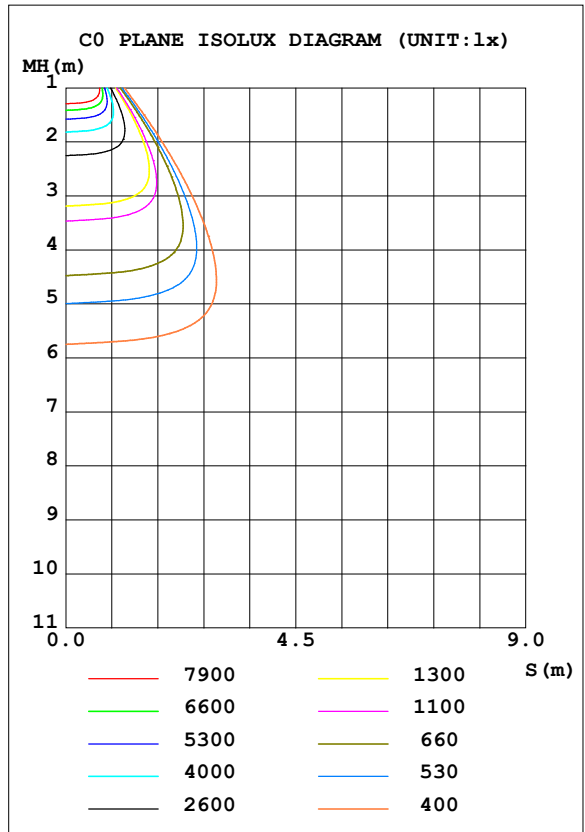
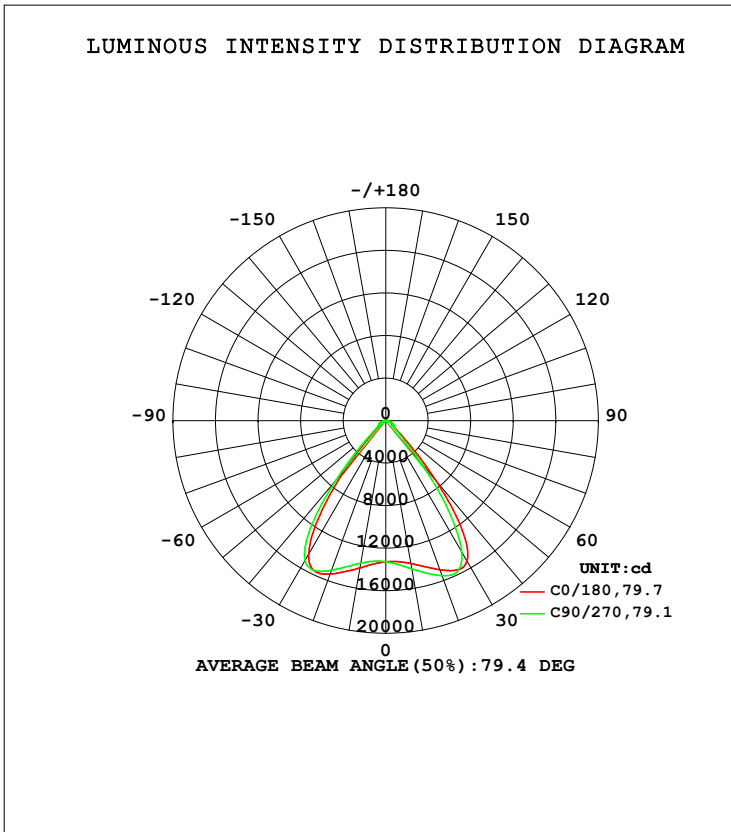


EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.2V I:0.6750A P:152.2W PF:0.9793 Freq:49.99Hz Lamp Flux:23277.5x1 lm		
NAME: HB21-150-5070-H55501	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 152.99 lm/W			
MODEL	/	I <sub>max</sub> (cd)	15829	S/MH (C0/180)	1.13
NOMINAL POWER (W)	/	LOR (%)	100.0	S/MH (C90/270)	1.19
RATED VOLTAGE (V)	/	TOTAL FLUX (lm)	23277	η UP, DN (C0-180)	0.0, 48.9
NOMINAL FLUX (lm)	23277.5	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 51.1
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE (V)	230	η down (%)	100.0	CIBSE SHR MAX	0.80



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

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**ZONAL FLUX DIAGRAM**

ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	1364	1391	1415	1423	1406	1384	1361	1355	0- 10	1297	1297	5.57,5.57
20	1491	1525	1551	1562	1535	1516	1497	1491	10- 20	4138	5435	23.3,23.3
30	1528	1484	1430	1397	1453	1490	1518	1529	20- 30	7139	12574	54,54
40	731.8	609.5	515.8	471.5	567.4	650.5	727.0	729.7	30- 40	6827	19401	83.3,83.3
50	121.4	105.9	100.6	96.45	96.47	111.7	131.6	128.6	40- 50	2169	21570	92.7,92.7
60	68.00	70.41	74.14	77.06	69.82	71.69	73.70	73.73	50- 60	758.8	22329	95.9,95.9
70	44.46	43.54	44.91	48.88	47.79	44.46	43.38	44.85	60- 70	602.3	22931	98.5,98.5
80	12.21	12.64	12.88	14.25	13.07	13.50	13.14	13.54	70- 80	298.3	23230	99.8,99.8
90	0.3959	0.3803	0.3801	0.3845	0.3644	0.3831	0.4088	0.4139	80- 90	47.88	23277	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:×10cd									UNIT:lm		

Conical surface Flux(90deg): 20917 lm

%lum = 89.9%

%lamp = 89.9%

Conical surface Flux(120deg): 22329 lm

%lum = 95.9%

%lamp = 95.9%

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:WJH  
 Test Date:2021-04-27

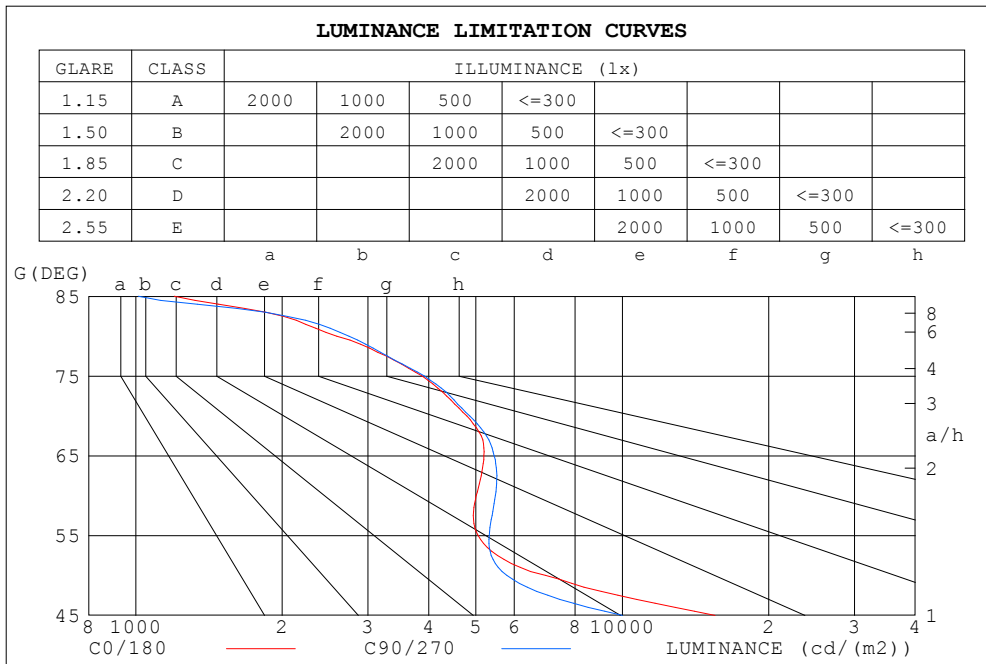
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity:65.0%  
 Test Distance:9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

LUMINANCE LIMITATION CURVES



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	1199	1013
80	2591	2745
75	3877	3916
70	4789	4858
65	5194	5455
60	5010	5486
55	5053	5325
50	6955	5792
45	15495	10011

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

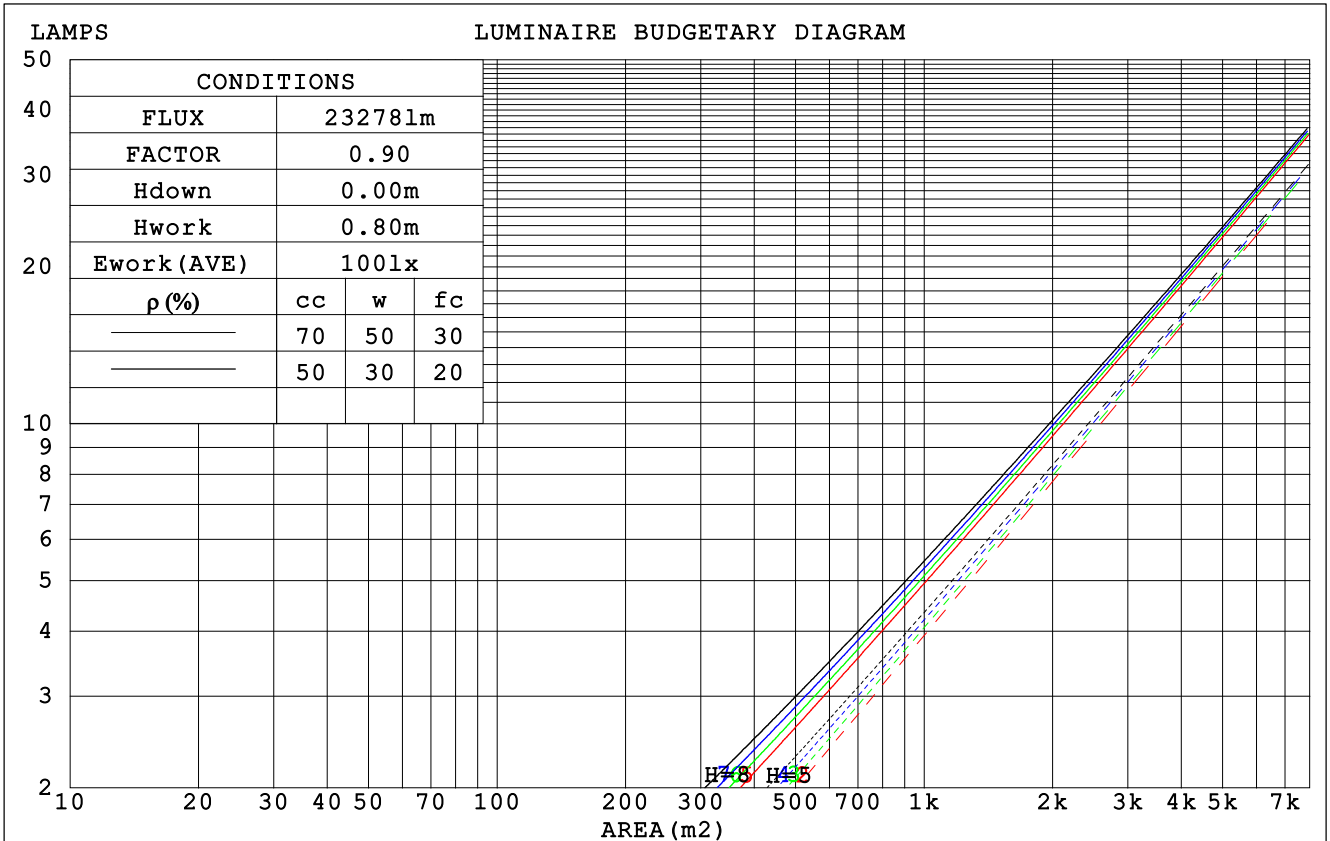
Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	1.00
1.0	1.09	1.06	1.04	1.07	1.04	1.02	1.03	1.01	.99	.99	.97	.96	.96	.94	.93	.91
2.0	.00	.95	.91	.98	.94	.90	.95	.91	.88	.92	.89	.86	.89	.86	.84	.83
3.0	.92	.86	.81	.90	.85	.80	.87	.83	.79	.85	.81	.78	.83	.79	.77	.75
4.0	.84	.78	.73	.83	.77	.72	.81	.76	.71	.79	.74	.71	.77	.73	.70	.68
5.0	.78	.71	.66	.77	.70	.66	.75	.69	.65	.73	.68	.64	.71	.67	.64	.62
6.0	.72	.65	.60	.71	.64	.60	.69	.64	.59	.68	.63	.59	.66	.62	.58	.57
7.0	.67	.60	.55	.66	.59	.55	.64	.59	.54	.63	.58	.54	.62	.57	.54	.52
8.0	.62	.55	.50	.61	.55	.50	.60	.54	.50	.59	.54	.50	.58	.53	.49	.48
9.0	.58	.51	.46	.57	.51	.46	.56	.50	.46	.55	.50	.46	.54	.49	.46	.44
10.0	.54	.47	.43	.53	.47	.43	.52	.47	.43	.52	.46	.42	.51	.46	.42	.41



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:WJH  
 Test Date:2021-04-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity:65.0%  
 Test Distance:9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

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**WEC AND CCEC**

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.209	.119	.038	.202	.115	.037	.189	.109	.035	.178	.102	.033	.167	.097	.031	
2.0	.201	.110	.034	.196	.108	.033	.185	.103	.032	.175	.098	.031	.165	.094	.029	
3.0	.192	.102	.031	.187	.100	.030	.177	.096	.029	.169	.092	.028	.161	.089	.028	
4.0	.182	.095	.028	.178	.093	.027	.169	.090	.027	.162	.087	.026	.155	.084	.026	
5.0	.173	.088	.026	.169	.087	.025	.162	.084	.025	.155	.082	.024	.149	.080	.024	
6.0	.164	.082	.024	.161	.081	.023	.155	.079	.023	.149	.077	.023	.143	.075	.022	
7.0	.156	.077	.022	.153	.076	.022	.148	.075	.022	.142	.073	.021	.137	.071	.021	
8.0	.149	.073	.020	.146	.072	.020	.141	.071	.020	.136	.069	.020	.132	.068	.020	
9.0	.142	.069	.019	.140	.068	.019	.135	.067	.019	.131	.066	.019	.127	.064	.019	
10.0	.136	.065	.018	.134	.065	.018	.130	.063	.018	.126	.062	.018	.122	.061	.018	

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	.173	.157	.142	.148	.135	.123	.101	.093	.085	.058	.054	.049	.019	.017	.016	
2.0	.160	.132	.109	.137	.114	.094	.094	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.149	.114	.085	.128	.098	.074	.088	.068	.052	.051	.040	.031	.016	.013	.010	
4.0	.140	.099	.068	.120	.086	.059	.083	.060	.042	.048	.035	.025	.015	.011	.008	
5.0	.132	.088	.056	.114	.076	.048	.078	.053	.034	.045	.031	.020	.015	.010	.007	
6.0	.126	.079	.046	.108	.069	.040	.074	.048	.028	.043	.028	.017	.014	.009	.006	
7.0	.119	.072	.039	.103	.063	.034	.071	.044	.024	.041	.026	.014	.013	.008	.005	
8.0	.114	.066	.033	.098	.057	.029	.068	.040	.021	.039	.024	.012	.013	.008	.004	
9.0	.109	.061	.029	.094	.053	.025	.065	.037	.018	.038	.022	.011	.012	.007	.004	
10.0	.104	.057	.025	.090	.049	.022	.062	.035	.016	.036	.021	.009	.012	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

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**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	8.5	9.6	8.7	9.8	9.9	7.7	8.8	7.9	9.0	9.2
3H	8.6	9.7	8.9	9.9	10.1	8.0	9.0	8.2	9.2	9.4
4H	8.7	9.7	9.0	9.9	10.1	8.0	9.0	8.3	9.3	9.5
6H	8.7	9.6	9.0	9.9	10.1	8.1	9.0	8.4	9.2	9.5
8H	8.7	9.5	9.0	9.8	10.1	8.1	8.9	8.4	9.2	9.5
12H	8.6	9.5	9.0	9.7	10.0	8.0	8.9	8.3	9.1	9.4
4H 2H	8.4	9.3	8.6	9.6	9.8	7.6	8.6	7.9	8.8	9.1
3H	8.7	9.5	9.0	9.8	10.1	8.0	8.9	8.4	9.2	9.4
4H	8.8	9.6	9.1	9.9	10.2	8.2	9.0	8.6	9.3	9.6
6H	8.8	9.5	9.2	9.8	10.2	8.3	9.0	8.7	9.3	9.6
8H	8.8	9.4	9.2	9.8	10.2	8.3	8.9	8.7	9.3	9.6
12H	8.8	9.4	9.2	9.7	10.1	8.3	8.8	8.7	9.2	9.6
8H 4H	8.8	9.4	9.2	9.7	10.1	8.2	8.8	8.6	9.2	9.6
6H	8.9	9.4	9.3	9.8	10.2	8.3	8.8	8.8	9.2	9.7
8H	8.9	9.3	9.3	9.7	10.2	8.3	8.8	8.8	9.2	9.7
12H	8.8	9.2	9.3	9.7	10.1	8.3	8.7	8.8	9.1	9.6
12H 4H	8.7	9.3	9.1	9.7	10.1	8.2	8.7	8.6	9.1	9.5
6H	8.8	9.3	9.3	9.7	10.1	8.3	8.8	8.8	9.2	9.6
8H	8.8	9.2	9.3	9.7	10.1	8.3	8.7	8.8	9.1	9.6
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 2.5 / - 3.6					+ 1.9 / - 2.7				
1.5H	+ 4.6 / - 3.5					+ 4.0 / - 2.7				
2.0H	+ 3.5 / - 1.0					+ 1.5 / - 0.7				

CIE Pub.117, 23277 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 10.9)  
 Area: 0.2704 m2

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:WJH  
 Test Date:2021-04-27

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity:65.0%  
 Test Distance:9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

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**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) $k(RI) \times RCR = 5$									
$k = 0.60$	81	74	69	81	74	69	80	73	69	65
0.80	89	82	78	89	82	78	87	81	77	73
1.00	95	88	84	94	88	83	92	88	83	78
1.25	99	93	89	98	93	89	96	91	88	83
1.50	103	97	93	101	96	92	99	95	91	86
2.00	106	101	97	105	100	97	102	98	95	89
2.50	108	104	100	106	102	99	103	100	97	91
3.00	110	106	103	108	105	102	105	102	100	93
4.00	112	109	107	110	108	105	107	104	102	95
5.00	114	111	109	112	109	107	108	106	104	96
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: WJH  
 Test Date: 2021-04-27

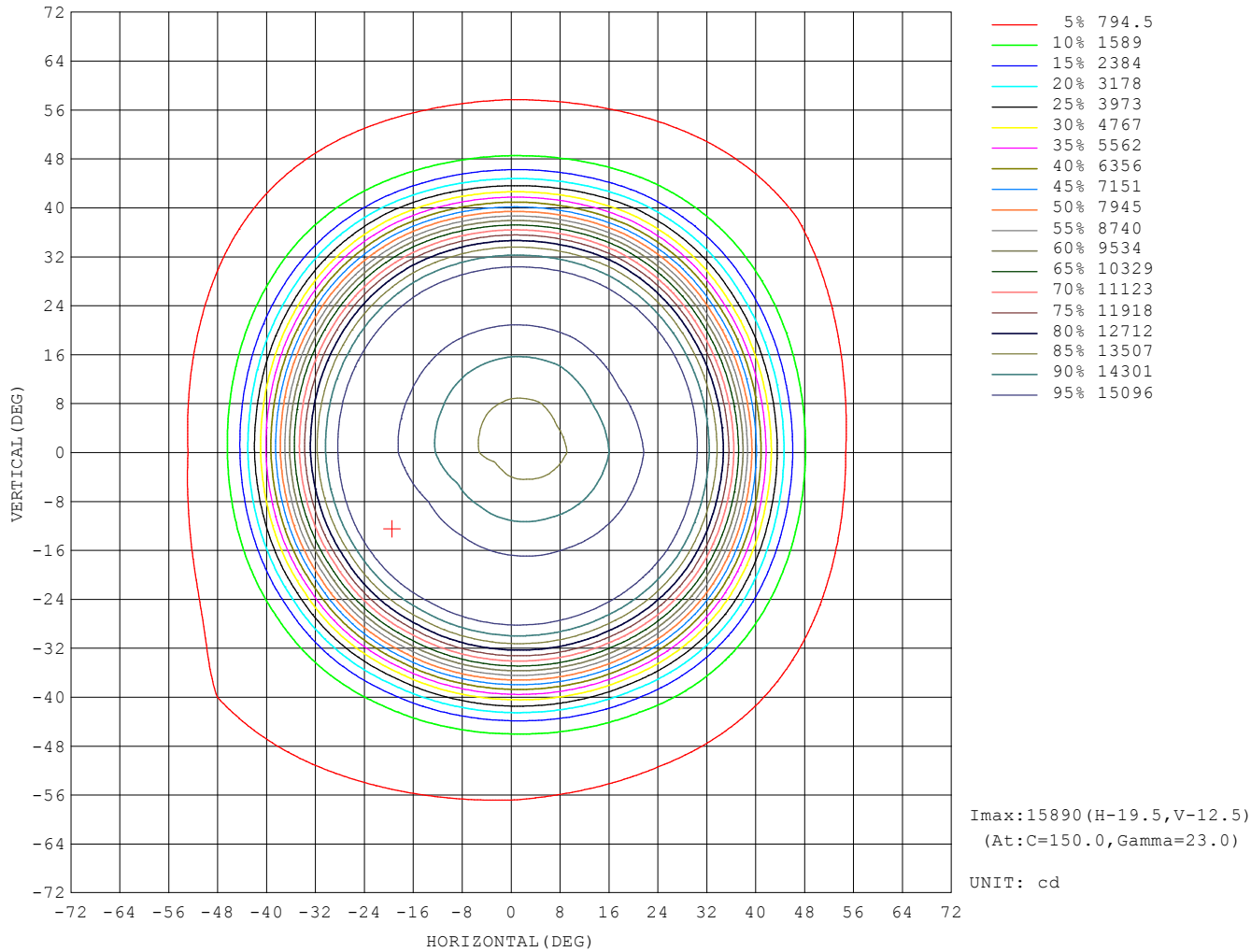
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

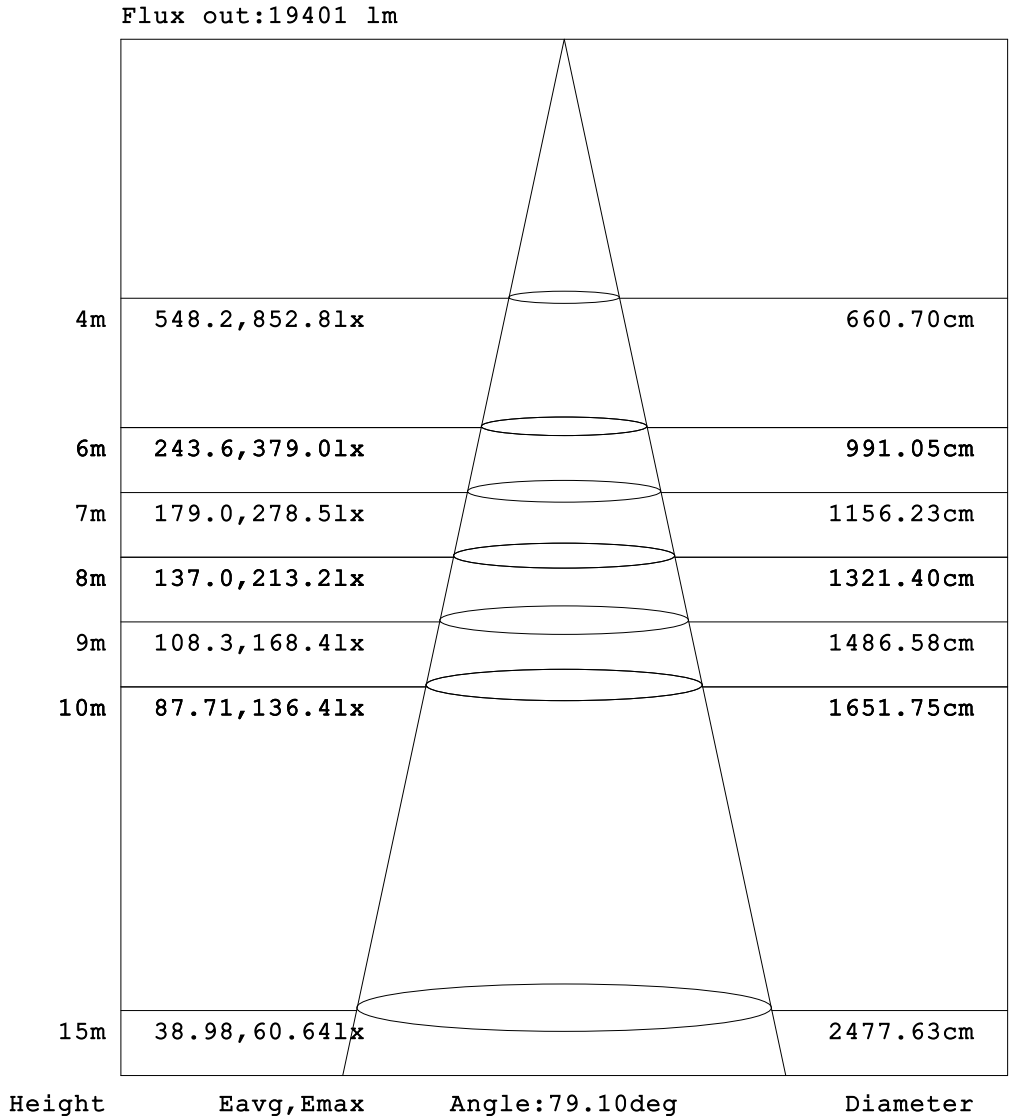
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

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: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

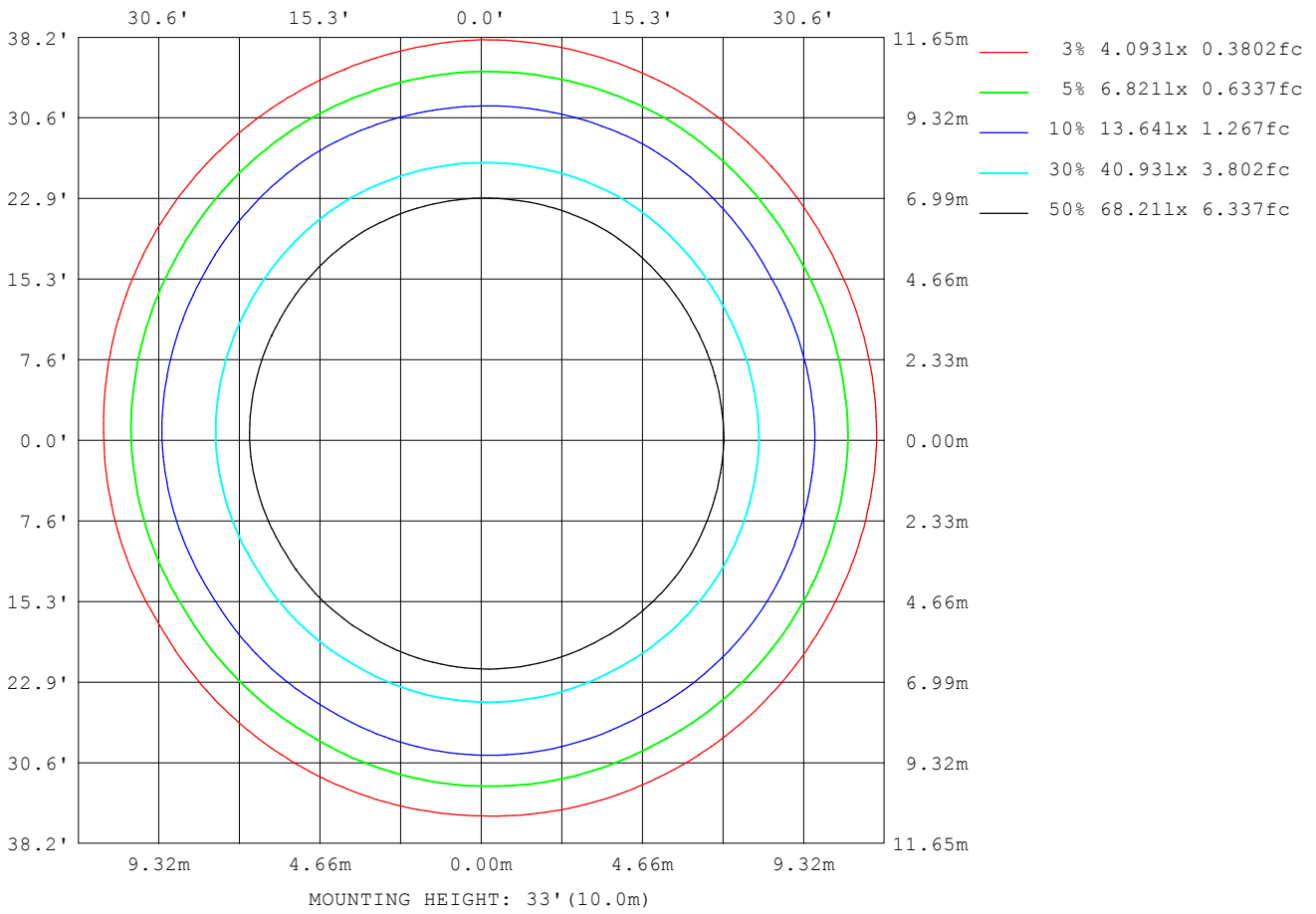
γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT

ISOLUX DIAGRAM



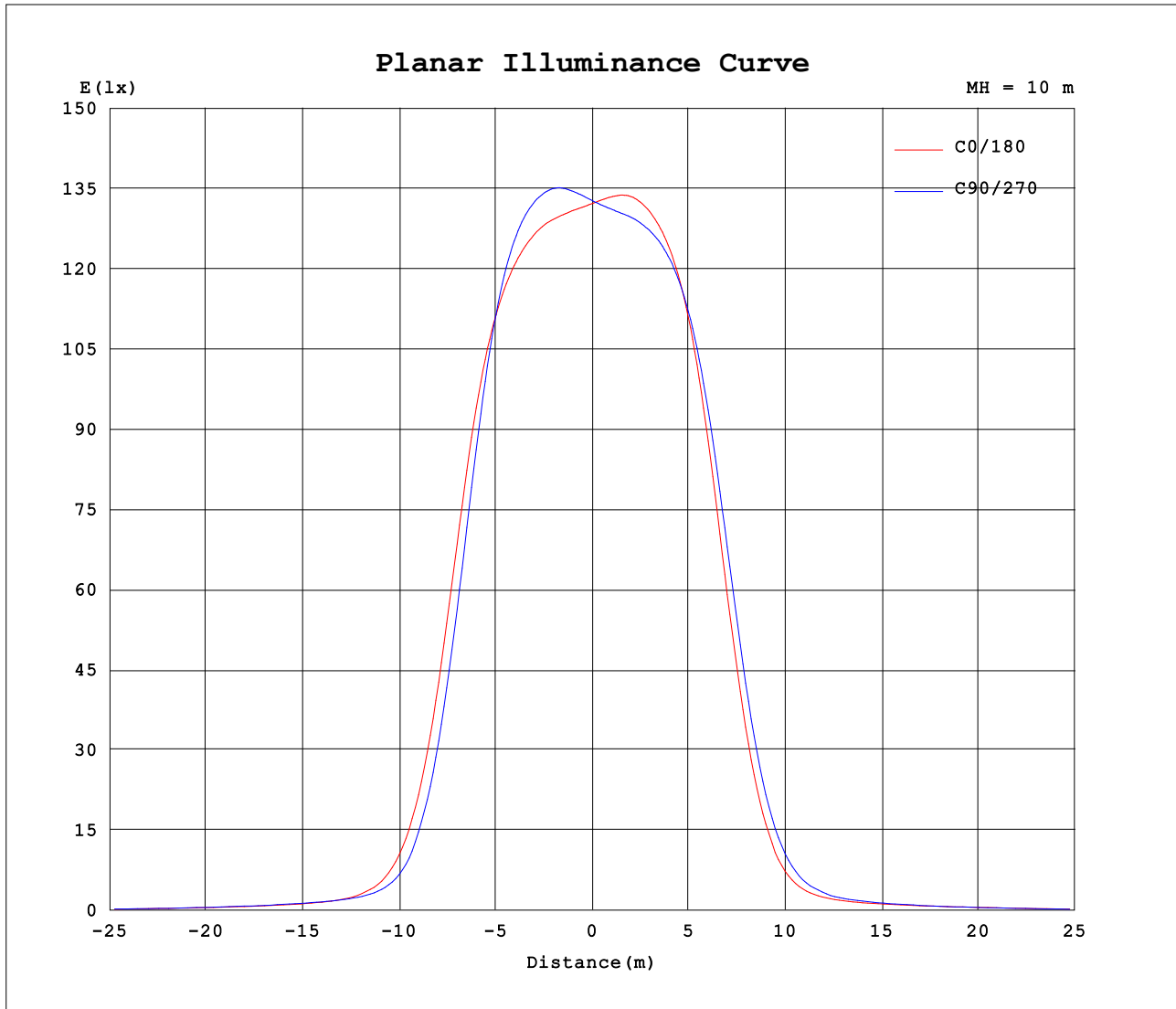
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: WJH  
 Test Date: 2021-04-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
 Humidity: 65.0%  
 Test Distance: 9.350m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: WJH  
Test Date: 2021-04-27

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.00.426  
Humidity: 65.0%  
Test Distance: 9.350m [K=1.0000]  
Remarks:

Checker: LI

Assessor: