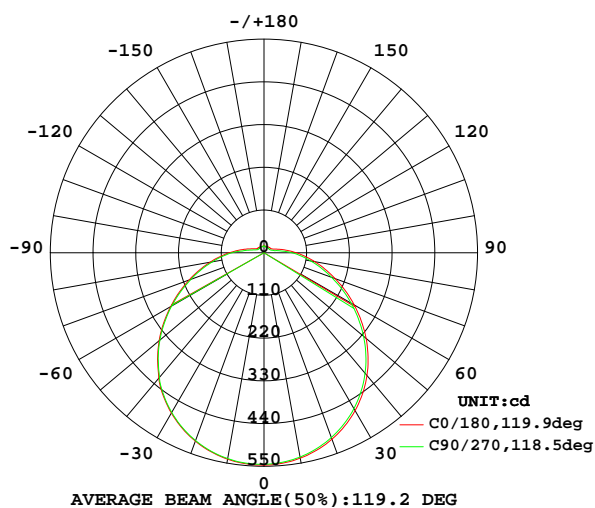


## LUMINAIRE PHOTOMETRIC TEST REPORT

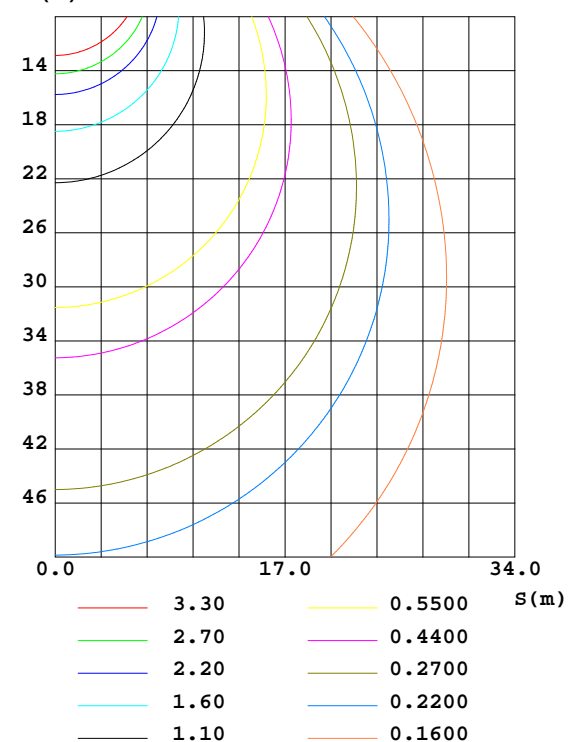
Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 90.29 lm/W			
MODEL	MO16080015	Imax(cd)	546.8	S/MH(C0/180)	1.28
NOMINAL POWER(W)	22	LOR(%)	100.0	S/MH(C90/270)	1.27
RATED VOLTAGE(V)	222	TOTAL FLUX(lm)	1968.4	$\eta$ UP, DN(C0-180)	4.3, 44.7
NOMINAL FLUX(lm)	1968.41	CIE CLASS	DIRECT	$\eta$ UP, DN(C180-360)	4.7, 46.3
LAMPS INSIDE	1	$\eta$ up(%)	9.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	221.1	$\eta$ down(%)	91.0	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 29DEG  
 Operators: Tommy  
 Test Date: 2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity: 51%  
 Test Distance: 10.500m [K=1.0000]  
 Remarks:

## ZONAL FLUX DIAGRAM

## ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\Phi$ lum,lamp
10	537.1	534.8	534.2	535.9	539.9	539.6	538.3	536.3	0- 10	51.66	51.66	2.62,2.62
20	511.2	507.5	506.5	510.5	516.5	516.8	514.8	511.5	10- 20	148.7	200.3	10.2,10.2
30	469.4	464.3	463.3	469.2	477.0	477.6	475.2	470.6	20- 30	227.4	427.8	21.7,21.7
40	412.6	404.0	404.9	410.6	421.2	423.3	419.0	414.7	30- 40	278.1	705.9	35.9,35.9
50	343.2	334.0	334.7	341.9	352.4	355.5	349.8	345.8	40- 50	293.5	999.3	50.8,50.8
60	268.1	258.4	258.9	266.6	277.7	280.2	274.5	270.3	50- 60	274.9	1274	64.7,64.7
70	194.9	186.1	185.0	193.8	205.2	204.6	200.3	195.7	60- 70	230.0	1504	76.4,76.4
80	132.8	123.5	122.5	129.7	141.3	138.9	135.3	131.1	70- 80	172.0	1676	85.2,85.2
90	83.11	74.95	72.35	78.62	89.41	85.98	82.59	79.67	80- 90	114.7	1791	91,91
100	48.20	42.07	33.46	44.72	52.27	49.07	40.13	45.04	90-100	66.67	1858	94.4,94.4
110	28.40	23.83	20.25	25.04	30.21	27.43	22.69	25.38	100-110	35.63	1893	96.2,96.2
120	21.33	16.66	16.97	17.07	21.58	18.31	17.57	17.44	110-120	21.02	1914	97.3,97.3
130	20.19	16.06	16.65	16.05	20.04	16.74	17.12	16.63	120-130	15.89	1930	98.1,98.1
140	19.15	16.45	16.60	16.20	18.96	16.74	17.20	16.85	130-140	13.44	1944	98.7,98.7
150	18.16	16.52	16.43	15.88	17.83	16.70	17.35	17.10	140-150	10.79	1954	99.3,99.3
160	17.27	16.01	15.87	15.16	16.99	15.97	16.85	16.79	150-160	7.750	1962	99.7,99.7
170	18.09	17.40	16.59	16.27	17.50	15.23	15.99	16.42	160-170	4.541	1967	99.9,99.9
180	19.38	18.66	18.37	18.56	19.41	18.62	18.39	18.58	170-180	1.694	1968	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

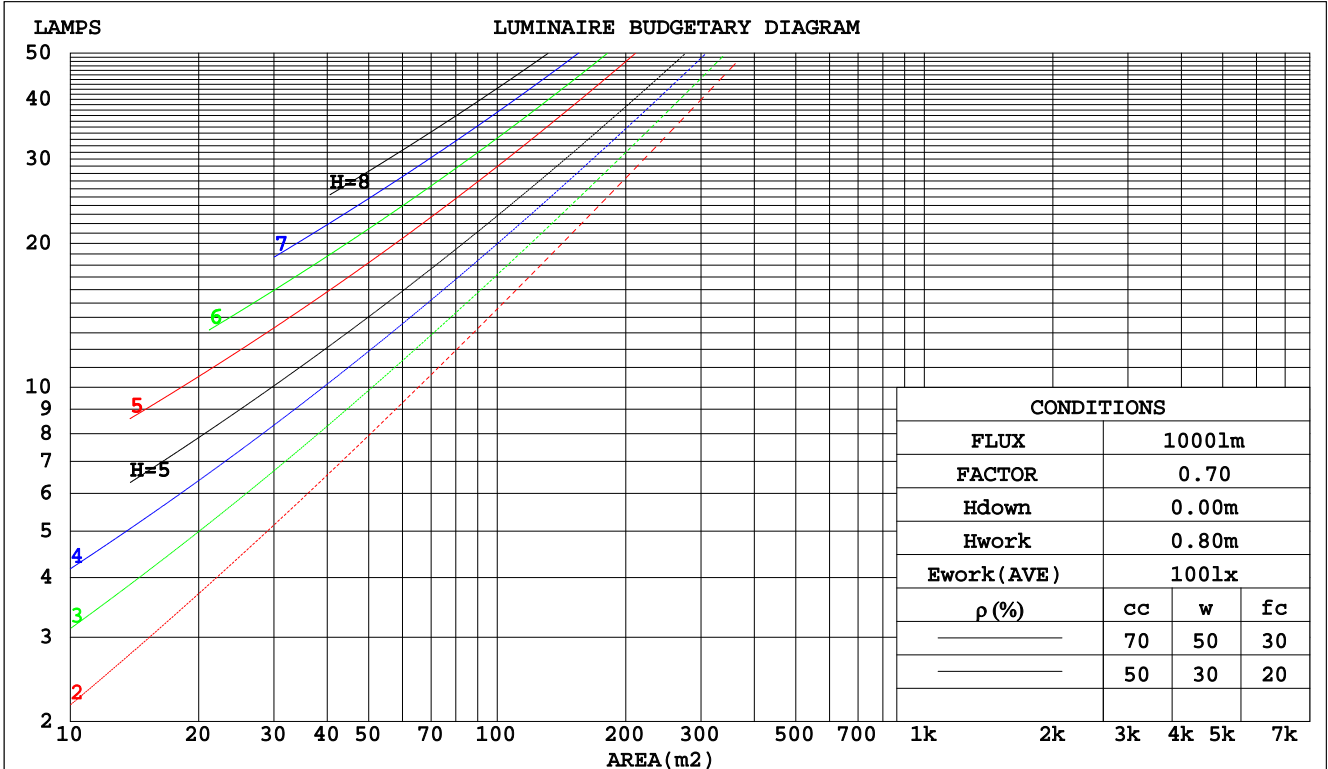
C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:29DEG  
 Operators:Tommy  
 Test Date:2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity:51%  
 Test Distance:10.500m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	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																
pfc																
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.17	1.17	1.17	1.13	1.13	1.13	1.06	1.06	1.06	.00	.00	.00	.94	.94	.94	.91
1.0	.99	.94	.89	.96	.91	.87	.90	.86	.83	.84	.81	.79	.79	.77	.75	.72
2.0	.85	.78	.71	.83	.76	.70	.78	.72	.67	.73	.68	.64	.68	.65	.61	.58
3.0	.74	.66	.59	.72	.64	.57	.68	.61	.55	.64	.58	.53	.60	.55	.51	.48
4.0	.66	.56	.49	.64	.55	.48	.60	.53	.47	.56	.50	.45	.53	.48	.44	.41
5.0	.58	.49	.42	.57	.48	.41	.54	.46	.40	.51	.44	.39	.48	.42	.38	.35
6.0	.52	.43	.37	.51	.42	.36	.48	.41	.35	.46	.39	.34	.43	.37	.33	.31
7.0	.47	.38	.32	.46	.38	.32	.44	.36	.31	.42	.35	.30	.39	.34	.29	.27
8.0	.43	.34	.28	.42	.34	.28	.40	.33	.27	.38	.31	.27	.36	.30	.26	.24
9.0	.40	.31	.26	.39	.31	.25	.37	.30	.25	.35	.29	.24	.33	.28	.23	.21
10.0	.36	.28	.23	.36	.28	.23	.34	.27	.22	.32	.26	.22	.31	.25	.21	.19



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 29DEG  
 Operators: Tommy  
 Test Date: 2016-08-04

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity: 51%  
 Test Distance: 10.500m [K=1.0000]  
 Remarks:

## WEC AND CCEC

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.41x1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.361	.205	.065	.351	.200	.064	.333	.191	.061	.316	.182	.058	.300	.174	.056	
2.0	.320	.175	.054	.311	.171	.053	.295	.164	.051	.279	.157	.049	.265	.150	.047	
3.0	.288	.153	.046	.280	.150	.045	.265	.144	.044	.251	.138	.042	.238	.132	.041	
4.0	.261	.136	.040	.254	.133	.039	.241	.128	.038	.228	.122	.037	.216	.118	.036	
5.0	.239	.122	.035	.232	.119	.035	.220	.115	.034	.209	.110	.033	.198	.106	.032	
6.0	.220	.110	.032	.214	.108	.031	.203	.104	.030	.193	.100	.029	.183	.096	.029	
7.0	.203	.100	.028	.198	.099	.028	.188	.095	.027	.179	.092	.027	.170	.088	.026	
8.0	.189	.092	.026	.184	.091	.026	.175	.087	.025	.167	.084	.024	.159	.081	.024	
9.0	.176	.085	.024	.172	.084	.024	.164	.081	.023	.156	.078	.022	.149	.075	.022	
10.0	.165	.079	.022	.161	.078	.022	.154	.075	.021	.147	.073	.021	.140	.070	.020	

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.259	.259	.259	.221	.221	.221	.151	.151	.151	.087	.087	.087	.028	.028	.028	
1.0	.253	.225	.200	.217	.193	.172	.148	.133	.119	.085	.077	.069	.027	.025	.022	
2.0	.246	.201	.164	.210	.173	.142	.144	.120	.099	.083	.070	.058	.027	.023	.019	
3.0	.238	.184	.142	.204	.159	.123	.140	.111	.086	.081	.065	.051	.026	.021	.017	
4.0	.230	.172	.127	.198	.148	.110	.136	.103	.078	.079	.061	.046	.025	.020	.015	
5.0	.223	.162	.117	.191	.140	.101	.132	.098	.072	.076	.057	.042	.025	.019	.014	
6.0	.215	.153	.109	.185	.133	.095	.128	.093	.067	.074	.055	.040	.024	.018	.013	
7.0	.208	.147	.104	.179	.127	.090	.124	.089	.064	.072	.053	.038	.023	.017	.013	
8.0	.201	.141	.099	.173	.122	.087	.120	.086	.062	.070	.051	.037	.023	.017	.012	
9.0	.195	.136	.096	.168	.118	.084	.117	.083	.060	.068	.049	.036	.022	.016	.012	
10.0	.189	.132	.094	.163	.115	.082	.113	.081	.058	.066	.048	.035	.021	.016	.011	

C Range: 0 - 360DEG  
C Interval: 45.0DEG  
Test Speed: HIGH  
Temperature:29DEG  
Operators:Tommy  
Test Date:2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
Humidity:51%  
Test Distance:10.500m [K=1.0000]  
Remarks:

## Uncorrected UGR Table

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm										
NAME: 83752					TYPE:			WEIGHT:		
DIM.:					SPEC.:			SERIAL No.:		
MFR.:					SUR.:D400mm			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	17.2	18.7	17.6	19.0	19.4	17.1	18.5	17.5	18.9	19.3
3H	19.1	20.5	19.5	20.9	21.3	18.9	20.3	19.4	20.7	21.1
4H	20.1	21.4	20.5	21.8	22.2	19.9	21.1	20.3	21.6	22.0
6H	21.1	22.3	21.6	22.8	23.2	20.8	22.0	21.3	22.5	22.9
8H	21.7	22.8	22.1	23.3	23.8	21.3	22.5	21.8	23.0	23.4
12H	22.3	23.4	22.8	23.9	24.4	21.9	23.0	22.4	23.5	24.0
4H 2H	17.8	19.1	18.3	19.5	20.0	17.7	19.0	18.2	19.4	19.9
3H	20.0	21.1	20.4	21.5	22.0	19.8	20.9	20.3	21.4	21.9
4H	21.1	22.1	21.6	22.6	23.2	20.9	21.9	21.4	22.4	23.0
6H	22.3	23.2	22.9	23.8	24.3	22.1	23.0	22.6	23.5	24.1
8H	23.0	23.8	23.5	24.4	24.9	22.7	23.5	23.2	24.1	24.6
12H	23.7	24.5	24.3	25.1	25.7	23.4	24.2	23.9	24.7	25.3
8H 4H	21.5	22.4	22.1	22.9	23.5	21.3	22.2	21.9	22.7	23.3
6H	23.0	23.7	23.6	24.3	24.9	22.8	23.5	23.3	24.0	24.7
8H	23.8	24.5	24.4	25.0	25.7	23.5	24.2	24.1	24.8	25.4
12H	24.8	25.3	25.4	25.9	26.6	24.4	25.0	25.0	25.6	26.3
12H 4H	21.6	22.4	22.1	22.9	23.5	21.4	22.2	22.0	22.8	23.4
6H	23.1	23.8	23.7	24.4	25.0	22.9	23.6	23.5	24.2	24.8
8H	24.1	24.6	24.7	25.2	25.9	23.8	24.4	24.4	25.0	25.7
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					+ 0.2 / - 0.3				

CIE Pub.117 Corrected 1968 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.4)

C Range: 0 - 360DEG  
C Interval: 45.0DEG  
Test Speed: HIGH  
Temperature:29DEG  
Operators:Tommy  
Test Date:2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
Humidity:51%  
Test Distance:10.500m [K=1.0000]  
Remarks:

## UTILIZATION FACTORS TABLE

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:

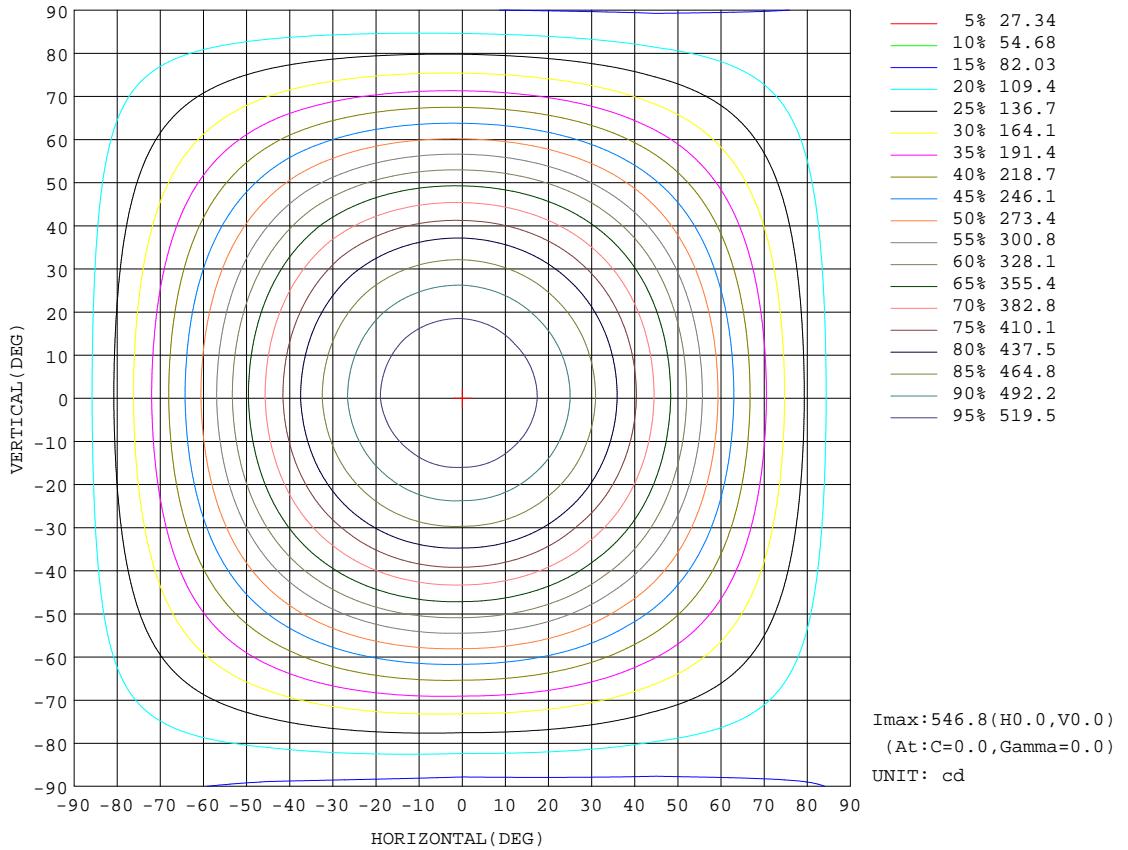
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	52	40	33	51	40	33	50	39	33	26
0.80	62	49	42	60	49	41	58	48	41	33
1.00	70	58	50	68	57	49	65	58	48	40
1.25	77	65	57	75	64	56	71	62	55	47
1.50	82	70	62	80	69	62	76	67	60	51
2.00	89	79	71	86	77	70	82	74	68	58
2.50	93	84	76	90	82	75	85	78	73	62
3.00	97	88	81	94	86	80	88	82	77	66
4.00	101	94	88	98	91	86	92	87	82	71
5.00	104	98	92	100	95	90	94	90	86	74
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:29DEG  
Operators:Tommy  
Test Date:2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
Humidity:51%  
Test Distance:10.500m [K=1.0000]  
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:



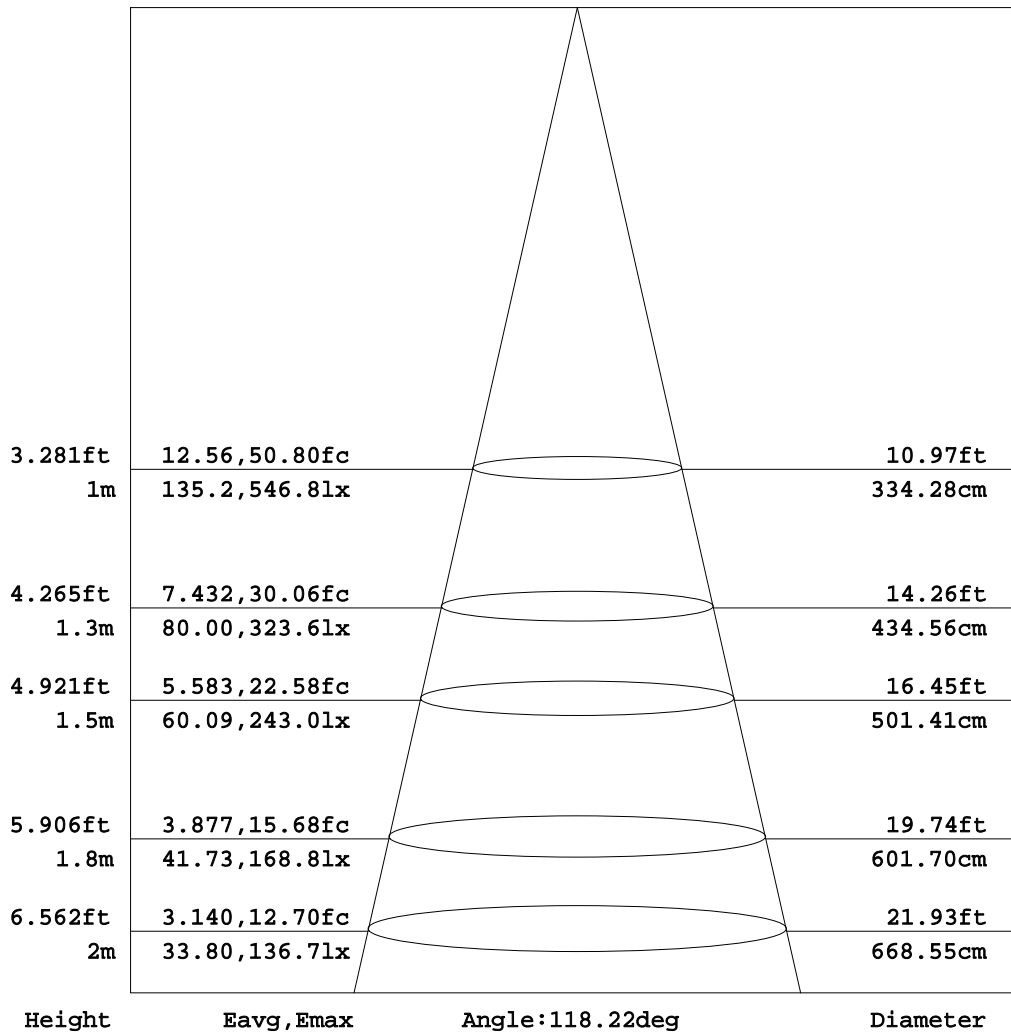
C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 29DEG  
 Operators: Tommy  
 Test Date: 2016-08-04

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity: 51%  
 Test Distance: 10.500m [K=1.0000]  
 Remarks:

AAI Figure

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:

Flux out:1274 lm



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

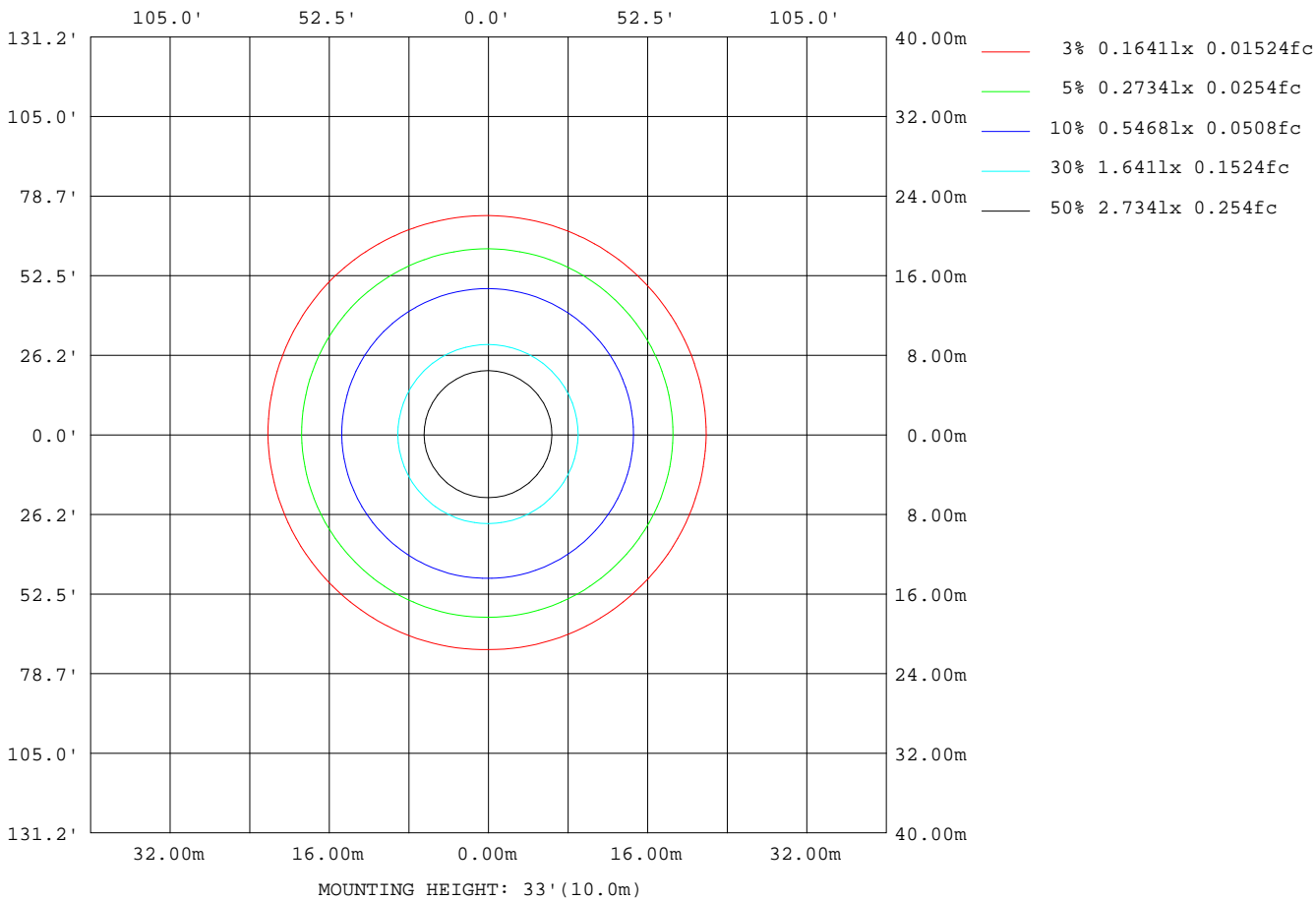
C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:29DEG  
 Operators:Tommy  
 Test Date:2016-08-04

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity:51%  
 Test Distance:10.500m [K=1.0000]  
 Remarks:



ISOLUX DIAGRAM

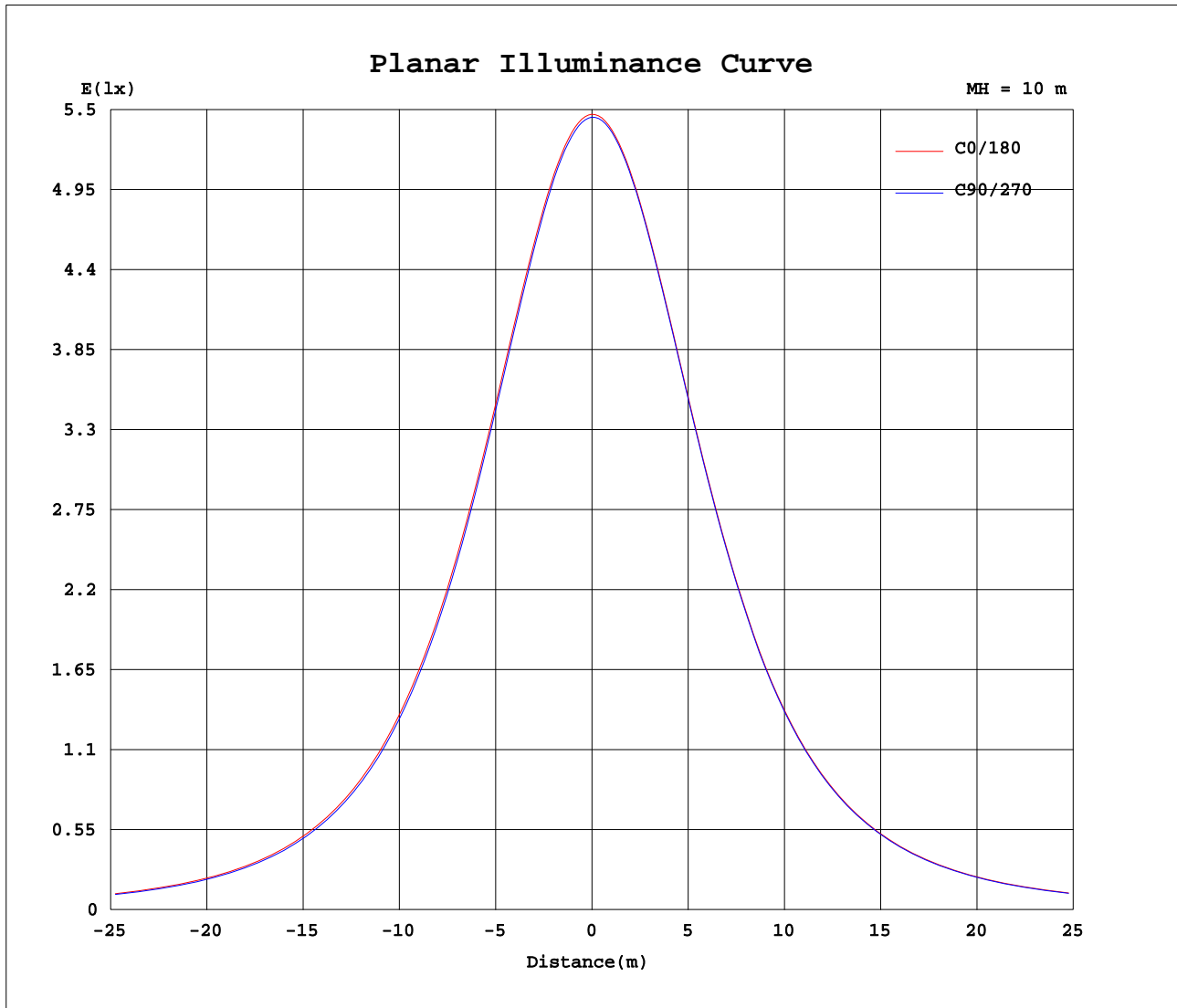
Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:29DEG  
 Operators:Tommy  
 Test Date:2016-08-04

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity:51%  
 Test Distance:10.500m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature: 29DEG  
 Operators: Tommy  
 Test Date: 2016-08-04

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity: 51%  
 Test Distance: 10.500m [K=1.0000]  
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.9V I:0.1040A P:21.80W PF:0.9450 Lamp Flux:1968.4lx1 lm		
NAME: 83752	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:D400mm	PROTECTION ANGLE:

Table--1

UNIT: cd

C(DEG)\ γ (DEG)	0	45	90	135	180	225	270	315											
0	547	546	545	544	547	546	545	544											
5	544	542	541	542	545	545	544	542											
10	537	535	534	536	540	540	538	536											
15	526	523	522	525	530	530	529	526											
20	511	508	507	511	516	517	515	512											
25	492	488	487	492	499	499	497	493											
30	469	464	463	469	477	478	475	471											
35	443	437	436	443	451	452	450	444											
40	413	404	405	411	421	423	419	415											
45	379	370	371	377	388	391	385	382											
50	343	334	335	342	352	356	350	346											
55	306	296	297	305	315	318	313	308											
60	268	258	259	267	278	280	275	270											
65	231	221	222	229	241	243	237	233											
70	195	186	185	194	205	205	200	196											
75	162	153	152	160	172	170	166	162											
80	133	124	123	130	141	139	135	131											
85	106	97.5	95.7	102	114	111	107	103											
90	83.1	74.9	72.3	78.6	89.4	86.0	82.6	79.7											
95	63.8	56.3	49.0	59.7	68.9	65.4	56.1	60.2											
100	48.2	42.1	33.5	44.7	52.3	49.1	40.1	45.0											
105	36.5	31.3	24.8	33.2	39.4	36.5	29.6	33.6											
110	28.4	23.8	20.3	25.0	30.2	27.4	22.7	25.4											
115	23.6	19.2	18.0	19.8	24.5	21.5	19.1	20.1											
120	21.3	16.7	17.0	17.1	21.6	18.3	17.6	17.4											
125	20.6	16.0	16.9	16.1	20.6	17.1	17.1	16.7											
130	20.2	16.1	16.7	16.0	20.0	16.7	17.1	16.6											
135	19.7	16.3	16.5	16.1	19.6	16.8	17.2	16.7											
140	19.2	16.4	16.6	16.2	19.0	16.7	17.2	16.9											
145	18.7	16.5	16.6	16.1	18.4	16.9	17.6	17.0											
150	18.2	16.5	16.4	15.9	17.8	16.7	17.3	17.1											
155	17.7	16.6	16.2	15.6	17.4	16.4	17.2	17.0											
160	17.3	16.0	15.9	15.2	17.0	16.0	16.9	16.8											
165	16.7	15.4	15.3	14.7	16.4	15.4	16.3	16.4											
170	18.1	17.4	16.6	16.3	17.5	15.2	16.0	16.4											
175	19.0	18.2	17.6	17.7	19.0	17.8	17.6	18.1											
180	19.4	18.7	18.4	18.6	19.4	18.6	18.4	18.6											

C Range: 0 - 360DEG  
 C Interval: 45.0DEG  
 Test Speed: HIGH  
 Temperature:29DEG  
 Operators:Tommy  
 Test Date:2016-08-04

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.275  
 Humidity:51%  
 Test Distance:10.500m [K=1.0000]  
 Remarks: