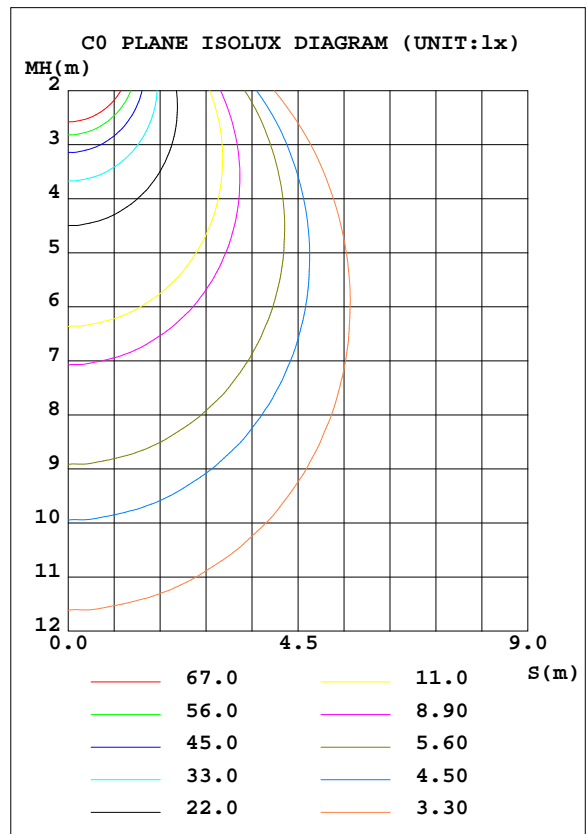
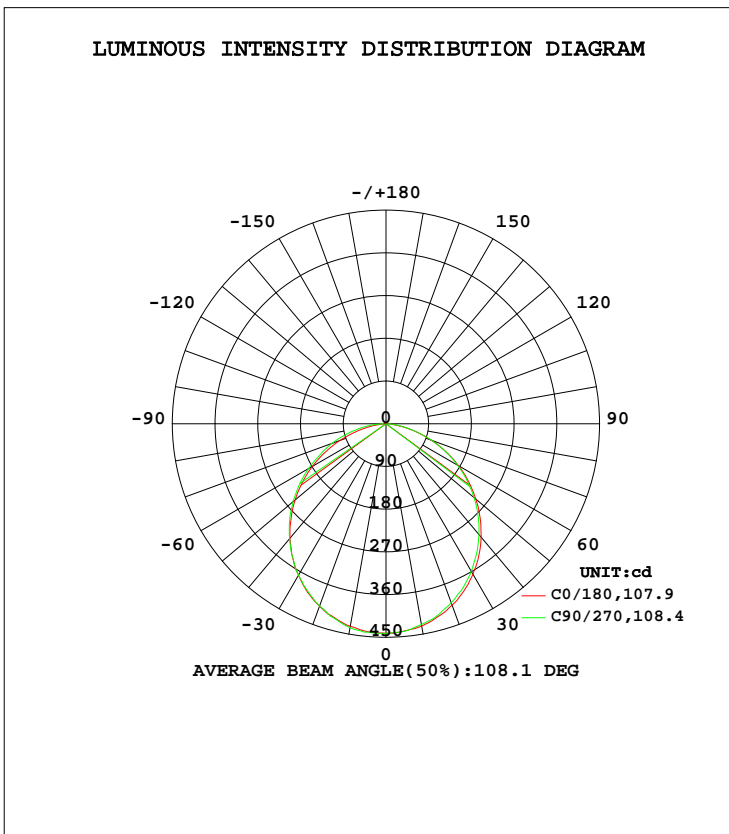


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	136-189_4000K	Imax(cd)	441.8	S/MH(C0/180)	1.24
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1202.3	η UP, DN(C0-180)	0.0,48.9
NOMINAL FLUX(lm)	1202.26	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,51.1
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)		η down(%)	100.0	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

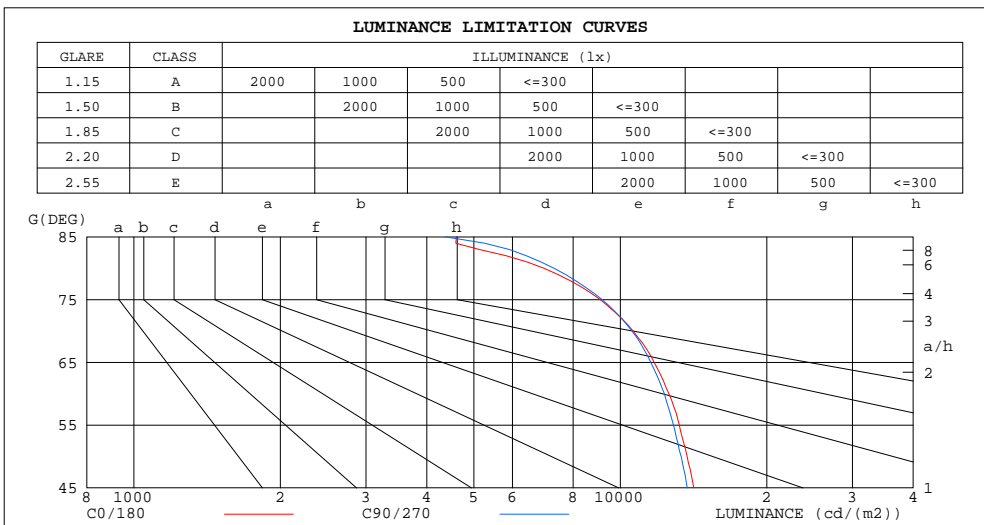
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	433.0	431.0	429.4	434.6	433.3	434.5	436.6	432.4	0- 10	41.73	41.73	3.47,3.47
20	406.8	403.8	401.5	409.6	409.0	410.3	408.9	407.6	10- 20	119.1	160.8	13.4,13.4
30	366.4	361.7	358.9	367.0	368.6	371.9	368.2	369.2	20- 30	179.0	339.8	28.3,28.3
40	311.9	306.8	305.0	312.5	314.7	319.6	316.2	317.7	30- 40	213.3	553.2	46,46
50	247.0	243.8	242.3	248.5	250.3	257.6	255.7	256.6	40- 50	217.9	771.1	64.1,64.1
60	176.3	173.5	174.1	177.2	178.3	189.2	187.8	188.6	50- 60	193.1	964.1	80.2,80.2
70	101.8	99.84	102.1	102.2	103.4	111.8	121.4	116.0	60- 70	142.3	1106	92,92
80	33.87	34.15	35.85	34.73	33.78	45.09	55.53	46.94	70- 80	76.21	1183	98.4,98.4
90	3.516	4.448	3.941	4.884	3.332	6.025	5.209	5.881	80- 90	19.62	1202	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: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	4604	4366
80	6962	7301
75	9092	9170
70	10617	10558
65	11737	11547
60	12584	12317
55	13215	12857
50	13716	13334
45	14161	13729

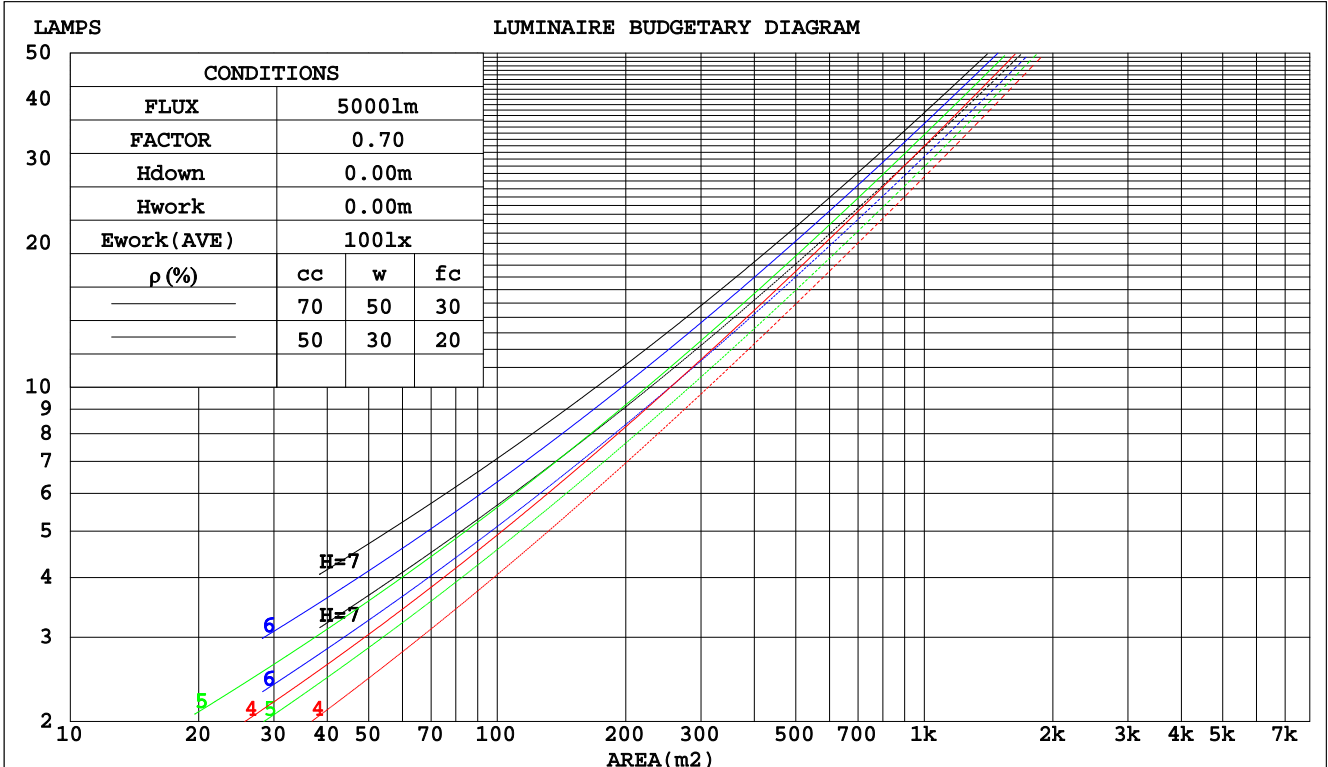
C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	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																0
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	.96	1.02	.98	.95	.98	.95	.92	.94	.91	.89	.90	.88	.86	.84
2.0	.91	.84	.79	.89	.83	.78	.86	.80	.76	.82	.78	.74	.79	.76	.73	.70
3.0	.80	.72	.66	.79	.71	.65	.76	.69	.64	.73	.67	.63	.70	.66	.62	.59
4.0	.71	.62	.56	.70	.62	.55	.67	.60	.54	.65	.59	.54	.63	.57	.53	.51
5.0	.63	.55	.48	.62	.54	.48	.60	.53	.47	.58	.52	.47	.56	.51	.46	.44
6.0	.57	.48	.42	.56	.48	.42	.54	.47	.41	.53	.46	.41	.51	.45	.41	.39
7.0	.52	.43	.37	.51	.43	.37	.50	.42	.37	.48	.41	.36	.47	.41	.36	.34
8.0	.47	.39	.33	.47	.39	.33	.45	.38	.33	.44	.37	.33	.43	.37	.32	.30
9.0	.43	.35	.30	.43	.35	.30	.42	.35	.30	.41	.34	.29	.40	.34	.29	.27
10.0	.40	.32	.27	.40	.32	.27	.39	.32	.27	.38	.31	.27	.37	.31	.27	.25



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

WEC AND CCEC

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	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	.302	.172	.054	.295	.168	.053	.282	.162	.052	.270	.155	.050	.258	.150	.048	
2.0	.286	.157	.048	.280	.154	.047	.268	.149	.046	.257	.144	.045	.247	.140	.044	
3.0	.265	.141	.042	.260	.139	.042	.250	.135	.041	.240	.132	.040	.231	.128	.040	
4.0	.246	.128	.038	.241	.126	.037	.232	.123	.037	.223	.120	.036	.215	.117	.036	
5.0	.227	.116	.034	.223	.115	.033	.215	.112	.033	.208	.109	.033	.200	.107	.032	
6.0	.211	.106	.030	.207	.105	.030	.200	.103	.030	.193	.101	.030	.187	.099	.029	
7.0	.197	.097	.028	.193	.096	.027	.187	.095	.027	.181	.093	.027	.175	.091	.027	
8.0	.184	.090	.025	.181	.089	.025	.175	.088	.025	.170	.086	.025	.165	.085	.025	
9.0	.173	.084	.023	.170	.083	.023	.165	.081	.023	.160	.080	.023	.155	.079	.023	
10.0	.162	.078	.022	.160	.077	.022	.155	.076	.021	.151	.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	.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	.164	.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	.149	.090	.048	.128	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.141	.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	.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	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.023	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm										
NAME: 136-189_4000K					TYPE:15W			WEIGHT:		
SPEC.:4000K					DIM.:			SERIAL No.:		
MFR.: Tronix Lighting					SUR.:0.096			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	21.7	23.2	22.0	23.4	23.6	21.6	23.1	21.9	23.3	23.5
3H	23.0	24.4	23.3	24.7	24.9	23.0	24.3	23.3	24.6	24.8
4H	23.5	24.8	23.8	25.1	25.3	23.4	24.8	23.7	25.0	25.3
6H	23.8	25.0	24.1	25.3	25.5	23.7	25.0	24.0	25.2	25.5
8H	23.8	25.0	24.1	25.3	25.6	23.8	25.0	24.1	25.3	25.5
12H	23.8	24.9	24.1	25.2	25.5	23.8	24.9	24.1	25.2	25.5
4H 2H	22.2	23.6	22.6	23.8	24.1	22.2	23.5	22.5	23.7	24.0
3H	23.7	24.9	24.1	25.2	25.5	23.7	24.8	24.0	25.1	25.4
4H	24.3	25.4	24.7	25.7	26.0	24.3	25.3	24.6	25.6	26.0
6H	24.7	25.6	25.1	25.9	26.3	24.6	25.6	25.0	25.9	26.3
8H	24.7	25.6	25.2	26.0	26.4	24.7	25.6	25.2	26.0	26.4
12H	24.8	25.6	25.2	25.9	26.3	24.8	25.6	25.2	26.0	26.4
8H 4H	24.5	25.4	24.9	25.7	26.1	24.5	25.3	24.9	25.7	26.1
6H	25.0	25.7	25.4	26.1	26.5	24.9	25.7	25.4	26.1	26.5
8H	25.1	25.7	25.5	26.1	26.6	25.1	25.7	25.6	26.2	26.6
12H	25.1	25.7	25.6	26.1	26.6	25.2	25.7	25.7	26.2	26.6
12H 4H	24.5	25.3	24.9	25.7	26.1	24.4	25.2	24.9	25.6	26.0
6H	25.0	25.6	25.4	26.0	26.5	25.0	25.6	25.4	26.0	26.5
8H	25.1	25.7	25.6	26.1	26.6	25.1	25.7	25.6	26.1	26.6
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 / - 0.3				
2.0H	+ 0.3 / - 0.3					+ 0.3 / - 0.3				

CIE Pub.117, 1202 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 0.6)

C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

**UTILIZATION FACTORS TABLE**

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:

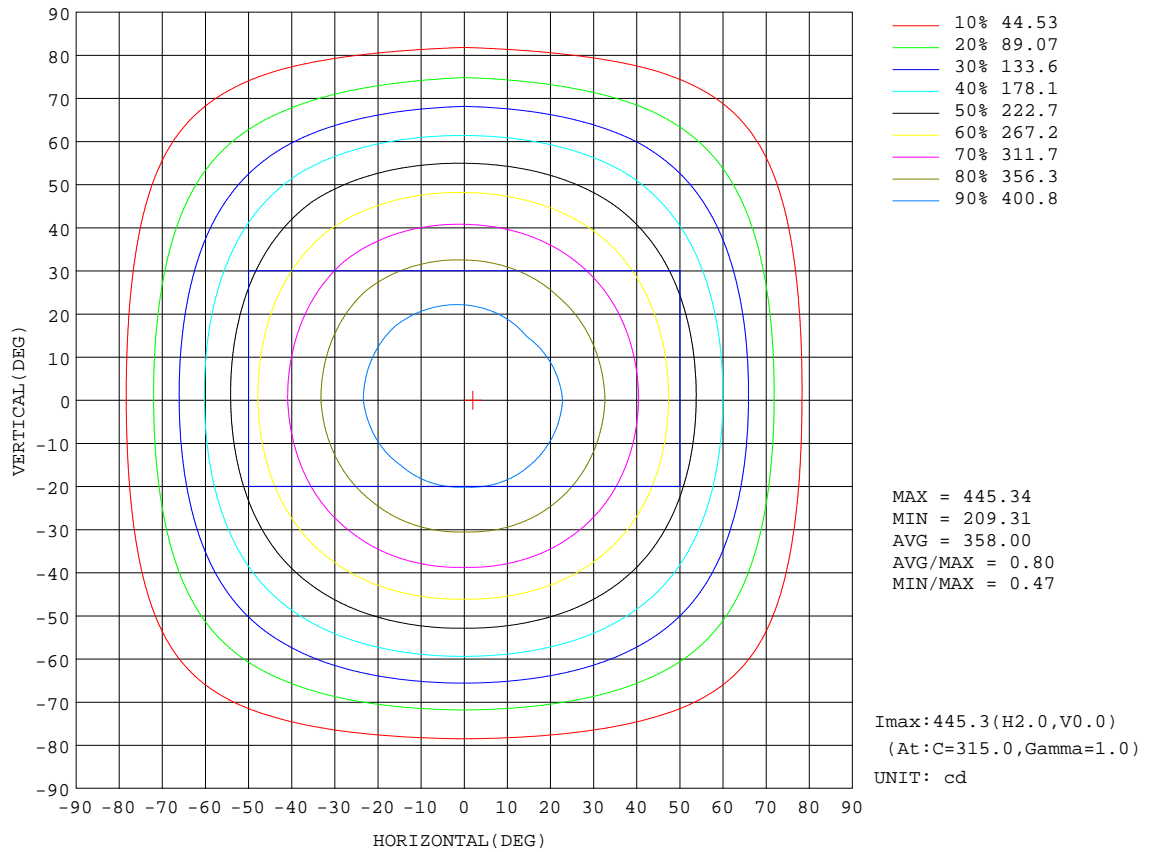
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	47	40	58	47	40	56	46	40	33
0.80	68	57	50	67	56	49	66	56	49	42
1.00	77	66	59	76	65	58	73	67	58	51
1.25	84	74	67	82	73	66	80	71	65	58
1.50	89	79	72	87	78	72	84	76	71	63
2.00	96	87	81	94	86	80	90	84	79	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	92	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: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:

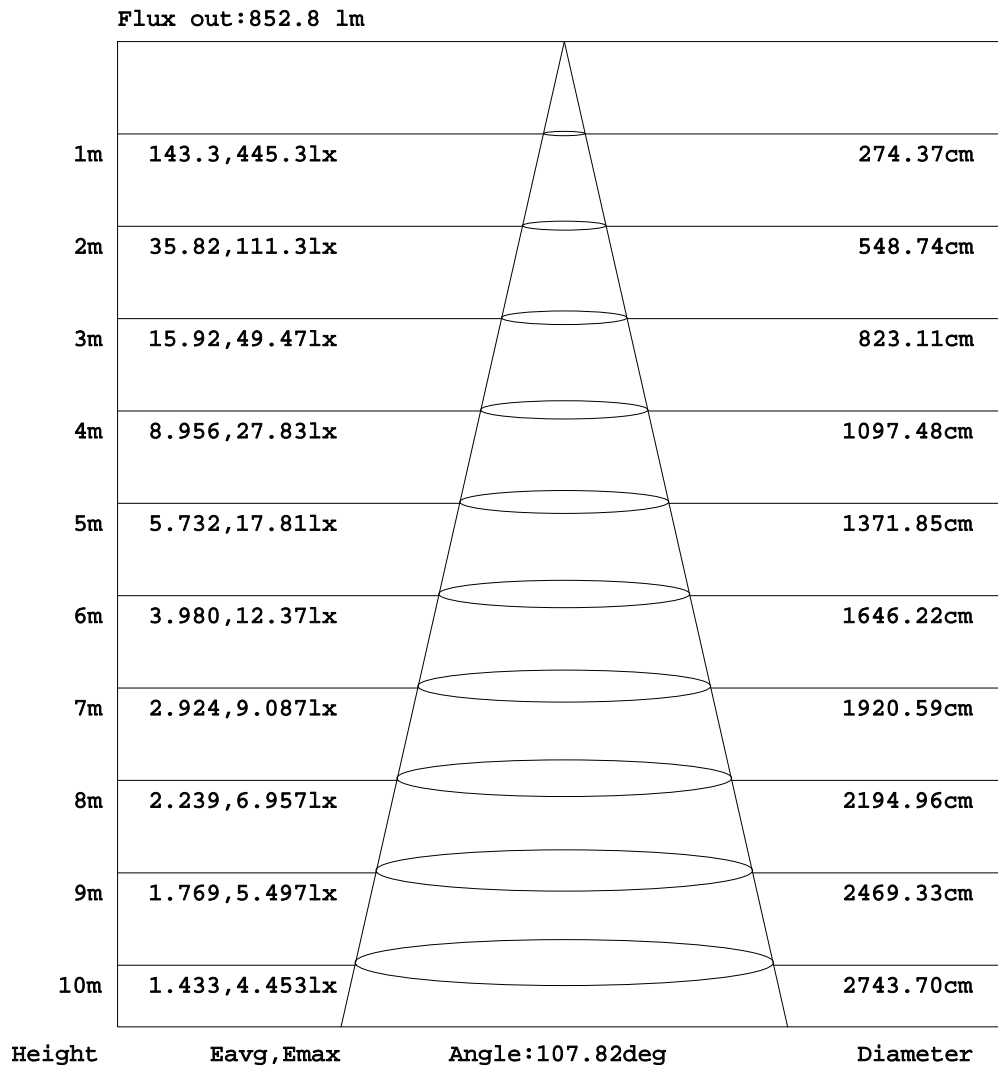


C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity: 65.0%  
 Test Distance: 9.900m [K=1.0000]  
 Remarks:

AAI Figure

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:



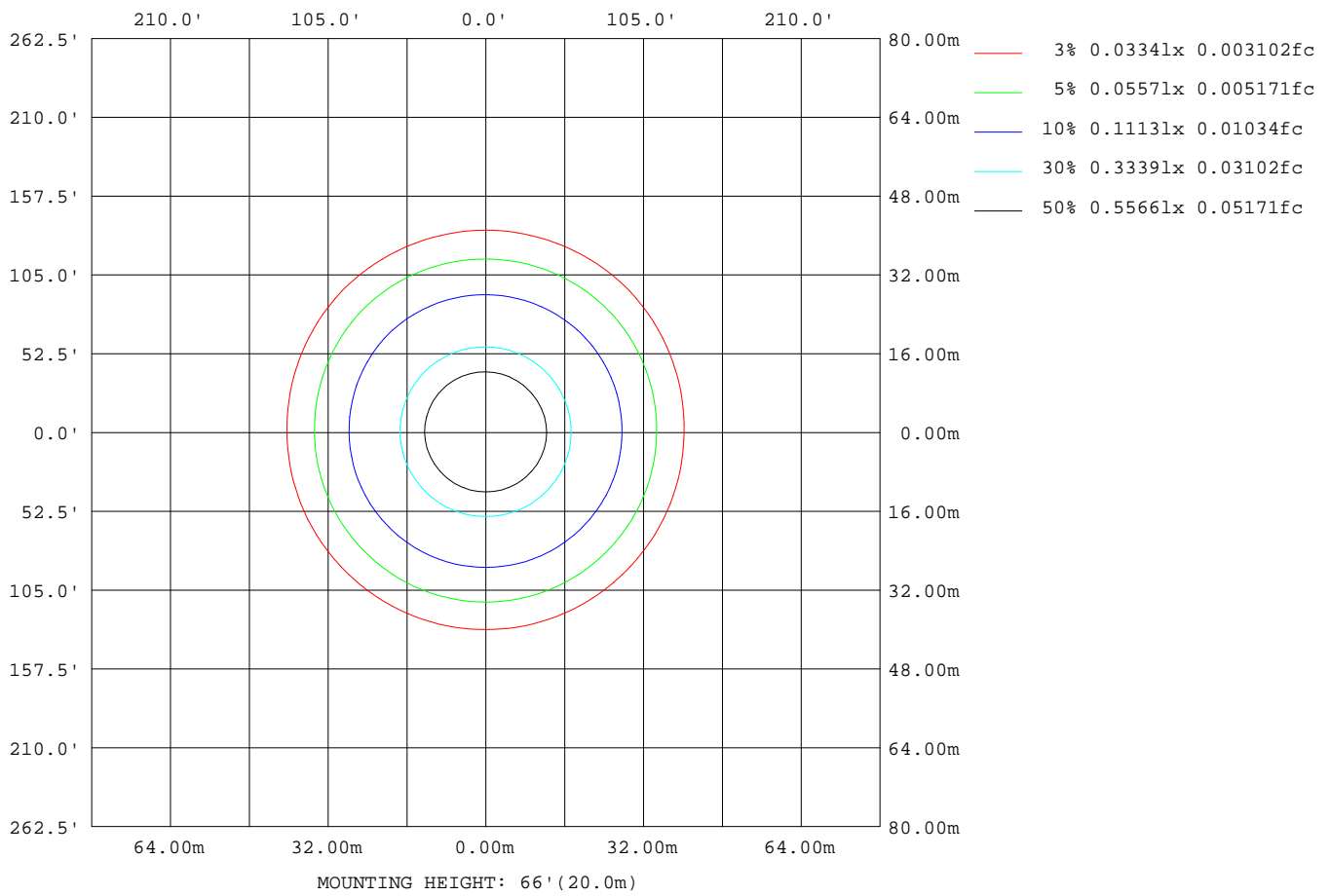
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity: 65.0%  
 Test Distance: 9.900m [K=1.0000]  
 Remarks:

**ISOLUX DIAGRAM**

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

LED Avg.L Report

Test:U:230.65V I:0.0653A P:14.799W PF:0.9824 Freq:50.00Hz Lamp Flux:1202.26x1 lm		
NAME: 136-189_4000K	TYPE:15W	WEIGHT:
SPEC.:4000K	DIM.:	SERIAL No.:
MFR.: Tronix Lighting	SUR.:0.096	Shielding Angle:

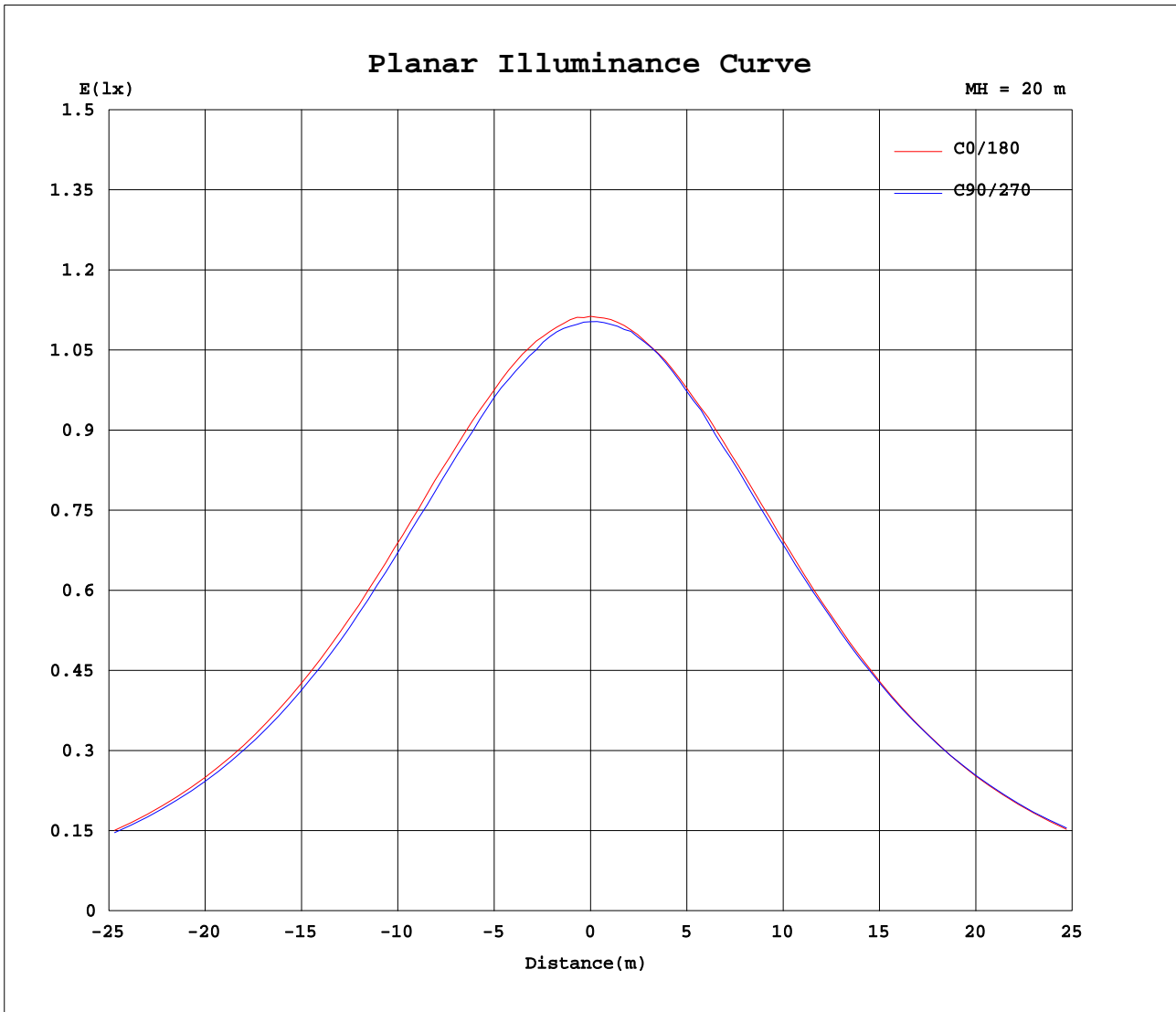
AvgL	cd/m2
L_0~180(65)av	11713
L_0~180(75)av	9082
L_0~180(85)av	4543
L_90~270(65)av	12158
L_90~270(75)av	10590
L_90~270(85)av	7488
L_45(65)av	12131
L_45(75)av	9772
L_45(85)av	6981

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2020-01-12

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:65.0%  
 Test Distance:9.900m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2020-01-12

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity: 65.0%  
 Test Distance: 9.900m [K=1.0000]  
 Remarks:

