NATA LIGHTING CO.,LTD.
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Address:380JinOU Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 2-2262-M
Luminaire: 92.70.131.00
Report No: 200919-B042
Test No: 200919-C042
LampCAT: OSRAM OPTO SOLERIQ S13
Lamp flux(lm): 1409.3
Number of Lamps: 1
Length(feet)(ft.):0.000
Phm Type: C

Voltage(V): 230.7000
Current(A): 0.0840
Power (W): 18.5900
PF: 0.9490
Ballast type: AC
Width(feet)(ft.):0.000
Height(feet)(ft.):0.000

Photometric Results

Lumens(lm): 1350.71
Efficiency(%): 95.84%
Lumens(lm)/Power(W): 72.66
Central intensity(cd): 9843.714
Maximum intensity(cd): 9843.714
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=16.0
[C90/270]Total=16.0
Field angle(10%Imax): [C0/180]Total=32.7
[C90/270]Total=32.7
Maximum s/h(1/2): C0_180=0.28 C90_270=0.28
Maximum s/h(1/4): C0_180=0.28 C90_270=0.28
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 96.01%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.615%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9843.715	2.355	2.355	.167%	.174%
1.0	9688.989	18.543	20.898	1.316%	1.547%
2.0	9525.359	36.455	57.353	2.587%	4.246%
3.0	8997.956	51.641	108.994	3.664%	8.069%
4.0	8393.263	64.205	173.199	4.556%	12.823%
5.0	7630.334	72.927	246.126	5.175%	18.222%
6.0	6774.772	77.657	323.783	5.510%	23.971%
7.0	5846.183	78.130	401.913	5.544%	29.756%
8.0	4915.796	75.024	476.938	5.324%	35.310%
9.0	4033.379	69.192	546.129	4.910%	40.433%
10.0	3255.311	61.989	608.118	4.399%	45.022%
11.0	2656.649	55.588	663.707	3.944%	49.138%
12.0	2253.810	51.386	715.093	3.646%	52.942%
13.0	1804.249	44.508	759.601	3.158%	56.237%
14.0	1529.257	40.570	800.171	2.879%	59.241%
15.0	1176.487	33.391	833.562	2.369%	61.713%
16.0	1031.732	31.186	864.748	2.213%	64.022%
17.0	894.163	28.668	893.417	2.034%	66.144%
18.0	810.614	27.469	920.886	1.949%	68.178%
19.0	734.321	26.217	947.103	1.860%	70.119%
20.0	675.029	25.318	972.421	1.796%	71.993%
21.0	623.081	24.486	996.907	1.737%	73.806%
22.0	585.442	24.050	1020.957	1.707%	75.587%
23.0	554.555	23.762	1044.718	1.686%	77.346%
24.0	526.951	23.504	1068.222	1.668%	79.086%
25.0	507.780	23.533	1091.755	1.670%	80.828%
26.0	488.413	23.479	1115.234	1.666%	82.566%
27.0	473.946	23.595	1138.829	1.674%	84.313%
28.0	459.706	23.667	1162.496	1.679%	86.065%
29.0	446.389	23.732	1186.228	1.684%	87.822%
30.0	427.218	23.425	1209.653	1.662%	89.557%
31.0	401.517	22.677	1232.33	1.609%	91.236%
32.0	367.892	21.379	1253.709	1.517%	92.818%
33.0	326.105	19.477	1273.186	1.382%	94.260%
34.0	279.951	17.167	1290.353	1.218%	95.531%
35.0	234.621	14.757	1305.11	1.047%	96.624%
36.0	182.916	11.790	1316.901	.837%	97.497%
37.0	146.339	9.658	1326.558	.685%	98.212%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	104.582	7.061	1333.619	.501%	98.735%
39.0	52.778	3.642	1337.261	.258%	99.004%
40.0	30.603	2.157	1339.419	.153%	99.164%
41.0	15.360	1.105	1340.524	.078%	99.246%
42.0	8.712	0.639	1341.163	.045%	99.293%
43.0	7.239	0.541	1341.704	.038%	99.333%
44.0	6.549	0.499	1342.203	.035%	99.370%
45.0	5.887	0.457	1342.66	.032%	99.404%
46.0	5.325	0.420	1343.08	.030%	99.435%
47.0	4.994	0.401	1343.48	.028%	99.465%
48.0	4.745	0.387	1343.867	.027%	99.493%
49.0	4.524	0.374	1344.241	.027%	99.521%
50.0	4.408	0.370	1344.612	.026%	99.548%
51.0	4.263	0.363	1344.975	.026%	99.575%
52.0	4.101	0.354	1345.329	.025%	99.601%
53.0	4.008	0.351	1345.68	.025%	99.627%
54.0	3.851	0.342	1346.022	.024%	99.653%
55.0	3.689	0.331	1346.353	.024%	99.677%
56.0	3.503	0.319	1346.672	.023%	99.701%
57.0	3.358	0.309	1346.981	.022%	99.724%
58.0	3.138	0.292	1347.273	.021%	99.745%
59.0	2.929	0.275	1347.548	.020%	99.766%
60.0	2.709	0.257	1347.805	.018%	99.785%
61.0	2.500	0.240	1348.045	.017%	99.803%
62.0	2.326	0.225	1348.27	.016%	99.819%
63.0	2.233	0.218	1348.488	.015%	99.835%
64.0	2.135	0.210	1348.699	.015%	99.851%
65.0	1.943	0.193	1348.892	.014%	99.865%
66.0	1.758	0.176	1349.068	.012%	99.878%
67.0	1.584	0.160	1349.228	.011%	99.890%
68.0	1.450	0.147	1349.375	.010%	99.901%
69.0	1.288	0.132	1349.507	.009%	99.911%
70.0	1.125	0.116	1349.623	.008%	99.919%
71.0	0.998	0.103	1349.726	.007%	99.927%
72.0	0.882	0.092	1349.818	.007%	99.934%
73.0	0.742	0.078	1349.896	.006%	99.940%
74.0	0.626	0.066	1349.962	.005%	99.945%
75.0	0.557	0.059	1350.021	.004%	99.949%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	0.516	0.055	1350.076	.004%	99.953%
77.0	0.505	0.054	1350.13	.004%	99.957%
78.0	0.470	0.050	1350.181	.004%	99.961%
79.0	0.447	0.048	1350.229	.003%	99.964%
80.0	0.441	0.048	1350.276	.003%	99.968%
81.0	0.423	0.046	1350.322	.003%	99.971%
82.0	0.412	0.045	1350.367	.003%	99.974%
83.0	0.394	0.043	1350.41	.003%	99.978%
84.0	0.377	0.041	1350.451	.003%	99.981%
85.0	0.389	0.042	1350.493	.003%	99.984%
86.0	0.412	0.045	1350.538	.003%	99.987%
87.0	0.476	0.052	1350.59	.004%	99.991%
88.0	0.412	0.045	1350.636	.003%	99.994%
89.0	0.458	0.050	1350.686	.004%	99.998%
90.0	0.476	0.026	1350.712	.002%	100.000%

Zonal flux distribution table

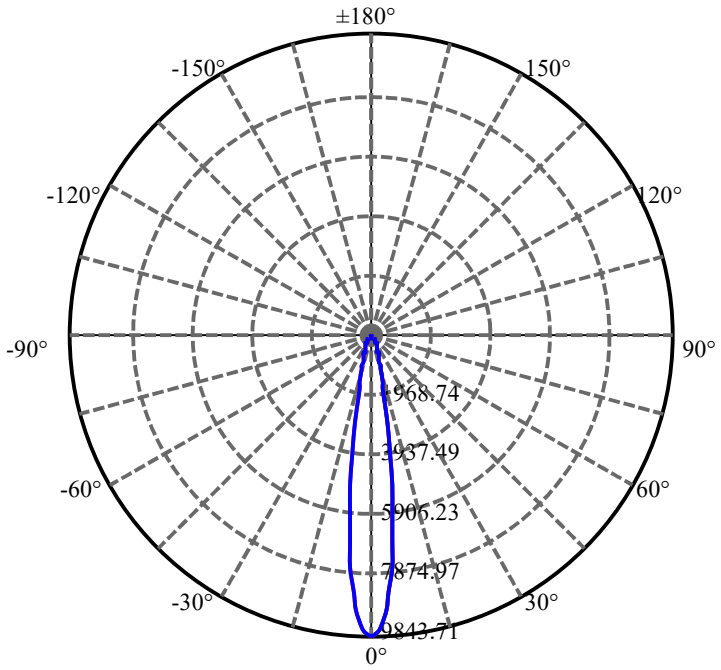
ZONAL LUMEN SUMMARY

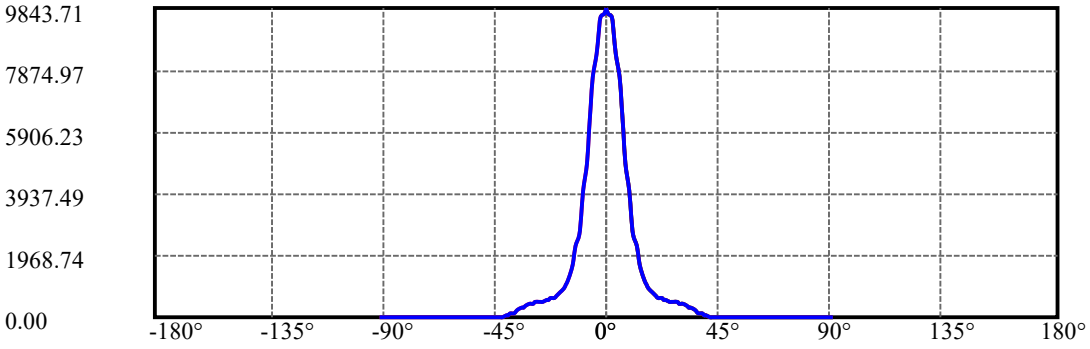
Zone	Lumens	%Lamp	%Fixt
0-30	1209.65	85.83%	89.56%
0-40	1339.42	95.04%	99.16%
0-60	1347.81	95.64%	99.78%
0-90	1350.69	95.84%	100.00%
0-120	1350.69	95.84%	100.00%
0-180	1350.71	95.84%	100.00%
60-90	3.14	0.22%	0.23%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.52	1080.57	76.67%	80.00%

ZONAL LUMEN SUMMARY

0-10	608.12
10-20	364.30
20-30	237.23
30-40	129.77
40-50	5.19
50-60	3.19
60-70	1.82
70-80	0.65
80-90	0.41
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

Light Distribution Curve [Unit:cd]





C0(Max):

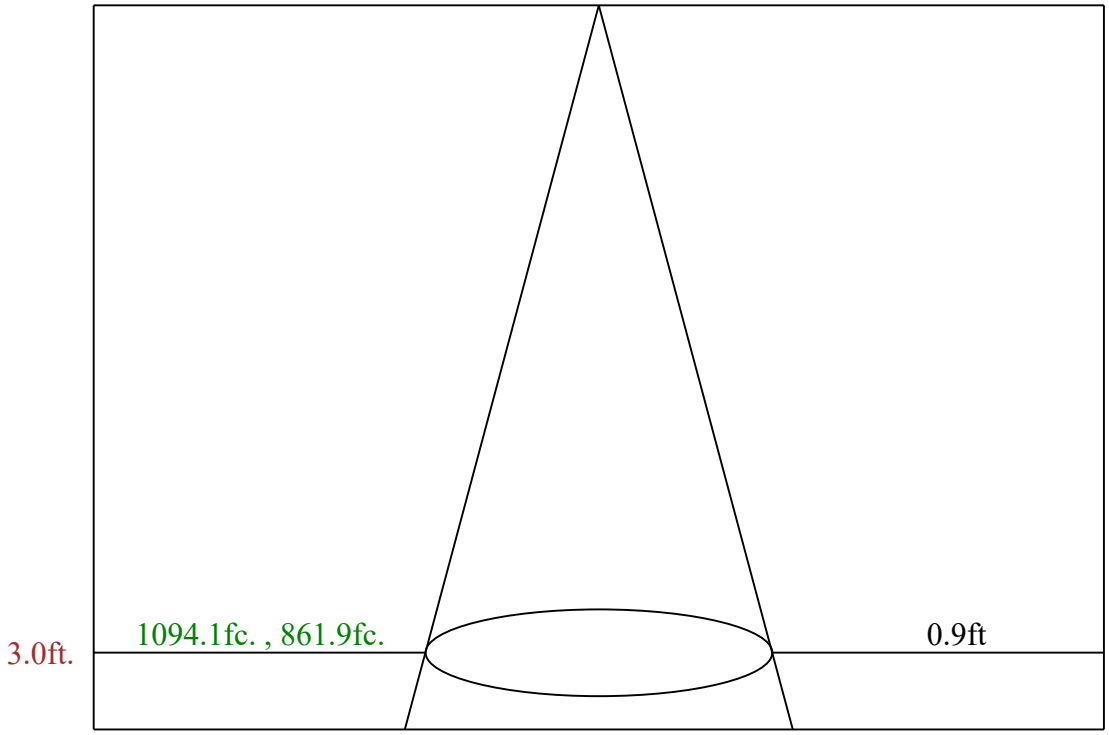
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:16.3 Right:16.3
:C90/270Left:16.3 Right:16.3

Beam Angle(50%Imax):C0/180Left:8.0 Right:8.0
:C90/270Left:8.0 Right:8.0

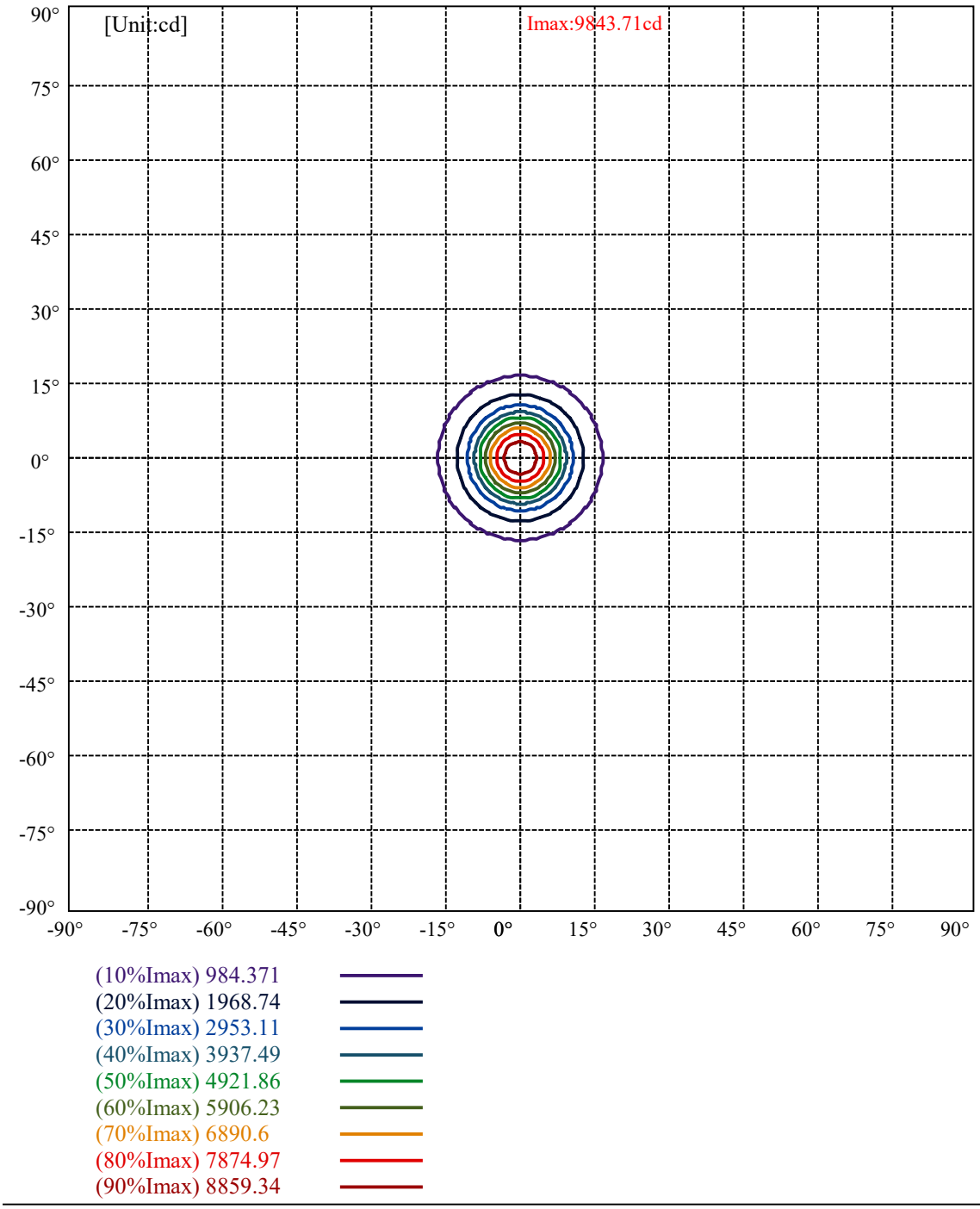
Lux distance Curve



Max , Ave

Beam angle of C0 plane 16.16

ISO-Intensity(V-H)

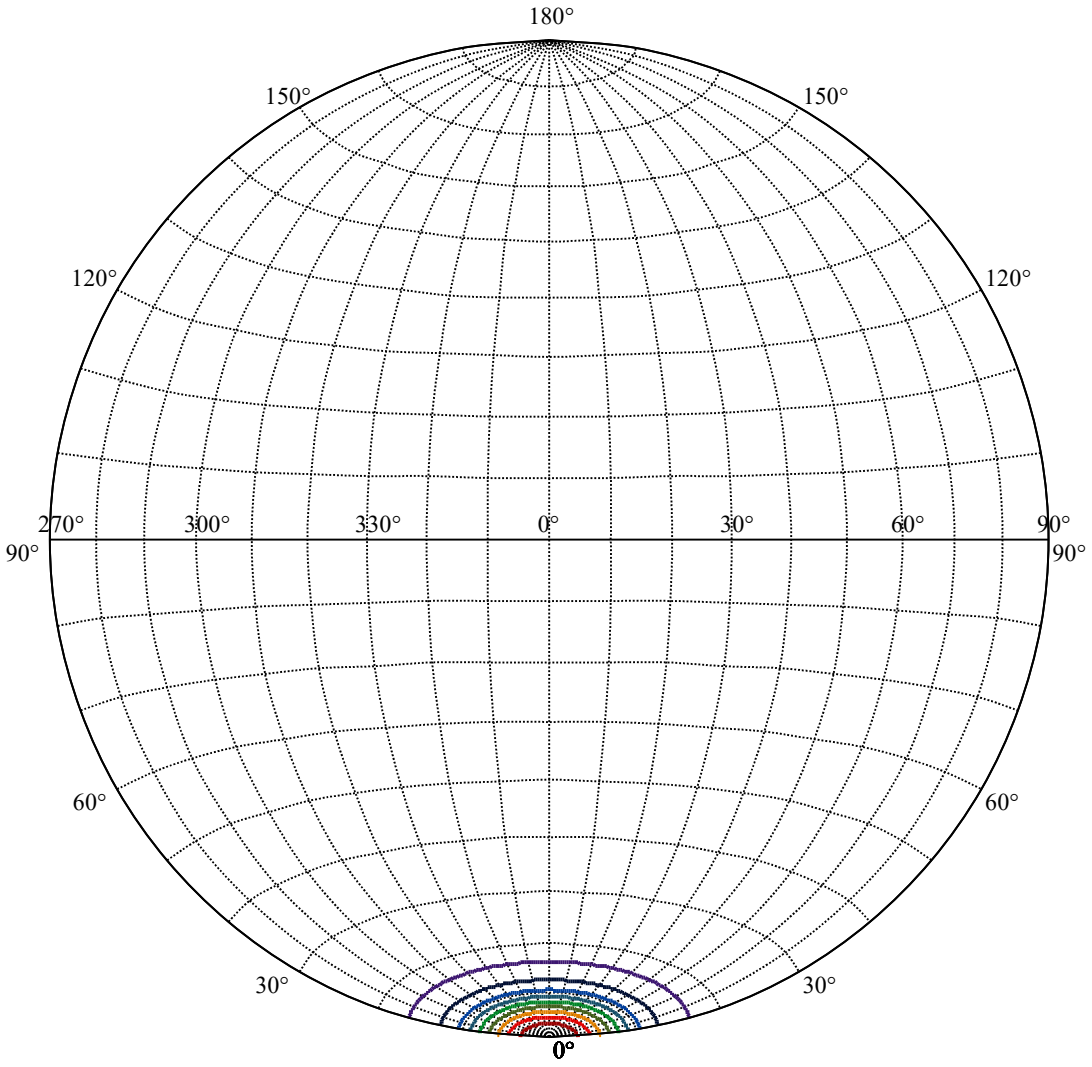


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:9843.71

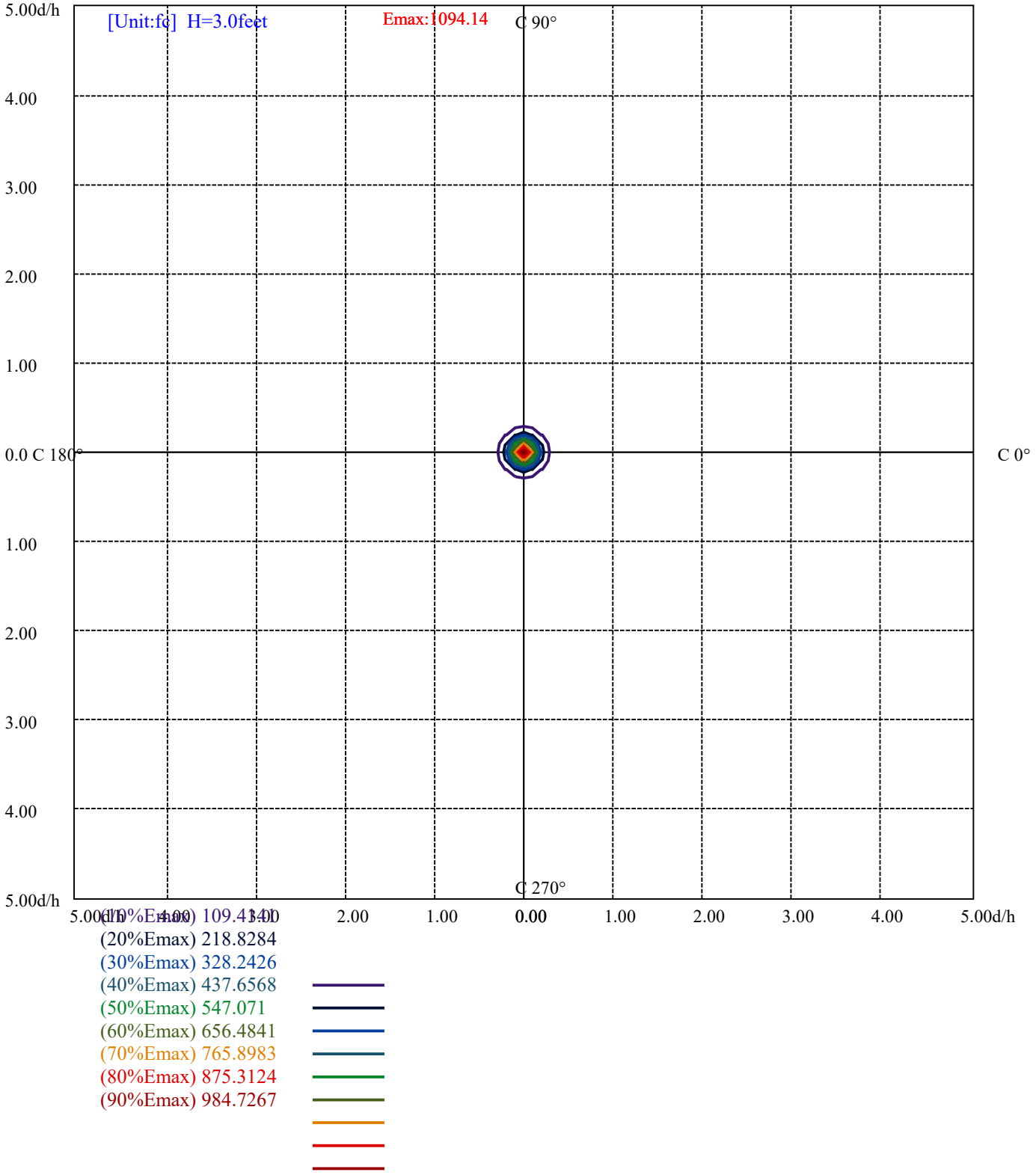
(10%Imax) 984.371
(20%Imax) 1968.74
(30%Imax) 2953.11
(40%Imax) 3937.49
(50%Imax) 4921.86
(60%Imax) 5906.23
(70%Imax) 6890.6
(80%Imax) 7874.97
(90%Imax) 8859.34

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

ISO illuminance diagram

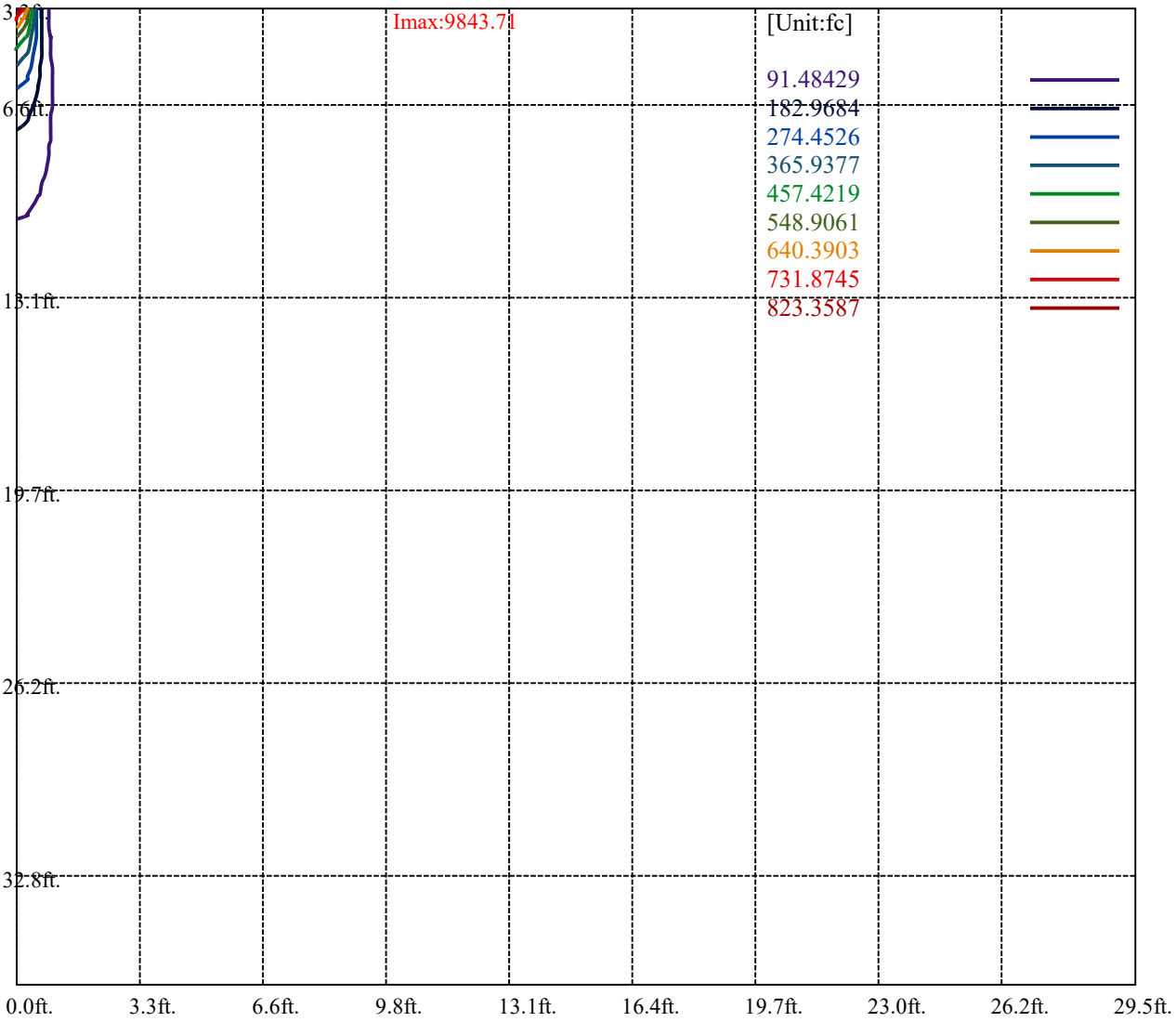


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

Space ISO Lux diagram



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

Luminance Limitting Curve(no luminous side)

Luminance Table

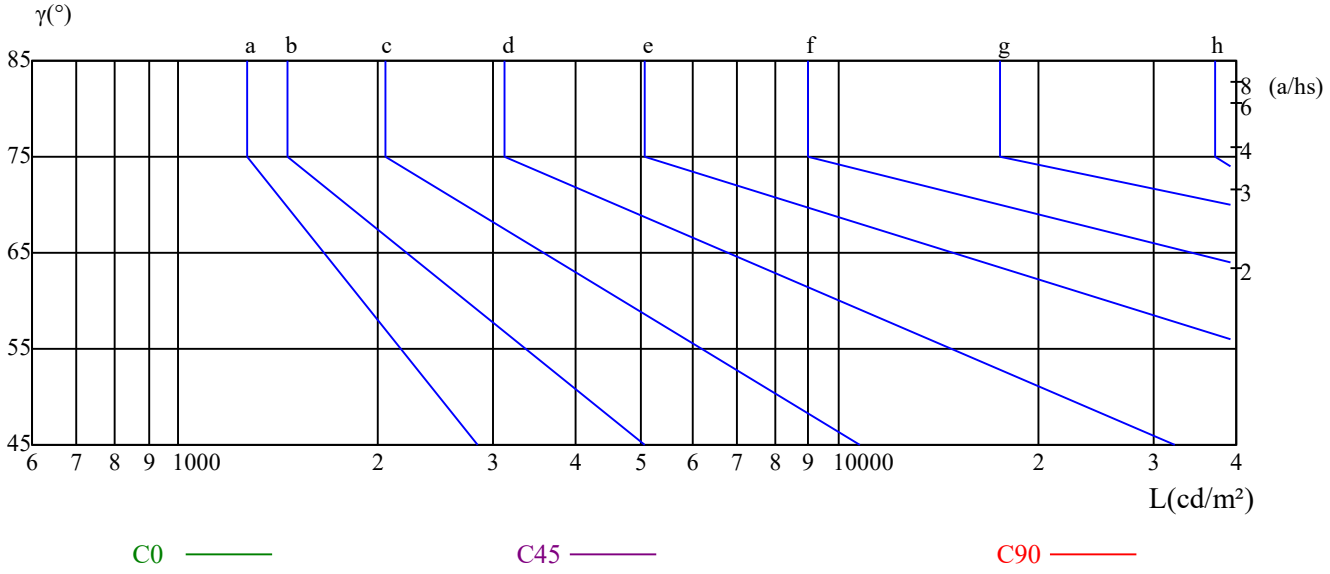
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

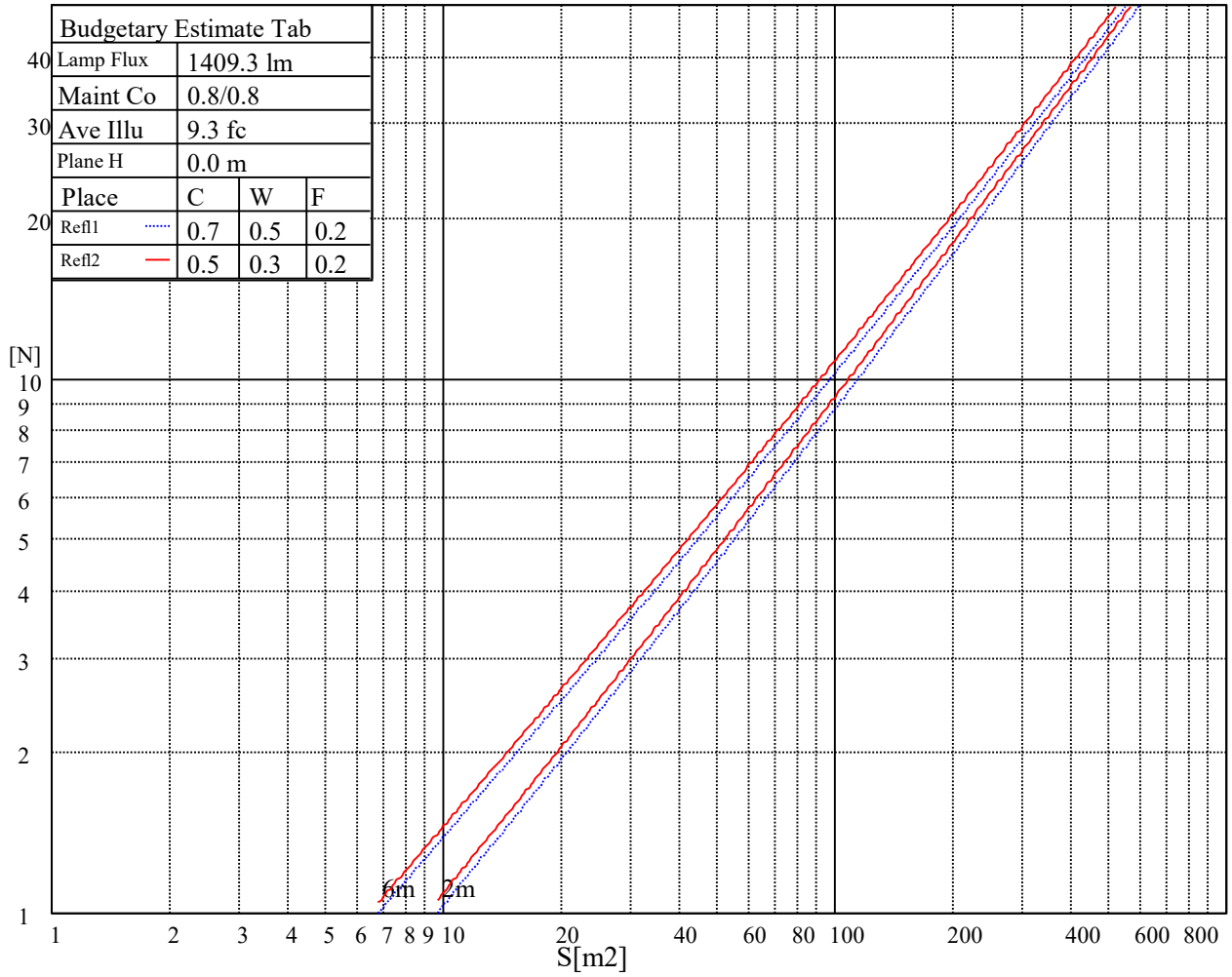
Glare Table

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 Limitting Curve



Budgetary Estimate Table



Equipment: GMS 1800
Temperature(°C): 25.0

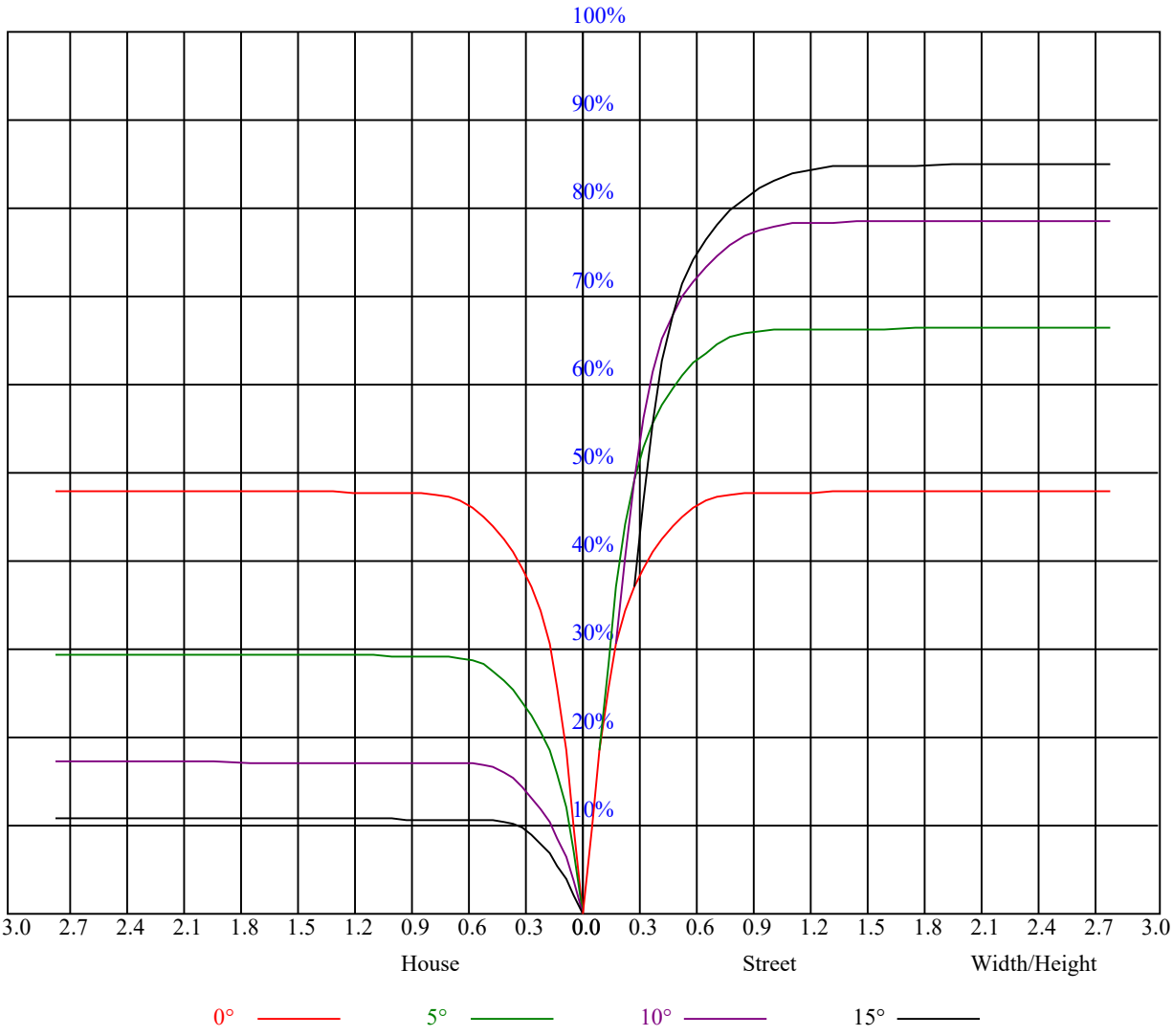
Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

Utilization factor table for indoor luminaire

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	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.14	1.14	1.14	1.12	1.12	1.12	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.08	1.06	1.05	1.06	1.04	1.03	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.92
2	1.03	1.00	0.98	1.02	0.99	0.97	0.99	0.96	0.95	0.96	0.94	0.93	0.93	0.92	0.91	0.89
3	0.99	0.95	0.92	0.97	0.94	0.92	0.95	0.92	0.90	0.93	0.91	0.89	0.91	0.89	0.88	0.86
4	0.95	0.91	0.88	0.94	0.90	0.88	0.92	0.89	0.87	0.90	0.88	0.86	0.88	0.86	0.85	0.84
5	0.91	0.87	0.84	0.91	0.87	0.84	0.89	0.86	0.83	0.88	0.85	0.83	0.86	0.84	0.82	0.81
6	0.88	0.84	0.81	0.88	0.84	0.81	0.86	0.83	0.81	0.85	0.82	0.80	0.84	0.82	0.80	0.79
7	0.85	0.81	0.79	0.85	0.81	0.78	0.84	0.80	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.76
8	0.83	0.79	0.76	0.82	0.79	0.76	0.82	0.78	0.76	0.81	0.78	0.76	0.80	0.77	0.75	0.74
9	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
10	0.78	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.77	0.74	0.72	0.76	0.74	0.72	0.71

Coefficient Utilization Curve



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2020/9/19
Humidity(%): 60.0%

Operator: NT0100
Distance(feet): 22.35

Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	9965.58	9170.46	9055.84	8799.70	8053.53	7171.87	6209.93	5217.36	4261.92
45.0	9181.13	10114.07	10151.20	9988.78	9617.56	9292.73	8610.60	7803.19	6879.76
90.0	10160.48	10230.08	10067.67	9064.20	9064.20	8660.49	7874.88	6964.91	5991.83
135.0	10067.67	10095.51	10007.35	9696.44	9218.49	8601.32	7840.31	6972.57	6049.14
180.0	9965.58	9974.86	9766.05	9371.62	8777.66	8030.56	7176.74	6248.67	5274.20
225.0	9181.13	8923.60	8780.67	7976.97	7053.54	6058.19	5053.09	4103.22	3257.75
270.0	10160.48	9891.34	9394.82	8703.41	7844.95	6893.68	5896.01	4898.34	3951.71
315.0	10067.67	9111.99	8979.28	8382.53	7516.18	6333.82	5536.61	4561.22	3660.06
360.0	9965.58	9170.46	9055.84	8799.70	8053.53	7171.87	6209.93	5217.36	4261.92

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3411.81	2696.27	2144.07	1743.14	1451.26	1232.24	891.27	891.27	850.16
45.0	5891.37	4898.34	3960.99	3139.65	2471.44	2471.44	1545.46	1293.49	1107.42
90.0	5002.05	4055.42	3224.80	2563.09	2065.18	1701.38	1429.92	1221.10	891.32
135.0	5083.95	4137.32	3274.22	2833.39	2350.79	2350.79	1462.87	1239.67	1068.90
180.0	4322.94	3450.55	2708.10	2578.17	2336.87	1526.90	1289.78	1104.17	957.53
225.0	2565.87	2134.79	1732.47	1402.08	1236.42	900.50	900.50	840.18	752.89
270.0	3116.45	2429.68	2429.68	2313.67	1294.42	1175.63	1016.93	849.41	792.34
315.0	2872.60	2240.12	1778.87	1457.30	1227.60	875.17	875.17	814.56	732.76
360.0	3411.81	2696.27	2144.07	1743.14	1451.26	1232.24	891.27	891.27	850.16

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	762.45	692.38	636.47	591.78	556.93	529.74	507.33	489.00	473.27
45.0	961.25	848.02	793.27	695.35	647.09	622.04	573.31	556.61	531.55
90.0	891.32	851.69	766.40	697.02	639.95	594.57	559.49	530.90	506.49
135.0	936.65	833.64	753.36	688.86	635.96	594.19	561.71	533.87	509.28
180.0	844.77	756.61	689.32	639.21	599.76	567.28	542.22	520.88	500.92
225.0	681.48	626.07	582.83	549.04	532.71	500.55	482.59	473.55	455.22
270.0	713.45	648.95	600.23	564.03	538.05	516.24	496.28	480.51	467.51
315.0	693.54	617.21	578.37	559.35	533.08	511.83	492.66	476.93	463.06
360.0	762.45	692.38	636.47	591.78	556.93	529.74	507.33	489.00	473.27

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	459.44	448.58	438.98	418.88	383.66	337.17	285.29	231.83	178.10
45.0	509.28	490.25	474.94	462.41	451.27	437.35	411.83	372.39	323.66
90.0	487.00	471.41	458.98	448.53	438.56	417.17	379.02	333.59	281.16
135.0	497.21	473.55	459.16	452.20	441.99	429.93	402.55	362.18	315.31
180.0	484.68	470.30	458.23	445.70	433.18	405.33	363.11	314.38	261.48
225.0	449.18	439.44	422.27	387.65	342.69	291.41	236.94	182.60	129.42
270.0	454.06	442.92	431.32	404.87	364.03	316.70	274.94	242.92	242.92
315.0	450.72	441.20	427.24	397.49	356.75	308.07	255.17	199.72	144.92
360.0	459.44	448.58	438.98	418.88	383.66	337.17	285.29	231.83	178.10

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	147.01	78.24	53.27	22.41	9.88	8.86	8.17	7.10	6.03
45.0	271.23	249.88	249.88	110.86	73.41	36.66	14.90	9.47	9.14
90.0	248.95	194.48	120.74	91.97	50.58	20.28	9.23	8.68	8.03
135.0	261.95	240.14	229.00	100.65	58.00	25.20	10.53	9.28	8.72
180.0	240.60	240.60	111.28	65.66	29.56	10.26	7.24	6.26	5.01
225.0	81.86	42.83	16.33	7.33	6.40	5.61	4.78	3.85	3.34
270.0	114.62	68.86	32.71	11.88	7.84	7.33	6.82	6.13	5.52
315.0	97.12	55.68	23.43	11.46	9.14	8.68	8.03	7.15	6.59
360.0	147.01	78.24	53.27	22.41	9.88	8.86	8.17	7.10	6.03

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	5.52	5.20	4.97	4.78	4.59	4.45	4.22	3.99	3.85
45.0	8.49	7.56	6.96	6.68	6.17	5.99	5.89	5.71	5.48
90.0	7.10	6.22	5.71	5.48	5.24	5.01	4.87	4.69	4.50
135.0	7.80	6.64	6.26	5.99	5.89	5.80	5.66	5.52	5.48
180.0	3.99	3.39	2.83	2.27	2.04	2.00	1.90	1.76	1.76
225.0	3.11	2.92	2.88	2.88	2.88	2.92	2.92	2.97	3.06
270.0	4.97	4.69	4.50	4.22	3.94	3.81	3.53	3.25	3.20
315.0	6.13	5.99	5.85	5.66	5.43	5.29	5.10	4.92	4.73
360.0	5.52	5.20	4.97	4.78	4.59	4.45	4.22	3.99	3.85

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.71	3.48	3.29	3.20	3.02	2.92	2.78	2.55	2.32
45.0	5.20	5.06	4.87	4.73	4.50	4.45	4.18	3.99	3.81
90.0	4.27	4.13	3.94	3.85	3.39	2.88	2.60	2.27	2.23
135.0	5.24	4.73	4.22	3.99	3.76	3.43	3.16	2.88	2.64
180.0	1.81	1.90	2.00	2.00	2.00	2.00	1.81	1.72	1.72
225.0	3.16	3.11	3.02	2.83	2.64	2.41	2.23	2.09	1.81
270.0	2.92	2.74	2.60	2.41	2.18	1.95	1.81	1.67	1.48
315.0	4.50	4.36	4.08	3.85	3.62	3.39	3.11	2.83	2.60
360.0	3.71	3.48	3.29	3.20	3.02	2.92	2.78	2.55	2.32

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.13	2.00	1.81	1.62	1.48	1.39	1.25	1.07	0.93
45.0	3.39	3.29	2.97	2.69	2.46	2.23	2.00	1.81	1.62
90.0	2.55	2.46	2.23	2.04	1.90	1.76	1.62	1.44	1.21
135.0	2.69	2.83	2.69	2.51	2.18	2.04	1.76	1.58	1.44
180.0	1.76	1.58	1.44	1.30	1.21	1.11	1.02	0.93	0.84
225.0	1.58	1.35	1.25	1.02	0.84	0.70	0.60	0.56	0.56
270.0	1.39	1.30	1.21	1.07	1.02	0.97	0.88	0.74	0.65
315.0	2.37	2.27	1.95	1.81	1.58	1.39	1.16	0.88	0.74
360.0	2.13	2.00	1.81	1.62	1.48	1.39	1.25	1.07	0.93

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	0.79	0.65	0.56	0.51	0.51	0.56	0.51	0.46	0.46
45.0	1.44	1.16	0.97	0.79	0.65	0.60	0.56	0.56	0.51
90.0	1.11	0.97	0.74	0.60	0.56	0.60	0.56	0.51	0.51
135.0	1.21	0.97	0.74	0.60	0.56	0.56	0.46	0.46	0.46
180.0	0.70	0.60	0.51	0.51	0.46	0.42	0.42	0.42	0.37
225.0	0.51	0.46	0.46	0.46	0.42	0.37	0.42	0.37	0.32
270.0	0.65	0.56	0.56	0.51	0.51	0.51	0.46	0.42	0.46
315.0	0.65	0.56	0.46	0.46	0.46	0.42	0.37	0.37	0.42
360.0	0.79	0.65	0.56	0.51	0.51	0.56	0.51	0.46	0.46

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	0.51	0.42	0.42	0.42	0.46	0.42	0.37	0.37	0.37
45.0	0.51	0.46	0.42	0.42	0.42	0.42	0.42	0.42	0.37
90.0	0.51	0.42	0.46	0.42	0.42	0.42	0.42	0.46	1.11
135.0	0.46	0.42	0.42	0.32	0.37	0.37	0.32	0.32	0.32
180.0	0.32	0.42	0.32	0.37	0.37	0.37	0.37	0.32	0.32
225.0	0.32	0.42	0.32	0.32	0.37	0.32	0.32	0.37	0.32
270.0	0.42	0.42	0.46	0.42	0.42	0.65	1.25	0.70	0.46
315.0	0.32	0.32	0.32	0.32	0.28	0.32	0.32	0.32	0.37
360.0	0.51	0.42	0.42	0.42	0.46	0.42	0.37	0.37	0.37

Intensity data(cd)

C/γ(°)	90.0
0.0	0.37
45.0	0.42
90.0	1.30
135.0	0.32
180.0	0.32
225.0	0.32
270.0	0.46
315.0	0.28
360.0	0.37