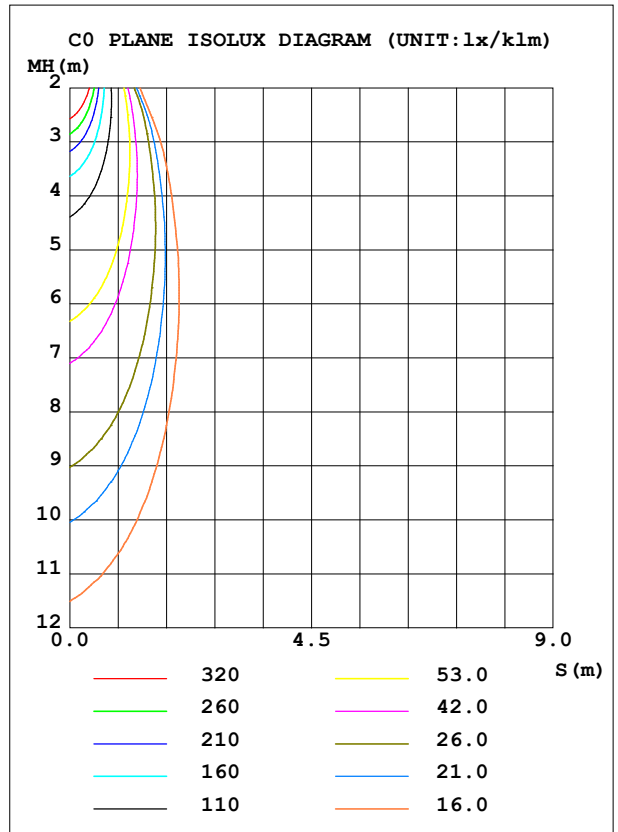
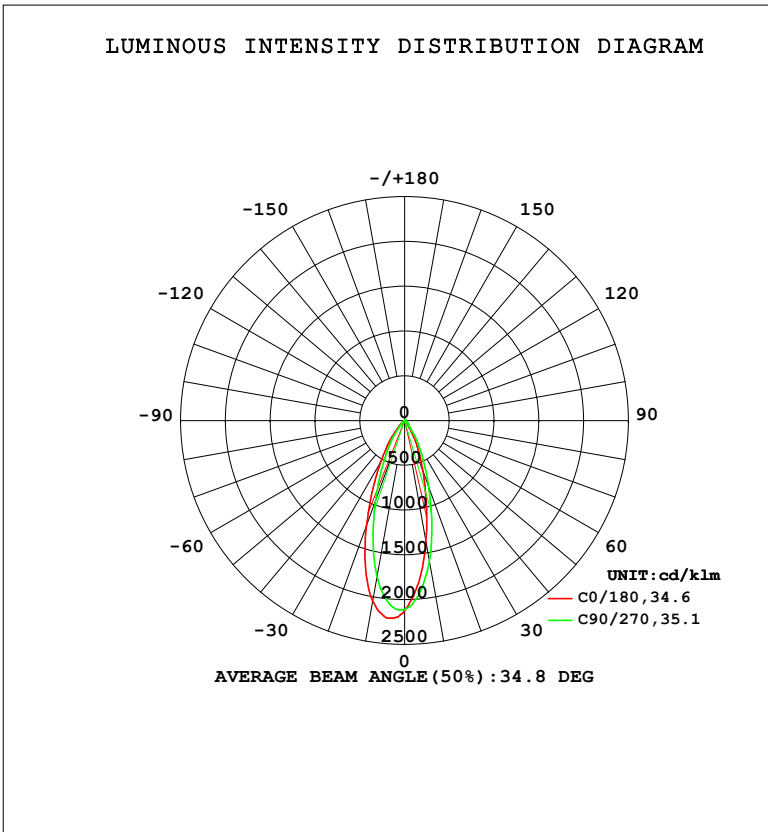


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA				Eff: 76.11 lm/W
MODEL	TUM0001-WH	I _{max} (cd/klm)	2219	S/MH (C0/180)	0.71	
NOMINAL POWER (W)	15	LOR (%)	100.0	S/MH (C90/270)	0.61	
RATED VOLTAGE (V)	120.0	TOTAL FLUX (lm/klm)	1000.0	η UP, DN (C0-180)	0.0, 45.8	
NOMINAL FLUX (lm)	1090.95	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 54.2	
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.50	
TEST VOLTAGE (V)	120	η down (%)	100.0	CIBSE SHR MAX	0.60	



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3 °C
 Operators:
 Test Date: 2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity: 65.0%
 Test Distance: 10.000m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

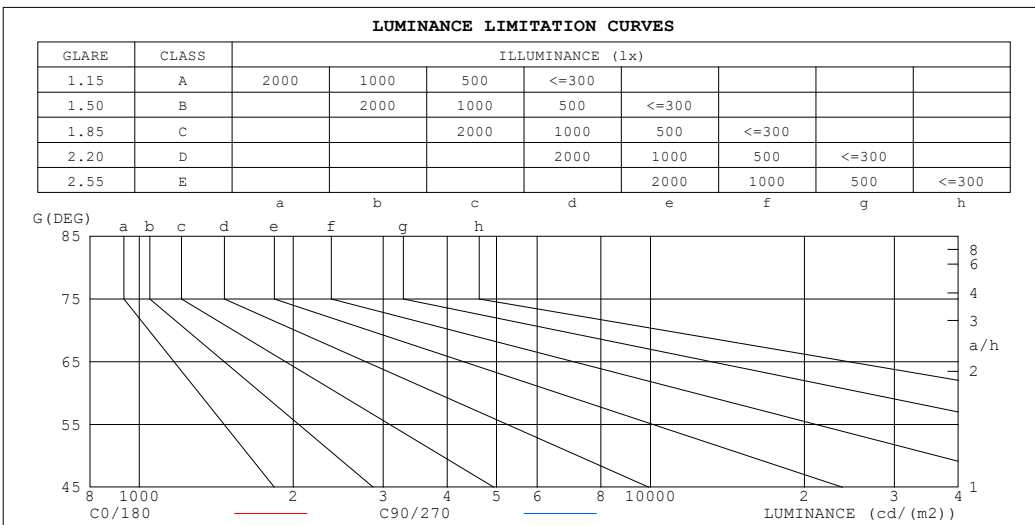
γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1377	1403	1595	1884	2050	1999	1773	1496	0- 10	181.3	181.3	18.1,18.1
20	601.5	620.5	790.4	1080	1246	1189	954.9	704.2	10- 20	355.4	536.6	53.7,53.7
30	198.1	219.0	312.3	454.8	536.2	522.2	387.4	246.2	20- 30	269.7	806.3	80.6,80.6
40	48.18	50.37	72.40	128.0	167.1	145.0	98.28	56.63	30- 40	126.1	932.5	93.2,93.2
50	15.25	16.69	24.38	37.81	44.78	39.73	28.04	18.13	40- 50	40.72	973.2	97.3,97.3
60	6.597	6.872	8.522	12.00	14.01	12.04	8.960	7.027	50- 60	14.92	988.1	98.8,98.8
70	3.878	3.992	4.648	5.681	6.035	5.553	4.712	4.013	60- 70	6.655	994.8	99.5,99.5
80	1.753	1.944	2.522	3.139	3.300	3.085	2.626	2.034	70- 80	3.815	998.6	99.9,99.9
90	0.0573	0.0573	0.0509	0.1464	1.050	0.5219	0	0	80- 90	1.411	1000	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℃
 Operators:
 Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	7	136
80	99	143
75	107	132
70	111	133
65	118	142
60	130	167
55	156	233
50	233	372
45	386	594

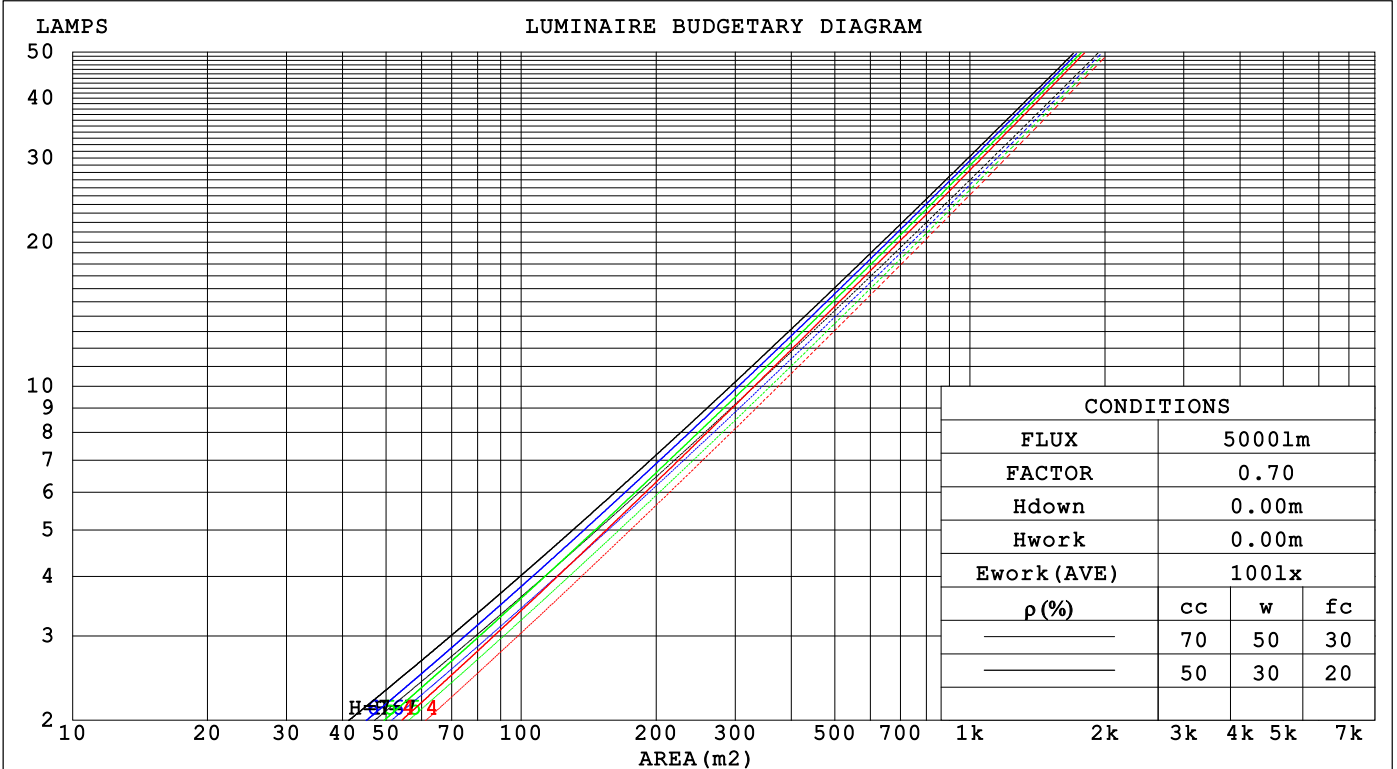
C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3 °C
 Operators:
 Test Date: 2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity: 65.0%
 Test Distance: 10.000m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	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			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	1.11	1.09	1.07	1.09	1.07	1.05	1.05	1.03	1.02	1.01	1.00	.99	.98	.97	.96	.94
2.0	1.04	1.01	.97	1.03	.99	.96	.99	.97	.94	.96	.94	.92	.94	.92	.90	.89
3.0	.98	.94	.90	.97	.93	.89	.94	.91	.88	.92	.89	.86	.90	.87	.85	.84
4.0	.93	.88	.84	.91	.87	.83	.89	.85	.82	.87	.84	.81	.86	.83	.80	.79
5.0	.88	.82	.78	.87	.82	.78	.85	.81	.77	.83	.80	.77	.82	.79	.76	.75
6.0	.83	.78	.74	.82	.77	.74	.81	.76	.73	.80	.76	.73	.78	.75	.72	.71
7.0	.79	.74	.70	.78	.73	.70	.77	.73	.69	.76	.72	.69	.75	.71	.69	.67
8.0	.75	.70	.66	.75	.70	.66	.74	.69	.66	.73	.69	.66	.72	.68	.65	.64
9.0	.72	.67	.63	.71	.66	.63	.71	.66	.63	.70	.66	.63	.69	.65	.62	.61
10.0	.69	.64	.60	.68	.63	.60	.68	.63	.60	.67	.63	.60	.66	.62	.60	.58



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3 °C
Operators:
Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
Humidity:65.0%
Test Distance:10.000m [K=1.0000]
Remarks:

WEC AND CCEC

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz		
Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	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	.168	.095	.030	.161	.092	.029	.148	.085	.027	.137	.079	.025	.126	.073	.024	
2.0	.159	.087	.027	.153	.084	.026	.142	.079	.025	.133	.075	.023	.124	.070	.022	
3.0	.150	.080	.024	.145	.078	.023	.136	.074	.022	.128	.070	.022	.120	.067	.021	
4.0	.142	.074	.022	.138	.072	.021	.130	.069	.021	.123	.066	.020	.116	.063	.019	
5.0	.134	.069	.020	.131	.067	.020	.124	.065	.019	.118	.062	.019	.112	.060	.018	
6.0	.128	.064	.018	.125	.063	.018	.119	.061	.018	.114	.059	.017	.109	.057	.017	
7.0	.122	.060	.017	.119	.059	.017	.114	.058	.017	.109	.056	.016	.105	.054	.016	
8.0	.116	.057	.016	.114	.056	.016	.110	.055	.016	.105	.053	.015	.101	.052	.015	
9.0	.111	.054	.015	.109	.053	.015	.105	.052	.015	.101	.051	.015	.098	.050	.014	
10.0	.107	.051	.014	.105	.051	.014	.101	.050	.014	.098	.049	.014	.095	.048	.014	

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	.125	.100	.093	.087	.057	.054	.050	.018	.017	.016	
2.0	.154	.133	.114	.132	.114	.099	.091	.079	.069	.052	.046	.040	.017	.015	.013	
3.0	.141	.113	.091	.121	.098	.079	.083	.068	.056	.048	.040	.033	.015	.013	.011	
4.0	.130	.099	.074	.112	.085	.065	.077	.059	.045	.044	.035	.027	.014	.011	.009	
5.0	.121	.087	.061	.104	.075	.053	.072	.052	.038	.042	.031	.022	.013	.010	.007	
6.0	.113	.077	.051	.097	.067	.045	.067	.047	.032	.039	.028	.019	.013	.009	.006	
7.0	.106	.070	.044	.091	.060	.038	.063	.042	.027	.037	.025	.016	.012	.008	.005	
8.0	.100	.063	.038	.086	.055	.033	.060	.038	.023	.035	.023	.014	.011	.007	.005	
9.0	.095	.058	.033	.082	.050	.028	.057	.035	.020	.033	.021	.012	.011	.007	.004	
10.0	.090	.053	.029	.078	.046	.025	.054	.033	.018	.032	.019	.011	.010	.006	.004	

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3℃
 Operators:
 Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	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	0.5	1.4	0.8	1.6	1.7	2.9	3.7	3.1	3.9	4.1
3H	0.7	1.5	1.0	1.7	1.9	3.0	3.7	3.2	3.9	4.1
4H	0.9	1.6	1.1	1.8	2.0	3.0	3.8	3.3	4.0	4.2
6H	1.0	1.7	1.2	1.9	2.1	3.1	3.8	3.4	4.0	4.3
8H	0.9	1.6	1.2	1.9	2.1	3.1	3.8	3.5	4.1	4.3
12H	0.9	1.5	1.2	1.8	2.1	3.2	3.8	3.5	4.1	4.4
4H 2H	0.5	1.3	0.8	1.5	1.7	2.7	3.5	3.0	3.7	3.9
3H	0.8	1.5	1.1	1.7	2.0	2.9	3.5	3.2	3.8	4.1
4H	1.0	1.6	1.4	1.9	2.2	3.0	3.6	3.4	3.9	4.2
6H	1.2	1.7	1.6	2.1	2.4	3.2	3.7	3.6	4.0	4.4
8H	1.2	1.7	1.6	2.0	2.4	3.3	3.8	3.7	4.1	4.5
12H	1.2	1.6	1.6	2.0	2.4	3.3	3.8	3.7	4.1	4.5
8H 4H	1.1	1.5	1.5	1.9	2.3	3.0	3.5	3.4	3.8	4.2
6H	1.3	1.7	1.8	2.1	2.5	3.2	3.6	3.6	4.0	4.4
8H	1.3	1.7	1.8	2.1	2.5	3.3	3.7	3.8	4.1	4.5
12H	1.3	1.6	1.7	2.0	2.5	3.4	3.7	3.9	4.1	4.6
12H 4H	1.0	1.5	1.5	1.9	2.2	2.9	3.4	3.3	3.7	4.1
6H	1.3	1.7	1.8	2.1	2.5	3.2	3.5	3.6	3.9	4.4
8H	1.3	1.6	1.8	2.1	2.5	3.3	3.6	3.8	4.1	4.5

Variations with the observer position at spacings(CIE Pub.117):		
S = 1.0H	+ 1.4 / - 2.1	+ 2.6 / - 2.3
1.5H	+ 2.6 / - 2.0	+ 4.1 / - 2.6
2.0H	+ 2.6 / - 1.2	+ 3.7 / - 1.6

CIE Pub.117, 1091 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 0.3)
Area: 0.111111 m2

C Range: 0 - 360DEG	γ Range: 0 - 90DEG
C Interval: 22.5DEG	γ Interval: 0.5DEG
Test Speed: HIGH	Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
Temperature:25.3℃	Humidity:65.0%
Operators:	Test Distance:10.000m [K=1.0000]
Test Date:2024-10-21	Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

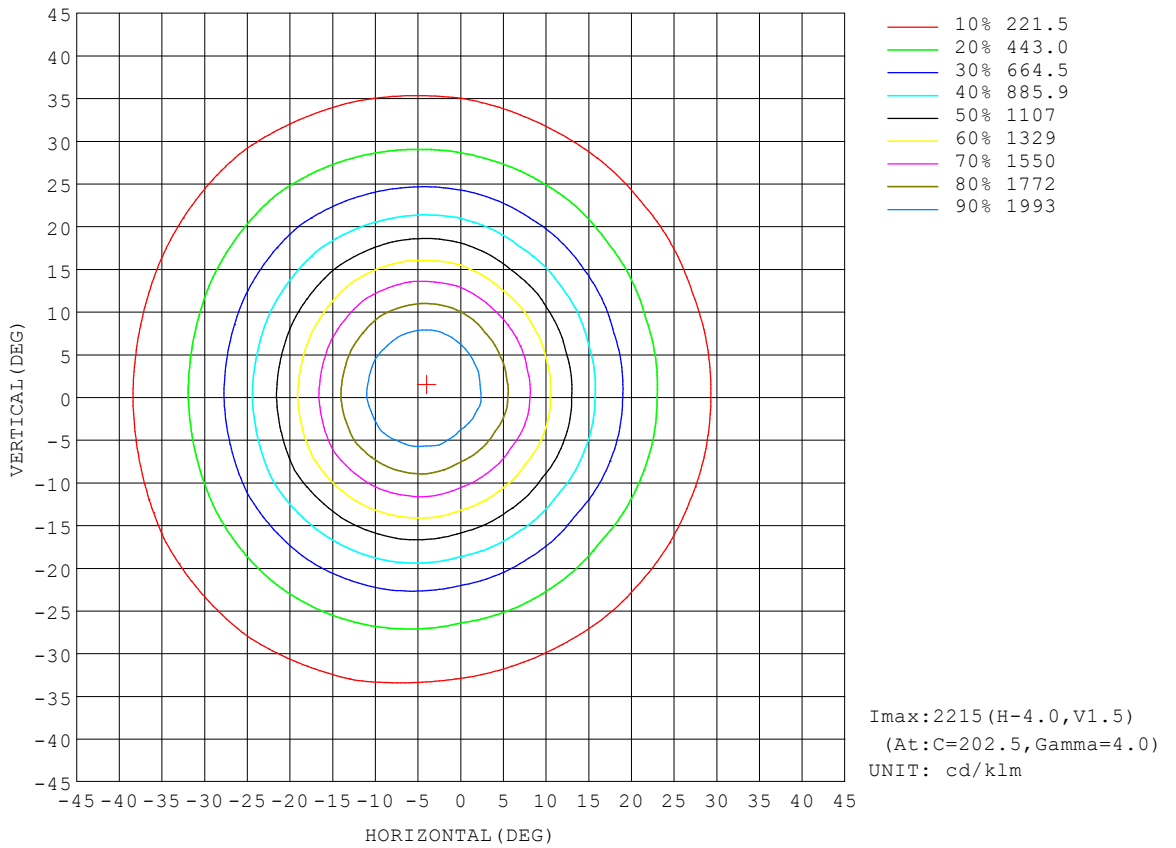
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	87	81	77	87	81	77	86	80	77	73
0.80	95	89	85	94	89	85	93	88	85	81
1.00	99	94	90	98	93	90	97	93	89	85
1.25	103	98	95	102	97	94	100	96	93	89
1.50	106	101	98	105	100	97	102	99	96	92
2.00	109	104	101	107	103	100	104	101	99	94
2.50	110	106	103	109	105	102	105	103	101	95
3.00	112	108	106	110	107	104	107	104	102	96
4.00	114	111	109	112	109	107	108	106	105	98
5.00	115	113	111	113	111	109	109	107	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:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

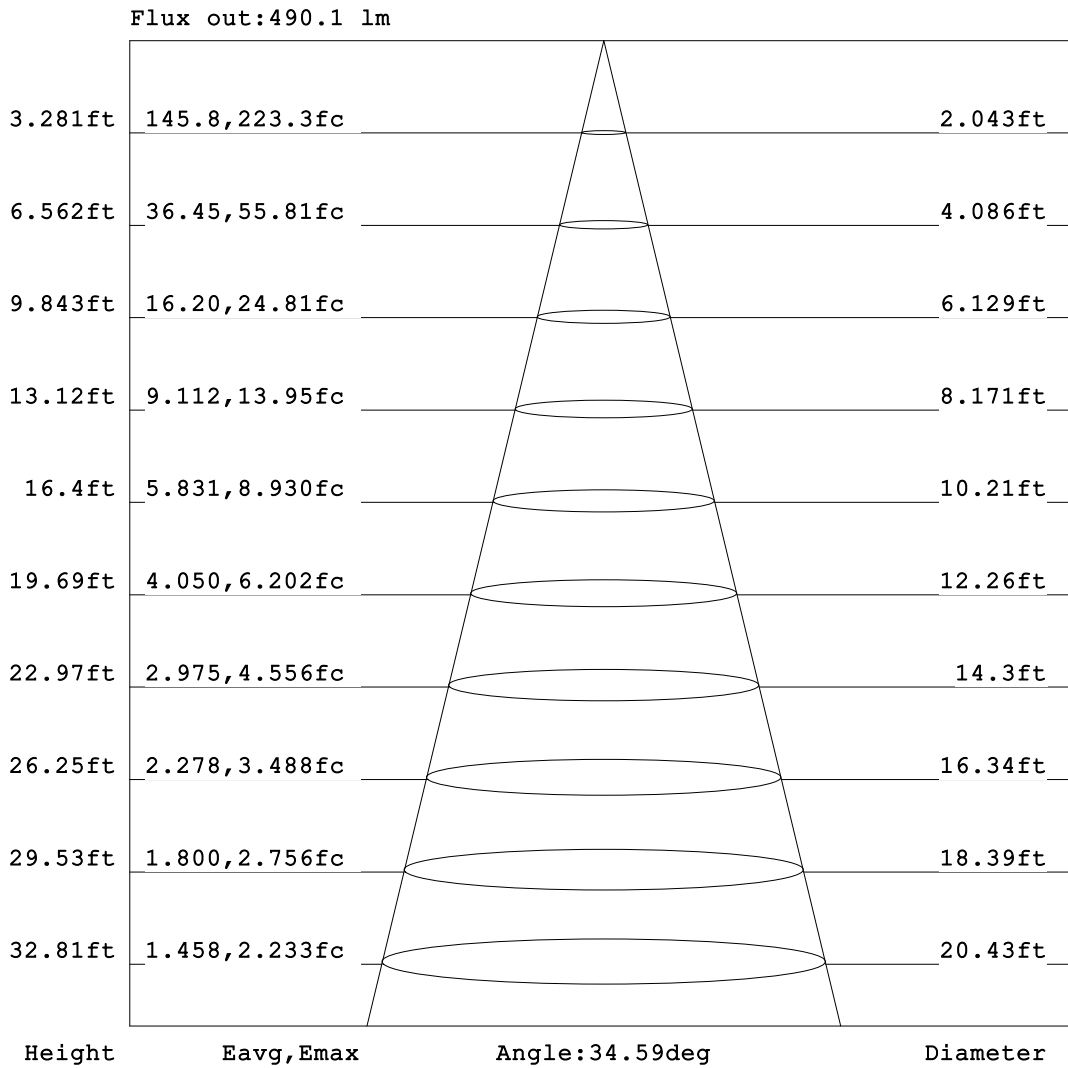


C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3℃
Operators:
Test Date:2024-10-21

γ Range: 0 - 90DEG
γ Interval: 0.5DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
Humidity:65.0%
Test Distance:10.000m [K=1.0000]
Remarks:

AAI Figure

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



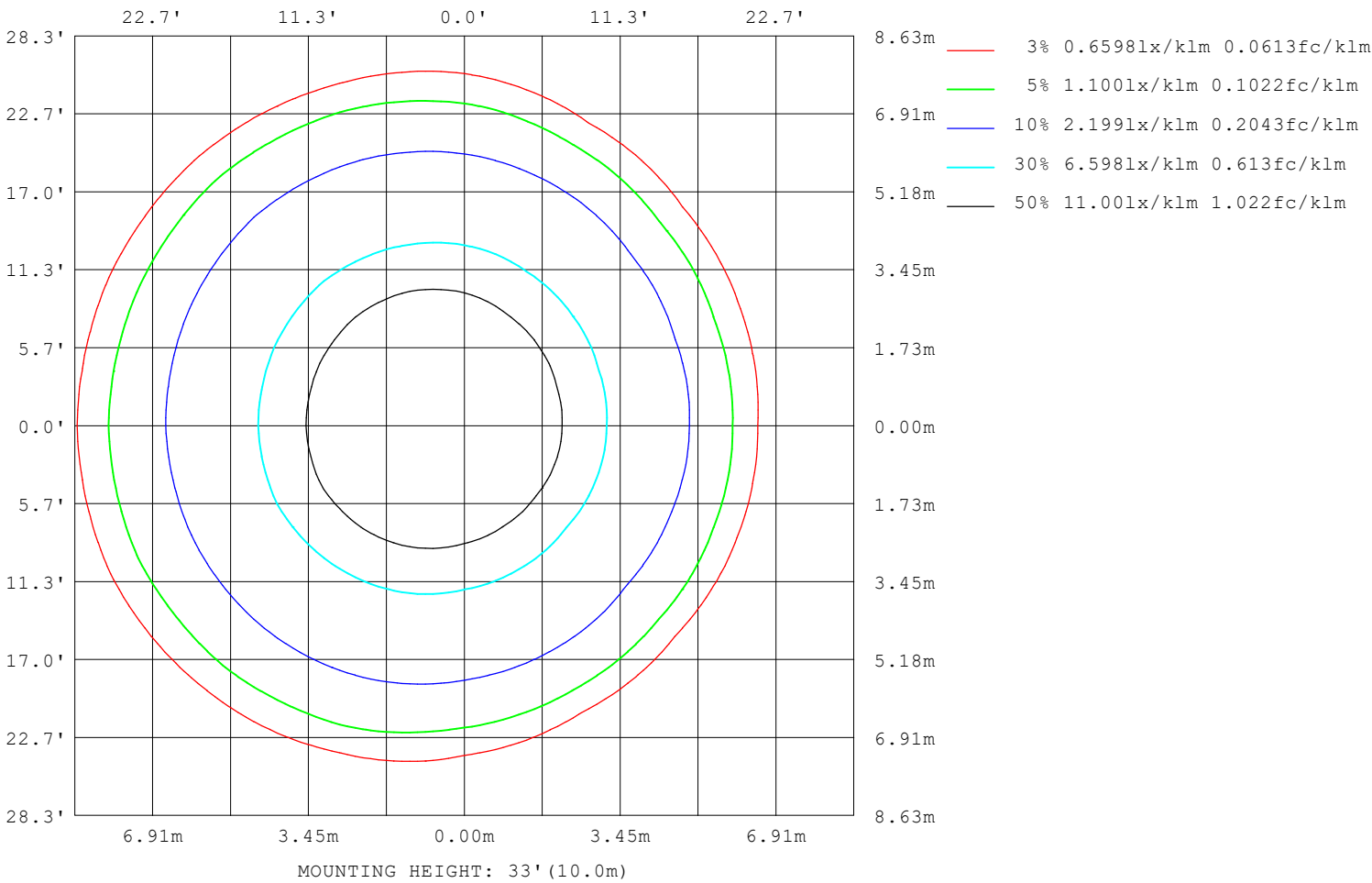
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3°C
 Operators:
 Test Date: 2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity: 65.0%
 Test Distance: 10.000m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3 °C
 Operators:
 Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

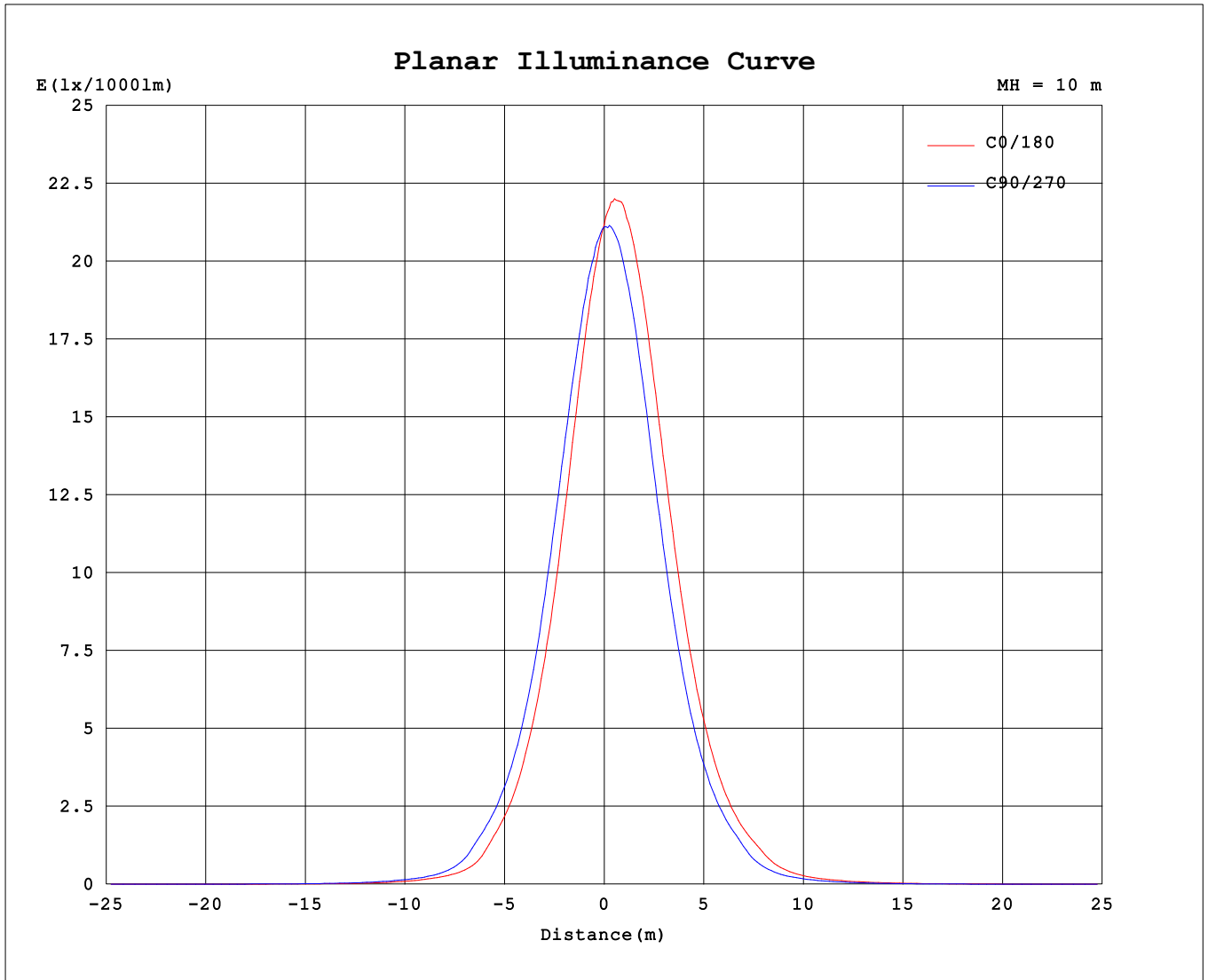
AvgL	cd/m2
L_0~180 (65) av	159
L_0~180 (75) av	138
L_0~180 (85) av	139
L_90~270 (65) av	145
L_90~270 (75) av	133
L_90~270 (85) av	161
L_45 (65) av	151
L_45 (75) av	135
L_45 (85) av	129

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3℃
 Operators:
 Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3 °C
 Operators:
 Test Date: 2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity: 65.0%
 Test Distance: 10.000m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.49V I:0.1213A P:14.334W PF:0.9807 Freq:59.98Hz Lamp Flux:1090.95x1 lm		
NAME: TUM0001-WH	TYPE:	WEIGHT:
SPEC.: 4000K	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

Table--1

UNIT: cd/klm

C (DEG) \ γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	2120	2129	2121	2116	2110	2115	2117	2118	2120	2129	2121	2116	2110	2115	2117	2118			
5	1817	1819	1816	1871	1930	2030	2107	2179	2215	2210	2181	2118	2045	1960	1890	1830			
10	1377	1380	1403	1486	1595	1749	1884	2002	2050	2048	1999	1901	1773	1617	1496	1412			
15	940	946	973	1062	1178	1348	1511	1649	1695	1689	1631	1522	1362	1191	1067	976			
20	602	603	620	691	790	938	1080	1206	1246	1239	1189	1083	955	812	704	633			
25	360	357	372	438	506	613	715	815	840	839	804	715	622	522	432	377			
30	198	200	219	255	312	387	455	513	536	539	522	457	387	314	246	207			
35	83.7	86.5	89.0	106	151	227	276	306	325	324	311	276	222	145	107	92.2			
40	48.2	48.6	50.4	58.1	72.4	97.4	128	158	167	162	145	118	98.3	69.2	56.6	50.4			
45	27.8	28.1	29.8	35.1	42.8	53.3	65.0	76.2	78.0	76.9	69.2	60.1	50.4	39.7	32.9	29.0			
50	15.2	15.6	16.7	19.7	24.4	31.4	37.8	43.2	44.8	43.0	39.7	34.4	28.0	21.7	18.1	16.0			
55	9.12	9.29	9.77	11.2	13.6	17.5	21.2	24.4	25.2	24.2	21.9	18.4	15.1	12.0	10.3	9.29			
60	6.60	6.63	6.87	7.46	8.52	10.2	12.0	13.7	14.0	13.4	12.0	10.4	8.96	7.79	7.03	6.63			
65	5.09	5.05	5.23	5.55	6.11	6.99	7.86	8.65	8.57	8.31	7.71	7.01	6.36	5.75	5.27	5.10			
70	3.88	3.85	3.99	4.22	4.65	5.15	5.68	6.07	6.04	5.86	5.55	5.15	4.71	4.35	4.01	3.89			
75	2.82	2.79	2.92	3.10	3.49	3.85	4.25	4.48	4.46	4.39	4.12	3.89	3.54	3.27	3.00	2.87			
80	1.75	1.73	1.94	2.17	2.52	2.81	3.14	3.29	3.30	3.29	3.08	2.94	2.63	2.39	2.03	1.79			
85	0.06	0.05	0.06	0.06	1.20	1.86	2.27	2.39	2.40	2.42	2.26	2.14	1.66	0.53	0.00	0.00			
90	0.06	0.06	0.06	0.06	0.05	0.05	0.15	0.81	1.05	1.00	0.52	0.01	0.00	0.00	0.00	0.00			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3℃
 Operators:
 Test Date:2024-10-21

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.00.479
 Humidity:65.0%
 Test Distance:10.000m [K=1.0000]
 Remarks: