%)	100.0	CIBSE SHR MAX	1.35

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:2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE G0-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [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	630.2	631.0	633.0	634.6	630.1	630.2	628.4	625.6	0- 10	60.84	60.84	3.53, 3.53
20	589.2	591.4	595.2	598.5	588.6	588.9	585.1	580.9	10- 20	172.9	233.8	13.5, 13.5
30	526.5	529.6	531.7	538.8	525.6	525.6	519.0	515.1	20- 30	258.2	492.0	28.5, 28.5
40	448.5	452.3	449.8	462.3	446.8	446.6	435.7	434.8	30- 40	305.8	797.8	46.2, 46.2
50	359.7	363.8	354.7	375.0	356.0	356.2	340.1	343.8	40- 50	311.4	1109	64.3, 64.3
60	263.1	267.9	252.8	278.4	258.1	258.2	236.0	246.0	50- 60	276.2	1385	80.3, 80.3
70	160.5	165.8	147.1	176.4	155.0	154.5	127.7	143.2	60- 70	205.6	1591	92.2, 92.2
80	61.03	65.85	47.92	75.10	55.71	54.69	31.29	45.89	70- 80	110.7	1702	98.6, 98.6
90	0.5442	2.198	0.5874	4.993	0.4700	0.6864	0.2412	0.7513	80- 90	24.06	1726	100, 100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

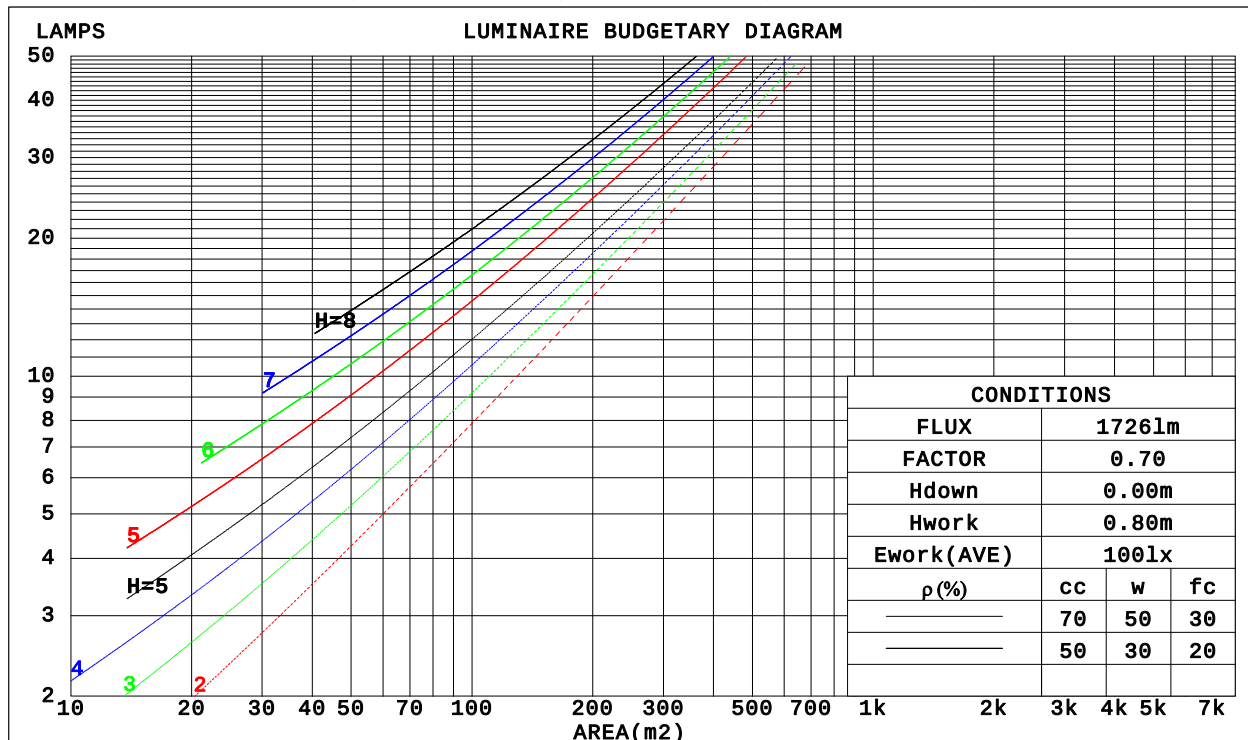
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE G0-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.600m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:

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	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1.0	1.04	1.00	.96	1.02	.98	.95	.98	.95	.92	.94	.91	.89	.90	.88	.86	.84
2.0	.91	.84	.79	.89	.83	.78	.86	.81	.76	.82	.78	.74	.79	.76	.73	.71
3.0	.80	.72	.66	.79	.71	.65	.76	.69	.64	.73	.67	.63	.70	.66	.62	.60
4.0	.71	.62	.56	.70	.62	.55	.67	.60	.55	.65	.59	.54	.63	.58	.53	.51
5.0	.64	.55	.48	.62	.54	.48	.60	.53	.47	.58	.52	.47	.57	.51	.46	.44
6.0	.57	.48	.42	.56	.48	.42	.55	.47	.41	.53	.46	.41	.51	.45	.41	.39
7.0	.52	.43	.37	.51	.43	.37	.50	.42	.37	.48	.42	.37	.47	.41	.36	.34
8.0	.47	.39	.33	.47	.39	.33	.45	.38	.33	.44	.38	.33	.43	.37	.32	.31
9.0	.44	.35	.30	.43	.35	.30	.42	.35	.30	.41	.34	.30	.40	.34	.29	.28
10.0	.40	.32	.27	.40	.32	.27	.39	.32	.27	.38	.31	.27	.37	.31	.27	.25



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.600m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm														
NAME: 169-308_4000K							TYPE:16W				WEIGHT:			
DIM.:							SPEC.:4000K				SERIAL No.:1			
MFR.: Tronix Lighting							SUR.:0.0195				PROTECTION ANGLE:			

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	.300	.170	.054	.293	.167	.053	.280	.160	.051	.267	.154	.049	.256	.148	.048		
2.0	.285	.156	.048	.278	.153	.047	.267	.148	.046	.256	.144	.045	.246	.139	.044		
3.0	.265	.141	.042	.259	.139	.042	.249	.135	.041	.239	.131	.040	.231	.128	.039		
4.0	.245	.127	.037	.240	.126	.037	.231	.123	.037	.223	.120	.036	.215	.117	.036		
5.0	.227	.116	.034	.223	.114	.033	.215	.112	.033	.207	.109	.033	.200	.107	.032		
6.0	.211	.106	.030	.207	.105	.030	.200	.102	.030	.193	.100	.030	.187	.098	.029		
7.0	.197	.097	.028	.193	.096	.027	.187	.094	.027	.181	.093	.027	.175	.091	.027		
8.0	.184	.090	.025	.181	.089	.025	.175	.087	.025	.170	.086	.025	.164	.084	.025		
9.0	.172	.083	.023	.170	.083	.023	.164	.081	.023	.160	.080	.023	.155	.079	.023		
10.0	.162	.078	.022	.160	.077	.022	.155	.076	.021	.151	.075	.021	.146	.074	.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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.180	.156	.135	.154	.134	.116	.105	.092	.080	.061	.053	.047	.019	.017	.015	
2.0	.171	.132	.099	.147	.114	.085	.101	.079	.060	.058	.046	.035	.019	.015	.011	
3.0	.163	.114	.075	.140	.099	.065	.096	.068	.046	.056	.040	.027	.018	.013	.009	
4.0	.156	.101	.059	.134	.087	.051	.092	.061	.036	.053	.036	.021	.017	.012	.007	
5.0	.148	.090	.048	.127	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.141	.082	.040	.121	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.135	.075	.034	.116	.065	.029	.080	.046	.021	.046	.027	.012	.015	.009	.004	
8.0	.128	.069	.029	.110	.060	.025	.076	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.122	.064	.025	.105	.056	.022	.073	.039	.016	.042	.023	.009	.014	.008	.003	
10.0	.116	.060	.023	.100	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.600m [K=1.0000]
Remarks:

Uncorrected UGR Table

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm											
NAME: 169-308_4000K					TYPE:16W			WEIGHT:			
DIM.:					SPEC.:4000K			SERIAL No.:1			
MFR.: Tronix Lighting					SUR.:0.0195			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	24.5	26.0	24.8	26.2	26.4	24.4	25.9	24.7	26.1	26.3	
	3H	26.0	27.3	26.3	27.6	27.8	25.8	27.2	26.1	27.4	27.7
	4H	26.5	27.8	26.8	28.1	28.3	26.3	27.6	26.6	27.9	28.1
	6H	26.9	28.1	27.2	28.4	28.7	26.6	27.8	26.9	28.1	28.3
	8H	27.0	28.2	27.3	28.4	28.7	26.6	27.8	26.9	28.1	28.4
	12H	27.0	28.1	27.3	28.4	28.7	26.6	27.7	26.9	28.0	28.3
4H	2H	25.1	26.4	25.4	26.7	26.9	25.1	26.4	25.4	26.6	26.9
	3H	26.8	27.9	27.1	28.2	28.5	26.7	27.8	27.0	28.1	28.4
	4H	27.4	28.5	27.8	28.8	29.1	27.3	28.3	27.7	28.7	29.0
	6H	27.9	28.9	28.3	29.2	29.6	27.7	28.6	28.1	28.9	29.3
	8H	28.0	28.9	28.5	29.3	29.7	27.7	28.6	28.2	29.0	29.4
	12H	28.1	28.9	28.5	29.3	29.7	27.8	28.6	28.2	28.9	29.3
8H	4H	27.7	28.6	28.1	28.9	29.3	27.6	28.4	28.0	28.8	29.2
	6H	28.3	29.0	28.8	29.4	29.9	28.1	28.8	28.5	29.2	29.7
	8H	28.5	29.2	29.0	29.6	30.0	28.3	28.9	28.7	29.3	29.8
	12H	28.6	29.2	29.1	29.6	30.1	28.3	28.9	28.8	29.3	29.8
12H	4H	27.7	28.5	28.1	28.9	29.3	27.6	28.4	28.0	28.8	29.2
	6H	28.4	29.0	28.8	29.4	29.9	28.2	28.8	28.6	29.2	29.7
	8H	28.6	29.1	29.1	29.6	30.1	28.4	28.9	28.8	29.3	29.8
Variations with the observer position at spacings:											
S = 1.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.2					
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.4					
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.4					

CIE Pub.117 Corrected 1726 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.9)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.600m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:

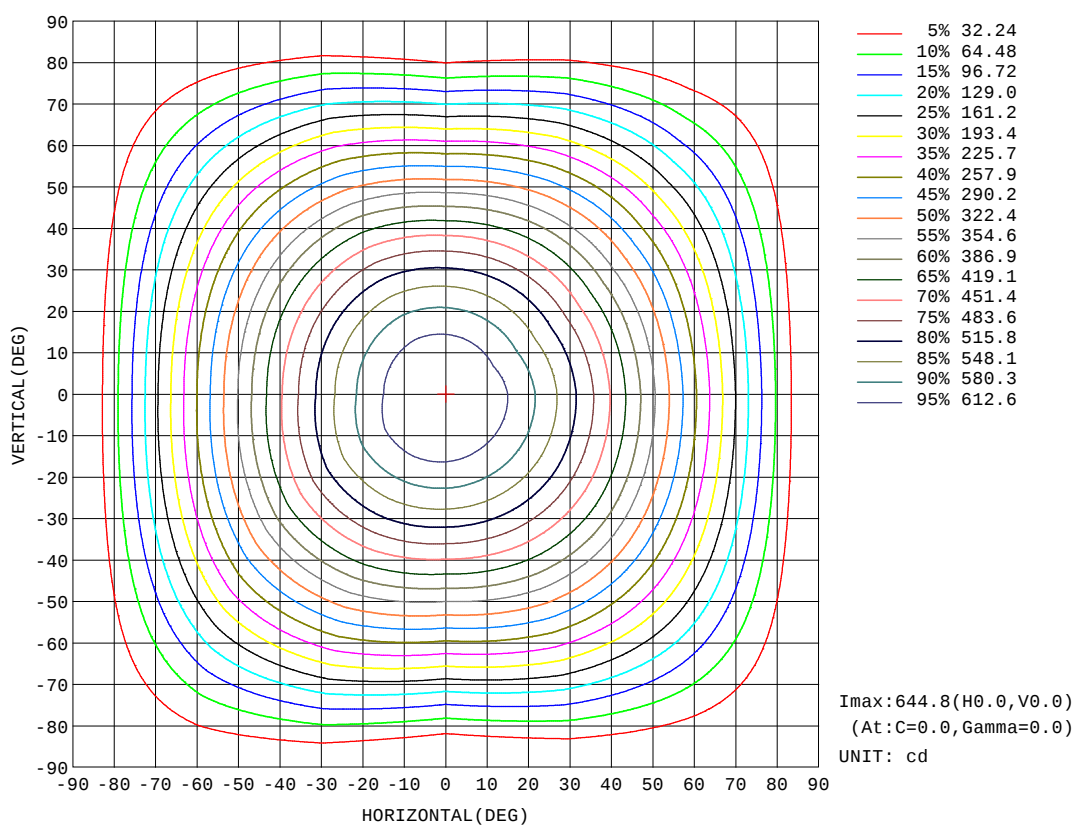
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	47	40	58	47	40	57	46	40	33
0.80	68	57	50	67	57	50	66	56	49	42
1.00	77	66	59	76	65	59	73	67	58	51
1.25	84	74	67	83	73	66	80	72	65	58
1.50	89	79	72	87	78	72	84	77	71	63
2.00	96	87	81	94	86	80	90	84	79	71
2.50	99	92	86	97	91	85	94	88	83	75
3.00	103	96	91	101	95	90	97	92	88	79
4.00	107	101	97	104	99	95	100	96	93	84
5.00	109	104	100	107	102	99	102	99	96	87
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:2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE G0-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:



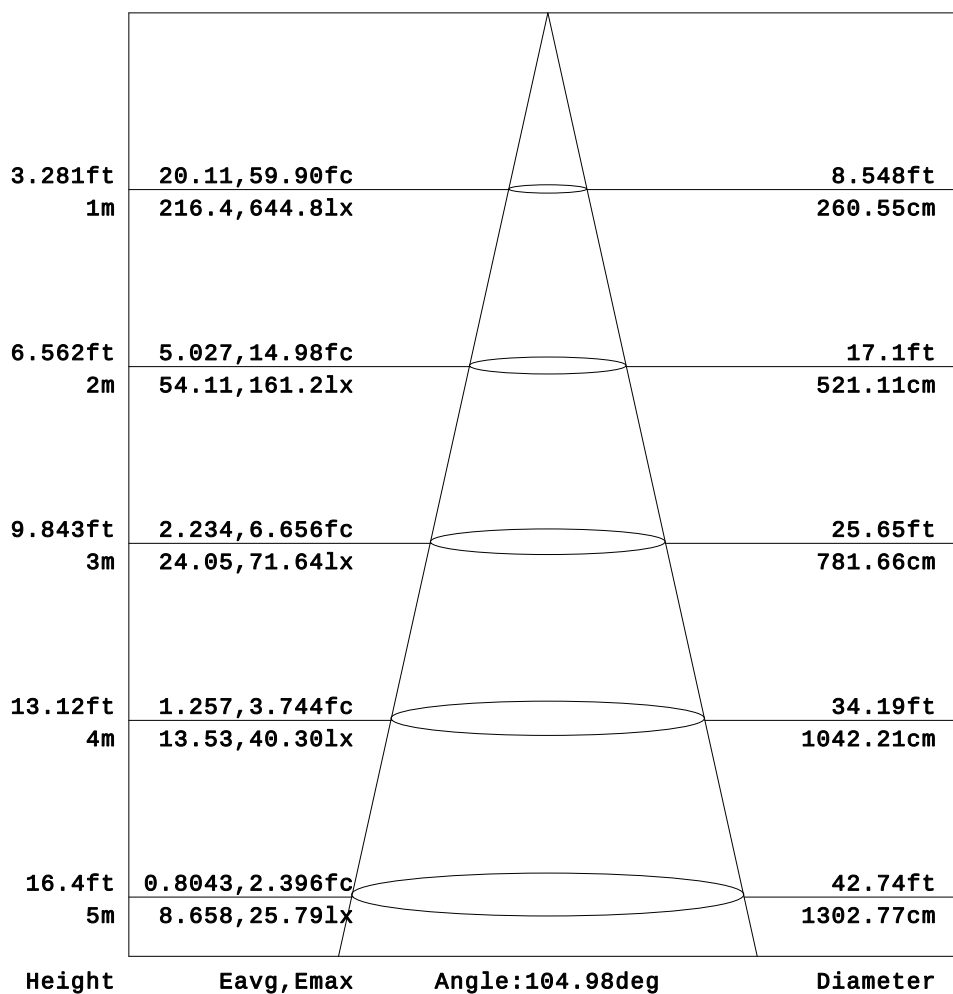
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.600m [K=1.0000]
Remarks:

AAI Figure

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:

Flux out:1197 lm



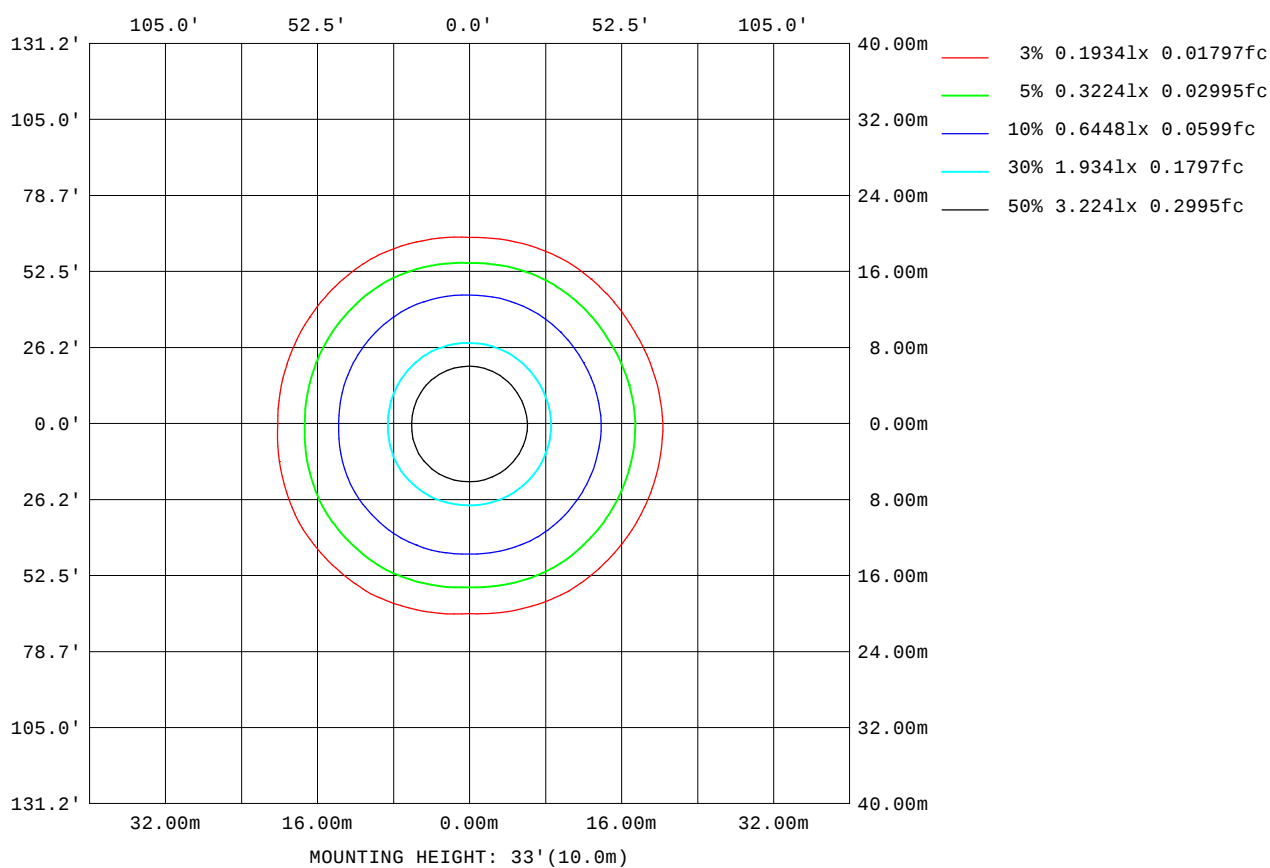
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-12-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE G0-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.600m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

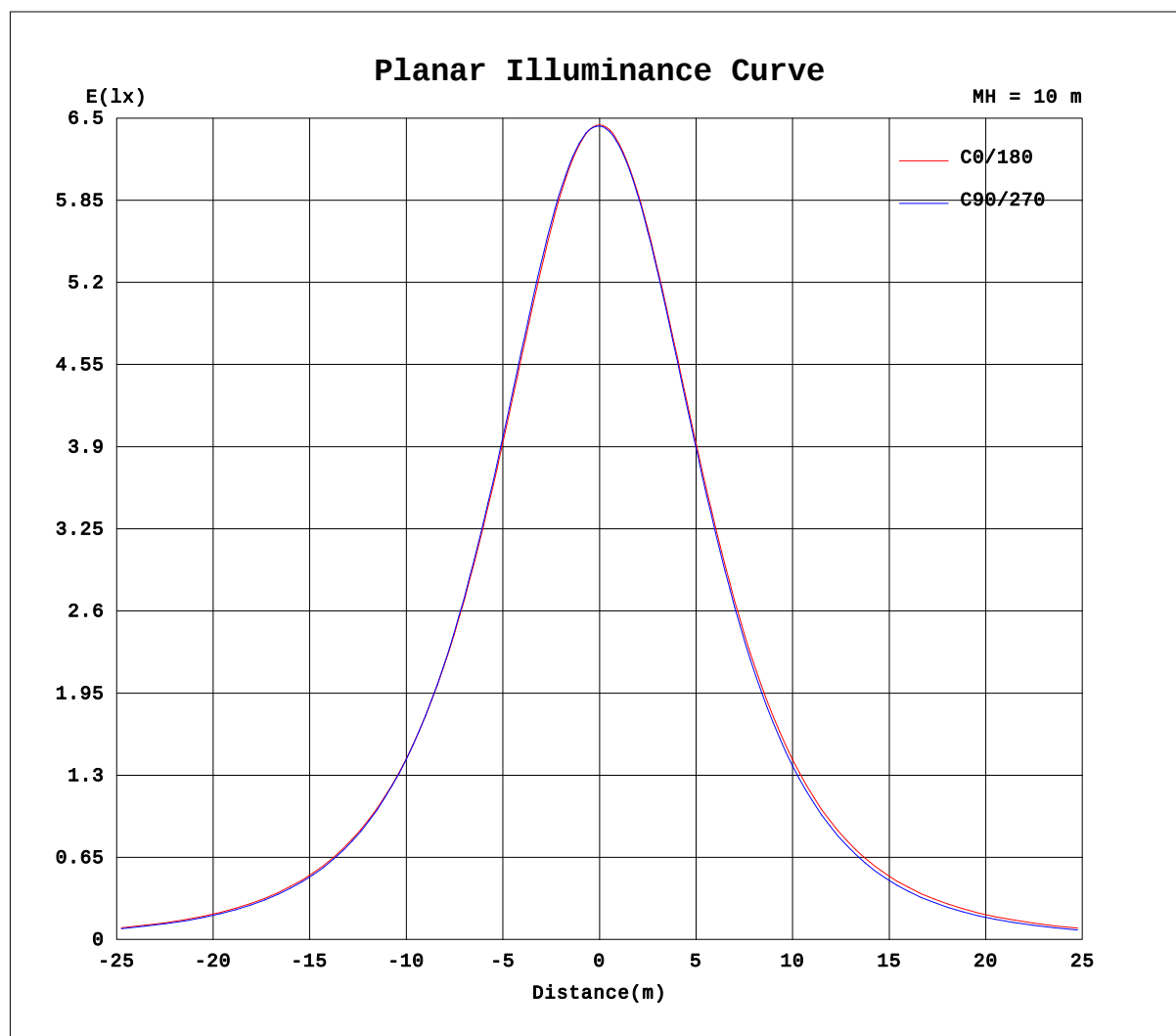
Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.600m [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: 2018-12-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE G0-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.600m [K=1.0000]
Remarks:

Test:U:220.0V I:0.0750A P:15.90W PF:0.9540 Lamp Flux:1725.71x1 lm		
NAME: 169-308_4000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0195	PROTECTION ANGLE:

UNIT: cd

[illegible]

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.600m [K=1.0000]
Remarks:

```