

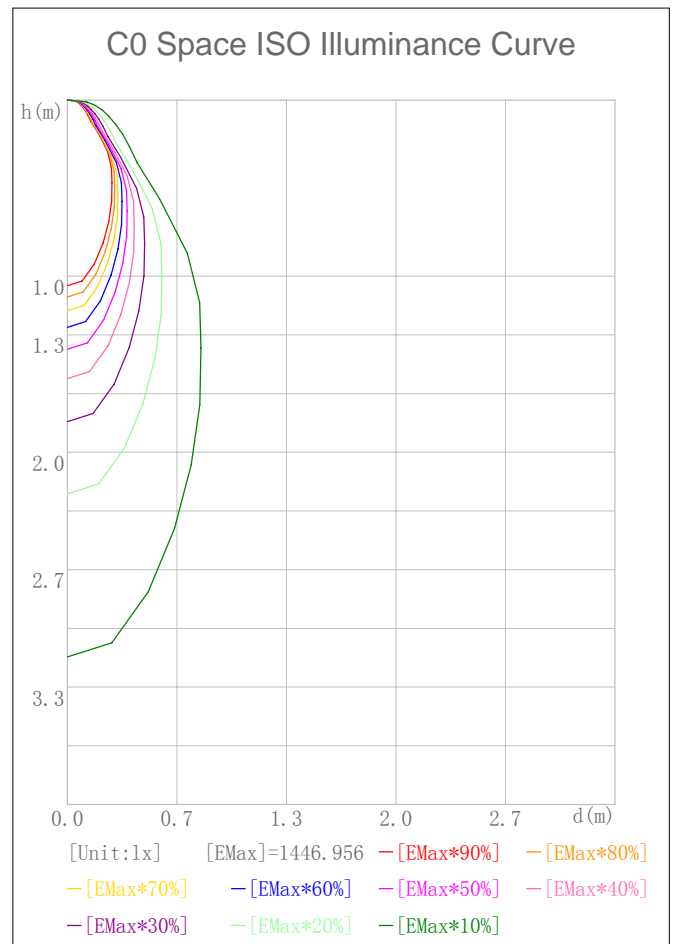
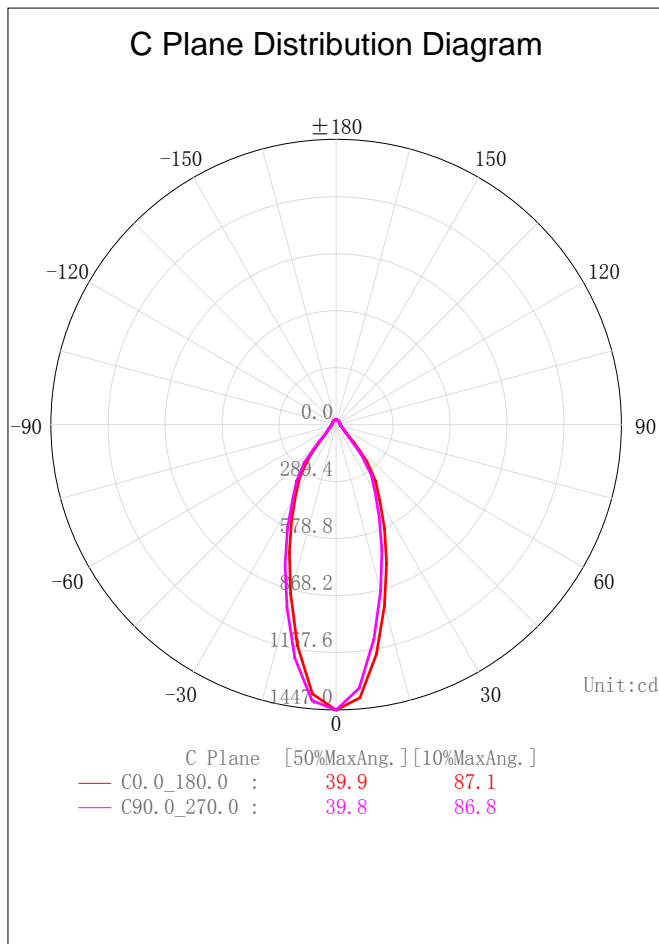
Indoor Luminaire Photometric Data

Description Information

Luminaire Name: DC13W-2700K, Ra90, Reflector 40°		Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR		Lamp Catalog: lamps and lanterns	Test Date: 2017/06/16
LED Chip: Citizen CLU028-1203C4-27XH5M3		Shld. Ang(°):	Test Machine:GON-2000
Test Lab:		Frequency (Hz):	Lamp CCT(K): 2700k 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

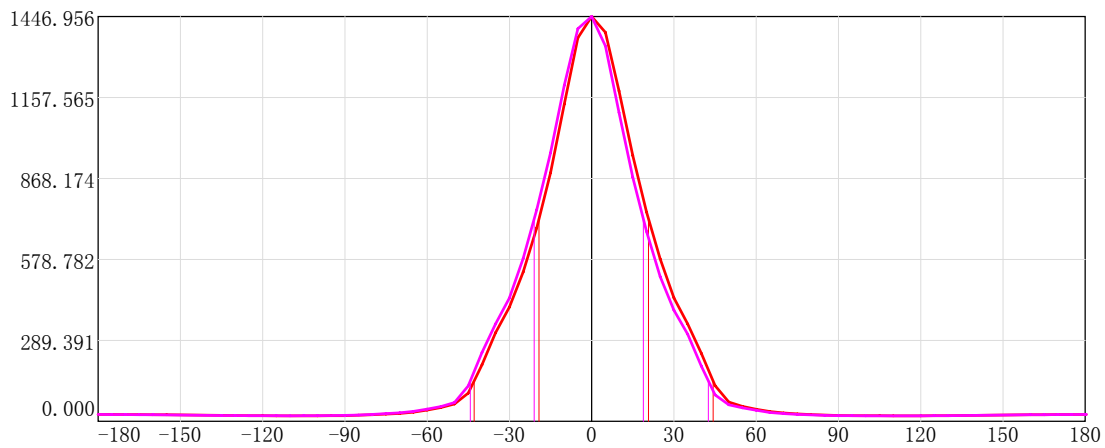
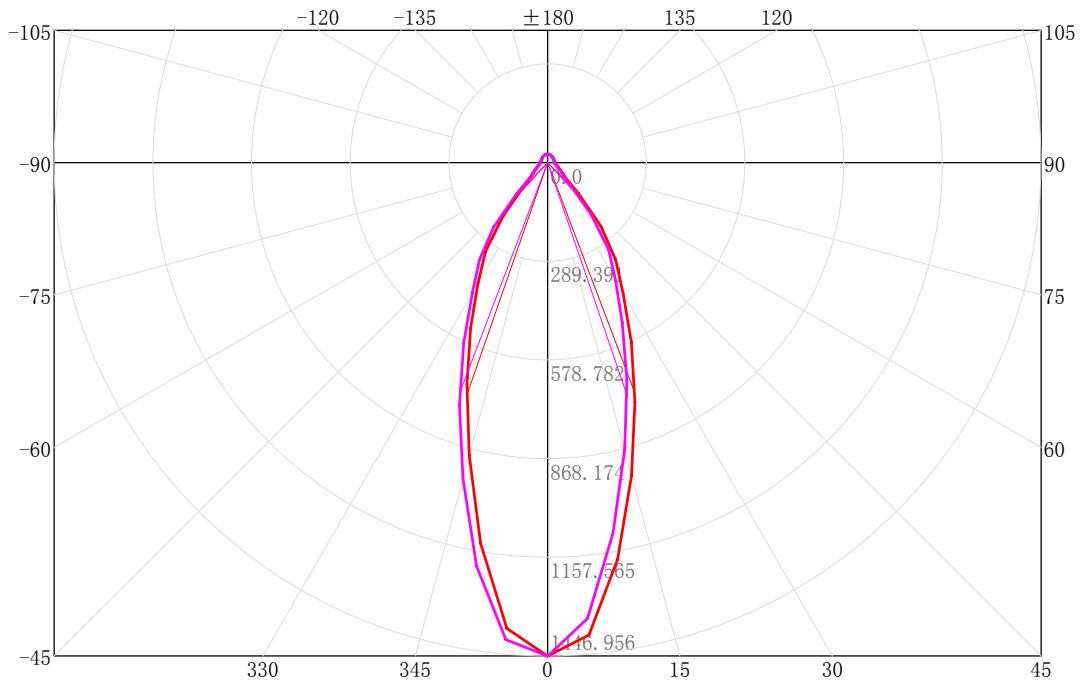
Lamp Speciality Parameter	Luminaire Speciality Parameter	
Rated Flux(lm): 1200.000	Luminaire Flux(lm): 1207.948	Field Angle(10%Imax): 87.1(°)
Rated Power(W): 13W	Luminaire Efficiency: 100.66%	Down Lumens&Percent: 1074.759lm 88.97%
Rated Voltage(V): 36V 350mA	Luminaire EER(lm/W): 34.287	Up Lumens&Percent: 133.188lm 11.03%
Tested Power(W): 35.230	Max. Candela(cd): 1446.956	S/MH: C0_a180=0.621 C90_270=0.619
Lamps' Inside: 1	Max Cand@Ang. (°): C=0.0 γ=0.0	CIE Type: General Diffuse
Tested Electrics (V, A, pf): 219.6, 0.213, 0.752	Beam Angle (50%Imax): 39.9(°)	ErP φ use(90°): 889.951lm
Lamp Size (W*L*H): 0.000m*0.000m*0.000m	Left=-19.2°, Right=20.7°	IRF(%): 310.887



2D Plane Light Intensity Distribution Curve

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

C Plane Distribution Diagram

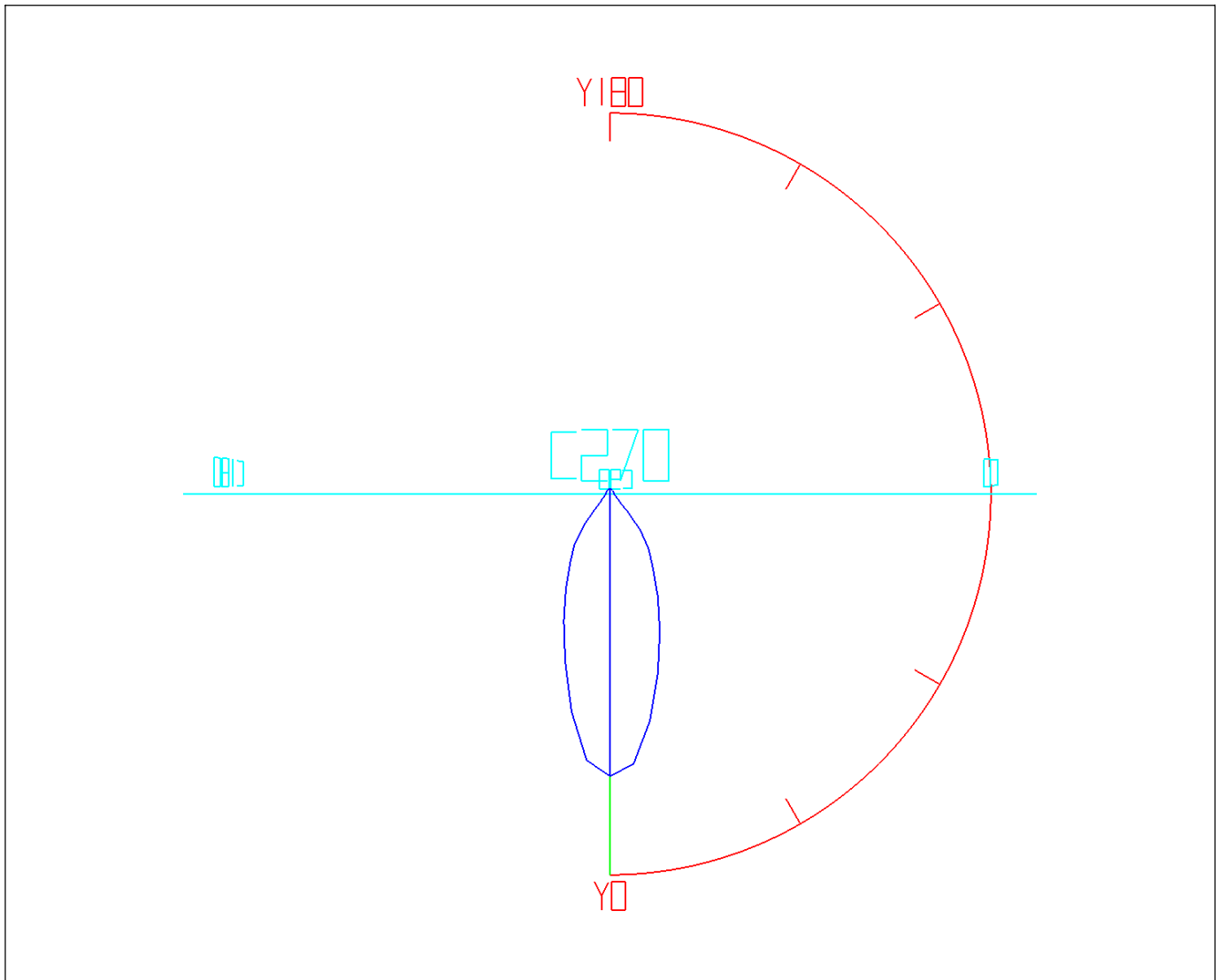


C Plane	[50%MaxAng.]	[10%MaxAng.]	Unit:cd
C0.0_180.0	: 39.9	87.1	
C90.0_270.0	: 39.8	86.8	

3D Light Intensity Distribution Modal

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

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

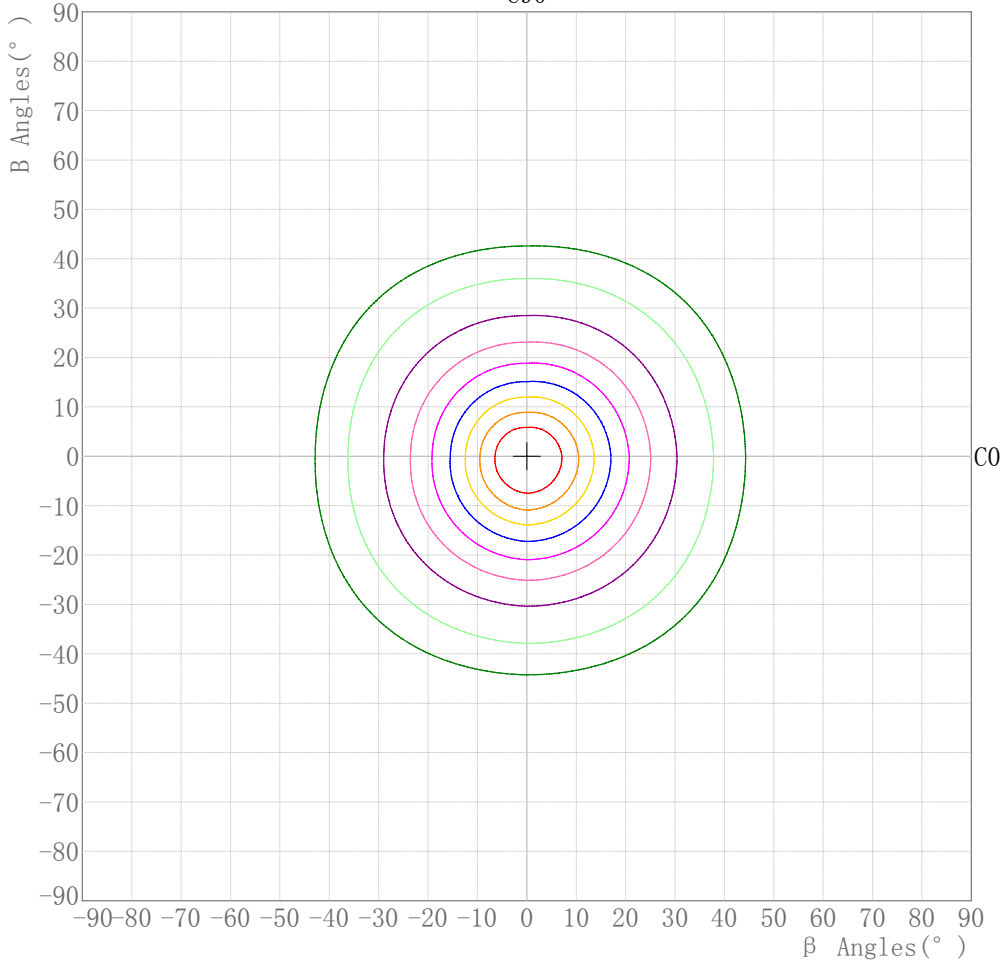
Zone(γ)	Zone Flux (lm)	Sums Flux (lm)	Zone%Lamp	Sums%Lamp
0.0-5.0	33.76	33.76	2.81	2.81
5.0-10.0	90.56	124.31	7.55	10.36
10.0-15.0	122.93	247.24	10.24	20.60
15.0-20.0	134.84	382.08	11.24	31.84
20.0-25.0	133.44	515.51	11.12	42.96
25.0-30.0	123.46	638.98	10.29	53.25
30.0-35.0	110.98	749.96	9.25	62.50
35.0-40.0	92.45	842.41	7.70	70.20
40.0-45.0	62.10	904.50	5.17	75.38
45.0-50.0	35.86	940.36	2.99	78.36
50.0-55.0	25.22	965.58	2.10	80.47
55.0-60.0	21.60	987.18	1.80	82.27
60.0-65.0	18.56	1005.75	1.55	83.81
65.0-70.0	16.14	1021.88	1.34	85.16
70.0-75.0	14.63	1036.51	1.22	86.38
75.0-80.0	13.62	1050.13	1.13	87.51
80.0-85.0	12.71	1062.84	1.06	88.57
85.0-90.0	11.92	1074.76	0.99	89.56
90.0-95.0	11.43	1086.19	0.95	90.52
95.0-100.0	11.15	1097.34	0.93	91.45
100.0-105.0	10.85	1108.20	0.90	92.35
105.0-110.0	10.53	1118.72	0.88	93.23
110.0-115.0	10.18	1128.90	0.85	94.08
115.0-120.0	9.82	1138.72	0.82	94.89
120.0-125.0	9.43	1148.16	0.79	95.68
125.0-130.0	9.01	1157.17	0.75	96.43
130.0-135.0	8.54	1165.70	0.71	97.14
135.0-140.0	8.01	1173.72	0.67	97.81
140.0-145.0	7.42	1181.14	0.62	98.43
145.0-150.0	6.71	1187.84	0.56	98.99
150.0-155.0	5.89	1193.74	0.49	99.48
155.0-160.0	4.98	1198.72	0.41	99.89
160.0-165.0	3.97	1202.69	0.33	100.22
165.0-170.0	2.90	1205.59	0.24	100.47
170.0-175.0	1.77	1207.35	0.15	100.61
175.0-180.0	0.59	1207.95	0.05	100.66

Rectangle ISO Lighting Intensity Dia gram

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

ISO Lighting Intensity Curve

C90



Curves:

[Unit: cd]

[I_{Max}] =1446.956

- [I_{Max}*90%]=1302.260
- [I_{Max}*80%]=1157.565
- [I_{Max}*70%]=1012.869
- [I_{Max}*60%]=868.174
- [I_{Max}*50%]=723.478
- [I_{Max}*40%]=578.782
- [I_{Max}*30%]=434.087
- [I_{Max}*20%]=289.391
- [I_{Max}*10%]=144.696

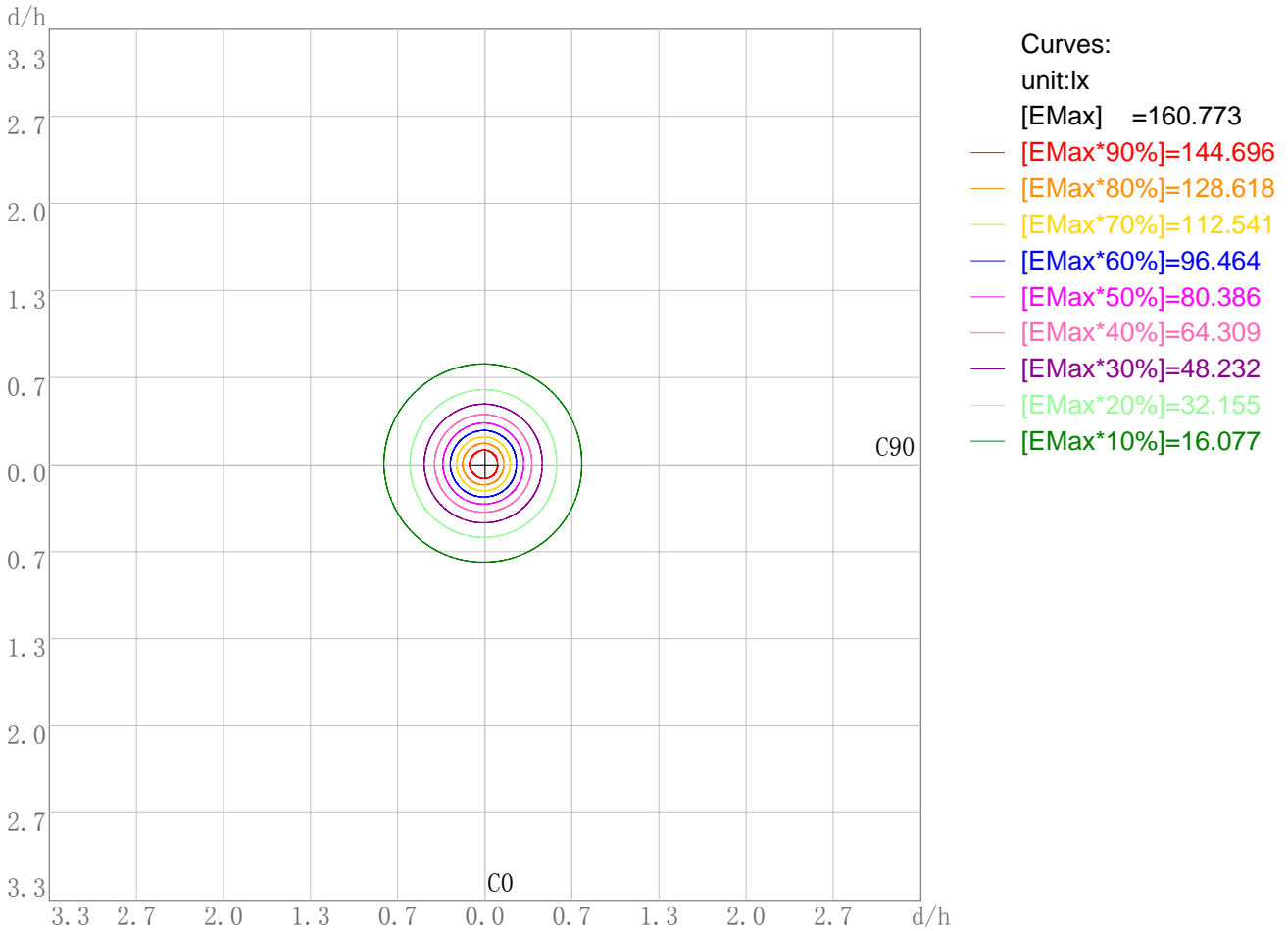
Maximum Light Intensity(cd): 1446.96

Maximum Cand.@Angle: H=0.0°,V=0.0°

Plane ISO-Illuminance Diagram

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

Plane ISO-Illuminance Curve

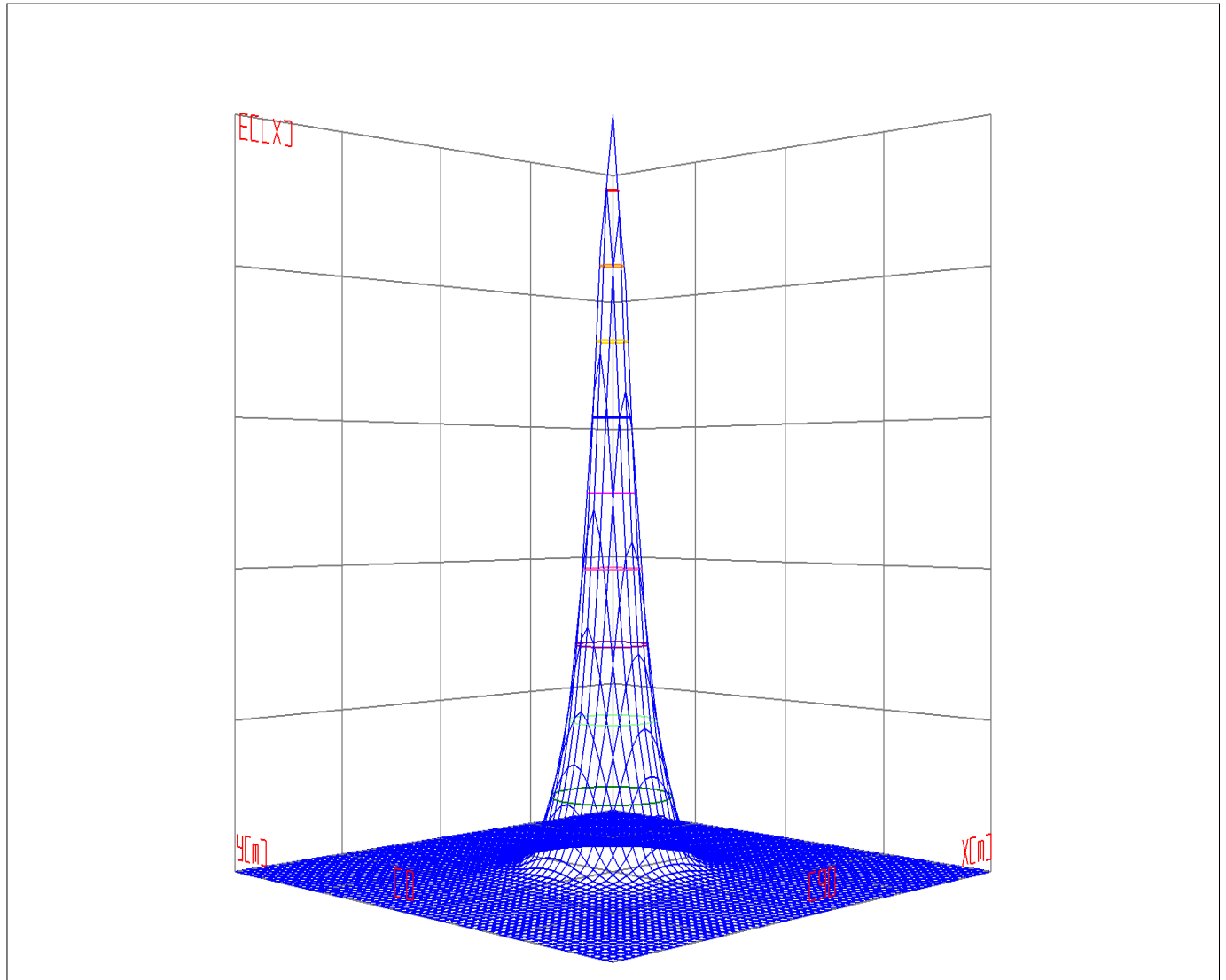


Working Plane Luminaire Mounting Height(m): 3.00
 Working Plane Maximum Illuminance(lx): 160.77
 Working Plane Maximum Illuminance Position(d/h):H0.0 V0.0

3D Plane ISO Illuminance Diagram

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name:CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

3D Plane Illuminance Modal

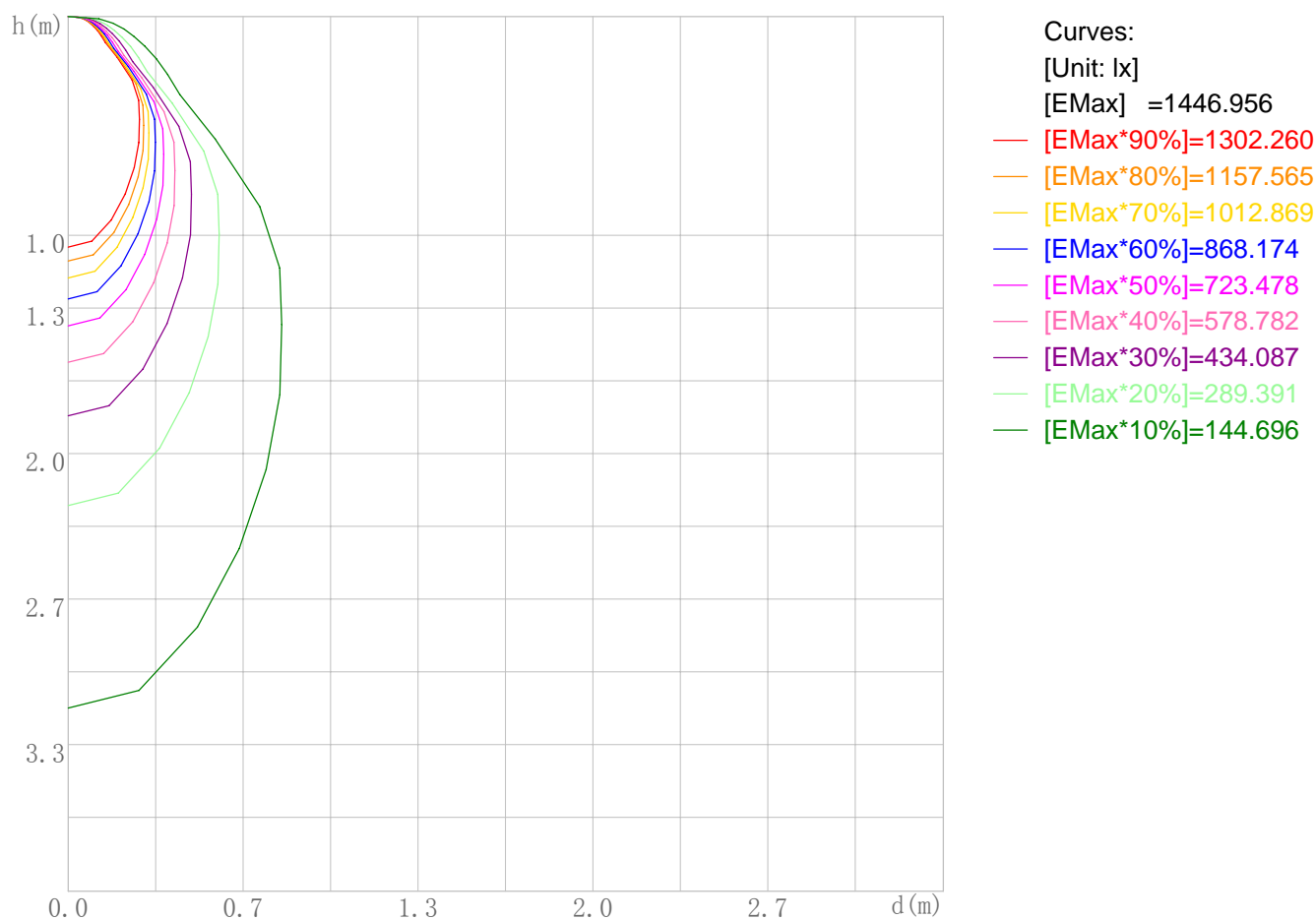


Curves: 3D Model — 90% — 80% — 70% — 60% — 50% — 40% — 30% — 20% — 10% —
 View Angles(deg): 0 Height(m): 3.0 Distance(m): 10.0

Space ISO Illuminance Diagram

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

Space ISO Illuminance Curve

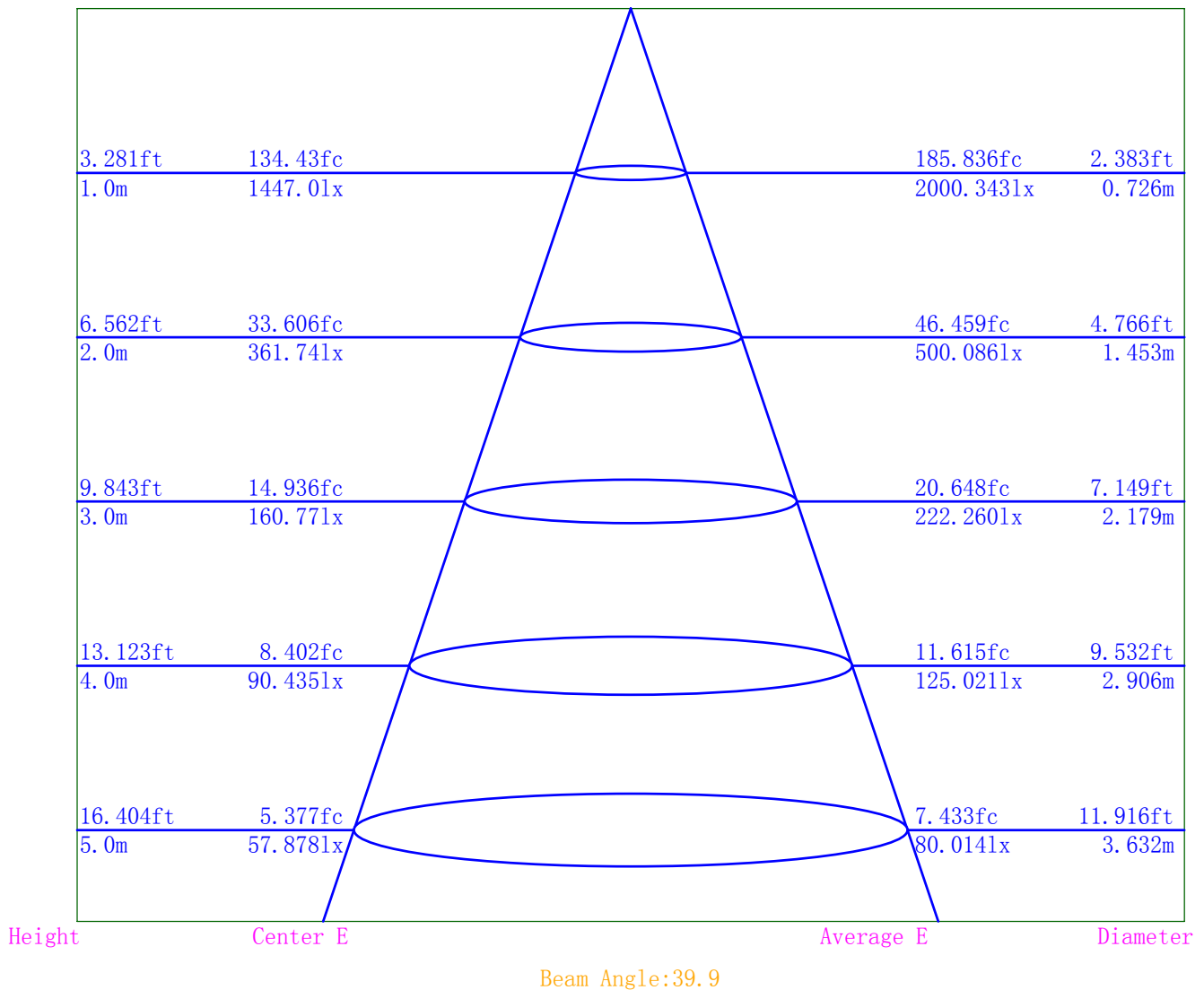


Space Plane Maximum Illuminance and @Angle:1446.96lx,0.0deg
 Plane Maximum Lighting Intensity and @Angle:1446.956cd,0deg

Illuminance-Distance Diagram

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

Illuminance-Distance Curve



Indoor Luminance Limiting Curves

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

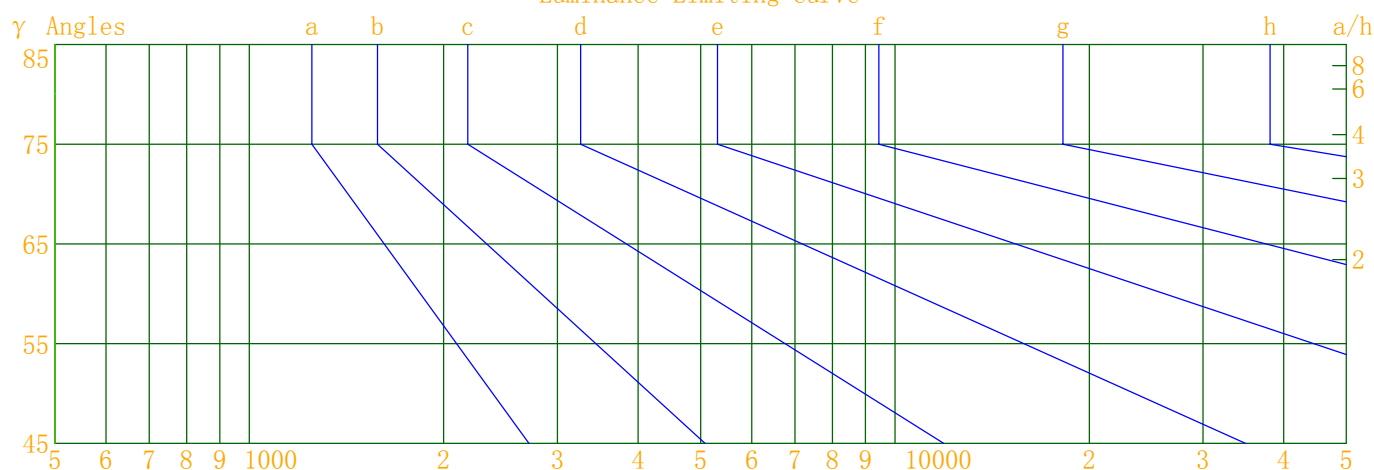
Glare Grade Table

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

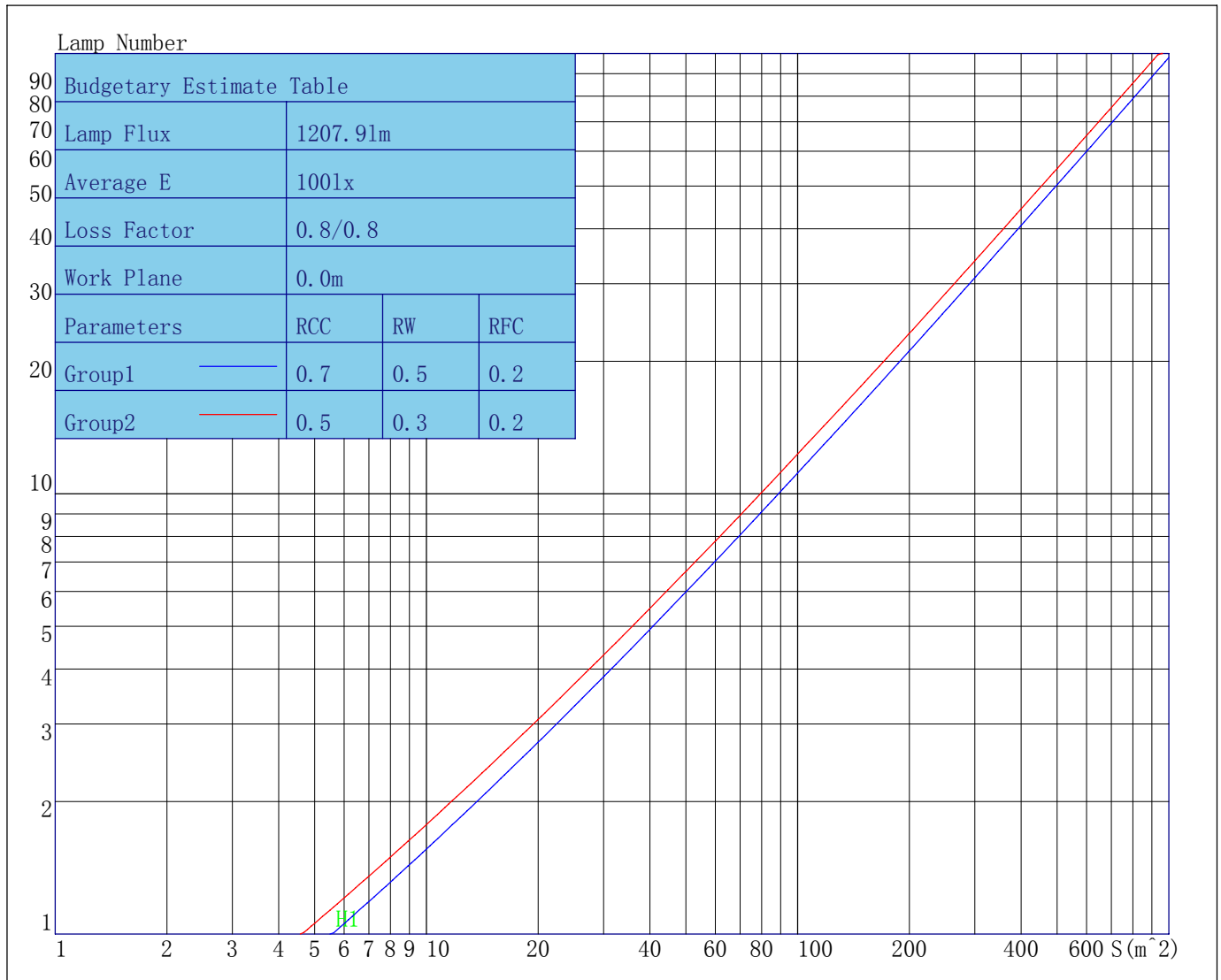
Luminance Limiting Curve



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-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16



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-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

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	117	117	117	117	113	113	113	113	106	106	106	99	99	99	93	93	93	90
1	110	106	103	100	106	103	100	97	96	94	92	91	89	87	86	84	83	80
2	103	97	92	87	99	94	89	85	89	85	82	84	81	78	80	77	75	73
3	96	89	83	78	93	86	81	76	82	77	74	78	74	71	74	71	69	66
4	91	82	75	70	88	80	74	69	76	71	67	73	69	65	70	66	63	61
5	85	76	69	64	83	74	68	63	71	66	62	68	64	60	65	61	58	56
6	81	70	64	59	78	69	63	58	66	61	57	64	59	56	61	57	54	52
7	76	66	59	54	74	65	58	54	62	57	53	60	55	52	58	54	51	49
8	72	62	55	50	70	61	54	50	59	53	49	57	52	48	55	51	47	46
9	69	58	51	47	67	57	51	47	55	50	46	54	49	45	52	48	45	43
10	65	55	48	44	64	54	48	44	52	47	43	51	46	43	49	45	42	40

Unified Glare Rating Table

Lum. Name: DC13W-2700K, Ra90, Reflector 40°	Lum. Catalog: 1200LM	Test ID: 01
Lamp Name: CL2-13MR	Lamp Catalog: lamps and lanterns	Test Lab:
LED Chip: Citizen CLU028-1203C4-27XH5M3	Test Machine:GON-2000	Test Date: 2017/06/16

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	-1.0	0.1	-0.5	0.6	1.2	-1.0	0.1	-0.5	0.6	1.2
Y=3H	-1.2	-0.2	-0.6	0.3	0.9	-1.2	-0.2	-0.6	0.3	0.9
Y=4H	-1.3	-0.4	-0.7	0.2	0.8	-1.3	-0.4	-0.7	0.2	0.8
Y=6H	-1.4	-0.6	-0.8	0.0	0.7	-1.4	-0.6	-0.8	0.0	0.7
Y=8H	-1.5	-0.7	-0.8	-0.1	0.6	-1.5	-0.7	-0.8	-0.1	0.6
Y=12H	-1.5	-0.8	-0.9	-0.2	0.5	-1.5	-0.8	-0.9	-0.2	0.5
X=4H Y=2H	-1.3	-0.4	-0.7	0.2	0.8	-1.3	-0.4	-0.7	0.2	0.8
Y=3H	-1.5	-0.7	-0.9	-0.1	0.5	-1.5	-0.7	-0.9	-0.1	0.5
Y=4H	-1.6	-0.9	-1.0	-0.3	0.4	-1.6	-0.9	-1.0	-0.3	0.4
Y=6H	-1.7	-1.1	-1.1	-0.5	0.2	-1.7	-1.1	-1.1	-0.5	0.2
Y=8H	-1.8	-1.2	-1.1	-0.6	0.1	-1.8	-1.2	-1.1	-0.6	0.1
Y=12H	-1.8	-1.3	-1.2	-0.7	0.1	-1.8	-1.3	-1.2	-0.7	0.1
X=8H Y=4H	-1.8	-1.2	-1.1	-0.6	0.1	-1.8	-1.2	-1.1	-0.6	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
Y=12H	-2.0	-1.6	-1.3	-1.0	-0.1	-2.0	-1.6	-1.3	-1.0	-0.1
X=12H Y=4H	-1.8	-1.3	-1.2	-0.7	0.1	-1.8	-1.3	-1.2	-0.7	0.1
Y=6H	-1.9	-1.5	-1.3	-0.9	-0.1	-1.9	-1.5	-1.3	-0.9	-0.1
Y=8H	-2.0	-1.6	-1.3	-1.0	-0.1	-2.0	-1.6	-1.3	-1.0	-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	1446.96	1446.96	1446.96	1446.96
γ 5.0	1390.30	1341.63	1370.95	1403.72
γ 10.0	1180.89	1103.84	1133.37	1201.24
γ 15.0	949.79	872.16	887.92	959.87
γ 20.0	747.89	678.75	691.66	756.45
γ 25.0	581.05	517.49	533.67	582.04
γ 30.0	441.69	397.64	408.15	440.72
γ 35.0	348.06	311.97	317.26	349.11
γ 40.0	243.38	197.73	202.51	246.41
γ 45.0	128.36	94.86	101.33	126.90
γ 50.0	69.23	59.43	62.18	67.51
γ 55.0	53.86	48.66	49.76	53.38
γ 60.0	43.54	39.95	40.58	44.07
γ 65.0	35.56	32.29	33.21	36.22
γ 70.0	30.10	28.07	28.73	30.73
γ 75.0	27.02	25.36	26.08	27.76
γ 80.0	24.72	23.34	23.99	25.29
γ 85.0	22.79	21.71	22.14	23.16
γ 90.0	21.36	20.69	20.86	21.45
γ 95.0	20.86	20.34	20.50	20.92
γ 100.0	20.58	20.15	20.25	20.58
γ 105.0	20.35	19.94	20.08	20.33
γ 110.0	20.13	19.91	20.11	20.22
γ 115.0	20.11	19.90	20.15	20.31
γ 120.0	20.29	20.05	20.39	20.40
γ 125.0	20.45	20.33	20.69	20.66
γ 130.0	20.78	20.77	21.06	20.97
γ 135.0	21.19	21.20	21.60	21.41
γ 140.0	21.77	21.86	22.15	21.96
γ 145.0	22.30	22.39	22.86	22.56
γ 150.0	22.85	22.93	23.33	23.01
γ 155.0	23.37	23.42	23.83	23.50
γ 160.0	23.83	23.84	24.22	23.86
γ 165.0	24.22	24.14	24.49	24.25
γ 170.0	24.55	24.49	24.73	24.53
γ 175.0	24.77	24.82	24.98	24.70
γ 180.0	24.95	24.95	24.95	24.95
