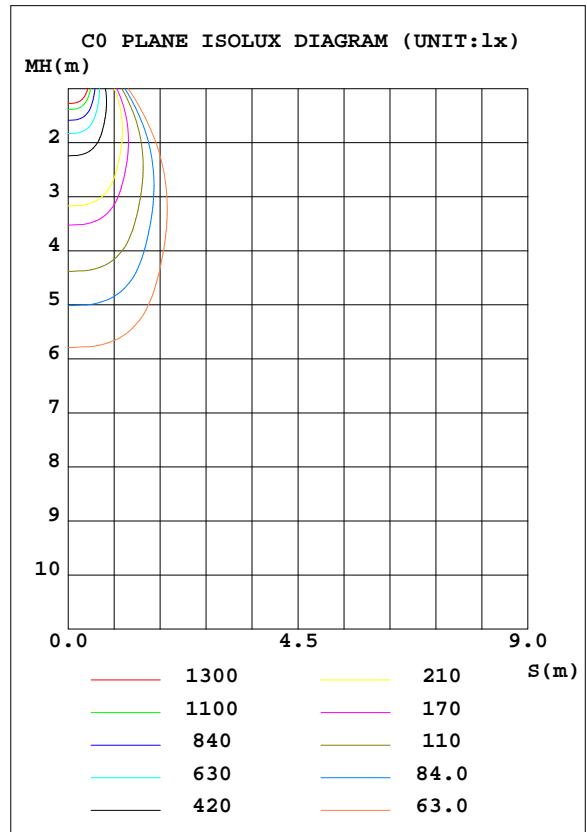
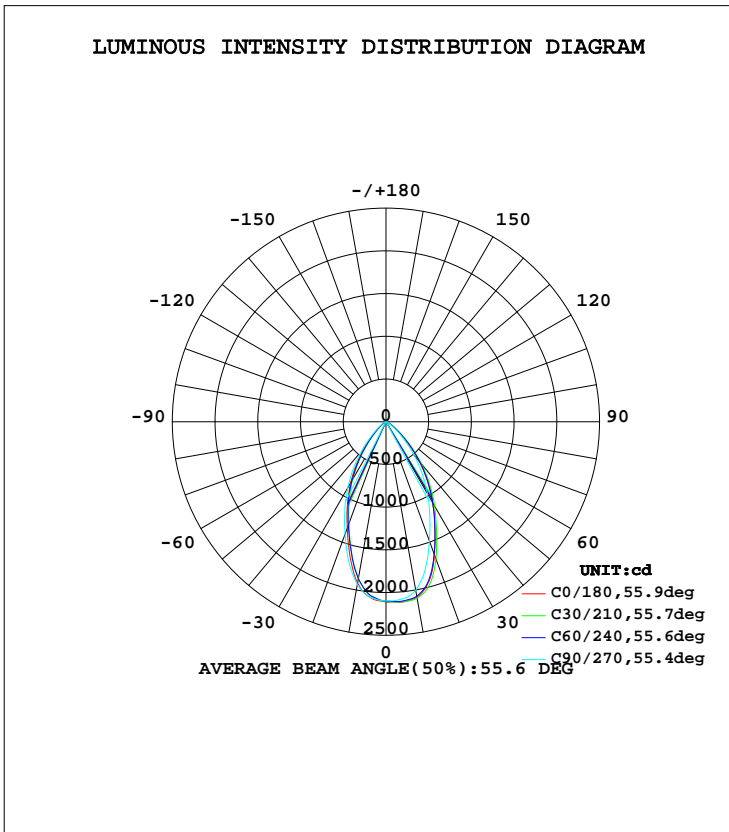


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 98.00 lm/W			
MODEL	CD20W-WW-W	I <sub>max</sub> (cd)	2119	S/MH(C0/180)	0.90
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	0.84
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	2057.9	η UP, DN(C0-180)	0.0, 52.1
NOMINAL FLUX(lm)	2057.94	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 47.9
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	240.5	η down(%)	100.0	CIBSE SHR MAX	0.90



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\Phi$ lum,lamp
10	2083	2085	2002	1880	1916	1864	1933	2060	0- 10	195.4	195.4	9.49,9.49
20	1659	1679	1487	1300	1329	1281	1402	1645	10- 20	487.2	682.5	33.2,33.2
30	1092	1118	970.4	806.8	828.3	791.1	898.4	1096	20- 30	550.1	1233	59.9,59.9
40	609.2	635.6	513.7	368.9	380.4	347.4	440.8	608.7	30- 40	442.9	1676	81.4,81.4
50	219.4	236.8	174.6	119.5	121.1	108.3	139.2	222.4	40- 50	236.0	1912	92.9,92.9
60	65.08	69.15	54.69	43.67	45.04	41.14	46.59	66.65	50- 60	87.89	1999	97.2,97.2
70	32.94	34.62	29.26	22.14	23.00	20.02	22.99	32.06	60- 70	38.40	2038	99,99
80	13.19	15.61	9.167	1.433	1.094	0.4545	2.726	11.70	70- 80	17.98	2056	99.9,99.9
90	0.1422	0.1268	0.1237	0.1917	0.1979	0.2071	0.1855	0.1577	80- 90	2.173	2058	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		

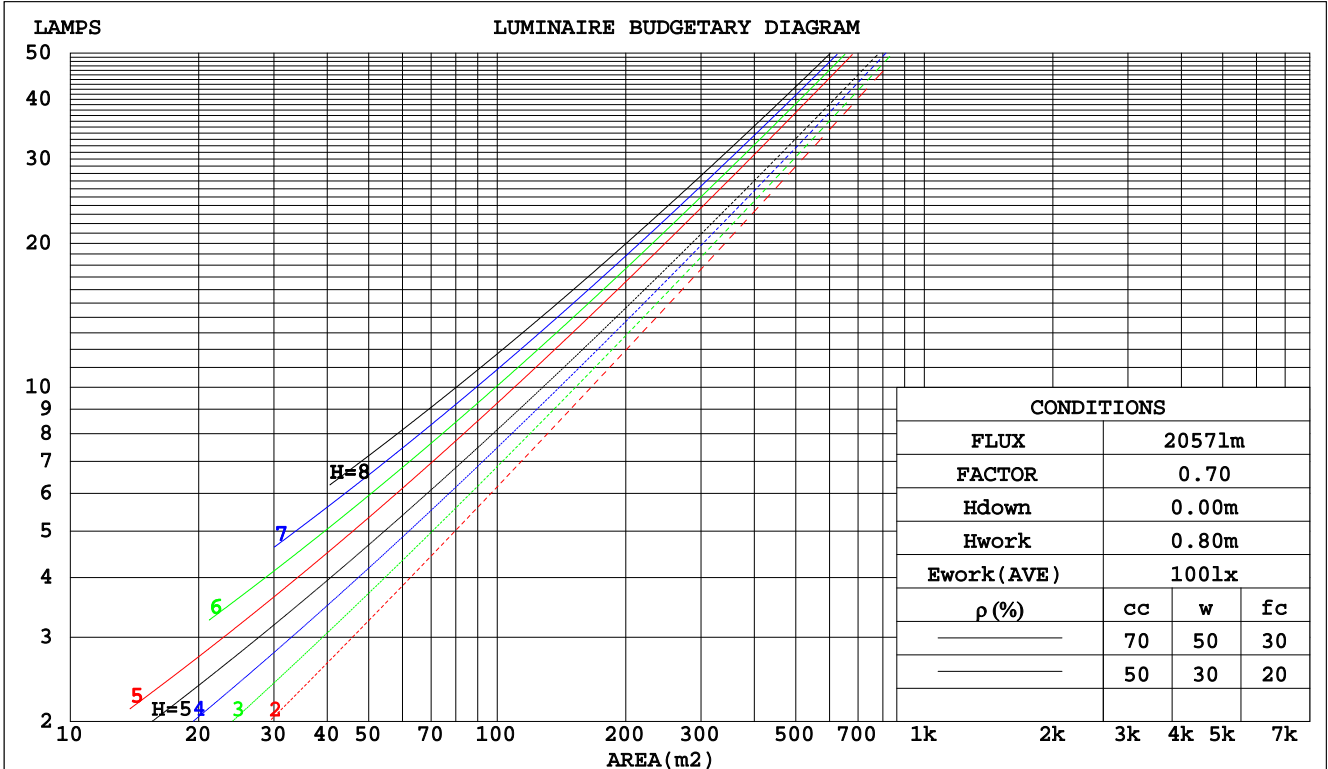
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																
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	1.00
1.0	1.10	1.07	1.04	1.08	1.05	1.03	1.03	1.01	.00	.00	.98	.97	.96	.95	.94	.92
2.0	1.01	.96	.93	.99	.95	.92	.96	.92	.90	.93	.90	.88	.90	.88	.86	.84
3.0	.93	.88	.83	.92	.87	.82	.89	.85	.81	.86	.83	.80	.84	.81	.79	.77
4.0	.86	.80	.75	.85	.79	.75	.83	.78	.74	.81	.76	.73	.79	.75	.72	.71
5.0	.80	.73	.69	.79	.73	.68	.77	.72	.68	.75	.71	.67	.74	.70	.67	.65
6.0	.74	.68	.63	.74	.67	.63	.72	.66	.62	.71	.66	.62	.69	.65	.62	.60
7.0	.69	.63	.58	.69	.63	.58	.67	.62	.58	.66	.61	.57	.65	.61	.57	.56
8.0	.65	.59	.54	.64	.58	.54	.63	.58	.54	.62	.57	.53	.61	.57	.53	.52
9.0	.61	.55	.50	.61	.54	.50	.60	.54	.50	.59	.54	.50	.58	.53	.50	.48
10.0	.58	.51	.47	.57	.51	.47	.56	.51	.47	.55	.50	.47	.55	.50	.47	.45



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

WEC AND CCEC

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.198	.113	.036	.192	.109	.035	.179	.103	.033	.167	.096	.031	.156	.091	.029	
2.0	.191	.105	.032	.186	.102	.031	.175	.097	.030	.165	.092	.029	.156	.088	.028	
3.0	.182	.097	.029	.177	.095	.029	.168	.091	.028	.159	.087	.027	.151	.084	.026	
4.0	.173	.090	.026	.169	.088	.026	.161	.085	.025	.153	.082	.025	.146	.079	.024	
5.0	.164	.084	.024	.160	.082	.024	.153	.080	.024	.147	.077	.023	.141	.075	.023	
6.0	.156	.078	.022	.153	.077	.022	.146	.075	.022	.141	.073	.021	.135	.071	.021	
7.0	.148	.073	.021	.145	.072	.021	.140	.071	.020	.135	.069	.020	.130	.067	.020	
8.0	.141	.069	.019	.139	.068	.019	.134	.067	.019	.129	.065	.019	.125	.064	.019	
9.0	.135	.065	.018	.132	.065	.018	.128	.063	.018	.124	.062	.018	.120	.061	.018	
10.0	.129	.062	.017	.127	.061	.017	.123	.060	.017	.119	.059	.017	.115	.058	.017	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	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	.143	.148	.135	.123	.101	.093	.085	.058	.054	.050	.019	.017	.016	
2.0	.159	.132	.110	.136	.114	.095	.093	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.148	.114	.087	.127	.098	.075	.087	.068	.053	.050	.040	.031	.016	.013	.010	
4.0	.138	.099	.070	.118	.086	.061	.081	.060	.043	.047	.035	.025	.015	.011	.008	
5.0	.130	.088	.057	.112	.076	.050	.077	.053	.035	.045	.031	.021	.014	.010	.007	
6.0	.123	.079	.047	.105	.068	.041	.073	.048	.029	.042	.028	.017	.014	.009	.006	
7.0	.116	.072	.040	.100	.062	.035	.069	.043	.025	.040	.026	.015	.013	.008	.005	
8.0	.111	.065	.034	.095	.057	.030	.066	.040	.021	.038	.024	.013	.012	.008	.004	
9.0	.105	.060	.030	.091	.052	.026	.063	.037	.018	.037	.022	.011	.012	.007	.004	
10.0	.101	.056	.026	.087	.049	.023	.060	.034	.016	.035	.020	.010	.011	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

Uncorrected UGR Table

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm										
NAME: CD20W-WW-W					TYPE:20W			WEIGHT:		
DIM.:					SPEC.:3000K			SERIAL No.:1		
MFR.:					SUR.:0.041			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	25.7	26.8	25.9	26.9	27.1	25.1	26.2	25.3	26.4	26.5
3H	25.7	26.7	26.0	26.9	27.1	25.2	26.1	25.4	26.3	26.5
4H	25.8	26.7	26.0	26.9	27.1	25.2	26.1	25.5	26.3	26.5
6H	25.8	26.6	26.1	26.9	27.1	25.2	26.0	25.5	26.3	26.5
8H	25.8	26.6	26.1	26.8	27.1	25.1	26.0	25.4	26.2	26.5
12H	25.7	26.5	26.0	26.8	27.1	25.1	25.9	25.4	26.1	26.4
4H 2H	25.6	26.5	25.9	26.7	27.0	25.0	26.0	25.3	26.2	26.4
3H	25.7	26.5	26.0	26.8	27.1	25.2	26.0	25.5	26.2	26.5
4H	25.8	26.5	26.2	26.8	27.1	25.2	26.0	25.6	26.3	26.6
6H	25.9	26.5	26.3	26.8	27.2	25.3	25.9	25.7	26.3	26.6
8H	25.9	26.5	26.3	26.8	27.2	25.3	25.9	25.7	26.2	26.6
12H	25.8	26.4	26.2	26.7	27.1	25.2	25.8	25.6	26.1	26.5
8H 4H	25.8	26.4	26.2	26.7	27.1	25.2	25.8	25.6	26.2	26.5
6H	25.9	26.4	26.3	26.8	27.2	25.3	25.8	25.8	26.2	26.6
8H	25.9	26.4	26.4	26.8	27.2	25.3	25.8	25.8	26.2	26.6
12H	25.9	26.3	26.4	26.7	27.2	25.3	25.7	25.8	26.1	26.6
12H 4H	25.7	26.3	26.1	26.6	27.0	25.2	25.7	25.6	26.1	26.5
6H	25.9	26.3	26.3	26.7	27.2	25.3	25.8	25.8	26.2	26.6
8H	25.9	26.3	26.4	26.7	27.2	25.3	25.7	25.8	26.1	26.6
Variations with the observer position at spacings:										
S = 1.0H	+ 1.7 / - 3.0					+ 1.8 / - 3.3				
1.5H	+ 2.2 / - 2.4					+ 2.3 / - 2.7				
2.0H	+ 3.6 / - 2.9					+ 3.5 / - 3.0				

CIE Pub.117 Corrected 2058 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.5)

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:

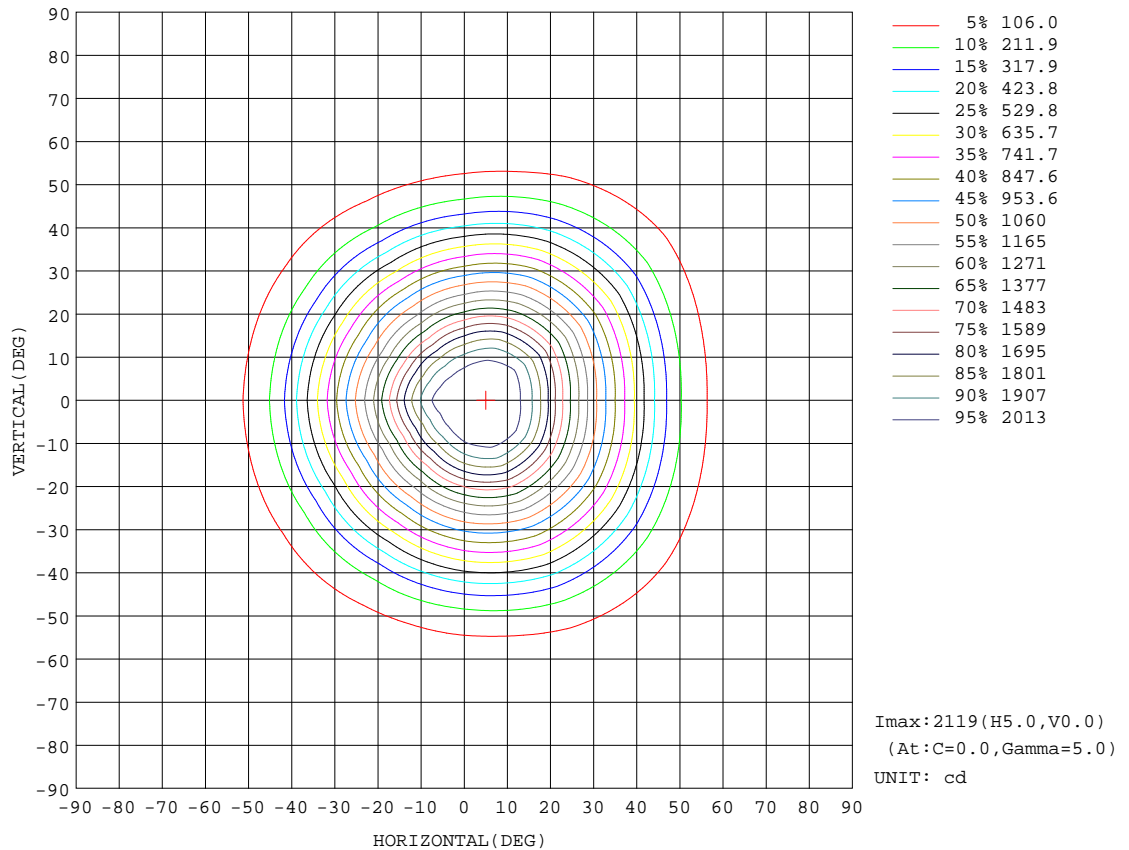
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	80	72	68	79	72	67	78	72	67	63
0.80	88	81	76	88	81	76	86	80	76	72
1.00	94	87	83	93	87	83	91	87	82	77
1.25	99	93	89	98	92	88	96	91	87	83
1.50	102	97	93	101	96	92	99	94	91	86
2.00	106	101	97	105	100	96	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	99	93
4.00	112	109	106	110	107	105	107	104	102	95
5.00	114	111	109	112	109	107	107	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:DAMIN  
 Test Date:2019-05-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

**ISOCANDELA DIAGRAM**

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:

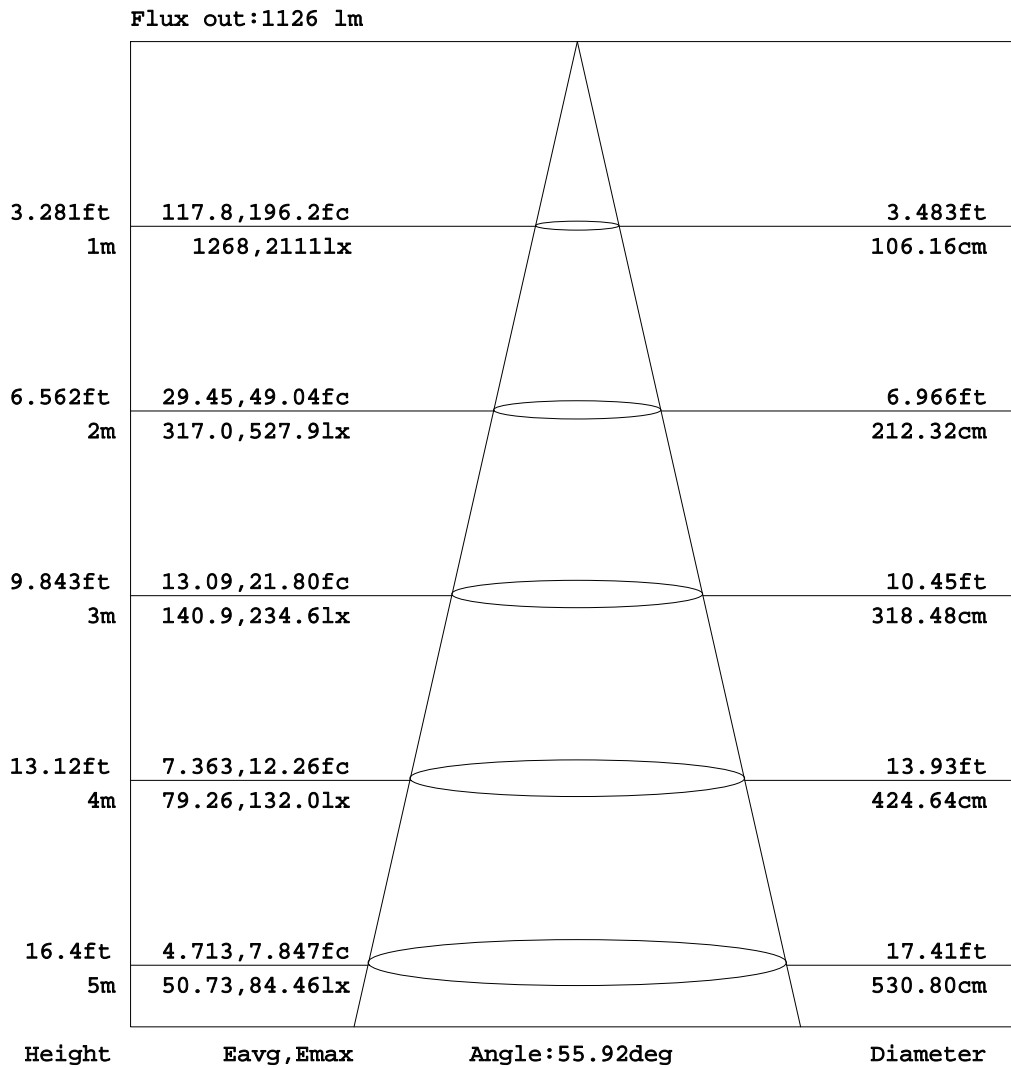


C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

AAI Figure

Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:



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

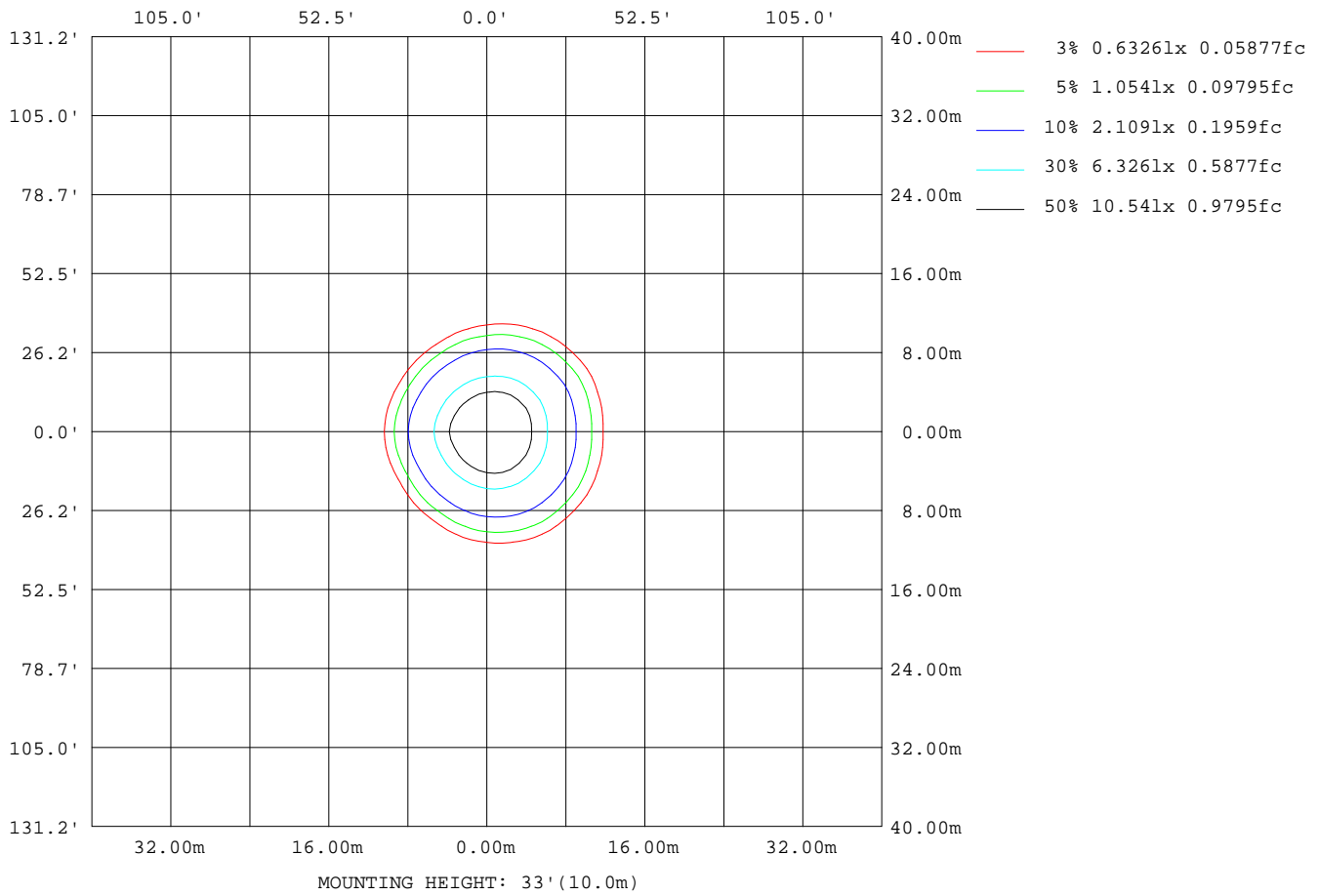
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:



**ISOLUX DIAGRAM**

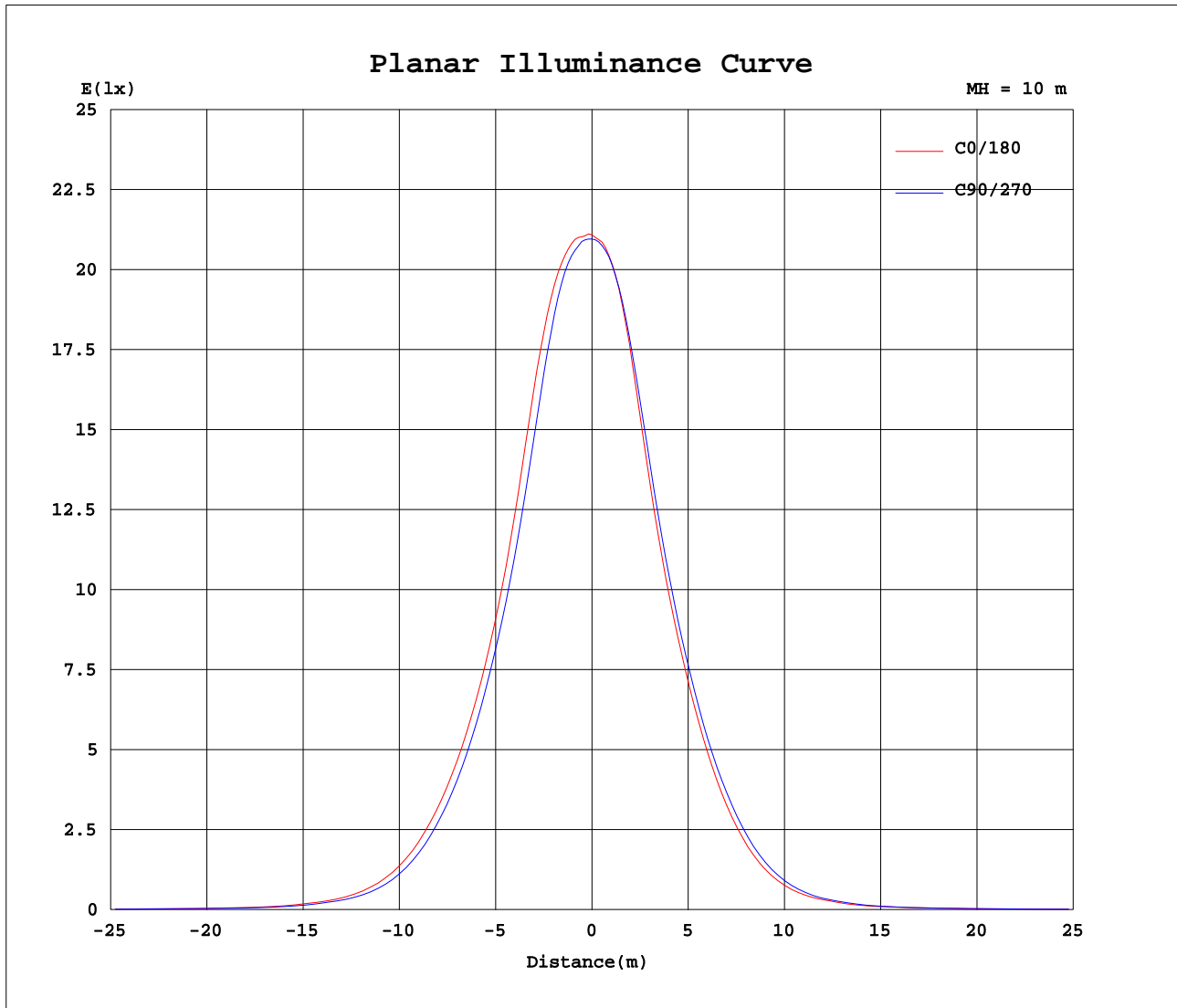
Test:U:240.6V I:0.0970A P:21.00W PF:0.8990 Lamp Flux:2057.94x1 lm		
NAME: CD20W-WW-W	TYPE:20W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.041	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-05-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.600m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: DAMIN  
 Test Date: 2019-05-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity: 65.0%  
 Test Distance: 9.600m [K=1.0000]  
 Remarks:

