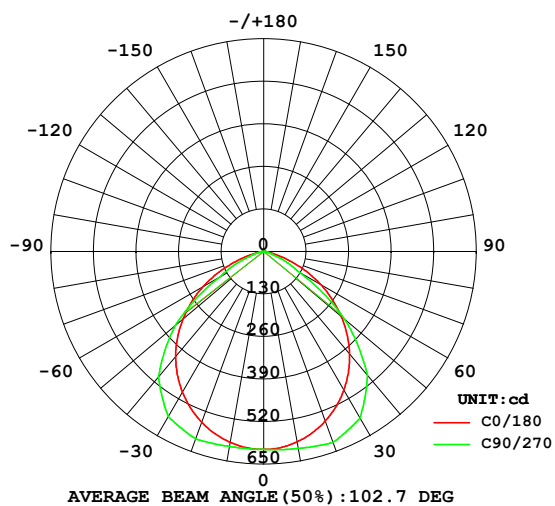


## LUMINAIRE PHOTOMETRIC TEST REPORT

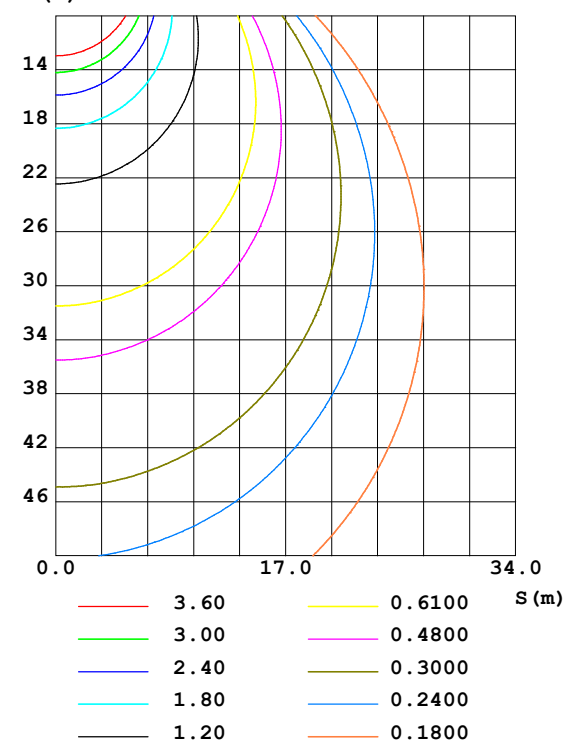
Test:U:230.0V I:0.0745A P:14.97W PF:0.8739 Lamp Flux:2150x1 lm		
NAME: Grille	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:1#
MFR.: ELEKO	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 102.58 lm/W			
MODEL		I <sub>max</sub> (cd)	621.0	S/MH (C0/180)	1.23
NOMINAL POWER (W)	16	LOR (%)	71.4	S/MH (C90/270)	1.38
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	1535.3	η UP, DN (C0-180)	0.0, 36.0
NOMINAL FLUX (lm)	2150	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 35.4
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.50
TEST VOLTAGE (V)	229.9	η down (%)	71.4	CIBSE SHR MAX	1.50

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: SU  
 Test Date: 2018-08-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity: 65.0%  
 Test Distance: 8.750m [K=1.0000]  
 Remarks:

## ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

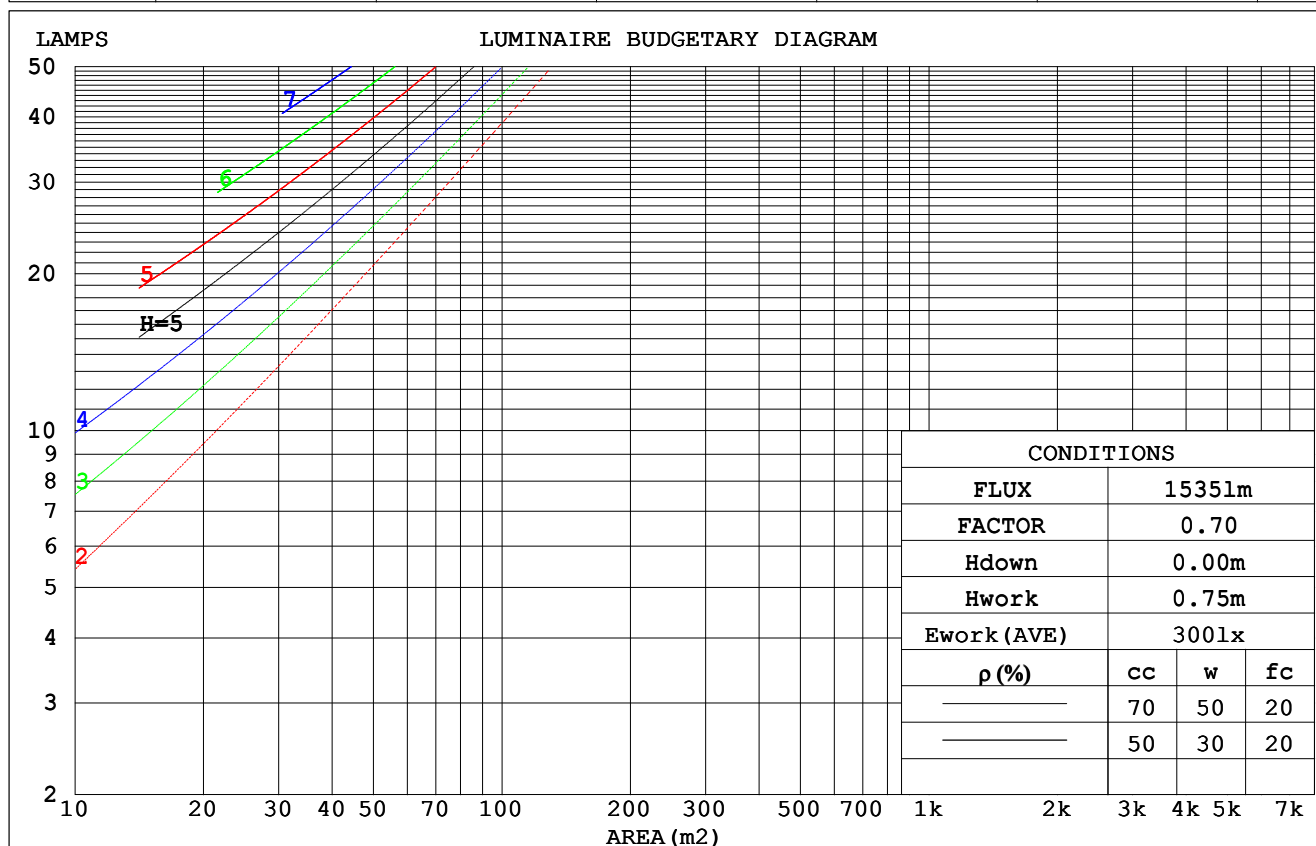
$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
5	602.1	603.7	604.9	603.3	601.6	605.4	608.0	605.8	0- 5	14.46	14.46	0.94,0.67
10	592.0	598.4	604.8	597.7	590.8	602.0	611.0	602.9	5- 10	43.09	57.55	3.75,2.68
15	576.7	590.9	607.1	589.3	573.9	595.8	616.0	597.2	10- 15	70.80	128.4	8.36,5.97
20	555.3	582.0	609.5	579.3	551.4	587.5	621.0	590.0	15- 20	97.11	225.5	14.7,10.5
25	528.5	570.5	596.4	566.7	523.2	576.5	604.8	580.0	20- 25	120.9	346.4	22.6,16.1
30	496.7	549.8	583.3	545.0	489.8	554.1	588.5	558.4	25- 30	140.9	487.3	31.7,22.7
35	460.1	521.8	541.8	515.7	451.7	522.7	541.0	527.7	30- 35	155.8	643.0	41.9,29.9
40	418.9	488.5	500.4	481.4	408.6	485.8	493.5	491.5	35- 40	163.7	806.7	52.5,37.5
45	372.9	436.1	426.9	427.9	361.1	428.0	408.7	433.6	40- 45	164.0	970.8	63.2,45.2
50	322.2	382.0	353.5	373.3	309.7	369.0	323.9	374.4	45- 50	154.6	1125	73.3,52.3
55	268.9	302.3	253.2	294.3	256.0	282.6	221.6	287.1	50- 55	136.1	1261	82.2,58.7
60	212.6	221.5	153.0	214.7	200.3	197.5	119.2	200.7	55- 60	108.4	1370	89.2,63.7
65	151.8	135.0	99.45	130.6	142.9	114.5	75.90	116.6	60- 65	77.03	1447	94.2,67.3
70	91.76	70.84	45.92	68.49	86.02	56.47	32.56	57.65	65- 70	48.82	1496	97.4,69.6
75	43.91	31.01	26.01	29.98	40.09	24.72	18.80	25.09	70- 75	25.46	1521	99.1,70.8
80	14.32	13.13	6.091	12.40	12.04	10.80	5.037	11.19	75- 80	10.73	1532	99.8,71.3
85	3.622	1.890	0	1.643	2.555	1.731	0	1.969	80- 85	3.033	1535	100,71.4
90	0.5444	0	0	0	0.6206	0	0	0	85- 90	0.3503	1535	100,71.4
95									90- 95			
100									95-100			
105									100-105			
110									105-110			
115									110-115			
120									115-120			
125									120-125			
130									125-130			
135									130-135			
140									135-140			
145									140-145			
150									145-150			
155									150-155			
160									155-160			
165									160-165			
170									165-170			
175									170-175			
180									175-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:SU  
 Test Date:2018-08-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity:65.0%  
 Test Distance:8.750m [K=1.0000]  
 Remarks:

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
p <sub>w</sub>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
p <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	.85	.85	.85	.83	.83	.83	.79	.79	.79	.76	.76	.76	.73	.73	.73	.71
1.0	.76	.74	.71	.75	.72	.70	.72	.70	.68	.69	.67	.66	.66	.65	.64	.62
2.0	.68	.63	.60	.66	.62	.59	.64	.60	.58	.61	.59	.56	.59	.57	.55	.54
3.0	.60	.55	.51	.59	.54	.50	.57	.53	.49	.55	.51	.48	.53	.50	.48	.46
4.0	.54	.48	.43	.53	.47	.43	.51	.46	.43	.49	.45	.42	.48	.44	.41	.40
5.0	.48	.42	.38	.47	.42	.38	.46	.41	.37	.45	.40	.37	.43	.39	.36	.35
6.0	.43	.37	.33	.43	.37	.33	.42	.37	.33	.40	.36	.32	.39	.35	.32	.31
7.0	.39	.34	.29	.39	.33	.29	.38	.33	.29	.37	.32	.29	.36	.32	.29	.27
8.0	.36	.30	.26	.36	.30	.26	.35	.30	.26	.34	.29	.26	.33	.29	.26	.24
9.0	.33	.27	.24	.33	.27	.24	.32	.27	.24	.31	.27	.23	.30	.26	.23	.22
10.0	.31	.25	.21	.30	.25	.21	.30	.25	.21	.29	.24	.21	.28	.24	.21	.20



C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: SU  
 Test Date: 2018-08-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity: 65.0%  
 Test Distance: 8.750m [K=1.0000]  
 Remarks:

## WEC AND CCEC

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	.184	.105	.033	.179	.102	.032	.170	.097	.031	.161	.093	.030	.154	.089	.029	
2.0	.180	.099	.030	.176	.097	.030	.168	.093	.029	.160	.090	.028	.154	.087	.027	
3.0	.171	.091	.027	.168	.090	.027	.161	.087	.026	.154	.084	.026	.148	.082	.025	
4.0	.162	.084	.025	.158	.083	.024	.152	.081	.024	.146	.078	.024	.141	.076	.023	
5.0	.152	.077	.022	.149	.076	.022	.143	.075	.022	.138	.073	.022	.133	.071	.021	
6.0	.142	.071	.020	.140	.071	.020	.135	.069	.020	.130	.068	.020	.126	.066	.020	
7.0	.134	.066	.019	.131	.066	.019	.127	.064	.018	.123	.063	.018	.119	.062	.018	
8.0	.126	.062	.017	.124	.061	.017	.120	.060	.017	.116	.059	.017	.113	.058	.017	
9.0	.119	.057	.016	.117	.057	.016	.113	.056	.016	.110	.055	.016	.107	.054	.016	
10.0	.112	.054	.015	.111	.053	.015	.107	.053	.015	.104	.052	.015	.101	.051	.015	

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	.136	.136	.136	.116	.116	.116	.079	.079	.079	.046	.046	.046	.015	.015	.015	
1.0	.126	.112	.099	.108	.096	.085	.074	.066	.059	.043	.038	.034	.014	.012	.011	
2.0	.119	.094	.073	.102	.081	.063	.070	.056	.044	.040	.033	.026	.013	.011	.008	
3.0	.113	.081	.056	.097	.070	.049	.067	.049	.034	.039	.029	.020	.012	.009	.007	
4.0	.108	.072	.044	.093	.062	.038	.064	.043	.027	.037	.025	.016	.012	.008	.005	
5.0	.103	.064	.036	.088	.056	.031	.061	.039	.022	.035	.023	.013	.011	.007	.004	
6.0	.098	.058	.029	.084	.050	.026	.058	.035	.018	.034	.021	.011	.011	.007	.004	
7.0	.094	.053	.025	.081	.046	.022	.056	.032	.015	.032	.019	.009	.010	.006	.003	
8.0	.089	.049	.021	.077	.043	.019	.053	.030	.013	.031	.018	.008	.010	.006	.003	
9.0	.085	.046	.019	.074	.040	.016	.051	.028	.012	.030	.016	.007	.010	.005	.002	
10.0	.082	.042	.017	.070	.037	.014	.049	.026	.010	.028	.015	.006	.009	.005	.002	

C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:SU  
 Test Date:2018-08-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity:65.0%  
 Test Distance:8.750m [K=1.0000]  
 Remarks:

## Uncorrected UGR Table

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	16.3	17.7	16.5	17.9	18.1	15.5	16.9	15.8	17.1	17.3
3H	17.1	18.4	17.4	18.6	18.8	15.7	17.0	16.0	17.2	17.5
4H	17.2	18.4	17.5	18.6	18.9	15.7	16.9	16.0	17.2	17.4
6H	17.1	18.3	17.5	18.6	18.8	15.6	16.8	16.0	17.1	17.3
8H	17.1	18.2	17.4	18.5	18.8	15.6	16.7	15.9	17.0	17.3
12H	17.1	18.1	17.4	18.4	18.7	15.5	16.6	15.9	16.9	17.2
4H 2H	16.5	17.8	16.8	18.0	18.3	15.9	17.1	16.2	17.3	17.6
3H	17.4	18.5	17.8	18.8	19.1	16.2	17.2	16.5	17.5	17.8
4H	17.6	18.6	18.0	18.9	19.2	16.2	17.2	16.6	17.5	17.8
6H	17.6	18.4	18.0	18.8	19.1	16.2	17.0	16.6	17.4	17.7
8H	17.6	18.3	18.0	18.7	19.1	16.1	16.9	16.5	17.3	17.6
12H	17.5	18.2	18.0	18.6	19.0	16.1	16.8	16.5	17.2	17.6
8H 4H	17.5	18.3	17.9	18.7	19.1	16.2	17.0	16.6	17.3	17.7
6H	17.6	18.2	18.0	18.6	19.0	16.2	16.8	16.6	17.2	17.6
8H	17.5	18.1	18.0	18.5	19.0	16.2	16.7	16.6	17.1	17.6
12H	17.5	18.0	18.0	18.4	18.9	16.1	16.6	16.6	17.0	17.5
12H 4H	17.5	18.2	17.9	18.6	19.0	16.2	16.9	16.6	17.3	17.7
6H	17.5	18.1	18.0	18.5	19.0	16.2	16.7	16.6	17.1	17.6
8H	17.5	18.0	18.0	18.4	18.9	16.1	16.6	16.6	17.0	17.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.6					+ 0.5 / - 0.7				
1.5H	+ 0.6 / - 1.0					+ 0.3 / - 0.6				
2.0H	+ 0.6 / - 1.1					+ 1.2 / - 2.1				

CIE Pub.117 Corrected 2150 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.7)

C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:SU  
 Test Date:2018-08-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity:65.0%  
 Test Distance:8.750m [K=1.0000]  
 Remarks:

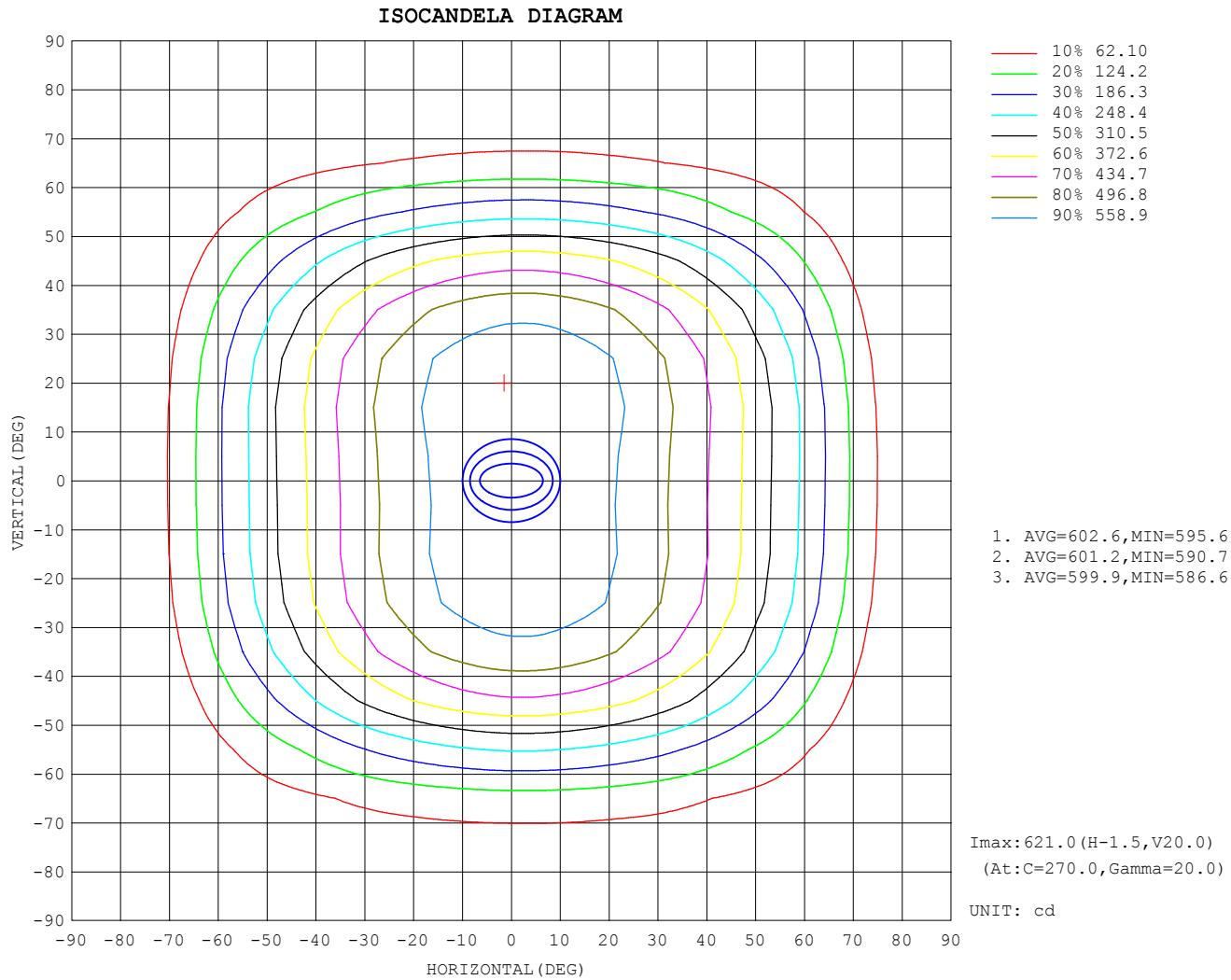
## UTILIZATION FACTORS TABLE

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) $k(RI) \times RCR = 5$									
$k = 0.60$	44	36	31	43	36	31	43	36	31	27
0.80	51	44	39	51	44	39	50	43	39	34
1.00	58	51	46	57	50	46	55	51	45	41
1.25	63	56	52	62	56	51	60	55	51	46
1.50	66	60	56	65	59	55	63	58	55	50
2.00	71	66	62	69	65	61	67	63	60	55
2.50	73	68	65	72	67	64	69	66	63	57
3.00	75	71	68	74	70	67	71	68	65	60
4.00	78	74	71	76	73	70	73	71	68	63
5.00	79	76	74	77	75	73	74	72	70	64
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: SU  
 Test Date: 2018-08-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity: 65.0%  
 Test Distance: 8.750m [K=1.0000]  
 Remarks:

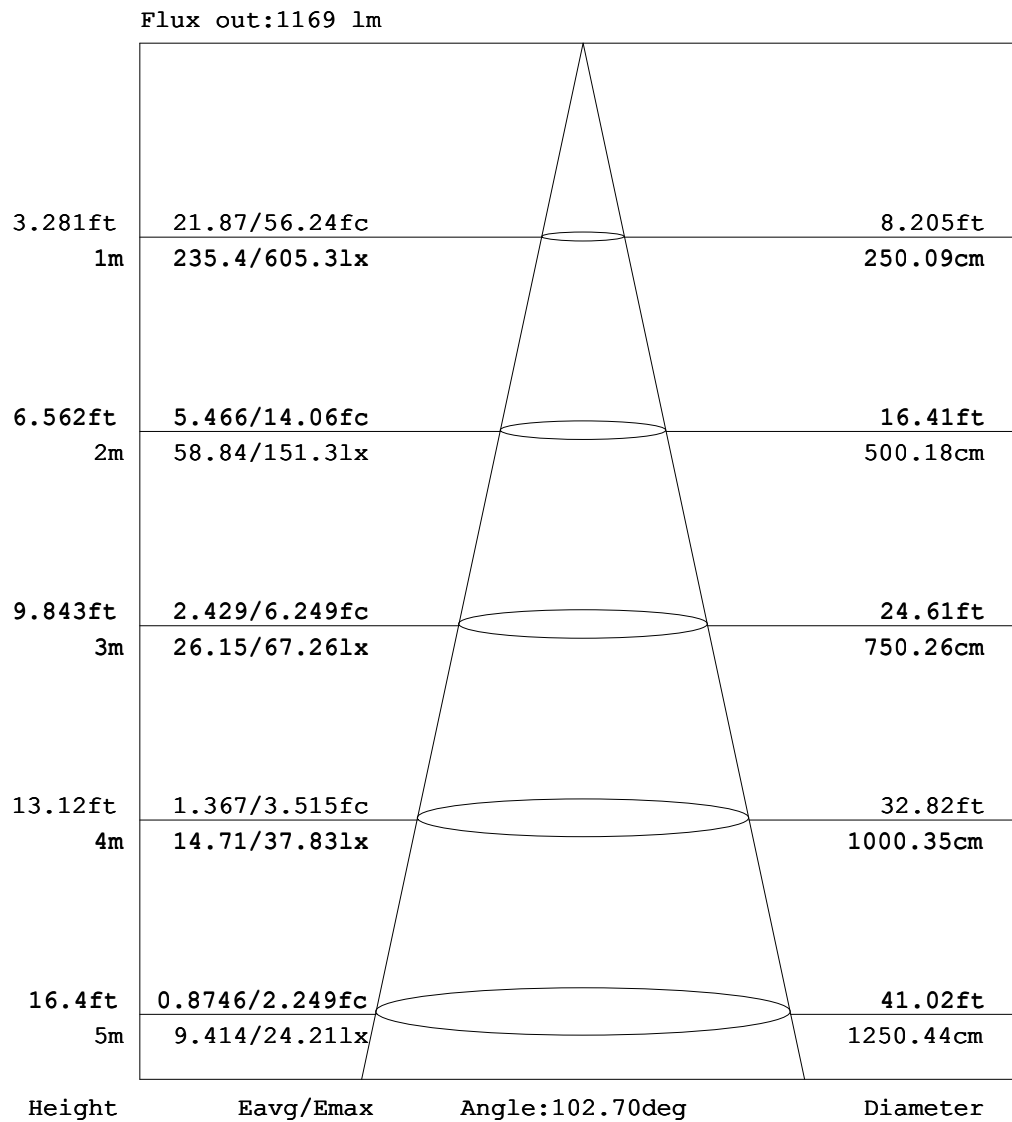
ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: SU  
Test Date: 2018-08-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity: 65.0%  
Test Distance: 8.750m [K=1.0000]  
Remarks:

## AAI Figure



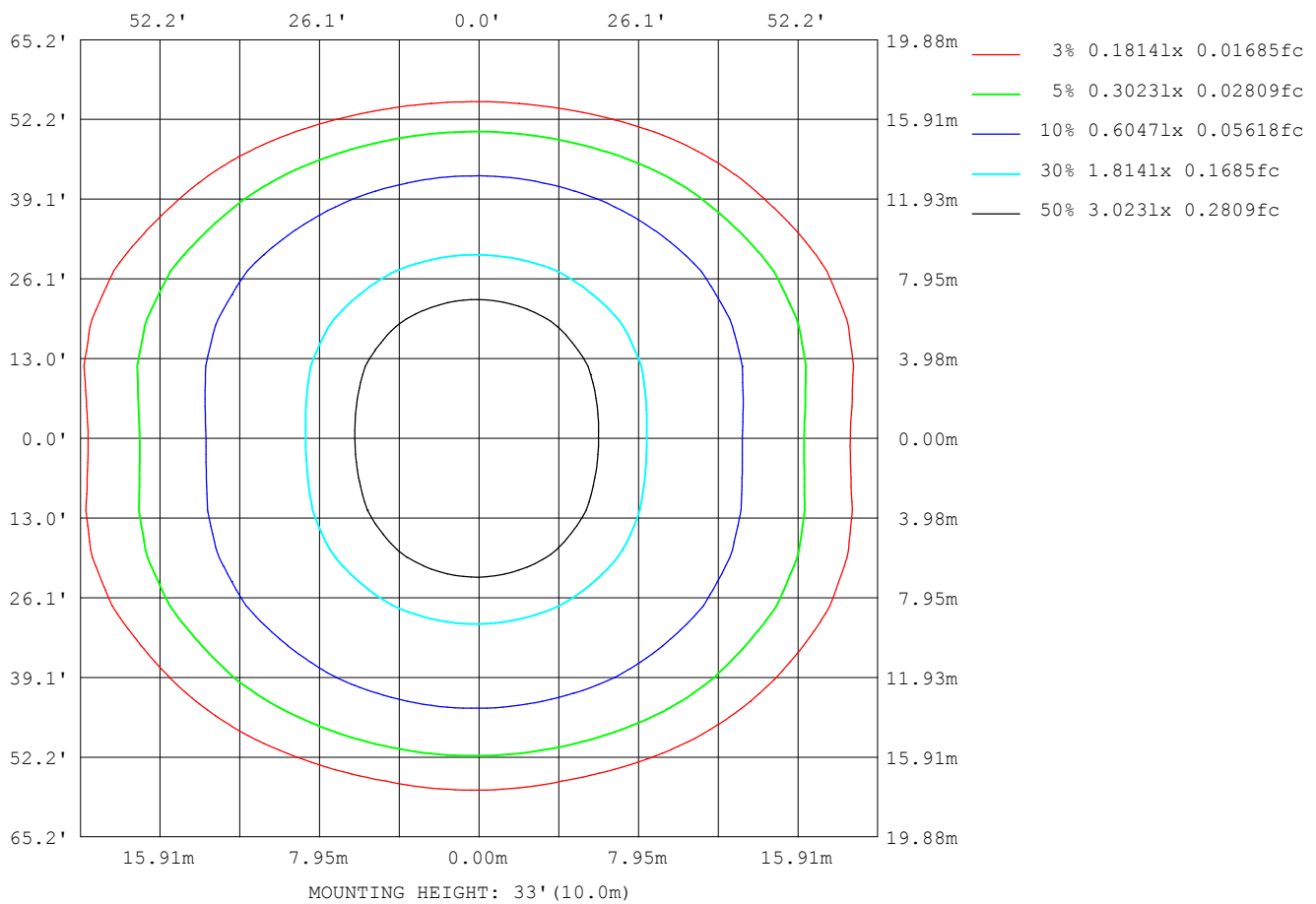
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:SU  
Test Date:2018-08-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:65.0%  
Test Distance:8.750m [K=1.0000]  
Remarks:



## ISOLUX DIAGRAM



C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: SU  
Test Date: 2018-08-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity: 65.0%  
Test Distance: 8.750m [K=1.0000]  
Remarks:

## Average Luminance Table (CIBSE)

Parameter description for average Luminance	Symbol	Value	Unit
Luminance in Azimuth Plane	Bc	refer Table 2	cd/sq.m.
Intensity at angle Gamma in given azimuth plane	I	from data	cd/klm
Number of lamps	N	1	
Output of each lamp (initial lumens as specified)	F	2150	lm
Multiplying factor	K	1	
Luminous area in horizontal plane used in calculations	A	0.2	sq.m.
Angle to the downward vertical from light centre	Gamma	from data	deg

Table 1. Calculation parameters for determination of CIBSE LG3:1996 Average Luminance

G deg	C plane (deg)																		
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
55	2344	2445	2630	2710	2693	2587	2471	2324	2238	2207	2232	2308	2435	2528	2612	2609	2519	2332	2232
60	2126	2259	2447	2439	2280	2114	1887	1689	1572	1530	1566	1678	1857	2062	2199	2334	2332	2140	2003
65	1796	1966	2067	1950	1733	1449	1297	1232	1195	1177	1188	1221	1274	1412	1669	1863	1970	1863	1690
70	1341	1483	1515	1356	1061	1000	911	788	710	671	700	775	885	972	1030	1313	1449	1411	1258
75	848	923	852	730	676	559	568	536	518	502	509	521	541	540	655	726	830	873	775
80	412	430	398	333	381	357	306	245	200	175	193	228	283	338	362	313	382	388	347
85	208	207	242	204	134	86	50	23	6	0	5	21	44	77	116	168	196	163	147

Table 2. Average Luminance (cd/sq.m.) for defined C plane, Gamma angle

CIBSE Category	Gamma (deg)	Average Luminance		Patch Luminance	
		maximum calculated	specified maximum	maximum measured	specified maximum
Category 1	55 to 90	2710	200	---	500
Category 2	65 to 90	2067	200	---	500
Category 3	75 to 90	923	200	---	500

Table 3. Tabulation of Average and Patch Luminance (cd/sq.m.) for defined CIBSE categories

No match

C Range: 0 - 360DEG  
 C Interval: 5.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: SU  
 Test Date: 2018-08-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
 Humidity: 65.0%  
 Test Distance: 8.750m [K=1.0000]  
 Remarks:

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

[illegible]

C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:SU  
Test Date:2018-08-27

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V1.0.257
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

```

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--2

UNIT: cd

[illegible]

C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:SU  
Test Date:2018-08-27

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V1.0.257
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

```

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--3

UNIT: cd

[illegible]

C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: SU  
Test Date: 2018-08-27

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V1.0.257
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

```

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--4

UNIT: cd

[illegible]

C Range: 0 - 360DEG  
C Interval: 5.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:SU  
Test Date:2018-08-27

```

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V1.0.257
Humidity:65.0%
Test Distance:8.750m [K=1.0000]
Remarks:

```