



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

NATA

LumCAT: 3-2115-N
Luminaire: 92.70.135.00
Report No: NATA0100
Test No: GC2018101802
LampCAT: LUMILEDS LUXEON 1208
Lamp flux(lm): 3643.0
Number of Lamps: 1
Length(mm): 81
Phm Type: C

Voltage(V): 35.0000
Current(A): 0.7000
Power (W): 24.5000
PF: 0.0000
Ballast type: DC
Width(mm): 81
Height(mm): 0

Photometric Results

Lumens(lm): 3069.91
Efficiency(%): 84.27%
Lumens(lm)/Power(W): 125.48
Central intensity(cd): 18615.940
Maximum intensity(cd): 18615.940
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=15.8
[C90/270]Total=15.8
Field angle(10%Imax): [C0/180]Total=44.4
[C90/270]Total=44.4
Maximum s/h(1/2): C0_180=0.27 C90_270=0.27
Maximum s/h(1/4): C0_180=0.32 C90_270=0.32
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 84.39%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.070%

Equipment:
Temperature(°C): 25.0

Date: 2018/10/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	18615.938	4.454	4.454	.122%	.145%
1.0	18491.484	35.390	39.844	.971%	1.298%
2.0	17936.016	68.643	108.487	1.884%	3.534%
3.0	16962.891	97.354	205.84	2.672%	6.705%
4.0	15723.984	120.282	326.122	3.302%	10.623%
5.0	13803.047	131.924	458.045	3.621%	14.920%
6.0	12002.063	137.576	595.621	3.776%	19.402%
7.0	10630.336	142.067	737.688	3.900%	24.030%
8.0	9163.477	139.852	877.54	3.839%	28.585%
9.0	7916.906	135.812	1013.352	3.728%	33.009%
10.0	6951.234	132.368	1145.721	3.633%	37.321%
11.0	6078.445	127.187	1272.908	3.491%	41.464%
12.0	5373.492	122.514	1395.422	3.363%	45.455%
13.0	4759.313	117.404	1512.826	3.223%	49.279%
14.0	4192.031	111.212	1624.038	3.053%	52.902%
15.0	3745.969	106.319	1730.358	2.918%	56.365%
16.0	3361.500	101.607	1831.964	2.789%	59.675%
17.0	3010.289	96.515	1928.48	2.649%	62.819%
18.0	2743.383	92.965	2021.445	2.552%	65.847%
19.0	2520.070	89.972	2111.417	2.470%	68.778%
20.0	2253.305	84.513	2195.93	2.320%	71.531%
21.0	2055.727	80.788	2276.717	2.218%	74.162%
22.0	1898.297	77.981	2354.699	2.141%	76.703%
23.0	1728.773	74.074	2428.773	2.033%	79.115%
24.0	1567.336	69.908	2498.681	1.919%	81.393%
25.0	1438.453	66.665	2565.346	1.830%	83.564%
26.0	1328.484	63.863	2629.209	1.753%	85.644%
27.0	1187.170	59.103	2688.312	1.622%	87.570%
28.0	1065.945	54.878	2743.19	1.506%	89.357%
29.0	906.258	48.181	2791.371	1.323%	90.927%
30.0	755.079	41.401	2832.772	1.136%	92.275%
31.0	610.601	34.486	2867.259	.947%	93.399%
32.0	465.778	27.067	2894.326	.743%	94.280%
33.0	336.895	20.121	2914.447	.552%	94.936%
34.0	240.764	14.764	2929.211	.405%	95.417%
35.0	156.185	9.824	2939.035	.270%	95.737%
36.0	100.976	6.509	2945.543	.179%	95.949%
37.0	84.108	5.551	2951.094	.152%	96.130%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	71.213	4.808	2955.902	.132%	96.286%
39.0	62.009	4.279	2960.181	.117%	96.426%
40.0	54.900	3.870	2964.051	.106%	96.552%
41.0	49.282	3.546	2967.597	.097%	96.667%
42.0	44.142	3.239	2970.836	.089%	96.773%
43.0	40.528	3.031	2973.867	.083%	96.871%
44.0	37.891	2.886	2976.753	.079%	96.965%
45.0	35.163	2.727	2979.48	.075%	97.054%
46.0	33.363	2.632	2982.112	.072%	97.140%
47.0	31.725	2.544	2984.656	.070%	97.223%
48.0	30.389	2.477	2987.133	.068%	97.304%
49.0	29.250	2.421	2989.553	.066%	97.382%
50.0	28.287	2.376	2991.93	.065%	97.460%
51.0	27.408	2.336	2994.265	.064%	97.536%
52.0	26.768	2.313	2996.578	.063%	97.611%
53.0	26.184	2.293	2998.872	.063%	97.686%
54.0	25.734	2.283	3001.155	.063%	97.760%
55.0	25.432	2.285	3003.439	.063%	97.835%
56.0	25.123	2.284	3005.723	.063%	97.909%
57.0	24.827	2.283	3008.007	.063%	97.984%
58.0	24.638	2.291	3010.298	.063%	98.058%
59.0	24.462	2.299	3012.597	.063%	98.133%
60.0	24.307	2.308	3014.906	.063%	98.208%
61.0	24.272	2.328	3017.234	.064%	98.284%
62.0	24.103	2.334	3019.567	.064%	98.360%
63.0	24.180	2.363	3021.93	.065%	98.437%
64.0	23.963	2.362	3024.292	.065%	98.514%
65.0	23.316	2.317	3026.609	.064%	98.589%
66.0	22.598	2.264	3028.873	.062%	98.663%
67.0	21.607	2.181	3031.054	.060%	98.734%
68.0	20.925	2.128	3033.182	.058%	98.804%
69.0	19.976	2.045	3035.227	.056%	98.870%
70.0	19.434	2.003	3037.229	.055%	98.935%
71.0	18.788	1.948	3039.177	.053%	98.999%
72.0	18.288	1.907	3041.085	.052%	99.061%
73.0	17.986	1.886	3042.971	.052%	99.122%
74.0	17.655	1.861	3044.832	.051%	99.183%
75.0	17.276	1.830	3046.662	.050%	99.243%

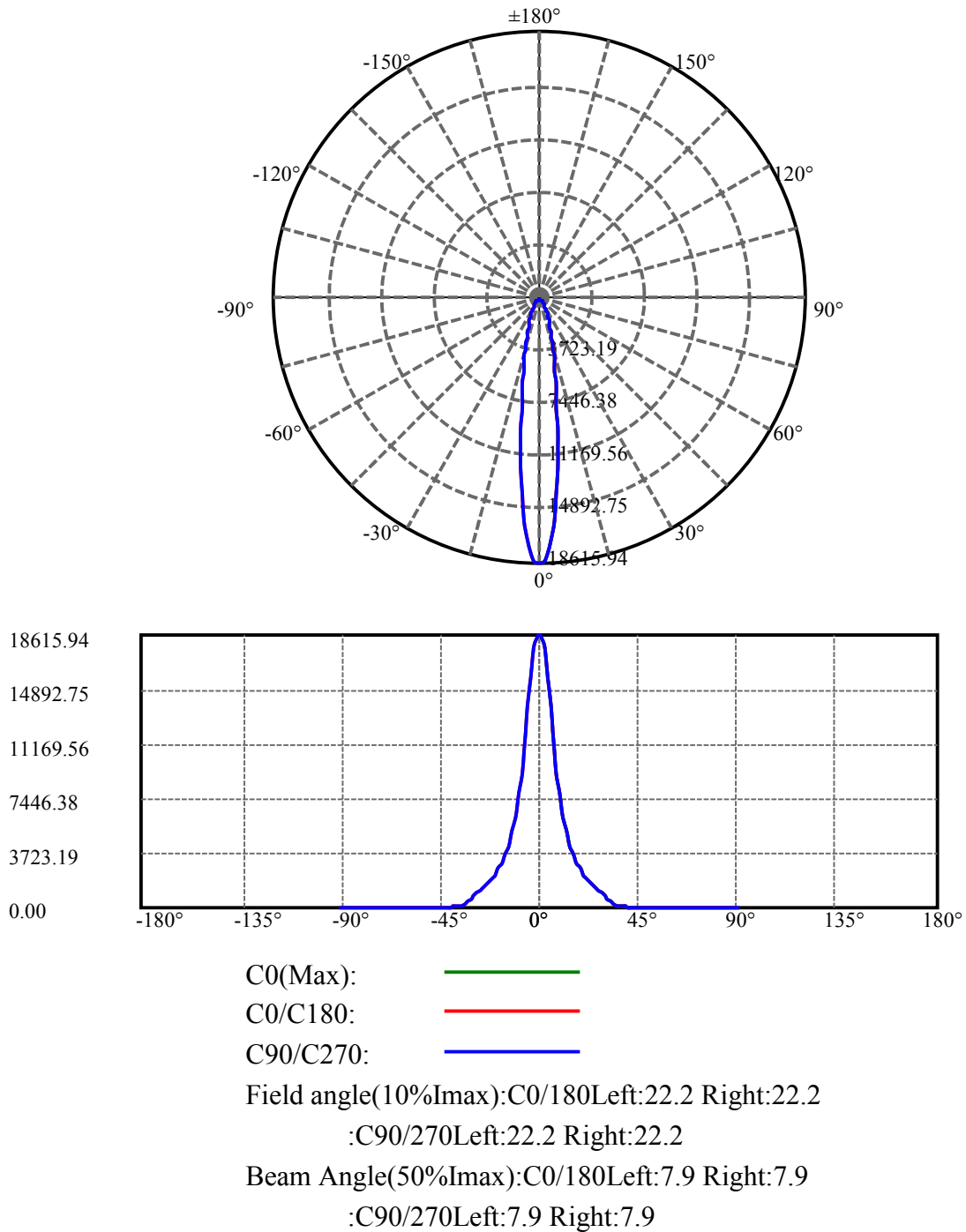
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	16.959	1.805	3048.466	.050%	99.301%
77.0	16.664	1.781	3050.247	.049%	99.359%
78.0	16.270	1.745	3051.992	.048%	99.416%
79.0	15.947	1.717	3053.709	.047%	99.472%
80.0	15.609	1.686	3055.395	.046%	99.527%
81.0	15.237	1.650	3057.045	.045%	99.581%
82.0	14.927	1.621	3058.666	.044%	99.634%
83.0	14.611	1.590	3060.256	.044%	99.686%
84.0	14.309	1.560	3061.817	.043%	99.736%
85.0	14.020	1.532	3063.348	.042%	99.786%
86.0	13.725	1.501	3064.85	.041%	99.835%
87.0	13.493	1.478	3066.327	.041%	99.883%
88.0	13.261	1.453	3067.781	.040%	99.931%
89.0	13.001	1.425	3069.206	.039%	99.977%
90.0	12.839	0.704	3069.91	.019%	100.000%

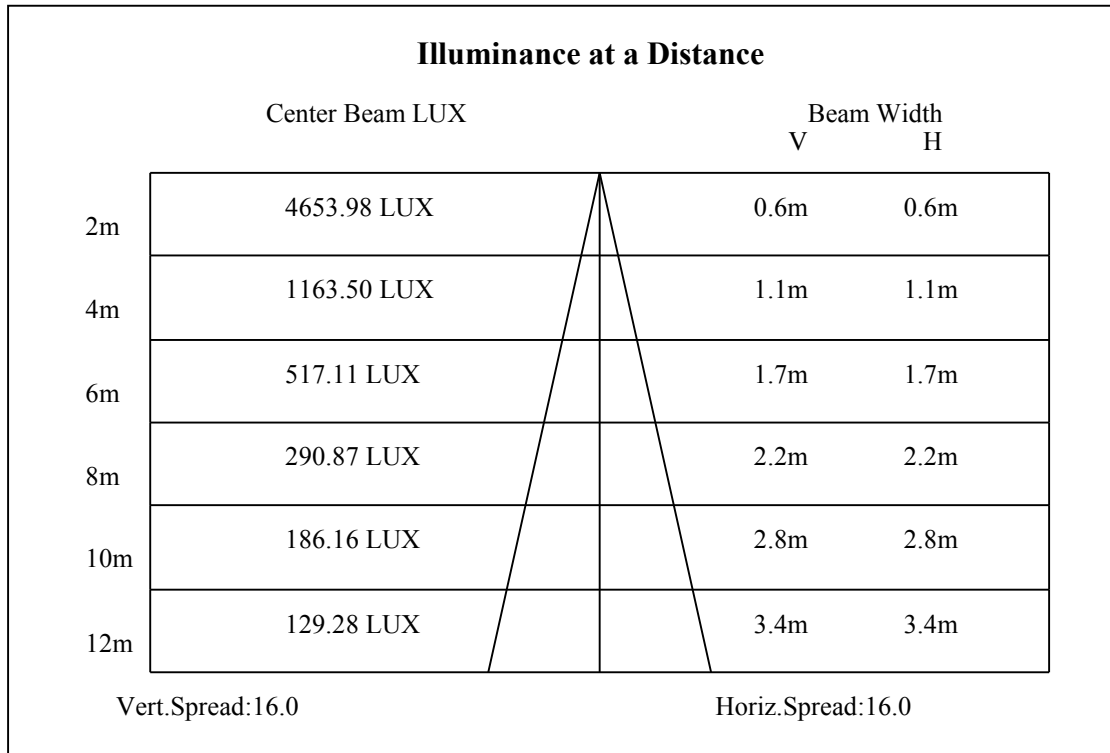
ZONAL LUMEN SUMMARY

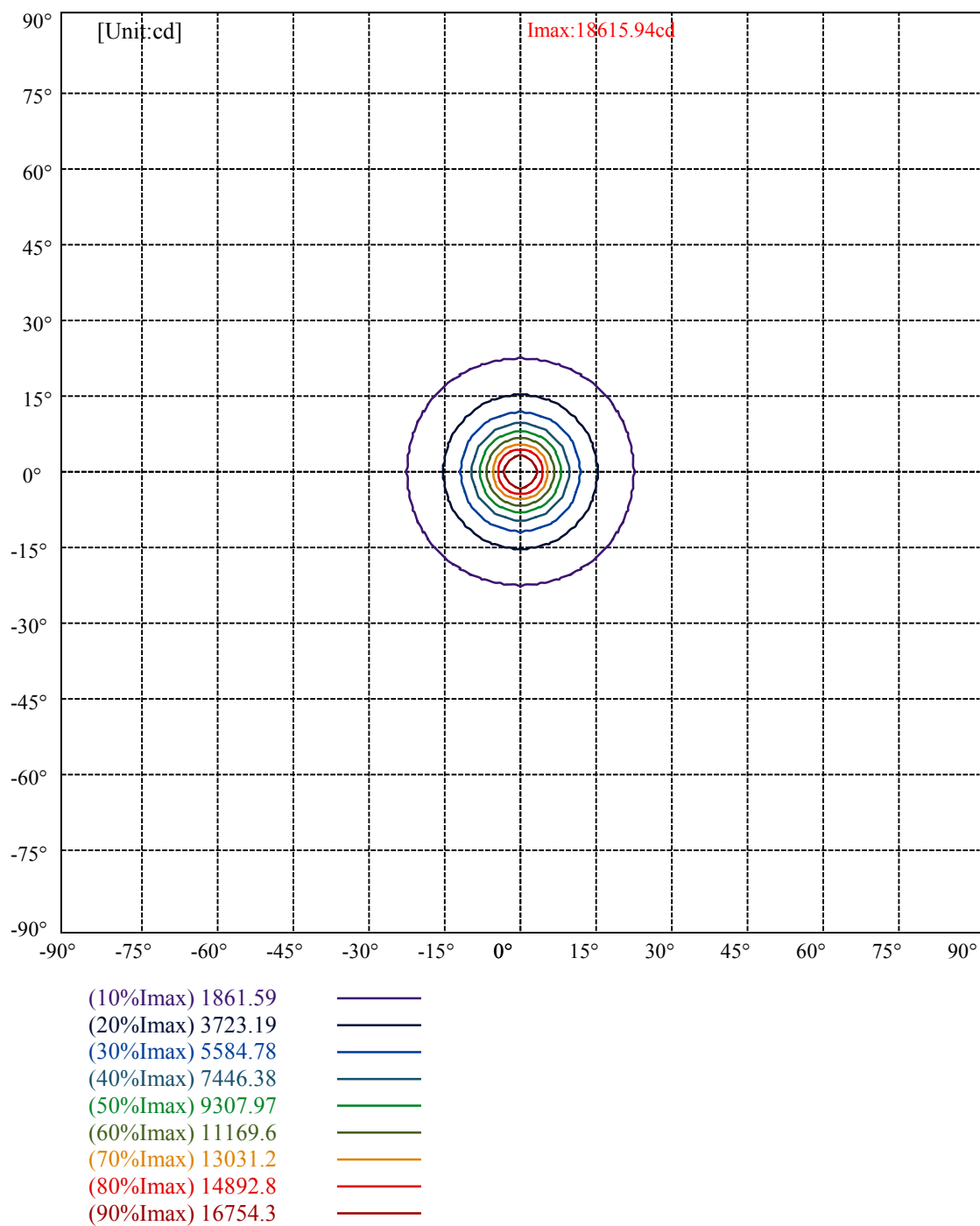
Zone	Lumens	%Lamp	%Fixt
0-30	2832.77	77.76%	92.28%
0-40	2964.05	81.36%	96.55%
0-60	3014.91	82.76%	98.21%
0-90	3069.21	84.25%	99.98%
0-120	3069.21	84.25%	99.98%
0-180	3069.91	84.27%	100.00%
60-90	56.61	1.55%	1.84%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-23.39	2455.93	67.41%	80.00%

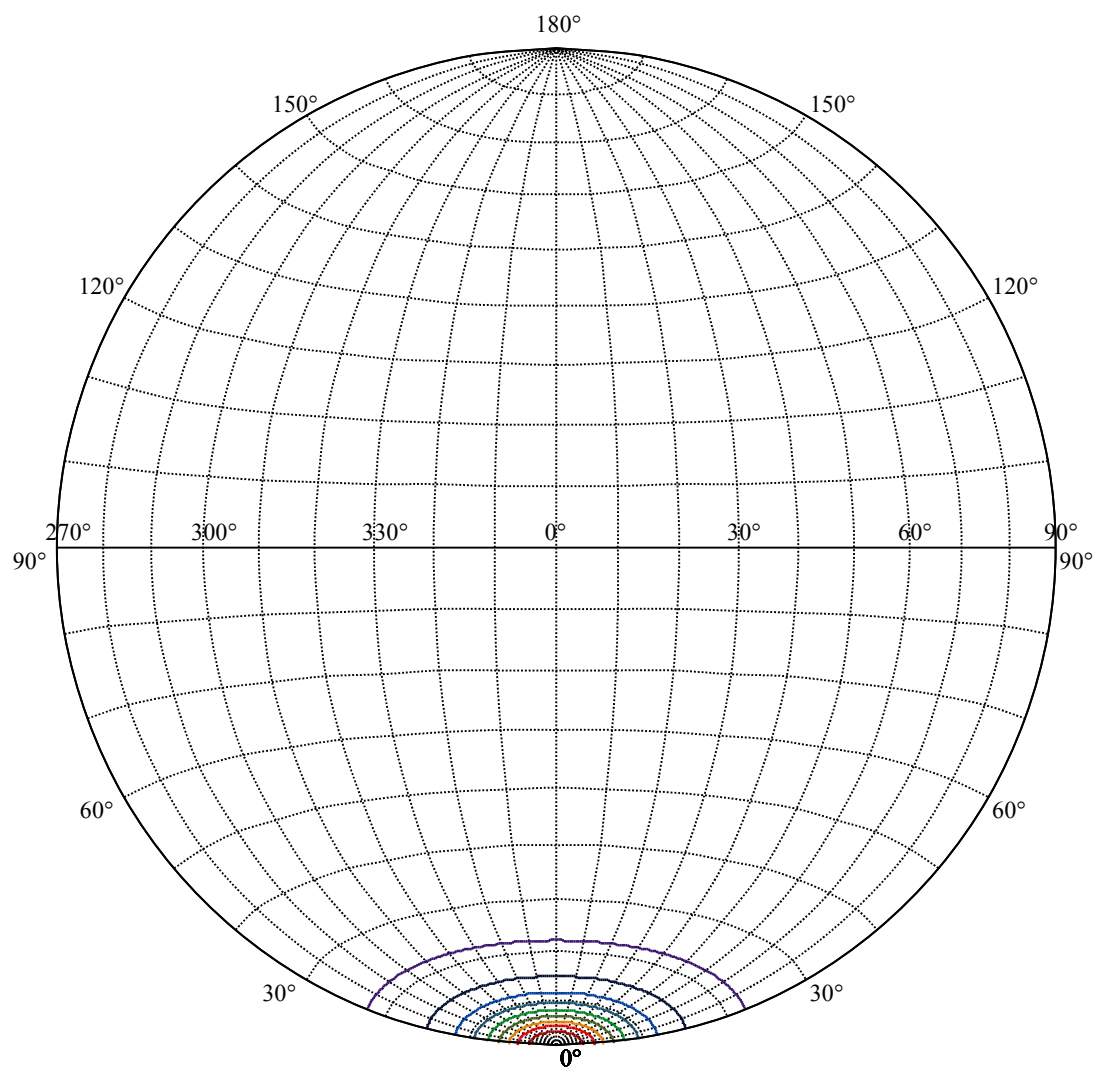
ZONAL LUMEN SUMMARY

0-10	1145.72
10-20	1050.21
20-30	636.84
30-40	131.28
40-50	27.88
50-60	22.98
60-70	22.32
70-80	18.17
80-90	13.81
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









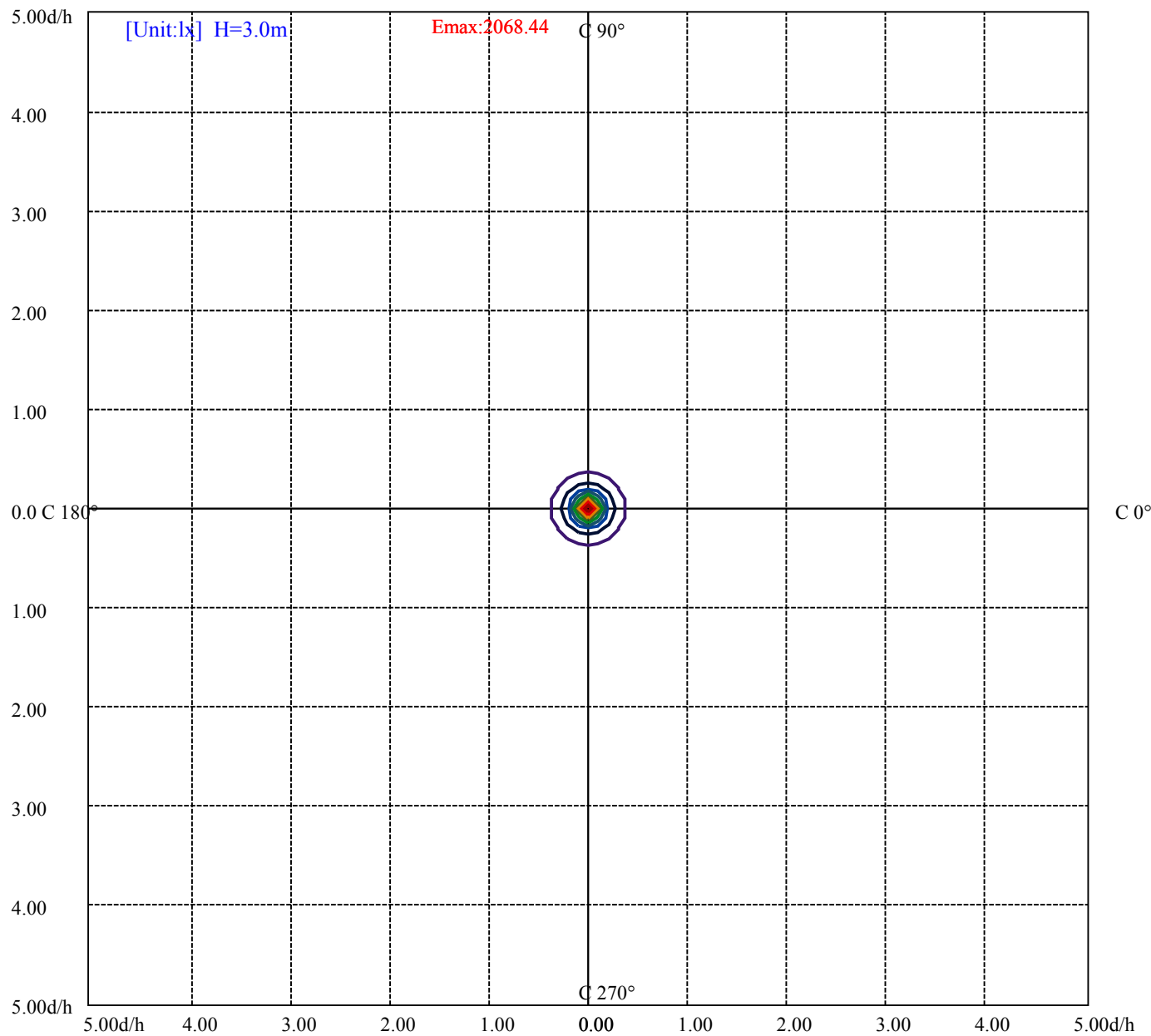
House

[Unit:cd]

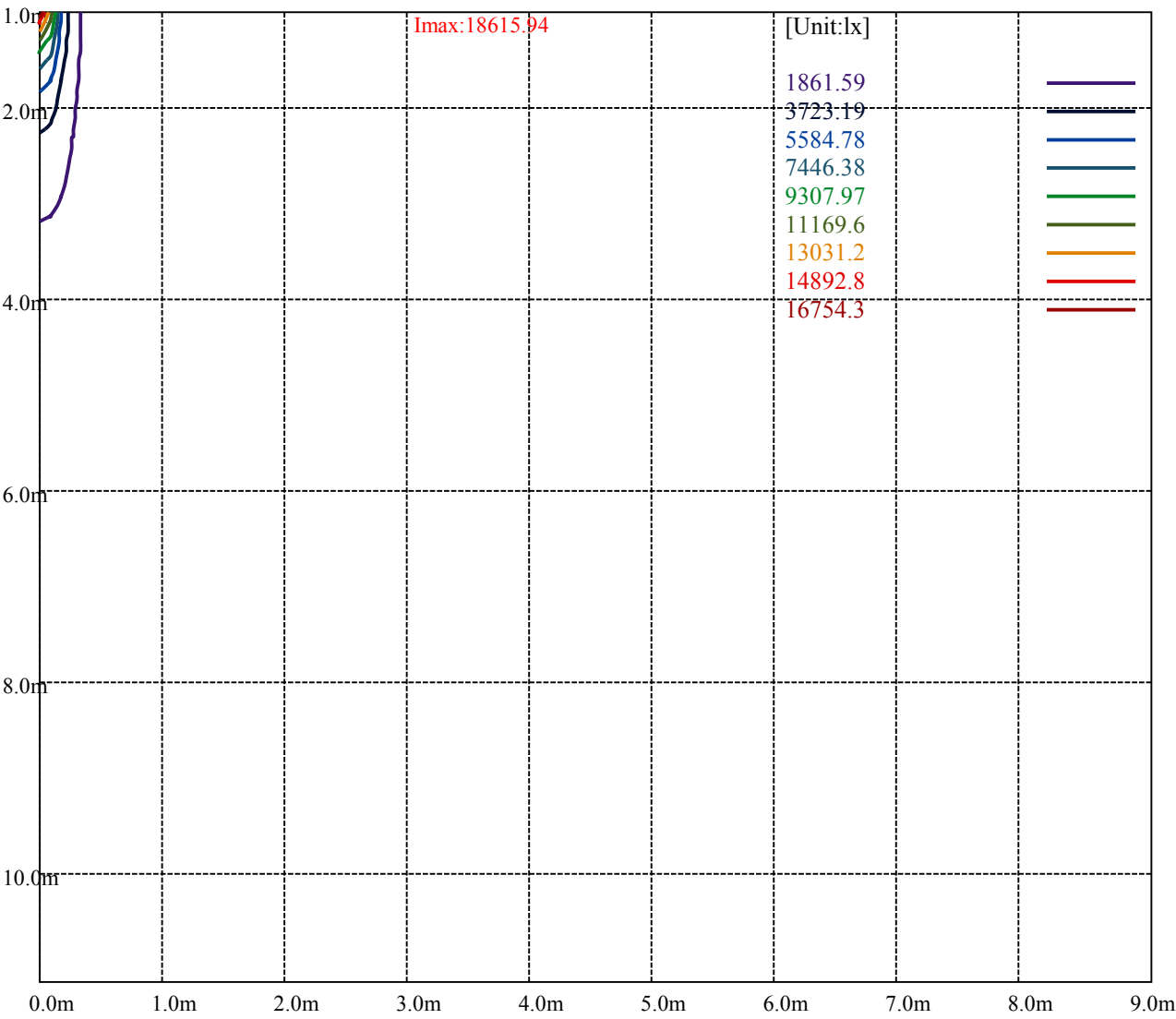
Road

Imax:18615.94

(10%Imax)	1861.59	—
(20%Imax)	3723.19	—
(30%Imax)	5584.78	—
(40%Imax)	7446.38	—
(50%Imax)	9307.97	—
(60%Imax)	11169.6	—
(70%Imax)	13031.2	—
(80%Imax)	14892.8	—
(90%Imax)	16754.3	—



(10%Emax)	206.8433	
(20%Emax)	413.6866	
(30%Emax)	620.5311	
(40%Emax)	827.3745	
(50%Emax)	1034.218	
(60%Emax)	1241.067	
(70%Emax)	1447.9	
(80%Emax)	1654.745	
(90%Emax)	1861.589	



Luminance Table

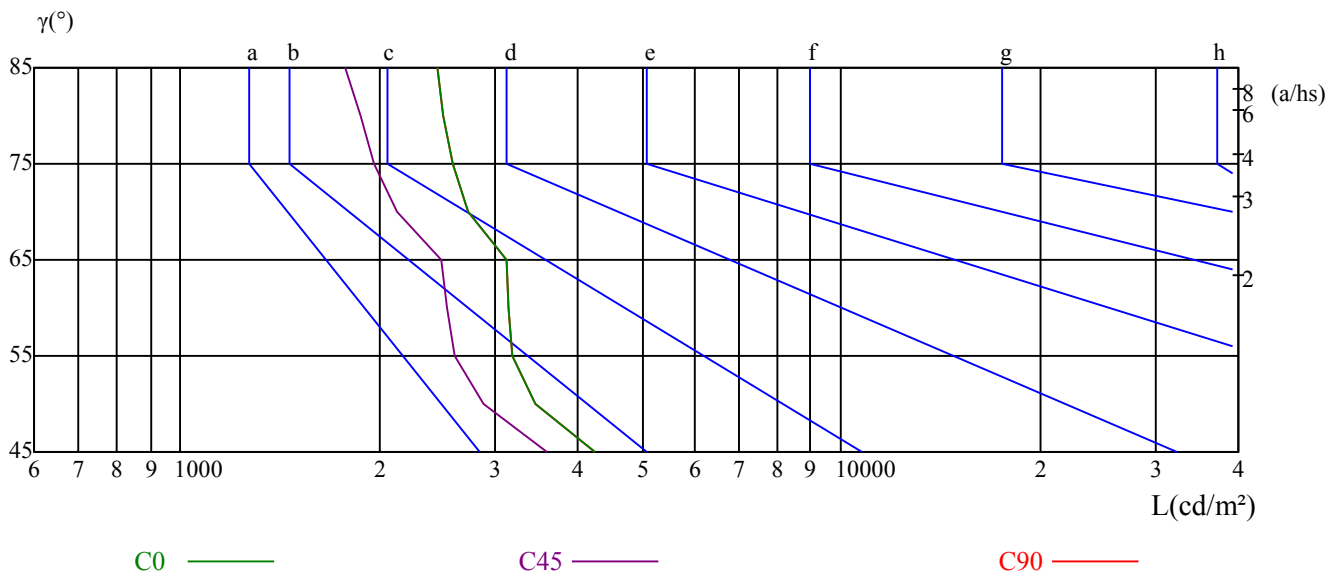
γ	45	50	55	60	65	70	75	80	85
C0	4234	3454	3175	3128	3121	2731	2576	2500	2444
C45	3580	2877	2603	2524	2476	2128	1968	1867	1780
C90	4234	3454	3175	3128	3121	2731	2576	2500	2444

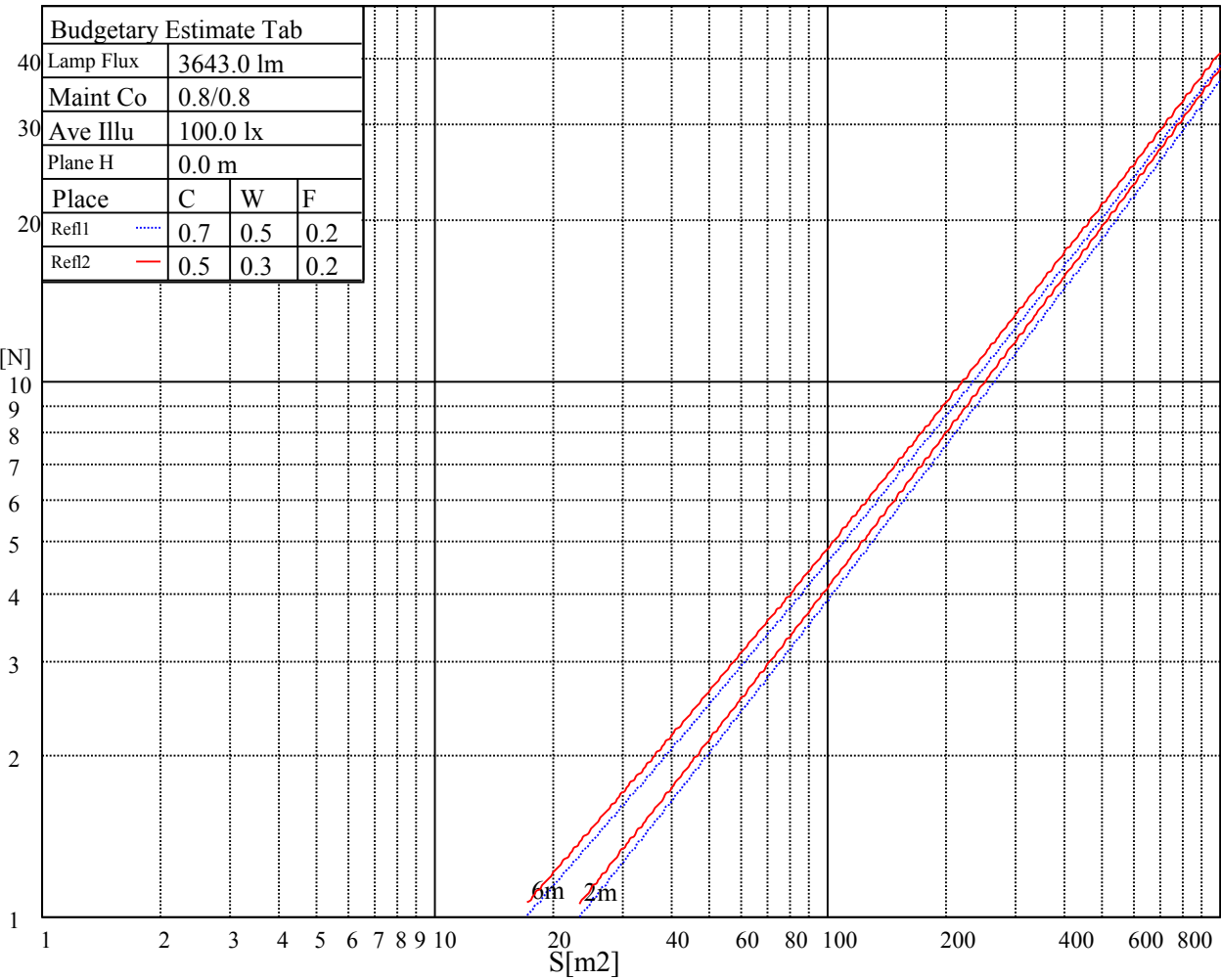
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8409	8409	8409	10174	10174	10174	24518	24518	24518

Glare Table

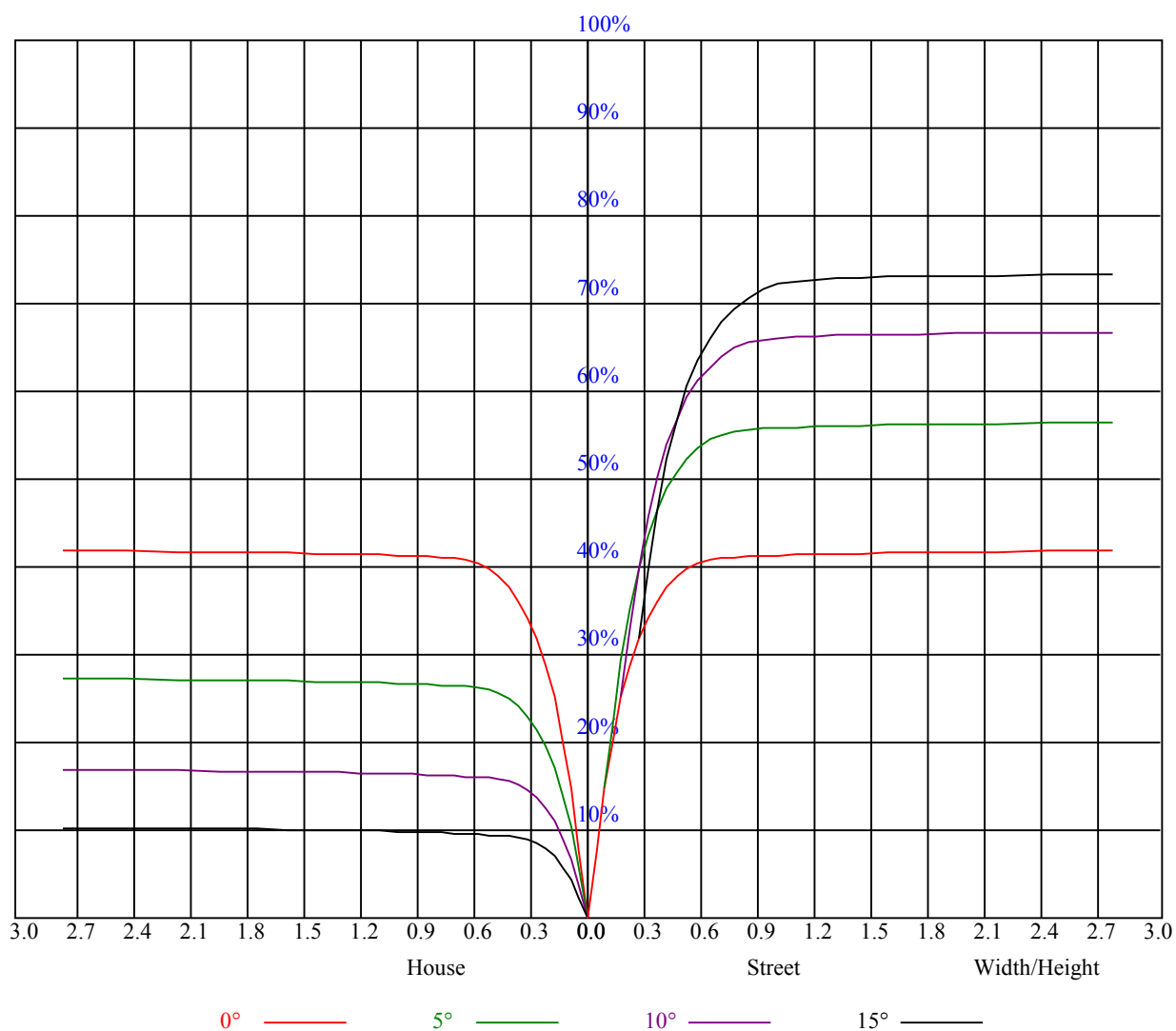
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	0.95	0.93	0.91	0.93	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.83	0.82	0.81
2	0.90	0.87	0.85	0.88	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.80	0.81	0.80	0.79	0.77
3	0.86	0.82	0.80	0.85	0.82	0.79	0.82	0.80	0.78	0.81	0.78	0.77	0.79	0.77	0.76	0.74
4	0.82	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.78	0.76	0.74	0.76	0.75	0.73	0.72
5	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.74	0.72	0.70	0.69
6	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.72	0.70	0.68	0.67
7	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.65
8	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.69	0.66	0.64	0.63
9	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.62	0.62
10	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60



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Intensity data(cd)										Appendix Page: 16 Total:18	
C/ γ (°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0		
0.0	18618.75	18562.50	17955.00	17038.13	15918.75	13786.88	12195.00	10856.25	9191.25		
45.0	18596.25	18590.63	18146.25	17409.38	16278.75	14512.50	12909.38	11334.38	9759.38		
90.0	18658.13	18579.38	18146.25	17257.50	16053.75	14360.63	12234.38	10955.25	9565.31		
135.0	18590.63	18652.50	18348.75	17707.50	16717.50	14951.25	13342.50	11711.25	10051.88		
180.0	18618.75	18433.13	17853.75	16801.88	15463.13	13691.25	11187.00	10223.44	8858.25		
225.0	18596.25	18326.25	17724.38	16425.00	14968.13	13303.13	11041.88	9761.63	8501.63		
270.0	18658.13	18534.38	17870.63	16931.25	15766.88	13533.75	11885.63	10558.13	8926.88		
315.0	18590.63	18253.13	17443.13	16132.50	14625.00	12285.00	11220.75	9642.38	8453.25		
360.0	18618.75	18562.50	17955.00	17038.13	15918.75	13786.88	12195.00	10856.25	9191.25		
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	7965.00	7143.75	6136.88	5467.50	4876.88	4235.63	3808.13	3414.38	3015.00		
45.0	8443.13	7458.75	6474.38	5731.88	5023.13	4415.63	3976.88	3538.13	3150.00		
90.0	8253.56	7164.56	6356.25	5584.50	4985.44	4402.13	3893.06	3492.00	3150.56		
135.0	8634.38	7582.50	6558.75	5805.00	5073.75	4449.38	3999.38	3560.63	3161.25		
180.0	7607.81	6607.69	5848.88	5121.00	4560.75	4032.56	3579.19	3233.25	2930.06		
225.0	7350.19	6396.19	5664.94	4968.00	4431.38	3935.25	3503.81	3161.81	2867.06		
270.0	7740.00	6856.88	5996.25	5338.13	4685.63	4134.38	3712.50	3335.63	2941.88		
315.0	7341.19	6399.56	5591.25	4971.94	4437.56	3931.31	3494.81	3156.19	2866.50		
360.0	7965.00	7143.75	6136.88	5467.50	4876.88	4235.63	3808.13	3414.38	3015.00		
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	2840.63	2509.31	2256.19	2083.50	1926.00	1753.31	1575.00	1452.38	1333.69		
45.0	2863.13	2719.69	2342.81	2152.69	1988.44	1803.94	1647.56	1515.94	1391.06		
90.0	2790.56	2545.88	2332.13	2093.63	1928.25	1770.75	1603.69	1462.50	1360.13		
135.0	2885.63	2851.88	2370.94	2178.00	2011.50	1827.56	1672.31	1532.25	1407.94		
180.0	2597.06	2369.81	2176.88	1973.81	1829.81	1689.19	1526.06	1399.50	1299.94		
225.0	2567.81	2359.69	2176.88	1970.44	1819.13	1661.06	1500.75	1377.56	1286.44		
270.0	2840.63	2456.44	2207.25	2036.25	1882.69	1681.31	1528.31	1399.50	1278.56		
315.0	2561.63	2347.88	2163.38	1957.50	1800.56	1643.06	1485.00	1368.00	1270.13		
360.0	2840.63	2509.31	2256.19	2083.50	1926.00	1753.31	1575.00	1452.38	1333.69		
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	1209.38	1072.13	911.25	770.63	615.94	465.19	343.69	291.38	136.41		
45.0	1287.00	1165.50	997.31	844.88	681.75	537.75	402.19	284.06	165.88		
90.0	1210.50	1098.28	953.33	789.53	654.75	505.41	366.69	258.41	170.61		
135.0	1303.31	1192.50	1033.31	882.00	723.38	572.63	432.00	297.56	284.06		
180.0	1120.95	1037.08	875.64	718.03	582.58	442.01	315.84	217.97	141.92		
225.0	1106.21	995.06	839.25	685.91	555.81	410.12	279.73	185.74	123.64		
270.0	1139.63	991.69	828.56	692.44	549.00	412.31	299.81	226.01	116.89		
315.0	1120.39	975.32	811.41	657.23	521.61	380.81	255.21	164.98	110.08		
360.0	1209.38	1072.13	911.25	770.63	615.94	465.19	343.69	291.38	136.41		
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	99.73	83.76	69.53	61.65	54.73	48.60	43.76	40.28	37.58		
45.0	110.76	90.34	74.14	65.70	57.66	50.96	45.34	41.51	38.25		
90.0	105.98	88.65	75.49	64.80	57.38	51.47	46.24	42.19	39.38		
135.0	114.92	90.34	75.04	64.41	56.87	51.53	45.00	41.34	38.64		
180.0	100.63	85.67	72.96	62.72	55.24	49.67	44.61	40.78	38.25		
225.0	96.13	81.84	71.27	62.27	54.90	49.73	44.66	41.29	38.87		
270.0	92.93	78.75	66.38	58.78	52.48	47.31	42.64	39.43	37.13		
315.0	86.74	73.52	64.91	55.74	49.95	45.00	40.89	37.41	35.04		
360.0	99.73	83.76	69.53	61.65	54.73	48.60	43.76	40.28	37.58		

Equipment:
Temperature(°C): 25.0

Date: 2018/10/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

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Intensity data(cd)										Appendix Page: 17 Total:18
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	
0.0	34.65	32.85	31.11	29.93	28.63	27.68	26.78	26.10	25.43	
45.0	35.55	33.64	31.84	30.54	29.25	28.18	27.39	26.72	25.93	
90.0	36.68	34.71	32.91	31.67	30.43	29.42	28.52	27.79	27.23	
135.0	35.61	33.58	32.29	30.71	29.59	28.74	27.84	27.17	26.55	
180.0	35.66	33.86	32.12	30.77	29.76	28.74	27.73	27.11	26.55	
225.0	36.06	34.48	32.74	31.33	30.26	29.25	28.24	27.68	27.23	
270.0	34.37	32.68	31.22	29.93	28.69	27.79	26.94	26.33	25.71	
315.0	32.74	31.11	29.59	28.24	27.39	26.49	25.82	25.26	24.86	
360.0	34.65	32.85	31.11	29.93	28.63	27.68	26.78	26.10	25.43	
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	
0.0	25.14	24.81	24.47	24.30	24.08	23.96	23.85	23.85	23.51	
45.0	25.54	25.20	24.86	24.53	24.36	24.19	24.08	24.02	23.85	
90.0	26.61	26.10	25.71	25.26	24.92	24.64	24.36	24.24	24.08	
135.0	25.99	25.71	25.31	24.98	24.75	24.47	24.19	24.02	24.02	
180.0	25.88	25.54	25.26	24.86	24.64	24.47	24.13	24.08	23.79	
225.0	26.66	26.44	26.16	25.82	25.59	25.37	25.20	25.09	24.81	
270.0	25.48	25.31	25.03	24.98	24.92	24.92	24.98	25.31	25.14	
315.0	24.58	24.36	24.19	23.91	23.85	23.68	23.68	23.57	23.63	
360.0	25.14	24.81	24.47	24.30	24.08	23.96	23.85	23.85	23.51	
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0	
0.0	23.74	23.68	22.95	22.44	21.38	20.81	19.80	19.52	18.73	
45.0	23.91	24.08	23.34	22.95	21.83	21.32	20.31	19.86	19.07	
90.0	24.13	24.30	23.34	22.78	21.66	21.15	20.14	19.69	19.01	
135.0	23.63	23.79	23.23	22.56	22.22	20.81	20.42	19.52	18.96	
180.0	23.85	23.57	22.89	22.44	21.21	20.81	19.69	19.35	18.68	
225.0	24.81	24.47	23.91	22.89	21.88	21.26	20.19	19.52	18.90	
270.0	25.48	24.81	24.13	23.29	21.88	21.26	19.97	19.41	18.73	
315.0	23.91	23.01	22.73	21.43	20.81	19.97	19.29	18.62	18.23	
360.0	23.74	23.68	22.95	22.44	21.38	20.81	19.80	19.52	18.73	
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	18.34	18.06	17.78	17.33	17.04	16.76	16.31	16.09	15.75	
45.0	18.62	18.34	17.94	17.55	17.27	16.99	16.54	16.20	15.92	
90.0	18.45	18.17	17.83	17.44	17.10	16.82	16.43	16.09	15.69	
135.0	18.39	18.06	17.72	17.33	16.99	16.71	16.37	15.98	15.69	
180.0	18.11	17.78	17.44	17.10	16.76	16.48	16.14	15.81	15.47	
225.0	18.39	18.06	17.66	17.38	16.99	16.71	16.31	15.98	15.58	
270.0	18.23	17.94	17.61	17.21	16.93	16.59	16.20	15.86	15.53	
315.0	17.78	17.49	17.27	16.88	16.59	16.26	15.86	15.58	15.24	
360.0	18.34	18.06	17.78	17.33	17.04	16.76	16.31	16.09	15.75	
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	15.24	14.91	14.57	14.29	14.01	13.73	13.56	13.28	13.05	
45.0	15.41	15.19	14.79	14.51	14.23	13.89	13.67	13.39	13.16	
90.0	15.41	15.08	14.74	14.40	14.06	13.73	13.44	13.22	12.99	
135.0	15.36	15.08	14.74	14.46	14.18	13.84	13.61	13.39	13.16	
180.0	15.13	14.85	14.57	14.23	13.89	13.67	13.44	13.22	12.88	
225.0	15.30	14.91	14.63	14.29	14.01	13.73	13.44	13.28	12.94	
270.0	15.19	14.79	14.51	14.29	13.95	13.67	13.39	13.16	12.94	
315.0	14.85	14.63	14.34	14.01	13.84	13.56	13.39	13.16	12.88	
360.0	15.24	14.91	14.57	14.29	14.01	13.73	13.56	13.28	13.05	

Equipment:
Temperature(°C): 25.0

Date: 2018/10/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.50

Intensity data(cd)

C/ γ (°)	90.0
0.0	12.71
45.0	12.94
90.0	12.88
135.0	12.83
180.0	12.71
225.0	12.88
270.0	12.88
315.0	12.88
360.0	12.71