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NATA

LumCAT: 3-2438-A
Luminaire: 92.70.151.00+92.70.153.00
Report No: NATA0100
Test No: GC2020011309
LampCAT: CITIZEN LCN-C03A
Lamp flux(lm): 2216.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 33.8800
Current(A): 0.4970
Power (W): 16.8000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1866.50
Efficiency(%): 84.23%
Lumens(lm)/Power(W): 111.10
Central intensity(cd): 4795.735
Maximum intensity(cd): 4795.735
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=29.3
[C90/270]Total=29.3
Field angle(10%Imax): [C0/180]Total=68.5
[C90/270]Total=68.5
Maximum s/h(1/2): C0_180=0.49 C90_270=0.49
Maximum s/h(1/4): C0_180=0.51 C90_270=0.51
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 84.23%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.605%

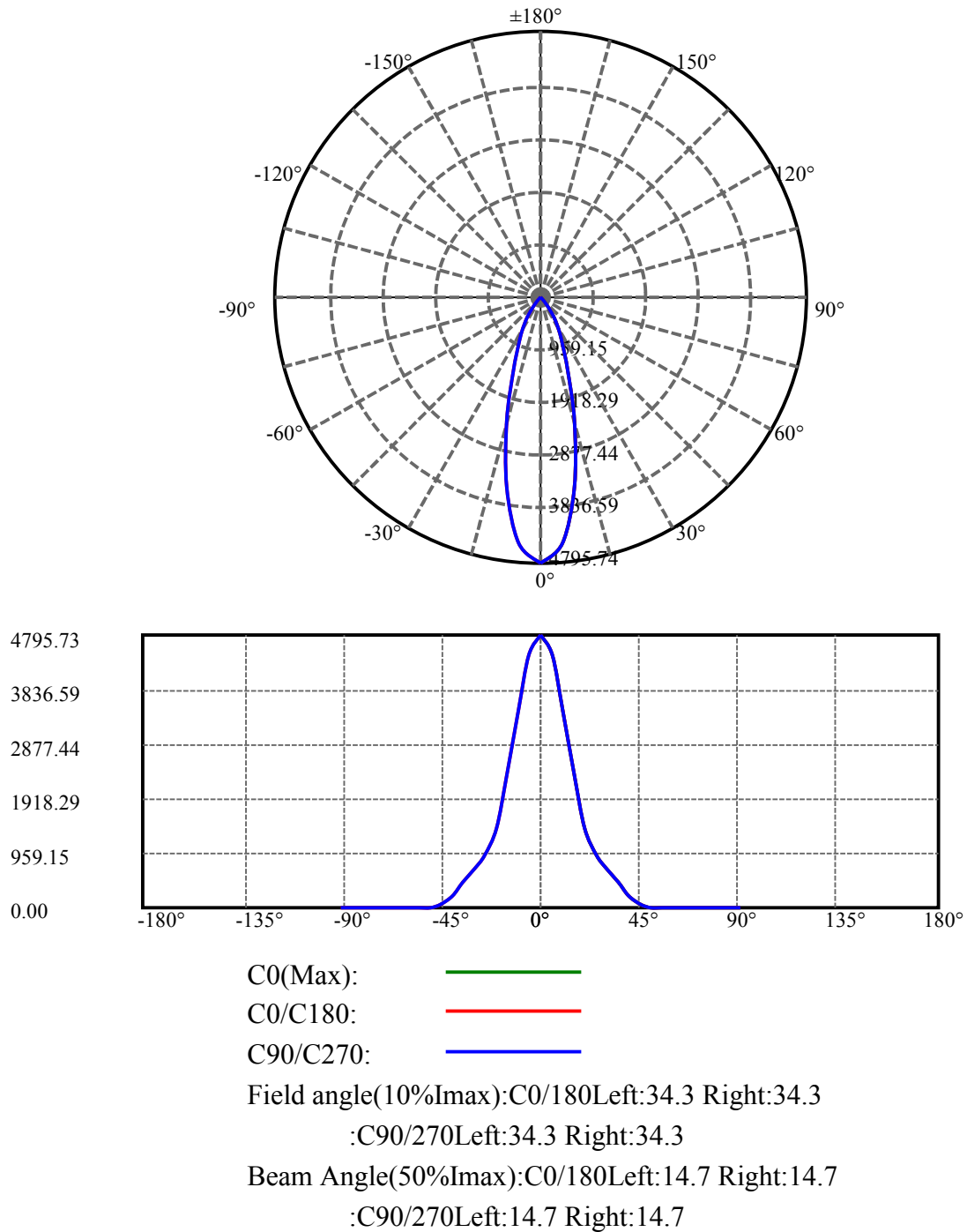
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4795.734	0.000	0	.000%	.000%
5.0	4438.898	110.397	110.397	4.982%	5.915%
10.0	3480.891	283.316	393.713	12.785%	21.094%
15.0	2319.398	344.069	737.782	15.527%	39.528%
20.0	1396.498	306.242	1044.024	13.820%	55.935%
25.0	934.509	244.480	1288.504	11.032%	69.033%
30.0	697.936	206.587	1495.091	9.323%	80.101%
35.0	441.380	167.772	1662.864	7.571%	89.090%
40.0	209.524	108.598	1771.462	4.901%	94.908%
45.0	50.745	48.191	1819.653	2.175%	97.490%
50.0	10.920	12.460	1832.113	.562%	98.158%
55.0	8.902	4.310	1836.423	.194%	98.389%
60.0	8.564	4.037	1840.46	.182%	98.605%
65.0	8.395	4.123	1844.583	.186%	98.826%
70.0	8.290	4.225	1848.808	.191%	99.052%
75.0	8.248	4.323	1853.13	.195%	99.284%
80.0	8.276	4.421	1857.551	.200%	99.521%
85.0	8.311	4.507	1862.058	.203%	99.762%
90.0	7.910	4.441	1866.5	.200%	100.000%

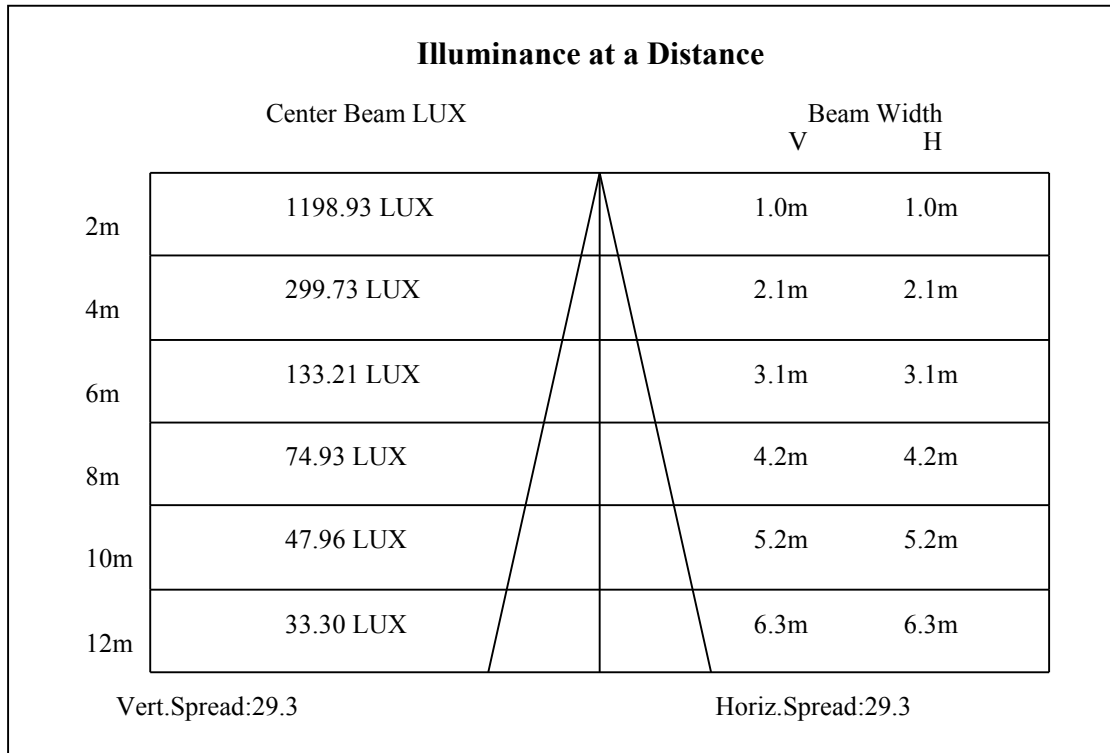
ZONAL LUMEN SUMMARY

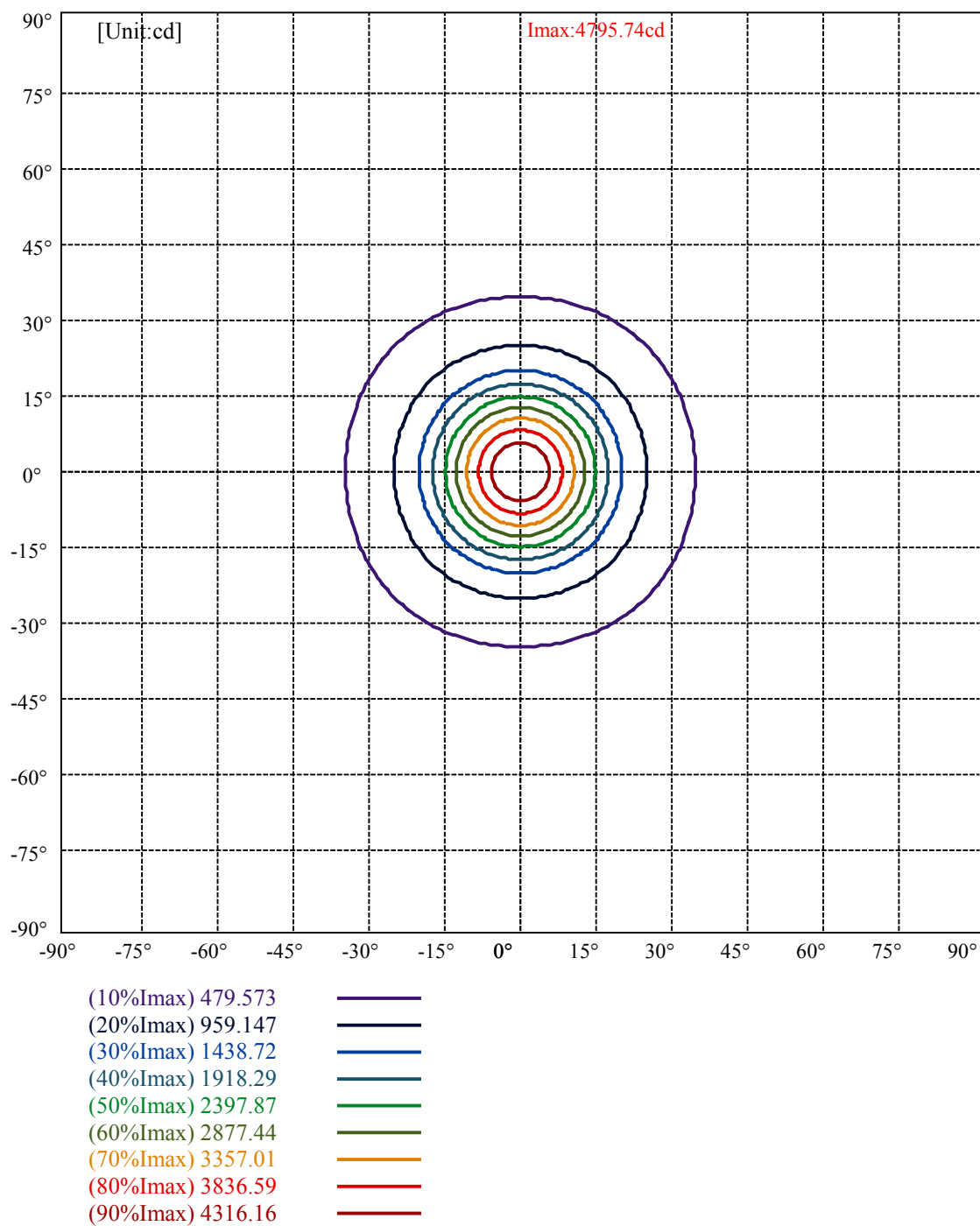
Zone	Lumens	%Lamp	%Fixt
0-30	1495.09	67.47%	80.10%
0-40	1771.46	79.94%	94.91%
0-60	1840.46	83.05%	98.60%
0-90	1862.06	84.03%	99.76%
0-120	1862.06	84.03%	99.76%
0-180	1866.50	84.23%	100.00%
60-90	25.64	1.16%	1.37%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.95	1493.20	67.38%	80.00%

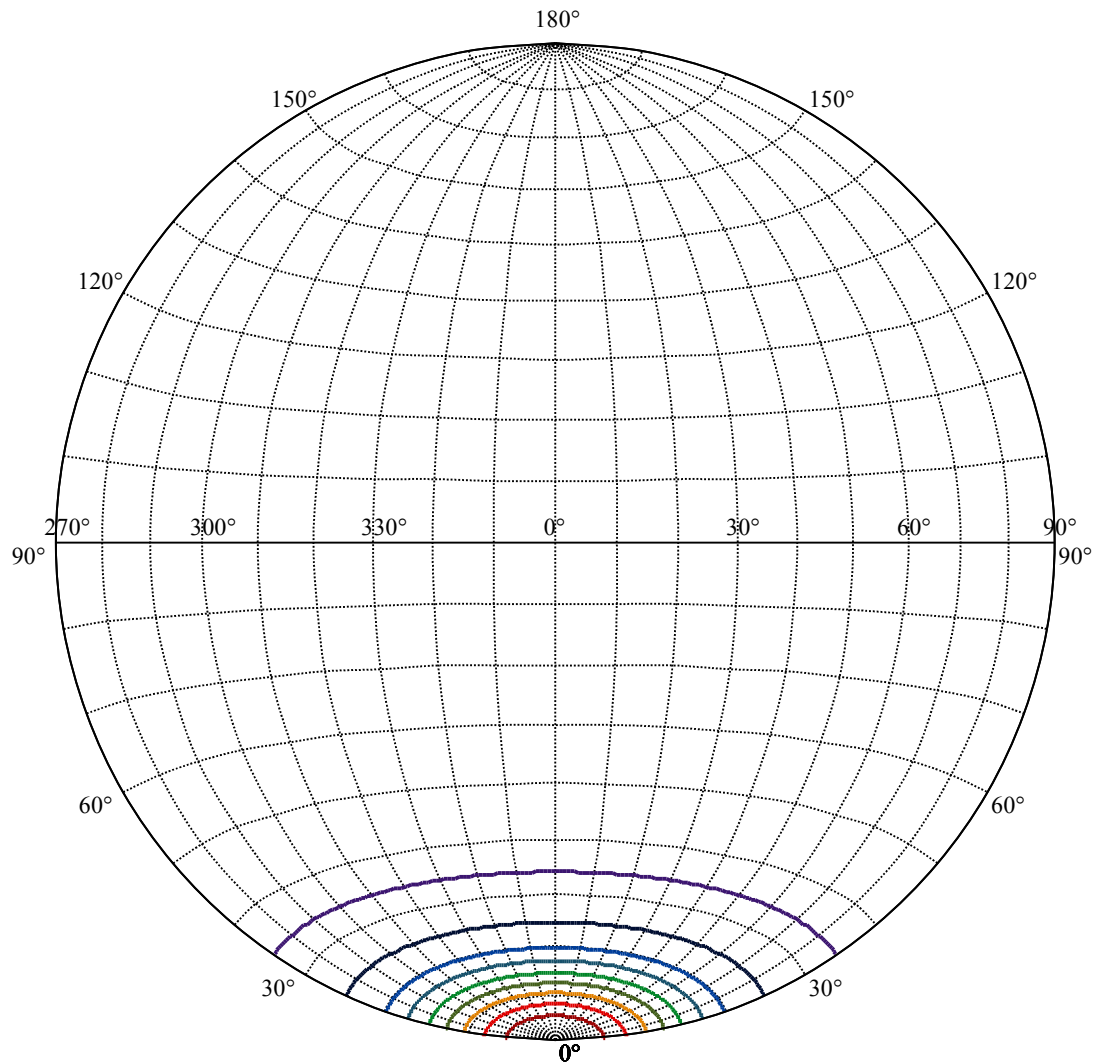
ZONAL LUMEN SUMMARY

0-10	393.71
10-20	650.31
20-30	451.07
30-40	276.37
40-50	60.65
50-60	8.35
60-70	8.35
70-80	8.74
80-90	4.51
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00









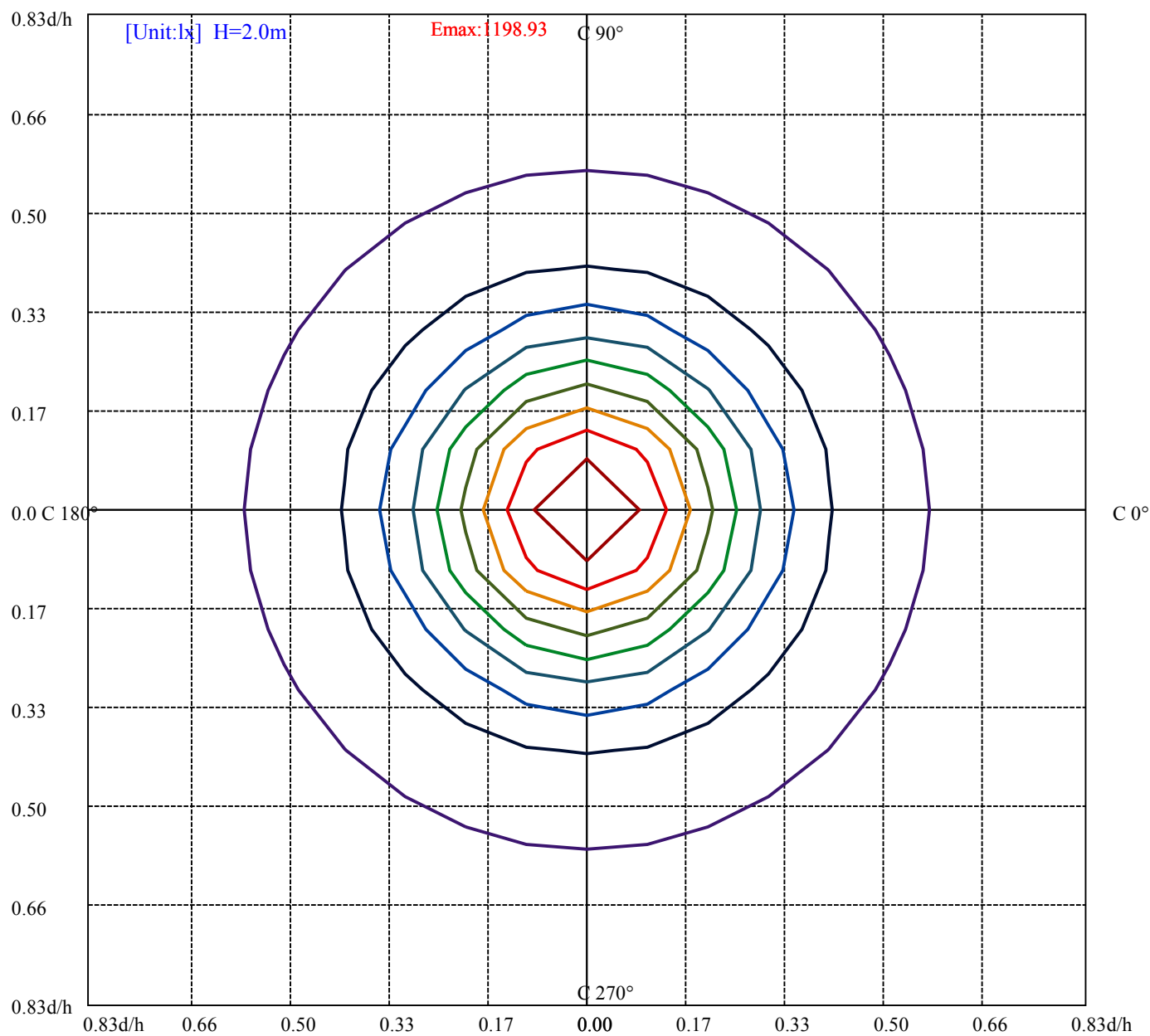
House

[Unit:cd]

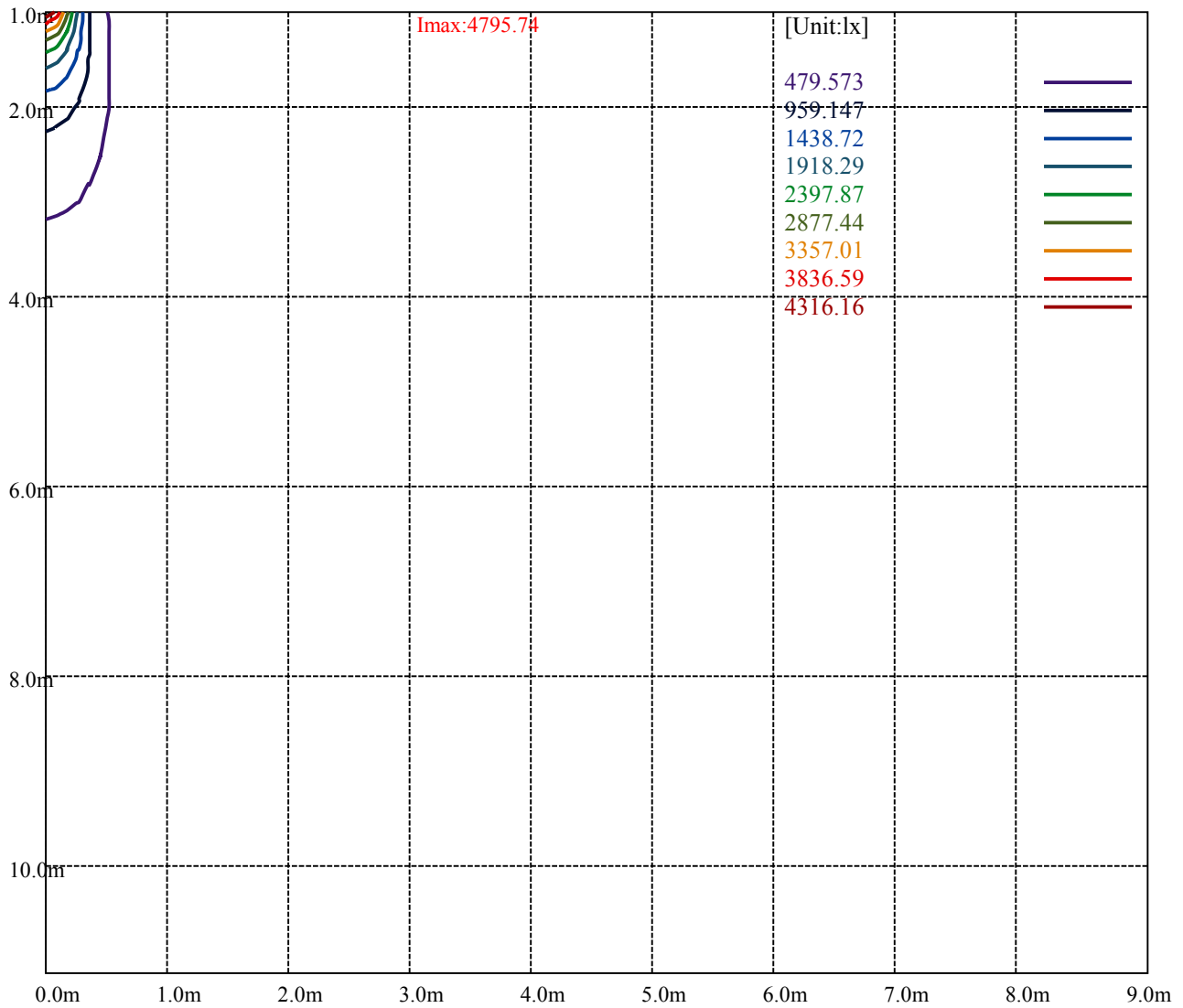
Road

I_{max}:4795.74

(10%I _{max}) 479.573	—
(20%I _{max}) 959.147	—
(30%I _{max}) 1438.72	—
(40%I _{max}) 1918.29	—
(50%I _{max}) 2397.87	—
(60%I _{max}) 2877.44	—
(70%I _{max}) 3357.01	—
(80%I _{max}) 3836.59	—
(90%I _{max}) 4316.16	—



(10%Emax) 119.893	—
(20%Emax) 239.7863	—
(30%Emax) 359.68	—
(40%Emax) 479.5725	—
(50%Emax) 599.465	—
(60%Emax) 719.3575	—
(70%Emax) 839.2525	—
(80%Emax) 959.145	—
(90%Emax) 1079.037	—



Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

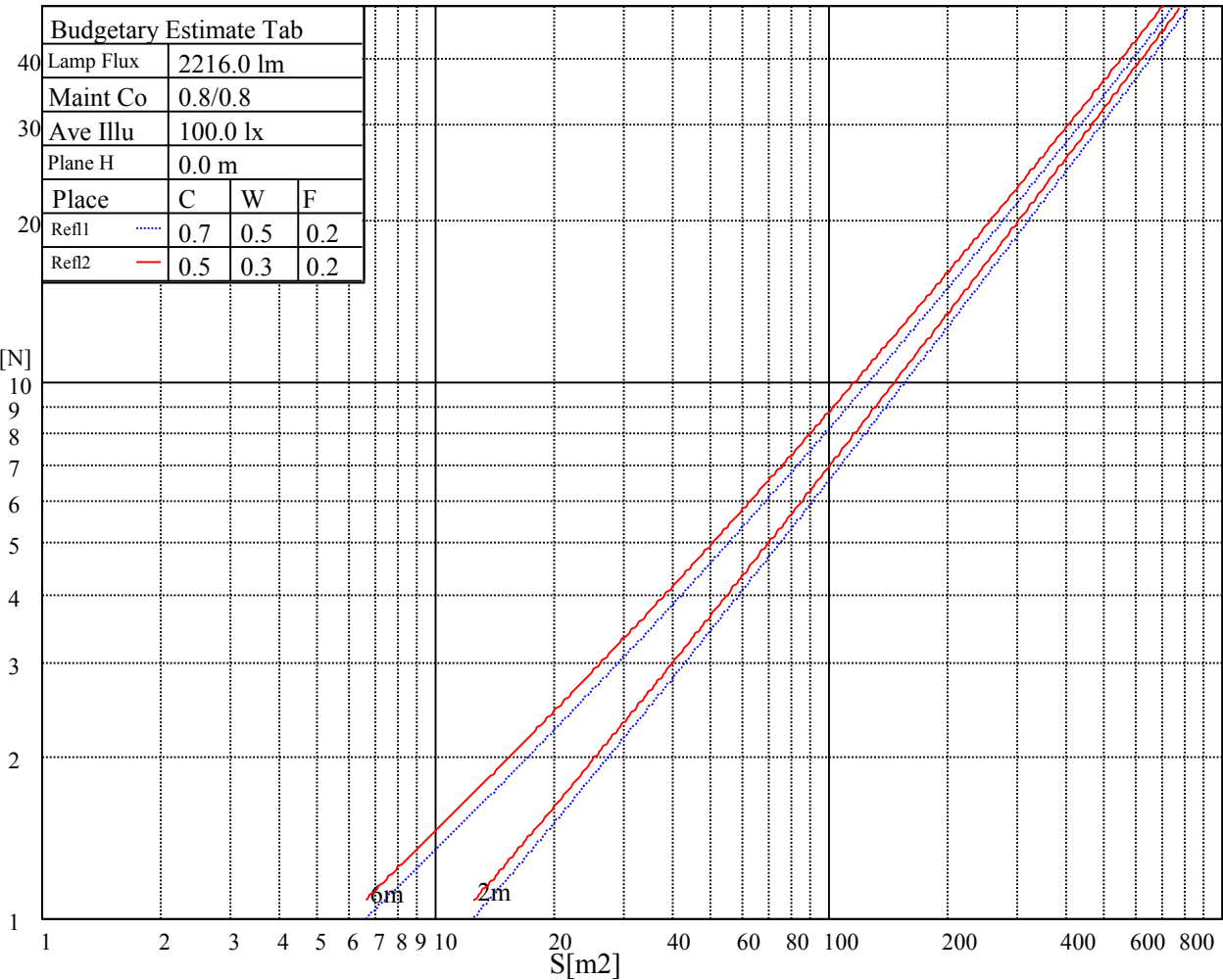
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

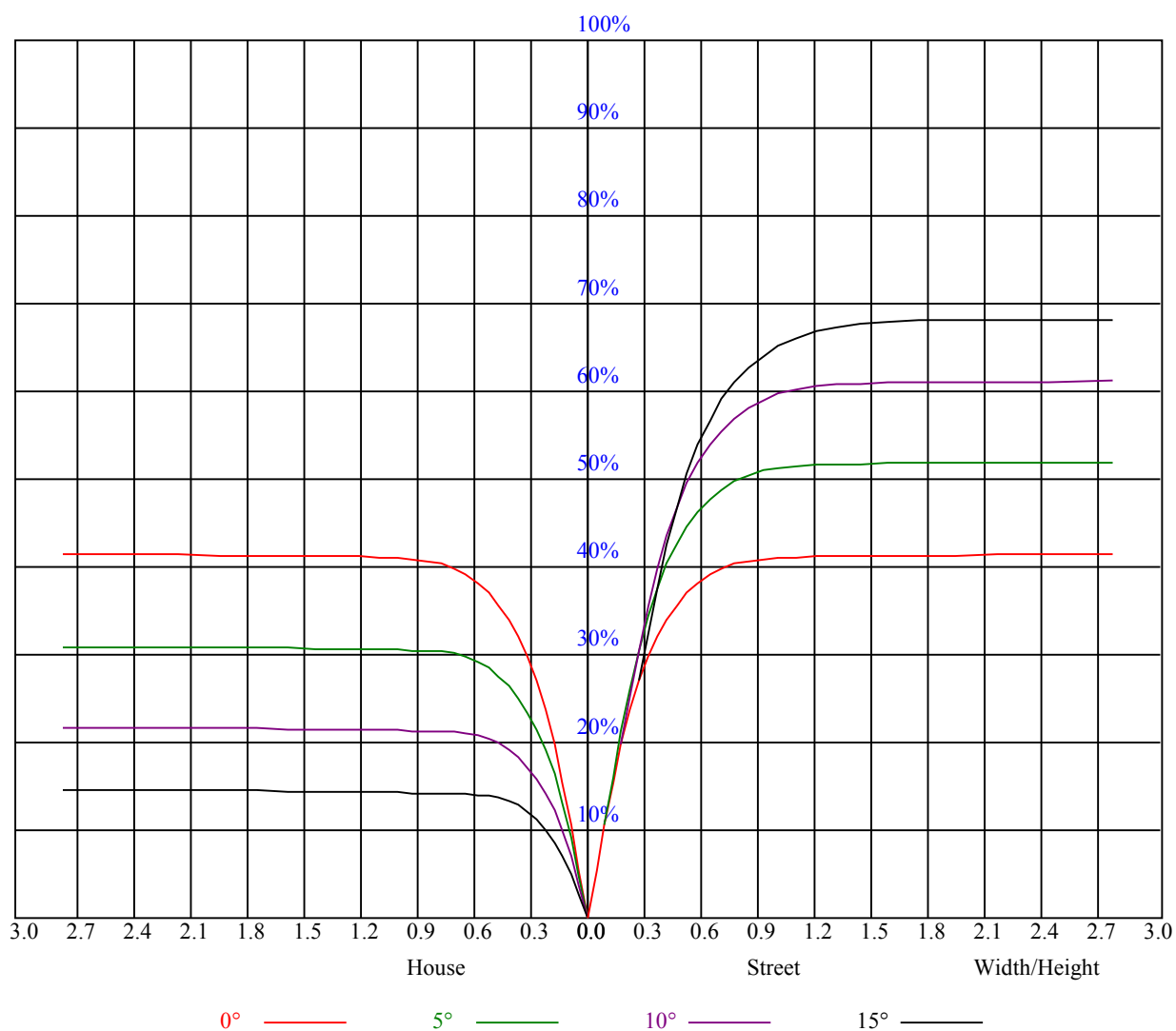
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.00	1.00	1.00	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.84
1	0.94	0.92	0.90	0.92	0.90	0.89	0.89	0.87	0.86	0.85	0.84	0.83	0.83	0.82	0.81	0.79
2	0.88	0.85	0.82	0.87	0.84	0.81	0.84	0.82	0.80	0.81	0.80	0.78	0.79	0.78	0.76	0.75
3	0.83	0.79	0.76	0.82	0.78	0.76	0.80	0.77	0.74	0.78	0.75	0.73	0.76	0.74	0.72	0.71
4	0.79	0.74	0.71	0.78	0.74	0.71	0.76	0.73	0.70	0.74	0.71	0.69	0.73	0.70	0.68	0.67
5	0.74	0.70	0.67	0.74	0.70	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
6	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.61
7	0.68	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.64	0.61	0.59	0.58
8	0.64	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.62	0.59	0.56	0.55
9	0.62	0.57	0.54	0.61	0.57	0.54	0.61	0.57	0.54	0.60	0.56	0.54	0.59	0.56	0.54	0.53
10	0.59	0.55	0.52	0.59	0.55	0.52	0.58	0.54	0.52	0.58	0.54	0.52	0.57	0.54	0.52	0.51



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Intensity data(cd)										Appendix Page: 14 Total:14	
C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	4782.94	4785.75	4044.94	2810.81	1798.31	1105.88	805.50	581.06	318.38		
45.0	4754.81	4701.38	3895.31	2656.69	1678.50	1042.31	772.31	546.19	290.81		
90.0	4812.75	4385.25	3356.44	2167.31	1101.71	878.68	672.92	403.65	168.24		
135.0	4832.44	4300.31	3314.81	2136.94	1290.38	868.50	668.25	374.63	142.82		
180.0	4782.94	4089.94	2961.00	1808.44	1113.02	802.63	563.06	298.63	111.83		
225.0	4754.81	4175.44	3110.06	1999.69	1113.75	844.03	628.54	340.71	137.59		
270.0	4812.75	4471.88	3579.75	2481.75	1539.00	963.56	729.56	488.81	284.06		
315.0	4832.44	4601.25	3584.81	2493.56	1537.31	970.48	743.34	497.36	222.47		
360.0	4782.94	4785.75	4044.94	2810.81	1798.31	1105.88	805.50	581.06	318.38		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	88.93	15.30	9.06	8.61	8.38	8.27	8.16	8.16	8.21		
45.0	73.41	12.04	8.89	8.49	8.33	8.21	8.16	8.16	8.21		
90.0	35.16	9.34	8.78	8.55	8.38	8.27	8.21	8.27	8.27		
135.0	32.79	9.45	8.89	8.61	8.49	8.44	8.38	8.61	8.61		
180.0	21.77	9.17	8.66	8.44	8.33	8.16	8.16	8.10	8.16		
225.0	30.26	9.34	8.72	8.44	8.27	8.21	8.21	8.21	8.27		
270.0	60.02	11.42	9.11	8.66	8.44	8.33	8.33	8.33	8.38		
315.0	63.62	11.31	9.11	8.72	8.55	8.44	8.38	8.38	8.38		
360.0	88.93	15.30	9.06	8.61	8.38	8.27	8.16	8.16	8.21		
C/γ(°)	90.0										
0.0	7.99										
45.0	7.88										
90.0	7.88										
135.0	7.93										
180.0	7.93										
225.0	7.88										
270.0	7.88										
315.0	7.93										
360.0	7.99										