

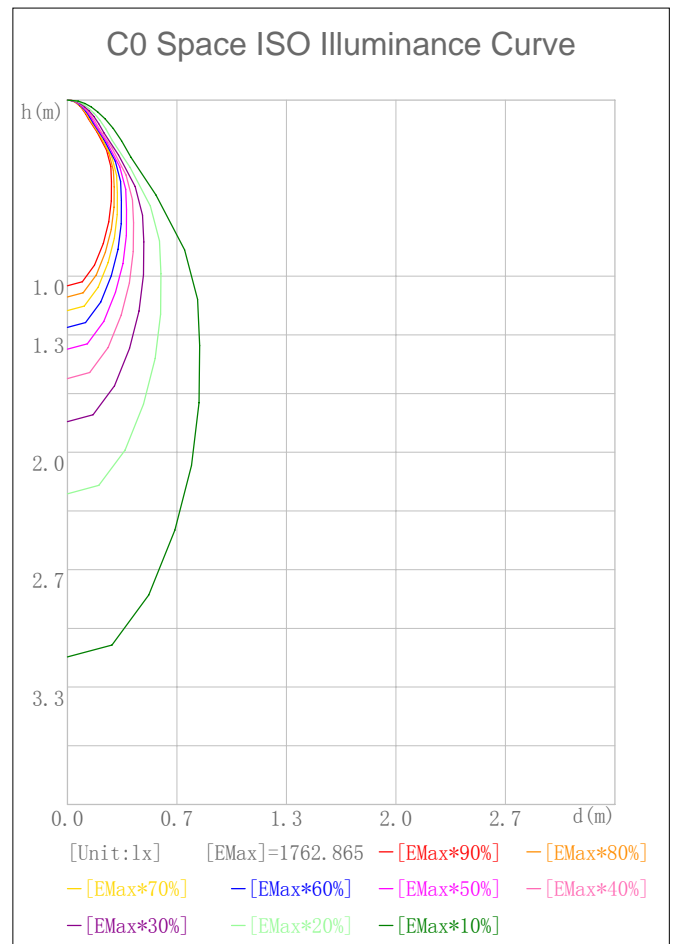
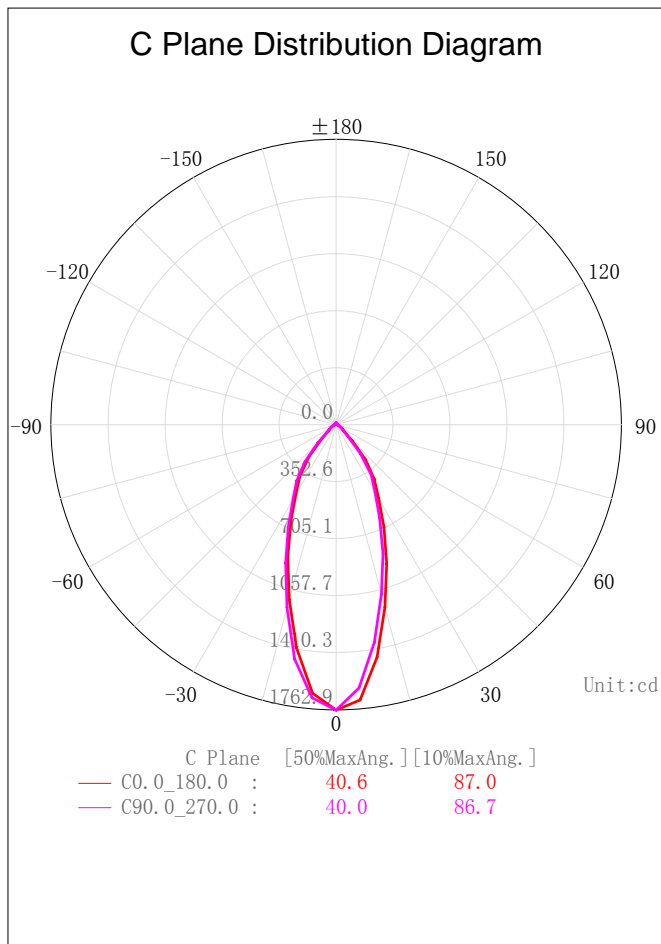
### Indoor Luminaire Photometric Data

#### Description Information

Luminary Name: DC13W-3000K, Ra90, Reflector 40°		Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR		Lamp Catalog: lamps and lanterns	Test Date: 2017/04/13
LED Chip: Citizen CLU028-1203C4-30XH5M3		Shld. Ang(°):	Test Machine:GON-2000
Test Lab:		Frequency (Hz):	Lamp CCT(K): 3000K Ra: 90
Lum. Size (W*L*H): 0.000m*0.000m*0.000m		Lum. Area (m2): 0.000	Lum. W (kg): 0.000
Test System: C, γ	Test Step: C=90.0 γ=5.0	Temp. (°C): 25	Humidity(%): 50.0

#### Character Parameter

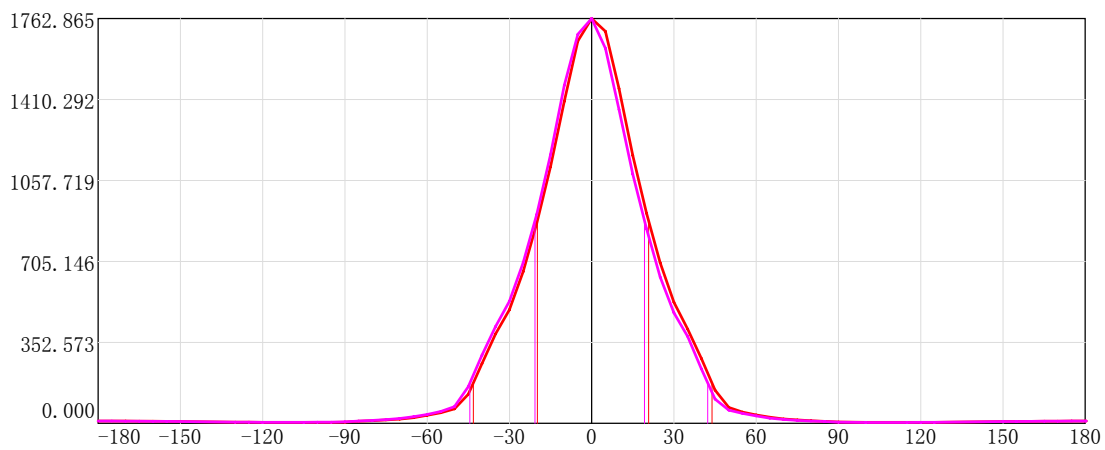
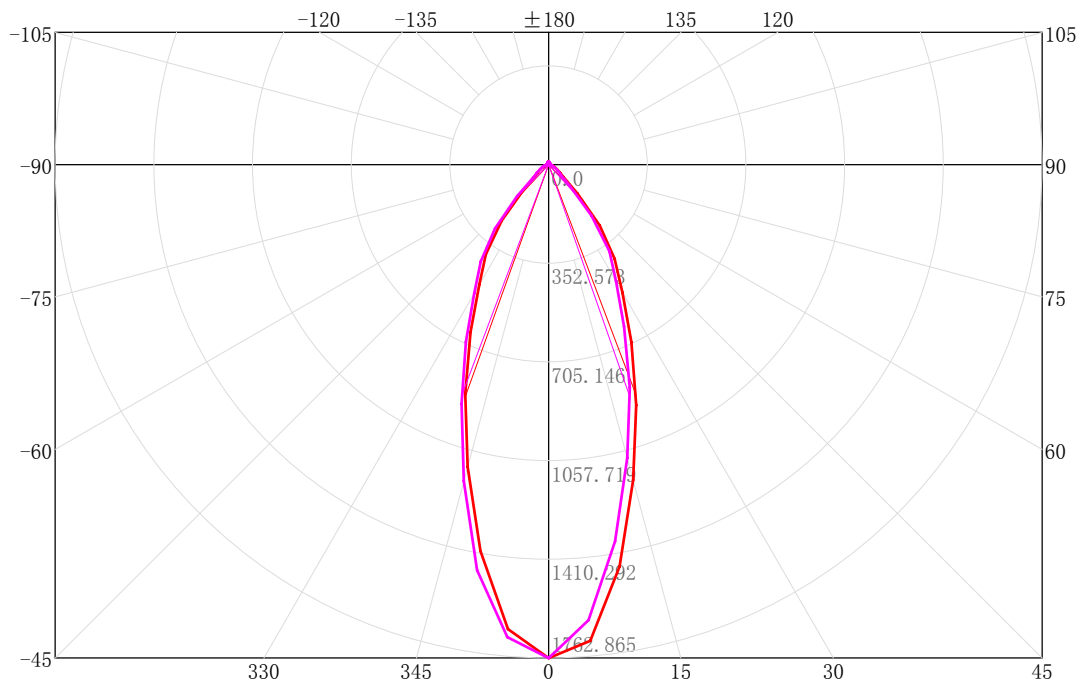
Lamp Speciality Parameter	Luminaire Speciality Parameter	
Rated Flux(lm): 1203.000	Luminary Flux(lm): 1279.355	Field Angle(10%Imax): 87.0(°)
Rated Power(W): 13W	Luminary Efficiency: 106.35%	Down Lumens&Percent: 1241.852lm 97.07%
Rated Voltage(V): 36V 350mA	Luminary EER(lm/W): 37.784	Up Lumens&Percent: 37.503lm 2.93%
Tested Power(W): 33.860	Max. Candela(cd): 1762.865	S/MH: C0_a180=0.633 C90_270=0.624
Lamps' Inside: 1	Max Cand@Ang. (°): C=0.0 γ=0.0	CIE Type: Semi-Direct
Tested Electrics (V, A, pf): 220.1, 0.205, 0.747	Beam Angle (50%Imax): 40.6(°)	ErP φ use(90°): 1090.363lm
Lamp Size (W*L*H): 0.000m*0.000m*0.000m	Left=-19.8°, Right=20.8°	IRF(%): 313.590



### 2D Plane Light Intensity Distribution Curve

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

#### C Plane Distribution Diagram



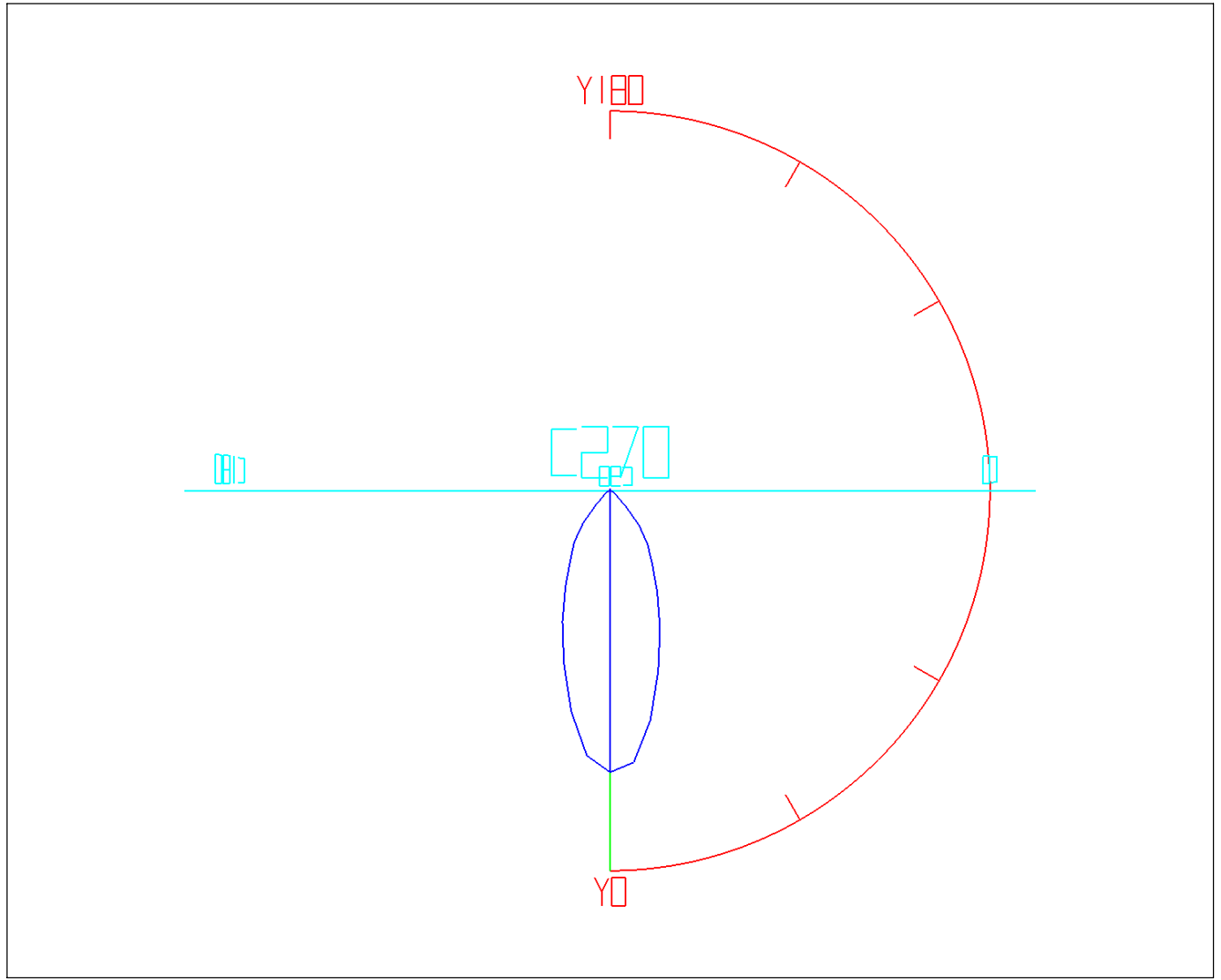
C Plane	[50%MaxAng.]	[10%MaxAng.]
C0.0_180.0	40.6	87.0
C90.0_270.0	40.0	86.7

Unit:cd

**3D Light Intensity Distribution Modal**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

**3D Light Intensity Distribution Modal**



Curves: 3D Model ——— Fixture ——— Vert. HUD ——— Hori. HUD ———  
 View Angles: Orient:0 Tilt:0 Roll:0 Spin:0

**Zonal Flux Tabulation**

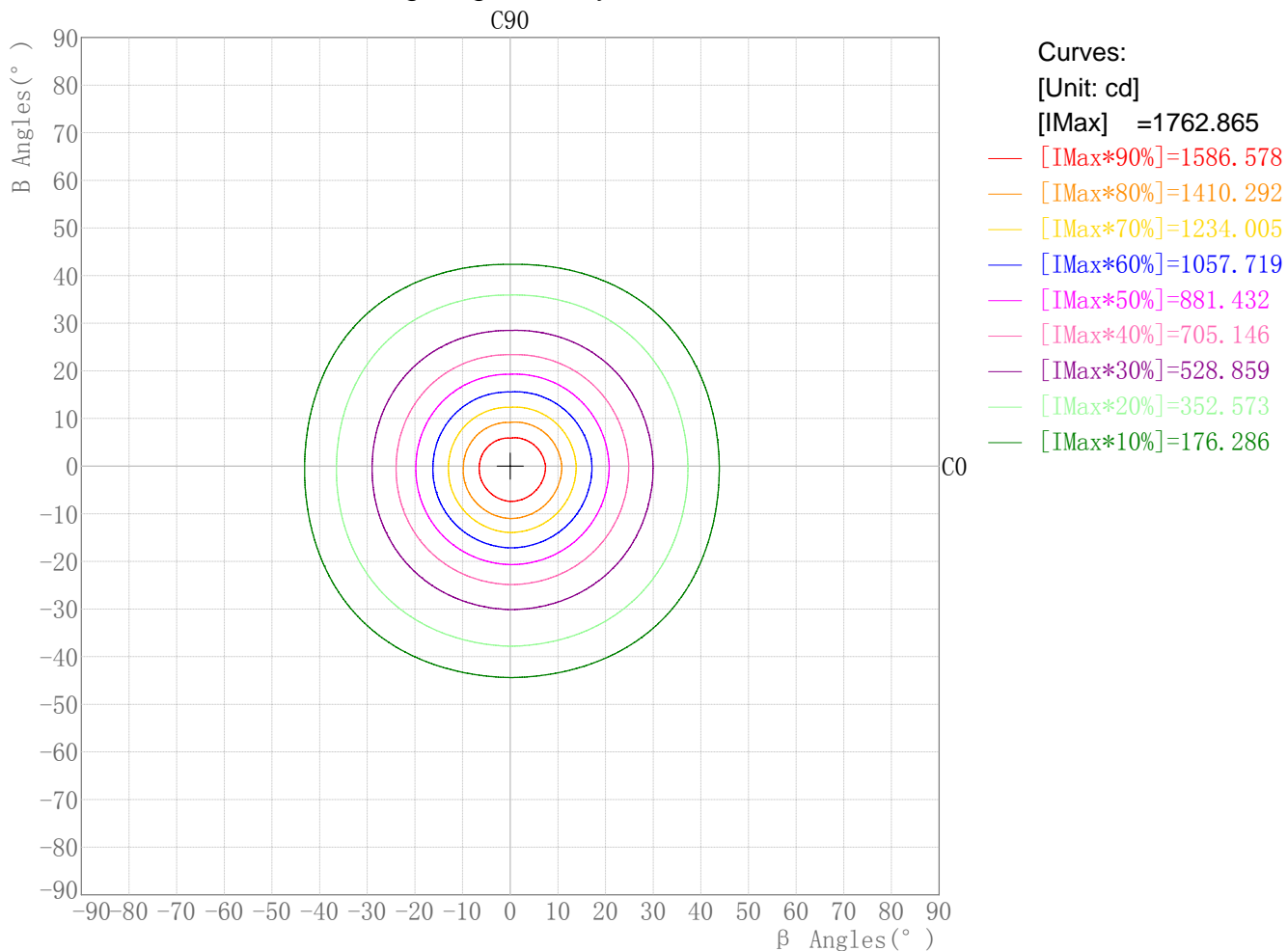
Zone(γ)	Zone Flux (lm)	Sums Flux (lm)	Zone%Lamp	Sums%Lamp
0.0-5.0	41.10	41.10	3.42	3.42
5.0-10.0	110.88	151.98	9.22	12.63
10.0-15.0	151.80	303.78	12.62	25.25
15.0-20.0	166.52	470.30	13.84	39.09
20.0-25.0	163.62	633.92	13.60	52.70
25.0-30.0	149.72	783.64	12.45	65.14
30.0-35.0	133.92	917.56	11.13	76.27
35.0-40.0	111.89	1029.45	9.30	85.57
40.0-45.0	74.89	1104.34	6.23	91.80
45.0-50.0	40.47	1144.80	3.36	95.16
50.0-55.0	24.83	1169.64	2.06	97.23
55.0-60.0	19.46	1189.10	1.62	98.84
60.0-65.0	15.06	1204.16	1.25	100.10
65.0-70.0	11.51	1215.67	0.96	101.05
70.0-75.0	9.05	1224.72	0.75	101.81
75.0-80.0	7.25	1231.96	0.60	102.41
80.0-85.0	5.73	1237.69	0.48	102.88
85.0-90.0	4.16	1241.85	0.35	103.23
90.0-95.0	3.10	1244.95	0.26	103.49
95.0-100.0	2.80	1247.75	0.23	103.72
100.0-105.0	2.59	1250.34	0.21	103.94
105.0-110.0	2.44	1252.78	0.20	104.14
110.0-115.0	2.35	1255.13	0.20	104.33
115.0-120.0	2.31	1257.43	0.19	104.52
120.0-125.0	2.30	1259.73	0.19	104.72
125.0-130.0	2.33	1262.06	0.19	104.91
130.0-135.0	2.38	1264.44	0.20	105.11
135.0-140.0	2.42	1266.86	0.20	105.31
140.0-145.0	2.41	1269.26	0.20	105.51
145.0-150.0	2.32	1271.59	0.19	105.70
150.0-155.0	2.15	1273.74	0.18	105.88
155.0-160.0	1.90	1275.63	0.16	106.04
160.0-165.0	1.57	1277.20	0.13	106.17
165.0-170.0	1.17	1278.38	0.10	106.27
170.0-175.0	0.73	1279.11	0.06	106.33
175.0-180.0	0.25	1279.36	0.02	106.35

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**Rectangle ISO Lighting Intensity Diagram**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

**ISO Lighting Intensity Curve**

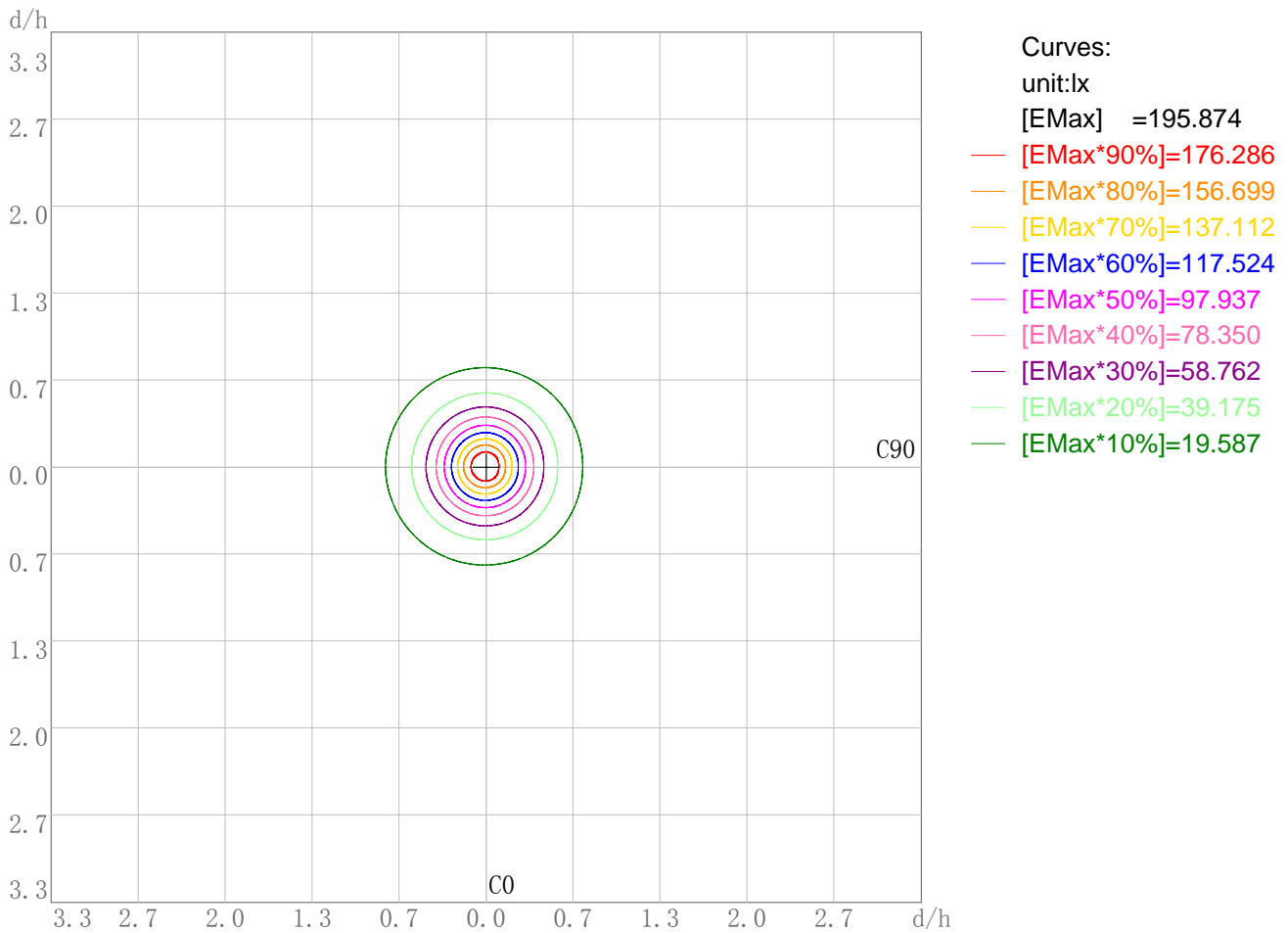


Maximum Light Intensity(cd): 1762.86  
 Maximum Cand.@Angle: H=0.0°,V=0.0°

**Plane ISO-Illuminance Diagram**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

**Plane ISO-Illuminance Curve**

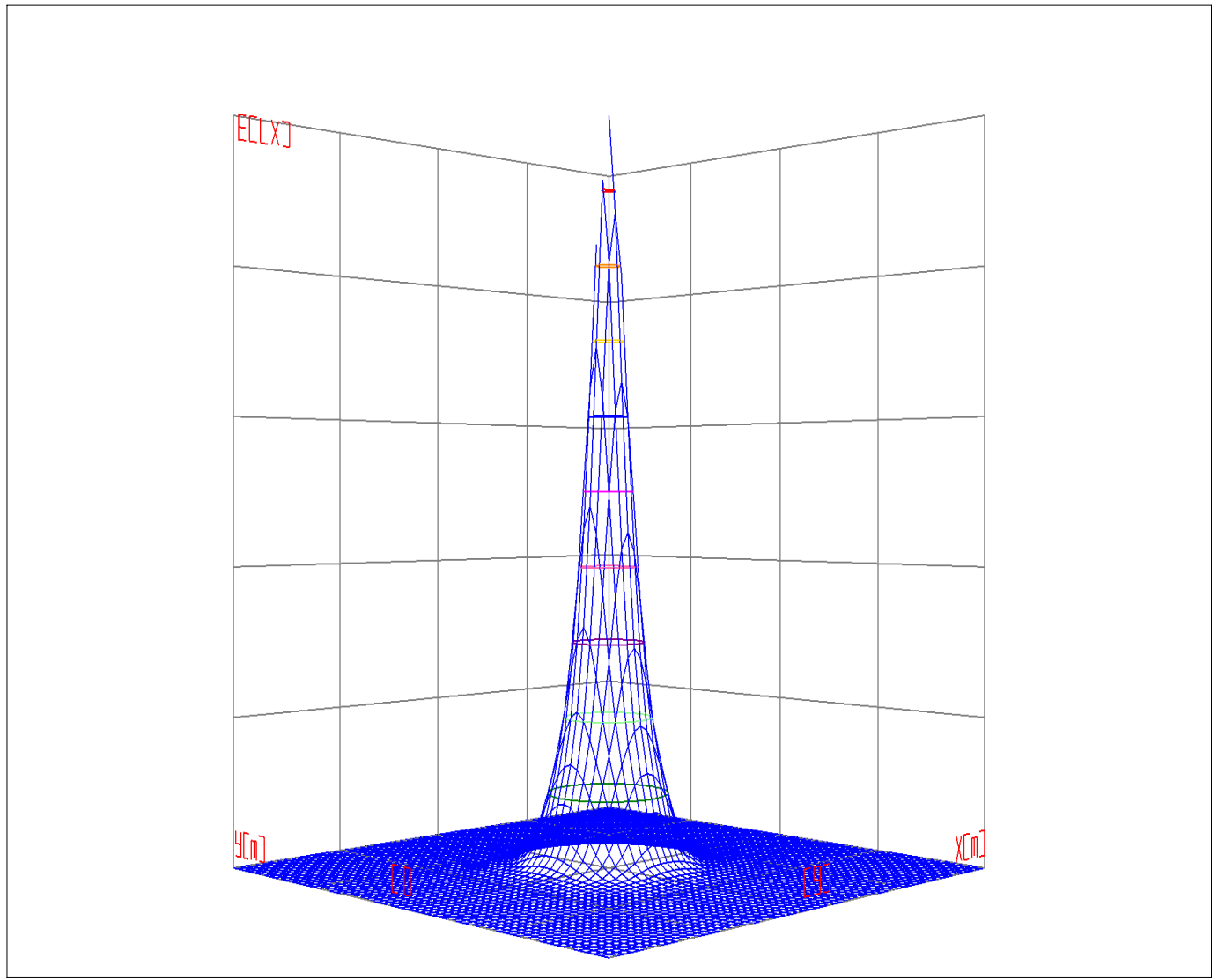


Working Plane Luminaire Mounting Height(m): 3.00  
 Working Plane Maximum Illuminance(lx): 195.87  
 Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

**3D Plane ISO Illuminance Diagram**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

**3D Plane Illuminance Modal**

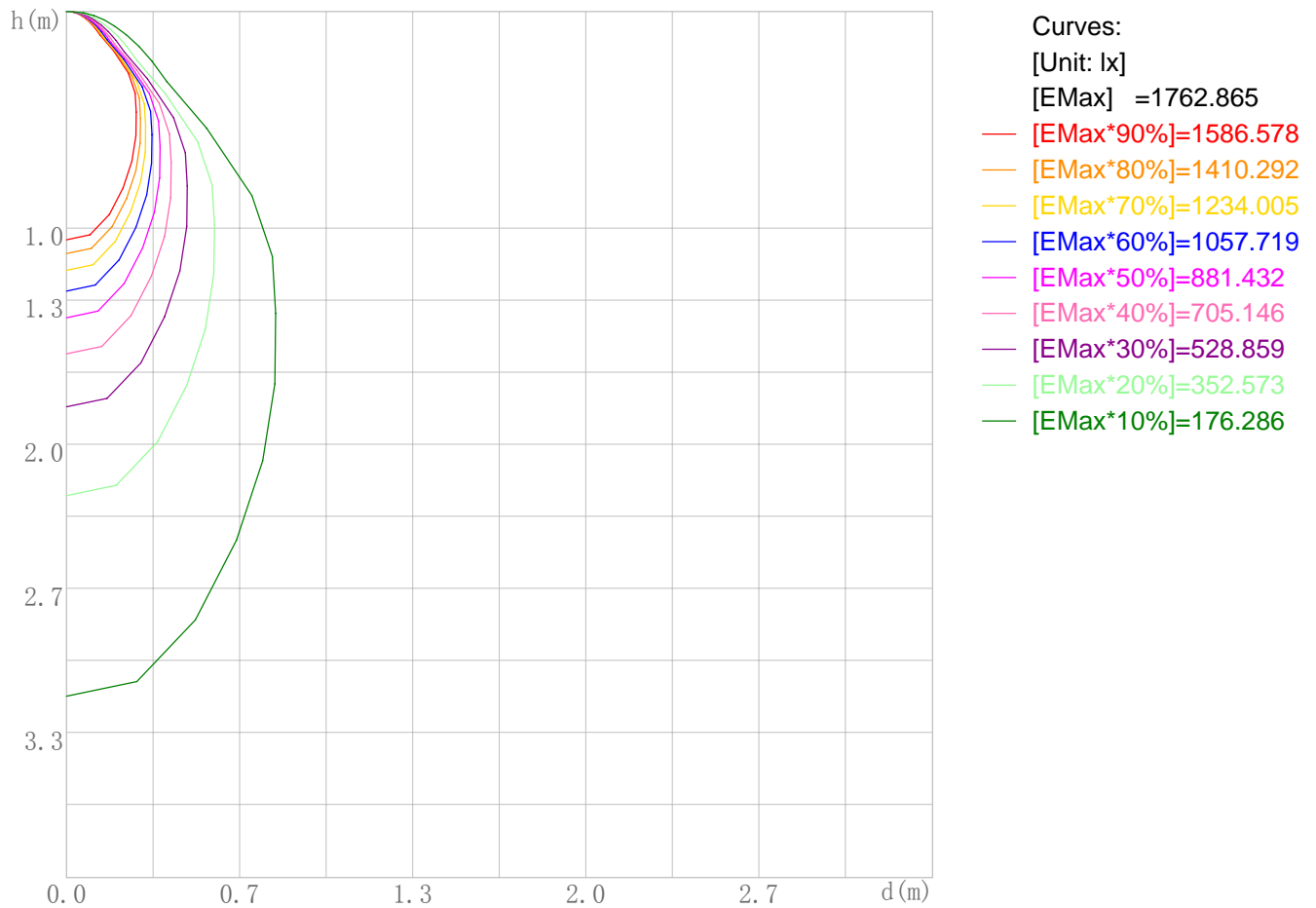


Curves: 3D Model — 90% — 80% — 70% — 60% — 50% — 40% — 30% — 20% — 10% —  
 View Angles(deg): 0    Height(m): 3.0    Distance(m): 10.0

**Space ISO Illuminance Diagram**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

Space ISO Illuminance Curve



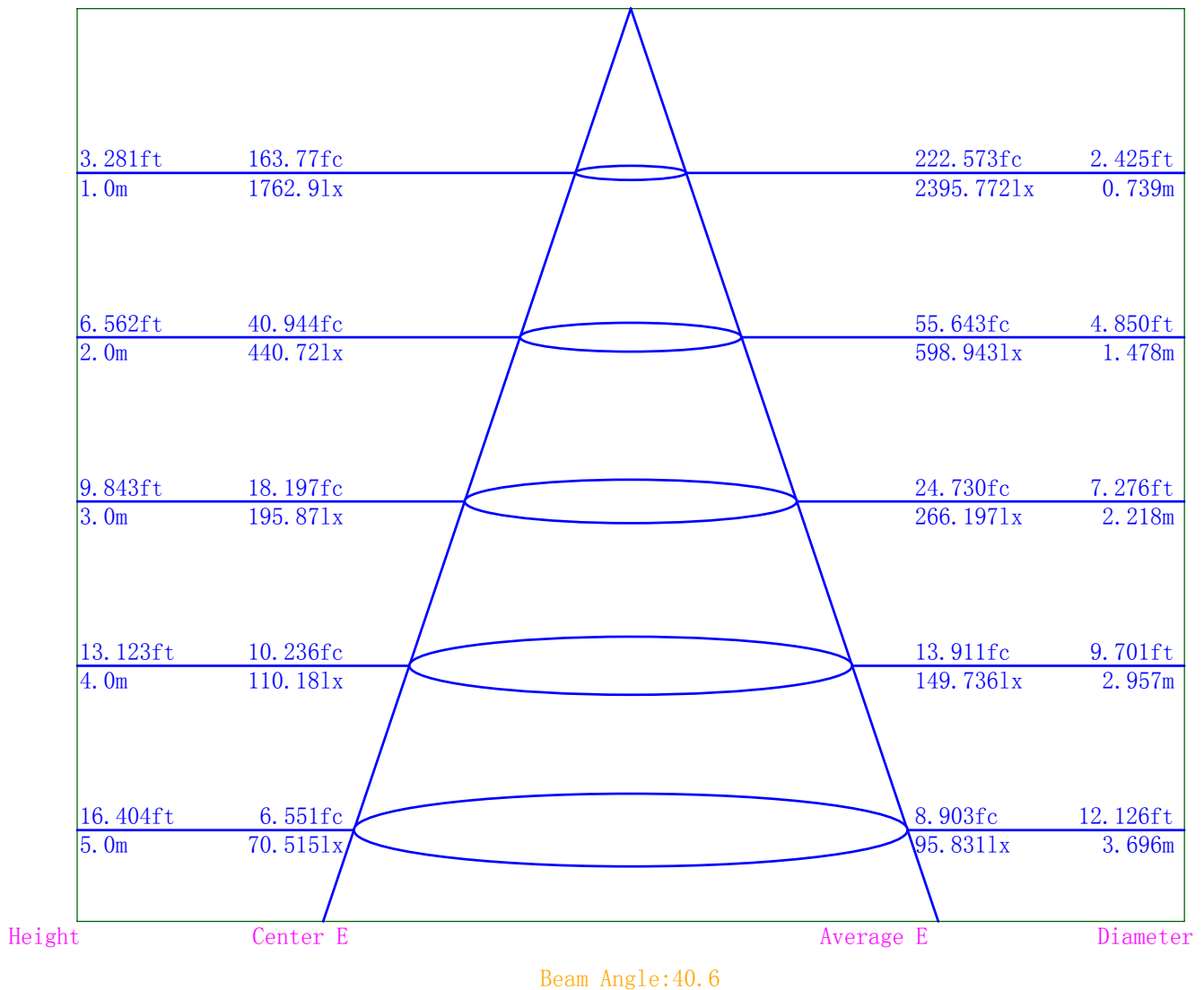
Space Plane Maximum Illuminance and @Angle:1762.86lx,0.0deg  
 Plane Maximum Lighting Intensity and @Angle:1762.865cd,0deg



**Illuminance-Distance Diagram**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

**Illuminance-Distance Curve**



**Indoor Luminance Limiting Curves**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

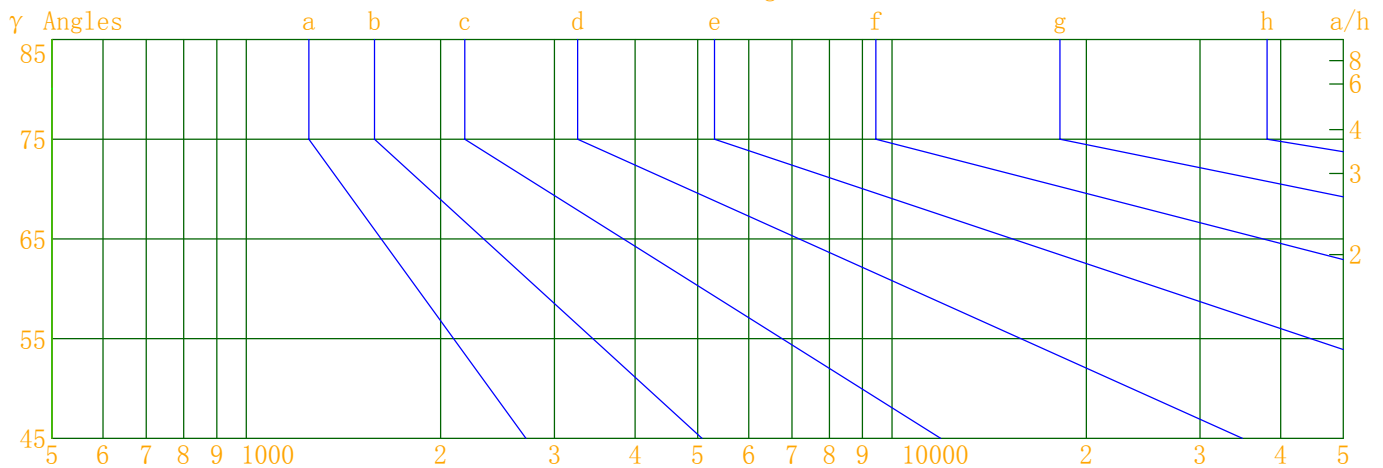
Glare Grade Table

GI	Quality	Using Illuminance							
		a	b	c	d	e	f	g	h
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E	a				2000	1000	500	<=300
			b	c	d	e	f	g	h

Luminance Table

Gama (deg)	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

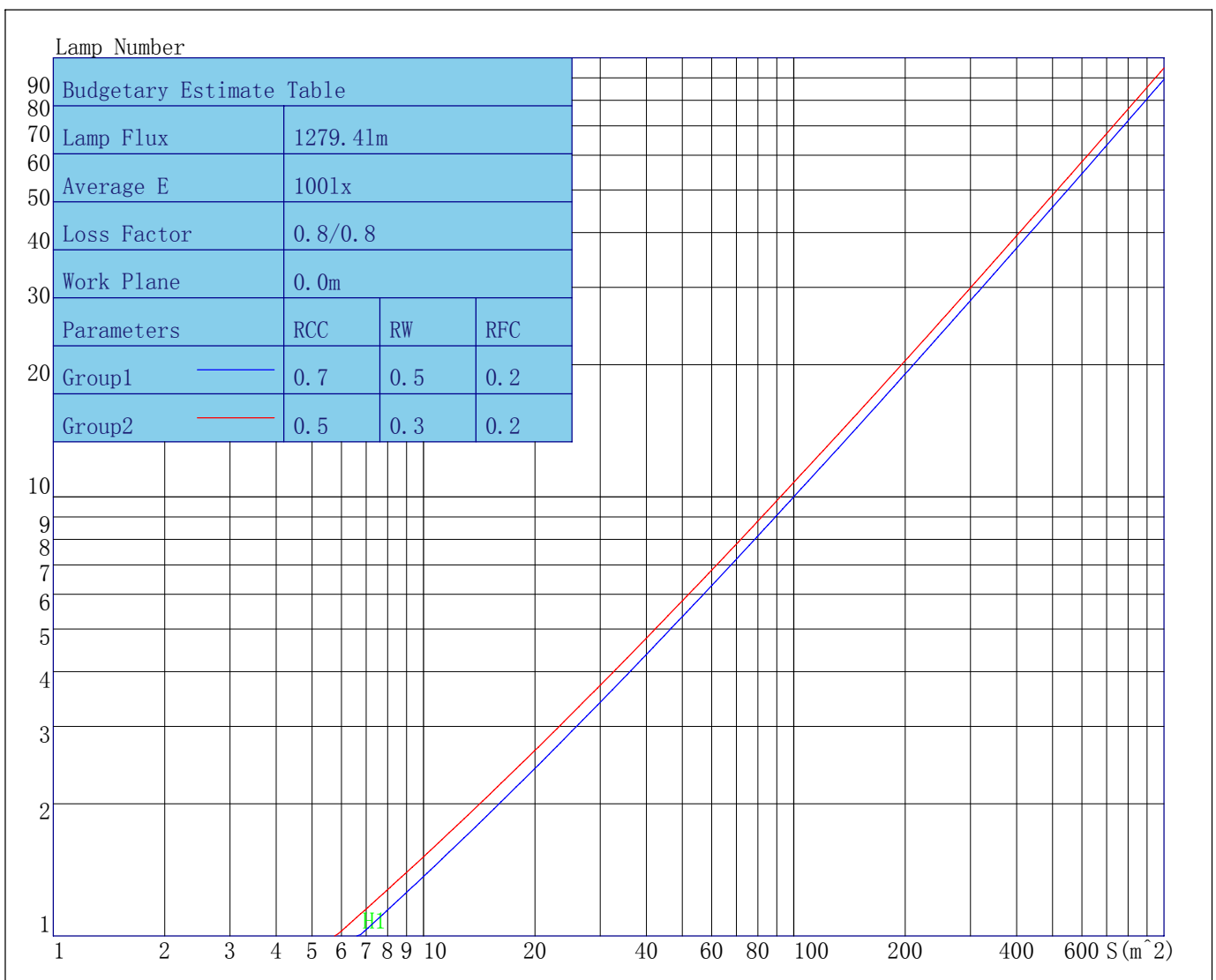
Luminance Limiting Curve



Luminous Size: Length(m)=0.000 Width(m)=0.000 Height(m)=0.000 Area(m^2)=0.000000  
 Luminous Type: Without Luminous Side  
 Luminous Curves: C0-C180 Color: — C90-C270 Color: —

**Indoor Budgetary Estimate Table**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13



Parameters1: Rhocc = 0.7 Rhow = 0.5 Rhofc = 0.2 LLF = 0.8  
 Parameters2: Rhocc = 0.5 Rhow = 0.3 Rhofc = 0.2 LLF = 0.8  
 Average Illuminance(lx): 100 Cavity Height: H1(m) = 2

**Indoor Coefficient of Utilization Table**

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

Coefficients of Utilization - Zonal Cavity Method																					
Coef.	Effective Floor Cavity Reflectance RFC=0.20																				
RhoCC (%)	80				70				50				30				10				0
RhoW (%)	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0			
RCR	Coefficient of Utilization (%)																				
0	126	126	126	126	123	123	123	123	116	116	116	111	111	111	106	106	106	103			
1	119	116	113	110	116	113	110	108	108	106	104	104	102	100	99	98	97	95			
2	112	106	102	98	110	104	100	96	100	97	94	97	94	91	93	91	89	87			
3	106	98	93	88	104	97	91	87	93	89	85	90	87	83	88	84	82	80			
4	100	91	85	80	98	90	84	79	87	82	78	85	80	77	82	79	76	74			
5	95	85	78	73	93	84	78	73	82	76	72	79	75	71	77	73	70	68			
6	90	80	73	68	88	79	72	67	77	71	67	75	70	66	73	69	65	64			
7	85	75	68	63	83	74	67	63	72	66	62	70	65	62	69	64	61	59			
8	81	70	63	59	79	69	63	59	68	62	58	67	61	58	65	61	57	56			
9	77	66	60	55	76	65	59	55	64	59	55	63	58	54	62	57	54	52			
10	73	63	56	52	72	62	56	52	61	55	51	60	55	51	59	54	51	49			

# IES Indoor Report

**Photometric Filename:DC13W-3000K, Ra90, Reflector 40°.IES**

## Unified Glare Rating Table

Lum. Name: DC13W-3000K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-30XH5M3	Test Machine:GON-2000	Test Date: 2017/04/13

## Unified Glare Rating Table

Ceiling RCC	0.70	0.70	0.50	0.50	0.30	0.70	0.70	0.50	0.50	0.30
Wall RW	0.50	0.30	0.50	0.30	0.30	0.50	0.30	0.50	0.30	0.30
Floor RFC	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Room Size	Viewed crosswise					Viewed endwise				
X=2H Y=2H	-0.7	0.5	-0.2	0.9	1.3	-0.7	0.5	-0.2	0.9	1.3
Y=3H	-0.9	0.2	-0.4	0.6	1.0	-0.9	0.2	-0.4	0.6	1.0
Y=4H	-1.0	0.0	-0.5	0.5	0.9	-1.0	0.0	-0.5	0.5	0.9
Y=6H	-1.1	-0.1	-0.6	0.3	0.8	-1.1	-0.1	-0.6	0.3	0.8
Y=8H	-1.1	-0.2	-0.6	0.2	0.7	-1.1	-0.2	-0.6	0.2	0.7
Y=12H	-1.2	-0.3	-0.7	0.1	0.6	-1.2	-0.3	-0.7	0.1	0.6
X=4H Y=2H	-1.0	0.0	-0.5	0.5	0.9	-1.0	0.0	-0.5	0.5	0.9
Y=3H	-1.2	-0.3	-0.7	0.2	0.6	-1.2	-0.3	-0.7	0.2	0.6
Y=4H	-1.3	-0.5	-0.8	-0.0	0.5	-1.3	-0.5	-0.8	-0.0	0.5
Y=6H	-1.4	-0.7	-0.9	-0.2	0.3	-1.4	-0.7	-0.9	-0.2	0.3
Y=8H	-1.4	-0.8	-0.9	-0.3	0.2	-1.4	-0.8	-0.9	-0.3	0.2
Y=12H	-1.5	-0.9	-1.0	-0.4	0.2	-1.5	-0.9	-1.0	-0.4	0.2
X=8H Y=4H	-1.4	-0.8	-0.9	-0.3	0.2	-1.4	-0.8	-0.9	-0.3	0.2
Y=6H	-1.6	-1.0	-1.0	-0.5	0.2	-1.6	-1.0	-1.0	-0.5	0.2
Y=8H	-1.6	-1.1	-1.1	-0.6	-0.0	-1.6	-1.1	-1.1	-0.6	-0.0
Y=12H	-1.7	-1.2	-1.1	-0.7	-0.1	-1.7	-1.2	-1.1	-0.7	-0.1
X=12H Y=4H	-1.5	-0.9	-1.0	-0.4	0.2	-1.5	-0.9	-1.0	-0.4	0.2
Y=6H	-1.6	-1.1	-1.1	-0.6	0.0	-1.6	-1.1	-1.1	-0.6	0.0
Y=8H	-1.7	-1.2	-1.1	-0.7	-0.1	-1.7	-1.2	-1.1	-0.7	-0.1
Variations with the observer position at spacings										
S=1.0H	0.0/0.0					0.0/0.0				
S=1.5H	0.0/0.0					0.0/0.0				
S=2.0H	0.0/0.0					0.0/0.0				
Reduced UGR Table:										
Nordic Standard Table:	BKO					BKO				
Correction Value	0.0					0.0				

to the CIE Pub.117, data has been corrected, refers to the lamp's lumens 8.2flm.

**Candela Tabulation**

V/H	C0.0	C90.0	C180.0	C270.0
γ 0.0	1762.86	1762.86	1762.86	1762.86
γ 5.0	1707.43	1633.41	1665.61	1694.41
γ 10.0	1457.95	1366.35	1401.61	1471.29
γ 15.0	1166.32	1084.70	1117.70	1170.09
γ 20.0	914.73	847.40	871.32	909.99
γ 25.0	699.66	637.59	660.23	699.30
γ 30.0	527.73	481.61	494.85	531.41
γ 35.0	410.64	378.35	390.51	422.56
γ 40.0	283.68	238.35	260.62	297.81
γ 45.0	145.02	106.24	126.50	159.59
γ 50.0	69.56	57.50	63.15	73.49
γ 55.0	49.72	44.03	46.99	52.44
γ 60.0	36.61	32.54	35.28	39.21
γ 65.0	26.85	22.93	25.32	29.08
γ 70.0	19.81	17.14	19.10	21.58
γ 75.0	15.36	13.28	15.13	17.02
γ 80.0	11.74	10.33	12.02	13.44
γ 85.0	8.75	8.08	9.48	10.53
γ 90.0	6.27	5.27	5.64	6.71
γ 95.0	5.66	4.83	5.14	5.79
γ 100.0	5.21	4.51	4.79	5.30
γ 105.0	4.90	4.34	4.60	5.02
γ 110.0	4.76	4.29	4.55	4.86
γ 115.0	4.73	4.37	4.66	4.86
γ 120.0	4.84	4.57	4.90	5.00
γ 125.0	5.09	4.90	5.26	5.27
γ 130.0	5.49	5.39	5.77	5.68
γ 135.0	6.06	6.01	6.41	6.23
γ 140.0	6.72	6.71	7.14	6.89
γ 145.0	7.41	7.42	7.86	7.58
γ 150.0	8.06	8.06	8.50	8.19
γ 155.0	8.67	8.65	9.08	8.75
γ 160.0	9.21	9.18	9.57	9.24
γ 165.0	9.67	9.60	9.98	9.66
γ 170.0	10.04	9.97	10.28	9.98
γ 175.0	10.32	10.25	10.52	10.21
γ 180.0	10.49	10.49	10.49	10.49

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