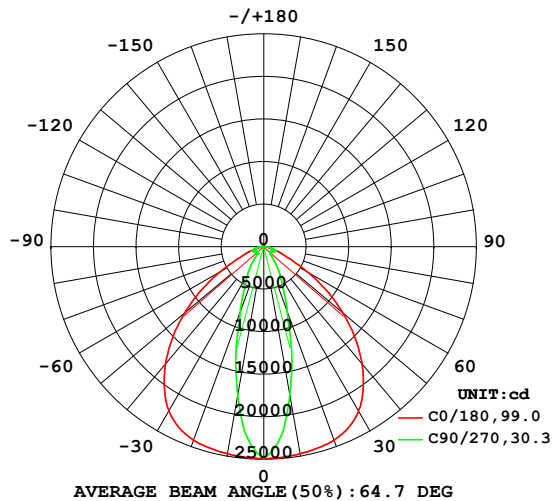


LUMINAIRE PHOTOMETRIC TEST REPORT

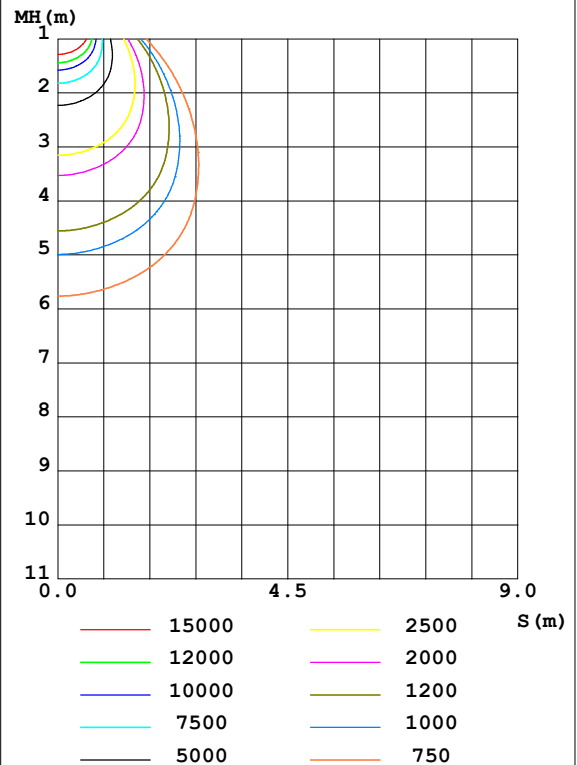
Test:U:230.0V I:0.8051A P:178.9 PF:0.9661 Lamp Flux:24879.6x1 lm		
NAME: LHB03-180	TYPE:180W	WEIGHT:
SPEC.:5000K Ra70 L00301	DIM.: 0.621*0.307*0.061	SERIAL No.:
MFR.:	SUR.:0.57*0.27	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 139.07 lm/W			
MODEL	NICHIA3030	I _{max} (cd)	24908	S/MH (C0/180)	1.31
NOMINAL POWER(W)	180	LOR(%)	100.0	S/MH (C90/270)	0.50
RATED VOLTAGE(V)	230	TOTAL FLUX (lm)	24880	η UP,DN (C0-180)	0.0,50.0
NOMINAL FLUX (lm)	24879.6	CIE CLASS	DIRECT	η UP,DN (C180-360)	0.0,50.0
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE (V)	230	η down (%)	100.0	CIBSE SHR MAX	0.55

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:
 Test Date: 2017-12-26

Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.500m [K=1.0000]
 Remarks:

Assessor:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
5	2484	2338	2250	2338	2484	2338	2250	2338	0- 5	574.9	574.9	2.31,2.31
10	2471	2049	1772	2049	2471	2049	1772	2049	5- 10	1579	2154	8.66,8.66
15	2451	1660	1265	1660	2451	1660	1265	1660	10- 15	2257	4411	17.7,17.7
20	2419	1280	813.1	1280	2419	1280	813.1	1280	15- 20	2582	6993	28.1,28.1
25	2350	877.3	541.2	877.3	2350	876.3	541.2	876.3	20- 25	2654	9648	38.8,38.8
30	2231	637.5	387.9	637.5	2231	633.7	387.9	633.7	25- 30	2578	12226	49.1,49.1
35	2038	436.9	249.5	436.9	2038	432.8	249.5	432.8	30- 35	2411	14636	58.8,58.8
40	1800	322.5	111.2	322.5	1800	319.6	111.2	319.6	35- 40	2135	16771	67.4,67.4
45	1518	208.8	107.7	208.8	1518	207.2	107.7	207.2	40- 45	1796	18567	74.6,74.6
50	1215	101.3	104.2	101.3	1215	100.9	104.2	100.9	45- 50	1499	20066	80.7,80.7
55	905.8	90.49	102.9	90.49	905.8	90.28	102.9	90.28	50- 55	1232	21298	85.6,85.6
60	589.2	77.82	118.2	77.82	589.2	77.78	118.2	77.78	55- 60	1012	22310	89.7,89.7
65	326.5	65.05	135.6	65.05	326.5	65.09	135.6	65.09	60- 65	817.0	23127	93,93
70	191.3	55.01	153.0	55.01	191.3	55.17	153.0	55.17	65- 70	661.4	23789	95.6,95.6
75	98.14	43.67	115.1	43.67	98.14	43.90	115.1	43.90	70- 75	512.2	24301	97.7,97.7
80	42.18	29.04	77.23	29.04	42.18	29.29	77.23	29.29	75- 80	334.7	24636	99,99
85	10.87	14.98	39.35	14.98	10.87	15.19	39.35	15.19	80- 85	182.6	24818	99.8,99.8
90	0.3611	1.339	1.466	1.339	0.3611	1.567	1.466	1.567	85- 90	61.16	24880	100,100
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:×10cd									UNIT:lm		

Conical surface Flux(90deg): 18567 lm

%lum = 74.6%

%lamp = 74.6%

Conical surface Flux(120deg): 22310 lm

%lum = 89.7%

%lamp = 89.7%

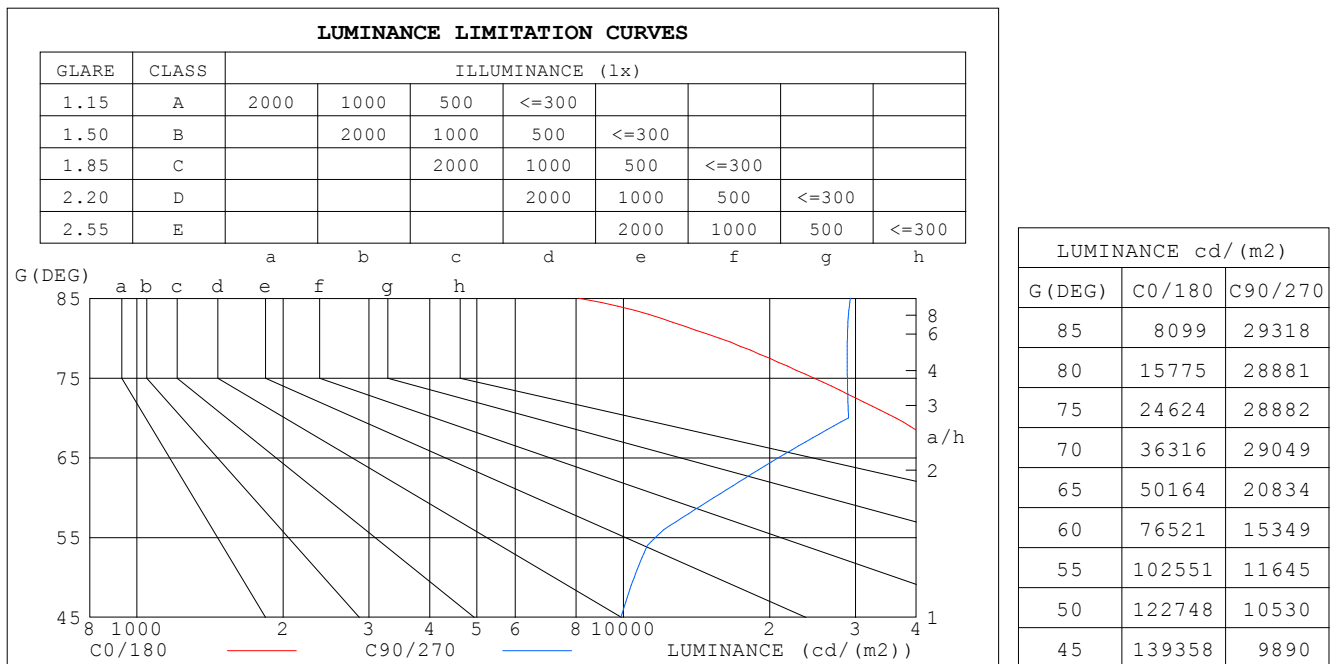
C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:
 Test Date:2017-12-26

Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity:65.0%
 Test Distance:9.500m [K=1.0000]
 Remarks:

Assessor:

LUMINANCE LIMITATION CURVES



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2017-12-26

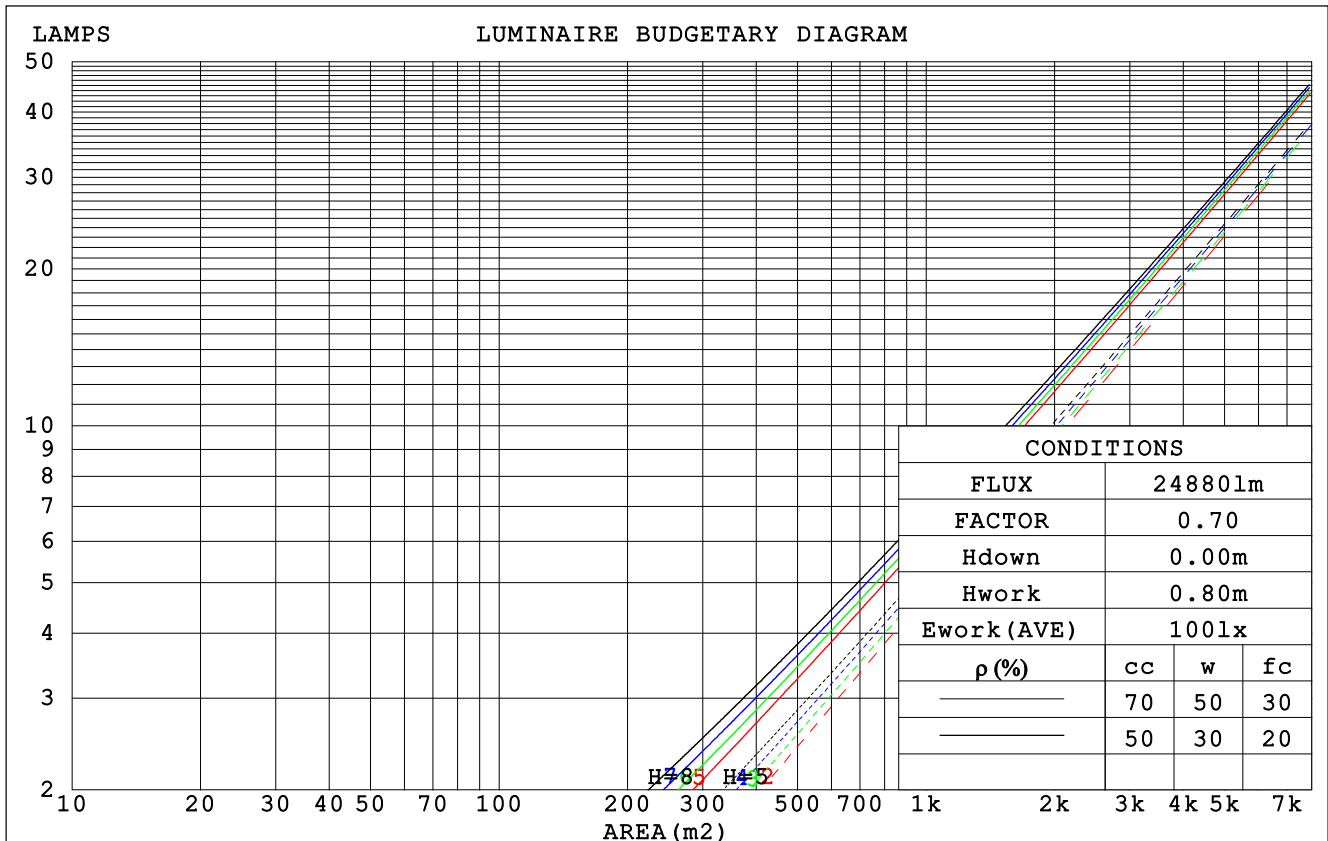
Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.500m [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	1.02	1.02	1.02	.00
1.0	1.07	1.04	1.01	1.05	1.02	.99	1.01	.99	.96	.97	.95	.93	.94	.92	.91	.89
2.0	.97	.92	.87	.95	.90	.86	.92	.88	.84	.89	.85	.82	.86	.83	.80	.79
3.0	.88	.82	.76	.87	.81	.76	.84	.79	.74	.81	.77	.73	.79	.75	.72	.70
4.0	.80	.73	.68	.79	.73	.67	.77	.71	.67	.75	.70	.66	.73	.68	.65	.63
5.0	.74	.67	.61	.73	.66	.61	.71	.65	.60	.69	.64	.60	.67	.63	.59	.57
6.0	.68	.61	.55	.67	.60	.55	.66	.59	.55	.64	.59	.54	.63	.58	.54	.52
7.0	.63	.56	.51	.63	.56	.51	.61	.55	.50	.60	.54	.50	.59	.54	.50	.48
8.0	.59	.52	.47	.58	.51	.47	.57	.51	.46	.56	.50	.46	.55	.50	.46	.44
9.0	.55	.48	.43	.55	.48	.43	.54	.47	.43	.53	.47	.43	.52	.47	.43	.41
10.0	.52	.45	.40	.51	.45	.40	.50	.44	.40	.50	.44	.40	.49	.44	.40	.38



C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2017-12-26

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.500m [K=1.0000]
 Remarks:

Checker: LI

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	.242	.137	.044	.235	.134	.043	.222	.127	.041	.210	.121	.039	.199	.115	.037	
2.0	.229	.125	.038	.223	.123	.038	.212	.118	.037	.202	.113	.035	.192	.109	.034	
3.0	.214	.114	.034	.209	.112	.034	.200	.108	.033	.191	.104	.032	.182	.101	.031	
4.0	.200	.104	.031	.196	.102	.030	.187	.099	.030	.179	.096	.029	.172	.094	.028	
5.0	.187	.096	.028	.184	.094	.027	.176	.092	.027	.169	.089	.027	.163	.087	.026	
6.0	.176	.088	.025	.172	.087	.025	.166	.085	.025	.160	.083	.024	.154	.081	.024	
7.0	.165	.082	.023	.162	.081	.023	.156	.079	.023	.151	.077	.023	.146	.076	.022	
8.0	.156	.076	.021	.153	.075	.021	.148	.074	.021	.143	.072	.021	.138	.071	.021	
9.0	.148	.071	.020	.145	.071	.020	.140	.069	.020	.136	.068	.020	.132	.067	.019	
10.0	.140	.067	.019	.138	.066	.019	.133	.065	.018	.129	.064	.018	.126	.063	.018	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.176	.157	.140	.150	.135	.120	.103	.093	.083	.059	.054	.048	.019	.017	.016	
2.0	.164	.132	.106	.140	.114	.091	.096	.079	.064	.055	.046	.037	.018	.015	.012	
3.0	.154	.114	.082	.132	.098	.071	.090	.068	.050	.052	.040	.029	.017	.013	.010	
4.0	.145	.100	.066	.124	.086	.057	.085	.060	.040	.049	.035	.024	.016	.011	.008	
5.0	.137	.089	.054	.117	.077	.047	.081	.054	.033	.047	.032	.020	.015	.010	.006	
6.0	.129	.080	.045	.111	.069	.039	.077	.049	.027	.045	.029	.016	.014	.009	.005	
7.0	.123	.073	.038	.106	.063	.033	.073	.044	.023	.042	.026	.014	.014	.009	.005	
8.0	.117	.067	.032	.100	.058	.028	.070	.041	.020	.040	.024	.012	.013	.008	.004	
9.0	.111	.062	.028	.096	.054	.025	.066	.038	.018	.039	.022	.010	.013	.007	.003	
10.0	.106	.057	.025	.091	.050	.022	.063	.035	.015	.037	.021	.009	.012	.007	.003	

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:
Test Date:2017-12-26

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity:65.0%
Test Distance:9.500m [K=1.0000]
Remarks:

Checker: LI

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	28.1	29.4	28.4	29.5	29.7	17.5	18.7	17.7	18.9	19.0
3H	28.9	30.0	29.2	30.3	30.5	21.5	22.7	21.8	22.9	23.1
4H	29.1	30.2	29.4	30.4	30.6	23.2	24.3	23.5	24.5	24.7
6H	29.1	30.1	29.4	30.4	30.6	24.4	25.4	24.7	25.6	25.9
8H	29.1	30.1	29.4	30.3	30.6	24.8	25.8	25.1	26.0	26.3
12H	29.1	30.0	29.4	30.3	30.6	25.1	26.0	25.4	26.3	26.6
4H 2H	27.9	29.0	28.2	29.2	29.4	18.1	19.1	18.4	19.4	19.6
3H	28.7	29.6	29.0	29.9	30.2	22.1	23.1	22.5	23.4	23.6
4H	28.9	29.8	29.3	30.1	30.4	24.0	24.8	24.3	25.1	25.4
6H	29.0	29.8	29.4	30.1	30.5	25.3	26.1	25.7	26.4	26.8
8H	29.0	29.7	29.4	30.1	30.5	25.9	26.6	26.3	26.9	27.3
12H	29.0	29.6	29.4	30.0	30.4	26.3	26.9	26.7	27.3	27.7
8H 4H	28.8	29.5	29.2	29.9	30.3	24.0	24.7	24.4	25.1	25.5
6H	29.0	29.5	29.4	29.9	30.4	25.6	26.1	26.0	26.5	27.0
8H	29.0	29.5	29.4	29.9	30.4	26.2	26.7	26.7	27.1	27.6
12H	29.0	29.4	29.5	29.9	30.3	26.8	27.2	27.2	27.7	28.1
12H 4H	28.8	29.4	29.2	29.8	30.2	24.0	24.7	24.4	25.0	25.4
6H	28.9	29.5	29.4	29.9	30.3	25.6	26.1	26.0	26.5	26.9
8H	29.0	29.4	29.4	29.9	30.3	26.2	26.7	26.7	27.1	27.6
Variations with the observer position at spacings:										
S = 1.0H	+ 1.3 / - 0.9					+ 0.2 / - 0.2				
1.5H	+ 2.6 / - 3.2					+ 0.2 / - 0.3				
2.0H	+ 4.0 / - 4.7					+ 0.2 / - 0.2				

CIE Pub.117 Corrected 24880 lm Total Lamp Luminous Flux.(8log(F/F0) = 11.2)

C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:
Test Date:2017-12-26

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity:65.0%
Test Distance:9.500m [K=1.0000]
Remarks:

Checker: LI

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) $k(RI) \times RCR = 5$									
$k = 0.60$	71	62	57	71	62	57	70	62	56	51
0.80	80	71	66	79	71	66	78	70	65	60
1.00	87	79	73	86	78	73	84	79	72	67
1.25	93	85	80	92	84	79	89	83	78	73
1.50	97	89	84	95	89	84	93	87	83	77
2.00	102	95	90	100	94	90	97	92	88	82
2.50	104	99	94	103	97	93	99	95	91	84
3.00	107	102	98	105	100	97	101	97	94	87
4.00	110	106	102	108	104	101	104	101	98	90
5.00	112	108	105	109	106	104	105	103	100	92
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

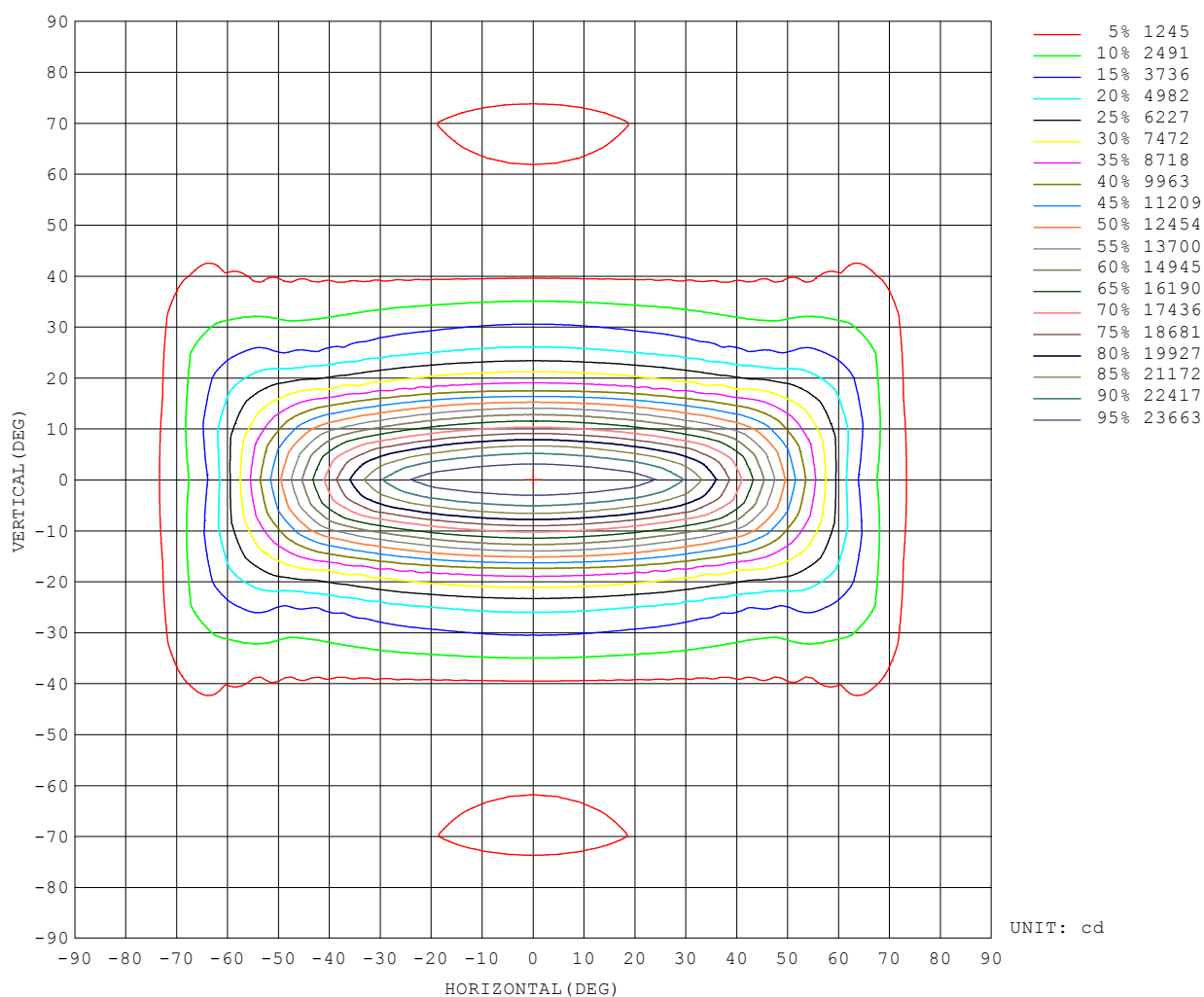
C Range: 0 - 360DEG
 C Interval: 5.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators:
 Test Date: 2017-12-26

Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
 Humidity: 65.0%
 Test Distance: 9.500m [K=1.0000]
 Remarks:

Assessor:

ISOCANDELA DIAGRAM



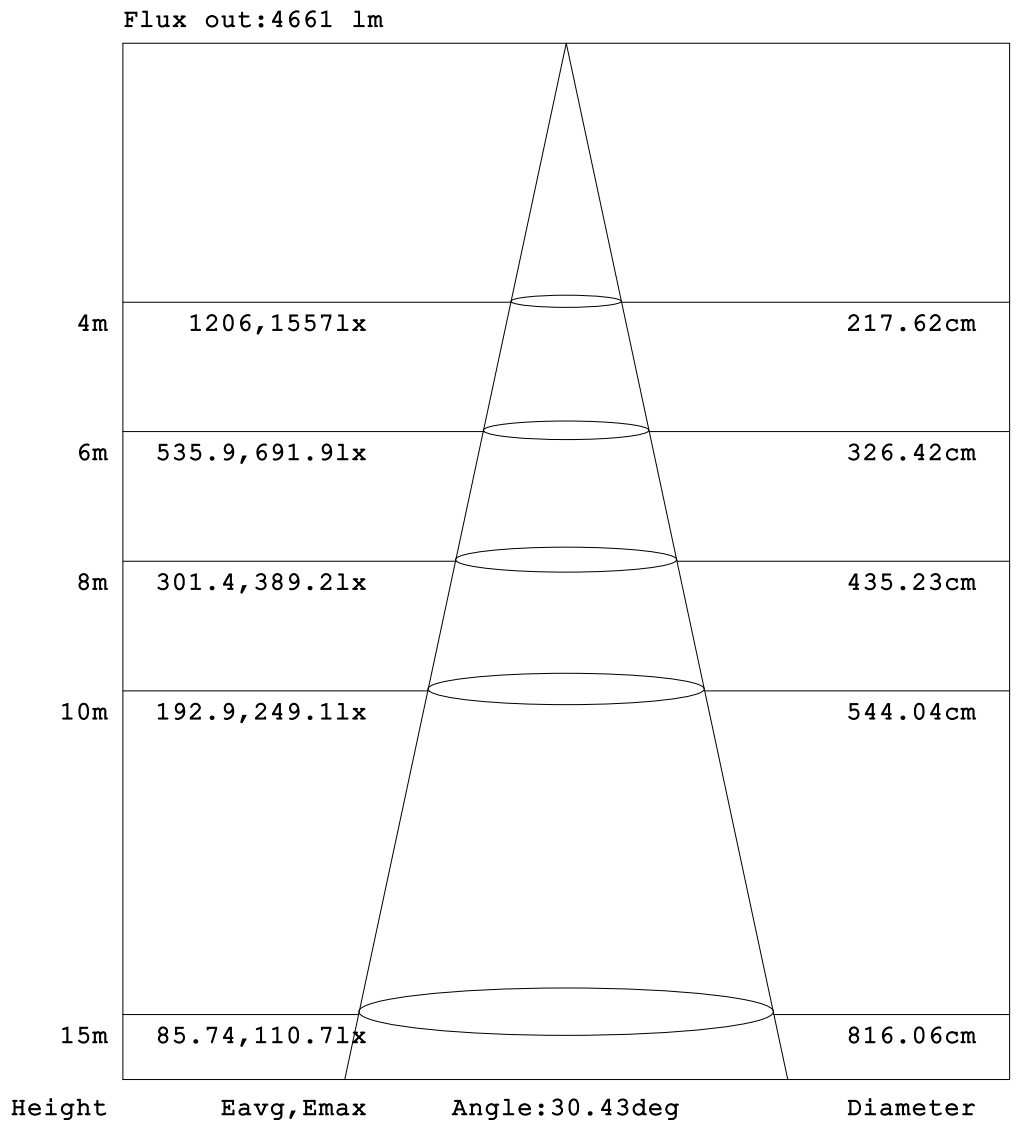
C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2017-12-26

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.500m [K=1.0000]
Remarks:

Checker: LI

Assessor:

AAI Figure



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

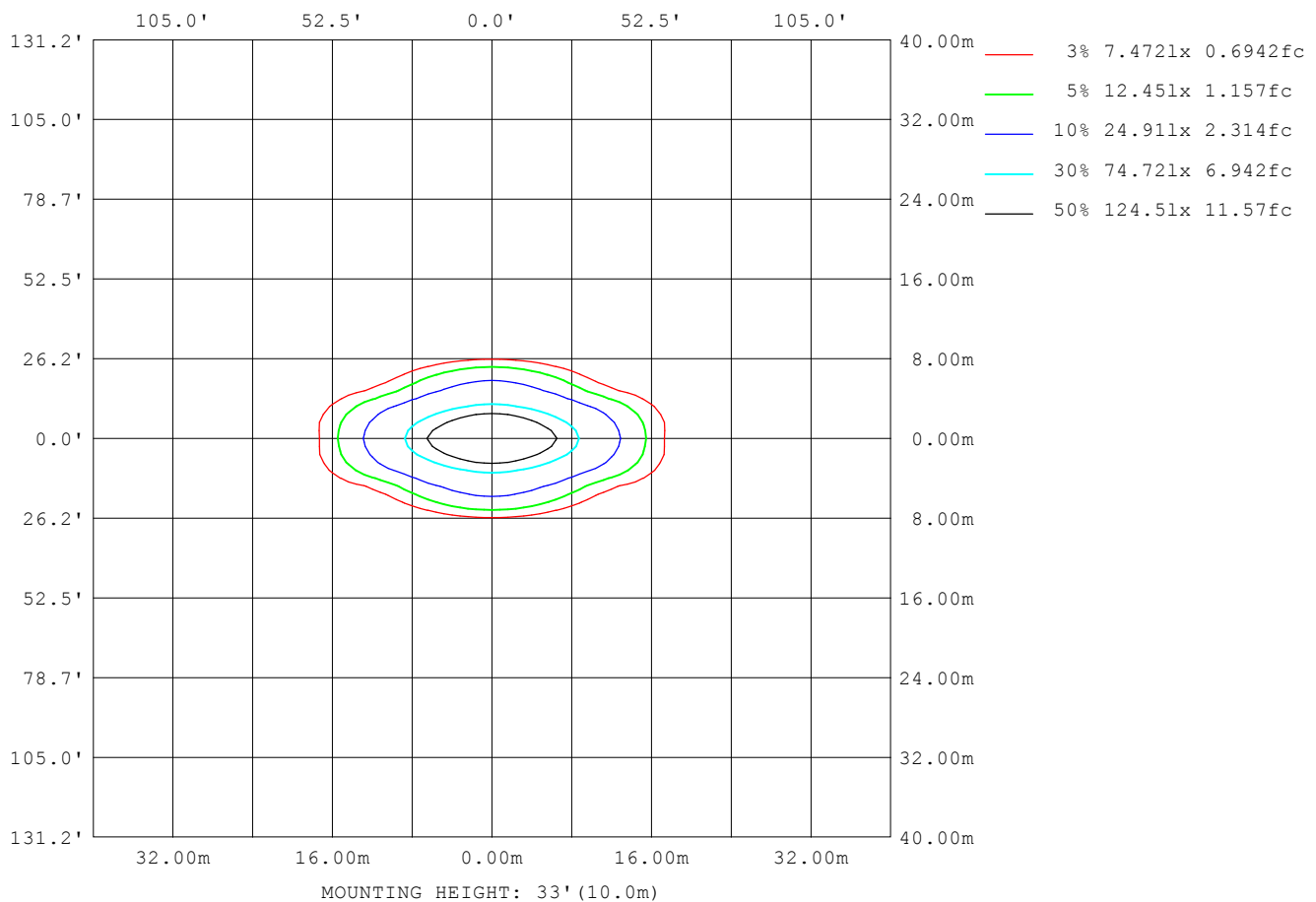
C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2017-12-26

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.500m [K=1.0000]
Remarks:

Checker: LI

Assessor:

ISOLUX DIAGRAM



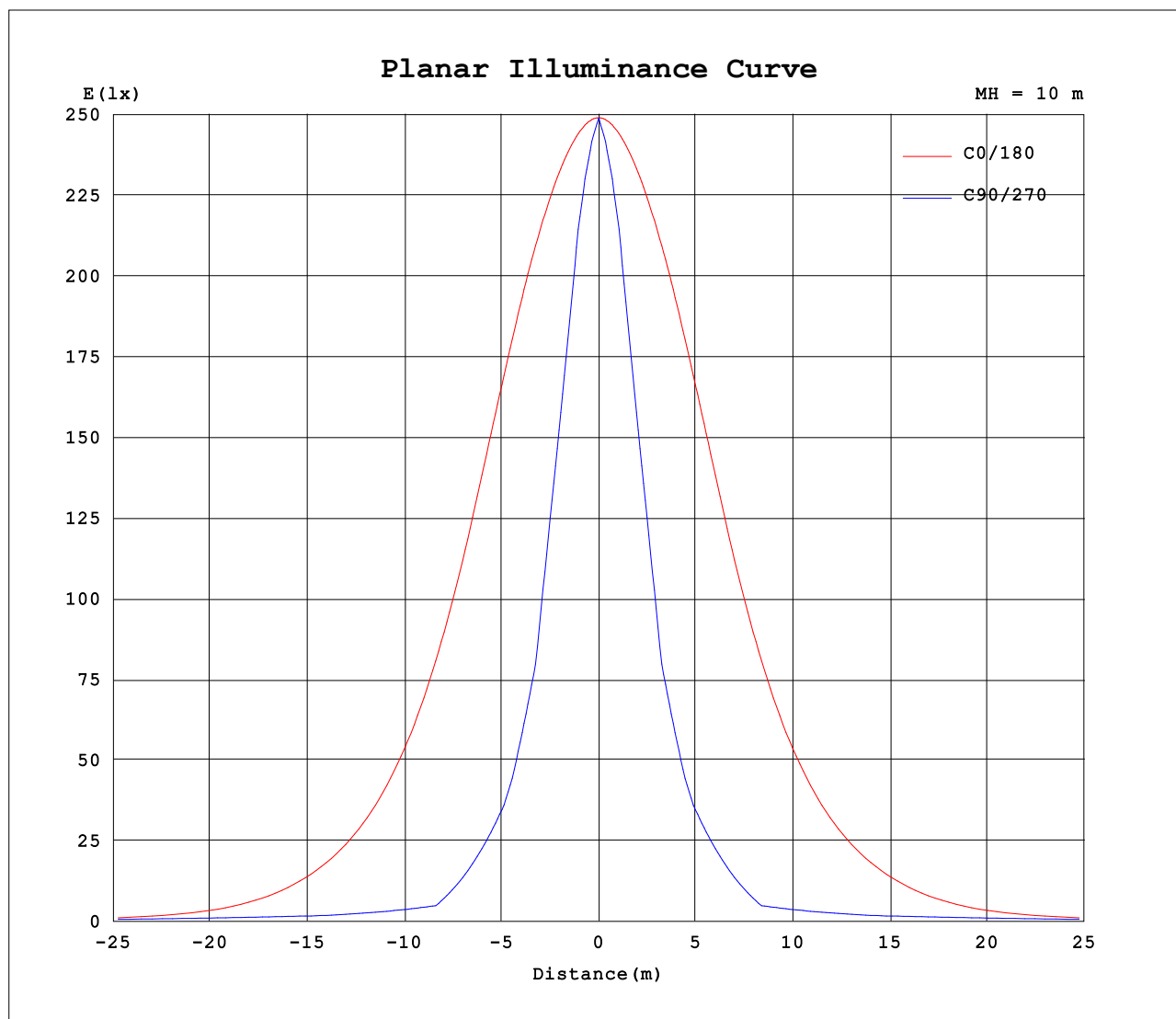
C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2017-12-26

Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.500m [K=1.0000]
Remarks:

Assessor:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 5.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators:
Test Date: 2017-12-26

Checker: LI

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.295
Humidity: 65.0%
Test Distance: 9.500m [K=1.0000]
Remarks:

Assessor:

Assessor:

Assessor:

Assessor:

Assessor: