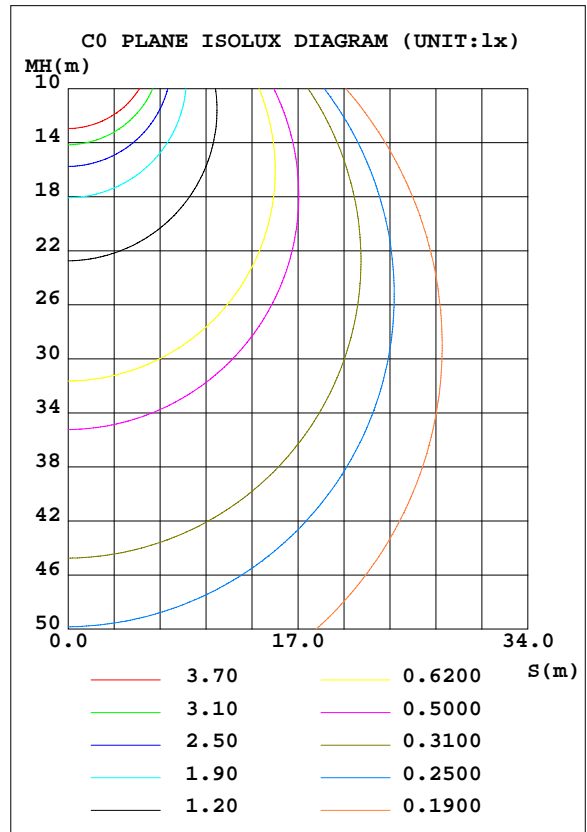
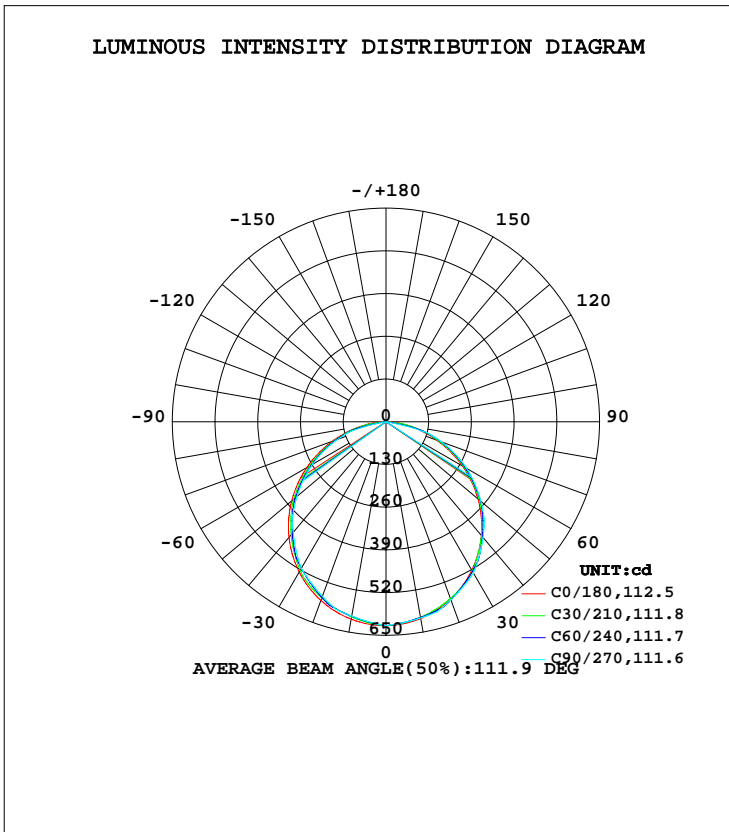


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	136-221_4000K_18W	Imax(cd)	620.7	S/MH(C0/180)	1.26
NOMINAL POWER(W)	18	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1736.8	η UP, DN(C0-180)	0.0,51.0
NOMINAL FLUX(lm)	1736.82	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,49.0
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	1.35



H(β) Range:-90 - 90DEG
 H(β) Interval: 1.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2019-11-13

V(B) Range:-75 - 75DEG
 V(B) Interval: 5.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
 Humidity:65.0%
 Test Distance:8.240m [K=1.0000]
 Remarks: 136-221_4000K_18W

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	607.9	604.1	606.3	605.7	610.1	601.7	600.7	600.0	0- 10	58.27	58.27	3.35,3.35
20	574.6	578.1	576.8	581.1	579.0	573.5	565.6	569.6	10- 20	166.9	225.2	13,13
30	521.8	522.8	532.0	527.0	528.0	516.0	515.5	510.8	20- 30	252.9	478.2	27.5,27.5
40	451.7	458.6	459.7	463.1	459.2	449.2	439.2	443.0	30- 40	305.4	783.6	45.1,45.1
50	365.5	371.0	376.8	377.0	374.6	360.9	353.3	353.2	40- 50	316.7	1100	63.3,63.3
60	267.9	275.3	283.3	281.9	277.5	264.5	257.6	256.4	50- 60	285.3	1385	79.8,79.8
70	164.5	174.6	180.3	180.7	174.4	163.6	156.8	156.2	60- 70	217.2	1603	92.3,92.3
80	67.42	65.82	0	70.47	75.79	58.90	0	53.82	70- 80	120.1	1723	99.2,99.2
90	1.107	0	0	0	1.538	0	0	0	80- 90	14.02	1737	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		

Conical surface Flux(90deg): 943.09 lm

%lum = 54.3%
 %lamp = 54.3%

Conical surface Flux(120deg): 1385.5 lm

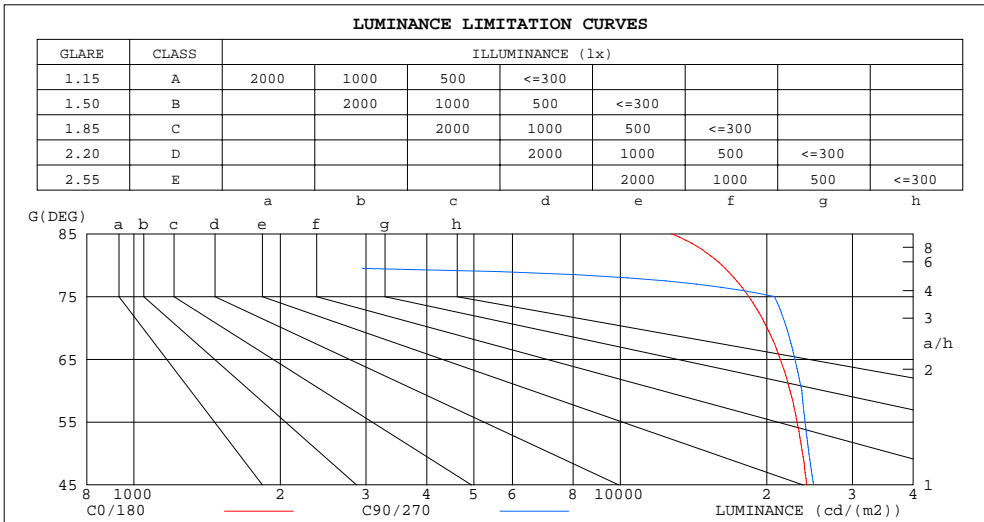
%lum = 79.8%
 %lamp = 79.8%

H(β) Range:-90 - 90DEG
 H(β) Interval: 1.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2019-11-13

V(B) Range:-75 - 75DEG
 V(B) Interval: 5.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
 Humidity:65.0%
 Test Distance:8.240m [K=1.0000]
 Remarks: 136-221_4000K_18W

LUMINANCE LIMITATION CURVES

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	12730	0
80	16177	0
75	18368	20743
70	20040	21969
65	21335	22855
60	22326	23608
55	23081	23975
50	23693	24424
45	24169	24957

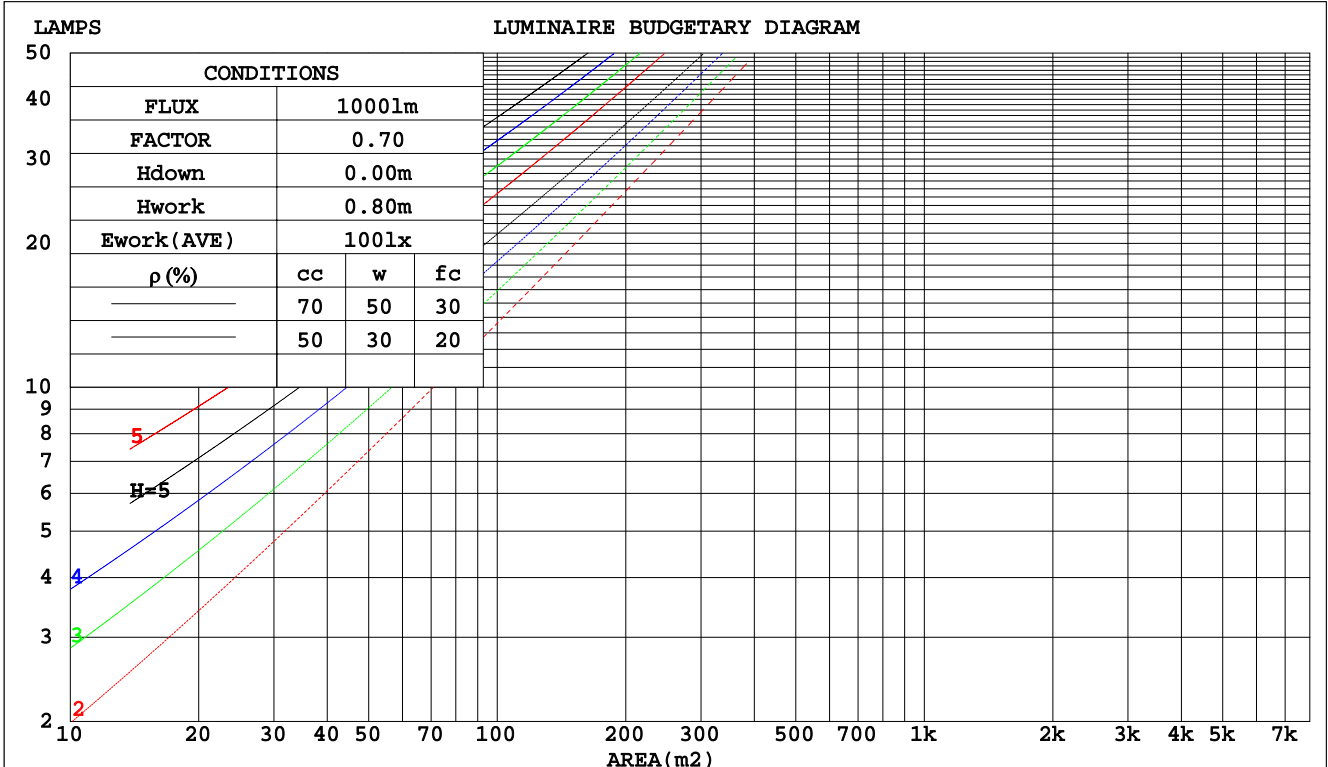
H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding 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																
pfc	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	.97	1.02	.98	.95	.98	.95	.92	.94	.92	.89	.90	.88	.87	.84
2.0	.91	.84	.79	.89	.83	.78	.86	.80	.76	.82	.78	.74	.79	.76	.72	.70
3.0	.80	.72	.65	.78	.71	.65	.75	.69	.64	.73	.67	.62	.70	.65	.61	.59
4.0	.71	.62	.55	.69	.61	.55	.67	.60	.54	.65	.58	.53	.62	.57	.53	.50
5.0	.63	.54	.48	.62	.54	.47	.60	.52	.47	.58	.51	.46	.56	.50	.46	.44
6.0	.57	.48	.41	.56	.47	.41	.54	.46	.41	.52	.46	.40	.51	.45	.40	.38
7.0	.51	.43	.37	.51	.42	.36	.49	.42	.36	.48	.41	.36	.46	.40	.36	.34
8.0	.47	.38	.33	.46	.38	.32	.45	.38	.32	.44	.37	.32	.43	.36	.32	.30
9.0	.43	.35	.29	.42	.35	.29	.41	.34	.29	.40	.34	.29	.39	.33	.29	.27
10.0	.40	.32	.27	.39	.32	.26	.38	.31	.26	.37	.31	.26	.36	.30	.26	.24



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

WEC AND CCEC

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding 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	.299	.170	.054	.292	.166	.053	.278	.160	.051	.266	.154	.049	.255	.148	.048	
2.0	.286	.157	.048	.280	.154	.048	.268	.149	.046	.258	.144	.045	.248	.140	.044	
3.0	.267	.142	.043	.261	.140	.042	.251	.136	.041	.241	.132	.041	.232	.129	.040	
4.0	.247	.128	.038	.242	.127	.037	.233	.124	.037	.225	.121	.036	.217	.118	.036	
5.0	.229	.117	.034	.225	.115	.034	.216	.113	.033	.209	.110	.033	.202	.108	.032	
6.0	.213	.107	.030	.209	.105	.030	.201	.103	.030	.195	.101	.030	.188	.099	.029	
7.0	.198	.098	.028	.195	.097	.028	.188	.095	.027	.182	.093	.027	.176	.092	.027	
8.0	.185	.090	.025	.182	.090	.025	.176	.088	.025	.171	.087	.025	.166	.085	.025	
9.0	.174	.084	.023	.171	.083	.023	.166	.082	.023	.161	.081	.023	.156	.079	.023	
10.0	.163	.078	.022	.161	.078	.022	.156	.076	.022	.152	.075	.021	.147	.074	.021	

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	.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	.060	.053	.047	.019	.017	.015	
2.0	.171	.132	.099	.147	.114	.085	.101	.079	.060	.058	.046	.035	.019	.015	.011	
3.0	.164	.114	.075	.140	.099	.065	.096	.068	.045	.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	.149	.091	.047	.128	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.142	.082	.039	.122	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.135	.075	.033	.116	.065	.029	.080	.046	.021	.047	.027	.012	.015	.009	.004	
8.0	.129	.069	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.014	.008	.004	
9.0	.123	.065	.025	.106	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.022	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

UGR(Unified Glare Rating) Table

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm										
NAME: 136-221_4000K_18W					TYPE:			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: Tronix Lighting					SUR.:175			Shielding 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	23.8	25.4	24.1	25.6	25.8	24.1	25.6	24.3	25.8	26.0
3H	25.3	26.7	25.6	27.0	27.2	25.7	27.1	26.0	27.3	27.5
4H	25.9	27.2	26.2	27.5	27.7	26.3	27.6	26.6	27.9	28.1
6H	26.3	27.6	26.6	27.8	28.1	26.4	27.6	26.7	27.9	28.2
8H	26.4	27.6	26.8	27.9	28.2	26.3	27.5	26.7	27.8	28.1
12H	26.5	27.7	26.8	27.9	28.3	26.3	27.4	26.6	27.7	28.0
4H 2H	24.5	25.8	24.8	26.1	26.3	24.7	26.0	25.0	26.2	26.5
3H	26.2	27.3	26.5	27.6	27.9	26.4	27.6	26.8	27.9	28.2
4H	26.9	27.9	27.3	28.3	28.6	27.2	28.3	27.6	28.6	28.9
6H	27.4	28.4	27.8	28.7	29.1	27.3	28.3	27.7	28.6	29.0
8H	27.6	28.5	28.0	28.8	29.2	27.3	28.2	27.7	28.5	28.9
12H	27.7	28.5	28.1	28.9	29.3	27.2	28.0	27.7	28.4	28.8
8H 4H	27.2	28.1	27.6	28.4	28.8	27.5	28.4	27.9	28.7	29.1
6H	27.9	28.6	28.3	29.0	29.4	27.7	28.4	28.1	28.8	29.2
8H	28.2	28.8	28.6	29.2	29.7	27.6	28.3	28.1	28.7	29.1
12H	28.3	28.9	28.8	29.3	29.8	27.6	28.1	28.1	28.6	29.0
12H 4H	27.2	28.0	27.6	28.4	28.8	27.5	28.3	27.9	28.7	29.1
6H	27.9	28.5	28.3	28.9	29.4	27.7	28.3	28.1	28.7	29.2
8H	28.2	28.7	28.6	29.2	29.6	27.6	28.2	28.1	28.6	29.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.1 / - 0.2				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.4				

CIE Pub.117, 1737 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 1.9)

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

UTILIZATION FACTORS TABLE

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:

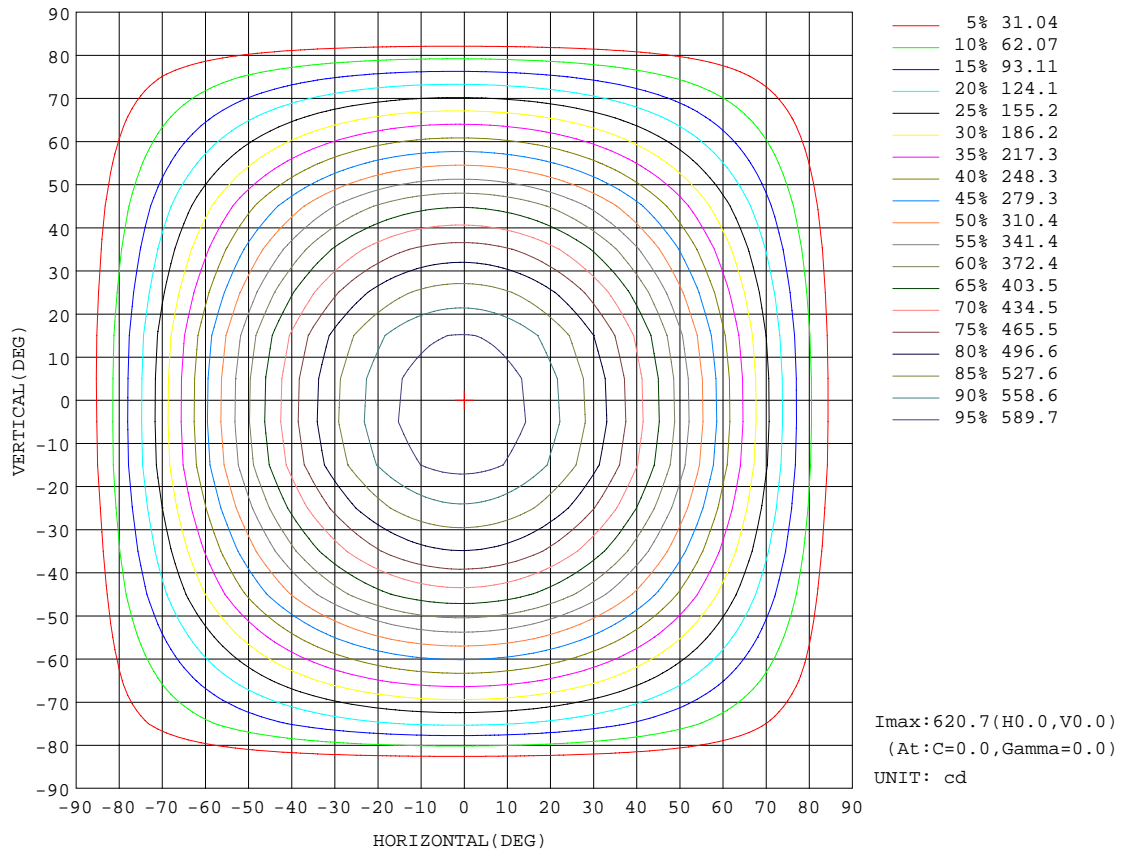
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	58	46	39	57	46	39	56	45	39	33
0.80	68	56	49	67	56	49	65	55	48	42
1.00	76	65	58	75	65	58	73	66	57	50
1.25	84	73	66	82	72	66	79	71	65	58
1.50	89	79	72	87	78	71	84	76	70	63
2.00	95	87	81	94	86	80	90	84	78	71
2.50	99	92	86	97	90	85	94	88	83	75
3.00	103	96	91	101	94	90	97	92	87	79
4.00	107	101	97	104	99	95	100	96	93	84
5.00	109	104	101	107	103	99	102	99	96	87
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

ISOCANDELA DIAGRAM

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:

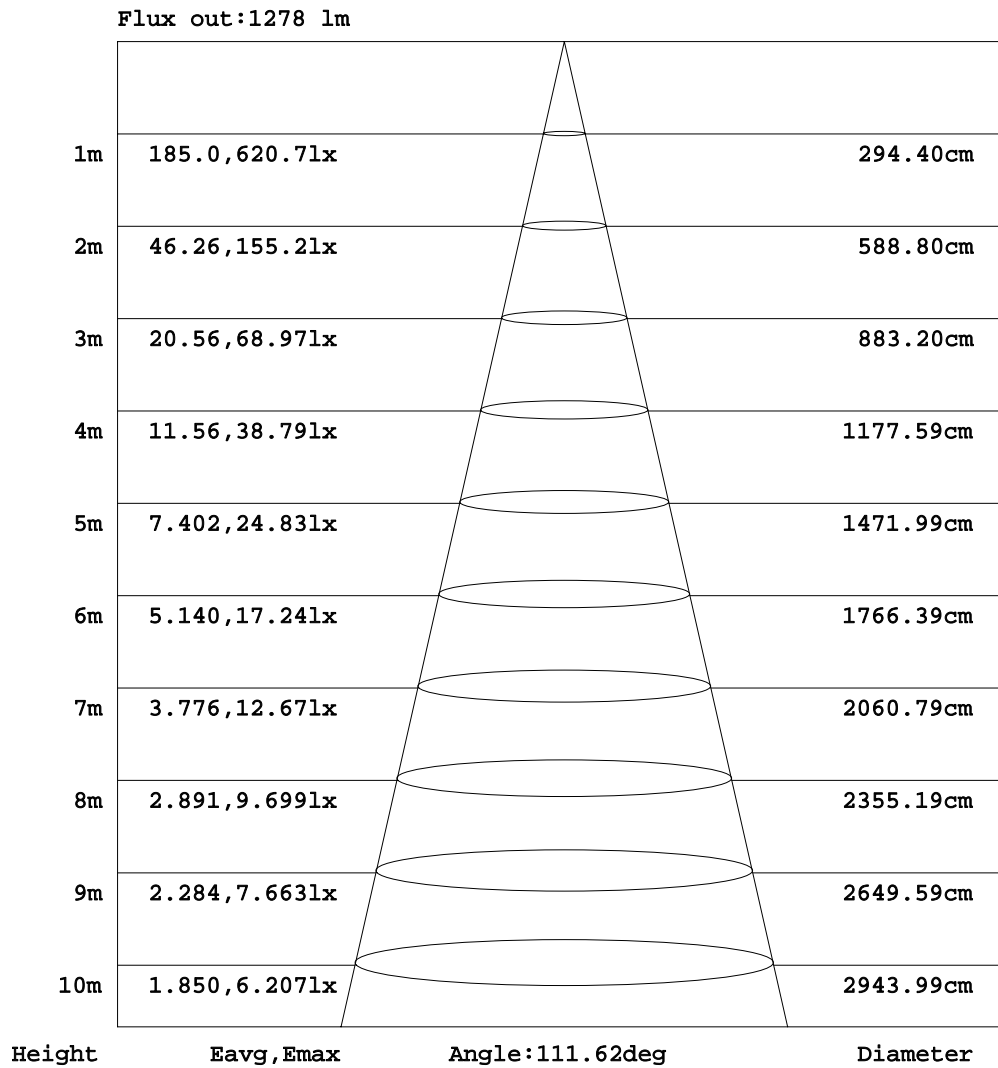


H(β) Range:-90 - 90DEG
 H(β) Interval: 1.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2019-11-13

V(B) Range:-75 - 75DEG
 V(B) Interval: 5.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
 Humidity:65.0%
 Test Distance:8.240m [K=1.0000]
 Remarks: 136-221_4000K_18W

AAI Figure

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:



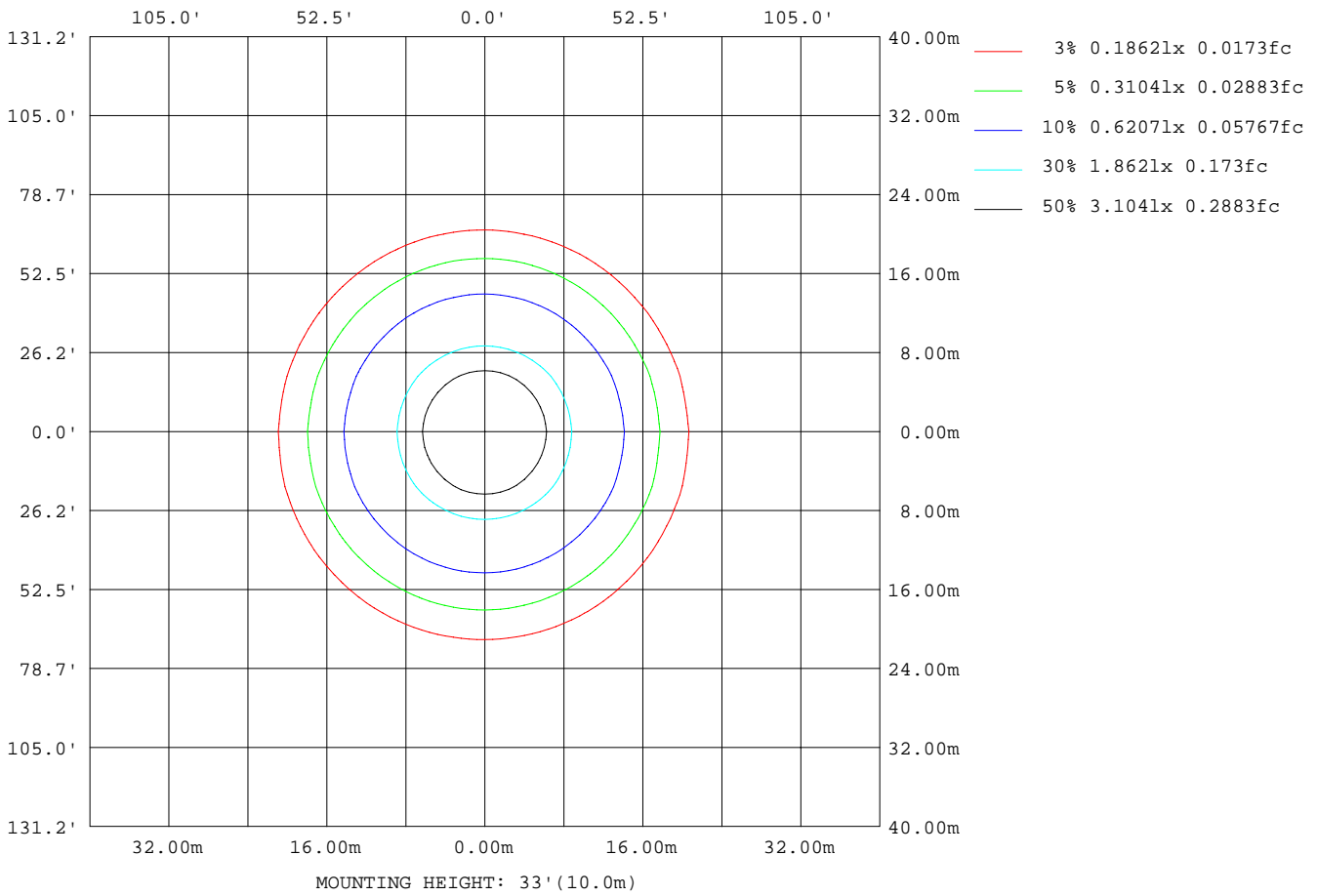
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

ISOLUX DIAGRAM

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

LED Avg.L Report

Test:U:230.52V I:0.0836A P:18.560W PF:0.9629 Freq:50.00Hz Lamp Flux:1736.82x1 lm		
NAME: 136-221_4000K_18W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:175	Shielding Angle:

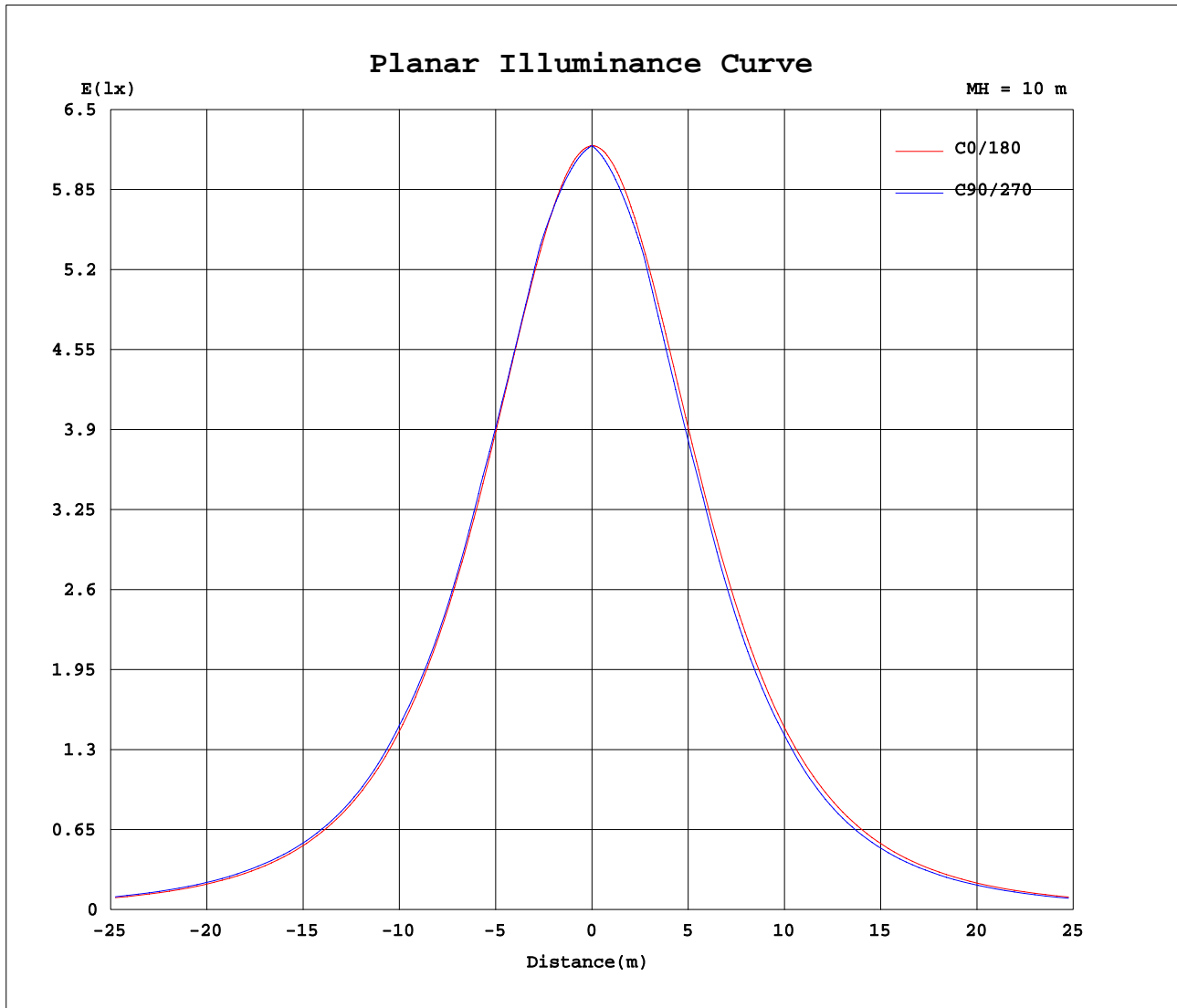
AvgL	cd/m2
L_0~180(65)av	21816
L_0~180(75)av	19128
L_0~180(85)av	14433
L_90~270(65)av	21642
L_90~270(75)av	18933
L_90~270(85)av	0
L_45(65)av	21586
L_45(75)av	19200
L_45(85)av	0

Standard: GB/T 29293-2012

H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

Planar Illuminance Curve



H(β) Range:-90 - 90DEG
H(β) Interval: 1.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-11-13

V(B) Range:-75 - 75DEG
V(B) Interval: 5.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.404.7
Humidity:65.0%
Test Distance:8.240m [K=1.0000]
Remarks: 136-221_4000K_18W

