



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: 4-1990-E
Luminaire: TE 2213382-2+92.76.233.00
Report No: NATA0100 Voltage(V): 34.5000
Test No: GC2019022705 Current(A): 0.4000
LampCAT: NICHIA NFCWJ060B-V3 LES11.5 Power (W): 13.8400
Lamp flux(lm): 1745.0 PF: 0.0000
Number of Lamps: 1 Ballast type: DC
Length(mm): 100 Width(mm): 100
Phm Type: C Height(mm): 0

Photometric Results

Lumens(lm): 1544.60
Efficiency(%): 88.52%
Lumens(lm)/Power(W): 113.05
Central intensity(cd): 3586.078
Maximum intensity(cd): 3586.078
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=35.3
[C90/270]Total=35.3
Field angle(10%Imax): [C0/180]Total=70.0
[C90/270]Total=70.0
Maximum s/h(1/2): C0_180=0.59 C90_270=0.59
Maximum s/h(1/4): C0_180=0.57 C90_270=0.57
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.66%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.572%

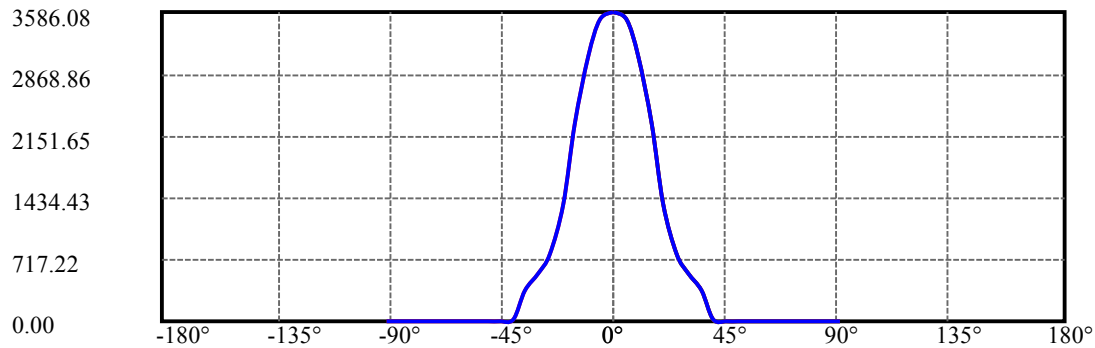
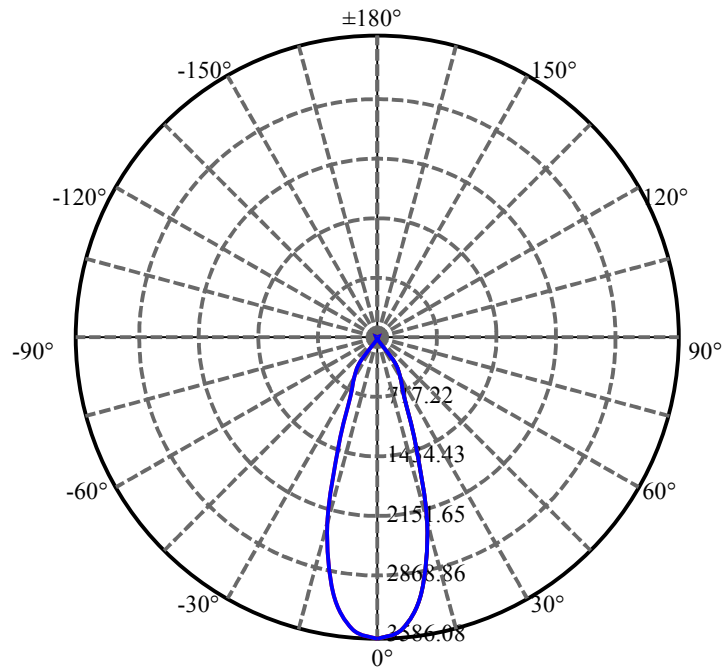
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3586.078	21.445	21.445	1.229%	1.388%
5.0	3494.883	166.962	188.408	9.568%	12.198%
10.0	3083.273	293.475	481.883	16.818%	31.198%
15.0	2289.305	324.780	806.663	18.612%	52.225%
20.0	1360.477	255.054	1061.717	14.616%	68.738%
25.0	778.120	180.254	1241.971	10.330%	80.408%
30.0	562.479	154.158	1396.129	8.834%	90.388%
35.0	358.516	112.717	1508.846	6.459%	97.685%
40.0	16.755	5.904	1514.749	.338%	98.068%
45.0	7.727	2.995	1517.744	.172%	98.262%
50.0	6.855	2.879	1520.623	.165%	98.448%
55.0	6.518	2.927	1523.55	.168%	98.637%
60.0	6.384	3.031	1526.58	.174%	98.834%
65.0	6.335	3.147	1529.727	.180%	99.037%
70.0	6.244	3.216	1532.943	.184%	99.246%
75.0	6.195	3.280	1536.223	.188%	99.458%
80.0	6.180	3.336	1539.56	.191%	99.674%
85.0	6.152	3.359	1542.919	.193%	99.891%
90.0	6.117	1.677	1544.596	.096%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1396.13	80.01%	90.39%
0-40	1514.75	86.81%	98.07%
0-60	1526.58	87.48%	98.83%
0-90	1542.92	88.42%	99.89%
0-120	1542.92	88.42%	99.89%
0-180	1544.60	88.52%	100.00%
60-90	19.37	1.11%	1.25%
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%
0-24.83	1235.68	70.81%	80.00%

ZONAL LUMEN SUMMARY

0-10	481.88
10-20	579.83
20-30	334.41
30-40	118.62
40-50	5.87
50-60	5.96
60-70	6.36
70-80	6.62
80-90	3.36
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

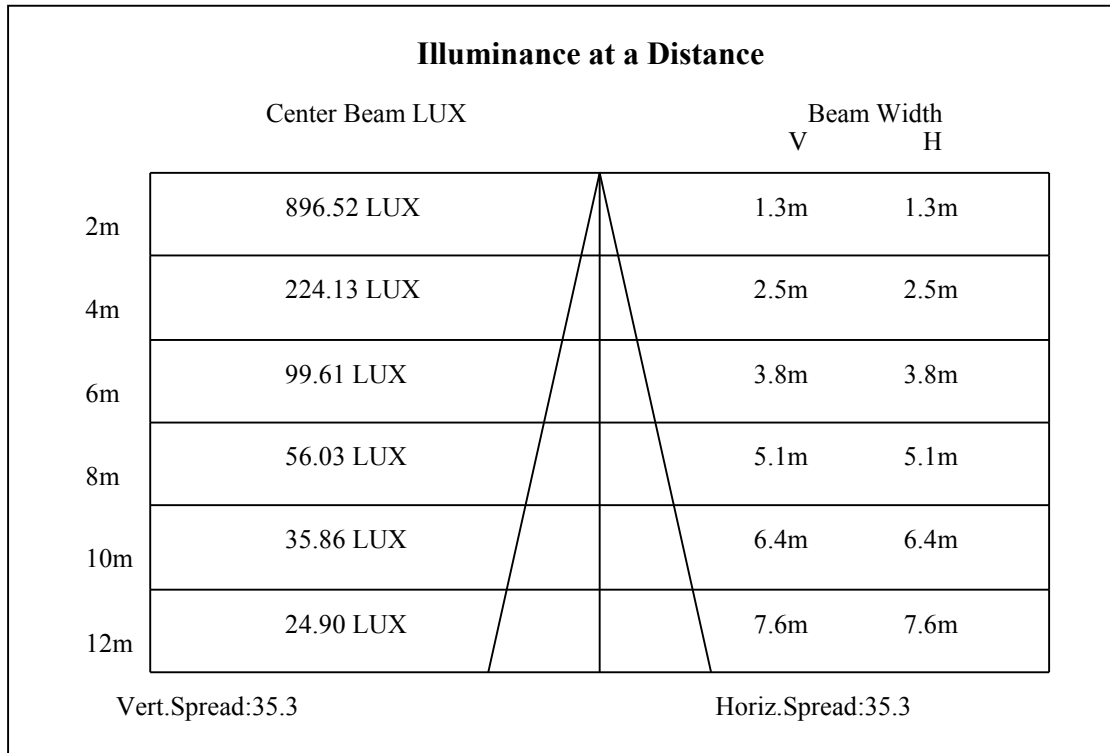
C0(Max): —————C0/C180: —————C90/C270: —————

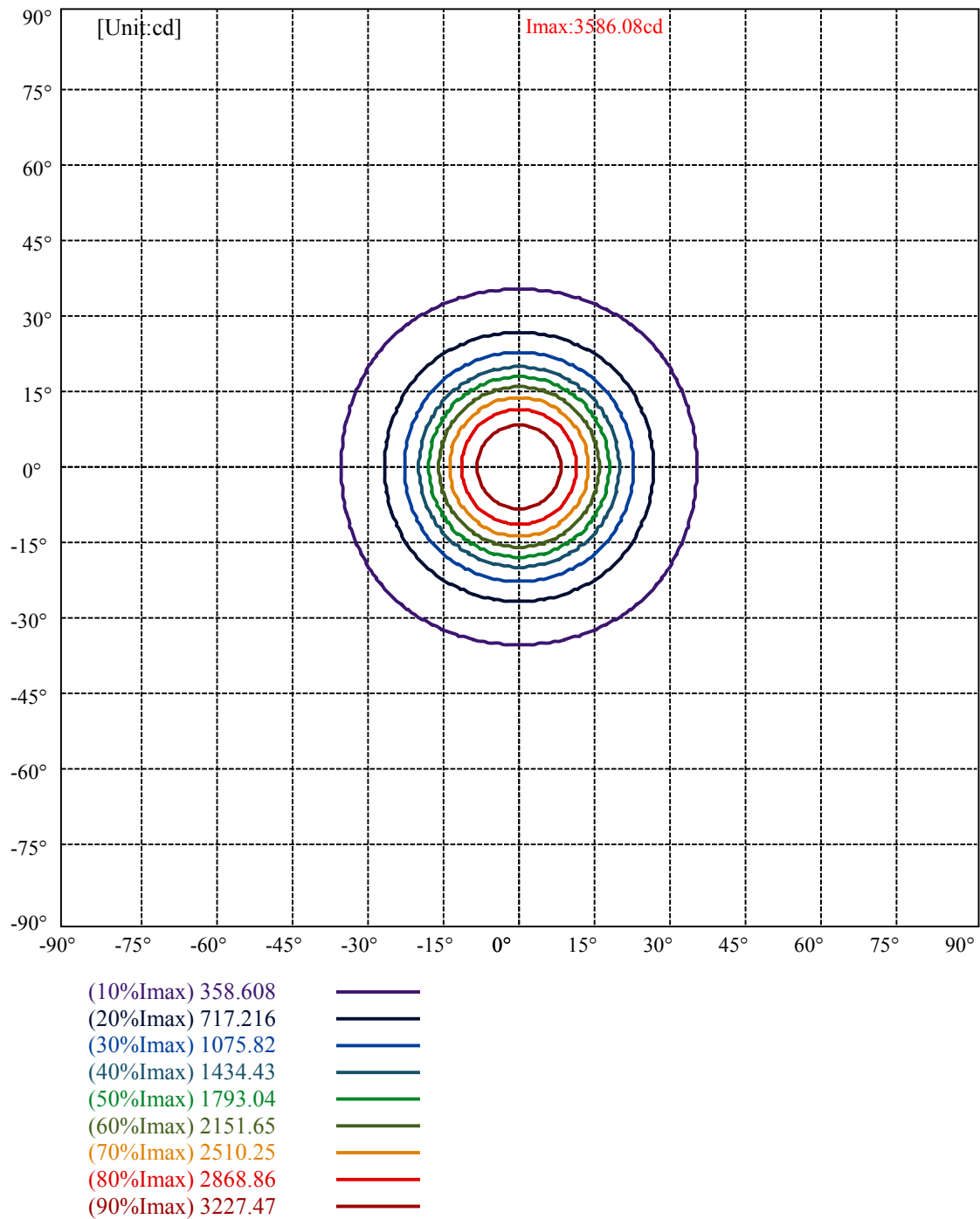
Field angle(10%Imax):C0/180Left:35.0 Right:35.0

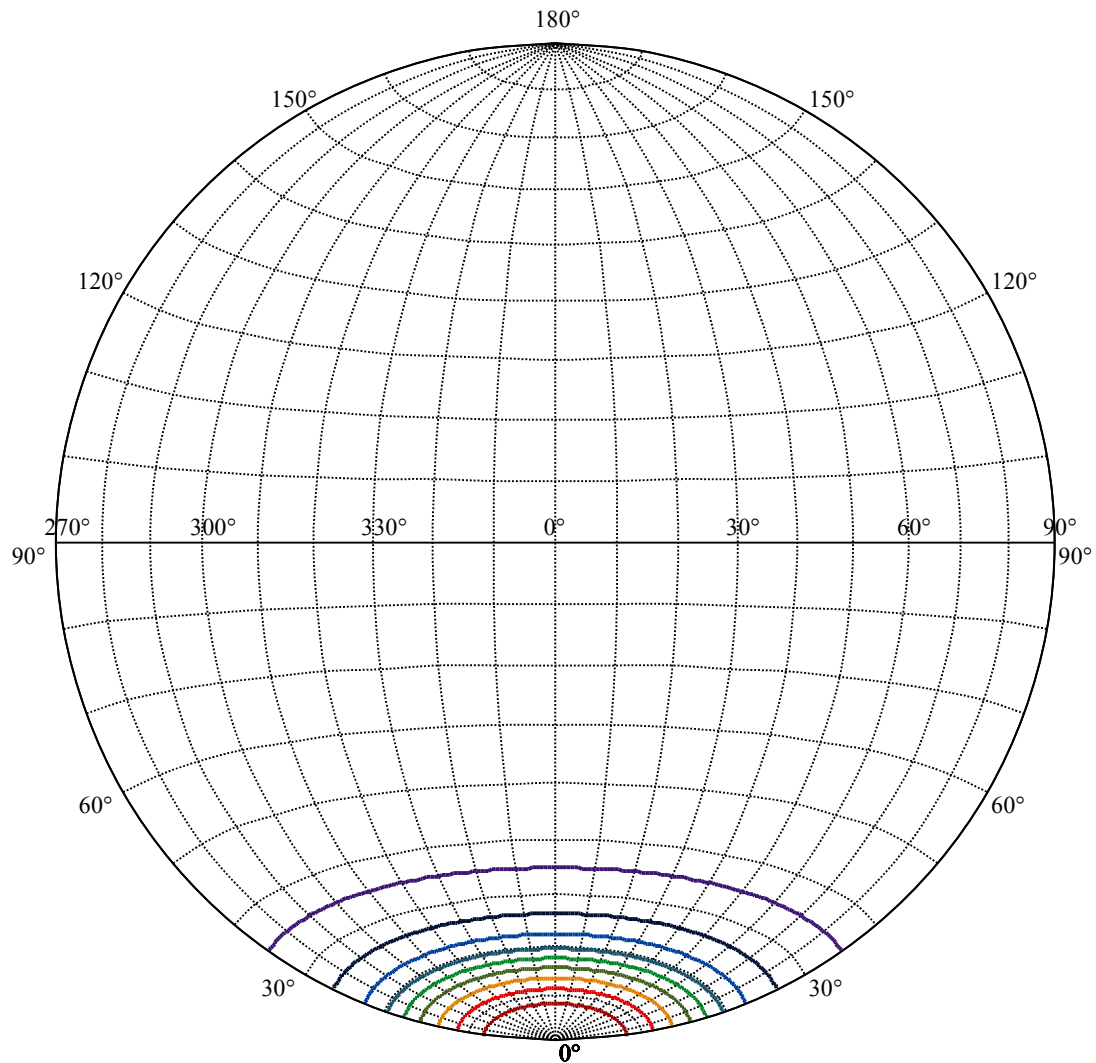
:C90/270Left:35.0 Right:35.0

Beam Angle(50%Imax):C0/180Left:17.7 Right:17.7

:C90/270Left:17.7 Right:17.7







House

[Unit:cd]

