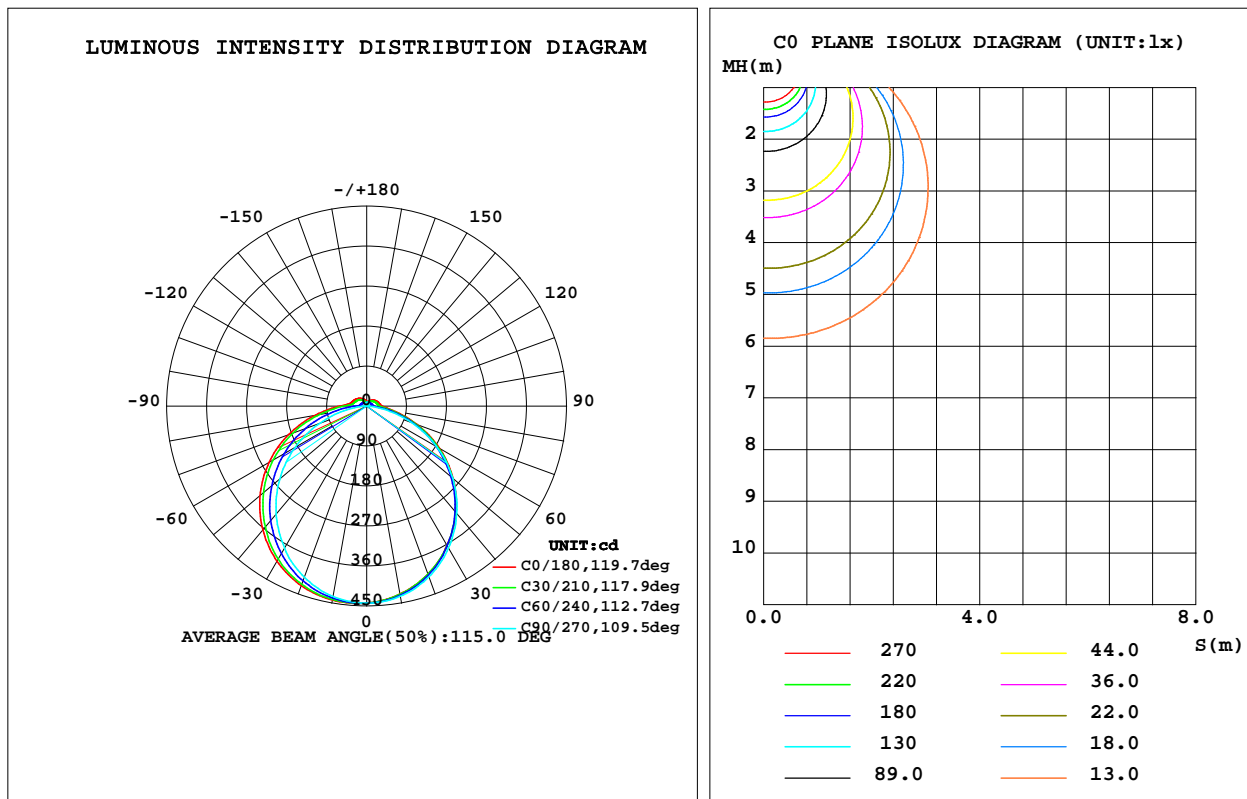


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 98.42 lm/W			
MODEL	136-305_15W_3000K	I _{max} (cd)	445.2	S/MH(C0/180)	1.35
NOMINAL POWER(W)	15	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1437.0	η UP, DN(C0-180)	3.7, 47.6
NOMINAL FLUX(lm)	1436.95	CIE CLASS	DIRECT	η UP, DN(C180-360)	3.4, 45.3
LAMPS INSIDE	1	η up(%)	7.1	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230.4	η down(%)	92.9	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	\$lum,lamp
10	443.3	440.5	435.3	431.7	429.9	431.4	434.9	440.6	0- 10	41.98	41.98	2.92,2.92
20	430.3	423.1	410.3	404.9	402.7	404.1	409.2	421.9	10- 20	120.4	162.4	11.3,11.3
30	403.6	391.0	369.9	363.8	362.2	362.5	368.5	389.1	20- 30	182.8	345.2	24,24
40	363.6	345.7	317.0	312.5	312.8	310.4	315.8	343.4	30- 40	221.1	566.3	39.4,39.4
50	313.4	291.1	255.5	252.3	254.2	250.0	252.9	288.8	40- 50	231.4	797.6	55.5,55.5
60	253.8	229.1	186.2	185.8	188.8	183.1	181.6	226.5	50- 60	213.0	1011	70.3,70.3
70	186.4	160.9	111.8	116.5	119.9	113.9	106.1	158.3	60- 70	168.6	1179	82.1,82.1
80	116.9	91.74	40.13	53.62	61.41	51.55	34.55	88.92	70- 80	106.7	1286	89.5,89.5
90	61.11	38.60	0.9595	22.70	34.45	22.12	0.3692	36.56	80- 90	48.99	1335	92.9,92.9
100	38.11	23.76	0.8993	18.95	29.87	18.80	0.9766	21.74	90-100	24.73	1360	94.6,94.6
110	33.85	21.48	2.248	17.05	27.17	17.09	2.314	20.91	100-110	20.05	1380	96,96
120	30.49	19.33	3.356	15.26	24.12	15.46	3.508	17.52	110-120	17.30	1397	97.2,97.2
130	26.75	16.83	4.258	13.57	20.75	13.77	4.441	16.42	120-130	14.01	1411	98.2,98.2
140	22.90	13.74	5.025	11.88	17.32	11.99	5.234	13.97	130-140	10.74	1422	98.9,98.9
150	19.00	10.77	5.600	10.19	13.89	10.16	5.804	11.42	140-150	7.431	1429	99.5,99.5
160	15.14	8.608	6.448	8.728	10.46	8.688	6.509	9.112	150-160	4.600	1434	99.8,99.8
170	11.38	7.543	7.506	7.910	7.845	7.809	7.610	7.785	160-170	2.422	1436	99.9,99.9
180	7.139	7.474	8.254	7.638	7.164	7.474	8.229	7.638	170-180	0.7451	1437	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

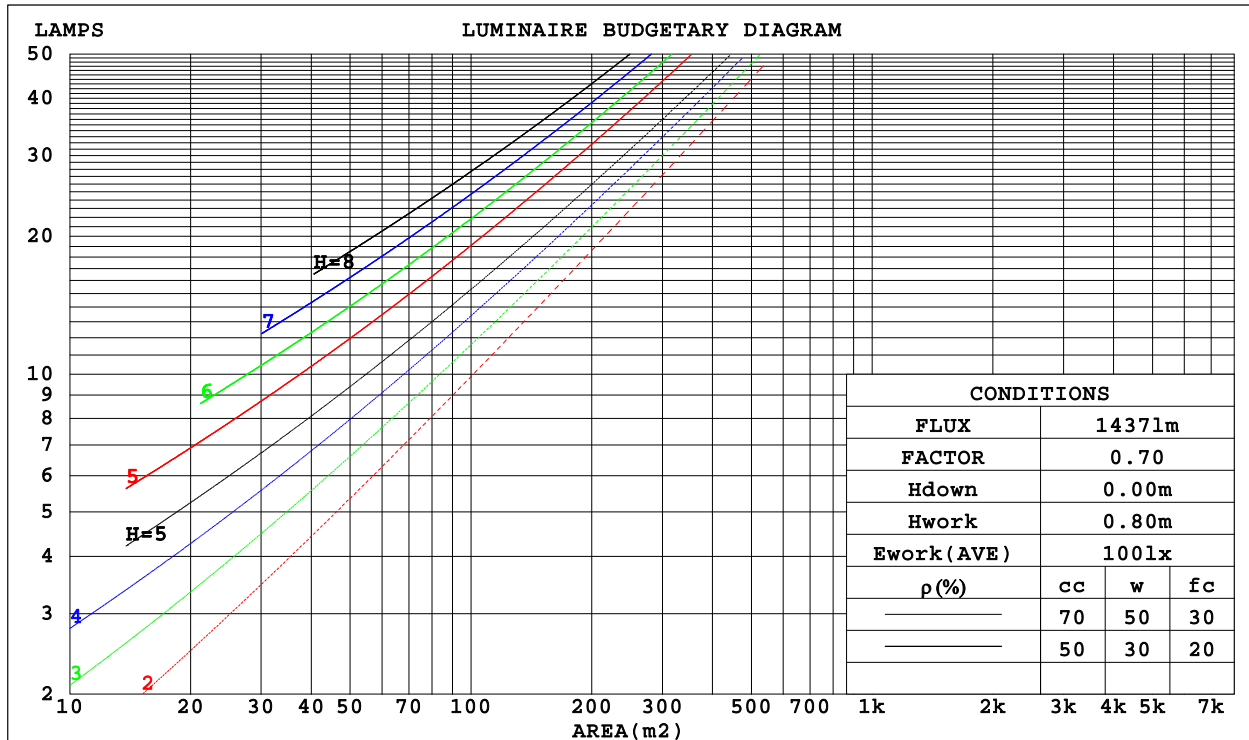
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	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	1.17	1.17	1.17	1.14	1.14	1.14	1.07	1.07	1.07	1.01	1.01	1.01	.96	.96	.96	.93
1.0	1.01	.97	.92	.98	.94	.90	.93	.89	.86	.87	.85	.82	.83	.81	.79	.76
2.0	.88	.81	.75	.85	.79	.73	.80	.75	.70	.76	.72	.68	.72	.68	.65	.63
3.0	.77	.68	.62	.75	.67	.61	.71	.64	.59	.67	.61	.57	.63	.59	.55	.52
4.0	.68	.59	.52	.66	.58	.51	.63	.55	.50	.59	.53	.48	.56	.51	.47	.44
5.0	.60	.51	.45	.59	.50	.44	.56	.49	.43	.53	.47	.42	.51	.45	.41	.38
6.0	.54	.45	.39	.53	.44	.38	.50	.43	.37	.48	.42	.37	.46	.40	.36	.33
7.0	.49	.40	.34	.48	.40	.34	.46	.38	.33	.44	.37	.32	.42	.36	.32	.29
8.0	.45	.36	.30	.44	.36	.30	.42	.35	.29	.40	.34	.29	.38	.33	.28	.26
9.0	.41	.33	.27	.40	.32	.27	.39	.31	.26	.37	.31	.26	.35	.30	.25	.24
10.0	.38	.30	.25	.37	.30	.24	.36	.29	.24	.34	.28	.24	.33	.27	.23	.21



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.329	.187	.059	.320	.182	.058	.302	.173	.055	.286	.165	.053	.272	.157	.051	
2.0	.301	.165	.051	.293	.161	.050	.278	.154	.048	.263	.148	.046	.250	.141	.045	
3.0	.276	.147	.044	.268	.144	.043	.254	.138	.042	.242	.132	.041	.230	.127	.039	
4.0	.253	.131	.039	.246	.129	.038	.234	.124	.037	.222	.119	.036	.211	.115	.035	
5.0	.232	.118	.034	.227	.116	.034	.215	.112	.033	.205	.108	.032	.195	.104	.031	
6.0	.215	.108	.031	.210	.106	.030	.199	.102	.030	.190	.099	.029	.181	.095	.028	
7.0	.200	.099	.028	.195	.097	.028	.186	.094	.027	.177	.091	.026	.169	.088	.026	
8.0	.186	.091	.026	.182	.089	.025	.173	.087	.025	.165	.084	.024	.158	.081	.024	
9.0	.174	.084	.024	.170	.083	.023	.163	.080	.023	.155	.078	.022	.149	.075	.022	
10.0	.163	.078	.022	.160	.077	.022	.153	.075	.021	.146	.073	.021	.140	.070	.020	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.245	.245	.245	.209	.209	.209	.143	.143	.143	.082	.082	.082	.026	.026	.026	
1.0	.236	.211	.187	.202	.181	.161	.138	.124	.112	.080	.072	.065	.025	.023	.021	
2.0	.228	.187	.152	.196	.161	.131	.134	.111	.091	.077	.065	.054	.025	.021	.017	
3.0	.221	.170	.129	.189	.146	.112	.130	.102	.078	.075	.059	.046	.024	.019	.015	
4.0	.213	.157	.113	.183	.135	.098	.126	.094	.069	.073	.055	.041	.023	.018	.013	
5.0	.206	.146	.102	.177	.127	.089	.122	.088	.063	.070	.052	.037	.023	.017	.012	
6.0	.198	.138	.095	.171	.120	.083	.118	.084	.058	.068	.049	.035	.022	.016	.011	
7.0	.192	.131	.089	.165	.114	.078	.114	.080	.055	.066	.047	.033	.021	.015	.011	
8.0	.185	.126	.085	.159	.109	.074	.110	.076	.052	.064	.045	.031	.021	.015	.010	
9.0	.179	.121	.081	.154	.105	.071	.107	.074	.050	.062	.043	.030	.020	.014	.010	
10.0	.173	.116	.079	.149	.101	.069	.104	.071	.049	.060	.042	.029	.020	.014	.010	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm										
NAME: 136-305_15W_3000K					TYPE:15W			WEIGHT:		
DIM.:					SPEC.:3000K			SERIAL No.:1		
MFR.: Tronix Lighting					SUR.:0.0708			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	19.7	21.2	20.1	21.5	21.9	18.6	20.0	18.9	20.3	20.7
3H	21.8	23.1	22.2	23.5	23.8	20.0	21.4	20.4	21.7	22.1
4H	22.7	24.0	23.2	24.4	24.8	20.6	21.8	21.0	22.2	22.6
6H	23.7	24.9	24.1	25.3	25.7	20.9	22.1	21.3	22.5	22.9
8H	24.2	25.3	24.6	25.7	26.2	21.0	22.1	21.4	22.5	23.0
12H	24.7	25.8	25.1	26.2	26.6	21.0	22.1	21.5	22.5	23.0
4H 2H	20.3	21.6	20.7	22.0	22.4	19.4	20.7	19.9	21.1	21.5
3H	22.6	23.7	23.0	24.1	24.6	21.1	22.2	21.6	22.7	23.1
4H	23.7	24.7	24.2	25.2	25.7	21.8	22.8	22.3	23.3	23.8
6H	24.8	25.7	25.3	26.2	26.7	22.3	23.2	22.8	23.7	24.2
8H	25.4	26.2	25.9	26.7	27.3	22.5	23.3	23.0	23.8	24.3
12H	26.0	26.8	26.5	27.3	27.8	22.5	23.3	23.1	23.8	24.4
8H 4H	24.0	24.8	24.5	25.3	25.9	22.4	23.3	22.9	23.7	24.3
6H	25.4	26.1	25.9	26.6	27.2	23.2	23.9	23.7	24.4	25.0
8H	26.1	26.7	26.7	27.3	27.9	23.4	24.1	24.0	24.6	25.2
12H	26.9	27.4	27.5	28.0	28.6	23.6	24.1	24.2	24.7	25.3
12H 4H	24.0	24.8	24.5	25.3	25.9	22.5	23.3	23.1	23.8	24.4
6H	25.4	26.1	26.0	26.6	27.2	23.4	24.0	24.0	24.6	25.2
8H	26.3	26.8	26.8	27.4	28.0	23.8	24.3	24.4	24.9	25.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.4				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.5				

CIE Pub.117 Corrected 1437 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.3)

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:

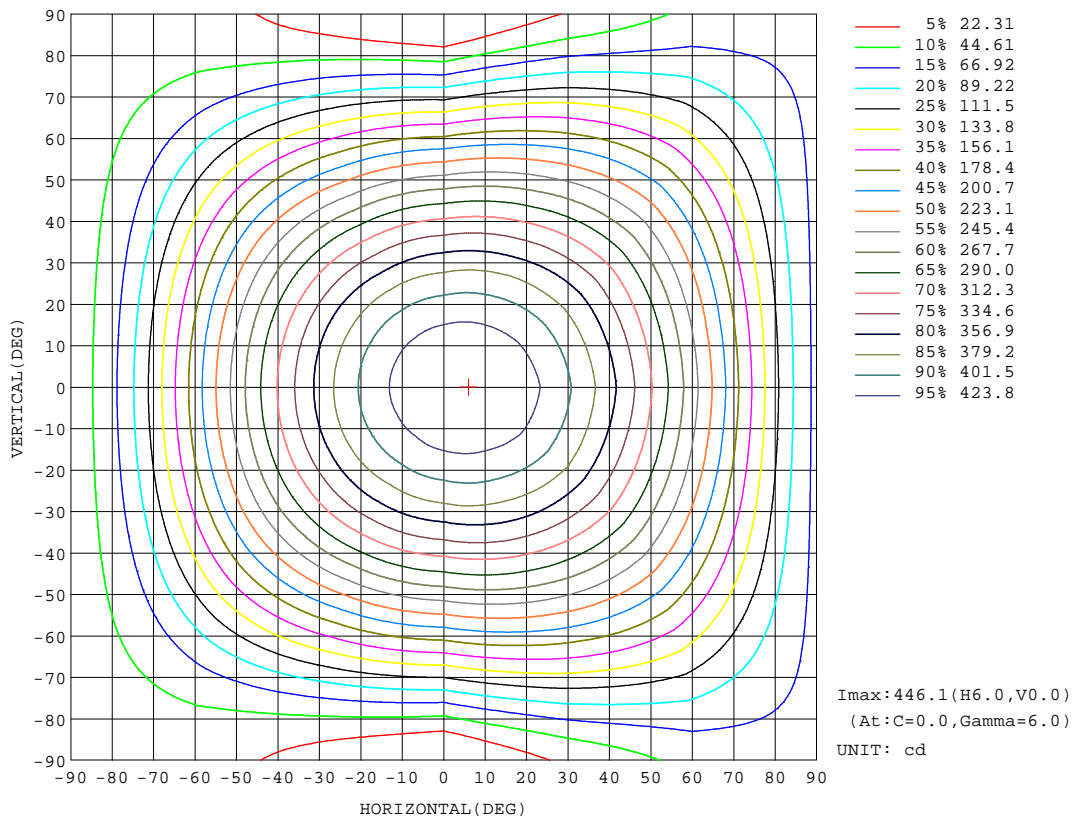
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	54	42	35	53	42	35	52	41	35	28
0.80	64	52	45	63	51	44	61	50	44	36
1.00	72	61	53	71	60	53	68	61	52	44
1.25	79	68	61	77	67	60	74	65	59	51
1.50	84	74	66	82	73	66	78	70	64	55
2.00	91	82	75	89	80	74	85	78	72	63
2.50	95	87	80	93	85	79	88	82	77	67
3.00	99	91	85	96	89	84	91	85	81	70
4.00	103	97	92	100	94	90	95	90	86	75
5.00	106	100	96	103	98	94	97	93	90	78
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:2018-06-25

γ Range: 0 - 180DEG
 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:

ISOCANDELA DIAGRAM

Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:



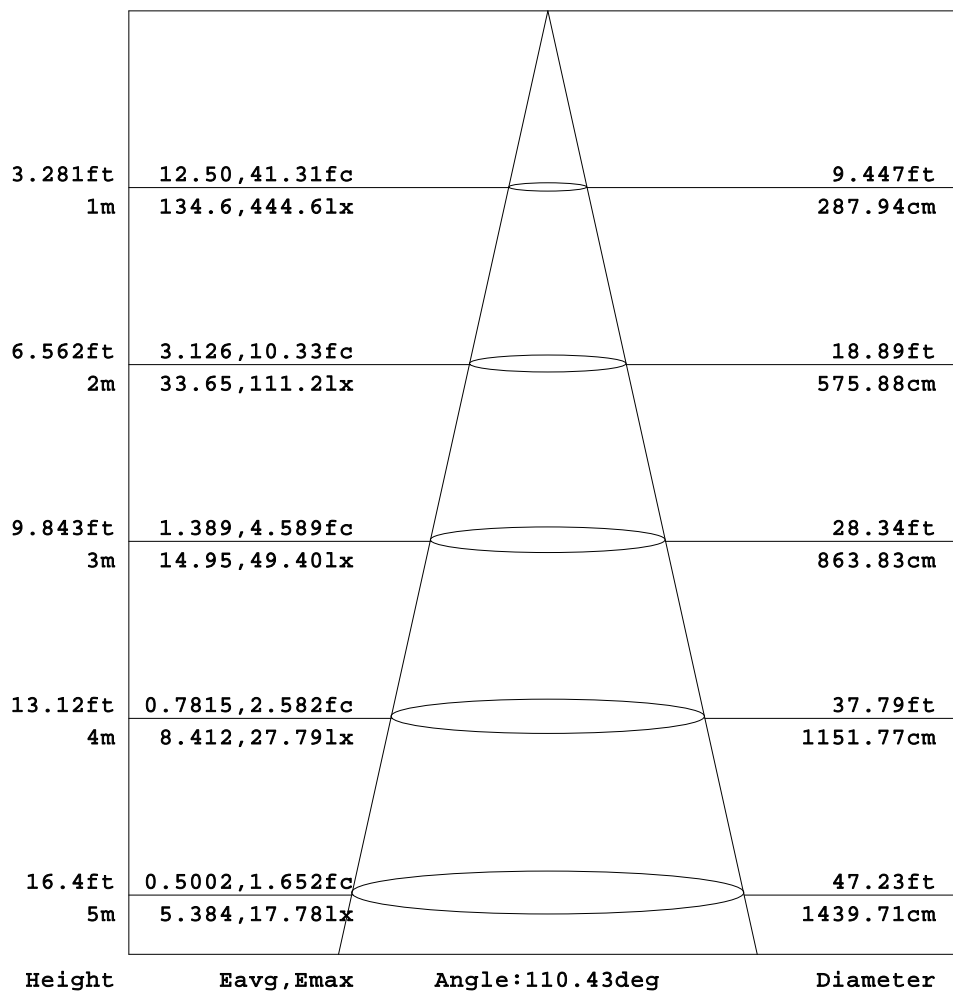
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-06-25

γ Range: 0 - 180DEG
 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:

AAI Figure

Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:

Flux out:929.4 lm



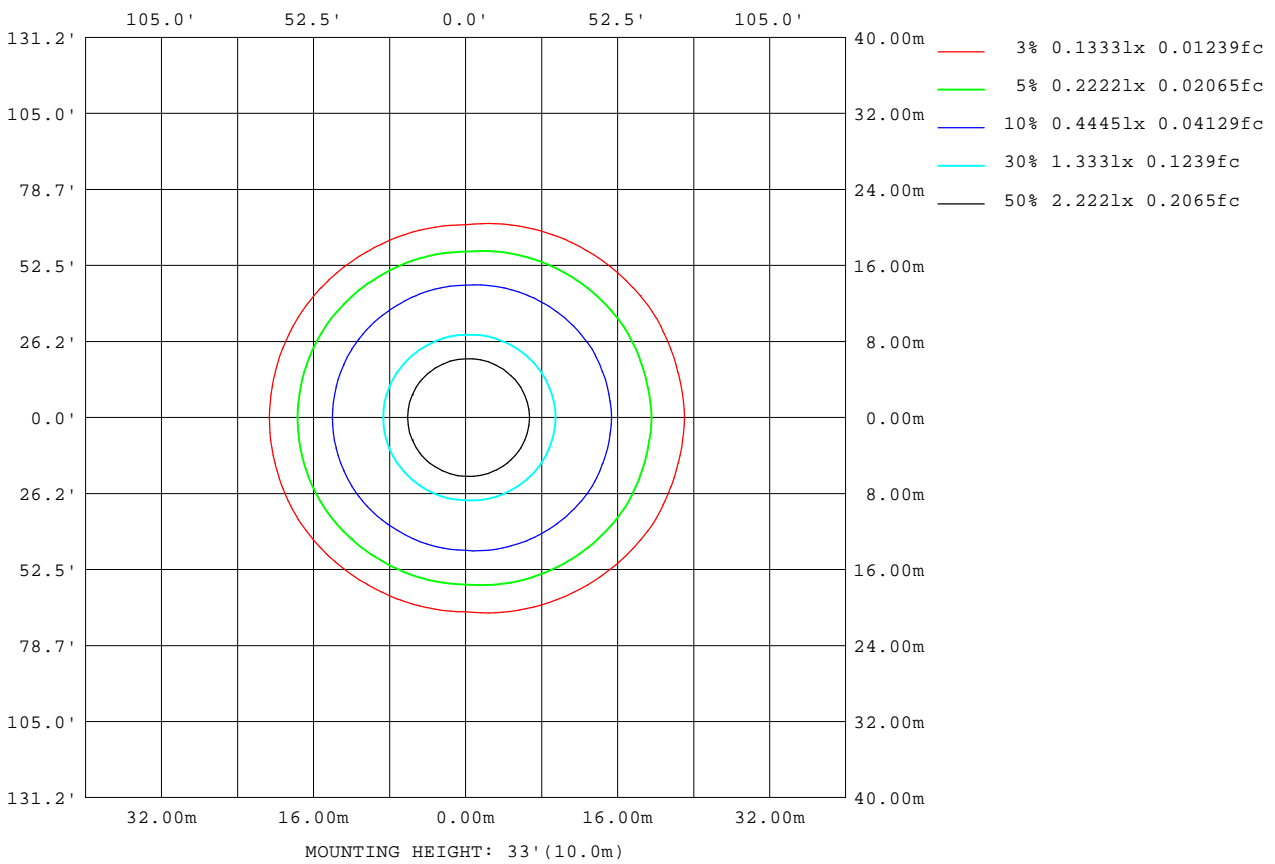
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-06-25

γ Range: 0 - 180DEG
 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:

ISOLUX DIAGRAM

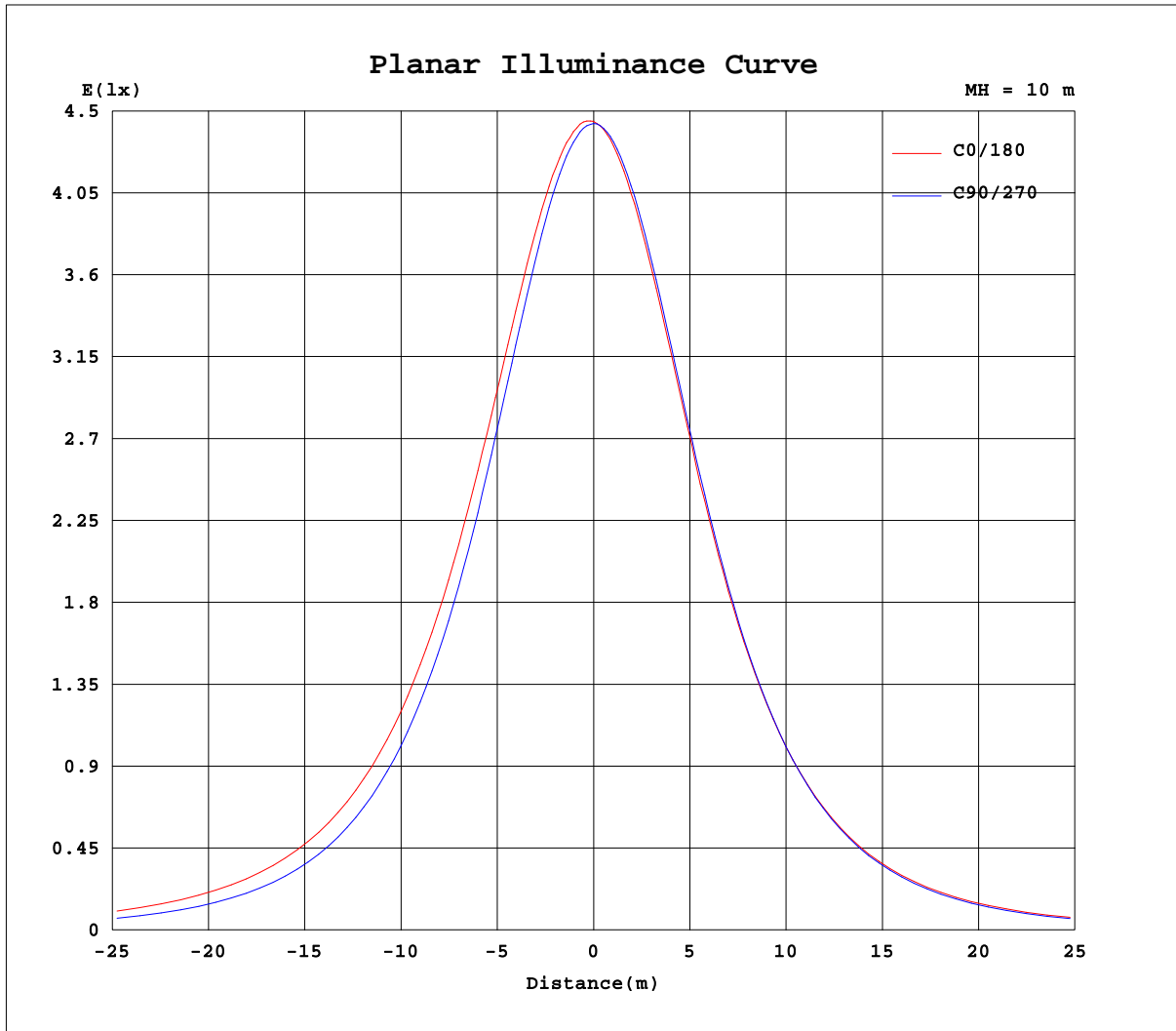
Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-06-25

γ Range: 0 - 180DEG
 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:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.4V I:0.0680A P:14.60W PF:0.9220 Lamp Flux:1436.95x1 lm		
NAME: 136-305_15W_3000K	TYPE:15W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.: Tronix Lighting	SUR.:0.0708	PROTECTION ANGLE:

Table--1

UNIT: cd

C(DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	444	444	444	444	444	444	444	444	444	444	444	444						
5	445	444	443	441	440	439	439	439	440	441	443	444						
10	443	442	439	435	432	431	430	430	433	435	439	443						
15	439	437	431	425	421	419	418	418	421	424	430	436						
20	430	427	419	410	406	404	403	403	405	409	418	426						
25	419	415	403	392	386	386	384	384	386	390	401	413						
30	404	398	384	370	364	363	362	362	363	368	382	396						
35	385	379	361	345	339	339	339	338	338	344	358	376						
40	364	355	336	317	312	313	313	311	310	316	333	354						
45	340	330	309	287	282	284	284	283	280	285	305	329						
50	313	303	279	255	250	254	254	252	248	253	275	302						
55	285	274	248	222	217	222	222	220	214	218	244	273						
60	254	243	215	186	183	189	189	186	180	182	211	242						
65	221	210	180	149	148	154	154	152	146	144	178	209						
70	186	176	146	112	113	120	120	117	111	106	143	174						
75	151	141	111	74.7	79.4	86.7	87.8	84.0	77.0	68.8	108	138						
80	117	107	76.9	40.1	48.7	58.6	61.4	56.4	46.7	34.6	74.0	104						
85	85.4	75.0	46.8	12.7	25.9	39.3	43.7	38.0	24.8	9.13	43.8	72.7						
90	61.1	51.3	25.9	0.96	15.7	29.7	34.4	28.9	15.3	0.37	23.6	49.5						
95	45.7	37.3	17.5	0.39	13.6	26.5	31.2	26.2	13.3	0.48	16.2	36.3						
100	38.1	31.6	16.0	0.90	12.7	25.2	29.9	25.0	12.5	0.98	12.5	30.9						
105	35.4	29.8	15.2	1.53	11.9	24.0	28.5	23.9	11.9	1.66	14.2	29.3						
110	33.8	28.5	14.4	2.25	11.3	22.8	27.2	22.7	11.5	2.31	13.8	28.1						
115	32.3	27.2	13.8	2.87	10.7	21.5	25.7	21.5	11.0	2.99	13.5	26.8						
120	30.5	25.8	12.9	3.36	10.3	20.2	24.1	20.3	10.6	3.51	13.1	22.0						
125	28.6	24.3	11.7	3.83	9.92	18.9	22.4	19.0	10.2	4.02	12.1	22.8						
130	26.8	22.9	10.8	4.26	9.62	17.5	20.7	17.7	9.87	4.44	11.3	21.6						
135	24.8	20.9	10.00	4.65	9.28	16.2	19.0	16.3	9.47	4.85	10.5	20.4						
140	22.9	18.1	9.34	5.02	8.93	14.8	17.3	14.9	9.04	5.23	9.79	18.1						
145	21.0	15.6	8.76	5.33	8.61	13.5	15.6	13.6	8.58	5.54	9.20	16.2						
150	19.0	13.3	8.21	5.60	8.22	12.2	13.9	12.2	8.12	5.80	8.61	14.2						
155	17.1	11.4	7.71	5.84	8.05	10.8	12.1	10.9	7.90	6.04	8.06	12.3						
160	15.1	9.94	7.28	6.45	7.93	9.52	10.5	9.55	7.83	6.51	7.58	10.6						
165	13.2	8.62	7.23	7.00	7.98	8.59	8.96	8.54	7.83	7.07	7.39	9.16						
170	11.4	7.56	7.53	7.51	7.83	7.99	7.85	7.80	7.82	7.61	7.64	7.93						
175	9.40	6.73	7.81	7.95	7.82	7.46	6.56	7.22	7.94	8.01	7.90	7.11						
180	7.14	6.80	8.15	8.25	8.01	7.26	7.16	6.79	8.16	8.23	8.05	7.23						

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-06-25

γ Range: 0 - 180DEG
 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: