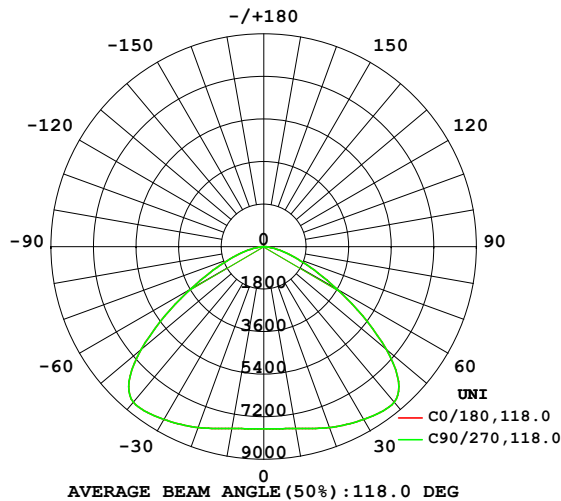


LUMINAIRE PHOTOMETRIC TEST REPORT

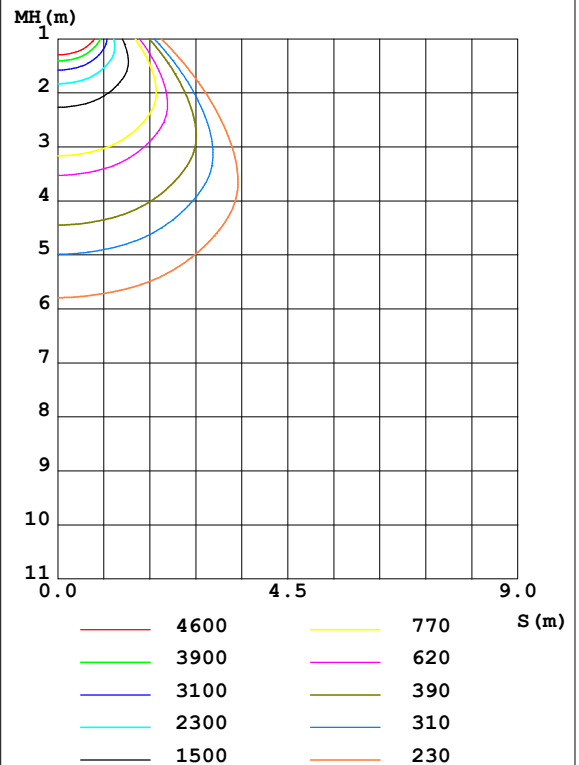
Test:U:229.90V I:0.8739A P:197.20W PF:0.9815 Freq:50.00Hz Lamp Flux:26466.2x1 lm		
NAME: HB38-200-5070-H00124	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:φ0.246	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 134.21 lm/W			
MODEL	RF303	I <sub>max</sub> (cd)	8613	S/MH(C0/180)	1.65
NOMINAL POWER(W)	200	LOR(%)	100.0	S/MH(C90/270)	1.65
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	26466	η UP,DN(C0-180)	0.0,50.0
NOMINAL FLUX(lm)	26466.2	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,50.0
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	230	η down(%)	100.0	CIBSE SHR MAX	1.55

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: LI  
Test Date: 2019-12-10

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.432m [K=1.0000]  
Remarks:

Checker: LI

Assessor:

## ZONAL FLUX DIAGRAM

### ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	7817	7817	7817	7817	7817	7817	7817	7817	0- 10	740.9	740.9	2.8,2.8
20	8142	8142	8142	8142	8142	8142	8142	8142	10- 20	2265	3005	11.4,11.4
30	8444	8444	8444	8444	8444	8444	8444	8444	20- 30	3845	6851	25.9,25.9
40	8586	8586	8586	8586	8586	8586	8586	8586	30- 40	5375	12226	46.2,46.2
50	6767	6767	6767	6767	6767	6767	6767	6767	40- 50	6119	18345	69.3,69.3
60	3563	3563	3563	3563	3563	3563	3563	3563	50- 60	4573	22918	86.6,86.6
70	1518	1518	1518	1518	1518	1518	1518	1518	60- 70	2395	25313	95.6,95.6
80	442.4	442.4	442.4	442.4	442.4	442.4	442.4	442.4	70- 80	976.6	26290	99.3,99.3
90	26.54	26.54	26.54	26.54	26.54	26.54	26.54	26.54	80- 90	176.5	26466	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 15330 lm

%lum = 57.9%

%lamp = 57.9%

Conical surface Flux(120deg): 22918 lm

%lum = 86.6%

%lamp = 86.6%

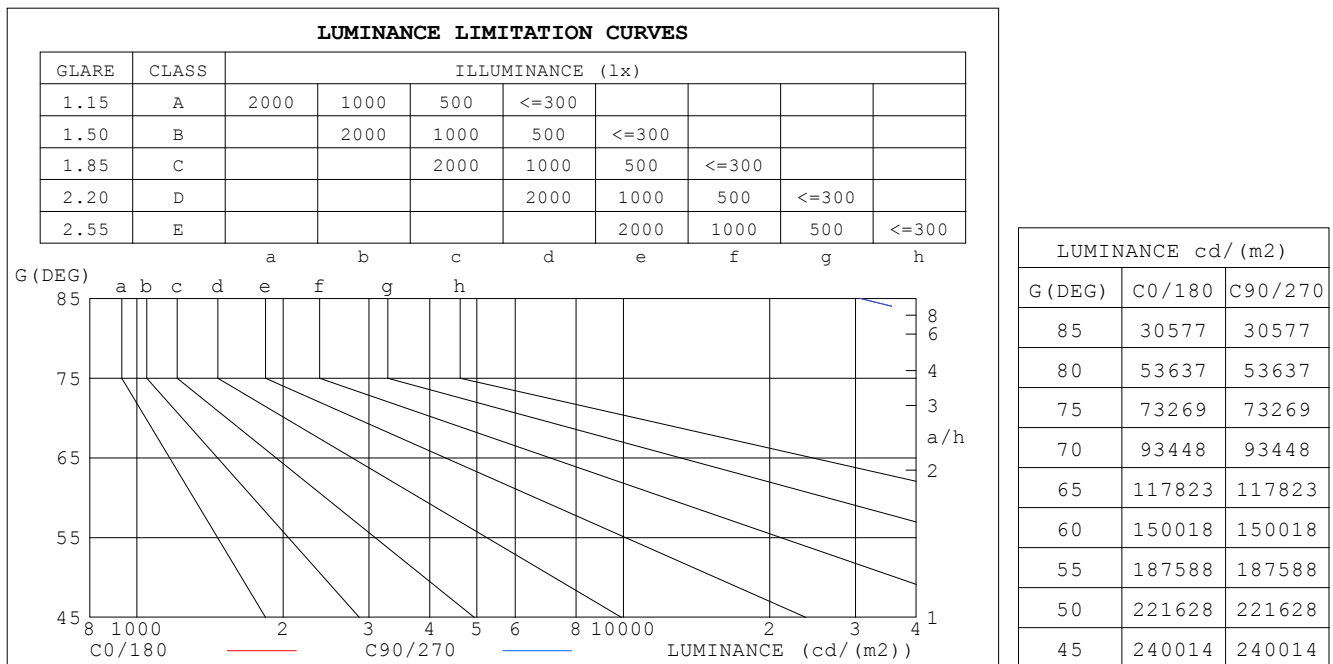
C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:LI  
 Test Date:2019-12-10

Checker: LI

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity:65.0%  
 Test Distance:9.432m [K=1.0000]  
 Remarks:

Assessor:

# LUMINANCE LIMITATION CURVES



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:LI  
Test Date:2019-12-10

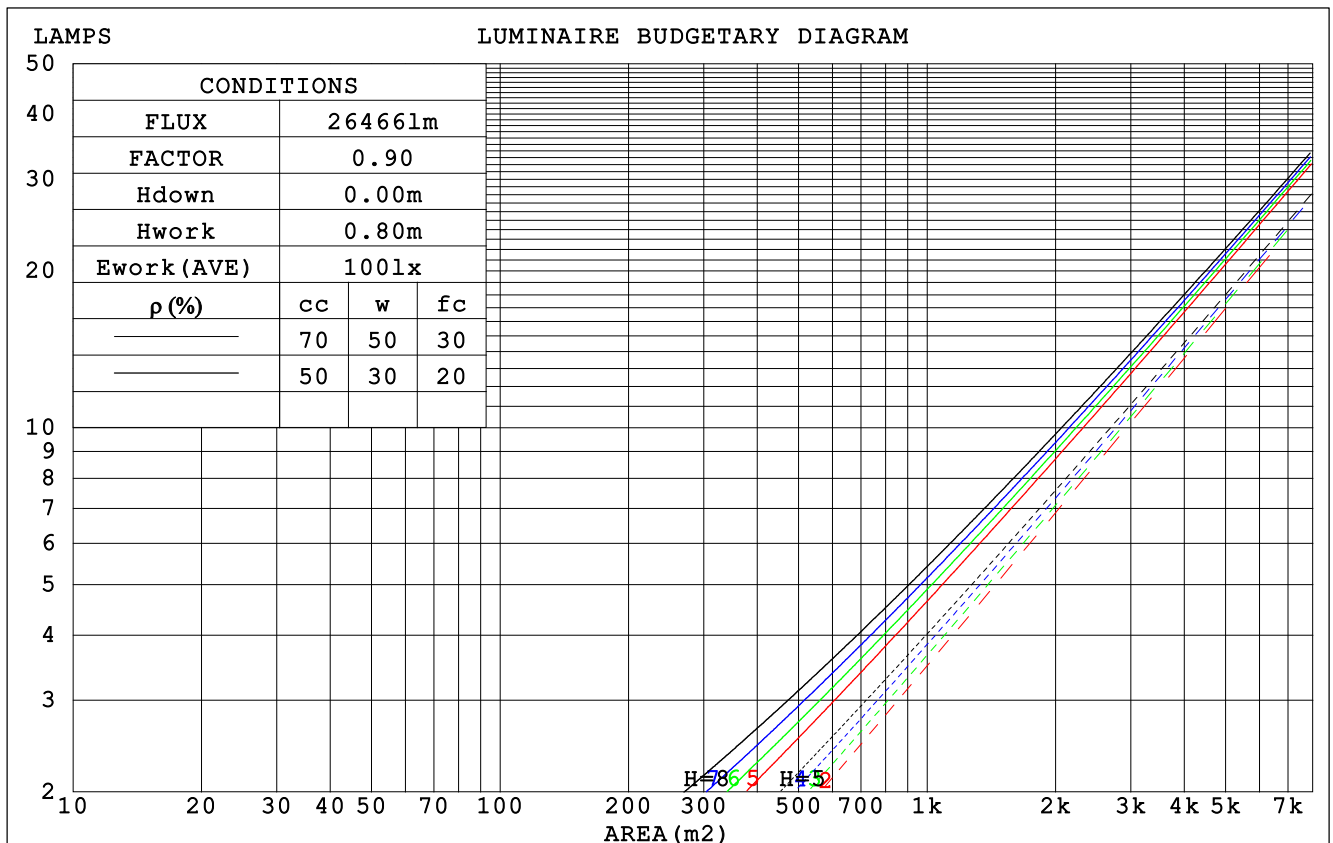
Checker: LI

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.432m [K=1.0000]  
Remarks:

Assessor:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

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			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	1.06	1.02	.98	1.03	.00	.97	.99	.96	.94	.95	.93	.91	.92	.90	.88	.86
2.0	.93	.86	.81	.91	.85	.80	.87	.83	.78	.84	.80	.77	.81	.78	.75	.73
3.0	.82	.74	.68	.80	.73	.67	.77	.71	.66	.75	.69	.65	.72	.68	.64	.62
4.0	.72	.64	.58	.71	.63	.57	.69	.62	.56	.66	.60	.56	.64	.59	.55	.53
5.0	.65	.56	.49	.64	.55	.49	.61	.54	.49	.59	.53	.48	.58	.52	.48	.45
6.0	.58	.49	.43	.57	.49	.43	.55	.48	.42	.54	.47	.42	.52	.46	.42	.40
7.0	.52	.44	.38	.52	.43	.37	.50	.43	.37	.49	.42	.37	.47	.41	.37	.35
8.0	.48	.39	.33	.47	.39	.33	.46	.38	.33	.44	.38	.33	.43	.37	.33	.31
9.0	.43	.35	.30	.43	.35	.30	.42	.34	.29	.41	.34	.29	.40	.34	.29	.27
10.0	.40	.32	.27	.39	.32	.27	.38	.31	.26	.37	.31	.26	.37	.31	.26	.25



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:LI  
Test Date:2019-12-10

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.432m [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	.277	.158	.050	.270	.154	.049	.257	.148	.047	.245	.142	.045	.234	.136	.044	
2.0	.269	.148	.045	.263	.145	.045	.252	.140	.043	.241	.135	.042	.231	.131	.041	
3.0	.254	.135	.041	.249	.133	.040	.239	.129	.039	.229	.126	.039	.221	.122	.038	
4.0	.238	.124	.036	.234	.122	.036	.225	.119	.036	.216	.116	.035	.208	.113	.035	
5.0	.223	.114	.033	.219	.112	.033	.211	.110	.032	.203	.107	.032	.196	.105	.032	
6.0	.209	.105	.030	.205	.104	.030	.198	.101	.029	.191	.099	.029	.185	.097	.029	
7.0	.196	.097	.027	.192	.096	.027	.186	.094	.027	.180	.092	.027	.174	.090	.027	
8.0	.184	.090	.025	.181	.089	.025	.175	.087	.025	.169	.086	.025	.164	.084	.025	
9.0	.173	.084	.023	.170	.083	.023	.165	.082	.023	.160	.080	.023	.155	.079	.023	
10.0	.163	.078	.022	.161	.078	.022	.156	.076	.022	.151	.075	.021	.147	.074	.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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.178	.156	.137	.152	.134	.118	.104	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.169	.132	.101	.145	.114	.087	.099	.079	.061	.057	.046	.036	.018	.015	.012	
3.0	.161	.114	.077	.138	.099	.066	.095	.068	.047	.055	.040	.027	.018	.013	.009	
4.0	.154	.101	.060	.132	.087	.052	.091	.061	.037	.053	.036	.022	.017	.012	.007	
5.0	.147	.090	.048	.126	.078	.042	.087	.055	.030	.050	.032	.018	.016	.010	.006	
6.0	.141	.082	.040	.121	.071	.035	.083	.050	.025	.048	.029	.015	.016	.010	.005	
7.0	.134	.075	.034	.115	.065	.029	.080	.046	.021	.046	.027	.012	.015	.009	.004	
8.0	.128	.069	.029	.110	.060	.025	.076	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.122	.064	.025	.105	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.022	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:LI  
Test Date:2019-12-10

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.432m [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	31.1	32.6	31.4	32.8	33.0	31.1	32.6	31.4	32.8	33.0
3H	31.7	33.0	31.9	33.2	33.5	31.7	33.0	31.9	33.2	33.5
4H	31.8	33.1	32.1	33.3	33.6	31.8	33.1	32.1	33.3	33.6
6H	31.9	33.1	32.2	33.3	33.6	31.9	33.1	32.2	33.3	33.6
8H	31.9	33.0	32.2	33.3	33.6	31.9	33.0	32.2	33.3	33.6
12H	31.8	32.9	32.2	33.2	33.5	31.8	32.9	32.2	33.2	33.5
4H 2H	31.4	32.6	31.7	32.9	33.1	31.4	32.6	31.7	32.9	33.1
3H	32.1	33.2	32.4	33.5	33.8	32.1	33.2	32.4	33.5	33.8
4H	32.3	33.3	32.7	33.6	33.9	32.3	33.3	32.7	33.6	33.9
6H	32.4	33.3	32.8	33.6	34.0	32.4	33.3	32.8	33.6	34.0
8H	32.4	33.2	32.8	33.6	34.0	32.4	33.2	32.8	33.6	34.0
12H	32.4	33.2	32.8	33.5	34.0	32.4	33.2	32.8	33.5	34.0
8H 4H	32.3	33.1	32.7	33.5	33.9	32.3	33.1	32.7	33.5	33.9
6H	32.5	33.2	33.0	33.6	34.0	32.5	33.2	33.0	33.6	34.0
8H	32.6	33.2	33.0	33.6	34.0	32.6	33.2	33.0	33.6	34.0
12H	32.6	33.1	33.0	33.5	34.0	32.6	33.1	33.0	33.5	34.0
12H 4H	32.3	33.1	32.7	33.4	33.8	32.3	33.1	32.7	33.4	33.8
6H	32.5	33.1	33.0	33.5	34.0	32.5	33.1	33.0	33.5	34.0
8H	32.6	33.1	33.0	33.5	34.0	32.6	33.1	33.0	33.5	34.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.5					+ 0.5 / - 0.5				
1.5H	+ 0.3 / - 0.8					+ 0.3 / - 0.8				
2.0H	+ 1.0 / - 1.2					+ 1.0 / - 1.2				

CIE Pub.117, 26466 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = 11.4$ )  
Area: 0.0475 m<sup>2</sup>

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:LI  
Test Date:2019-12-10

Checker: LI

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.432m [K=1.0000]  
Remarks:

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	46	39	57	46	39	56	45	39	32
0.80	69	57	50	68	57	50	66	56	49	43
1.00	78	67	60	77	67	60	75	68	59	53
1.25	85	75	69	84	75	68	81	73	67	61
1.50	90	81	75	89	80	74	86	79	73	66
2.00	97	89	83	95	88	83	92	86	81	74
2.50	101	94	88	99	92	87	95	90	85	77
3.00	104	98	93	102	96	92	98	93	89	81
4.00	107	102	98	105	101	97	101	97	94	85
5.00	110	105	101	107	103	100	103	100	97	88
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

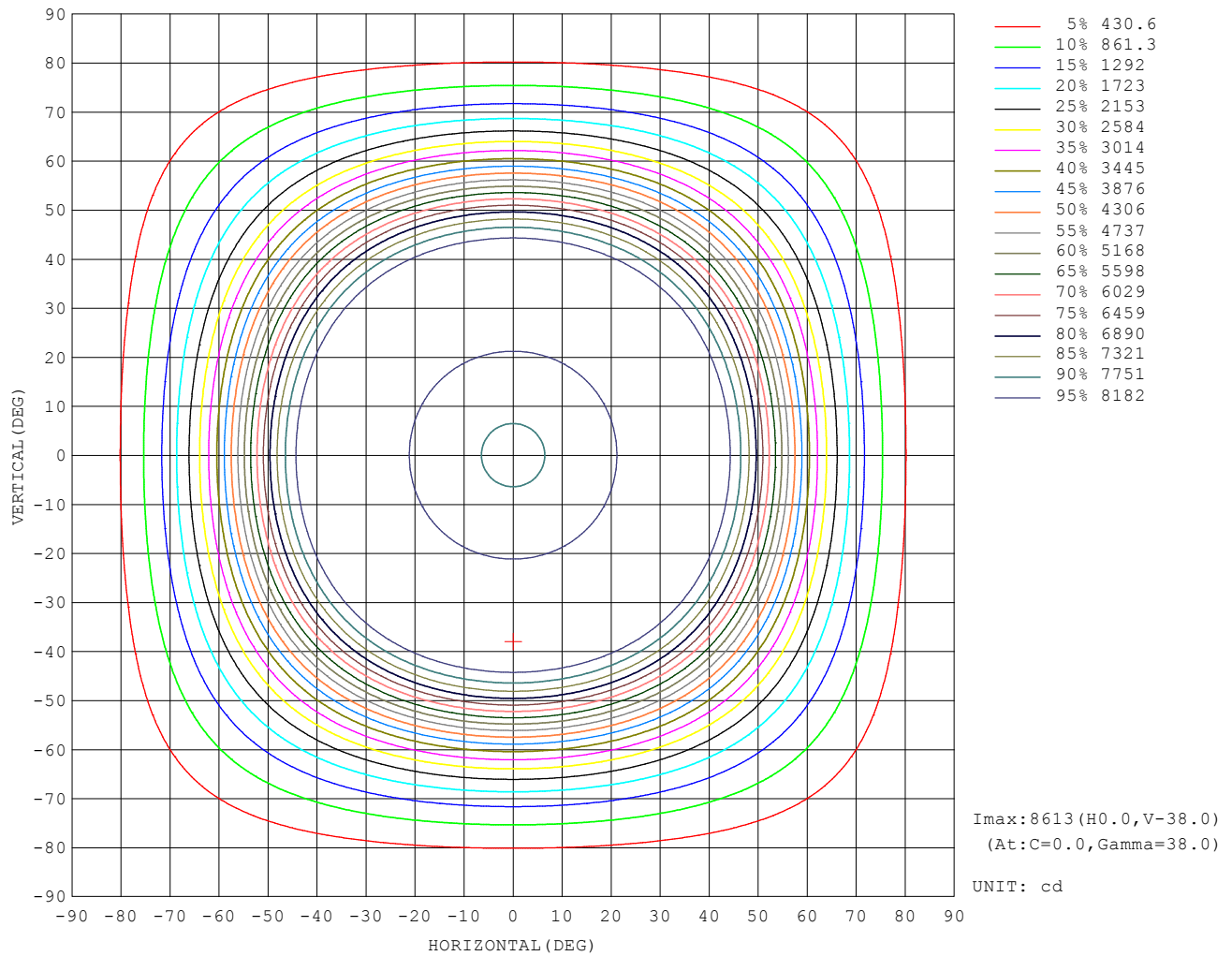
C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: LI  
 Test Date: 2019-12-10

Checker: LI

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.432m [K=1.0000]  
 Remarks:

Assessor:

# ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: LI  
Test Date: 2019-12-10

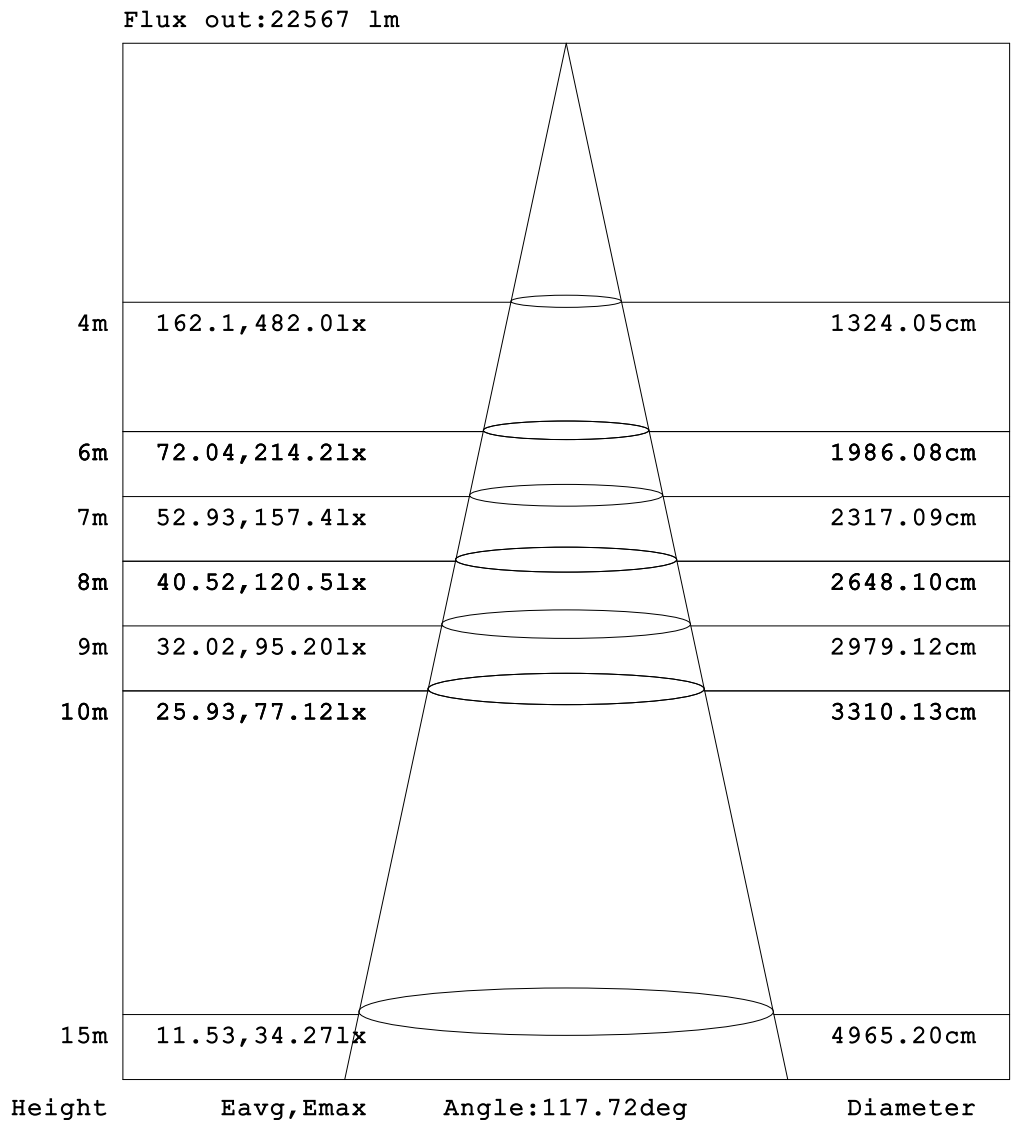
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.432m [K=1.0000]  
Remarks:

Checker: LI

Assessor:



### AAI Figure



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

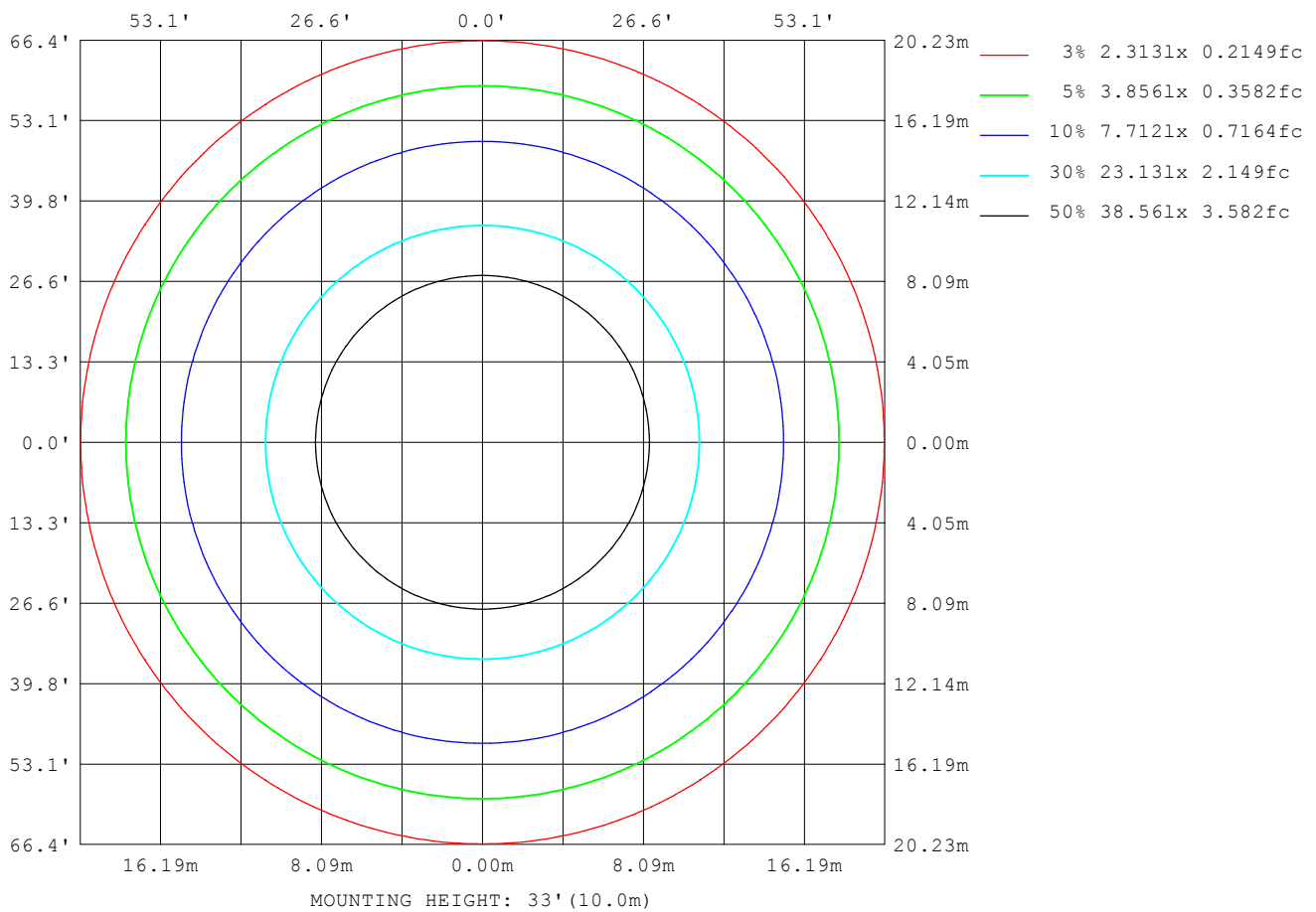
C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: LI  
 Test Date: 2019-12-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.432m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

# ISOLUX DIAGRAM



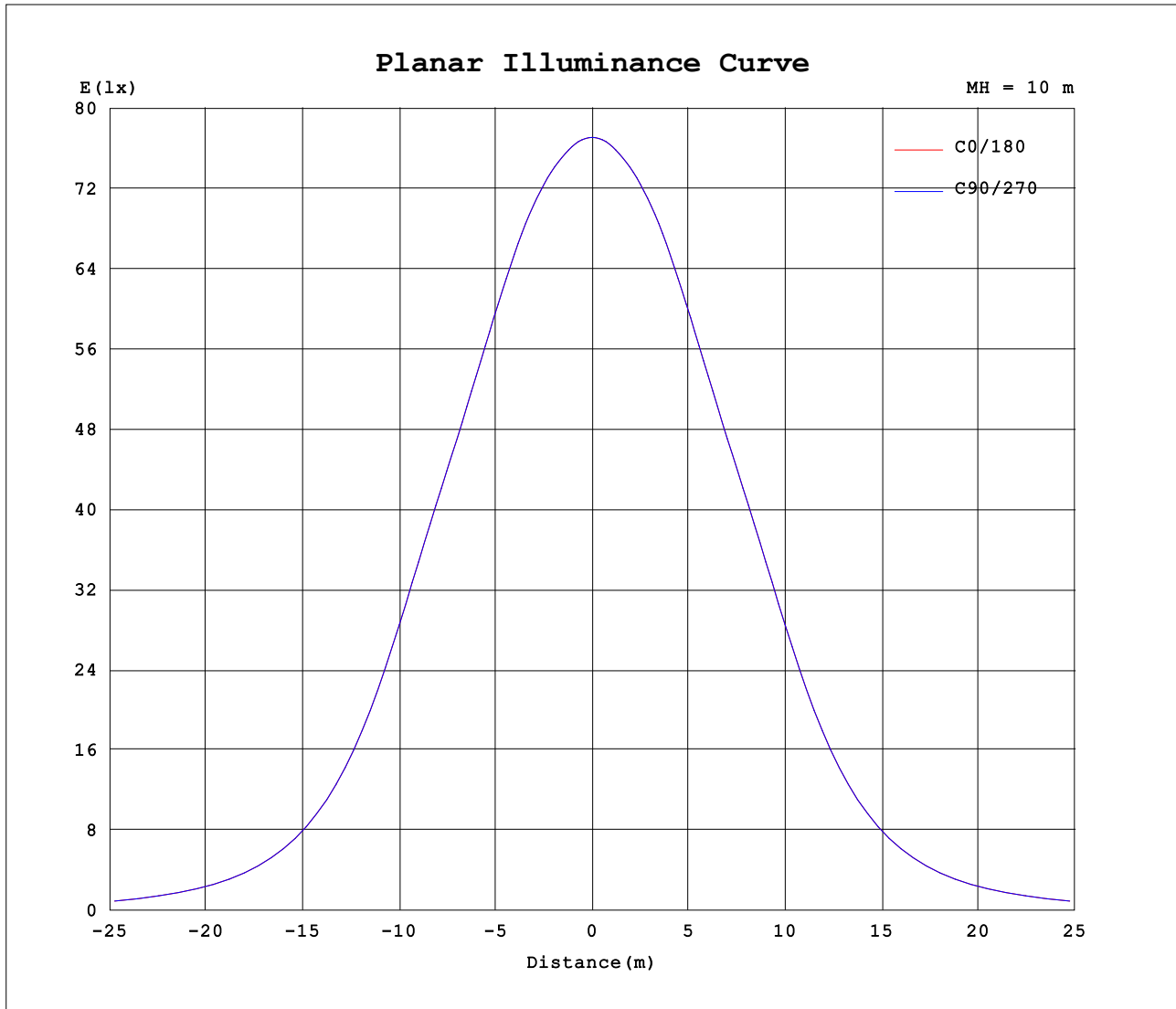
C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: LI  
 Test Date: 2019-12-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.432m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

### Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: LI  
 Test Date: 2019-12-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.432m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

Assessor:

Assessor: