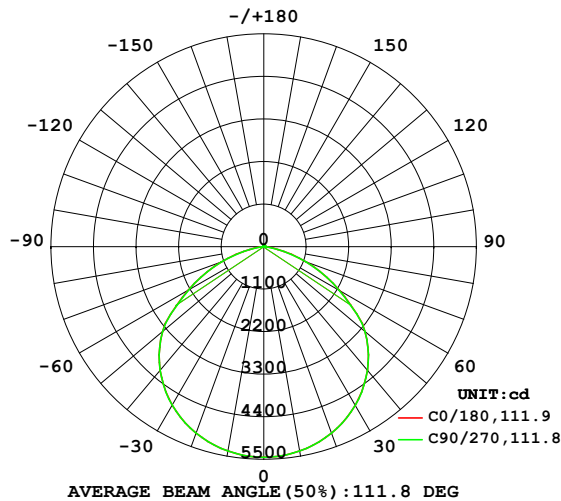


LUMINAIRE PHOTOMETRIC TEST REPORT

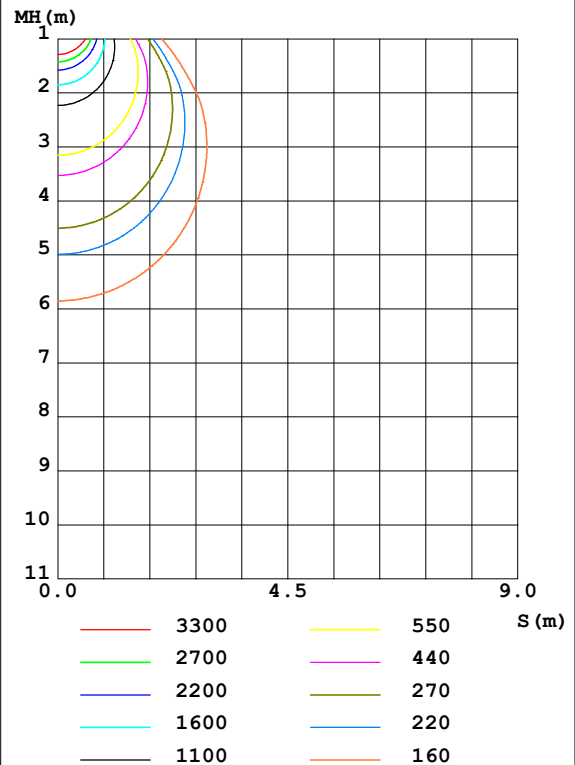
Test:U:230.0V I:0.5438A P:119.8W PF:0.9582 Lamp Flux:15139.9x1 lm		
NAME: HB08-120	TYPE:120	WEIGHT:
SPEC.:5000K Ra70 120DEG H00A02	DIM.: 0.39*0.39*0.12	SERIAL No.:
MFR.:	SUR.:0.23*0.23	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 126.35 lm/W			
MODEL	HB08-120	I _{max} (cd)	5449	S/MH (C0/180)	1.29
NOMINAL POWER(W)	120	LOR(%)	100.0	S/MH (C90/270)	1.29
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	15140	η UP,DN(C0-180)	0.4,49.7
NOMINAL FLUX(lm)	15139.9	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.4,49.5
LAMPS INSIDE	1	η up (%)	0.8	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	99.2	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:
Test Date:2016-06-22

γ Range: 0 - 180DEG
γ Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity:65.0%
Test Distance:9.470m [K=1.0000]
Remarks:

Checker:

Assessor:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	5365	5365	5365	5365	5365	5365	5365	5365	0- 10	515.9	515.9	3.41,3.41
20	5130	5131	5130	5131	5130	5129	5130	5129	10- 20	1488	2004	13.2,13.2
30	4733	4734	4734	4734	4733	4733	4734	4733	20- 30	2283	4287	28.3,28.3
40	4170	4172	4170	4172	4170	4169	4170	4169	30- 40	2798	7085	46.8,46.8
50	3420	3420	3419	3420	3420	3418	3419	3418	40- 50	2945	10030	66.2,66.2
60	2255	2252	2253	2252	2255	2254	2253	2254	50- 60	2545	12574	83.1,83.1
70	1178	1175	1174	1175	1178	1177	1174	1177	60- 70	1690	14264	94.2,94.2
80	236.3	216.3	215.3	216.3	236.3	221.8	215.3	221.8	70- 80	700.5	14965	98.8,98.8
90	3.984	3.972	3.968	3.972	3.984	3.971	3.968	3.971	80- 90	53.27	15018	99.2,99.2
100	7.652	7.650	7.647	7.650	7.652	7.647	7.647	7.647	90-100	6.191	15024	99.2,99.2
110	12.58	12.60	12.60	12.60	12.58	12.59	12.60	12.59	100-110	10.62	15035	99.3,99.3
120	17.97	18.00	18.00	18.00	17.97	17.99	18.00	17.99	110-120	15.12	15050	99.4,99.4
130	23.60	23.64	23.65	23.64	23.60	23.63	23.65	23.63	120-130	18.61	15069	99.5,99.5
140	28.95	28.99	29.00	28.99	28.95	28.99	29.00	28.99	130-140	20.35	15089	99.7,99.7
150	33.70	33.72	33.73	33.72	33.70	33.73	33.73	33.73	140-150	19.67	15109	99.8,99.8
160	37.46	37.48	37.49	37.48	37.46	37.50	37.49	37.50	150-160	16.47	15125	99.9,99.9
170	40.15	40.15	40.16	40.15	40.15	40.17	40.16	40.17	160-170	10.99	15136	100,100
180	41.19	41.20	41.21	41.20	41.19	41.22	41.21	41.22	170-180	3.881	15140	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 8861.1 lm

%lum = 58.5%

%lamp = 58.5%

Conical surface Flux(120deg): 12574 lm

%lum = 83.1%

%lamp = 83.1%

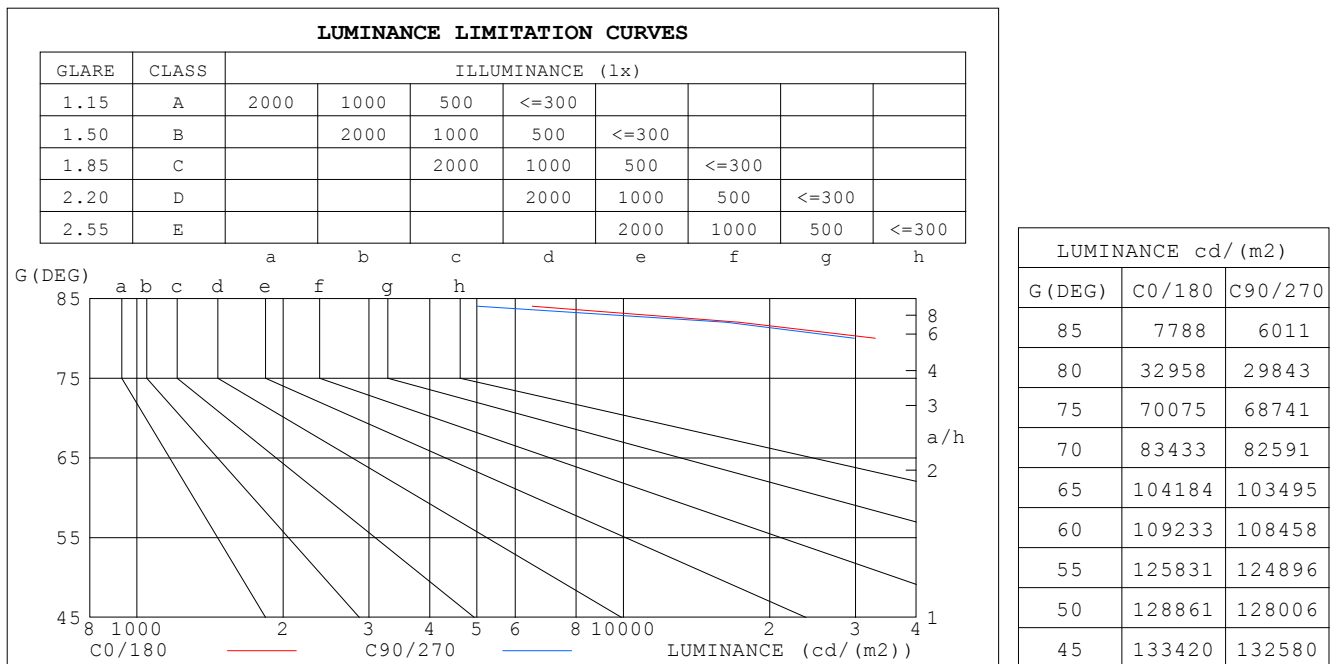
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:
 Test Date:2016-06-22

Checker:

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity:65.0%
 Test Distance:9.470m [K=1.0000]
 Remarks:

Assessor:

LUMINANCE LIMITATION CURVES



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2016-06-22

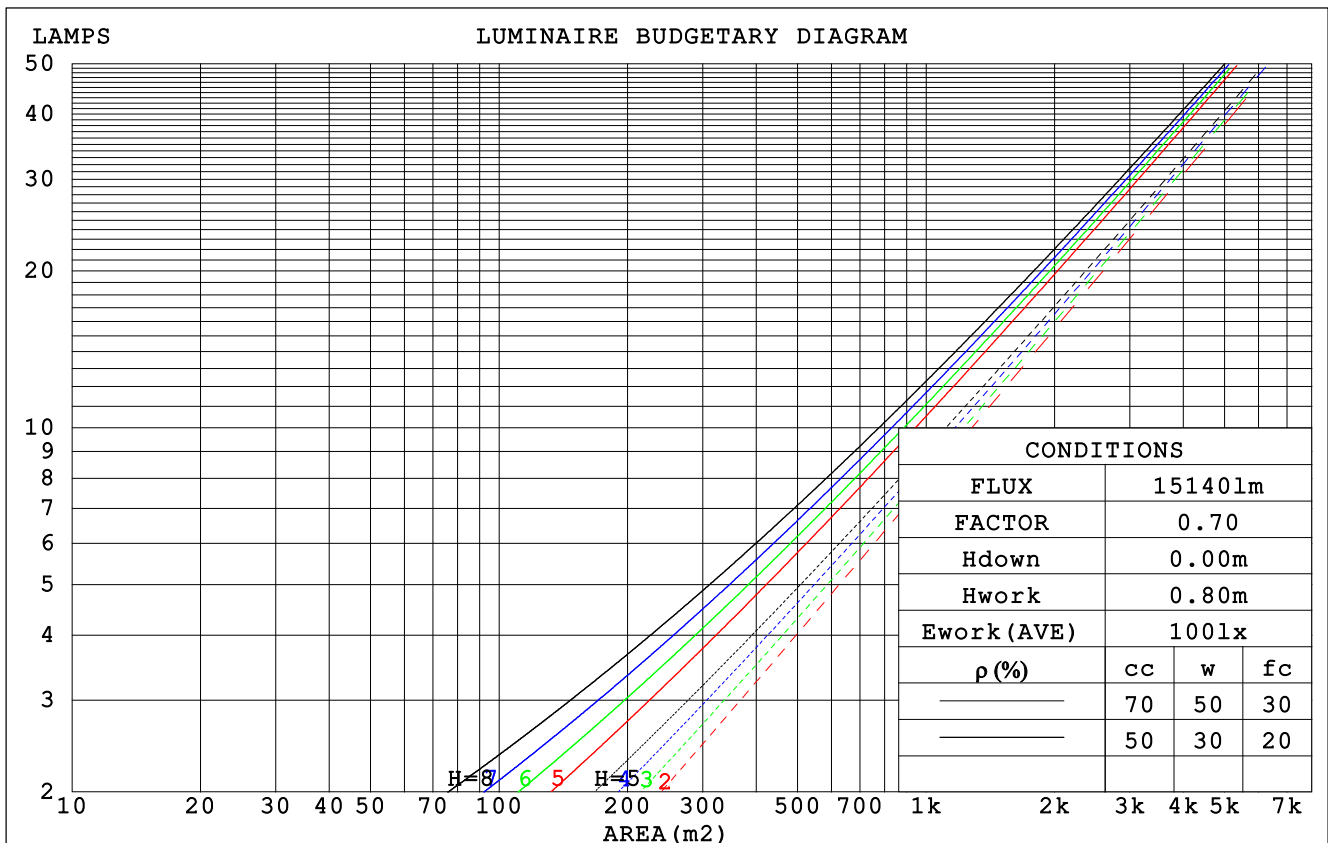
Checker:

γ Range: 0 - 180DEG
γ Interval: 2.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.470m [K=1.0000]
Remarks:

Assessor:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	80%			70%			50%			30%			10%			0
p _w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
p _{fc}	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	1.01	1.01	1.01	.99
1.0	1.05	1.01	.98	1.03	.99	.96	.99	.96	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.92	.86	.81	.90	.84	.79	.87	.82	.78	.83	.79	.76	.80	.77	.74	.72
3.0	.81	.74	.67	.80	.72	.67	.77	.70	.65	.74	.69	.64	.71	.67	.63	.61
4.0	.72	.64	.57	.71	.63	.57	.68	.61	.56	.66	.60	.55	.64	.58	.54	.52
5.0	.64	.56	.49	.63	.55	.49	.61	.54	.48	.59	.53	.48	.57	.52	.47	.45
6.0	.58	.49	.43	.57	.49	.43	.55	.48	.42	.53	.47	.42	.52	.46	.41	.39
7.0	.53	.44	.38	.52	.44	.38	.50	.43	.37	.49	.42	.37	.47	.41	.37	.35
8.0	.48	.40	.34	.47	.39	.34	.46	.39	.33	.45	.38	.33	.43	.37	.33	.31
9.0	.44	.36	.30	.43	.36	.30	.42	.35	.30	.41	.35	.30	.40	.34	.30	.28
10.0	.41	.33	.28	.40	.32	.27	.39	.32	.27	.38	.32	.27	.37	.31	.27	.25



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2016-06-22

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.470m [K=1.0000]
 Remarks:

Checker:

Assessor:

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	.280	.159	.050	.273	.156	.049	.259	.149	.048	.247	.142	.046	.235	.136	.044	
2.0	.272	.149	.046	.266	.146	.045	.254	.141	.044	.243	.136	.043	.233	.132	.041	
3.0	.256	.136	.041	.251	.134	.040	.240	.130	.040	.230	.126	.039	.221	.122	.038	
4.0	.239	.124	.037	.234	.123	.036	.225	.119	.036	.216	.116	.035	.208	.113	.034	
5.0	.223	.114	.033	.218	.112	.033	.210	.109	.032	.202	.107	.032	.195	.104	.031	
6.0	.208	.104	.030	.204	.103	.030	.196	.101	.029	.189	.098	.029	.183	.096	.029	
7.0	.194	.096	.027	.191	.095	.027	.184	.093	.027	.178	.091	.027	.172	.089	.026	
8.0	.182	.089	.025	.179	.088	.025	.173	.086	.025	.167	.085	.024	.162	.083	.024	
9.0	.171	.083	.023	.168	.082	.023	.163	.081	.023	.158	.079	.023	.153	.078	.022	
10.0	.161	.077	.021	.159	.077	.021	.154	.075	.021	.149	.074	.021	.145	.073	.021	

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	.197	.197	.197	.168	.168	.168	.115	.115	.115	.066	.066	.066	.021	.021	.021	
1.0	.184	.163	.143	.158	.140	.123	.108	.096	.085	.062	.056	.049	.020	.018	.016	
2.0	.176	.138	.107	.151	.119	.092	.103	.082	.064	.060	.048	.038	.019	.015	.012	
3.0	.168	.120	.083	.144	.104	.072	.099	.072	.050	.057	.042	.030	.018	.014	.010	
4.0	.161	.107	.066	.138	.093	.057	.095	.064	.040	.055	.038	.024	.018	.012	.008	
5.0	.154	.097	.055	.132	.084	.047	.091	.058	.034	.053	.034	.020	.017	.011	.007	
6.0	.147	.088	.046	.126	.076	.040	.087	.053	.029	.050	.031	.017	.016	.010	.006	
7.0	.140	.081	.040	.120	.070	.035	.083	.049	.025	.048	.029	.015	.016	.010	.005	
8.0	.134	.076	.036	.115	.066	.031	.080	.046	.022	.046	.027	.013	.015	.009	.004	
9.0	.128	.071	.032	.110	.061	.028	.076	.043	.020	.044	.025	.012	.014	.008	.004	
10.0	.122	.066	.029	.106	.058	.025	.073	.041	.018	.043	.024	.011	.014	.008	.004	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:
Test Date:2016-06-22

γ Range: 0 - 180DEG
γ Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity:65.0%
Test Distance:9.470m [K=1.0000]
Remarks:

Checker:

Assessor:

UGR(Unified Glare Rating) 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	29.5	31.0	29.8	31.2	31.4	29.5	30.9	29.7	31.1	31.4
3H	30.6	31.9	30.9	32.2	32.4	30.5	31.9	30.9	32.1	32.4
4H	30.8	32.1	31.2	32.4	32.7	30.8	32.1	31.1	32.3	32.6
6H	30.9	32.1	31.2	32.4	32.7	30.8	32.0	31.2	32.3	32.6
8H	30.8	32.0	31.2	32.3	32.6	30.8	32.0	31.1	32.2	32.5
12H	30.8	31.9	31.2	32.2	32.5	30.7	31.9	31.1	32.2	32.5
4H 2H	30.0	31.2	30.3	31.5	31.8	29.9	31.2	30.3	31.5	31.8
3H	31.2	32.3	31.6	32.6	32.9	31.2	32.3	31.5	32.6	32.9
4H	31.5	32.5	31.9	32.9	33.2	31.5	32.5	31.9	32.8	33.2
6H	31.6	32.5	32.0	32.9	33.2	31.6	32.5	32.0	32.8	33.2
8H	31.6	32.4	32.0	32.8	33.2	31.5	32.4	32.0	32.7	33.1
12H	31.5	32.3	32.0	32.7	33.1	31.5	32.2	31.9	32.6	33.1
8H 4H	31.6	32.4	32.0	32.8	33.2	31.6	32.4	32.0	32.8	33.2
6H	31.7	32.4	32.2	32.8	33.3	31.7	32.4	32.1	32.8	33.2
8H	31.7	32.3	32.2	32.7	33.2	31.7	32.3	32.1	32.7	33.2
12H	31.7	32.2	32.2	32.6	33.1	31.6	32.1	32.1	32.6	33.1
12H 4H	31.6	32.3	32.0	32.7	33.1	31.5	32.3	32.0	32.7	33.1
6H	31.7	32.3	32.2	32.7	33.2	31.7	32.3	32.1	32.7	33.2
8H	31.7	32.2	32.2	32.6	33.1	31.6	32.1	32.1	32.6	33.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.3 / - 0.3					+ 0.3 / - 0.4				
1.5H	+ 0.3 / - 0.5					+ 0.3 / - 0.6				
2.0H	+ 0.6 / - 0.5					+ 0.6 / - 0.5				

CIE Pub.117 Corrected 15140 lm Total Lamp Luminous Flux.(8log(F/F0) = 9.4)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:
Test Date:2016-06-22

γ Range: 0 - 180DEG
γ Interval: 2.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity:65.0%
Test Distance:9.470m [K=1.0000]
Remarks:

Checker:

Assessor:

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) $k(RI) \times RCR = 5$									
$k = 0.60$	58	47	40	58	47	40	56	46	40	33
0.80	69	57	50	68	57	50	66	56	50	43
1.00	78	67	60	76	66	60	74	67	59	52
1.25	85	75	68	83	74	68	81	73	67	60
1.50	90	80	74	88	79	73	85	78	72	65
2.00	97	89	83	95	87	82	91	85	80	72
2.50	100	93	87	98	92	86	94	89	84	76
3.00	104	97	92	101	96	91	97	93	89	80
4.00	107	102	98	105	100	96	101	97	94	85
5.00	110	105	101	107	103	100	102	99	97	87
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

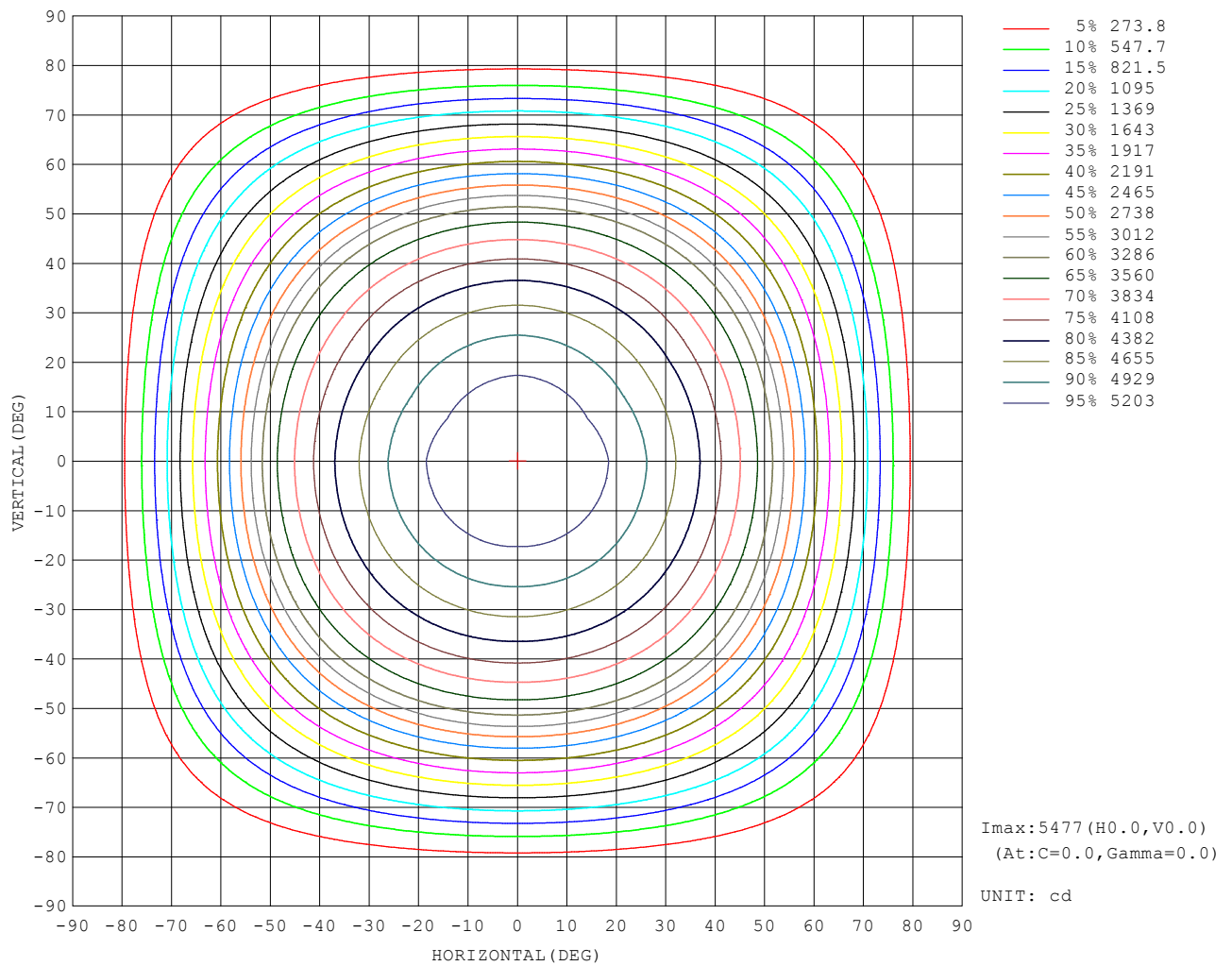
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2016-06-22

Checker:

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.470m [K=1.0000]
 Remarks:

Assessor:

ISOCANDELA DIAGRAM



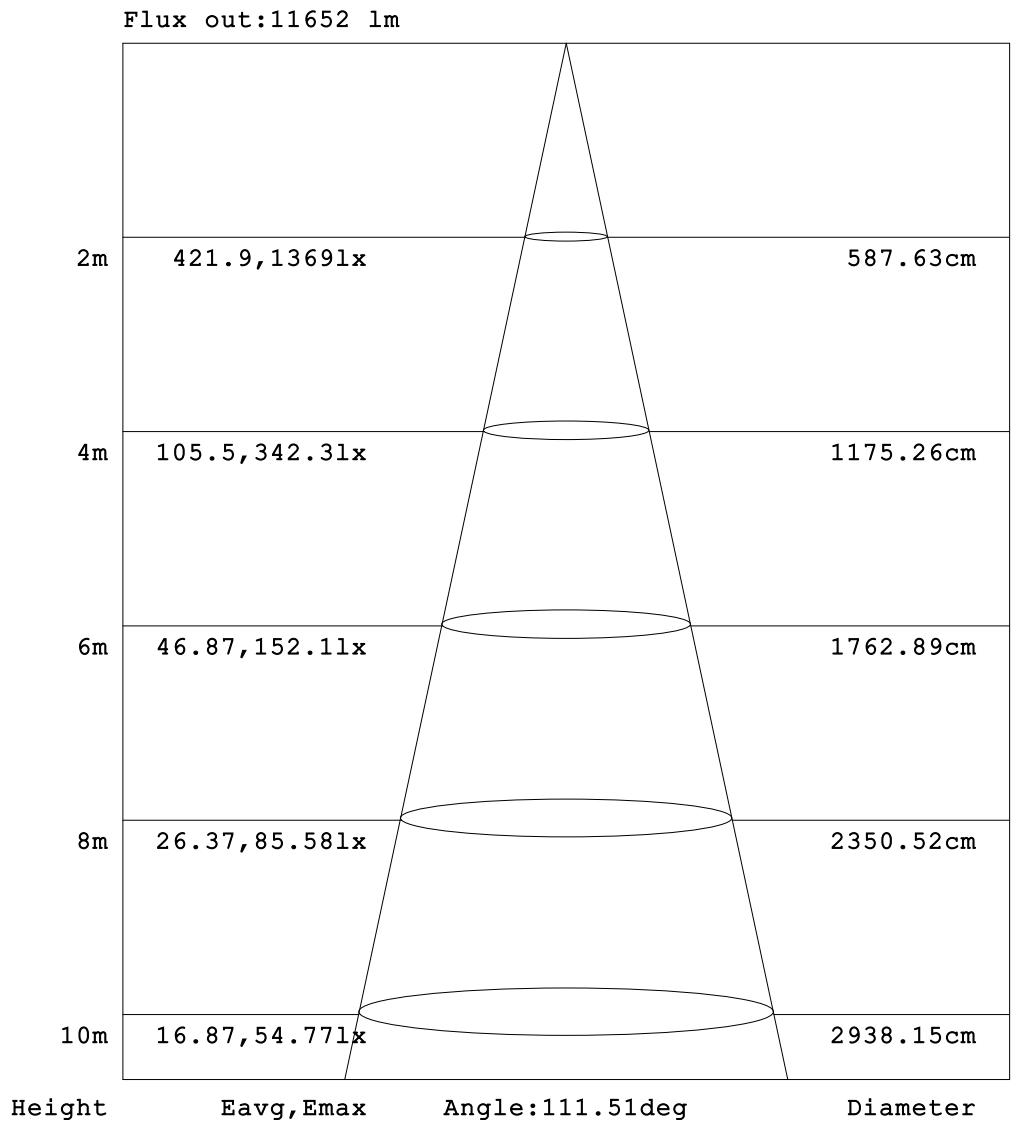
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2016-06-22

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.470m [K=1.0000]
Remarks:

Checker:

Assessor:

AAI Figure



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

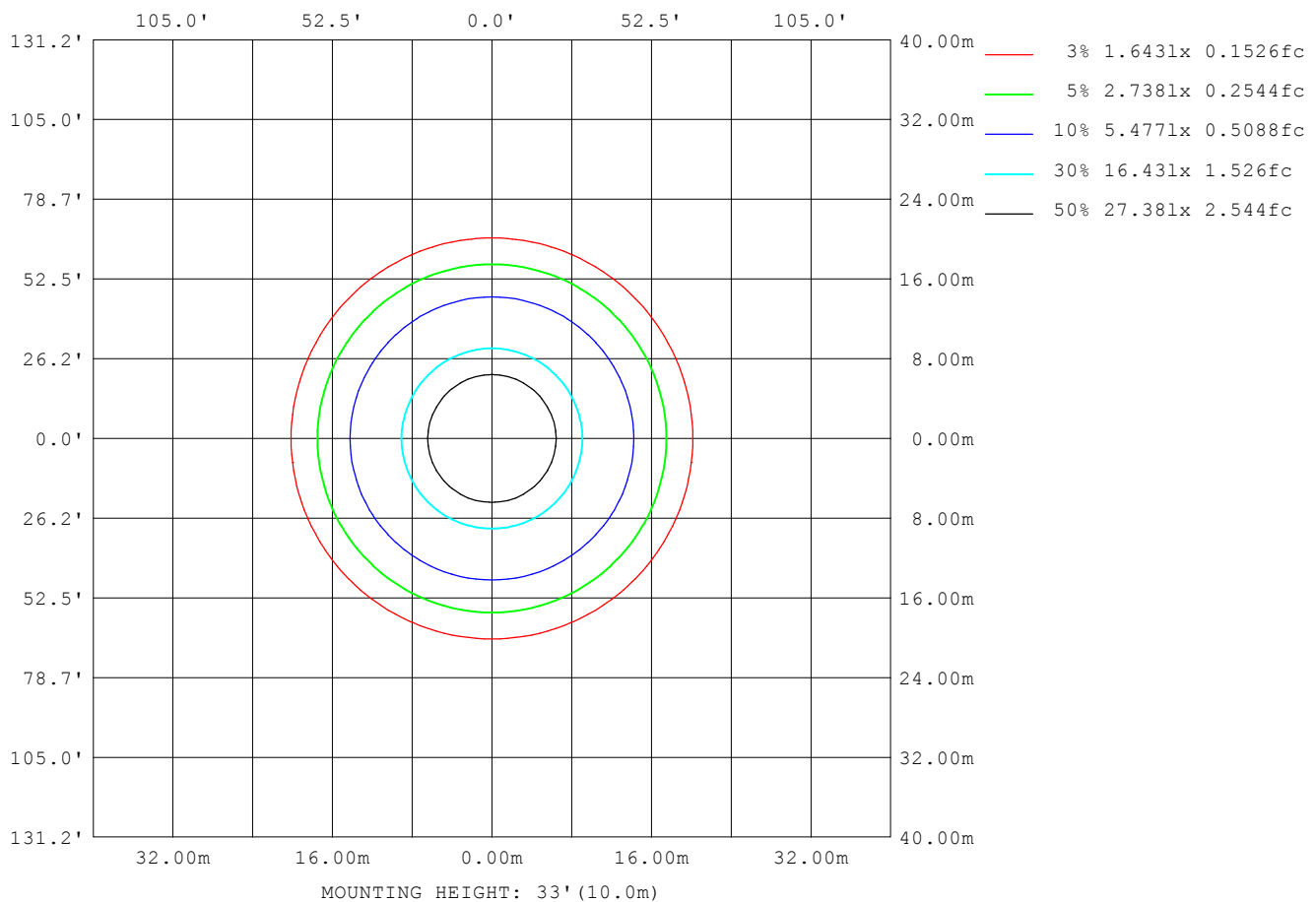
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2016-06-22

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.470m [K=1.0000]
 Remarks:

Checker:

Assessor:

ISOLUX DIAGRAM



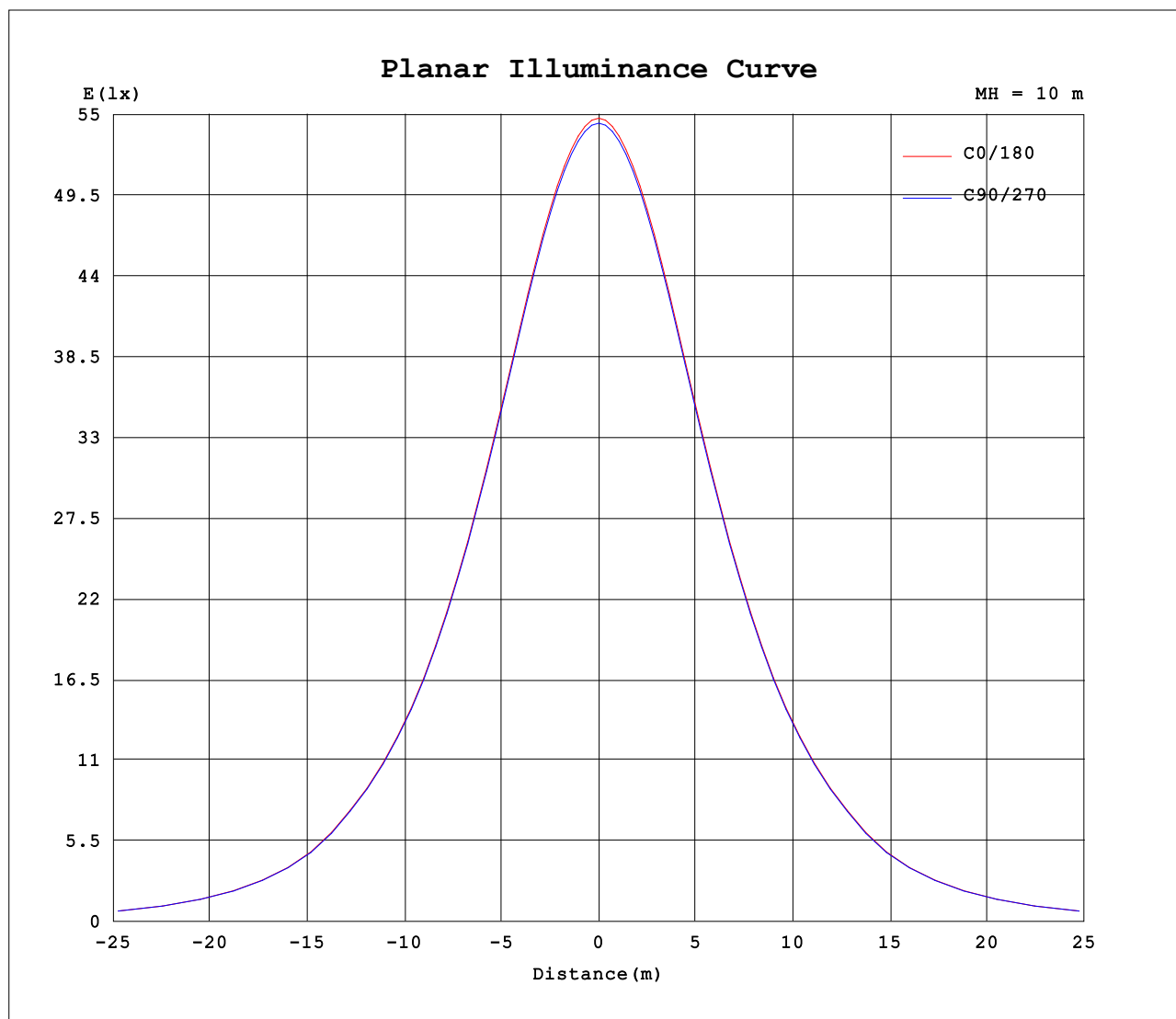
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2016-06-22

Checker:

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.470m [K=1.0000]
Remarks:

Assessor:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2016-06-22

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.470m [K=1.0000]
Remarks:

Checker:

Assessor:

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	5449	5449	5449	5449	5449	5449	5449	5449	5449	5449	5449	5449						
5	5433	5433	5433	5433	5433	5433	5433	5433	5433	5433	5433	5433						
10	5365	5365	5365	5365	5365	5365	5365	5364	5365	5365	5365	5365						
15	5290	5291	5290	5290	5290	5291	5290	5289	5289	5290	5289	5289						
20	5130	5131	5131	5130	5131	5131	5130	5129	5130	5130	5130	5129						
25	4990	4991	4991	4991	4991	4991	4990	4991	4991	4991	4991	4991						
30	4733	4733	4734	4734	4734	4733	4733	4732	4733	4734	4733	4732						
35	4528	4528	4530	4530	4530	4528	4528	4528	4527	4530	4527	4528						
40	4170	4170	4173	4170	4173	4170	4170	4169	4169	4170	4169	4169						
45	3895	3896	3897	3895	3897	3896	3895	3895	3895	3895	3895	3895						
50	3420	3420	3420	3419	3420	3420	3420	3418	3418	3419	3418	3418						
55	2980	2986	2982	2976	2982	2986	2980	2980	2976	2976	2976	2980						
60	2255	2252	2252	2253	2252	2252	2255	2254	2253	2253	2253	2254						
65	1818	1814	1813	1817	1813	1814	1818	1817	1815	1817	1815	1817						
70	1178	1176	1173	1174	1173	1176	1178	1176	1179	1174	1179	1176						
75	749	748	745	739	745	748	749	748	743	739	743	748						
80	236	216	216	215	216	216	236	228	216	215	216	228						
85	28.0	25.9	23.2	21.8	23.2	25.9	28.0	26.4	23.4	21.8	23.4	26.4						
90	3.98	3.97	3.97	3.97	3.97	3.97	3.98	3.97	3.97	3.97	3.97	3.97						
95	5.25	5.24	5.24	5.24	5.24	5.24	5.25	5.24	5.24	5.24	5.24	5.24						
100	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65						
105	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52	9.52						
110	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6						
115	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7						
120	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0						
125	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2						
130	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6						
135	25.8	25.8	25.9	25.9	25.9	25.8	25.8	25.8	25.9	25.9	25.9	25.8						
140	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0						
145	30.9	31.0	31.0	31.0	31.0	31.0	30.9	31.0	31.0	31.0	31.0	31.0						
150	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7	33.7						
155	35.3	35.4	35.4	35.4	35.4	35.4	35.3	35.4	35.4	35.4	35.4	35.4						
160	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5						
165	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7						
170	40.1	40.1	40.2	40.2	40.2	40.1	40.1	40.2	40.2	40.2	40.2	40.2						
175	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8	40.8						
180	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2						

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2016-06-22

γ Range: 0 - 180DEG
 γ Interval: 2.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.470m [K=1.0000]
 Remarks:

Checker:

Assessor: