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Nata

LumCAT: 2-2263-M
Luminaire: 92.70.131.00
Report No: 200919-B044
Test No: 200919-C044
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): 18.6000
PF: 0.9500
Ballast type: AC
Width(feet)(ft.):0.000
Height(feet)(ft.):0.000

Photometric Results

Lumens(lm): 1325.57
Efficiency(%): 94.06%
Lumens(lm)/Power(W): 71.27
Central intensity(cd): 5775.359
Maximum intensity(cd): 5775.359
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=23.5
[C90/270]Total=23.5
Field angle(10%Imax): [C0/180]Total=47.1
[C90/270]Total=47.1
Maximum s/h(1/2): C0_180=0.40 C90_270=0.40
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 94.15%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.675%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5775.360	1.382	1.382	.098%	.104%
1.0	5755.233	11.015	12.396	.782%	.935%
2.0	5685.222	21.758	34.154	1.544%	2.577%
3.0	5599.550	32.137	66.291	2.280%	5.001%
4.0	5440.154	41.615	107.906	2.953%	8.140%
5.0	5222.928	49.919	157.825	3.542%	11.906%
6.0	4985.343	57.145	214.97	4.055%	16.217%
7.0	4679.139	62.533	277.503	4.437%	20.935%
8.0	4334.536	66.153	343.656	4.694%	25.925%
9.0	3966.152	68.038	411.695	4.828%	31.058%
10.0	3578.684	68.147	479.842	4.836%	36.199%
11.0	3185.590	66.656	546.498	4.730%	41.227%
12.0	2793.655	63.695	610.192	4.520%	46.032%
13.0	2408.914	59.424	669.616	4.217%	50.515%
14.0	2042.965	54.199	723.815	3.846%	54.604%
15.0	1696.292	48.145	771.96	3.416%	58.236%
16.0	1366.781	41.313	813.273	2.931%	61.353%
17.0	1170.756	37.536	850.809	2.663%	64.184%
18.0	1009.186	34.198	885.008	2.427%	66.764%
19.0	860.457	30.720	915.728	2.180%	69.082%
20.0	776.630	29.128	944.856	2.067%	71.279%
21.0	699.728	27.499	972.355	1.951%	73.354%
22.0	646.248	26.548	998.902	1.884%	75.356%
23.0	597.803	25.615	1024.517	1.818%	77.289%
24.0	559.856	24.971	1049.488	1.772%	79.172%
25.0	528.778	24.506	1073.994	1.739%	81.021%
26.0	501.864	24.126	1098.12	1.712%	82.841%
27.0	480.385	23.916	1122.036	1.697%	84.645%
28.0	462.230	23.797	1145.833	1.689%	86.441%
29.0	443.111	23.558	1169.391	1.672%	88.218%
30.0	418.860	22.966	1192.357	1.630%	89.950%
31.0	390.345	22.046	1214.403	1.564%	91.614%
32.0	355.131	20.637	1235.041	1.464%	93.170%
33.0	313.687	18.735	1253.776	1.329%	94.584%
34.0	271.141	16.627	1270.402	1.180%	95.838%
35.0	212.336	13.356	1283.758	.948%	96.846%
36.0	173.079	11.156	1294.914	.792%	97.687%
37.0	137.754	9.091	1304.005	.645%	98.373%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	84.512	5.706	1309.711	.405%	98.803%
39.0	49.773	3.435	1313.146	.244%	99.063%
40.0	27.732	1.955	1315.101	.139%	99.210%
41.0	13.544	0.974	1316.075	.069%	99.284%
42.0	7.958	0.584	1316.659	.041%	99.328%
43.0	6.520	0.488	1317.147	.035%	99.364%
44.0	5.829	0.444	1317.591	.032%	99.398%
45.0	5.157	0.400	1317.991	.028%	99.428%
46.0	4.698	0.371	1318.361	.026%	99.456%
47.0	4.374	0.351	1318.712	.025%	99.482%
48.0	4.211	0.343	1319.055	.024%	99.508%
49.0	4.066	0.337	1319.392	.024%	99.534%
50.0	3.915	0.329	1319.721	.023%	99.559%
51.0	3.747	0.319	1320.04	.023%	99.583%
52.0	3.596	0.311	1320.351	.022%	99.606%
53.0	3.498	0.306	1320.657	.022%	99.629%
54.0	3.405	0.302	1320.959	.021%	99.652%
55.0	3.295	0.296	1321.255	.021%	99.674%
56.0	3.132	0.285	1321.54	.020%	99.696%
57.0	2.999	0.276	1321.816	.020%	99.717%
58.0	2.883	0.268	1322.084	.019%	99.737%
59.0	2.744	0.258	1322.342	.018%	99.756%
60.0	2.581	0.245	1322.587	.017%	99.775%
61.0	2.401	0.230	1322.817	.016%	99.792%
62.0	2.204	0.213	1323.031	.015%	99.808%
63.0	2.164	0.211	1323.242	.015%	99.824%
64.0	2.135	0.210	1323.452	.015%	99.840%
65.0	2.024	0.201	1323.654	.014%	99.855%
66.0	1.862	0.187	1323.84	.013%	99.869%
67.0	1.705	0.172	1324.012	.012%	99.882%
68.0	1.537	0.156	1324.169	.011%	99.894%
69.0	1.346	0.138	1324.306	.010%	99.904%
70.0	1.154	0.119	1324.425	.008%	99.913%
71.0	0.992	0.103	1324.528	.007%	99.921%
72.0	0.847	0.088	1324.616	.006%	99.928%
73.0	0.748	0.078	1324.695	.006%	99.934%
74.0	0.667	0.070	1324.765	.005%	99.939%
75.0	0.592	0.063	1324.828	.004%	99.944%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	0.574	0.061	1324.889	.004%	99.948%
77.0	0.626	0.067	1324.956	.005%	99.954%
78.0	0.580	0.062	1325.018	.004%	99.958%
79.0	0.545	0.059	1325.077	.004%	99.963%
80.0	0.499	0.054	1325.131	.004%	99.967%
81.0	0.476	0.052	1325.182	.004%	99.971%
82.0	0.423	0.046	1325.228	.003%	99.974%
83.0	0.406	0.044	1325.272	.003%	99.977%
84.0	0.412	0.045	1325.317	.003%	99.981%
85.0	0.400	0.044	1325.361	.003%	99.984%
86.0	0.452	0.049	1325.411	.004%	99.988%
87.0	0.447	0.049	1325.459	.003%	99.991%
88.0	0.394	0.043	1325.503	.003%	99.995%
89.0	0.400	0.044	1325.547	.003%	99.998%
90.0	0.470	0.026	1325.572	.002%	100.000%

Zonal flux distribution table

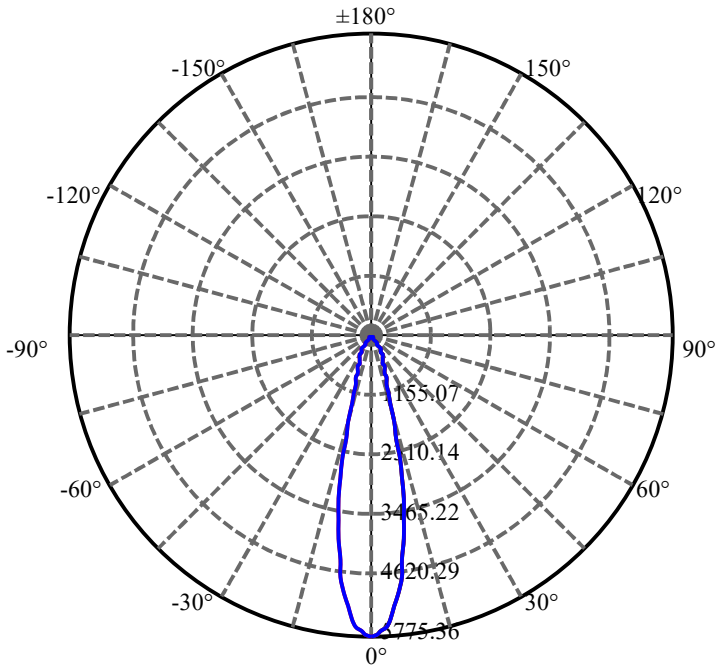
ZONAL LUMEN SUMMARY

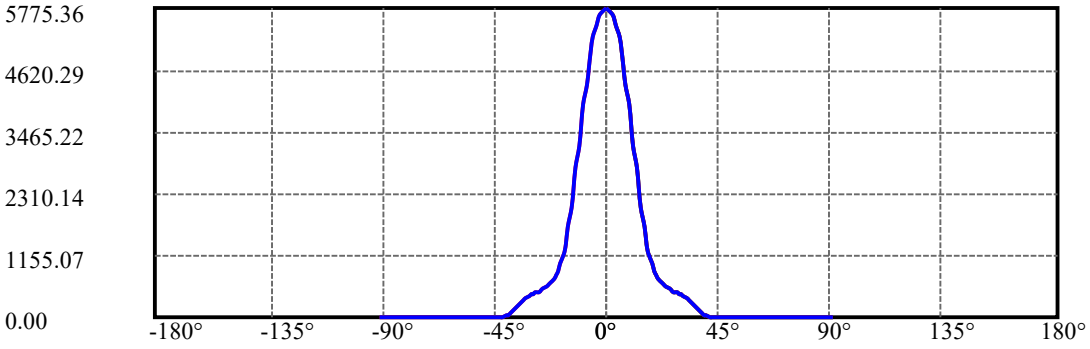
Zone	Lumens	%Lamp	%Fixt
0-30	1192.36	84.61%	89.95%
0-40	1315.10	93.32%	99.21%
0-60	1322.59	93.85%	99.77%
0-90	1325.55	94.06%	100.00%
0-120	1325.55	94.06%	100.00%
0-180	1325.57	94.06%	100.00%
60-90	3.20	0.23%	0.24%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.45	1060.46	75.25%	80.00%

ZONAL LUMEN SUMMARY

0-10	479.84
10-20	465.01
20-30	247.50
30-40	122.74
40-50	4.62
50-60	2.87
60-70	1.84
70-80	0.71
80-90	0.42
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:23.5 Right:23.5
:C90/270Left:23.5 Right:23.5

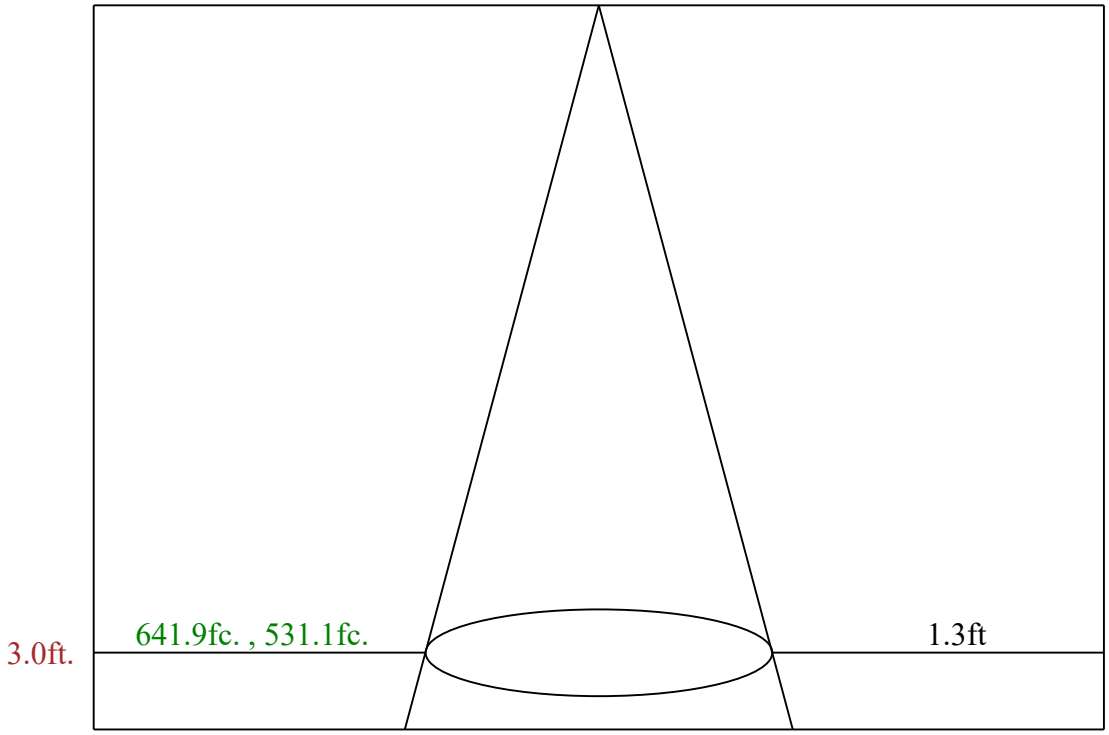
Beam Angle(50%Imax):C0/180Left:11.8 Right:11.8
:C90/270Left:11.8 Right:11.8

Equipment: GMS 1800
Temperature(°C): 25.0

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

Operator: NT0100
Distance(feet): 22.35

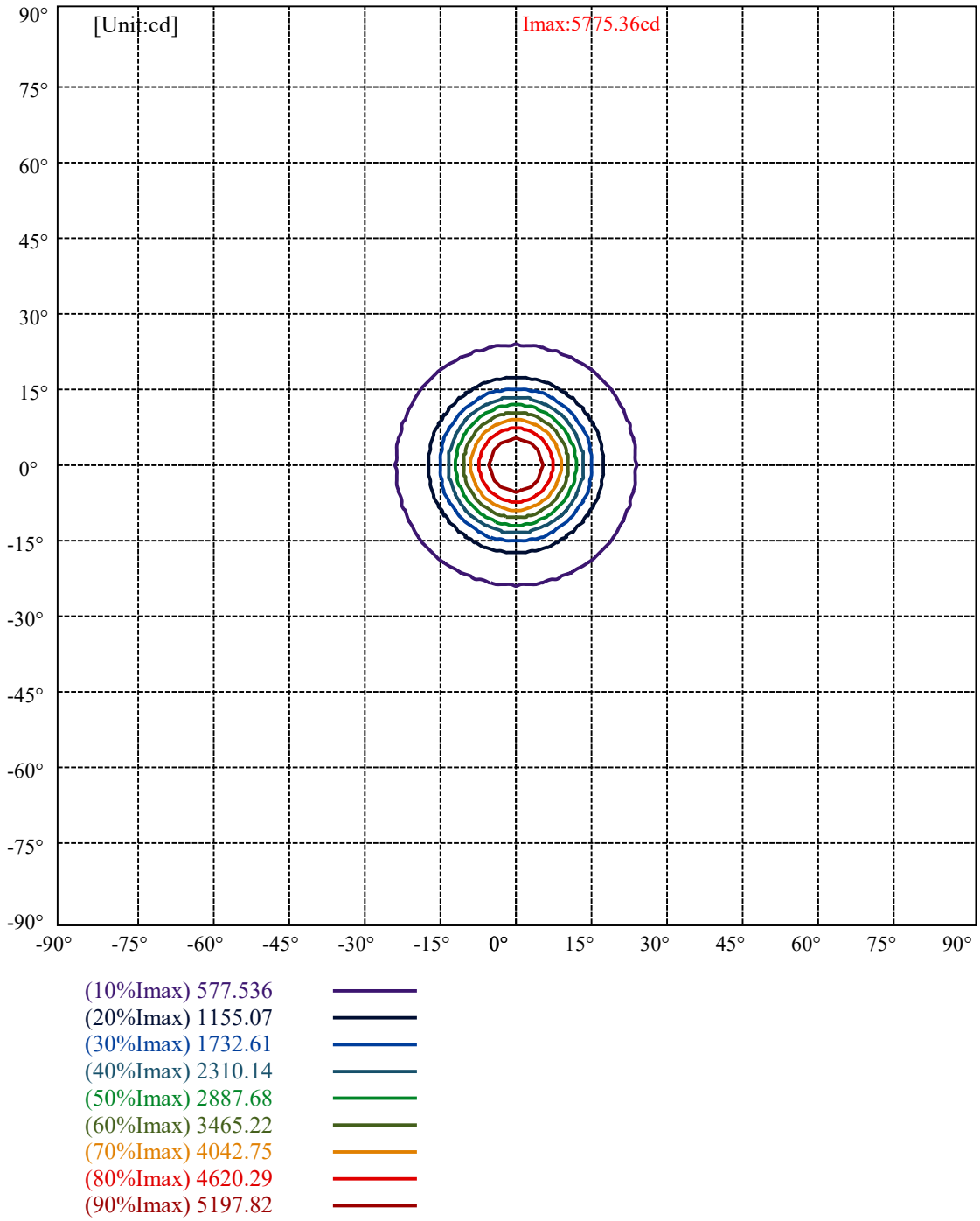
Lux distance Curve



Max , Ave

Beam angle of C0 plane 23.57

ISO-Intensity(V-H)

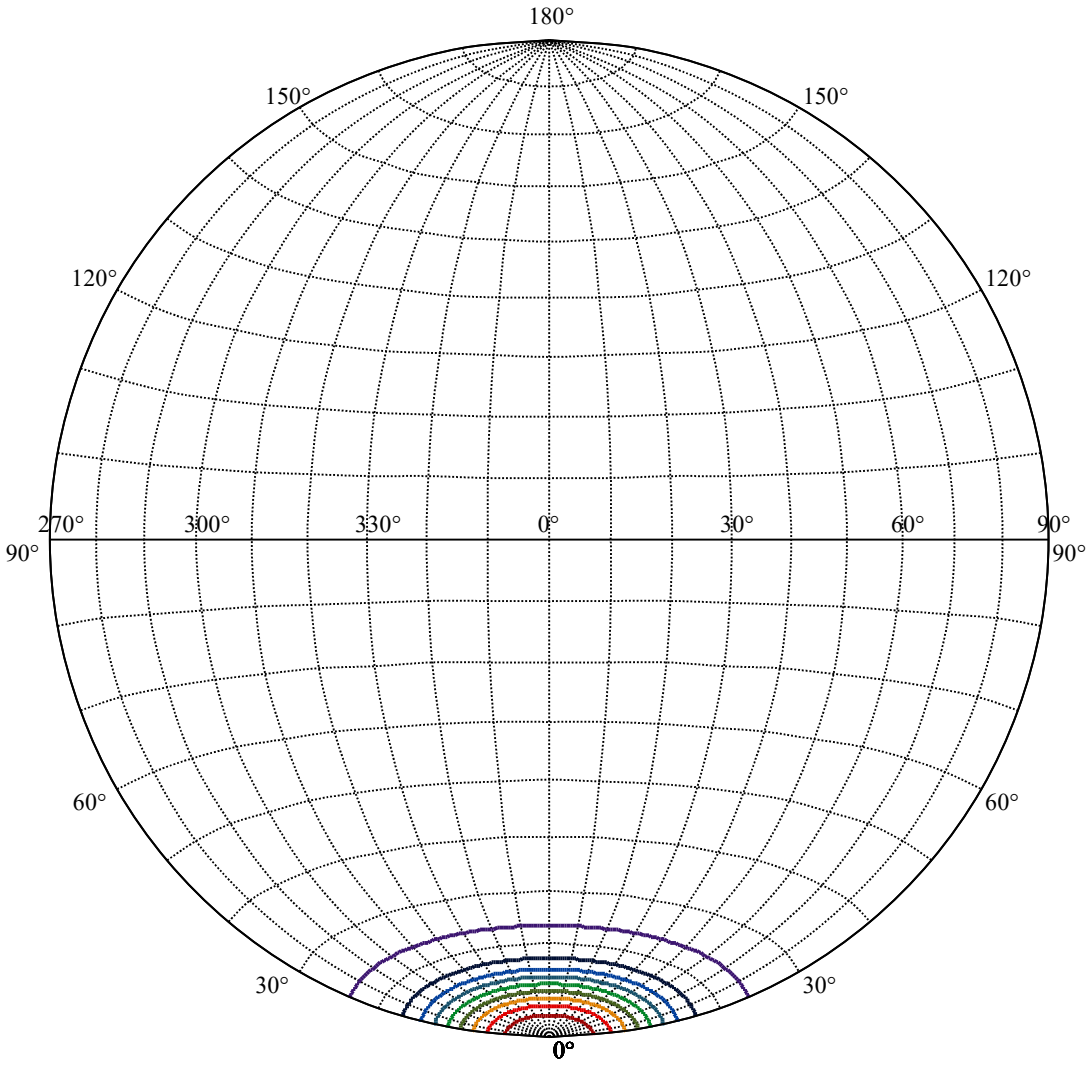


Equipment: GMS 1800
Temperature(°C): 25.0

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

Operator: NT0100
Distance(feet): 22.35

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:5775.36

(10%Imax) 577.536
(20%Imax) 1155.07
(30%Imax) 1732.61
(40%Imax) 2310.14
(50%Imax) 2887.68
(60%Imax) 3465.22
(70%Imax) 4042.75
(80%Imax) 4620.29
(90%Imax) 5197.82

Equipment: GMS 1800
Temperature(°C): 25.0

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

Operator: NT0100
Distance(feet): 22.35

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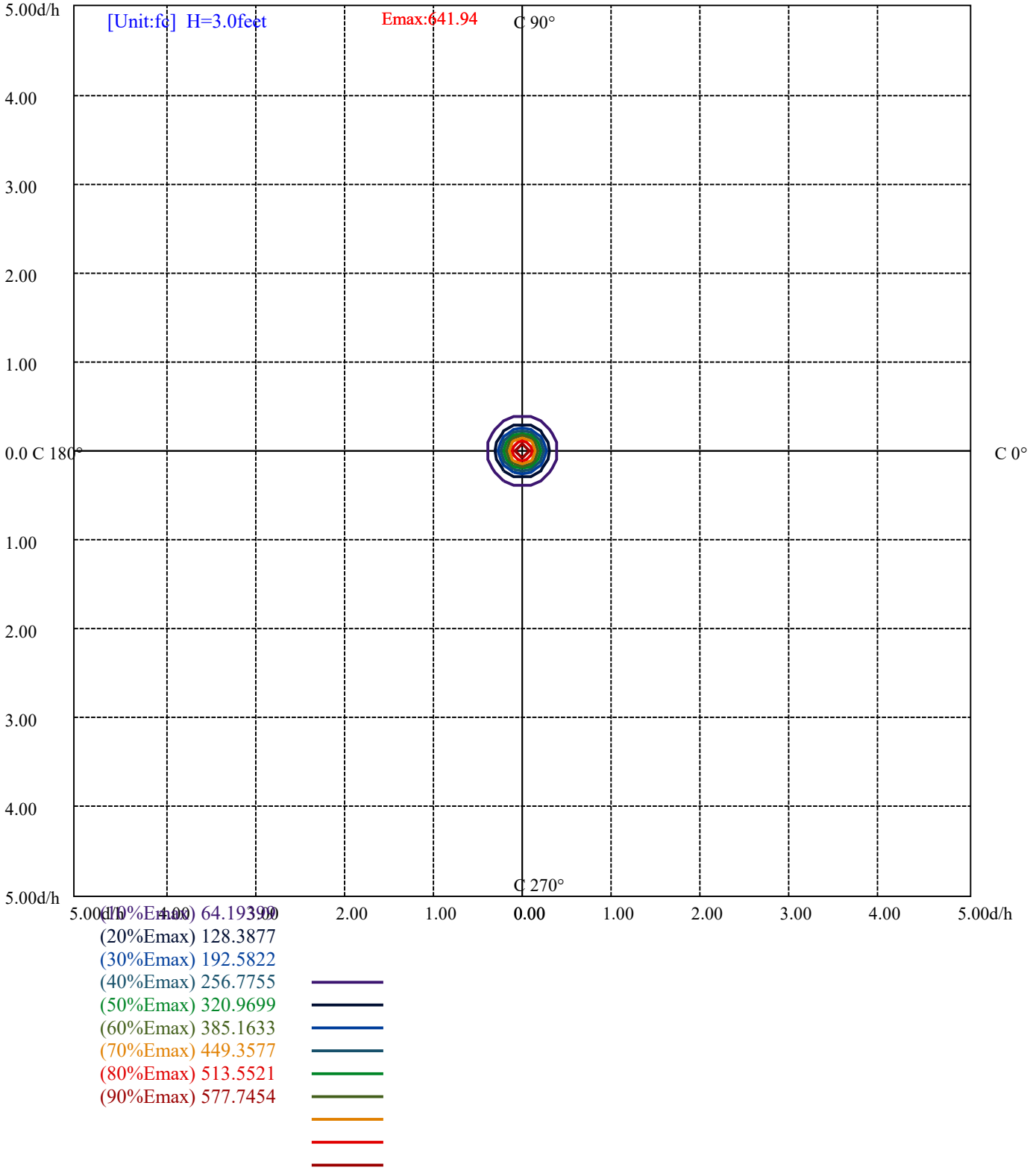
ISO illuminance diagram

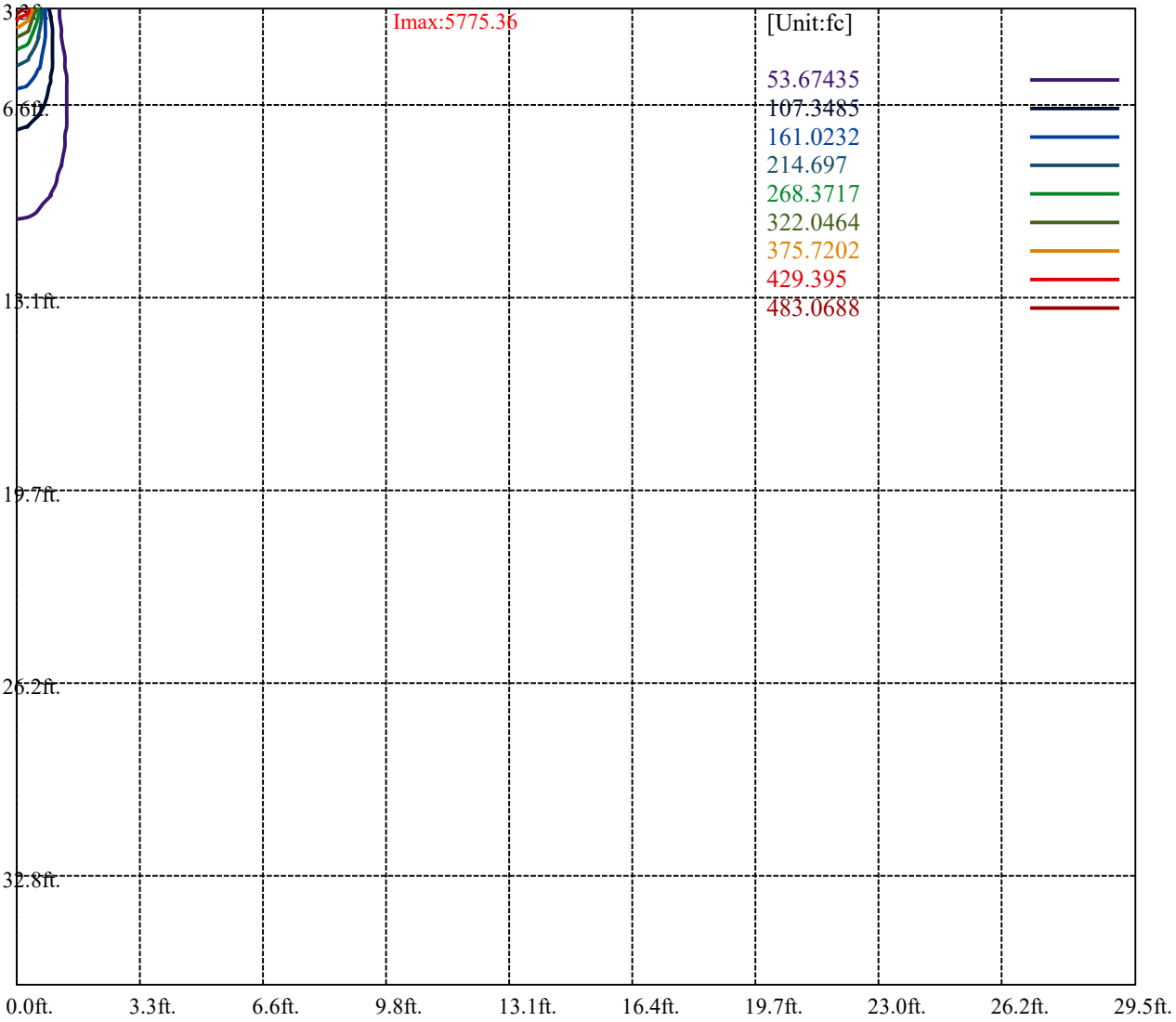


Equipment: GMS 1800
Temperature(°C): 25.0

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

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Luminance Limitting Curve(no luminous side)

Luminance Table

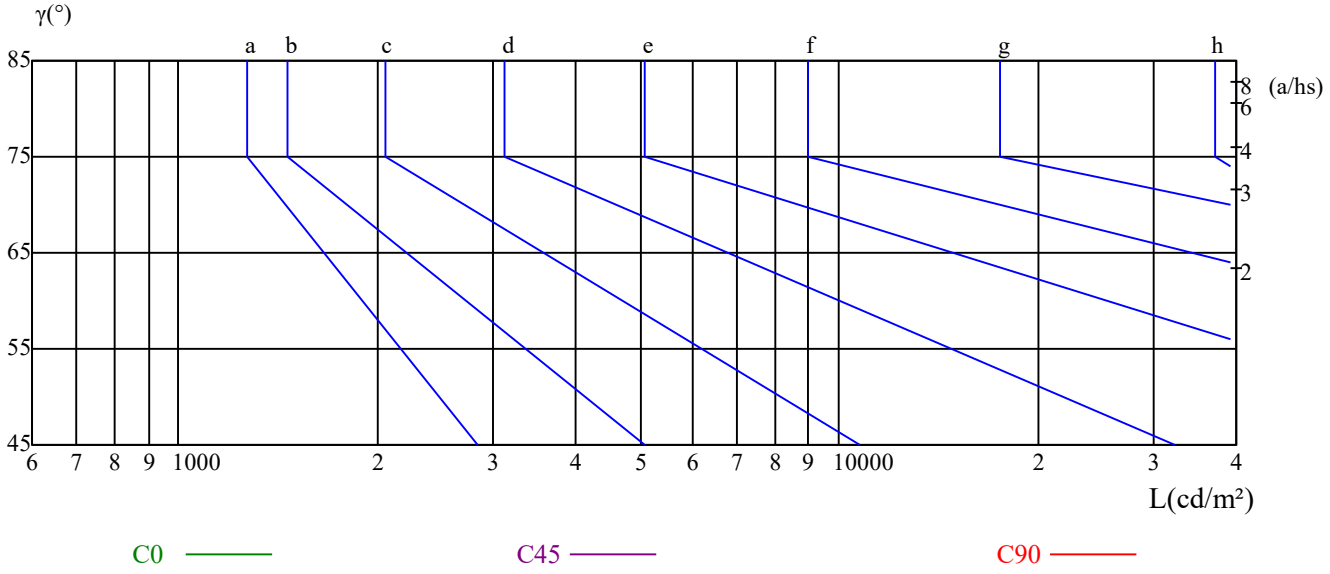
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

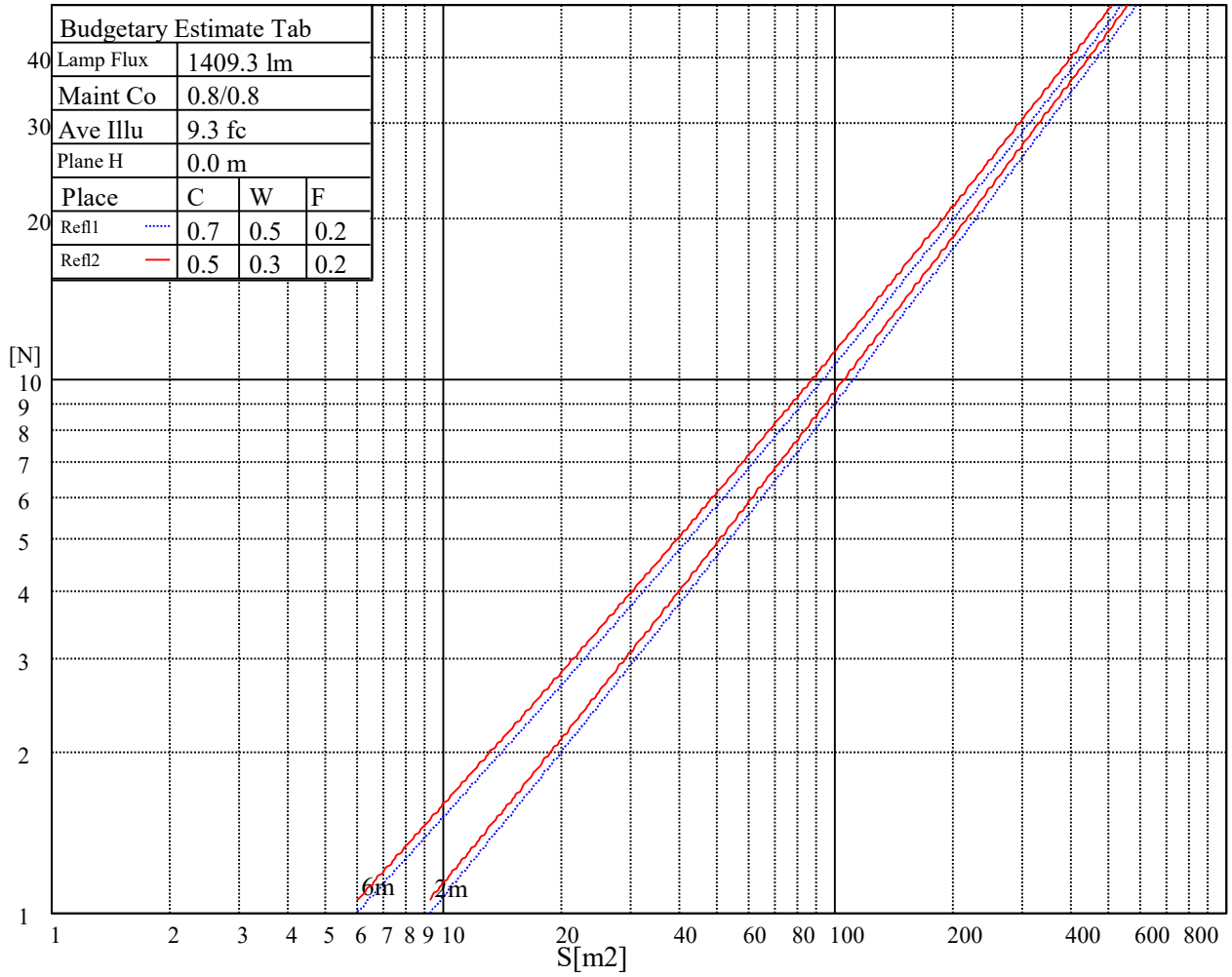


Equipment: GMS 1800
Temperature(°C): 25.0

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

Operator: NT0100
Distance(feet): 22.35

Budgetary Estimate Table



Equipment: GMS 1800
Temperature(°C): 25.0

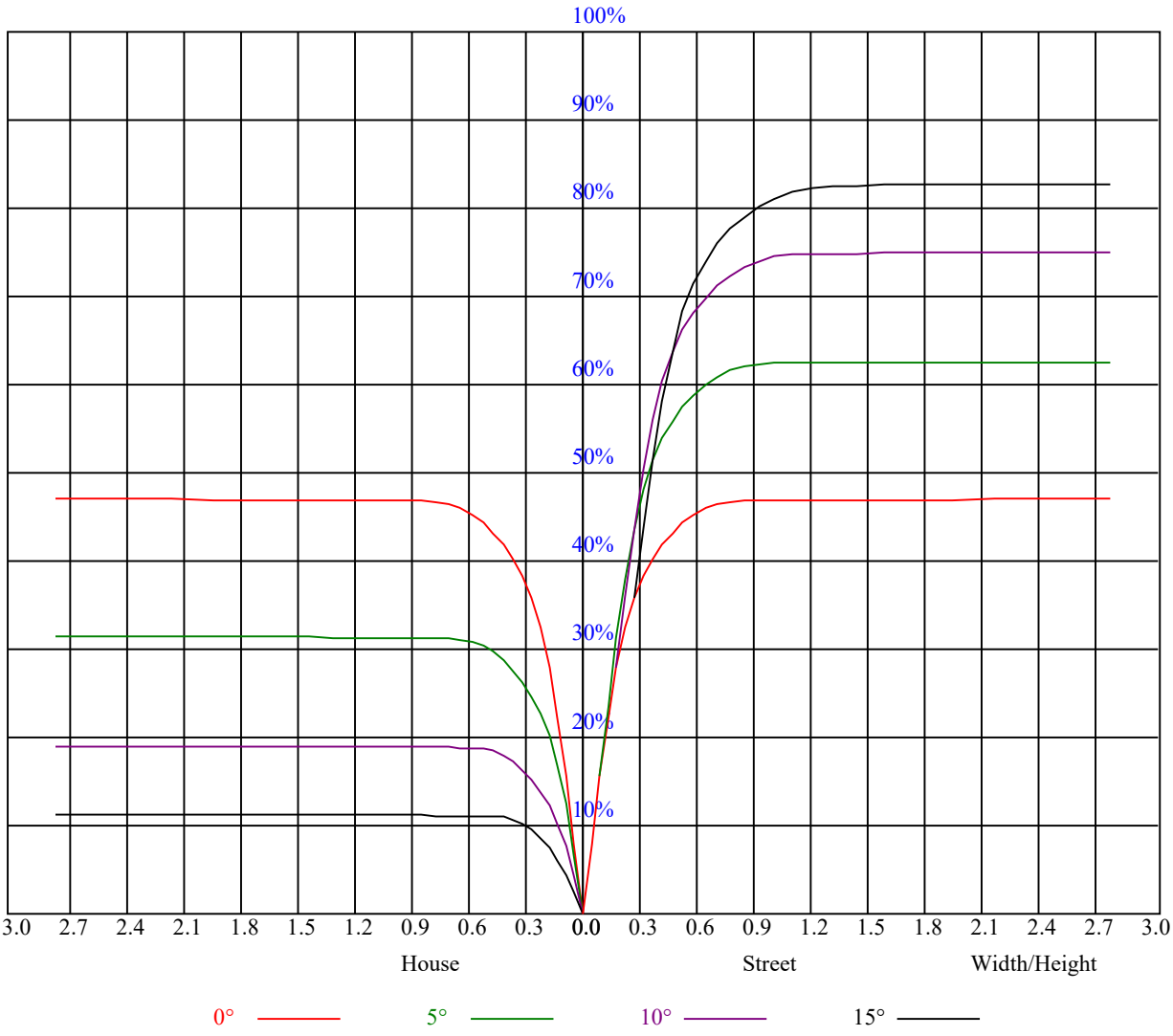
Date: 2020/9/19
Humidity(%): 60.0%

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	1.12	1.12	1.12	1.09	1.09	1.09	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.06	1.04	1.02	1.04	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.90
2	1.01	0.98	0.95	0.99	0.96	0.94	0.96	0.94	0.92	0.93	0.92	0.90	0.91	0.90	0.88	0.87
3	0.96	0.93	0.90	0.95	0.92	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.87	0.85	0.84
4	0.92	0.88	0.85	0.91	0.88	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.86	0.84	0.82	0.81
5	0.88	0.84	0.81	0.88	0.84	0.81	0.86	0.83	0.80	0.85	0.82	0.80	0.83	0.81	0.79	0.78
6	0.85	0.81	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.75
7	0.82	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.73
8	0.79	0.75	0.73	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.77	0.74	0.72	0.71
9	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.72	0.70	0.69
10	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67

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	5738.93	5700.42	5539.40	5437.31	5221.54	4960.29	4664.70	4325.02	3952.87
45.0	5731.51	5783.94	5794.15	5768.63	5705.52	5613.64	5461.44	5252.16	4992.30
90.0	5816.43	5817.82	5825.24	5809.93	5753.78	5645.66	5475.83	5224.32	4926.88
135.0	5814.57	5821.07	5822.46	5769.56	5677.22	5593.69	5402.97	5138.47	4832.68
180.0	5738.93	5770.49	5757.49	5699.03	5586.73	5419.21	5184.41	4912.49	4585.81
225.0	5731.51	5628.96	5460.51	5326.87	5054.48	4603.44	4383.49	3991.85	3592.78
270.0	5816.43	5760.74	5626.64	5491.14	5253.55	4963.07	4636.39	4268.41	3863.77
315.0	5814.57	5758.42	5655.87	5493.92	5268.40	4984.42	4673.51	4320.38	3929.20
360.0	5738.93	5700.42	5539.40	5437.31	5221.54	4960.29	4664.70	4325.02	3952.87

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3565.86	3171.44	2783.04	2395.11	2022.49	1676.32	1378.41	914.15	862.45
45.0	4697.18	4355.19	3977.00	3585.35	3189.53	2796.03	2408.10	2027.59	1678.18
90.0	4590.91	4212.73	3817.37	3417.84	3014.13	2613.20	2219.24	1845.23	1507.41
135.0	4482.80	4095.33	3698.11	3295.80	2896.26	2501.84	2117.15	1751.96	1435.49
180.0	4215.98	3826.65	3432.69	3032.69	2642.44	2256.83	1888.85	1564.02	1292.57
225.0	3191.85	2787.68	2396.04	2016.46	1665.18	1365.88	897.35	897.35	809.14
270.0	3458.67	3059.14	2660.07	2270.75	1884.21	1532.47	1245.23	1026.67	873.54
315.0	3525.96	3121.32	2720.40	2335.25	1957.06	1601.15	1416.00	907.28	907.28
360.0	3565.86	3171.44	2783.04	2395.11	2022.49	1676.32	1378.41	914.15	862.45

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	862.45	748.90	698.09	644.87	600.37	560.69	530.53	505.80	482.50
45.0	1372.84	1219.71	1017.39	817.39	759.85	688.86	634.57	587.23	548.72
90.0	1235.49	877.63	877.63	810.43	730.34	671.50	621.80	580.18	544.45
135.0	1181.20	987.23	852.66	762.17	696.28	643.38	596.98	558.46	532.94
180.0	1080.50	922.27	807.65	726.44	676.79	624.36	571.46	543.62	514.38
225.0	759.21	672.71	640.69	594.61	555.45	523.57	497.72	475.54	457.44
270.0	769.14	724.59	648.02	618.79	573.31	526.91	510.20	487.93	465.66
315.0	812.66	730.62	670.90	623.10	577.58	543.15	515.59	491.46	468.81
360.0	862.45	748.90	698.09	644.87	600.37	560.69	530.53	505.80	482.50

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	463.38	448.67	436.15	412.06	373.64	325.10	272.57	219.35	165.89
45.0	520.41	496.75	475.87	461.02	447.10	435.03	411.37	373.31	325.52
90.0	514.33	489.37	469.18	453.50	441.53	424.59	390.67	346.73	295.22
135.0	504.17	480.51	462.41	447.56	436.42	415.54	377.96	332.48	281.44
180.0	491.64	472.62	454.98	443.38	429.93	401.62	357.54	307.42	254.52
225.0	444.64	431.27	402.87	360.83	310.44	256.33	202.23	149.28	97.82
270.0	450.81	438.28	419.25	383.52	338.05	286.54	255.45	255.45	125.71
315.0	453.69	440.37	424.17	389.00	345.66	296.29	241.72	185.10	152.57
360.0	463.38	448.67	436.15	412.06	373.64	325.10	272.57	219.35	165.89

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	115.27	68.44	31.46	17.40	8.31	7.89	6.96	5.66	4.73
45.0	272.62	229.93	229.93	121.21	74.15	35.96	12.99	7.33	6.54
90.0	242.36	187.89	135.36	96.10	52.90	17.45	9.61	9.10	8.54
135.0	248.95	248.95	135.82	70.77	33.69	17.77	8.40	7.98	6.91
180.0	244.31	244.31	95.31	67.56	30.49	8.63	8.03	7.24	6.03
225.0	70.95	23.20	8.07	7.01	6.13	5.52	4.59	3.94	3.71
270.0	87.15	39.30	14.29	8.58	8.35	7.89	7.01	6.08	5.75
315.0	103.02	60.00	25.85	9.56	7.84	7.24	6.08	4.83	4.41
360.0	115.27	68.44	31.46	17.40	8.31	7.89	6.96	5.66	4.73

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	4.41	4.45	4.41	4.32	4.22	4.08	3.94	3.81	3.76
45.0	5.52	4.27	3.20	2.78	2.37	2.23	2.09	2.09	2.13
90.0	7.33	6.08	5.48	5.38	5.34	5.10	4.92	4.78	4.64
135.0	5.66	4.83	4.50	4.55	4.64	4.64	4.50	4.27	4.18
180.0	4.92	4.55	4.32	3.99	3.71	3.53	3.34	3.06	2.88
225.0	3.71	3.71	3.62	3.43	3.29	3.25	3.11	3.02	2.92
270.0	5.57	5.61	5.52	5.43	5.34	5.10	4.87	4.69	4.55
315.0	4.13	4.08	3.94	3.81	3.62	3.39	3.20	3.06	2.92
360.0	4.41	4.45	4.41	4.32	4.22	4.08	3.94	3.81	3.76

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.71	3.62	3.48	3.34	3.20	2.92	2.83	2.51	2.46
45.0	2.23	2.27	2.41	2.55	2.60	2.69	2.78	2.83	2.74
90.0	4.41	4.32	4.22	4.08	3.94	3.53	3.02	2.41	1.58
135.0	4.08	4.04	3.62	3.20	2.97	2.88	2.69	2.46	2.27
180.0	2.74	2.64	2.55	2.55	2.64	2.74	2.55	2.46	2.41
225.0	2.78	2.55	2.23	1.95	1.76	1.62	1.53	1.44	1.44
270.0	4.41	4.27	3.99	3.90	3.62	3.48	3.34	3.25	2.92
315.0	2.88	2.64	2.55	2.41	2.32	2.09	1.90	1.86	1.81
360.0	3.71	3.62	3.48	3.34	3.20	2.92	2.83	2.51	2.46

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.32	2.27	2.13	1.90	1.67	1.53	1.35	1.11	0.93
45.0	2.55	2.41	2.27	2.13	2.04	1.95	1.76	1.48	1.30
90.0	1.86	2.27	2.23	2.09	1.90	1.72	1.53	1.30	1.11
135.0	2.32	2.37	2.27	2.13	2.04	1.90	1.62	1.44	1.25
180.0	2.37	2.27	2.18	2.04	1.90	1.72	1.44	1.30	1.16
225.0	1.39	1.35	1.25	1.16	1.16	1.02	0.84	0.70	0.65
270.0	2.83	2.55	2.32	2.00	1.67	1.39	1.21	0.97	0.74
315.0	1.67	1.58	1.53	1.44	1.25	1.07	1.02	0.93	0.79
360.0	2.32	2.27	2.13	1.90	1.67	1.53	1.35	1.11	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	0.70	0.60	0.56	0.60	1.21	0.97	0.56	0.46
45.0	1.16	1.02	0.88	0.70	0.65	0.60	0.56	0.79	0.84
90.0	0.93	0.84	0.70	0.56	0.46	0.51	0.46	0.51	0.42
135.0	1.11	0.93	0.79	0.65	0.65	0.60	0.65	0.56	0.56
180.0	0.97	0.79	0.70	0.65	0.56	0.56	0.65	0.70	0.51
225.0	0.56	0.51	0.51	0.56	0.74	0.60	0.42	0.42	0.42
270.0	0.60	0.60	0.56	0.51	0.46	0.46	0.46	0.42	0.37
315.0	0.65	0.60	0.60	0.56	0.46	0.46	0.46	0.42	0.42
360.0	0.79	0.70	0.60	0.56	0.60	1.21	0.97	0.56	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	0.46	0.46	0.42	0.46	0.46	0.42	0.42	0.42
45.0	0.65	0.51	0.42	0.46	0.46	0.42	0.37	0.42	0.37
90.0	0.46	0.37	0.42	0.37	0.32	0.42	0.32	0.42	0.70
135.0	0.51	0.46	0.46	0.42	0.42	0.46	0.37	0.32	0.37
180.0	0.46	0.46	0.37	0.42	0.37	0.32	0.37	0.37	0.28
225.0	0.37	0.32	0.37	0.37	0.32	0.32	0.32	0.37	0.32
270.0	0.42	0.37	0.37	0.42	0.42	0.88	1.07	0.46	0.42
315.0	0.42	0.42	0.37	0.42	0.42	0.32	0.32	0.37	0.32
360.0	0.51	0.46	0.46	0.42	0.46	0.46	0.42	0.42	0.42

Intensity data(cd)

C/γ(°)	90.0
0.0	0.42
45.0	0.42
90.0	1.16
135.0	0.32
180.0	0.37
225.0	0.28
270.0	0.42
315.0	0.37
360.0	0.42