Road

Imax:3586.08

(10%Imax) 358.608

(20%Imax) 717.216

(30%Imax) 1075.82

(40%Imax) 1434.43

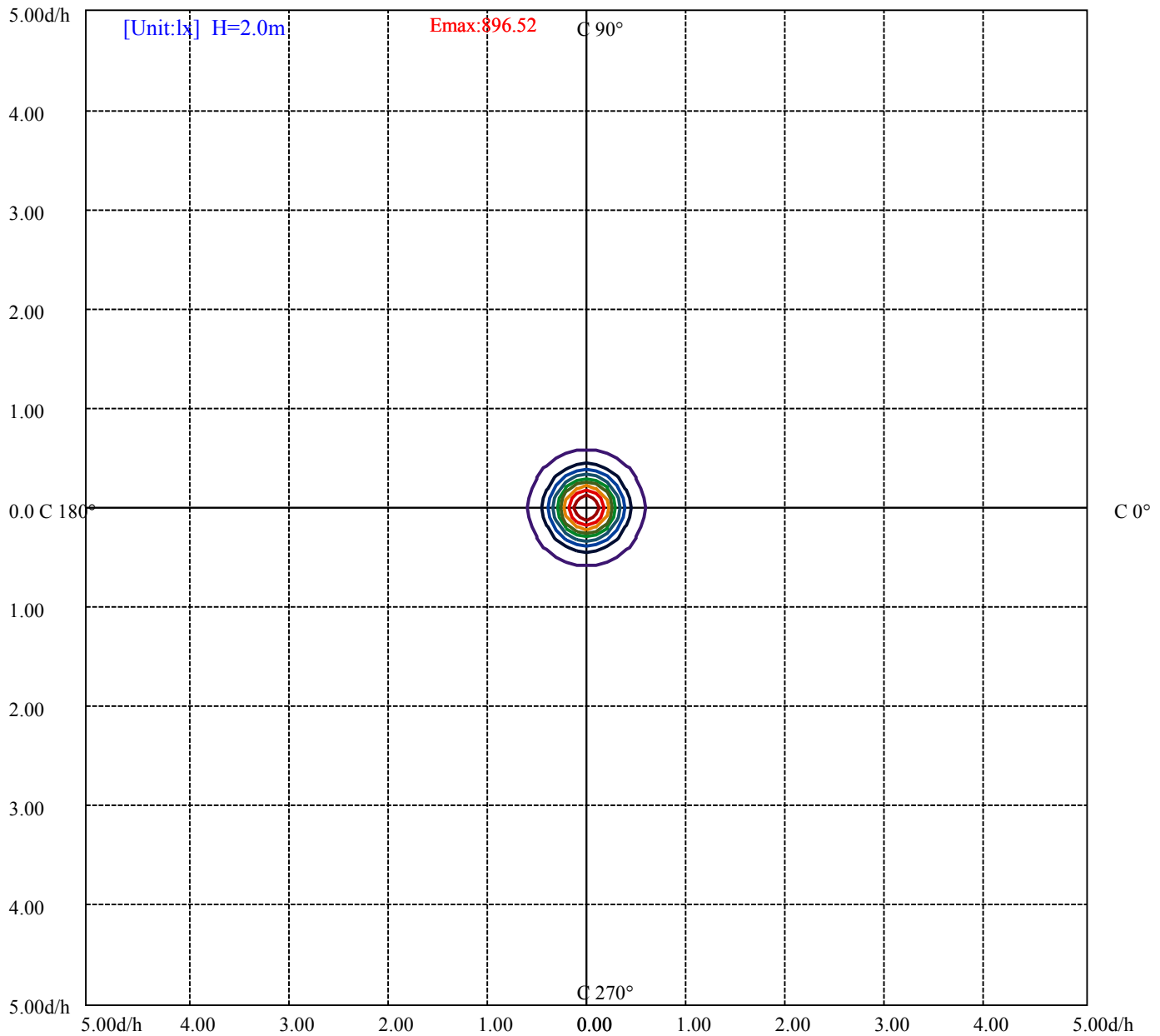
(50%Imax) 1793.04

(60%Imax) 2151.65

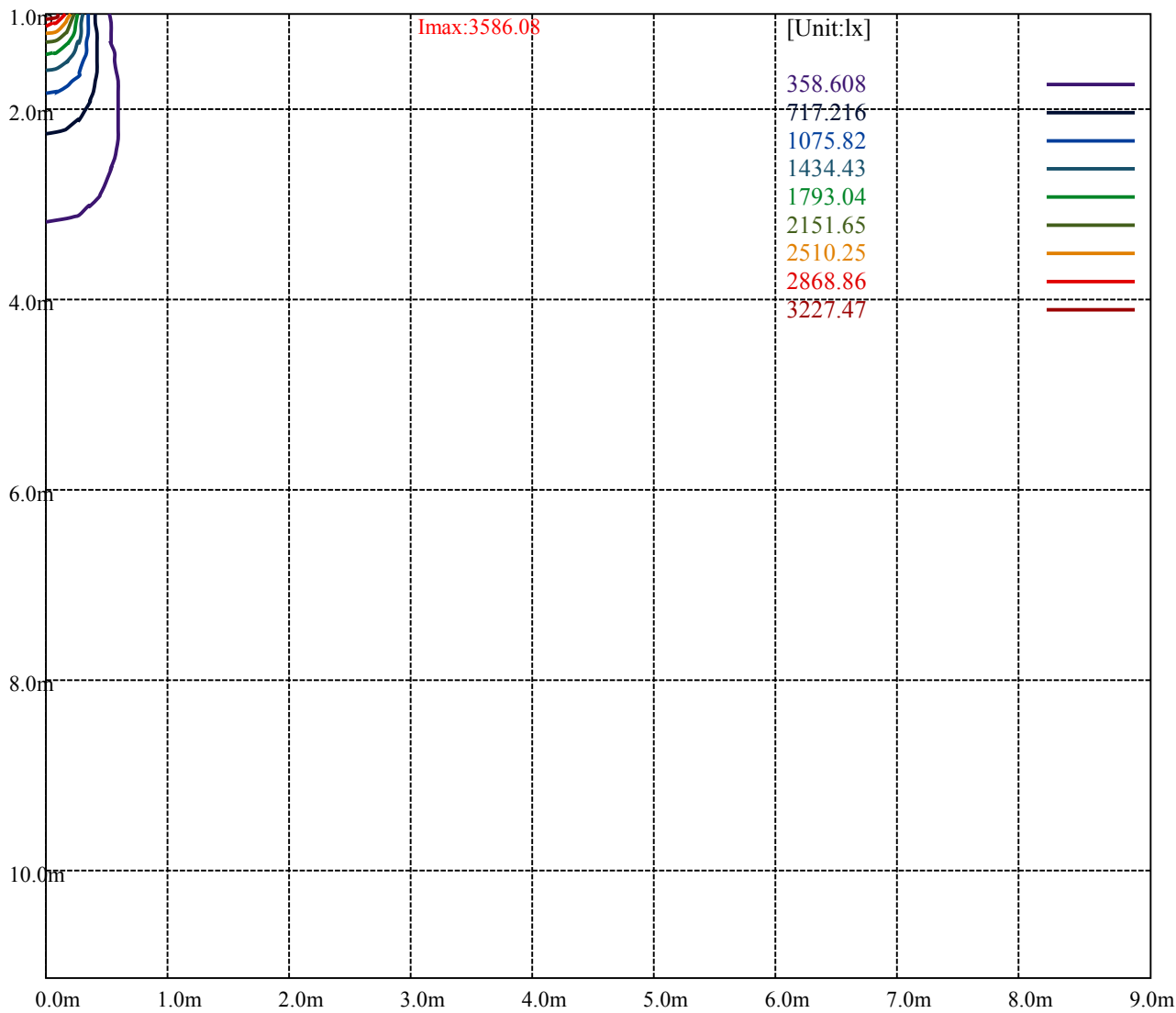
(70%Imax) 2510.25

(80%Imax) 2868.86

(90%Imax) 3227.47



(10%Emax)	89.652	—
(20%Emax)	179.3038	—
(30%Emax)	268.955	—
(40%Emax)	358.6075	—
(50%Emax)	448.26	—
(60%Emax)	537.9125	—
(70%Emax)	627.5625	—
(80%Emax)	717.215	—
(90%Emax)	806.8675	—



Luminance Table

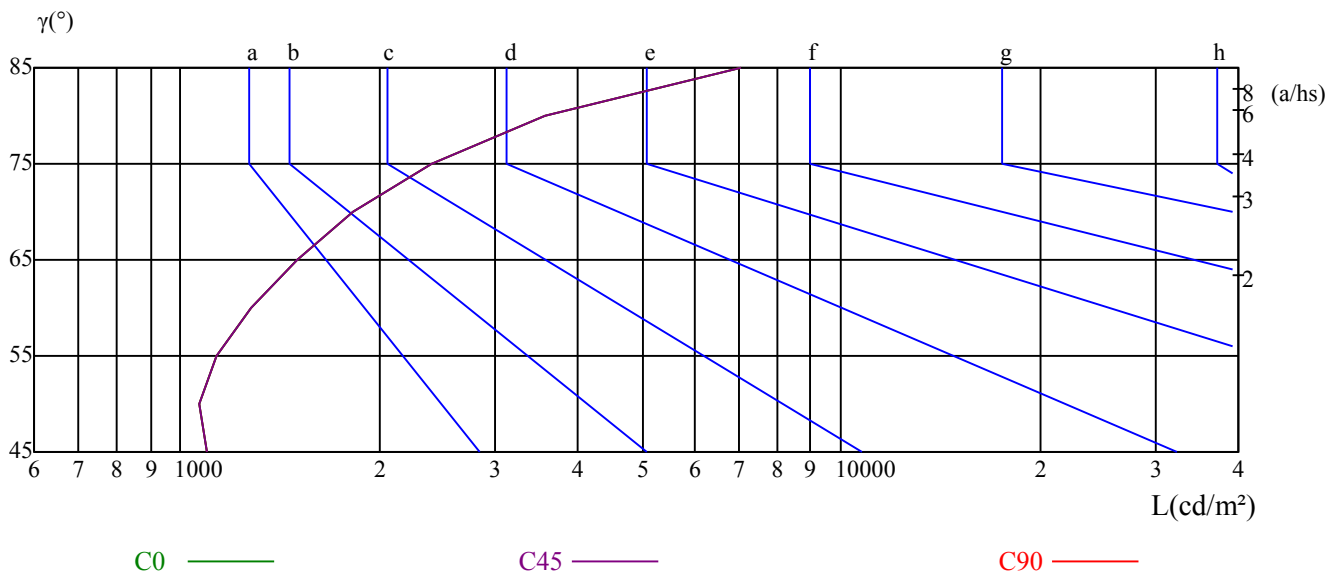
γ	45	50	55	60	65	70	75	80	85
C0	1093	1067	1136	1277	1499	1826	2393	3559	7059
C45	1093	1067	1136	1277	1499	1826	2393	3559	7059
C90	1093	1067	1136	1277	1499	1826	2393	3559	7059

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1499	1499	1499	2393	2393	2393	7059	7059	7059

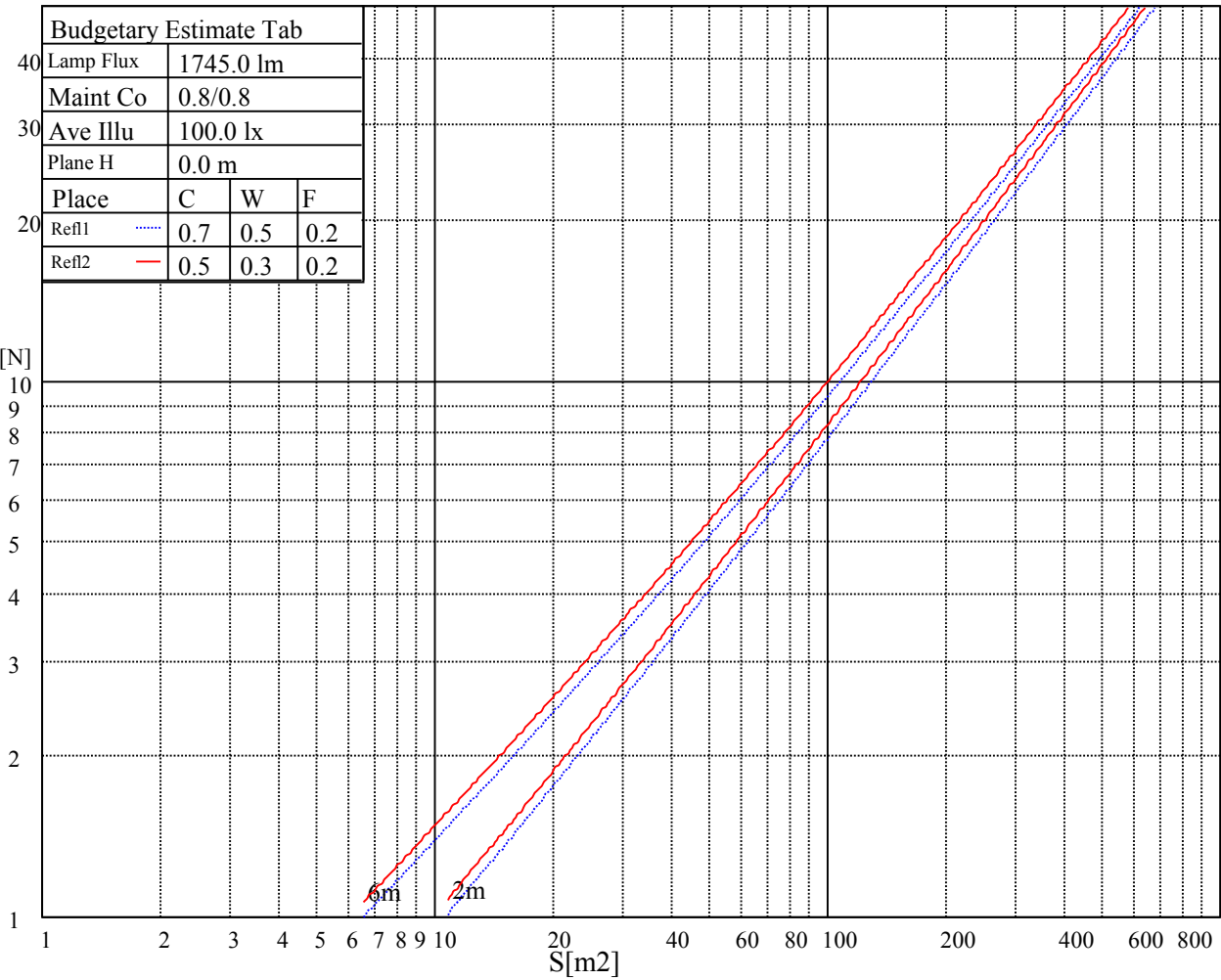
Glare Table

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

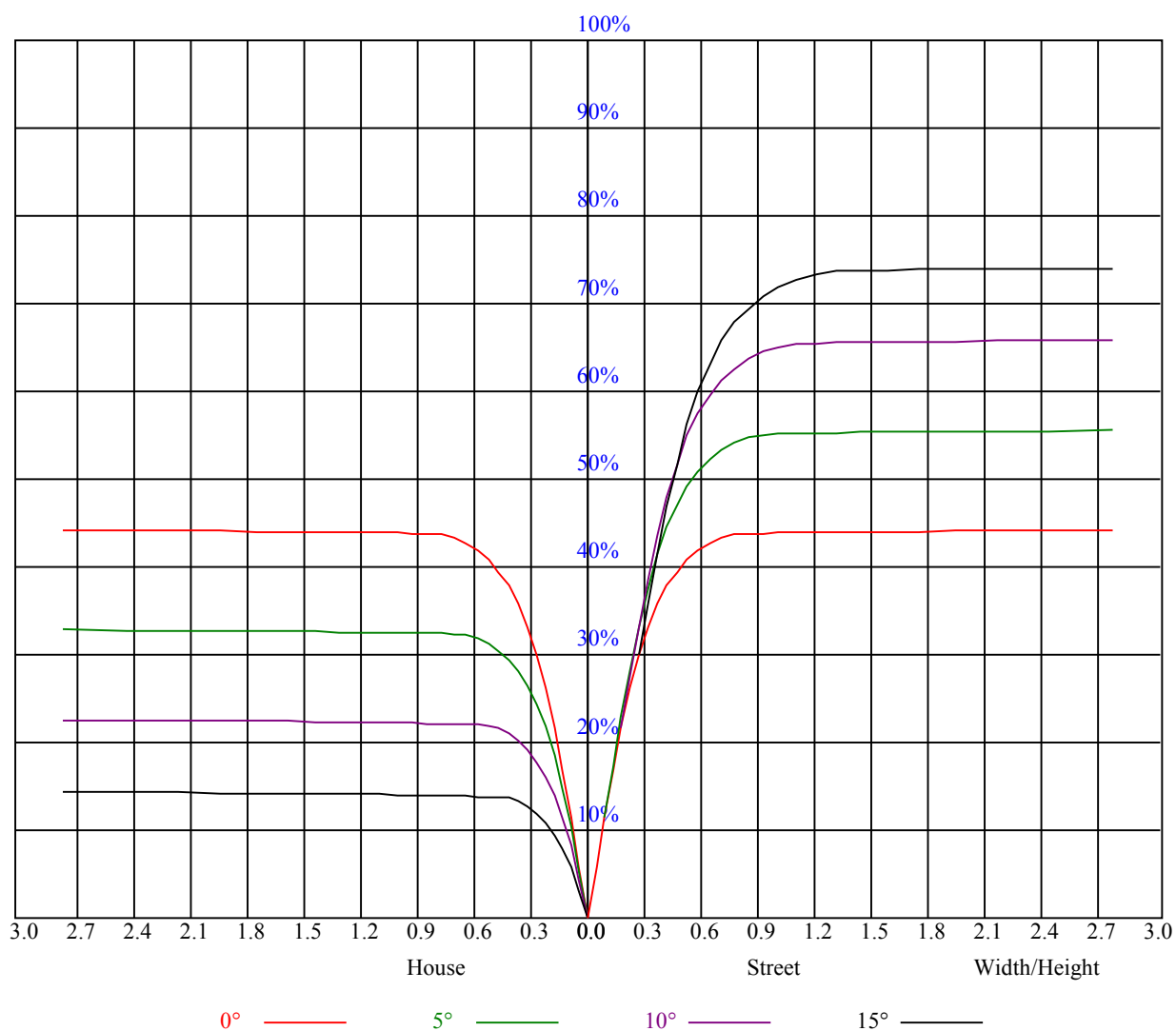
Luminance Limiting Curve



Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	-0.49	0.42	-0.13	0.73	1.04	-0.56	0.34	-0.20	0.66	0.97
	3H	2.91	3.72	3.30	4.05	4.42	2.79	3.59	3.17	3.92	4.29
	4H	4.71	5.45	5.12	5.81	6.20	4.62	5.36	5.03	5.71	6.11
	6H	6.74	7.42	7.16	7.79	8.19	6.66	7.34	7.08	7.71	8.11
	8H	7.86	8.49	8.29	8.88	9.29	7.78	8.41	8.21	8.80	9.22
	12H	9.65	10.26	10.08	10.64	11.07	9.58	10.18	10.01	10.57	11.00
4H	2H	0.48	1.22	0.89	1.57	1.96	0.43	1.17	0.84	1.52	1.92
	3H	4.09	4.70	4.50	5.11	5.51	3.99	4.60	4.41	5.01	5.42
	4H	6.05	6.59	6.49	7.01	7.46	5.98	6.52	6.42	6.95	7.40
	6H	8.23	8.70	8.71	9.15	9.63	8.17	8.64	8.64	9.09	9.56
	8H	9.44	9.88	9.92	10.33	10.80	9.38	9.81	9.86	10.27	10.74
	12H	11.13	11.50	11.62	11.99	12.47	11.07	11.44	11.56	11.93	12.41
8H	4H	6.79	7.22	7.27	7.67	8.15	6.73	7.17	7.21	7.62	8.09
	6H	9.24	9.58	9.76	10.09	10.58	9.20	9.54	9.71	10.04	10.53
	8H	10.64	10.94	11.18	11.47	11.96	10.59	10.90	11.13	11.42	11.92
	12H	12.46	12.71	12.98	13.21	13.80	12.41	12.66	12.93	13.16	13.75
12H	4H	7.00	7.37	7.49	7.86	8.34	6.95	7.32	7.45	7.81	8.29
	6H	9.76	9.87	10.10	10.34	10.89	9.72	9.82	10.06	10.30	10.85
	8H	11.10	11.35	11.62	11.85	12.43	11.05	11.31	11.58	11.81	12.39
Variation with the observer position at spacings:											
S = 1.0H		5.6/-7.9					5.6/-7.9				
S = 1.5H		7.7/-5.7					7.7/-5.7				
S = 2.0H		9.1/-4.2					9.1/-4.2				
Standard tables:		BK3					BK3				
Uncorrected UGR		-2.6					-2.6				



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 RHOF=20 CU															
0	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	0.99	0.97	0.95	0.97	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.83
2	0.94	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.88	0.84	0.82	0.86	0.83	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.77
4	0.85	0.81	0.78	0.84	0.80	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.77	0.74	0.81	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.72	0.71
6	0.78	0.74	0.71	0.78	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.68
7	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.66
8	0.73	0.68	0.65	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.64	0.63
9	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.62	0.61
10	0.68	0.64	0.61	0.67	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.60	0.59



NATA 4-1990-E

Intensity data(cd)									Appendix Page: 15 Total:15		
C/ γ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	3577.50	3456.56	3062.25	2256.19	1407.94	780.75	568.13	331.88	13.39		
45.0	3596.06	3473.44	3080.81	2298.38	1506.38	801.56	561.94	379.69	14.34		
90.0	3587.63	3475.69	3052.13	2264.63	1324.13	780.81	552.77	373.61	15.30		
135.0	3583.13	3533.63	3223.13	2529.56	1667.25	893.81	584.44	477.00	35.83		
180.0	3577.50	3508.31	3098.25	2335.50	1329.75	759.15	559.46	389.31	15.69		
225.0	3596.06	3519.56	3077.44	2272.50	1105.20	746.66	559.74	338.96	13.50		
270.0	3587.63	3532.50	3128.63	2289.94	1454.63	772.88	565.88	374.06	14.63		
315.0	3583.13	3459.38	2943.56	2067.75	1088.55	689.34	547.48	203.63	11.36		
360.0	3577.50	3456.56	3062.25	2256.19	1407.94	780.75	568.13	331.88	13.39		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	7.59	6.75	6.41	6.30	6.19	6.19	6.13	6.13	6.13		
45.0	7.48	6.81	6.47	6.36	6.30	6.24	6.19	6.19	6.19		
90.0	7.43	6.75	6.47	6.30	6.24	6.24	6.19	6.19	6.13		
135.0	8.89	6.98	6.58	6.36	6.24	6.19	6.19	6.13	6.13		
180.0	7.65	6.86	6.47	6.30	6.19	6.19	6.19	6.13	6.08		
225.0	7.48	6.86	6.53	6.41	6.36	6.30	6.24	6.24	6.19		
270.0	7.76	6.98	6.64	6.58	6.69	6.36	6.24	6.24	6.19		
315.0	7.54	6.86	6.58	6.47	6.47	6.24	6.19	6.19	6.19		
360.0	7.59	6.75	6.41	6.30	6.19	6.19	6.13	6.13	6.13		
C/ γ (°)	90.0										
0.0	6.08										
45.0	6.19										
90.0	6.13										
135.0	6.08										
180.0	6.08										
225.0	6.19										
270.0	6.13										
315.0	6.08										
360.0	6.08										