



NATA LIGHTING CO.,LTD.
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NATA

Client:

LumCAT: 1449-E

Luminaire: 92.70.064.00

Report No: nt0100

Test No: GC2019122617

LampCAT: LUMINUS CXM-9-AC40

Lamp flux(lm): 1100.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 33.5900

Current(A): 0.2970

Power (W): 9.9700

PF: 1.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 997.37, Efficiency(%): 90.67% , Luminous Efficacy(lm/W): 100.04

Central intensity(cd): 3789.281, Maximum intensity(cd): 3789.281

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=19.2

[C90/270]Total=19.2

Field angle(10%Imax): [C0/180]Total=65.0

[C90/270]Total=65.0

Maximum s/h(1/2): C0_180=0.33 C90_270=0.33

Maximum s/h(1/4): C0_180=0.33 C90_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 90.67%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.166%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3789.281	0.000	0	.000%	.000%
1.0	3751.102	3.608	3.608	.328%	.362%
2.0	3669.469	10.651	14.259	.968%	1.430%
3.0	3531.656	17.223	31.481	1.566%	3.156%
4.0	3349.055	23.032	54.513	2.094%	5.466%
5.0	3147.117	27.946	82.459	2.541%	8.268%
6.0	2906.859	31.815	114.275	2.892%	11.458%
7.0	2617.523	34.290	148.564	3.117%	14.896%
8.0	2359.828	35.622	184.186	3.238%	18.467%
9.0	2067.680	35.883	220.069	3.262%	22.065%
10.0	1753.460	34.580	254.649	3.144%	25.532%
11.0	1520.213	32.711	287.36	2.974%	28.812%
12.0	1255.029	30.337	317.697	2.758%	31.853%
13.0	1079.522	27.705	345.402	2.519%	34.631%
14.0	918.795	25.578	370.981	2.325%	37.196%
15.0	793.167	23.503	394.483	2.137%	39.552%
16.0	694.069	21.792	416.275	1.981%	41.737%
17.0	629.227	20.607	436.883	1.873%	43.803%
18.0	576.274	19.876	456.759	1.807%	45.796%
19.0	541.181	19.441	476.2	1.767%	47.746%
20.0	516.002	19.349	495.549	1.759%	49.686%
21.0	496.779	19.447	514.997	1.768%	51.635%
22.0	481.556	19.660	534.657	1.787%	53.607%
23.0	469.308	19.952	554.609	1.814%	55.607%
24.0	458.606	20.288	574.896	1.844%	57.641%
25.0	448.692	20.630	595.526	1.875%	59.710%
26.0	440.641	20.993	616.519	1.908%	61.814%
27.0	431.782	21.344	637.863	1.940%	63.955%
28.0	422.445	21.627	659.49	1.966%	66.123%
29.0	413.079	21.860	681.35	1.987%	68.315%
30.0	404.698	22.080	703.43	2.007%	70.528%
31.0	394.488	22.240	725.67	2.022%	72.758%
32.0	384.708	22.323	747.993	2.029%	74.997%
33.0	373.830	22.347	770.34	2.032%	77.237%
34.0	360.007	22.208	792.548	2.019%	79.464%
35.0	344.637	21.884	814.431	1.989%	81.658%
36.0	324.274	21.298	835.73	1.936%	83.793%
37.0	299.152	20.333	856.062	1.848%	85.832%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	273.333	19.109	875.171	1.737%	87.748%
39.0	239.955	17.520	892.691	1.593%	89.505%
40.0	206.177	15.560	908.251	1.415%	91.065%
41.0	174.811	13.567	921.817	1.233%	92.425%
42.0	143.381	11.560	933.378	1.051%	93.584%
43.0	113.752	9.525	942.903	.866%	94.539%
44.0	89.733	7.680	950.583	.698%	95.309%
45.0	68.189	6.069	956.652	.552%	95.917%
46.0	50.006	4.622	961.274	.420%	96.381%
47.0	36.570	3.443	964.718	.313%	96.726%
48.0	28.779	2.642	967.359	.240%	96.991%
49.0	22.191	2.093	969.452	.190%	97.201%
50.0	16.566	1.616	971.068	.147%	97.363%
51.0	13.549	1.274	972.342	.116%	97.491%
52.0	11.595	1.079	973.421	.098%	97.599%
53.0	9.239	0.906	974.328	.082%	97.690%
54.0	8.438	0.779	975.107	.071%	97.768%
55.0	7.903	0.729	975.836	.066%	97.841%
56.0	7.467	0.695	976.531	.063%	97.911%
57.0	7.130	0.667	977.198	.061%	97.978%
58.0	6.778	0.643	977.841	.058%	98.042%
59.0	6.546	0.623	978.464	.057%	98.104%
60.0	6.363	0.610	979.074	.055%	98.166%
61.0	6.195	0.599	979.673	.054%	98.226%
62.0	6.089	0.592	980.265	.054%	98.285%
63.0	6.019	0.589	980.854	.054%	98.344%
64.0	5.963	0.588	981.442	.053%	98.403%
65.0	5.955	0.590	982.032	.054%	98.462%
66.0	5.991	0.596	982.628	.054%	98.522%
67.0	6.068	0.606	983.234	.055%	98.583%
68.0	6.159	0.619	983.854	.056%	98.645%
69.0	6.251	0.633	984.487	.058%	98.708%
70.0	6.328	0.646	985.133	.059%	98.773%
71.0	6.342	0.655	985.788	.060%	98.839%
72.0	6.342	0.660	986.447	.060%	98.905%
73.0	6.321	0.662	987.109	.060%	98.971%
74.0	6.300	0.664	987.773	.060%	99.038%
75.0	6.272	0.664	988.437	.060%	99.104%

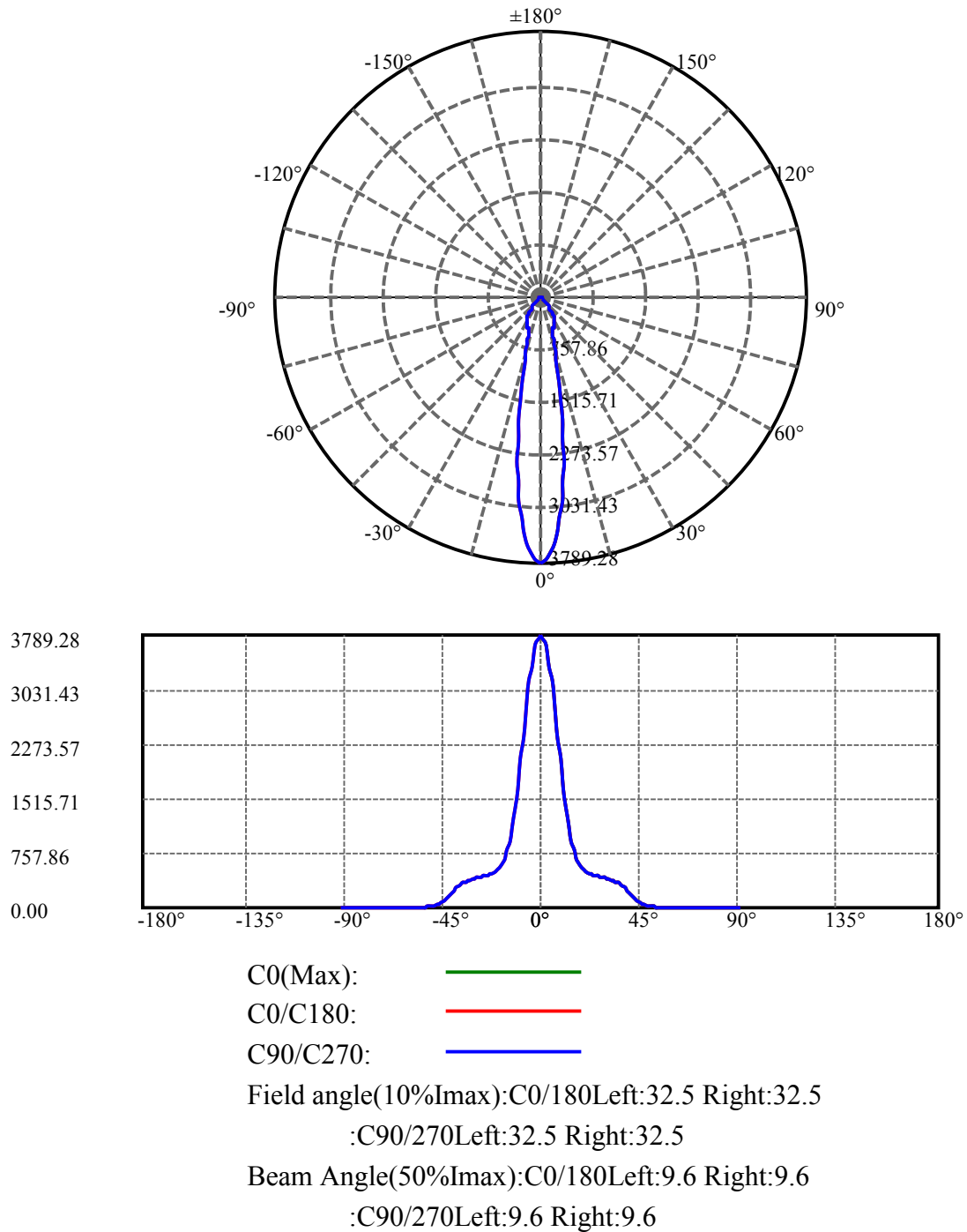
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.237	0.664	989.101	.060%	99.171%
77.0	6.216	0.664	989.765	.060%	99.238%
78.0	6.166	0.663	990.428	.060%	99.304%
79.0	6.103	0.659	991.087	.060%	99.370%
80.0	6.012	0.653	991.74	.059%	99.436%
81.0	5.913	0.645	992.385	.059%	99.500%
82.0	5.794	0.635	993.02	.058%	99.564%
83.0	5.660	0.623	993.643	.057%	99.626%
84.0	5.562	0.611	994.254	.056%	99.688%
85.0	5.203	0.588	994.842	.053%	99.746%
86.0	5.048	0.560	995.402	.051%	99.803%
87.0	4.641	0.530	995.932	.048%	99.856%
88.0	4.570	0.505	996.437	.046%	99.906%
89.0	4.177	0.479	996.916	.044%	99.955%
90.0	4.099	0.454	997.37	.041%	100.000%

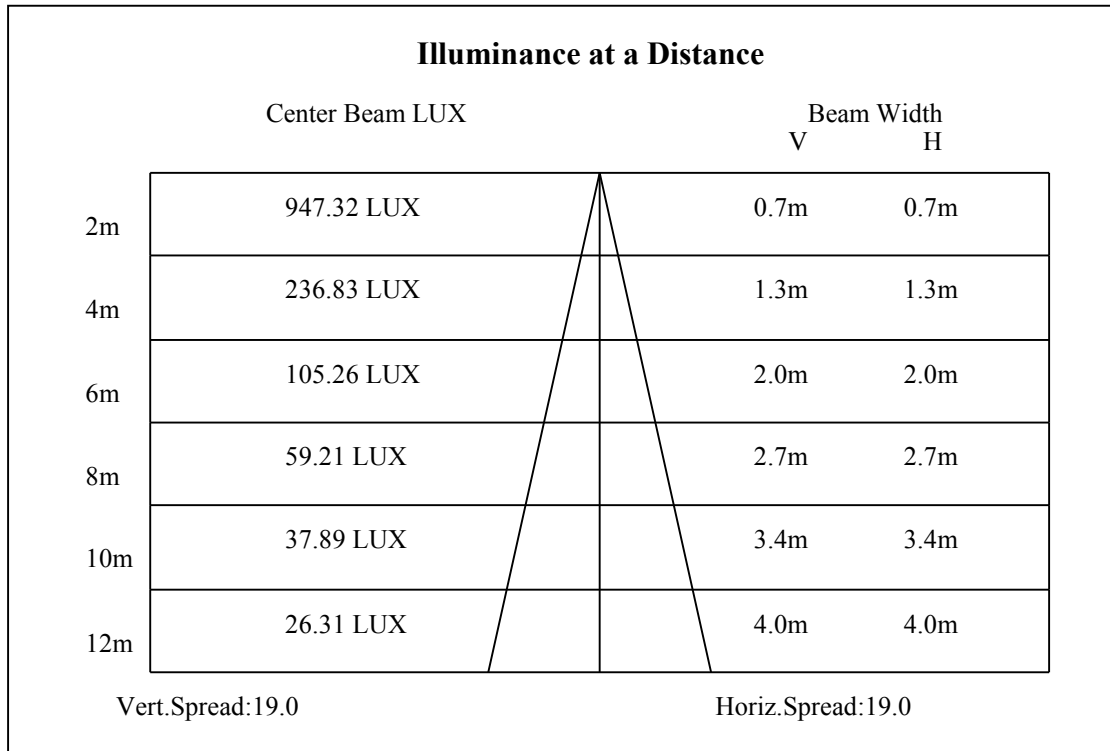
ZONAL LUMEN SUMMARY

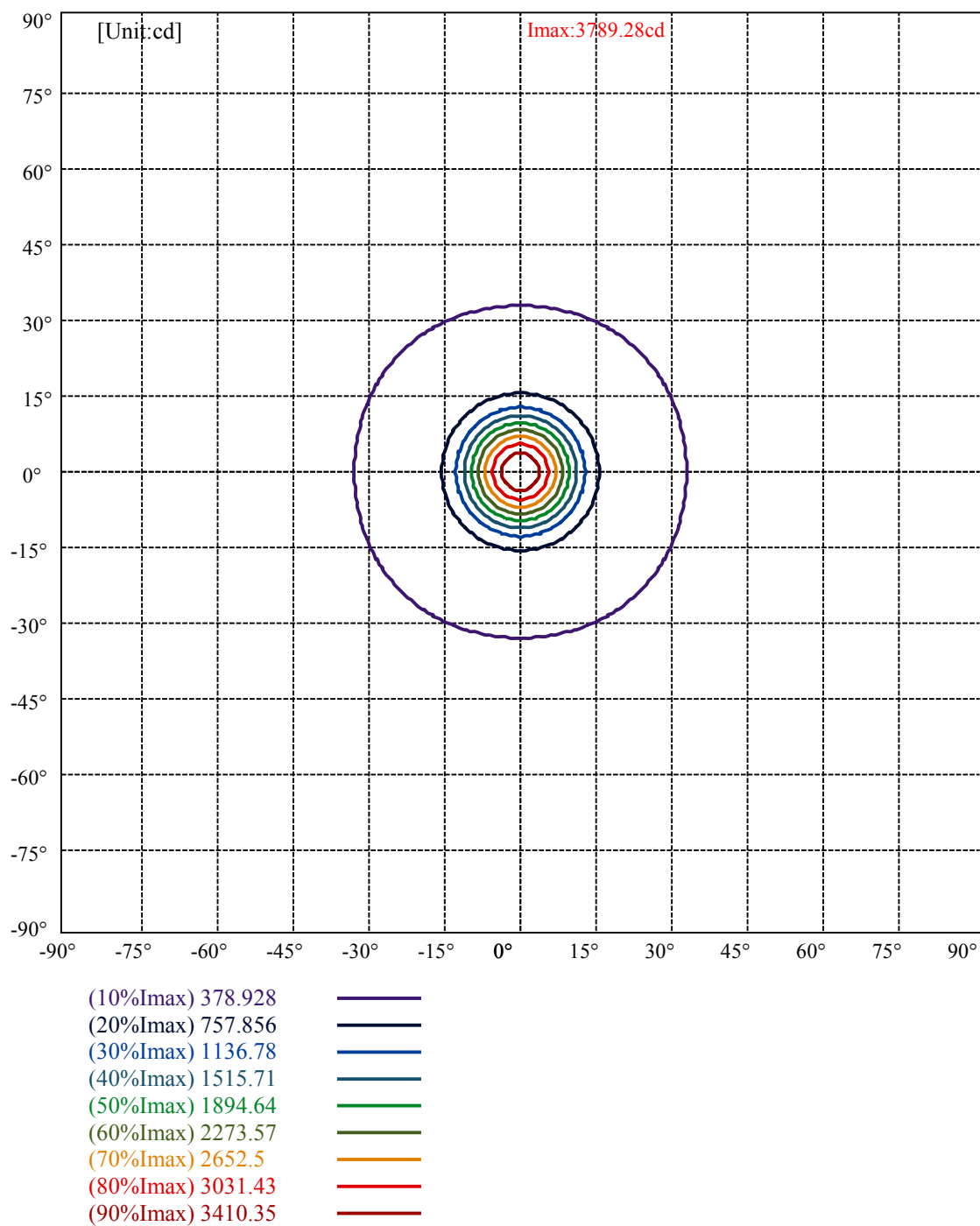
Zone	Lumens	%Lamp	%Fixt
0-30	703.43	63.95%	70.53%
0-40	908.25	82.57%	91.06%
0-60	979.07	89.01%	98.17%
0-90	996.92	90.63%	99.95%
0-120	996.92	90.63%	99.95%
0-180	997.37	90.67%	100.00%
60-90	18.45	1.68%	1.85%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-34.24	797.90	72.54%	80.00%

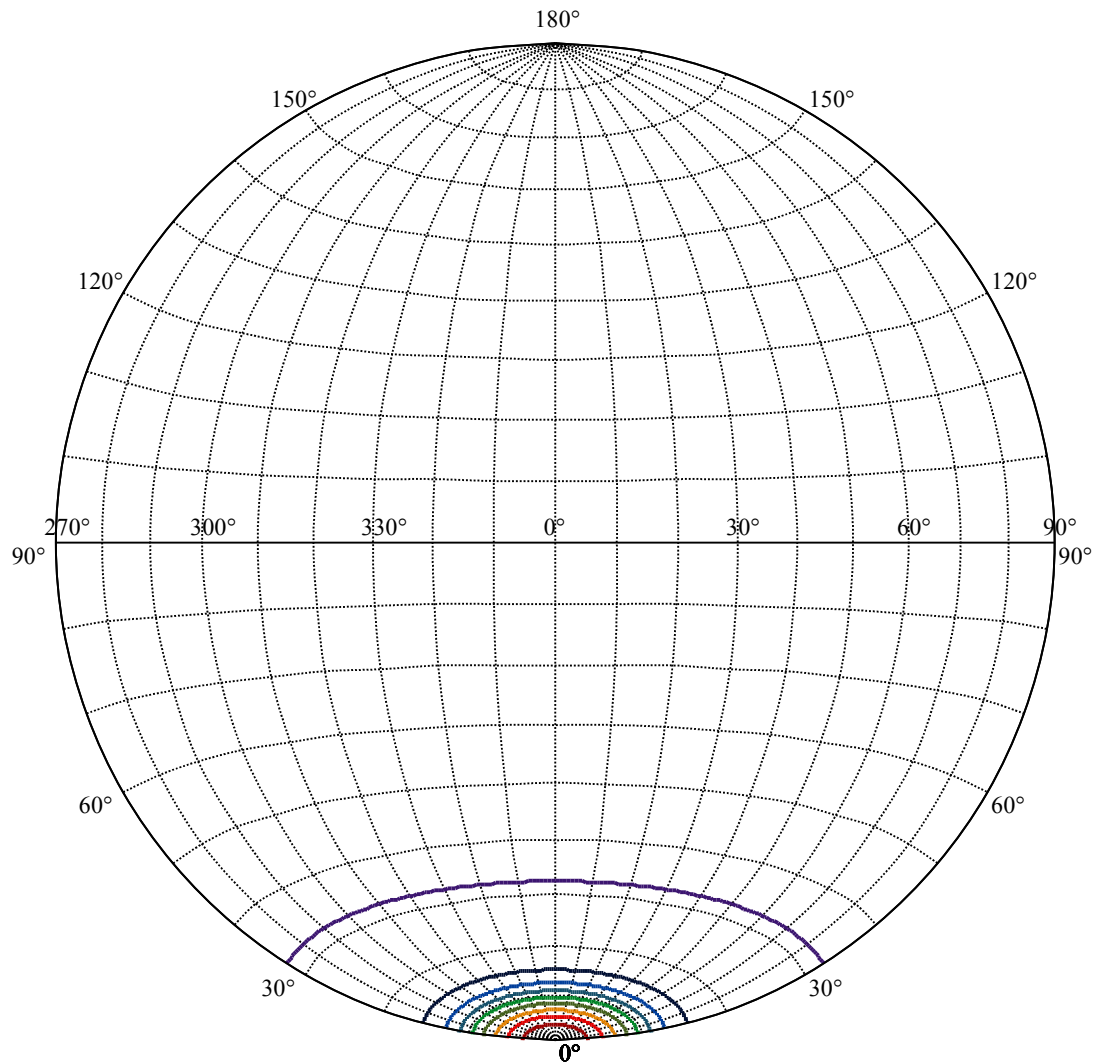
ZONAL LUMEN SUMMARY

0-10	254.65
10-20	240.90
20-30	207.88
30-40	204.82
40-50	62.82
50-60	8.01
60-70	6.06
70-80	6.61
80-90	5.18
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

Imax:3789.28

(10%Imax) 378.928

(20%Imax) 757.856

(30%Imax) 1136.78

(40%Imax) 1515.71

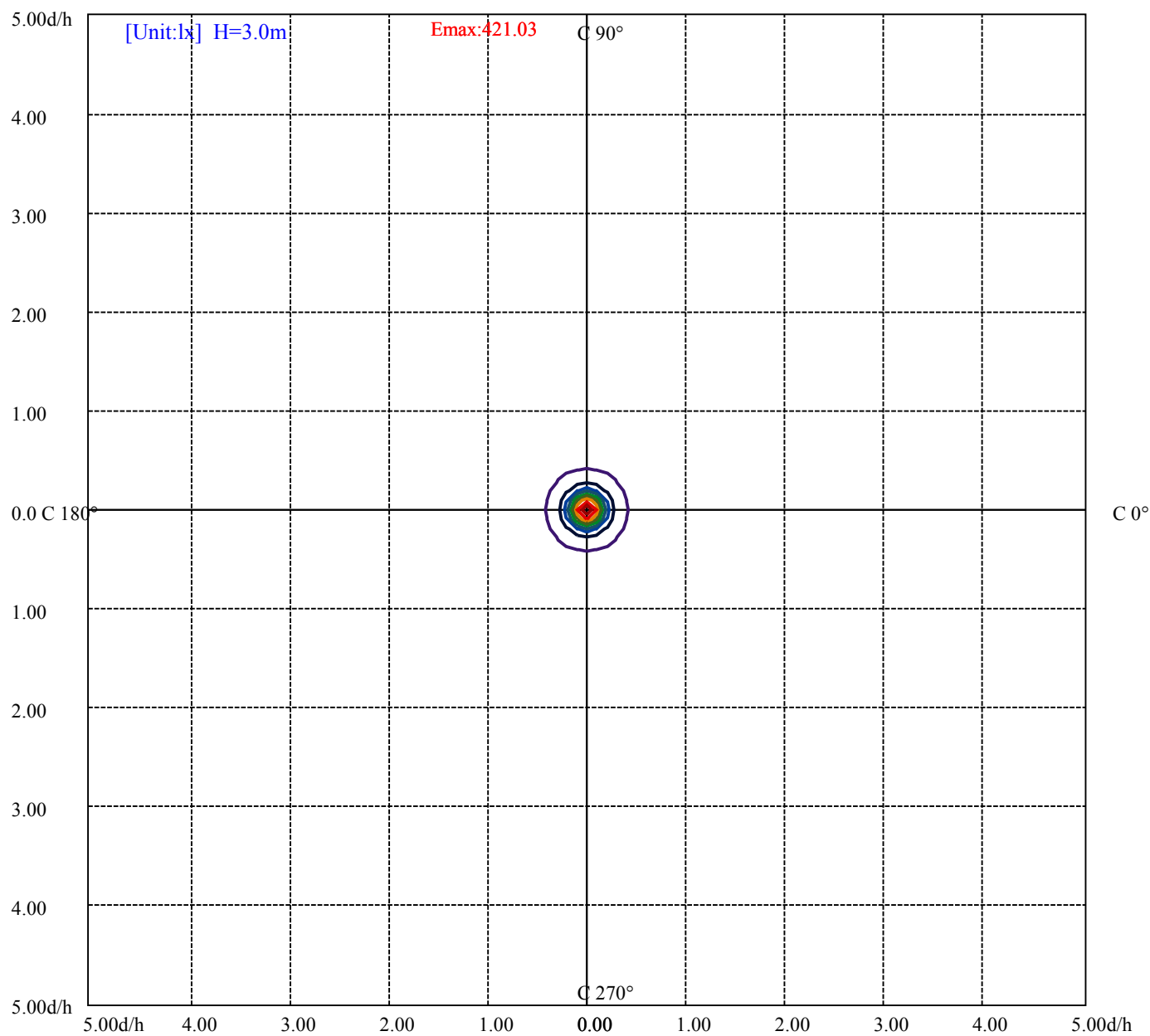
(50%Imax) 1894.64

(60%Imax) 2273.57

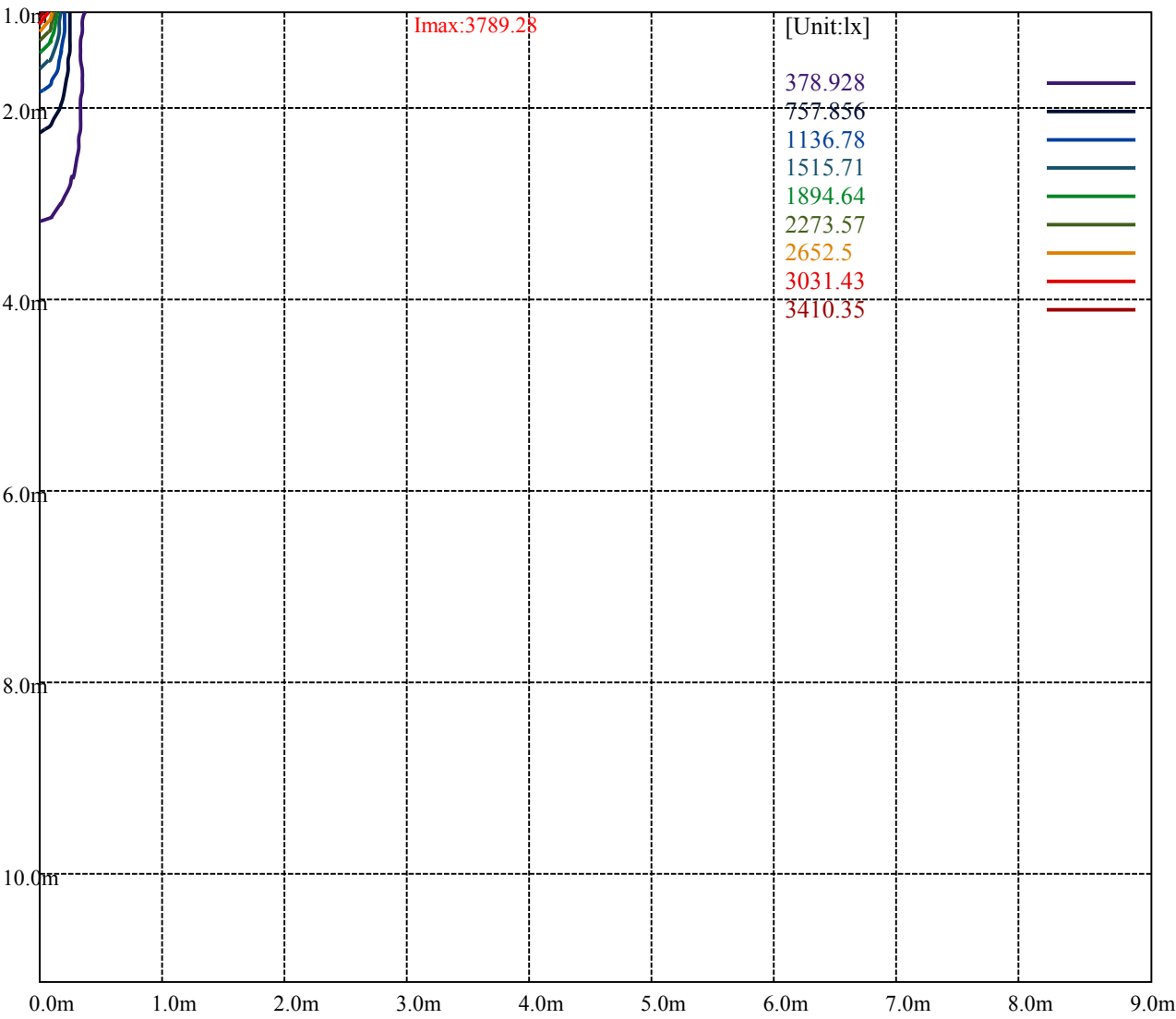
(70%Imax) 2652.5

(80%Imax) 3031.43

(90%Imax) 3410.35



(10%E _{max}) 42.10311	—
(20%E _{max}) 84.20611	—
(30%E _{max}) 126.3089	—
(40%E _{max}) 168.4122	—
(50%E _{max}) 210.5156	—
(60%E _{max}) 252.6189	—
(70%E _{max}) 294.7211	—
(80%E _{max}) 336.8244	—
(90%E _{max}) 378.9278	—



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

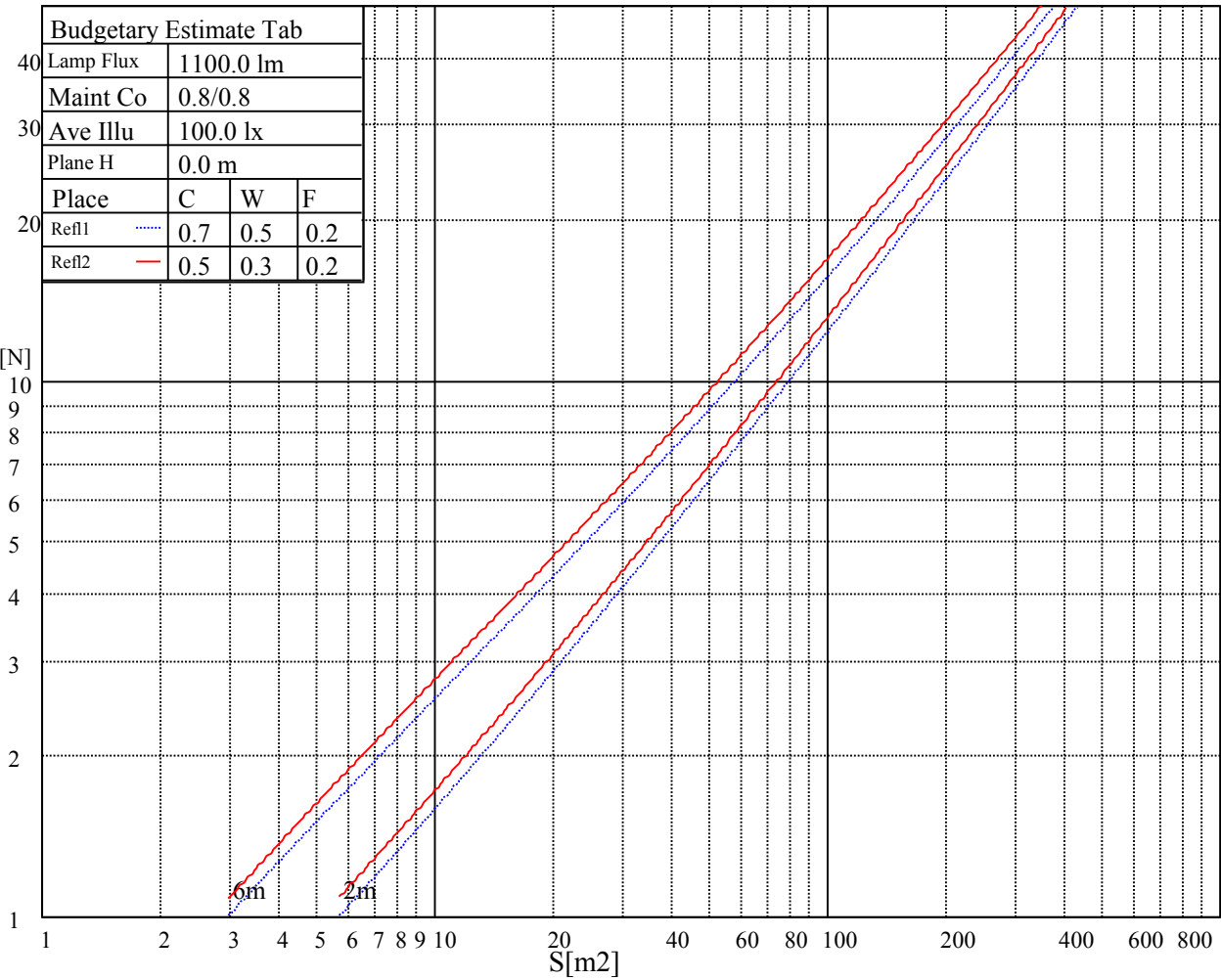
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

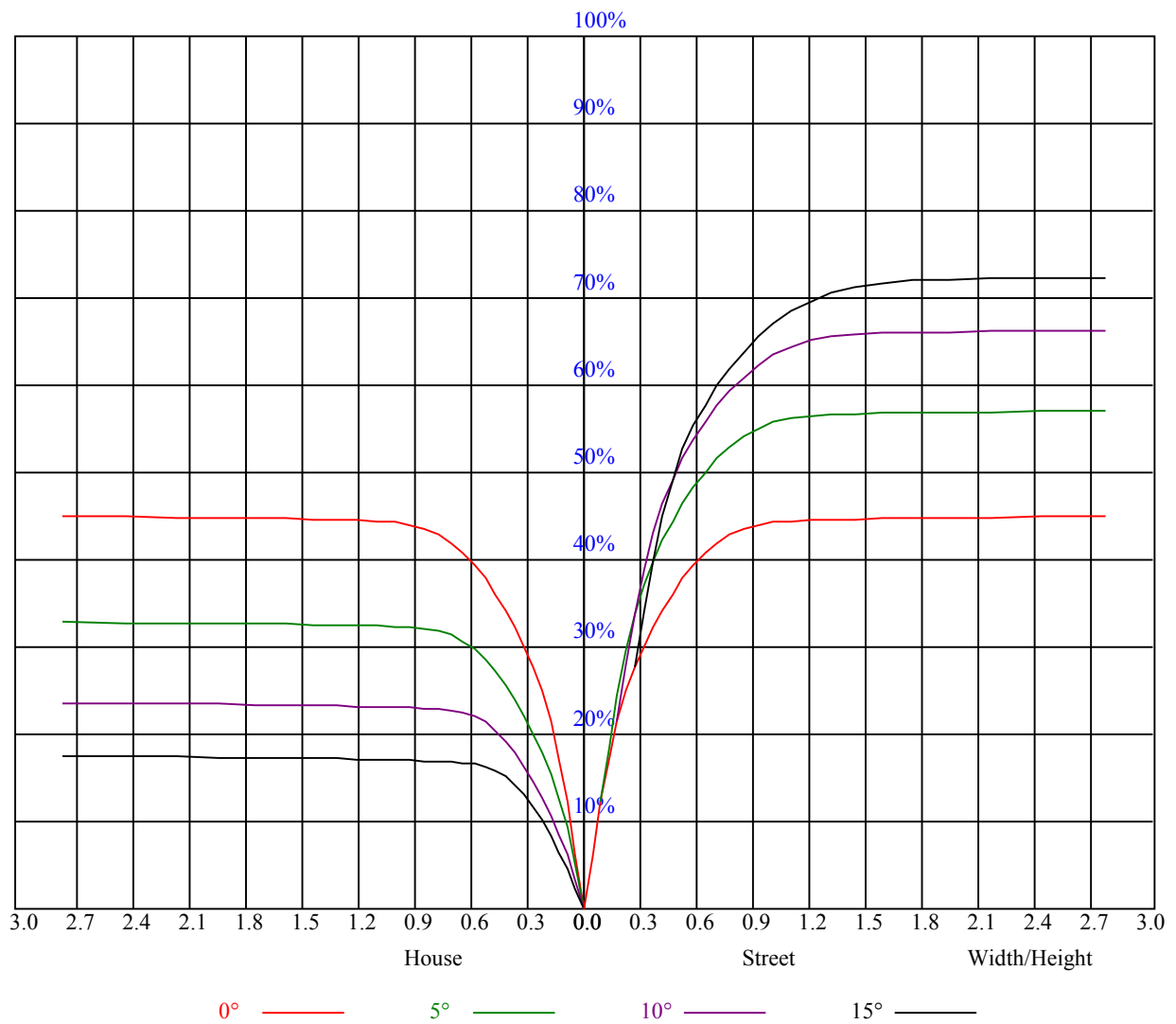
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

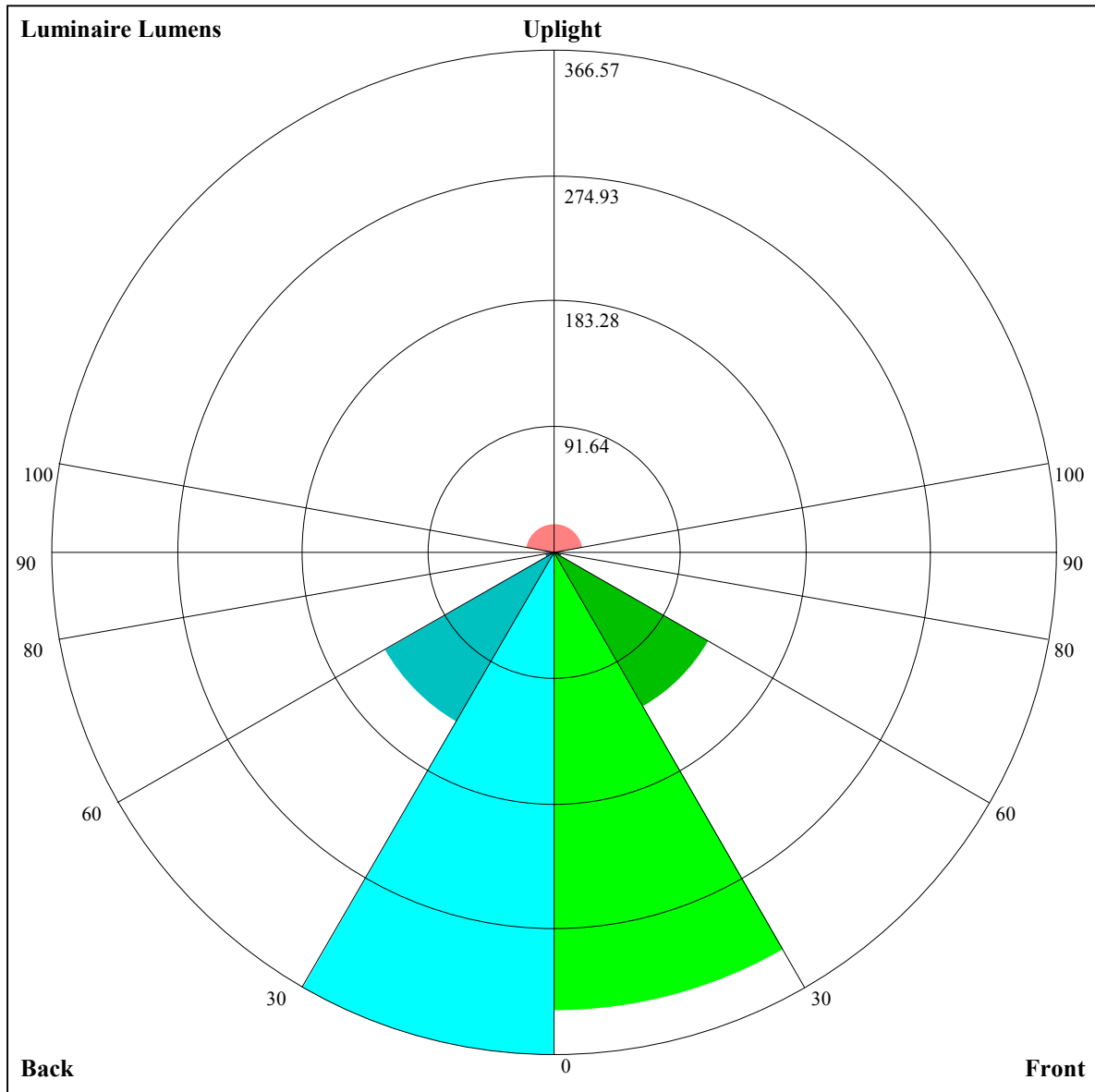
Luminance Limiting Curve





RHOC	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	1.08	1.08	1.08	1.05	1.05	1.05	1.01	1.01	1.01	0.96	0.96	0.96	0.93	0.93	0.93	0.91
1	1.01	0.98	0.96	0.99	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.88	0.88	0.87	0.85
2	0.94	0.91	0.88	0.93	0.89	0.87	0.90	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.88	0.84	0.81	0.87	0.83	0.80	0.85	0.81	0.79	0.83	0.80	0.78	0.81	0.78	0.76	0.75
4	0.83	0.79	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.75	0.73	0.77	0.74	0.72	0.71
5	0.79	0.74	0.70	0.78	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.70	0.68	0.67
6	0.75	0.70	0.66	0.74	0.69	0.66	0.73	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.63
7	0.71	0.66	0.62	0.70	0.66	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.60
8	0.68	0.63	0.59	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.57
9	0.65	0.60	0.56	0.64	0.60	0.56	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.55
10	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	0.53	0.52





Luminaire Lumens:

FL=335.16,FM=130.74,FH=6.33,FVH=2.75

BL=366.57,BM=143.48,BH=6.61,BVH=2.95

UL=4.47,UH=21.28

BUG Rating:B1-U2-G0

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Intensity data(cd)									Appendix Page: 17 Total:19
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	3935.81	3864.94	3738.38	3517.31	3314.25	3093.75	2793.38	2535.19	2266.31
45.0	3722.06	3480.19	3240.56	3045.38	2764.13	2485.13	2248.31	1905.19	1640.81
90.0	3667.50	3480.75	3293.44	3070.13	2832.75	2596.50	2337.75	2005.88	1734.75
135.0	3831.75	3777.75	3652.88	3475.69	3288.94	3060.56	2798.44	2549.81	2293.88
180.0	3935.81	3941.44	3873.38	3705.19	3453.75	3254.63	3013.31	2656.69	2415.94
225.0	3722.06	3855.38	3958.31	4003.88	3967.31	3861.00	3666.38	3416.06	3167.44
270.0	3667.50	3791.81	3864.38	3855.94	3782.81	3634.88	3434.06	3221.44	2977.31
315.0	3831.75	3816.56	3734.44	3579.75	3388.50	3190.50	2963.25	2649.94	2382.19
360.0	3935.81	3864.94	3738.38	3517.31	3314.25	3093.75	2793.38	2535.19	2266.31
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1923.75	1653.75	1397.81	1158.75	977.06	851.06	740.81	661.50	610.88
45.0	1385.44	1115.44	948.38	817.31	695.81	627.19	577.13	533.81	510.75
90.0	1469.25	1107.62	1000.58	858.32	733.73	639.62	576.73	526.95	497.98
135.0	1962.56	1694.81	1431.56	1174.50	977.63	842.63	726.75	641.25	585.56
180.0	2143.69	1787.06	1566.56	1238.63	1107.90	909.73	794.25	707.68	635.34
225.0	2868.75	2544.75	2246.63	1929.94	1662.75	1373.06	1122.24	951.75	821.03
270.0	2678.63	2359.13	2073.94	1763.44	1468.69	1236.38	1044.56	862.31	753.19
315.0	2109.38	1765.13	1496.25	1099.35	1012.61	870.69	762.86	667.29	619.09
360.0	1923.75	1653.75	1397.81	1158.75	977.06	851.06	740.81	661.50	610.88
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	570.94	545.63	526.50	511.31	498.38	485.44	471.38	461.81	453.38
45.0	494.44	482.06	474.19	466.88	457.88	450.56	442.13	433.69	427.50
90.0	476.83	463.05	453.43	444.04	434.19	425.87	417.21	406.29	402.47
135.0	541.69	511.88	492.19	477.56	468.00	458.44	452.25	447.75	442.13
180.0	583.59	551.64	525.94	506.81	494.16	481.61	471.99	461.64	451.74
225.0	708.24	629.33	577.58	536.34	506.87	486.45	472.78	459.56	451.01
270.0	660.38	601.88	554.63	525.94	501.75	486.56	471.94	462.38	451.13
315.0	574.09	543.99	523.58	505.35	491.23	479.53	469.18	456.41	445.78
360.0	570.94	545.63	526.50	511.31	498.38	485.44	471.38	461.81	453.38
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	442.69	434.25	426.38	416.81	407.25	398.81	390.38	379.69	362.81
45.0	420.75	413.44	406.69	400.50	393.75	384.19	367.31	336.94	309.94
90.0	394.93	386.89	378.39	371.98	360.45	347.79	332.66	310.39	288.17
135.0	436.50	429.75	422.44	414.56	405.00	397.13	387.56	378.00	361.69
180.0	442.29	432.73	419.68	409.61	399.54	388.35	378.68	369.11	358.48
225.0	442.01	429.02	419.57	410.46	399.09	389.59	380.59	372.04	364.16
270.0	438.75	425.81	414.56	405.00	390.94	382.50	372.38	361.13	351.56
315.0	436.33	427.67	416.93	408.66	399.88	389.31	381.09	372.77	360.28
360.0	442.69	434.25	426.38	416.81	407.25	398.81	390.38	379.69	362.81
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	337.50	311.06	285.19	237.94	203.29	167.18	127.46	98.38	74.19
45.0	284.06	243.11	206.72	174.09	137.53	108.06	78.08	52.93	37.41
90.0	260.55	230.40	203.12	171.68	141.58	115.54	91.91	67.84	53.21
135.0	336.38	308.81	286.88	242.04	206.78	174.99	141.36	109.41	83.76
180.0	339.98	316.69	286.93	253.69	221.18	183.83	149.91	117.23	87.92
225.0	355.73	347.18	333.79	308.87	279.06	250.71	221.68	186.02	156.54
270.0	342.56	327.94	304.88	286.31	245.81	218.93	187.03	160.93	137.53
315.0	337.44	308.03	279.17	245.03	214.20	179.27	149.63	117.28	87.30
360.0	337.50	311.06	285.19	237.94	203.29	167.18	127.46	98.38	74.19

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Intensity data(cd)										Appendix Page: 18 Total:19
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	
0.0	48.66	34.20	26.27	22.50	15.98	8.83	8.44	8.10	7.71	
45.0	28.80	23.01	14.74	9.17	8.38	7.88	7.48	7.03	6.64	
90.0	41.91	31.22	24.36	16.54	12.77	11.36	10.29	9.39	8.83	
135.0	58.78	40.73	31.89	28.63	20.98	11.36	9.84	8.94	8.27	
180.0	65.64	47.59	33.08	28.18	25.43	18.23	10.07	9.39	8.89	
225.0	127.80	95.91	68.46	48.71	34.31	29.03	26.16	20.64	11.76	
270.0	110.59	83.59	63.90	50.06	37.58	33.02	27.17	20.87	13.95	
315.0	63.34	43.82	29.87	26.44	22.11	12.83	8.94	8.38	7.88	
360.0	48.66	34.20	26.27	22.50	15.98	8.83	8.44	8.10	7.71	
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	
0.0	7.26	6.98	6.75	6.53	6.24	6.08	5.85	5.68	5.57	
45.0	6.47	6.36	6.19	6.08	6.02	5.96	5.85	5.85	5.85	
90.0	8.27	7.76	7.48	7.20	6.98	6.81	6.64	6.53	6.41	
135.0	7.88	7.31	6.98	6.64	6.24	6.08	5.96	5.79	5.74	
180.0	8.44	7.99	7.54	7.14	6.75	6.41	6.19	5.96	5.85	
225.0	9.17	8.44	7.93	7.54	7.03	6.81	6.64	6.41	6.30	
270.0	12.54	11.25	10.13	9.45	8.78	8.27	7.93	7.59	7.37	
315.0	7.48	7.14	6.75	6.47	6.19	5.96	5.85	5.74	5.63	
360.0	7.26	6.98	6.75	6.53	6.24	6.08	5.85	5.68	5.57	
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0	
0.0	5.46	5.46	5.51	5.57	5.63	5.68	5.74	5.74	5.68	
45.0	5.91	5.91	5.96	5.91	5.91	5.91	5.91	5.91	5.91	
90.0	6.47	6.47	6.47	6.47	6.47	6.36	6.30	6.30	6.30	
135.0	5.63	5.57	5.63	5.74	5.85	5.91	5.96	6.02	6.02	
180.0	5.74	5.74	5.63	5.85	6.13	6.30	6.36	6.41	6.41	
225.0	6.19	6.08	6.02	5.96	5.96	6.08	6.36	6.69	6.86	
270.0	7.14	6.92	6.81	6.75	6.75	7.09	7.26	7.37	7.43	
315.0	5.63	5.57	5.63	5.68	5.85	5.96	6.13	6.19	6.13	
360.0	5.46	5.46	5.51	5.57	5.63	5.68	5.74	5.74	5.68	
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	5.51	5.46	5.40	5.34	5.34	5.34	5.29	5.29	5.23	
45.0	5.85	5.74	5.74	5.79	5.79	5.91	5.96	5.91	5.79	
90.0	6.30	6.36	6.41	6.36	6.36	6.41	6.36	6.41	6.30	
135.0	6.08	6.08	6.08	6.08	6.02	6.02	6.02	5.96	5.91	
180.0	6.47	6.41	6.36	6.30	6.24	6.19	6.08	6.02	5.96	
225.0	6.92	6.98	6.98	6.98	6.92	6.86	6.81	6.64	6.53	
270.0	7.48	7.48	7.48	7.43	7.37	7.26	7.20	7.03	6.92	
315.0	6.13	6.08	5.96	5.91	5.85	5.74	5.63	5.57	5.46	
360.0	5.51	5.46	5.40	5.34	5.34	5.34	5.29	5.29	5.23	
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	5.23	5.12	4.95	4.89	4.78	4.67	4.22	4.16	4.05	
45.0	5.63	5.46	5.34	5.29	4.22	4.11	4.05	4.05	4.05	
90.0	6.13	5.91	5.74	5.51	4.44	4.16	4.05	4.05	4.05	
135.0	5.79	5.63	5.40	5.29	5.12	4.84	4.16	4.16	4.05	
180.0	5.91	5.85	5.74	5.63	5.51	5.29	4.28	4.22	4.16	
225.0	6.47	6.41	6.30	6.24	6.13	6.08	5.91	5.79	4.33	
270.0	6.75	6.64	6.53	6.47	6.36	6.30	6.13	5.96	4.67	
315.0	5.40	5.34	5.29	5.18	5.06	4.95	4.33	4.16	4.05	
360.0	5.23	5.12	4.95	4.89	4.78	4.67	4.22	4.16	4.05	

Intensity data(cd)

Appendix Page: 19 Total:19

C/ $\gamma(^{\circ})$	90.0
0.0	3.99
45.0	4.05
90.0	4.05
135.0	3.99
180.0	4.11
225.0	4.16
270.0	4.39
315.0	4.05
360.0	3.99