

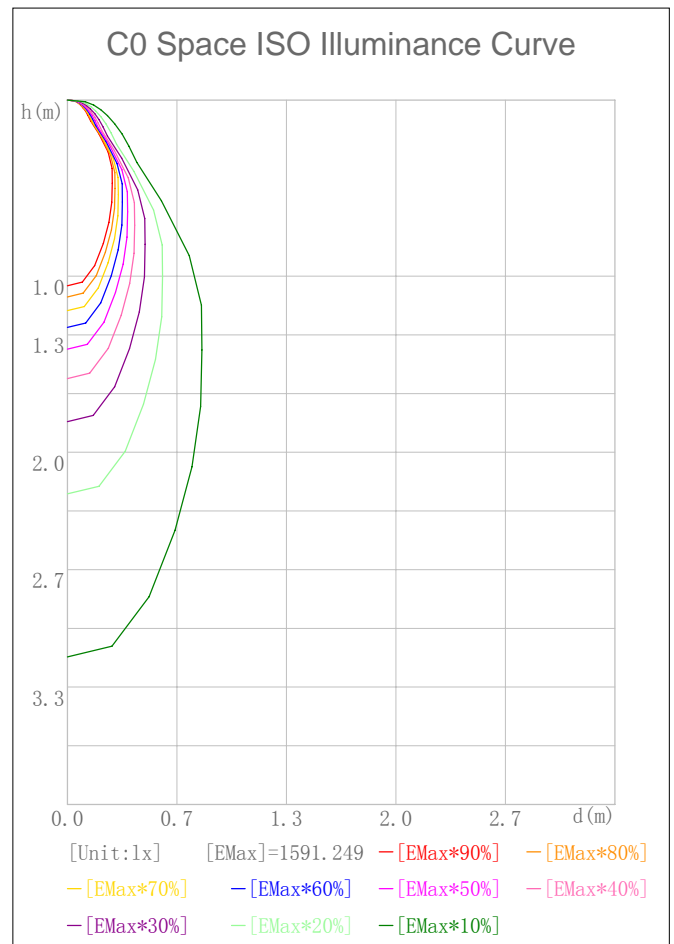
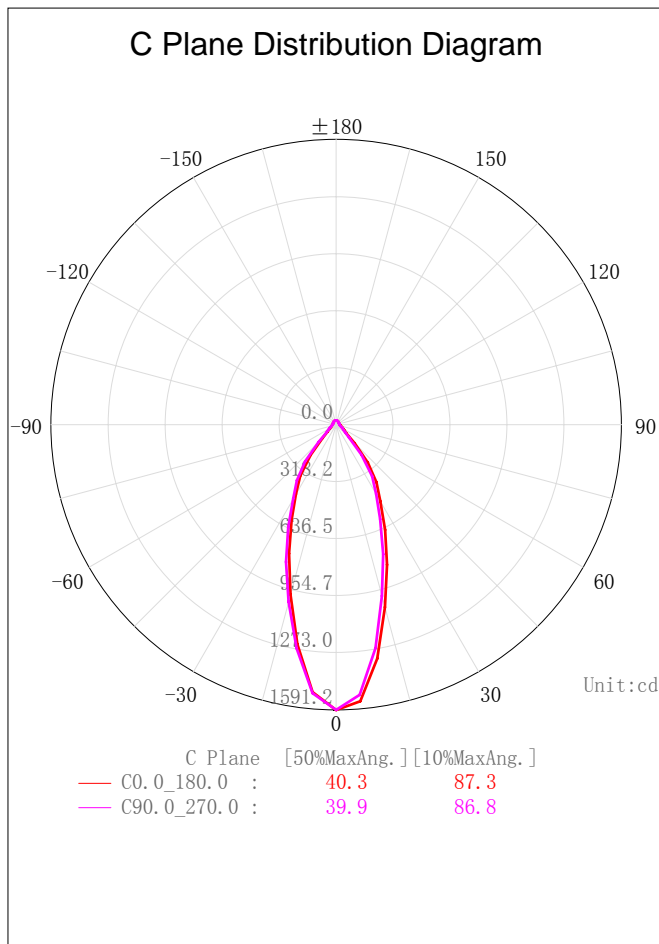
### Indoor Luminaire Photometric Data

#### Description Information

Luminary Name: DC13W-3500K, Ra90, Reflector 40°		Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR		Lamp Catalog: lamps and lanterns	Test Date: 2017/06/13
LED Chip: Citizen CLU028-1203C4-35XH5M3		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, $\gamma$	Test Step: C=90.0 $\gamma$ =5.0	Temp. (°C): 25	Humidity(%): 50.0

#### Character Parameter

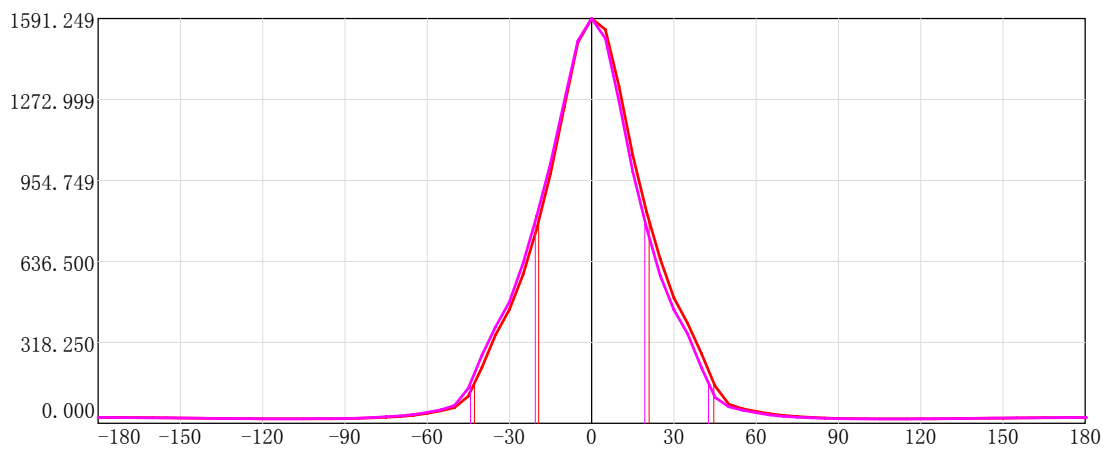
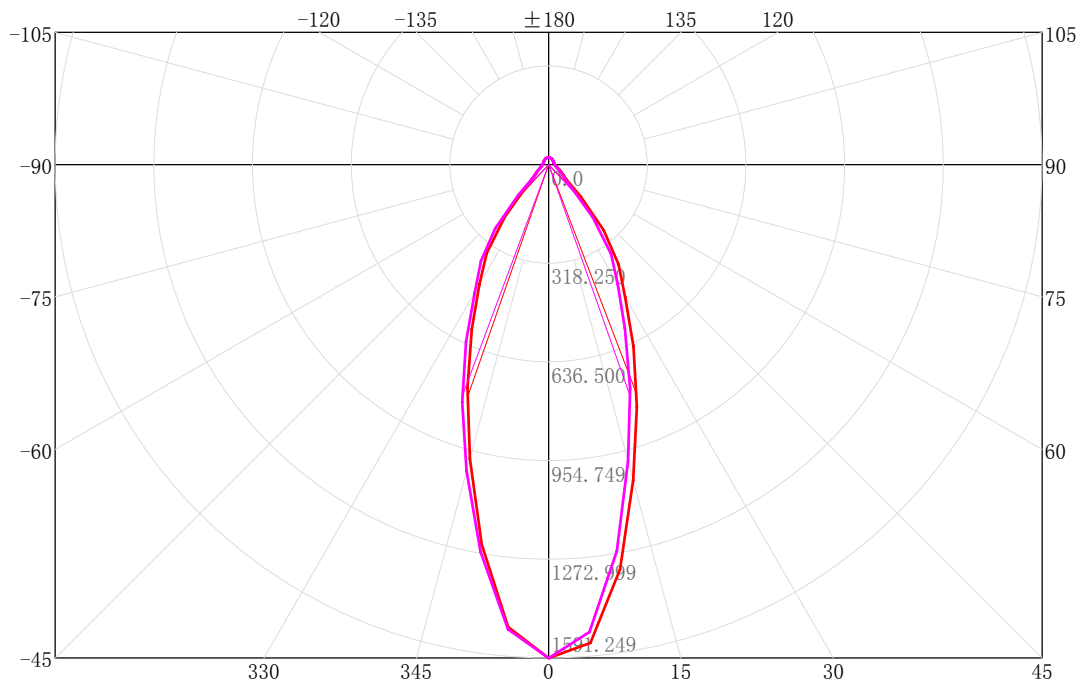
Lamp Speciality Parameter	Luminaire Speciality Parameter	
Rated Flux(lm): 1228.000	Luminary Flux(lm): 1292.606	Field Angle(10%Imax): 87.3(°)
Rated Power(W): 13W	Luminary Efficiency: 105.26%	Down Lumens&Percent: 1171.734lm 90.65%
Rated Voltage(V): 36V 350mA	Luminary EER(lm/W): 36.494	Up Lumens&Percent: 120.872lm 9.35%
Tested Power(W): 35.420	Max. Candela(cd): 1591.249	S/MH: C0_a180=0.626 C90_270=0.620
Lamps' Inside: 1	Max Cand@Ang. (°): C=0.0 $\gamma$ =0.0	CIE Type: Semi-Direct
Tested Electrics (V, A, pf): 219.9, 0.213, 0.753	Beam Angle (50%Imax): 40.3(°)	ErP $\phi$ use(90°): 985.393lm
Lamp Size (W*L*H): 0.000m*0.000m*0.000m	Left=-19.3°, Right=21.0°	IRF(%): 308.465



**2D Plane Light Intensity Distribution Curve**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**C Plane Distribution Diagram**

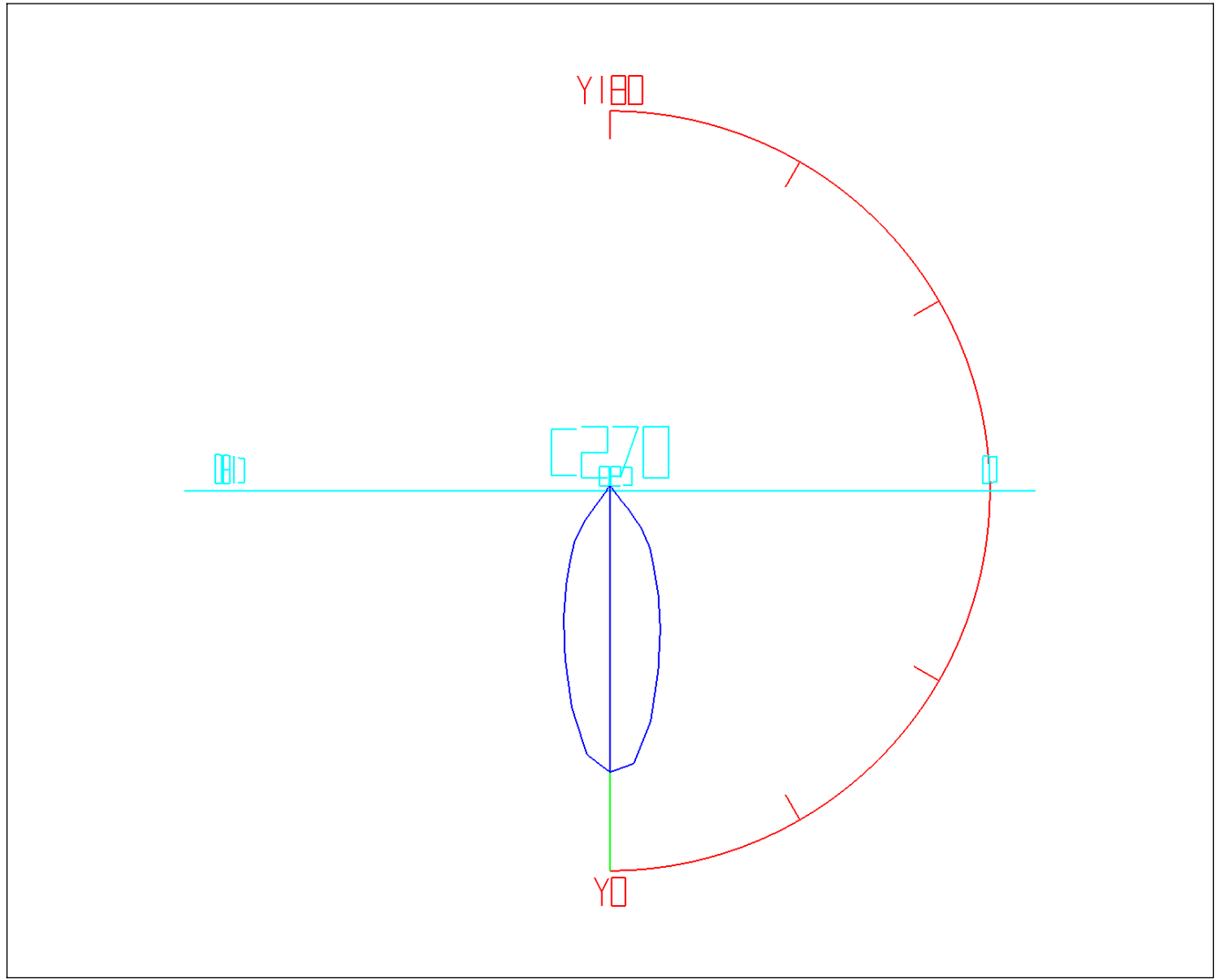


C Plane	[50%MaxAng.]	[10%MaxAng.]	Unit:cd
C0.0_180.0	40.3	87.3	
C90.0_270.0	39.9	86.8	

**3D Light Intensity Distribution Modal**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**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	37.14	37.14	3.02	3.02
5.0-10.0	99.83	136.97	8.13	11.15
10.0-15.0	135.65	272.62	11.05	22.20
15.0-20.0	148.90	421.51	12.13	34.33
20.0-25.0	147.47	568.98	12.01	46.33
25.0-30.0	136.28	705.26	11.10	57.43
30.0-35.0	122.82	828.09	10.00	67.43
35.0-40.0	102.57	930.66	8.35	75.79
40.0-45.0	68.56	999.22	5.58	81.37
45.0-50.0	38.81	1038.03	3.16	84.53
50.0-55.0	26.49	1064.52	2.16	86.69
55.0-60.0	22.31	1086.83	1.82	88.50
60.0-65.0	18.86	1105.69	1.54	90.04
65.0-70.0	16.07	1121.76	1.31	91.35
70.0-75.0	14.26	1136.02	1.16	92.51
75.0-80.0	12.98	1149.00	1.06	93.57
80.0-85.0	11.83	1160.84	0.96	94.53
85.0-90.0	10.90	1171.73	0.89	95.42
90.0-95.0	10.35	1182.08	0.84	96.26
95.0-100.0	10.04	1192.12	0.82	97.08
100.0-105.0	9.74	1201.86	0.79	97.87
105.0-110.0	9.44	1211.30	0.77	98.64
110.0-115.0	9.14	1220.45	0.74	99.38
115.0-120.0	8.82	1229.27	0.72	100.10
120.0-125.0	8.49	1237.75	0.69	100.79
125.0-130.0	8.13	1245.89	0.66	101.46
130.0-135.0	7.75	1253.63	0.63	102.09
135.0-140.0	7.32	1260.95	0.60	102.68
140.0-145.0	6.81	1267.76	0.55	103.24
145.0-150.0	6.18	1273.94	0.50	103.74
150.0-155.0	5.45	1279.39	0.44	104.18
155.0-160.0	4.62	1284.01	0.38	104.56
160.0-165.0	3.69	1287.70	0.30	104.86
165.0-170.0	2.70	1290.40	0.22	105.08
170.0-175.0	1.65	1292.05	0.13	105.22
175.0-180.0	0.56	1292.61	0.05	105.26

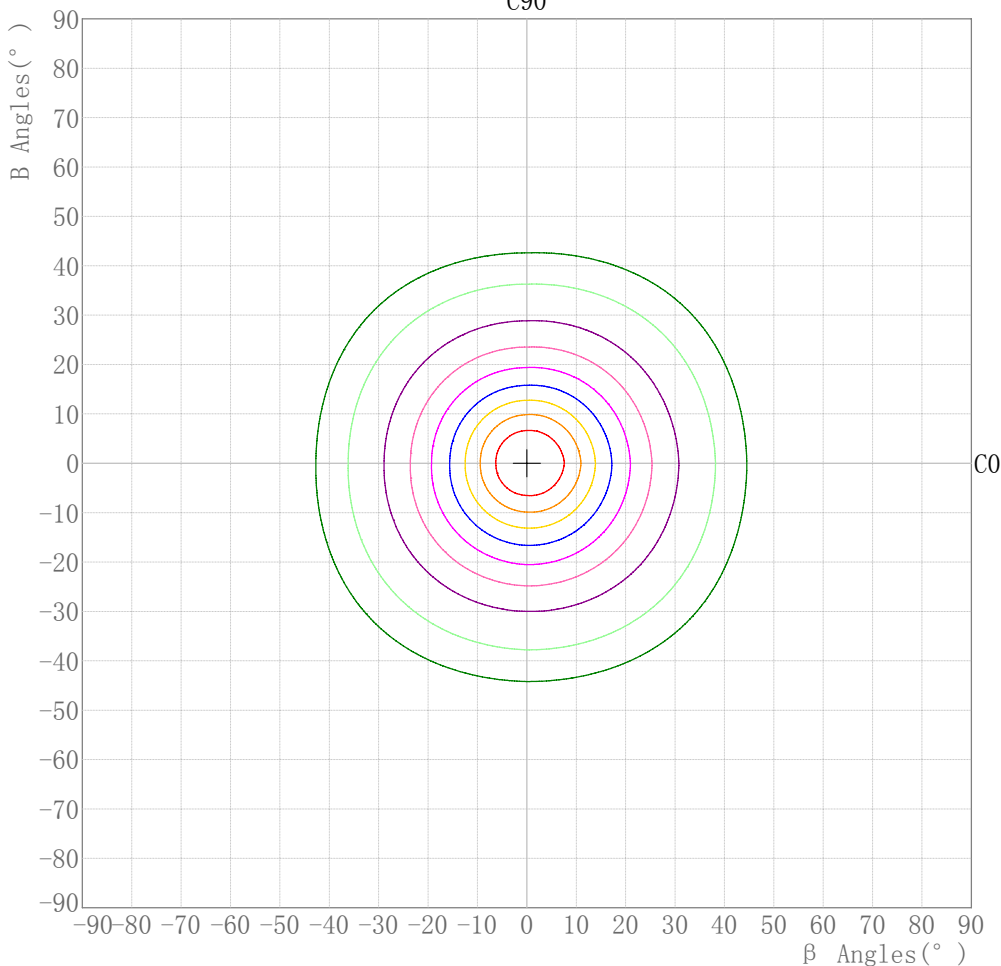
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**Rectangle ISO Lighting Intensity Diagram**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**ISO Lighting Intensity Curve**

C90



Curves:

[Unit: cd]

[IMax] =1591.249

— [IMax\*90%]=1432.124

— [IMax\*80%]=1272.999

— [IMax\*70%]=1113.874

— [IMax\*60%]=954.749

— [IMax\*50%]=795.625

— [IMax\*40%]=636.500

— [IMax\*30%]=477.375

— [IMax\*20%]=318.250

— [IMax\*10%]=159.125

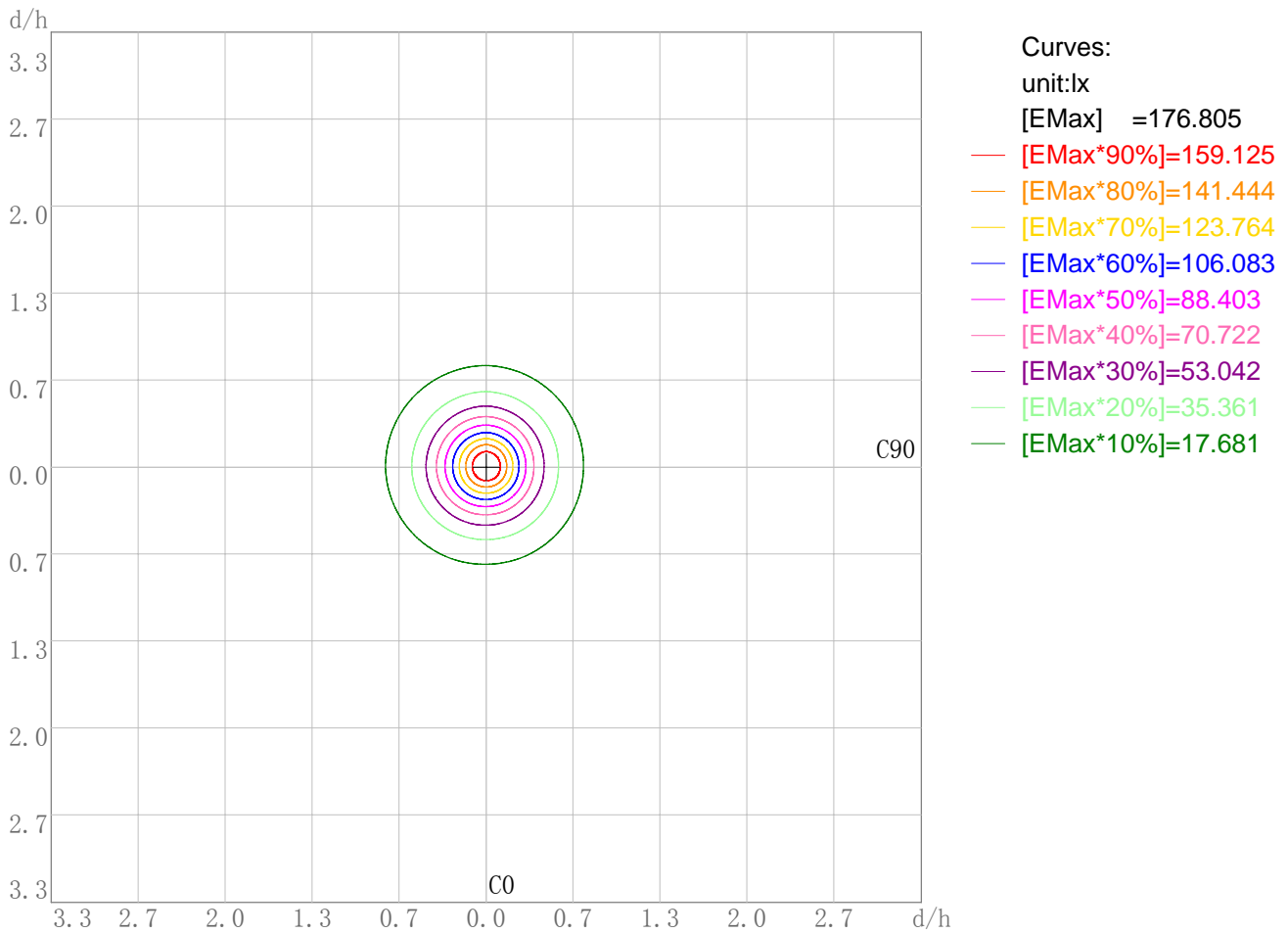
Maximum Light Intensity(cd): 1591.25

Maximum Cand.@Angle: H=0.0°,V=0.0°

**Plane ISO-Illuminance Diagram**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**Plane ISO-Illuminance Curve**

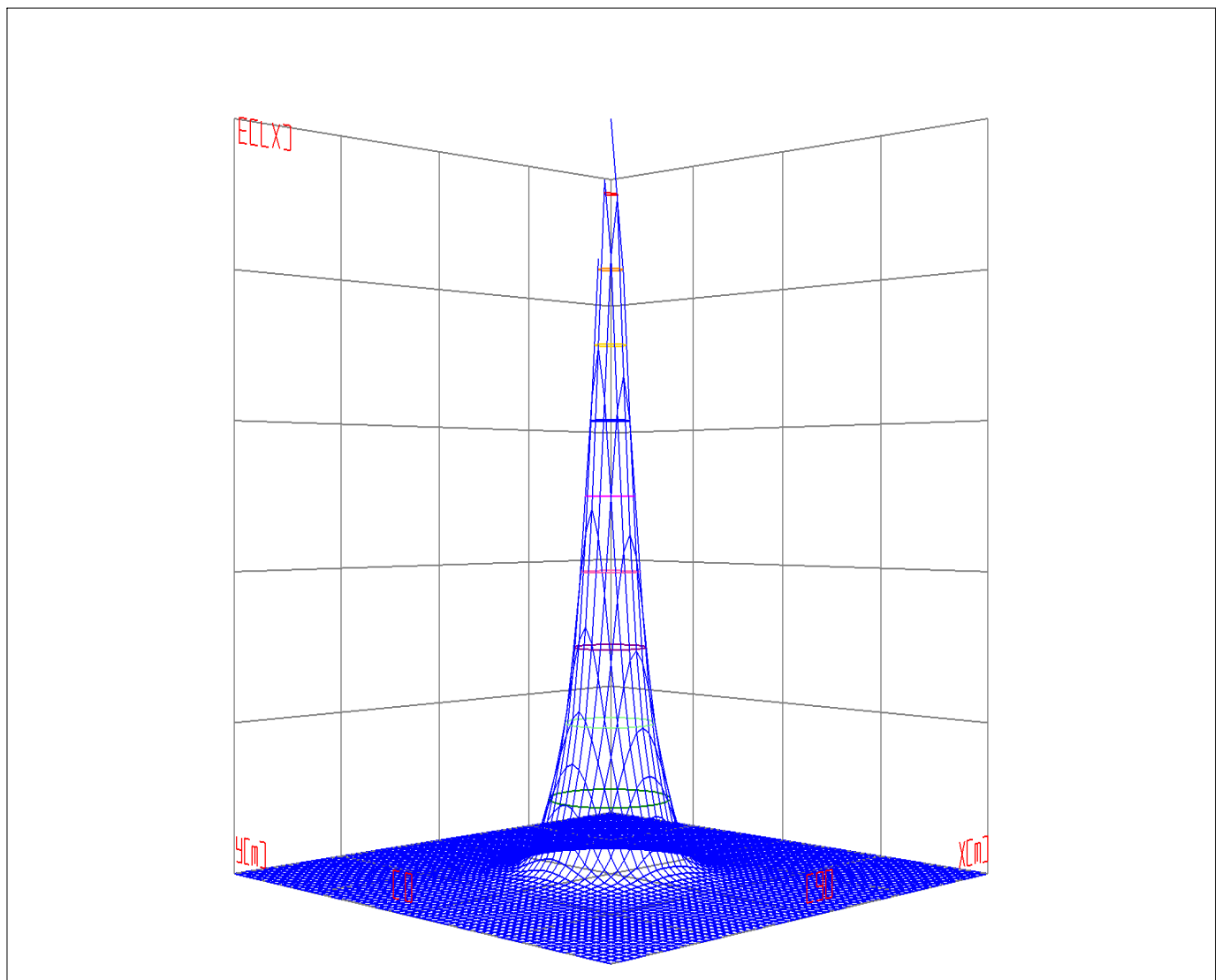


Working Plane Luminaire Mounting Height(m): 3.00  
 Working Plane Maximum Illuminance(lx): 176.81  
 Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

**3D Plane ISO Illuminance Diagram**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**3D Plane Illuminance Modal**

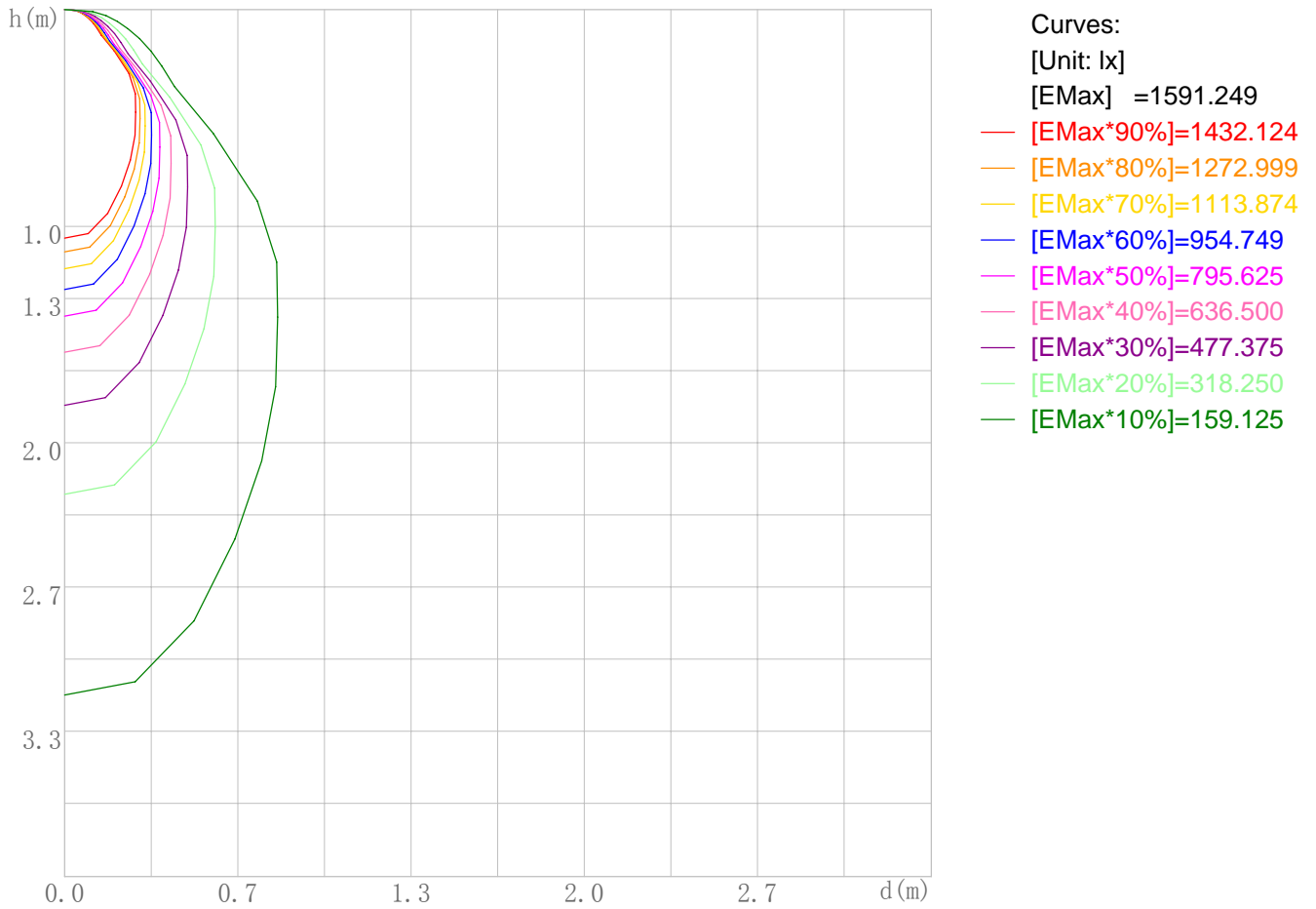


Curves: 3D Model — 90% — 80% — 70% — 60% — 50% — 40% — 30% — 20% — 10% —  
 View Angles(deg): 0    Height(m): 3.0    Distance(m): 10.0

**Space ISO Illuminance Diagram**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

Space ISO Illuminance Curve



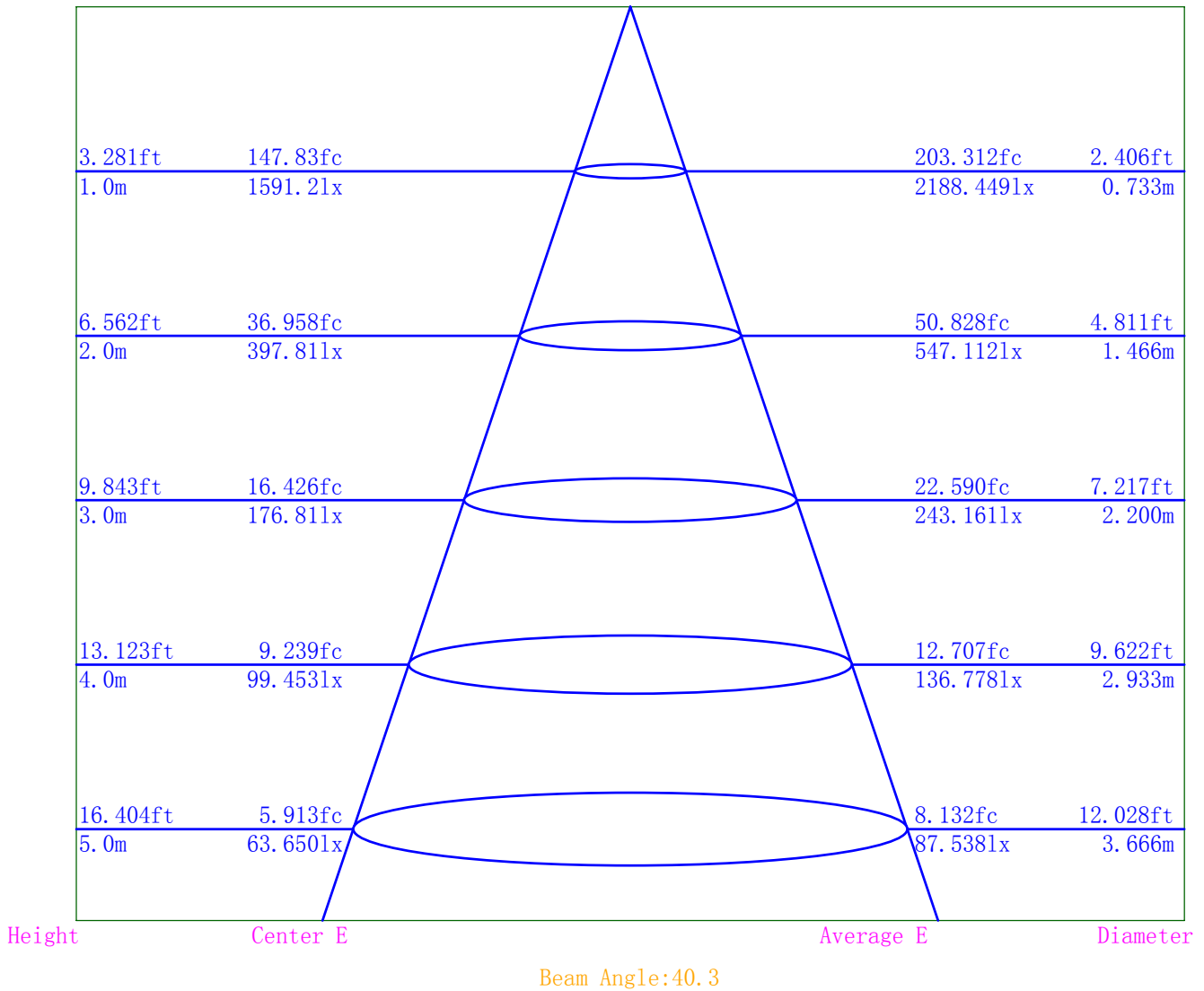
Space Plane Maximum Illuminance and @Angle:1591.25lx,0.0deg  
 Plane Maximum Lighting Intensity and @Angle:1591.249cd,0deg



**Illuminance-Distance Diagram**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

**Illuminance-Distance Curve**



**Indoor Luminance Limiting Curves**

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

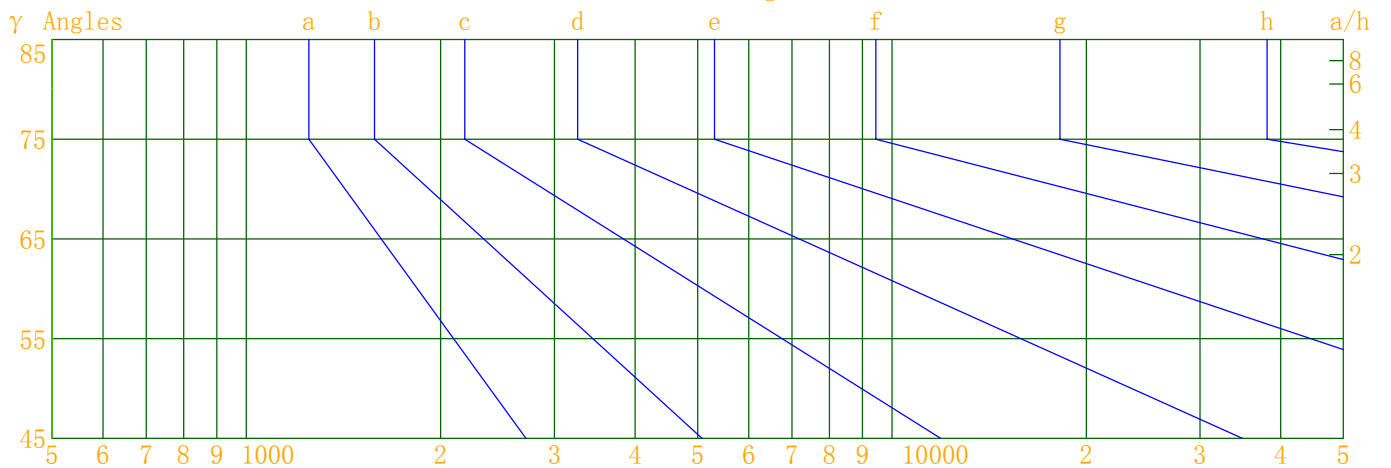
Glare Grade Table

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

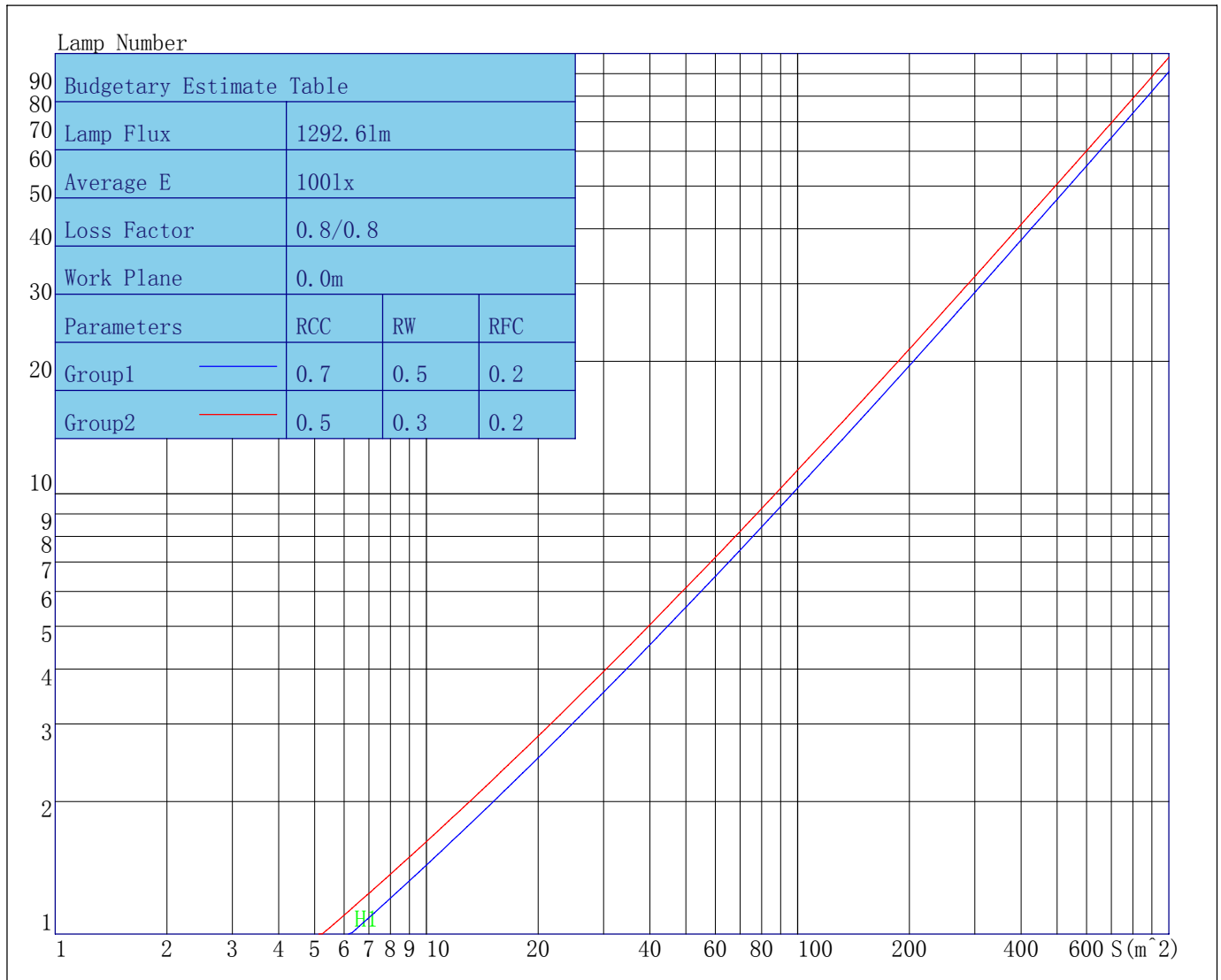
Luminance Limiting Curve



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-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13



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-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

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	123	123	123	123	119	119	119	119	111	111	111	105	105	105	98	98	98	95
1	115	112	108	105	112	108	105	103	102	100	98	96	95	93	91	90	89	86
2	108	102	97	92	105	99	95	91	94	90	87	89	86	84	85	83	81	78
3	102	94	87	82	99	91	86	81	87	82	79	83	79	76	80	76	74	72
4	96	86	80	75	93	85	78	74	81	76	72	78	73	70	75	71	68	66
5	90	80	73	68	88	79	72	67	76	70	66	73	68	64	70	66	63	61
6	85	75	68	63	83	73	67	62	71	65	61	68	63	60	66	62	58	57
7	81	70	63	58	79	69	62	57	66	61	56	64	59	55	62	58	54	53
8	76	66	59	54	75	64	58	53	62	57	53	61	56	52	59	54	51	49
9	73	62	55	50	71	61	54	50	59	53	49	57	52	49	56	51	48	46
10	69	58	52	47	68	57	51	47	56	50	46	54	49	46	53	48	45	44

### Unified Glare Rating Table

Lum. Name: DC13W-3500K, Ra90, Reflector 40°	Lum. Catalog: 1290LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-35XH5M3	Test Machine:GON-2000	Test Date: 2017/06/13

### 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	Vewed crosswise					Vewed endwise				
X=2H Y=2H	-0.9	0.2	-0.4	0.7	1.3	-0.9	0.2	-0.4	0.7	1.3
Y=3H	-1.1	-0.1	-0.6	0.4	1.0	-1.1	-0.1	-0.6	0.4	1.0
Y=4H	-1.2	-0.2	-0.6	0.3	0.9	-1.2	-0.2	-0.6	0.3	0.9
Y=6H	-1.3	-0.4	-0.7	0.1	0.7	-1.3	-0.4	-0.7	0.1	0.7
Y=8H	-1.4	-0.5	-0.8	0.1	0.7	-1.4	-0.5	-0.8	0.1	0.7
Y=12H	-1.4	-0.6	-0.8	-0.0	0.6	-1.4	-0.6	-0.8	-0.0	0.6
X=4H Y=2H	-1.2	-0.2	-0.6	0.3	0.9	-1.2	-0.2	-0.6	0.3	0.9
Y=3H	-1.4	-0.6	-0.8	-0.0	0.6	-1.4	-0.6	-0.8	-0.0	0.6
Y=4H	-1.5	-0.8	-0.9	-0.2	0.5	-1.5	-0.8	-0.9	-0.2	0.5
Y=6H	-1.6	-1.0	-1.0	-0.3	0.3	-1.6	-1.0	-1.0	-0.3	0.3
Y=8H	-1.7	-1.1	-1.1	-0.4	0.2	-1.7	-1.1	-1.1	-0.4	0.2
Y=12H	-1.7	-1.2	-1.1	-0.5	0.1	-1.7	-1.2	-1.1	-0.5	0.1
X=8H Y=4H	-1.7	-1.1	-1.1	-0.4	0.2	-1.7	-1.1	-1.1	-0.4	0.2
Y=6H	-1.8	-1.3	-1.2	-0.6	0.2	-1.8	-1.3	-1.2	-0.6	0.2
Y=8H	-1.9	-1.4	-1.2	-0.7	-0.0	-1.9	-1.4	-1.2	-0.7	-0.0
Y=12H	-1.9	-1.5	-1.3	-0.8	-0.1	-1.9	-1.5	-1.3	-0.8	-0.1
X=12H Y=4H	-1.7	-1.2	-1.1	-0.5	0.1	-1.7	-1.2	-1.1	-0.5	0.1
Y=6H	-1.9	-1.4	-1.2	-0.7	-0.0	-1.9	-1.4	-1.2	-0.7	-0.0
Y=8H	-1.9	-1.5	-1.3	-0.8	-0.1	-1.9	-1.5	-1.3	-0.8	-0.1
Variations with the objerver 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	1591.25	1591.25	1591.25	1591.25
γ 5.0	1548.10	1512.93	1497.00	1504.04
γ 10.0	1324.88	1265.43	1243.49	1266.81
γ 15.0	1053.49	989.08	981.43	1022.35
γ 20.0	831.39	768.72	765.20	815.05
γ 25.0	646.97	581.22	585.67	630.01
γ 30.0	493.20	446.28	447.05	477.10
γ 35.0	392.87	351.38	348.25	380.19
γ 40.0	276.26	220.79	220.73	268.57
γ 45.0	147.31	102.43	107.11	137.97
γ 50.0	75.40	65.40	62.34	70.39
γ 55.0	57.95	52.19	49.95	53.71
γ 60.0	46.97	42.24	39.74	43.31
γ 65.0	37.98	33.26	31.80	35.01
γ 70.0	31.23	27.86	27.27	29.44
γ 75.0	27.17	24.69	24.39	26.21
γ 80.0	24.13	22.12	21.97	23.39
γ 85.0	21.36	20.05	20.11	21.06
γ 90.0	19.50	18.72	18.90	19.48
γ 95.0	18.88	18.30	18.44	18.93
γ 100.0	18.46	18.13	18.11	18.58
γ 105.0	18.19	17.90	18.00	18.26
γ 110.0	18.08	17.85	18.07	18.12
γ 115.0	18.03	17.91	18.11	18.23
γ 120.0	18.12	18.09	18.31	18.35
γ 125.0	18.41	18.30	18.66	18.62
γ 130.0	18.72	18.78	19.10	19.01
γ 135.0	19.22	19.34	19.67	19.52
γ 140.0	19.86	19.96	20.37	20.15
γ 145.0	20.44	20.65	20.98	20.84
γ 150.0	21.01	21.11	21.56	21.30
γ 155.0	21.55	21.71	22.11	21.80
γ 160.0	22.05	22.22	22.52	22.15
γ 165.0	22.50	22.56	22.83	22.50
γ 170.0	22.81	22.94	23.16	22.76
γ 175.0	23.07	23.17	23.33	23.08
γ 180.0	23.29	23.29	23.29	23.29

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