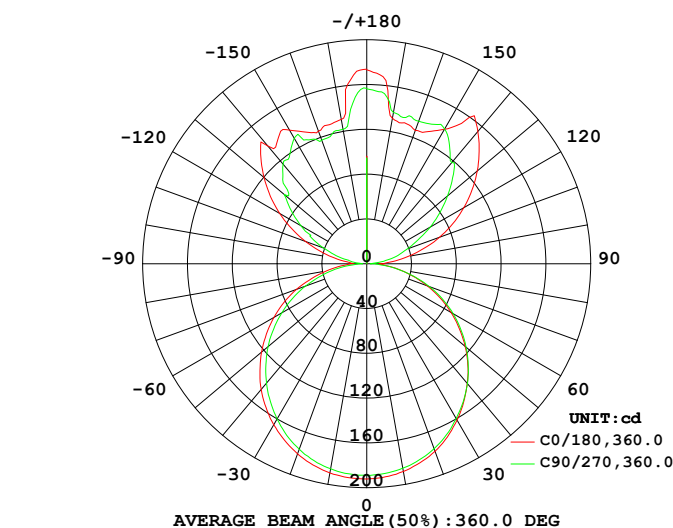


## LUMINAIRE PHOTOMETRIC TEST REPORT

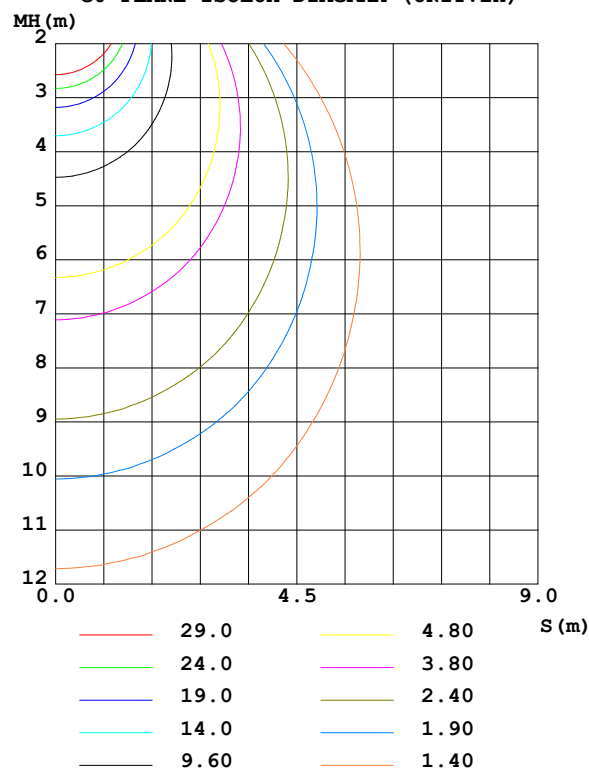
Test:U:219.97V I:0.0998A P:20.541W PF:0.9361 Freq:50.00Hz		
Lamp Flux:1033.92x1 lm		
NAME: SB-U101 20WSZ 20W		WEIGHT:
TYPE: SPEC.: 4000K	DIM.: 15.75"	SERIAL No.:
MFR.: SNOWBALL	SUR.: 400mm	

DATA OF LAMP		PHOTOMETRIC DATA Eff: 50.34 lm/W			
MODEL		I <sub>max</sub> (cd)	192.1	S/MH (C0/180)	1.28
NOMINAL POWER(W)		LOR (%)	100.0	S/MH (C90/270)	1.26
RATED VOLTAGE (V)	--	TOTAL FLUX(lm)	1033.9	η UP,DN (C0-180)	23.0,27.8
NOMINAL FLUX(lm)	1033.92	CIE CLASS	DIFFUSE	η UP,DN (C180-360)	21.4,27.8
LAMPS INSIDE	1	η up (%)	44.4	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	--	η down (%)	55.6	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature:25.3℃  
Operators:DAMIN  
Test Date:2023-09-20

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity:65.0%  
Test Distance:9.000m [K=1.0000]  
Remarks:

## ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	188.3	186.9	185.3	183.9	189.7	187.7	185.9	183.8	0~ 10	17.92	17.92	1.73,1.73
20	178.2	176.9	175.8	174.7	180.7	178.4	176.2	174.3	10~ 20	51.39	69.31	6.7,6.7
30	161.2	160.6	159.8	159.8	166.1	162.8	160.1	158.2	20~ 30	78.03	147.3	14.3,14.3
40	139.7	139.7	139.8	140.9	146.7	143.1	139.2	137.0	30~ 40	94.48	241.8	23.4,23.4
50	114.7	115.4	115.8	117.0	122.5	119.1	115.0	112.7	40~ 50	99.35	341.2	33,33
60	86.77	87.72	89.02	90.66	95.67	92.02	87.59	85.21	50~ 60	92.13	433.3	41.9,41.9
70	57.36	58.85	59.40	62.57	66.72	63.38	57.95	55.42	60~ 70	74.13	507.4	49.1,49.1
80	28.93	29.36	28.06	32.88	36.28	33.65	28.68	26.94	70~ 80	47.47	554.9	53.7,53.7
90	13.45	8.173	4.033	10.38	13.88	9.210	3.881	9.589	80~ 90	19.62	574.5	55.6,55.6
100	37.17	25.74	17.35	21.33	28.86	23.40	15.92	25.74	90~100	15.64	590.2	57.1,57.1
110	69.16	49.00	38.30	43.11	58.01	43.97	40.69	48.20	100~110	38.02	628.2	60.8,60.8
120	100.1	77.06	65.36	68.60	89.64	70.92	67.69	66.99	110~120	62.19	690.4	66.8,66.8
130	128.8	104.1	94.07	92.20	119.6	92.38	96.10	81.79	120~130	76.95	767.3	74.2,74.2
140	154.3	106.2	118.2	89.65	137.4	90.31	116.2	95.30	130~140	84.62	851.9	82.4,82.4
150	138.6	124.3	138.9	115.3	137.8	107.3	129.6	110.8	140~150	75.52	927.5	89.7,89.7
160	126.8	133.9	135.6	127.9	126.1	113.6	117.6	115.3	150~160	57.38	984.8	95.3,95.3
170	132.0	137.0	137.3	124.0	130.9	113.0	121.9	113.1	160~170	35.61	1020	98.7,98.7
180	173.2	159.4	156.2	150.2	173.7	160.0	156.7	151.3	170~180	13.47	1034	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 291.65 lm

%lum = 28.2%

%lamp = 28.2%

Conical surface Flux(120deg): 433.29 lm

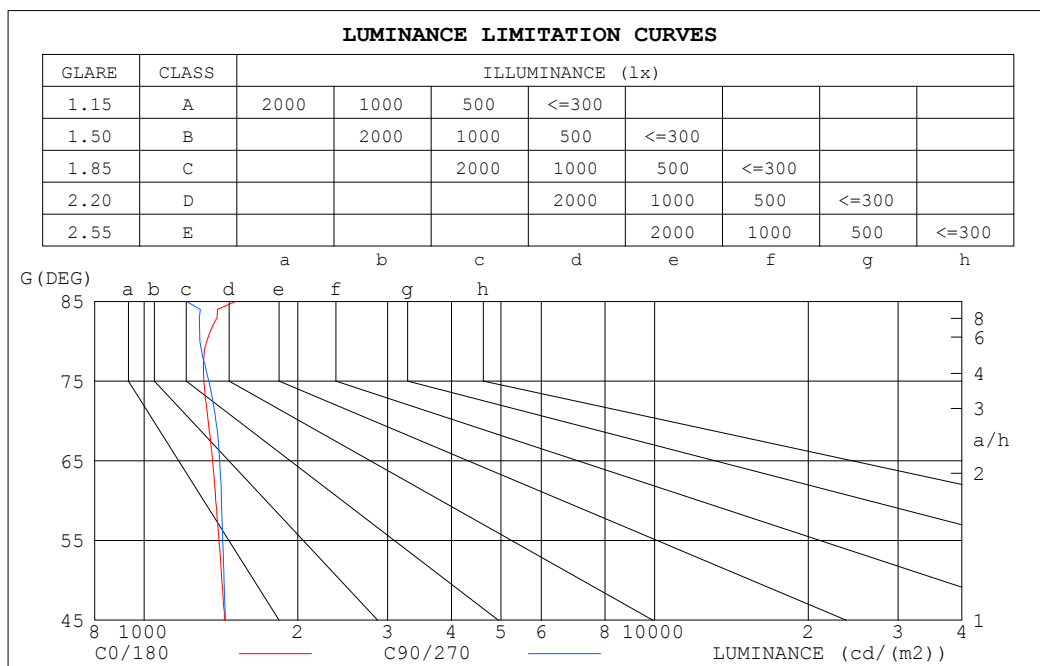
%lum = 41.9%

%lamp = 41.9%

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3℃  
 Operators:DAMIN  
 Test Date:2023-09-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 $\gamma$  Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

## LUMINANCE LIMITATION CURVES



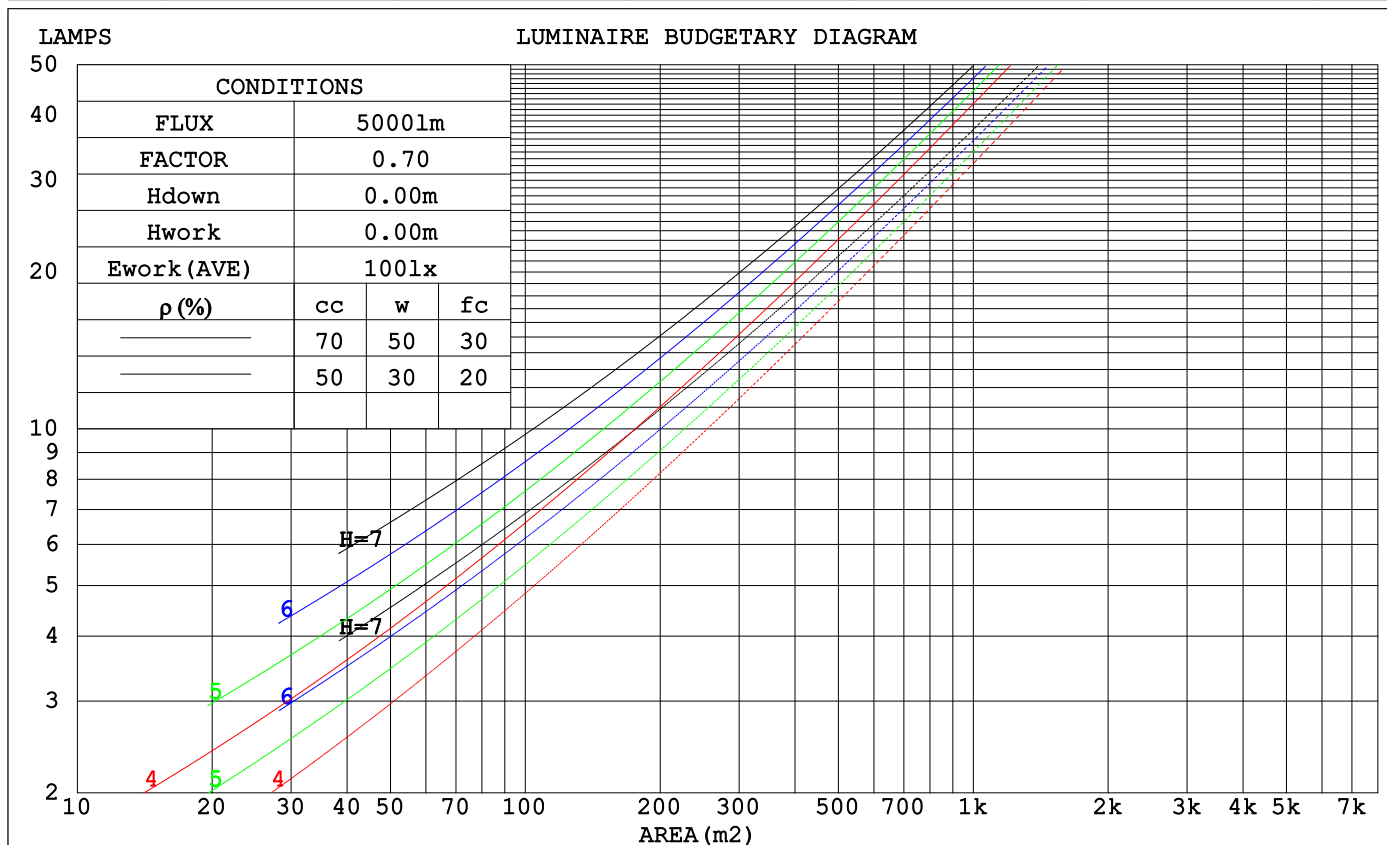
LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	1510	1212
80	1327	1286
75	1309	1339
70	1335	1383
65	1362	1407
60	1382	1418
55	1402	1425
50	1420	1434
45	1436	1443

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature: 25.3°C  
Operators: DAMIN  
Test Date: 2023-09-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity: 65.0%  
Test Distance: 9.000m [K=1.0000]  
Remarks:

## 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	1.08	1.08	1.08	1.01	1.01	1.01	.86	.86	.86	.73	.73	.73	.61	.61	.61	.56
1.0	.94	.90	.86	.87	.84	.80	.75	.72	.70	.64	.62	.60	.53	.52	.50	.45
2.0	.81	.75	.69	.76	.70	.65	.65	.61	.57	.55	.52	.49	.46	.44	.42	.37
3.0	.71	.64	.57	.66	.60	.54	.57	.52	.48	.49	.45	.41	.41	.38	.35	.31
4.0	.63	.55	.48	.59	.51	.46	.51	.45	.40	.43	.39	.35	.36	.33	.30	.27
5.0	.56	.47	.41	.52	.45	.39	.45	.39	.35	.39	.34	.30	.32	.29	.26	.23
6.0	.50	.42	.36	.47	.39	.34	.41	.34	.30	.35	.30	.26	.29	.26	.23	.20
7.0	.45	.37	.31	.42	.35	.30	.37	.31	.26	.32	.27	.23	.27	.23	.20	.18
8.0	.41	.33	.27	.38	.31	.26	.33	.28	.23	.29	.24	.21	.24	.21	.18	.16
9.0	.37	.30	.24	.35	.28	.23	.31	.25	.21	.26	.22	.18	.23	.19	.16	.14
10.0	.34	.27	.22	.32	.25	.21	.28	.23	.19	.24	.20	.17	.21	.17	.15	.13



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-09-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

## 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	.300	.171	.054	.279	.159	.051	.241	.138	.044	.206	.119	.038	.173	.100	.032	
2.0	.276	.151	.046	.257	.142	.044	.222	.124	.038	.190	.107	.033	.160	.091	.029	
3.0	.253	.135	.040	.236	.126	.038	.204	.111	.034	.175	.096	.029	.147	.082	.025	
4.0	.233	.121	.036	.217	.114	.034	.188	.100	.030	.161	.086	.026	.136	.074	.022	
5.0	.215	.110	.032	.201	.103	.030	.174	.090	.027	.149	.078	.023	.125	.067	.020	
6.0	.199	.100	.029	.186	.094	.027	.161	.083	.024	.138	.072	.021	.116	.061	.018	
7.0	.185	.092	.026	.173	.086	.025	.150	.076	.022	.129	.066	.019	.109	.056	.017	
8.0	.173	.085	.024	.162	.080	.023	.141	.070	.020	.121	.061	.018	.102	.052	.015	
9.0	.162	.078	.022	.152	.074	.021	.132	.065	.018	.113	.057	.016	.096	.049	.014	
10.0	.153	.073	.020	.143	.069	.019	.124	.061	.017	.107	.053	.015	.090	.045	.013	

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	.529	.529	.529	.452	.452	.452	.309	.309	.309	.177	.177	.177	.057	.057	.057		
1.0	.521	.498	.476	.446	.427	.410	.305	.294	.284	.175	.170	.165	.056	.055	.053		
2.0	.514	.476	.444	.440	.409	.383	.302	.283	.267	.174	.165	.157	.056	.053	.051		
3.0	.507	.460	.422	.434	.397	.366	.298	.275	.257	.172	.161	.151	.055	.052	.050		
4.0	.500	.448	.408	.429	.387	.354	.295	.270	.249	.171	.158	.148	.055	.051	.049		
5.0	.493	.438	.398	.423	.379	.346	.292	.265	.244	.169	.156	.145	.054	.051	.048		
6.0	.487	.431	.390	.418	.373	.340	.289	.261	.241	.167	.154	.143	.054	.050	.047		
7.0	.480	.424	.385	.413	.368	.336	.286	.258	.238	.166	.152	.142	.054	.050	.047		
8.0	.475	.419	.381	.409	.364	.332	.283	.255	.236	.164	.151	.140	.053	.049	.047		
9.0	.469	.415	.378	.404	.360	.330	.280	.253	.234	.163	.149	.140	.053	.049	.046		
10.0	.464	.411	.376	.400	.357	.328	.277	.251	.233	.162	.148	.139	.052	.049	.046		

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: 10.0deg/s  
 Temperature:25.3℃  
 Operators:DAMIN  
 Test Date:2023-09-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity:65.0%  
 Test Distance:9.000m [K=1.0000]  
 Remarks:

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	11.2	12.2	12.0	13.0	14.1	11.3	12.3	12.1	13.1	14.1
3H	12.8	13.7	13.6	14.6	15.6	12.9	13.8	13.7	14.7	15.7
4H	13.5	14.3	14.3	15.2	16.2	13.6	14.4	14.4	15.3	16.4
6H	14.0	14.8	14.9	15.7	16.8	14.1	14.9	14.9	15.7	16.8
8H	14.2	15.0	15.1	15.9	17.0	14.3	15.0	15.1	15.9	17.0
12H	14.4	15.1	15.3	16.0	17.1	14.4	15.1	15.3	16.0	17.1
4H 2H	11.7	12.6	12.6	13.4	14.5	11.8	12.7	12.6	13.5	14.6
3H	13.5	14.2	14.4	15.1	16.2	13.6	14.3	14.5	15.2	16.3
4H	14.3	14.9	15.2	15.8	17.0	14.4	15.0	15.3	15.9	17.1
6H	15.0	15.5	15.9	16.5	17.6	15.0	15.6	15.9	16.5	17.7
8H	15.3	15.8	16.2	16.7	17.9	15.2	15.8	16.2	16.7	17.9
12H	15.5	16.0	16.4	16.9	18.1	15.4	15.9	16.3	16.8	18.0
8H 4H	14.5	15.0	15.5	16.0	17.2	14.6	15.1	15.5	16.0	17.2
6H	15.4	15.8	16.3	16.8	18.0	15.4	15.8	16.3	16.8	18.0
8H	15.8	16.2	16.8	17.1	18.4	15.7	16.1	16.7	17.1	18.3
12H	16.1	16.5	17.1	17.5	18.7	16.0	16.3	16.9	17.3	18.5
12H 4H	14.5	15.0	15.4	15.9	17.1	14.6	15.1	15.5	16.0	17.2
6H	15.4	15.8	16.4	16.8	18.0	15.4	15.8	16.4	16.8	18.0
8H	15.9	16.2	16.9	17.2	18.5	15.8	16.1	16.8	17.1	18.4
Variations with the observer position at spacings(CIE Pub.117):										
S = 1.0H	+ 0.1 / - 0.2					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.1 / - 0.3					+ 0.1 / - 0.3				

CIE Pub.117, 1034 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = 0.1$ )  
Area: 0.1256 m<sup>2</sup>

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature:25.3°C  
Operators:DAMIN  
Test Date:2023-09-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity:65.0%  
Test Distance:9.000m [K=1.0000]  
Remarks:

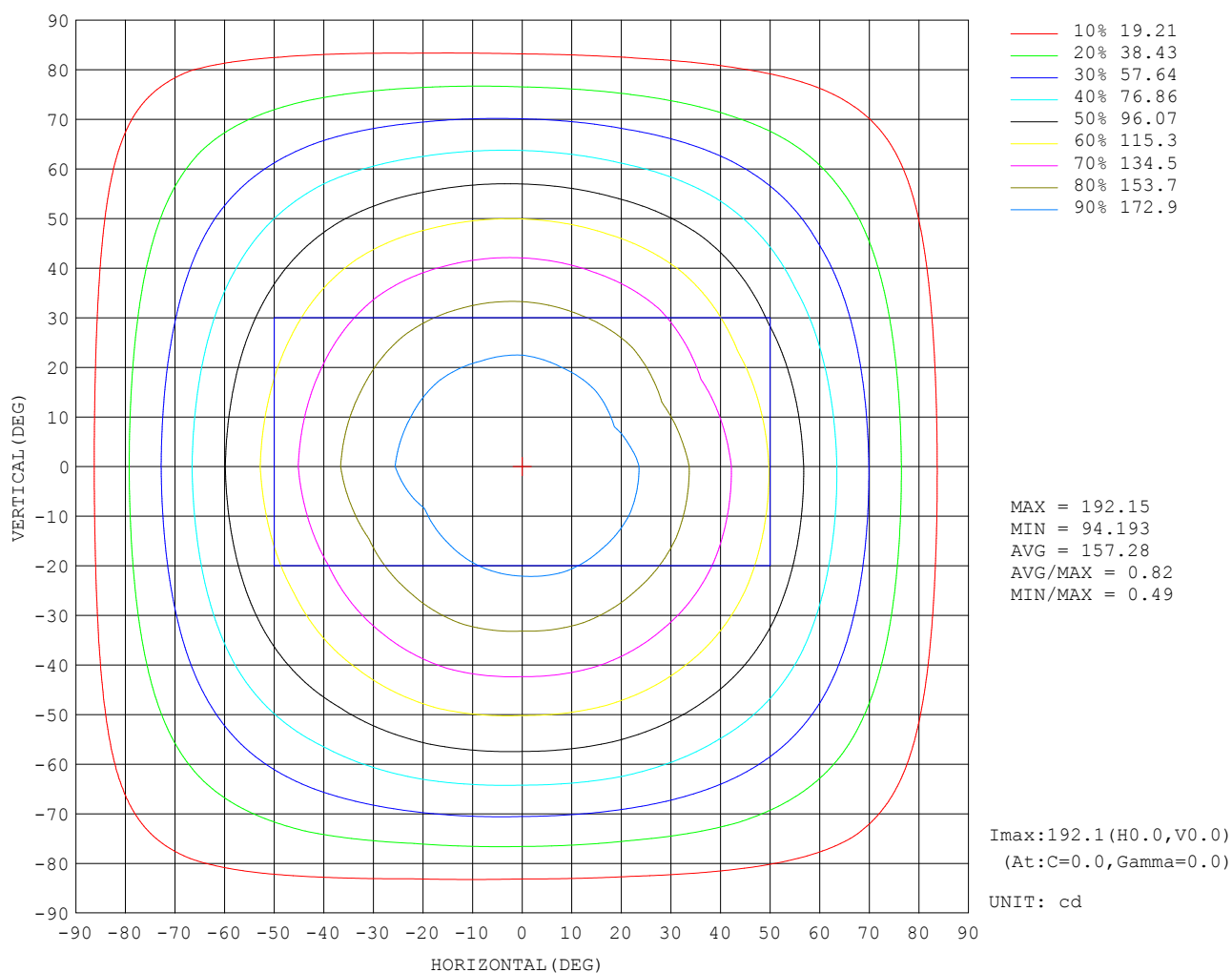
## UTILIZATION FACTORS TABLE

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) $k(RI) \times RCR = 5$									
$k = 0.60$	44	33	27	42	32	26	38	30	24	17
0.80	54	42	35	51	40	34	46	37	31	22
1.00	62	50	42	58	48	41	52	45	38	26
1.25	69	57	50	64	54	48	57	49	43	30
1.50	74	63	55	69	60	53	61	53	48	33
2.00	81	71	64	76	67	61	66	60	55	37
2.50	85	77	70	80	72	66	69	63	59	40
3.00	89	81	75	83	76	71	72	67	63	42
4.00	93	87	81	87	81	77	75	71	67	45
5.00	96	91	86	90	85	81	77	74	71	47
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: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-09-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

## ISOCANDELA DIAGRAM

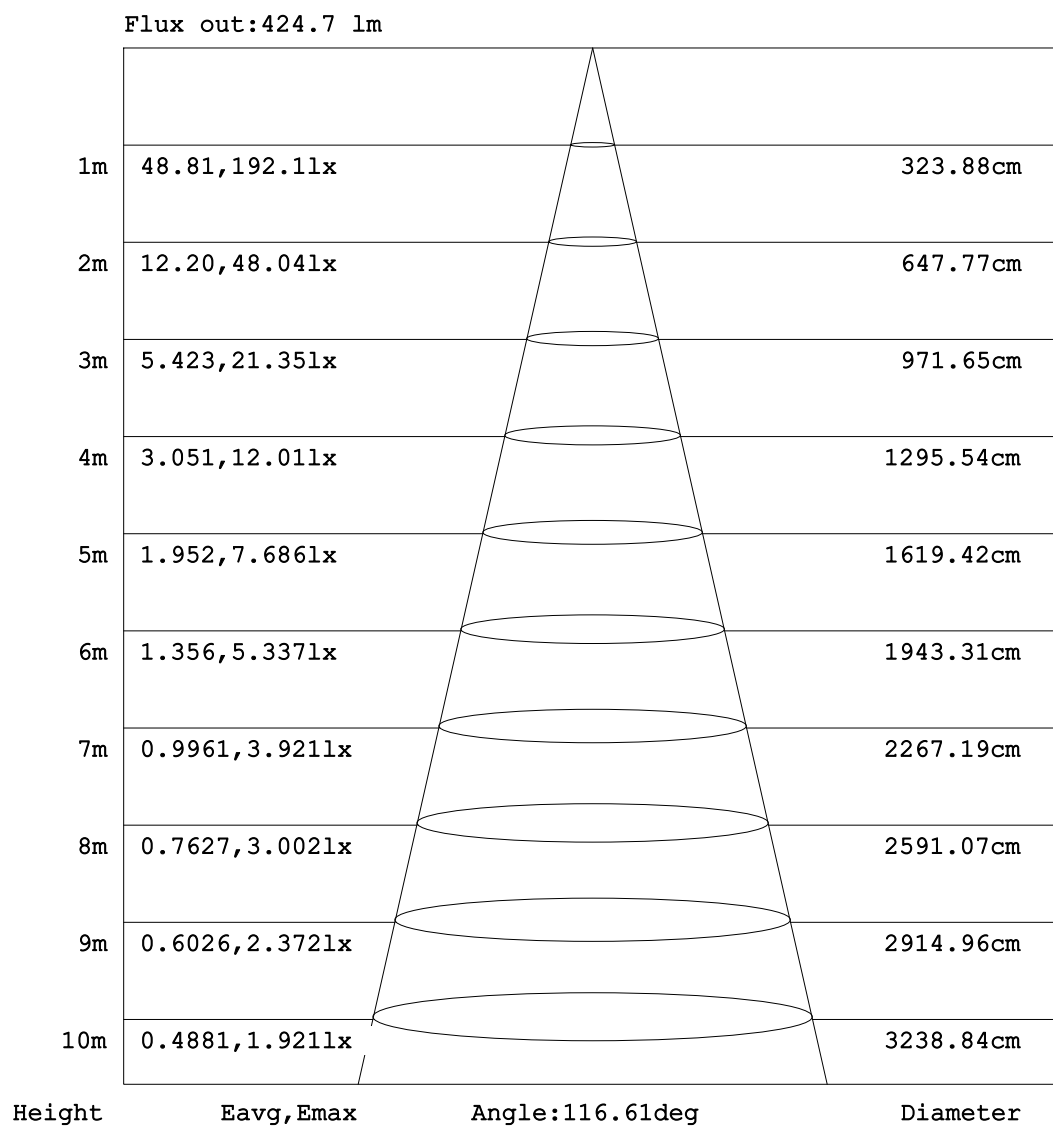


C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature:25.3°C  
Operators:DAMIN  
Test Date:2023-09-20

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity:65.0%  
Test Distance:9.000m [K=1.0000]  
Remarks:



## AAI Figure

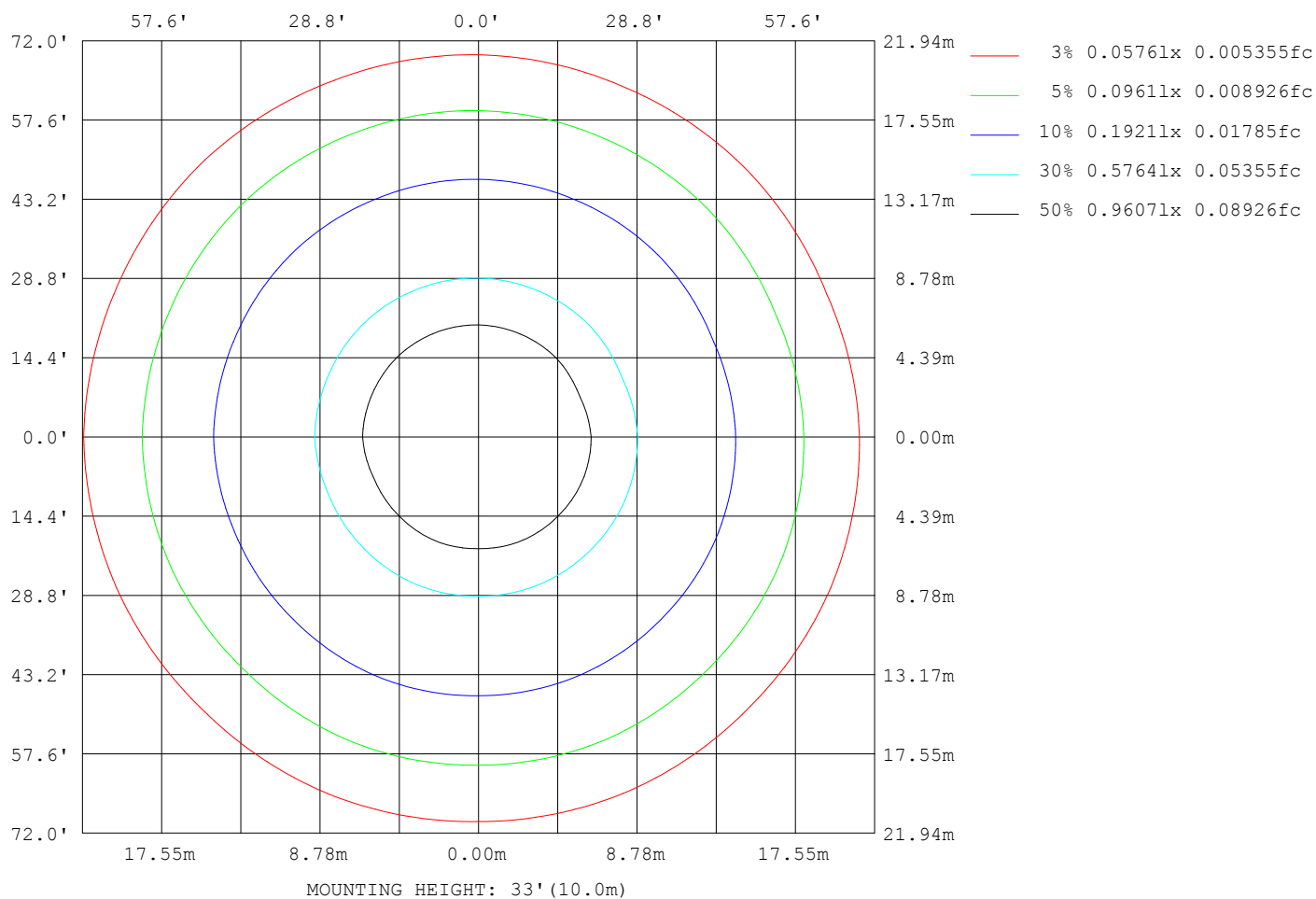


Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: 10.0deg/s  
 Temperature: 25.3°C  
 Operators: DAMIN  
 Test Date: 2023-09-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
 Humidity: 65.0%  
 Test Distance: 9.000m [K=1.0000]  
 Remarks:

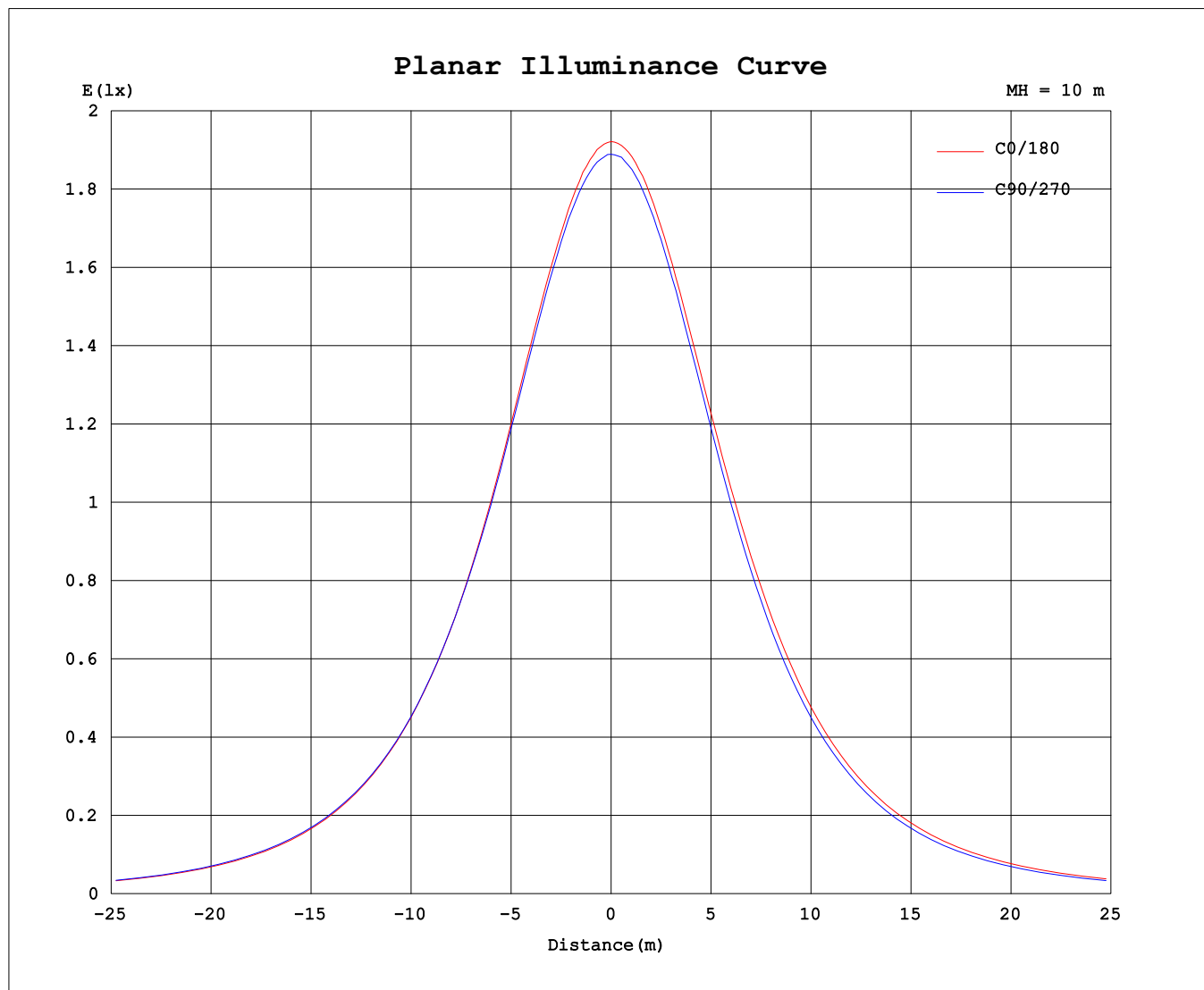
## ISOLUX DIAGRAM



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature: 25.3°C  
Operators: DAMIN  
Test Date: 2023-09-20

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity: 65.0%  
Test Distance: 9.000m [K=1.0000]  
Remarks:

## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature: 25.3°C  
Operators: DAMIN  
Test Date: 2023-09-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity: 65.0%  
Test Distance: 9.000m [K=1.0000]  
Remarks:

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

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	192	191	191	190	189	188	187	186	192	191	191	190	189	188	187	186			
5	191	190	189	189	188	187	186	186	192	191	190	189	188	187	186	185			
10	188	188	187	186	185	185	184	184	190	189	188	187	186	185	184	183			
15	184	184	183	182	181	181	180	180	186	185	184	183	182	181	180	179			
20	178	178	177	176	176	175	175	175	181	179	178	177	176	175	174	173			
25	171	171	170	170	168	168	168	168	174	172	171	170	169	168	167	165			
30	161	161	161	161	160	160	160	160	166	164	163	161	160	159	158	155			
35	151	152	150	151	150	151	151	152	157	155	154	152	150	148	148	145			
40	140	140	140	140	140	141	141	142	147	145	143	141	139	138	137	134			
45	128	128	128	129	128	130	129	130	135	133	132	129	127	126	125	123			
50	115	116	115	116	116	118	117	118	123	120	119	117	115	113	113	111			
55	101	102	102	103	103	104	104	106	109	107	106	103	101	99.9	99.4	97.2			
60	86.8	88.0	87.7	89.1	89.0	90.4	90.7	93.7	95.7	93.6	92.0	89.2	87.6	85.7	85.2	83.7			
65	72.3	73.7	73.4	74.7	74.7	76.4	76.8	79.6	81.3	79.1	77.8	74.8	73.1	71.1	70.8	69.5			
70	57.4	58.8	58.8	59.3	59.4	61.5	62.6	64.7	66.7	64.7	63.4	60.0	57.9	56.3	55.4	55.0			
75	42.6	43.4	44.1	43.0	43.5	44.7	47.9	49.1	50.7	50.0	47.7	45.1	42.7	41.5	40.7	40.8			
80	28.9	30.0	29.4	27.9	28.1	29.4	32.9	35.2	36.3	35.7	33.6	30.8	28.7	27.7	26.9	27.3			
85	16.5	17.0	15.4	13.8	13.3	15.1	18.5	21.7	22.9	22.0	18.9	15.3	13.3	13.0	14.3	15.2			
90	13.4	12.2	8.17	5.40	4.03	7.51	10.4	12.8	13.9	12.9	9.21	5.36	3.88	5.95	9.59	12.3			
95	22.7	18.9	13.2	7.91	5.73	7.73	11.5	14.8	16.5	15.6	12.8	9.22	6.23	8.79	15.1	19.4			
100	37.2	32.9	25.7	18.1	17.3	17.3	21.3	25.2	28.9	26.3	23.4	18.2	15.9	18.7	25.7	30.6			
105	52.3	46.8	36.8	30.9	28.8	29.8	31.6	38.0	42.7	38.8	32.0	27.4	28.1	28.9	36.6	44.0			
110	69.2	61.6	49.0	44.5	38.3	42.6	43.1	52.6	58.0	51.1	44.0	40.7	40.7	37.7	48.2	58.5			
115	84.8	77.5	63.1	57.2	50.4	55.6	55.5	67.7	73.7	66.2	57.5	57.1	54.1	58.2	57.4	72.3			
120	100	93.9	77.1	61.1	65.4	68.7	68.6	83.8	89.6	80.2	70.9	64.9	67.7	66.0	67.0	87.6			
125	115	110	90.8	62.9	79.7	66.1	80.8	101	105	94.0	82.8	65.9	82.0	61.4	80.2	99.7			
130	129	126	104	78.0	94.1	70.6	92.2	116	120	108	92.4	75.4	96.1	59.4	81.8	102			
135	142	140	110	98.7	108	92.6	97.6	130	134	121	98.0	92.2	106	92.2	92.7	118			
140	154	154	106	115	118	103	89.7	135	137	126	90.3	99.1	116	110	95.3	131			
145	160	144	104	125	129	117	91.5	129	138	114	87.0	113	120	122	93.3	121			
150	139	133	124	134	139	129	115	126	138	108	107	125	130	125	111	112			
155	130	132	125	135	138	128	127	127	130	113	109	119	122	120	102	113			
160	127	132	134	138	136	134	128	124	126	110	114	114	118	118	115	119			
165	130	137	135	137	135	134	128	122	129	112	115	121	120	119	121	124			
170	132	138	137	138	137	132	124	123	131	117	113	121	122	117	113	125			
175	168	170	161	155	154	153	149	140	165	153	149	148	144	139	135	151			
180	173	166	159	158	156	156	150	139	174	166	160	158	157	156	151	137			

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: 10.0deg/s  
Temperature:25.3℃  
Operators:DAMIN  
Test Date:2023-09-20

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-3000H\_V1 SYSTEM V2.00.463  
Humidity:65.0%  
Test Distance:9.000m [K=1.0000]  
Remarks: