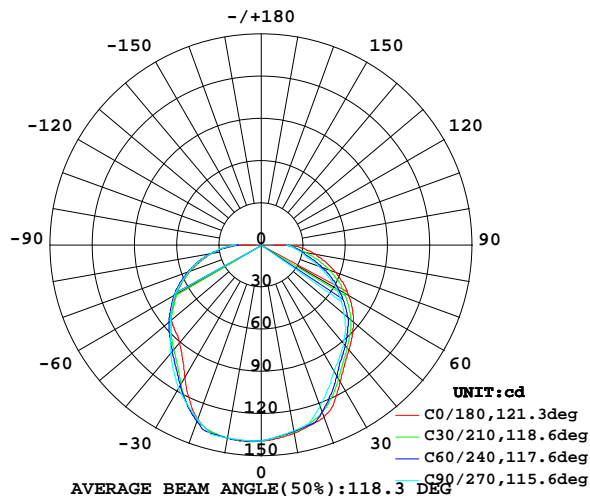


LUMINAIRE PHOTOMETRIC TEST REPORT

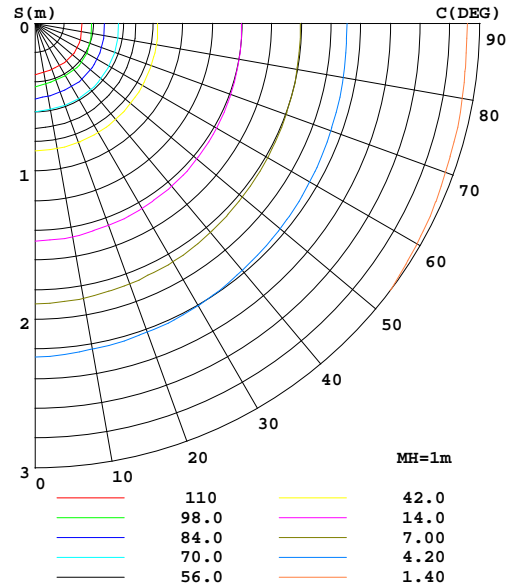
NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 49.91 lm/W			
MODEL	SAMSUNG	Imax(cd)	140.0	S/MH(C0/180)	1.20
NOMINAL POWER(W)	28*0.3	LOR(%)	52.3	S/MH(C90/270)	1.12
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	439.24	h UP,DN(C0-180)	0.0,25.1
NOMINAL FLUX(lm)	30	CIE CLASS	DIRECT	h UP,DN(C180-360)	0.0,27.2
LAMPS INSIDE	28	h up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230.3	h down(%)	52.3	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



PLANAR ISOLUX DIAGRAM(UNIT:lx)



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:30DEG
Operators:WCZ
Test Date:2013-09-10

g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity:65.0%
Test Distance:6.120m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

g	C0	C45	C90	C135	C180	C225	C270	C315	g	F zone	F total	%lum,lamp
5	137.9	137.0	136.8	137.7	140.0	139.7	139.4	138.6	0- 5	3.317	3.317	0.76,0.39
10	135.9	134.7	134.2	134.5	139.5	139.2	139.4	137.8	5- 10	9.840	13.16	3.1.57
15	133.0	132.3	131.6	129.6	137.6	138.1	139.4	136.9	10- 15	16.10	29.25	6.66,3.48
20	130.3	128.8	122.2	122.1	132.0	135.8	132.2	135.2	15- 20	21.74	51.00	11.6,6.07
25	123.4	119.1	112.9	112.2	121.4	126.1	124.9	125.1	20- 25	26.10	77.10	17.6,9.18
30	112.4	109.4	103.6	104.2	108.9	115.2	117.7	112.6	25- 30	29.08	106.2	24.2,12.6
35	103.6	101.1	97.42	97.70	98.02	105.4	108.9	101.4	30- 35	31.13	137.3	31.3,16.3
40	97.25	94.45	91.22	92.51	90.56	97.66	100.2	93.50	35- 40	32.77	170.1	38.7,20.2
45	91.61	88.15	85.03	85.97	86.68	91.40	91.43	89.20	40- 45	33.98	204.1	46.5,24.3
50	85.72	81.49	77.24	79.04	83.47	85.41	84.60	85.40	45- 50	34.58	238.6	54.3,28.4
55	79.22	74.71	69.45	71.99	77.38	79.16	77.77	80.69	50- 55	34.39	273.0	62.2,32.5
60	72.04	65.96	61.67	63.53	69.90	71.19	70.93	73.07	55- 60	33.30	306.3	69.7,36.5
65	64.26	57.25	52.27	55.16	61.85	63.36	62.74	65.47	60- 65	31.29	337.6	76.9,40.2
70	55.94	48.28	42.88	46.23	53.38	55.14	54.55	57.43	65- 70	28.33	366.0	83.3,43.6
75	47.37	39.01	33.49	36.53	44.68	46.36	46.36	48.81	70- 75	24.68	390.6	88.9,46.5
80	38.92	30.28	28.26	27.57	36.08	37.39	36.87	40.01	75- 80	20.60	411.2	93.6,49
85	30.21	24.21	23.03	22.72	26.22	26.77	27.39	29.53	80- 85	16.33	427.6	97.3,50.9
90	8.786	18.15	17.80	17.95	4.351	16.22	17.90	19.09	85- 90	11.68	439.2	100,52.3
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		

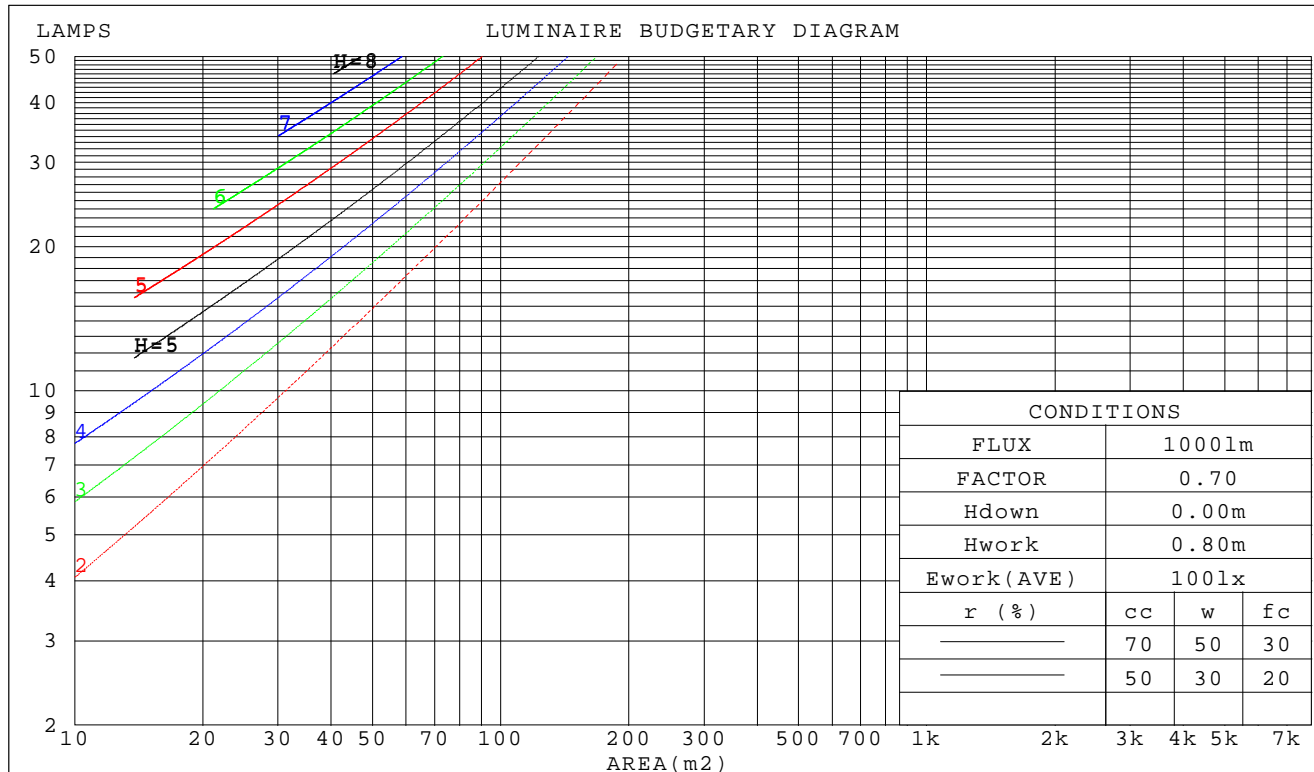
C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:30DEG
 Operators:WCZ
 Test Date:2013-09-10

g Range: 0 - 90DEG
 g Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
 Humidity:65.0%
 Test Distance:6.120m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

rcc	80%			70%			50%			30%			10%			0
rw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
rfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	.62	.62	.62	.61	.61	.61	.58	.58	.58	.56	.56	.56	.53	.53	.53	.52
1.0	.53	.50	.47	.51	.49	.47	.49	.47	.45	.47	.45	.44	.45	.44	.42	.41
2.0	.45	.41	.38	.44	.40	.37	.42	.39	.36	.40	.38	.35	.39	.37	.35	.33
3.0	.39	.35	.31	.38	.34	.30	.37	.33	.30	.35	.32	.29	.34	.31	.29	.28
4.0	.35	.30	.26	.34	.29	.26	.32	.28	.25	.31	.28	.25	.30	.27	.24	.23
5.0	.31	.26	.22	.30	.25	.22	.29	.25	.22	.28	.24	.21	.27	.24	.21	.20
6.0	.28	.23	.19	.27	.22	.19	.26	.22	.19	.25	.22	.19	.24	.21	.19	.17
7.0	.25	.20	.17	.25	.20	.17	.24	.20	.17	.23	.19	.17	.22	.19	.16	.15
8.0	.23	.18	.15	.22	.18	.15	.22	.18	.15	.21	.17	.15	.20	.17	.15	.14
9.0	.21	.17	.14	.21	.16	.13	.20	.16	.13	.19	.16	.13	.19	.16	.13	.12
10.0	.19	.15	.12	.19	.15	.12	.19	.15	.12	.18	.15	.12	.18	.14	.12	.11



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature: 30DEG
 Operators: WCZ
 Test Date: 2013-09-10

g Range: 0 - 90DEG
 g Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.275
 Humidity: 65.0%
 Test Distance: 6.120m [K=1.0000]
 Remarks:

WEC AND CCEC

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

rcc	80%	70%	50%	30%	10%	0
rw	50% 30% 10%	50% 30% 10%	50% 30% 10%	50% 30% 10%	50% 30% 10%	0
rfc	20%	20%	20%	20%	20%	0
RCR	RCR:Room Cavity Ratio Wall Exitance Coefficients(WEC)					
0.0						
1.0	.197 .112 .035	.193 .110 .035	.186 .107 .034	.179 .103 .033	.173 .100 .032	
2.0	.174 .095 .029	.170 .094 .029	.164 .091 .028	.158 .089 .028	.153 .086 .027	
3.0	.156 .083 .025	.153 .082 .025	.147 .080 .024	.142 .078 .024	.137 .076 .023	
4.0	.141 .073 .021	.138 .072 .021	.133 .071 .021	.129 .069 .021	.124 .068 .021	
5.0	.128 .065 .019	.126 .065 .019	.122 .063 .019	.117 .062 .018	.114 .061 .018	
6.0	.118 .059 .017	.116 .058 .017	.112 .057 .017	.108 .056 .017	.105 .055 .016	
7.0	.109 .054 .015	.107 .053 .015	.103 .052 .015	.100 .051 .015	.097 .050 .015	
8.0	.101 .049 .014	.099 .049 .014	.096 .048 .014	.093 .047 .014	.090 .046 .014	
9.0	.094 .045 .013	.093 .045 .013	.090 .044 .013	.087 .044 .013	.085 .043 .012	
10.0	.088 .042 .012	.087 .042 .012	.084 .041 .012	.082 .041 .012	.080 .040 .012	

rcc	80%	70%	50%	30%	10%	0
rw	50% 30% 10%	50% 30% 10%	50% 30% 10%	50% 30% 10%	50% 30% 10%	0
rfc	20%	20%	20%	20%	20%	0
RCR	RCR:Room Cavity Ratio Ceiling Cavity Exitance Coefficients(CCEC)					
0.0	.100 .100 .100	.085 .085 .085	.058 .058 .058	.033 .033 .033	.011 .011 .011	
1.0	.097 .081 .068	.083 .070 .058	.057 .048 .040	.033 .028 .023	.010 .009 .008	
2.0	.093 .069 .049	.080 .059 .042	.055 .041 .029	.031 .024 .017	.010 .008 .006	
3.0	.089 .060 .037	.076 .052 .032	.052 .036 .022	.030 .021 .013	.010 .007 .004	
4.0	.085 .053 .029	.073 .046 .025	.050 .032 .018	.029 .019 .010	.009 .006 .003	
5.0	.080 .048 .024	.069 .041 .020	.048 .029 .014	.028 .017 .009	.009 .006 .003	
6.0	.076 .043 .020	.066 .038 .017	.045 .026 .012	.026 .015 .007	.008 .005 .002	
7.0	.073 .040 .017	.062 .034 .015	.043 .024 .010	.025 .014 .006	.008 .005 .002	
8.0	.069 .037 .015	.059 .032 .013	.041 .022 .009	.024 .013 .005	.008 .004 .002	
9.0	.066 .034 .013	.057 .030 .011	.039 .021 .008	.023 .012 .005	.007 .004 .002	
10.0	.062 .032 .011	.054 .028 .010	.037 .019 .007	.022 .011 .004	.007 .004 .001	

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:30DEG
 Operators:WCZ
 Test Date:2013-09-10

g Range: 0 - 90DEG
 g Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
 Humidity:65.0%
 Test Distance:6.120m [K=1.0000]
 Remarks:

Uncorrected UGR Table

NAME: E41321						TYPE:					WEIGHT:				
DIM.:						SPEC.:					SERIAL No.:13090010005				
MFR.:						SUR.:					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	18.1	19.7	18.4	19.9	20.1	17.5	19.1	17.7	19.3	19.5					
3H	20.3	21.8	20.6	22.1	22.3	19.3	20.8	19.6	21.1	21.3					
4H	21.4	22.9	21.8	23.1	23.4	20.2	21.6	20.5	21.9	22.1					
6H	22.6	24.0	22.9	24.2	24.5	21.1	22.5	21.4	22.7	23.0					
8H	23.2	24.5	23.5	24.8	25.1	21.6	22.9	22.0	23.2	23.5					
12H	23.8	25.1	24.1	25.4	25.7	22.2	23.5	22.6	23.8	24.1					
4H 2H	18.8	20.2	19.1	20.5	20.7	18.3	19.7	18.6	20.0	20.3					
3H	21.2	22.5	21.5	22.8	23.1	20.3	21.6	20.7	21.9	22.2					
4H	22.5	23.6	22.8	24.0	24.3	21.3	22.5	21.7	22.9	23.2					
6H	23.8	24.9	24.2	25.2	25.6	22.4	23.5	22.9	23.9	24.2					
8H	24.5	25.5	24.9	25.9	26.3	23.1	24.1	23.5	24.4	24.8					
12H	25.2	26.1	25.6	26.5	26.9	23.8	24.7	24.2	25.1	25.5					
8H 4H	22.8	23.8	23.2	24.2	24.6	21.9	22.9	22.3	23.3	23.6					
6H	24.4	25.2	24.8	25.6	26.1	23.2	24.1	23.7	24.5	24.9					
8H	25.2	26.0	25.7	26.4	26.9	24.0	24.8	24.5	25.2	25.7					
12H	26.1	26.8	26.6	27.2	27.7	25.0	25.6	25.5	26.1	26.6					
12H 4H	22.9	23.8	23.3	24.2	24.6	22.0	22.9	22.4	23.3	23.7					
6H	24.5	25.3	25.0	25.7	26.2	23.5	24.2	23.9	24.7	25.1					
8H	25.4	26.1	25.9	26.6	27.0	24.4	25.0	24.8	25.5	26.0					
Variations with the observer position at spacings:															
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1									
1.5H	+ 0.2 / - 0.2					+ 0.2 / - 0.3									
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.4									

CIE Pub.117 Corrected 840.0 lm Total Lamp Luminous Flux.(8log(F/F0) = -0.6)

C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:30DEG
 Operators:WCZ
 Test Date:2013-09-10

g Range: 0 - 90DEG
 g Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
 Humidity:65.0%
 Test Distance:6.120m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

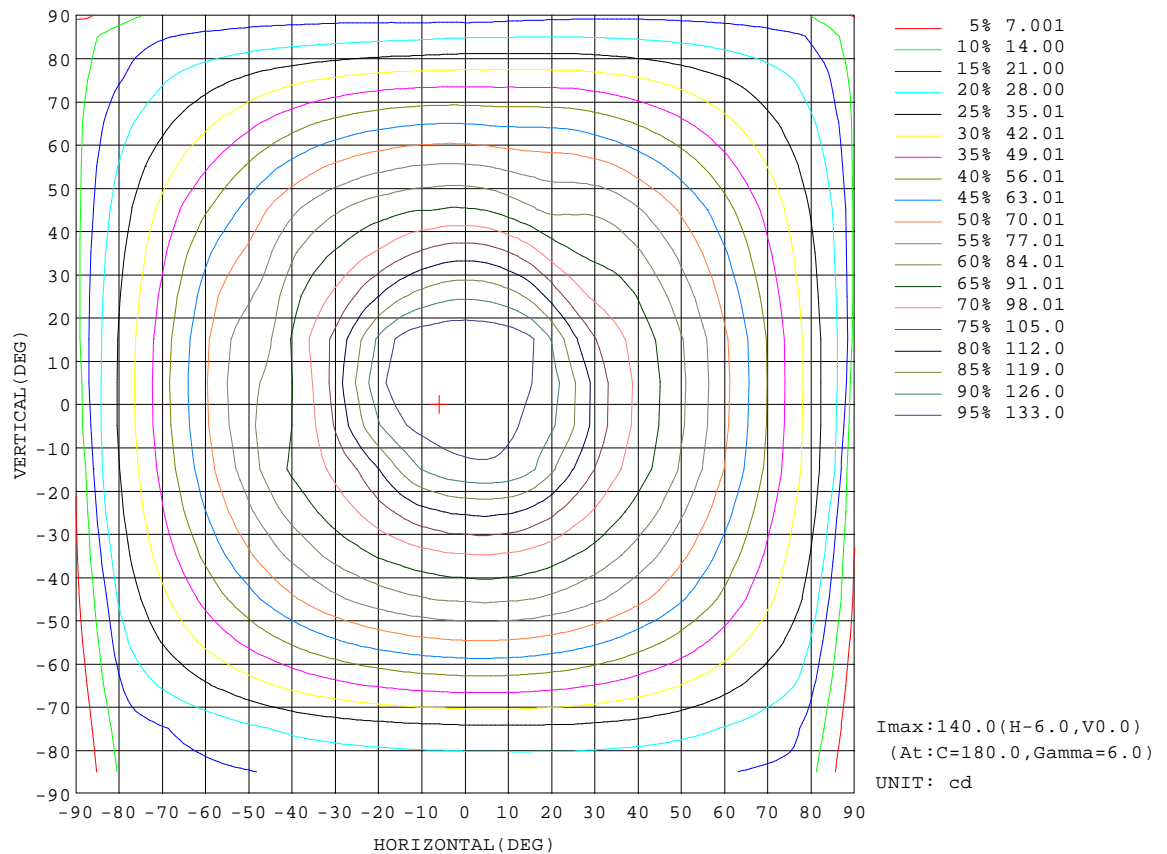
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	29	22	18	28	22	18	27	22	18	15
0.80	33	27	23	33	27	23	32	26	23	19
1.00	38	31	27	37	31	27	36	32	27	23
1.25	41	35	31	41	35	31	39	34	30	26
1.50	44	38	34	43	38	34	41	37	33	29
2.00	48	43	39	47	42	38	45	41	37	33
2.50	50	45	41	49	44	41	47	43	40	35
3.00	52	47	44	51	47	44	48	45	42	38
4.00	54	50	48	53	50	47	50	48	45	40
5.00	55	52	50	54	51	49	52	49	47	42
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:30DEG
 Operators:WCZ
 Test Date:2013-09-10

g Range: 0 - 90DEG
 g Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
 Humidity:65.0%
 Test Distance:6.120m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

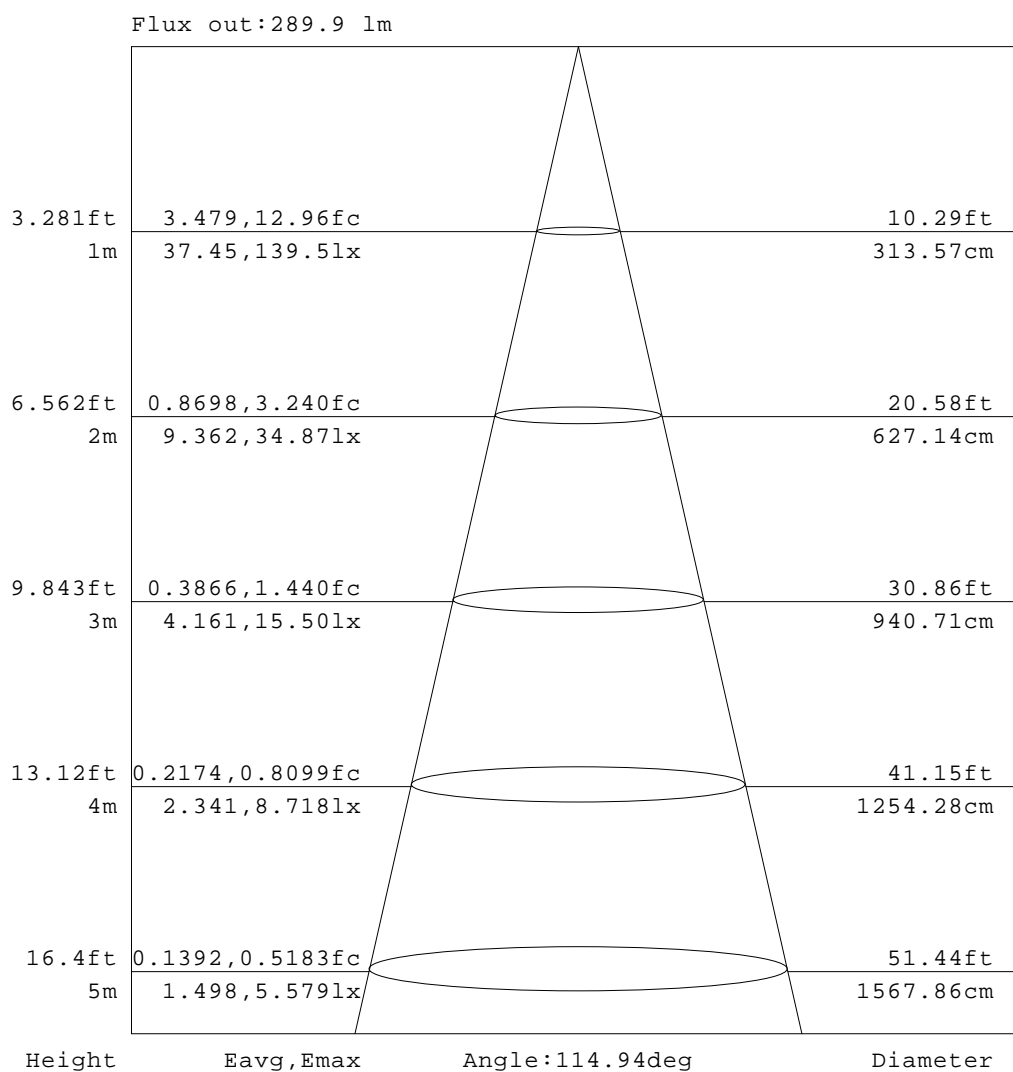


C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:30DEG
Operators:WCZ
Test Date:2013-09-10

g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity:65.0%
Test Distance:6.120m [K=1.0000]
Remarks:

AAI Figure

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:



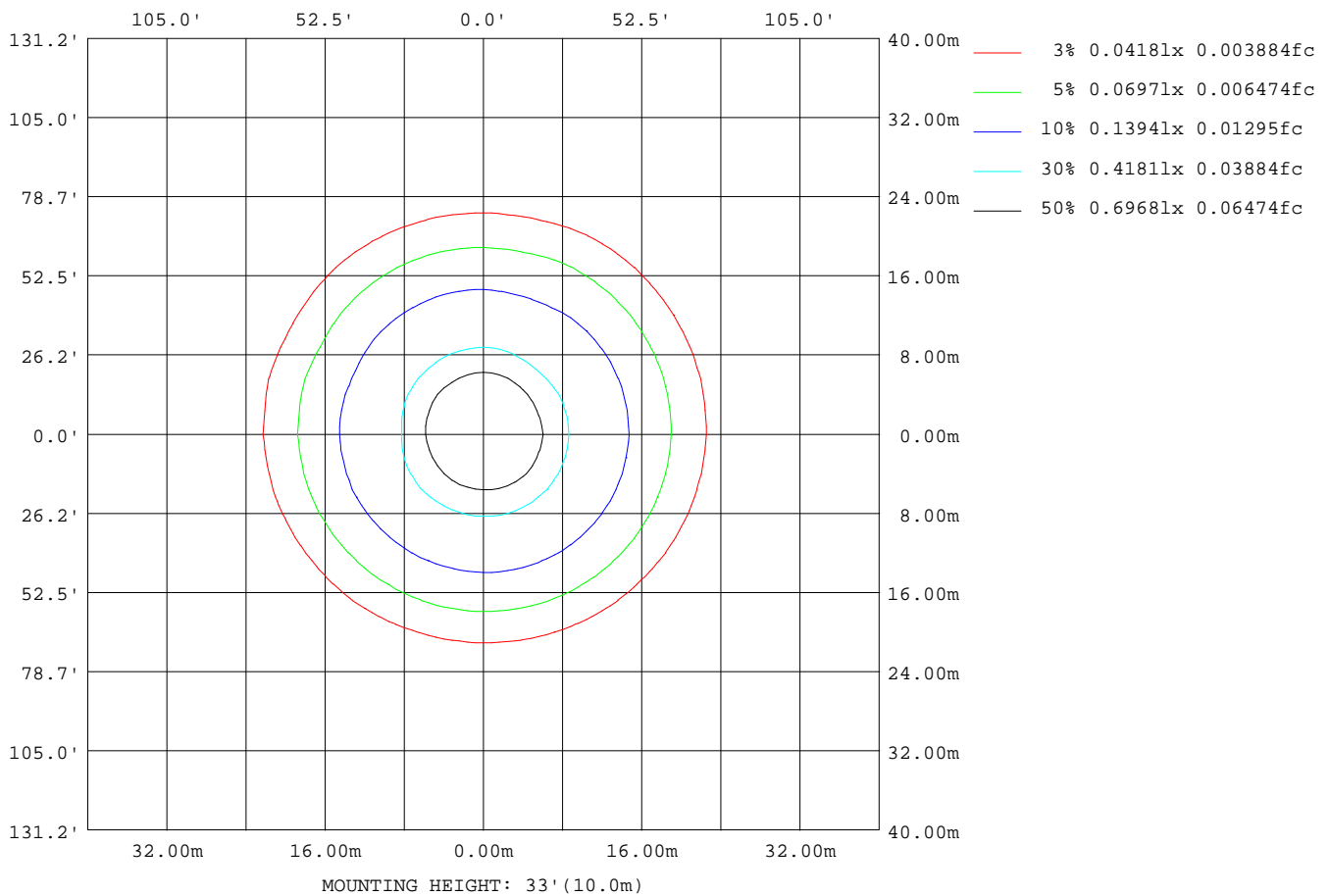
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:30DEG
Operators:WCZ
Test Date:2013-09-10

g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity:65.0%
Test Distance:6.120m [K=1.0000]
Remarks:

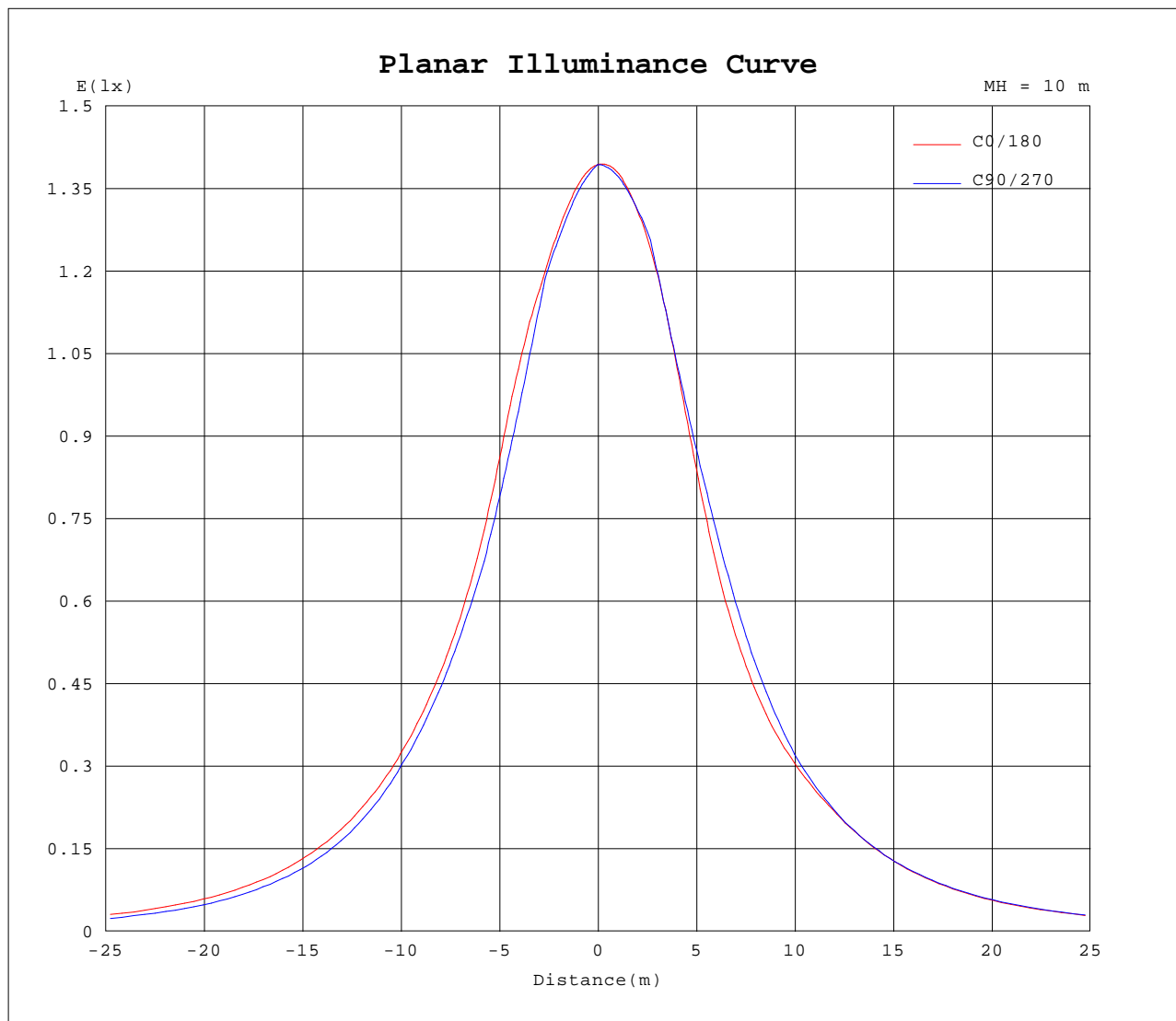
ISOLUX DIAGRAM

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 30DEG
Operators: WCZ
Test Date: 2013-09-10

g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity: 65.0%
Test Distance: 6.120m [K=1.0000]
Remarks:

Planar Illuminance Curve

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 30DEG
Operators: WCZ
Test Date: 2013-09-10

g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity: 65.0%
Test Distance: 6.120m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

Table--1

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:30DEG
Operators:WCZ
Test Date:2013-09-10

```
g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity: 65.0%
Test Distance: 6.120m [K=1.0000]
Remarks:
```

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: E41321	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:13090010005
MFR.:	SUR.:	PROTECTION ANGLE:

Table--2

UNIT: cd

[illegible]

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:30DEG
Operators:WCZ
Test Date:2013-09-10

```
g Range: 0 - 90DEG
g Interval: 0.5DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.275
Humidity: 65.0%
Test Distance: 6.120m [K=1.0000]
Remarks:
```