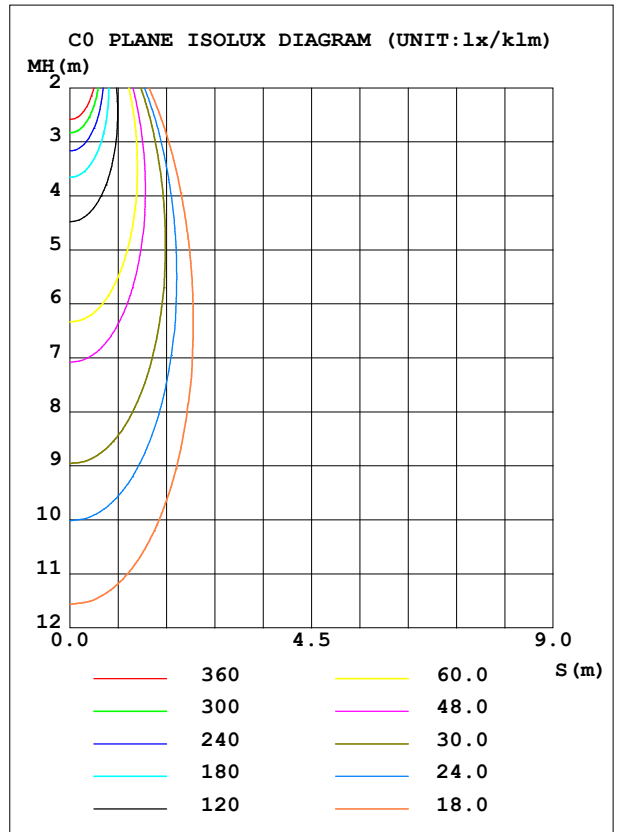
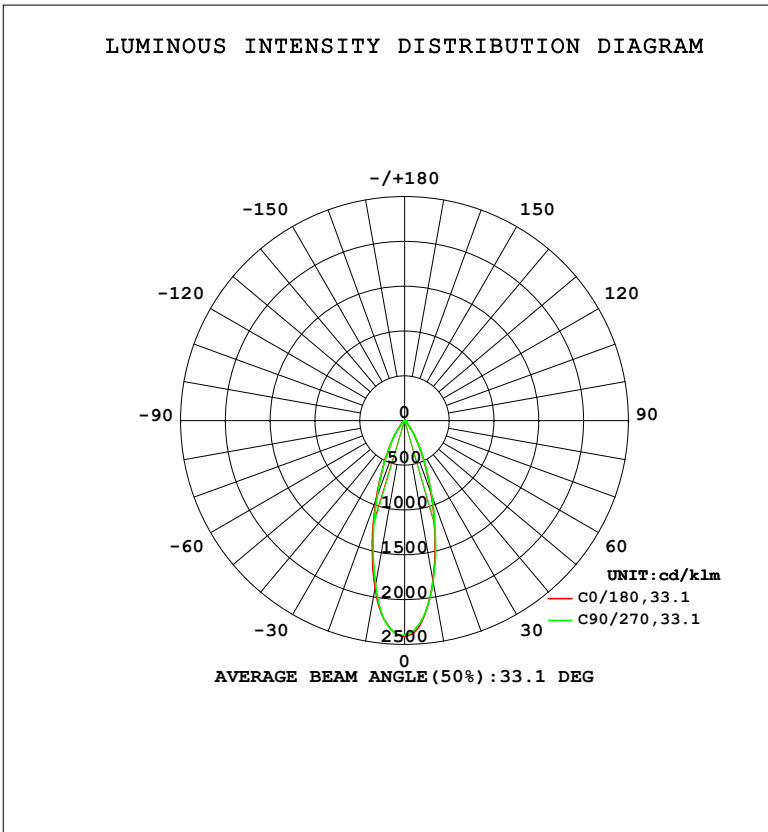


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz		
UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		Imax (cd/klm)	2408	S/MH (C0/180)	0.56
NOMINAL POWER (W)	15	LOR (%)	100.0	S/MH (C90/270)	0.55
RATED VOLTAGE (V)	120	TOTAL FLUX (lm/klm)	1000.00	η UP, DN (C0-180)	0.0, 51.0
NOMINAL FLUX (lm)	955.026	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 49.0
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE (V)	120	η down (%)	100.0	CIBSE SHR MAX	0.55



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3 °C
 Operators:
 Test Date: 2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity: 65.0%
 Test Distance: 3.090m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

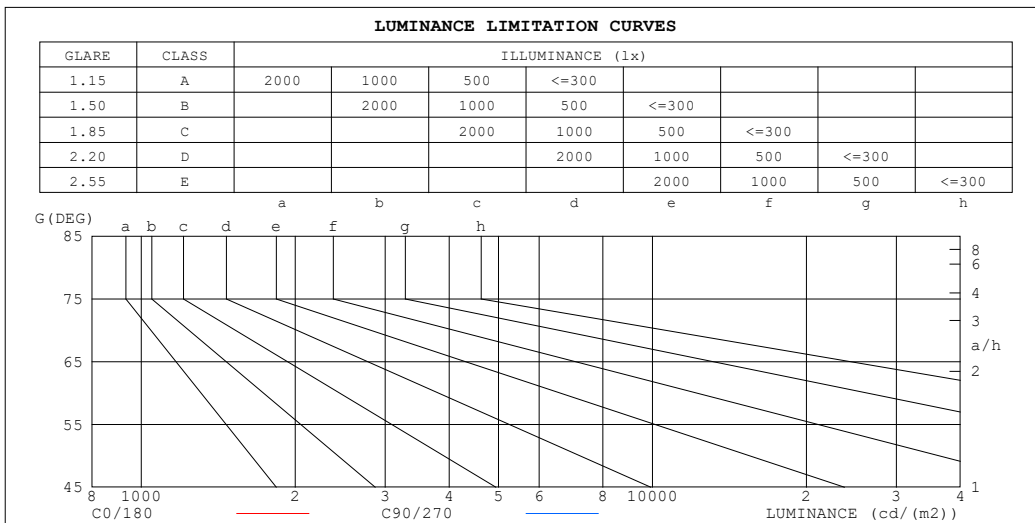
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1821	1880	1834	1885	1905	1817	1869	1820	0- 10	202.3	202.3	20.2,20.2
20	865.4	929.0	887.9	917.2	931.6	859.2	896.4	845.0	10- 20	369.6	571.8	57.2,57.2
30	313.6	348.5	324.9	334.7	341.2	319.9	331.7	309.7	20- 30	257.5	829.4	82.9,82.9
40	78.99	100.2	79.34	79.38	89.06	85.99	88.69	77.80	30- 40	114.5	943.8	94.4,94.4
50	21.37	23.81	23.02	24.13	23.76	22.97	24.73	24.05	40- 50	31.66	975.5	97.5,97.5
60	8.192	10.05	10.43	11.52	10.01	10.00	10.66	10.89	50- 60	14.78	990.3	99,99
70	3.087	3.677	3.923	4.302	3.475	3.573	3.966	3.561	60- 70	6.665	996.9	99.7,99.7
80	0.8355	1.279	1.565	1.476	1.062	1.188	1.568	1.165	70- 80	2.558	999.5	99.9,99.9
90	0.0514	0.0460	0.0456	0.0561	0.0421	0.0374	0.0413	0.0347	80- 90	0.5054	1000.0	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/klm									UNIT:lm/klm		

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3°C
 Operators:
 Test Date:2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity:65.0%
 Test Distance:3.090m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
	SUR.:	Shielding Angle:



LUMINANCE cd/ (m2)		
G (DEG)	C0/180	C90/270
85	9	59
80	41	77
75	62	89
70	78	99
65	97	146
60	141	179
55	197	250
50	286	308
45	381	410

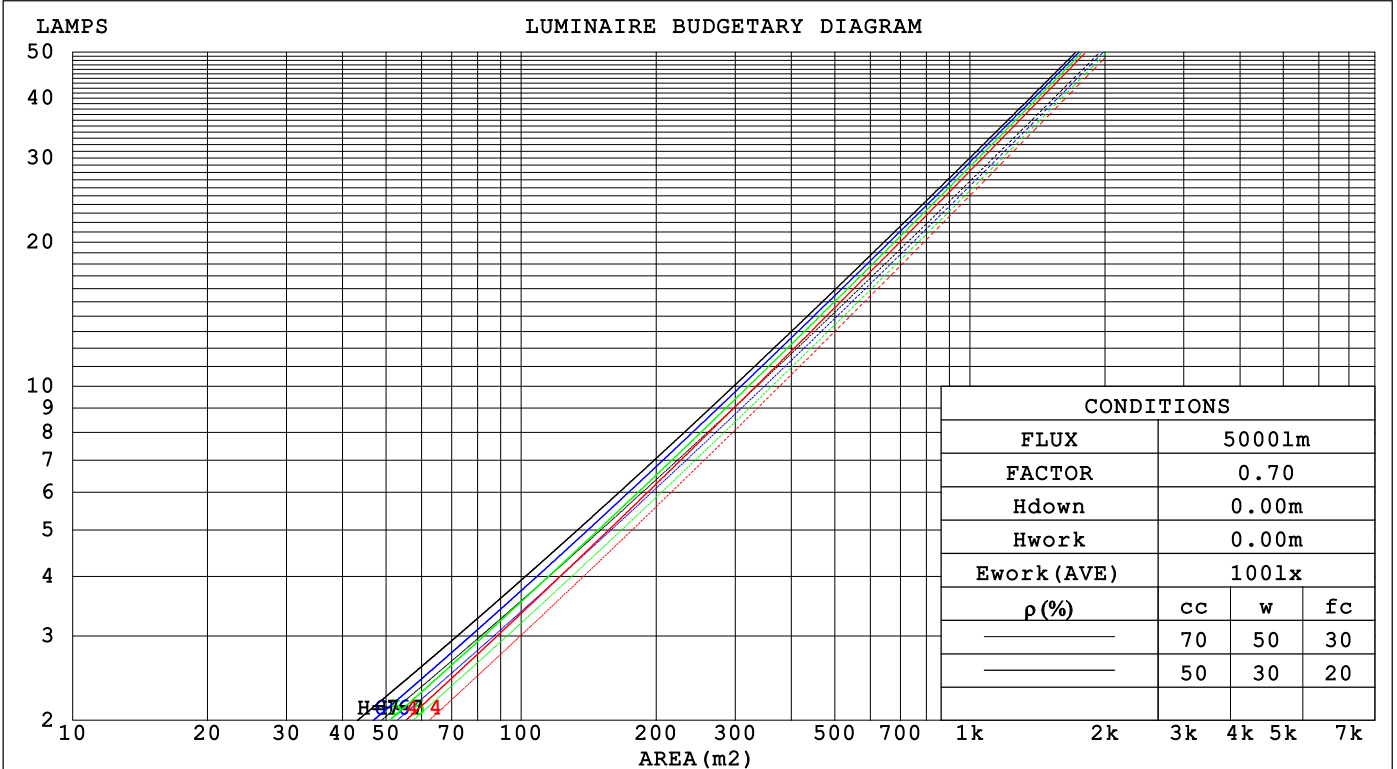
C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3°C
 Operators:
 Test Date:2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity:65.0%
 Test Distance:3.090m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz		
UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
MFR.: DIRECTLED	SUR.:	Shielding 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															
	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	1.12	1.09	1.07	1.09	1.07	1.06	1.05	1.04	1.02	1.02	1.00	.99	.98	.97	.96	.95
2.0	1.05	1.01	.98	1.03	.90	.97	.90	.97	.95	.97	.95	.93	.94	.93	.91	.89
3.0	.99	.94	.91	.97	.93	.90	.95	.92	.89	.93	.90	.87	.90	.88	.86	.85
4.0	.94	.89	.85	.92	.88	.84	.90	.86	.83	.88	.85	.82	.87	.84	.82	.80
5.0	.89	.84	.80	.88	.83	.79	.86	.82	.79	.85	.81	.78	.83	.80	.77	.76
6.0	.84	.79	.75	.84	.79	.75	.82	.78	.75	.81	.77	.74	.80	.76	.74	.72
7.0	.80	.75	.72	.80	.75	.71	.79	.74	.71	.77	.74	.71	.76	.73	.70	.69
8.0	.77	.72	.68	.76	.71	.68	.75	.71	.68	.74	.70	.67	.73	.70	.67	.66
9.0	.74	.68	.65	.73	.68	.65	.72	.68	.65	.71	.67	.64	.71	.67	.64	.63
10.0	.71	.66	.62	.70	.65	.62	.69	.65	.62	.69	.65	.62	.68	.64	.62	.61



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3 °C
 Operators:
 Test Date:2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity:65.0%
 Test Distance:3.090m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz		
UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
MFR.: DIRECTLED	SUR.:	Shielding Angle:

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.162	.092	.029	.156	.089	.028	.143	.082	.026	.132	.076	.024	.121	.070	.023	
2.0	.154	.084	.026	.148	.082	.025	.138	.077	.024	.128	.072	.022	.119	.067	.021	
3.0	.145	.077	.023	.140	.075	.023	.132	.071	.022	.123	.068	.021	.116	.064	.020	
4.0	.137	.071	.021	.133	.070	.021	.126	.067	.020	.119	.064	.019	.112	.061	.019	
5.0	.130	.066	.019	.127	.065	.019	.120	.063	.018	.114	.060	.018	.108	.058	.017	
6.0	.124	.062	.018	.121	.061	.018	.115	.059	.017	.110	.057	.017	.105	.055	.016	
7.0	.118	.058	.017	.115	.057	.016	.110	.056	.016	.106	.054	.016	.101	.053	.015	
8.0	.113	.055	.015	.110	.054	.015	.106	.053	.015	.102	.052	.015	.098	.050	.015	
9.0	.108	.052	.015	.106	.052	.014	.102	.050	.014	.098	.049	.014	.094	.048	.014	
10.0	.103	.050	.014	.101	.049	.014	.098	.048	.014	.095	.047	.013	.091	.046	.013	

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{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	.170	.157	.146	.146	.135	.126	.100	.093	.087	.057	.054	.051	.018	.017	.016	
2.0	.154	.133	.115	.132	.114	.099	.090	.079	.069	.052	.046	.041	.017	.015	.013	
3.0	.140	.113	.092	.120	.098	.080	.083	.068	.056	.048	.040	.033	.015	.013	.011	
4.0	.129	.098	.075	.111	.085	.065	.076	.059	.046	.044	.035	.027	.014	.011	.009	
5.0	.120	.087	.062	.103	.075	.054	.071	.052	.038	.041	.031	.023	.013	.010	.007	
6.0	.112	.077	.052	.096	.067	.045	.066	.047	.032	.038	.027	.019	.012	.009	.006	
7.0	.105	.069	.044	.090	.060	.039	.062	.042	.027	.036	.025	.016	.012	.008	.005	
8.0	.099	.063	.038	.085	.054	.033	.059	.038	.024	.034	.023	.014	.011	.007	.005	
9.0	.094	.057	.033	.081	.050	.029	.056	.035	.020	.033	.021	.012	.011	.007	.004	
10.0	.089	.053	.029	.077	.046	.025	.053	.032	.018	.031	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3°C
 Operators:
 Test Date:2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity:65.0%
 Test Distance:3.090m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
MFR.: DIRECTLED	SUR.:	Shielding 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	4.5	5.3	4.7	5.5	5.6	4.9	5.8	5.1	5.9	6.1
3H	4.4	5.2	4.7	5.4	5.6	4.9	5.7	5.2	5.9	6.1
4H	4.4	5.1	4.6	5.3	5.5	4.9	5.6	5.2	5.8	6.1
6H	4.3	5.0	4.6	5.2	5.5	4.9	5.5	5.2	5.8	6.0
8H	4.3	4.9	4.6	5.2	5.4	4.8	5.5	5.1	5.7	6.0
12H	4.2	4.8	4.5	5.1	5.4	4.8	5.4	5.1	5.7	6.0
4H 2H	4.4	5.1	4.6	5.3	5.5	4.8	5.5	5.1	5.7	6.0
3H	4.3	5.0	4.6	5.2	5.5	4.8	5.5	5.1	5.7	6.0
4H	4.3	4.9	4.6	5.2	5.5	4.8	5.4	5.2	5.7	6.0
6H	4.2	4.7	4.6	5.1	5.4	4.8	5.3	5.2	5.6	6.0
8H	4.2	4.7	4.6	5.0	5.4	4.8	5.3	5.2	5.6	6.0
12H	4.1	4.6	4.5	4.9	5.3	4.8	5.2	5.2	5.6	5.9
8H 4H	4.2	4.7	4.6	5.0	5.4	4.7	5.2	5.1	5.5	5.9
6H	4.1	4.5	4.6	4.9	5.3	4.7	5.1	5.1	5.5	5.9
8H	4.1	4.4	4.5	4.8	5.3	4.7	5.1	5.2	5.5	5.9
12H	4.0	4.3	4.5	4.8	5.2	4.7	5.0	5.2	5.4	5.9
12H 4H	4.1	4.6	4.5	4.9	5.3	4.7	5.1	5.1	5.5	5.9
6H	4.1	4.4	4.5	4.8	5.3	4.7	5.0	5.1	5.4	5.9
8H	4.0	4.3	4.5	4.8	5.3	4.7	5.0	5.1	5.4	5.9

Variations with the observer position at spacings(CIE Pub.117):		
S = 1.0H	+ 2.5 / - 4.8	+ 2.1 / - 3.8
1.5H	+ 4.3 / - 3.3	+ 4.0 / - 2.8
2.0H	+ 2.4 / - 2.3	+ 2.0 / - 1.7

CIE Pub.117, 955.0 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -0.2)
 Area: 0.111111 m2

C Range: 0 - 360DEG	γ Range: 0 - 90DEG
C Interval: 22.5DEG	γ Interval: 1.0DEG
Test Speed: HIGH	Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
Temperature:25.3°C	Humidity:65.0%
Operators:	Test Distance:3.090m [K=1.0000]
Test Date:2023-03-20	Remarks:

UTILIZATION FACTORS TABLE

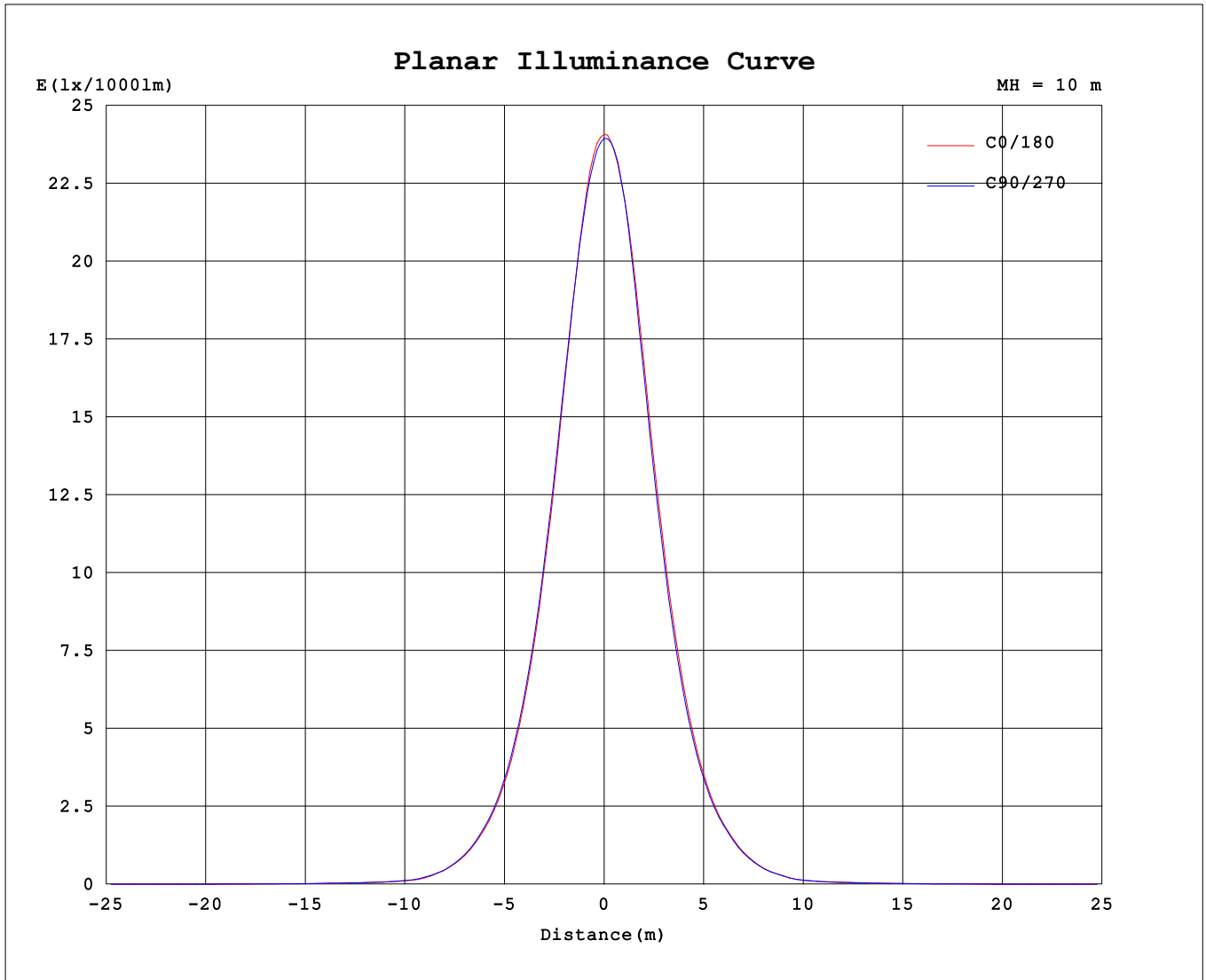
Test:U:119.88V I:0.1127A P:13.303W PF:0.9847 Freq:59.98Hz UTHDi:0.00% ITHDi:0.00% KDisp:0 Lamp Flux:955.026x1 lm		
NAME: 3INCH-15W-1000LM	TYPE:	WEIGHT:
SPEC.: 2700K 90	DIM.:	SERIAL No.:
MFR.: DIRECTLED	SUR.:	Shielding Angle:

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) $k(RI) \times RCR = 5$									
$k = 0.60$	88	82	78	88	82	78	87	81	78	74
0.80	95	90	86	95	89	86	94	89	85	82
1.00	100	94	91	99	94	90	97	94	90	86
1.25	104	98	95	103	98	95	101	97	94	90
1.50	106	102	98	105	101	98	103	99	97	92
2.00	109	105	102	107	104	101	105	102	99	94
2.50	110	107	104	109	105	103	106	103	101	95
3.00	112	109	106	110	107	105	107	105	103	96
4.00	114	111	109	112	110	108	108	106	105	98
5.00	115	113	111	113	111	110	109	108	106	99
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3°C
 Operators:
 Test Date:2023-03-20

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-SPEX500_V1 SYSTEM V2.00.460
 Humidity:65.0%
 Test Distance:3.090m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3 °C
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γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
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 Humidity: 65.0%
 Test Distance: 3.090m [K=1.0000]
 Remarks:

