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Report No.: 9 Test Time: 2017/4/14 18:09

Luminaire Property

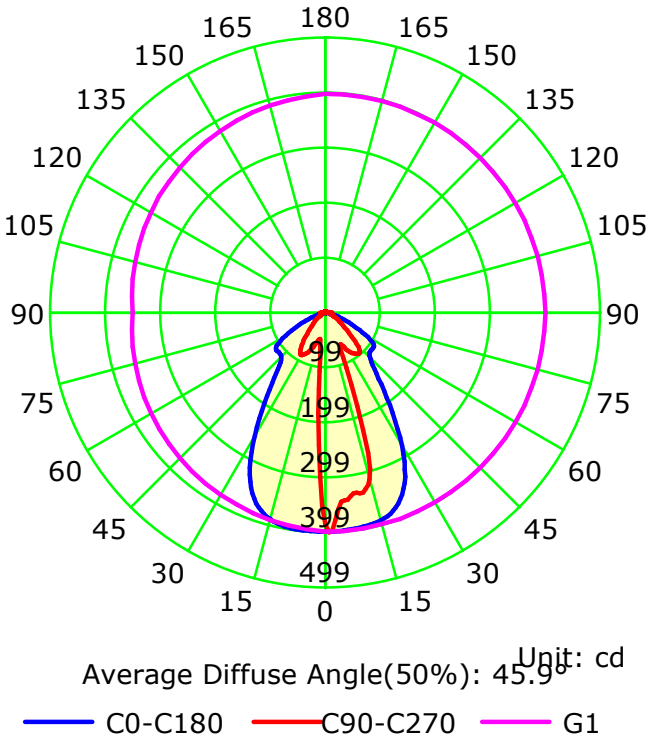
Luminaire Manufacturer:
Luminaire Description: QL-AL1715-60D3 Voltage: 220V
Current: 0.107 A Power: 9.01 W
Power Factor: 0.380

Photometric Results

CIE Class: Direct Total Rated Lamp Lumens: 490.7 lm
Measurement Flux: 490.7 lm Efficiency: 100%
Downward Ratio: 97% Upward Ratio: 3%
Horizontal Diffuse Angle(50%): H69.4
Vertical Diffuse Angle(50%): V22.4
Luminaire Efficacy Rating (LER): 54 Central Intensity: 397.68 cd
Max. Intensity: 399.49 cd Pos of Max. Intensity: H90 V1

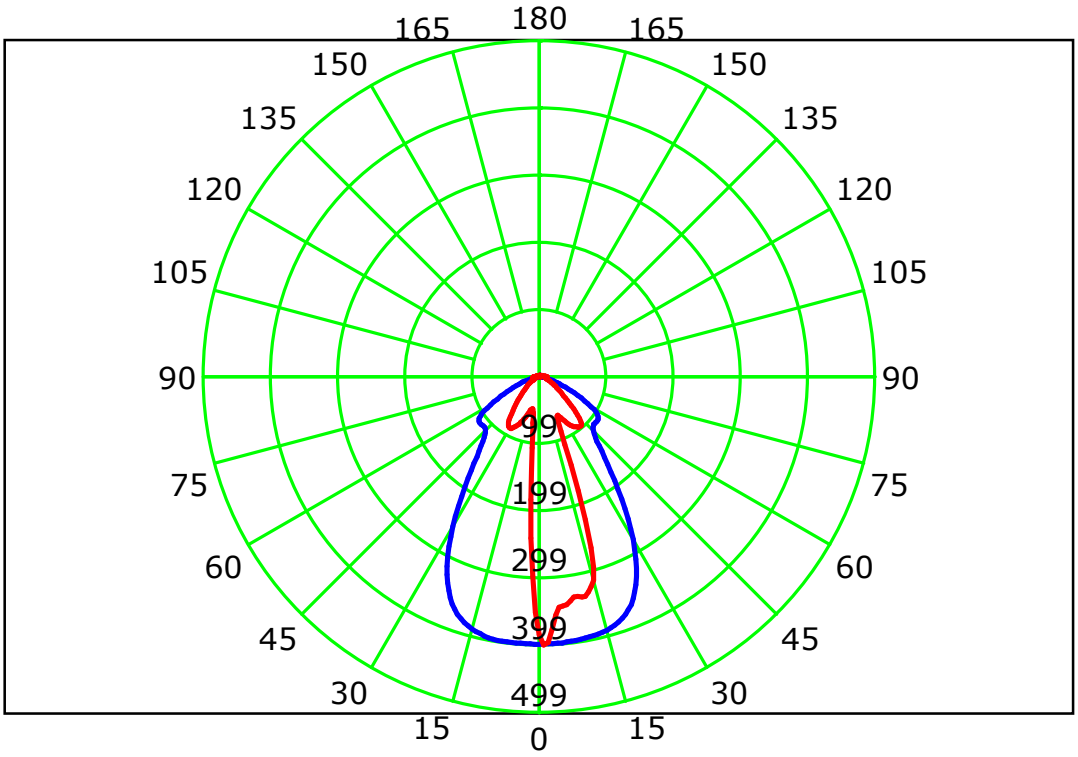
Picture Of Luminaire

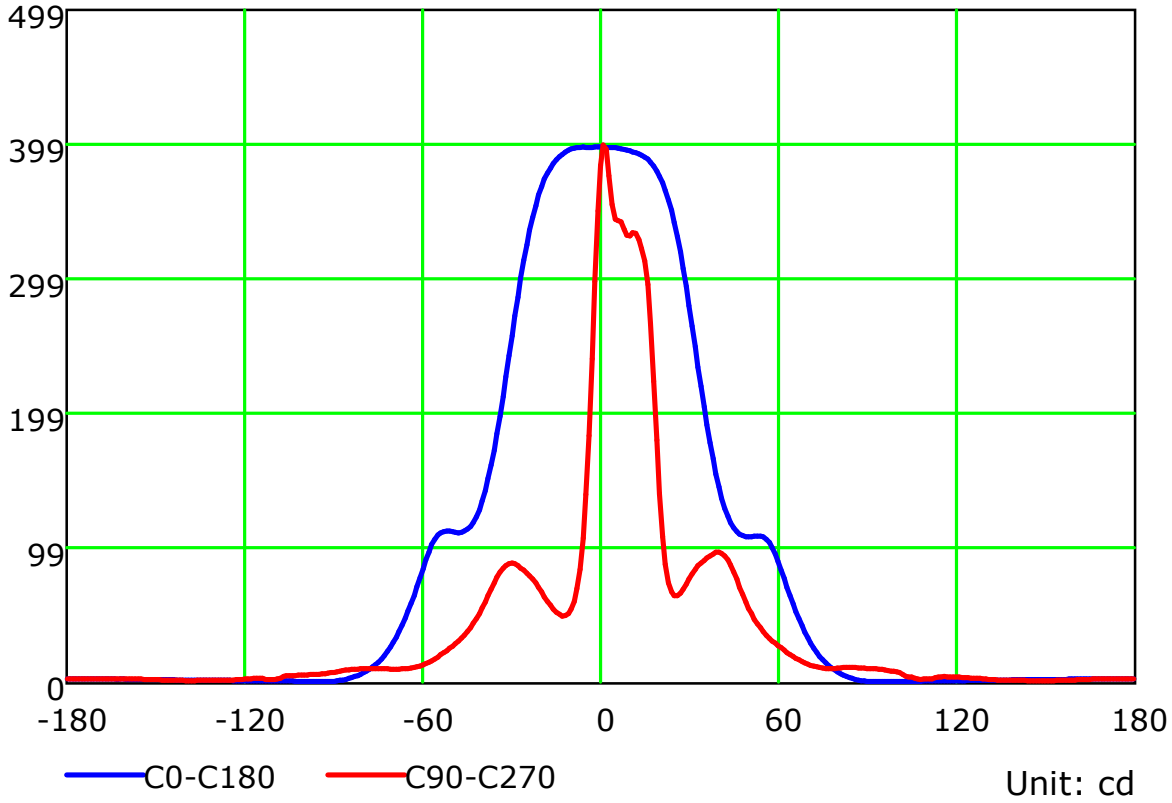
Luminous Intensity Distribution Curve



C Plane (°):0.0-360.0: 90.0 Gamma Plane (°):0.0-180.0:1.0
Test Lab: Inventfine instrument Test Device: GPM-1800B
Test Type: TYPE C Distance: 8.082 m
Temperature: 28 Humidity: 58
Operator: Jacky tang Inspector:

Luminous Intensity Distribution Curve





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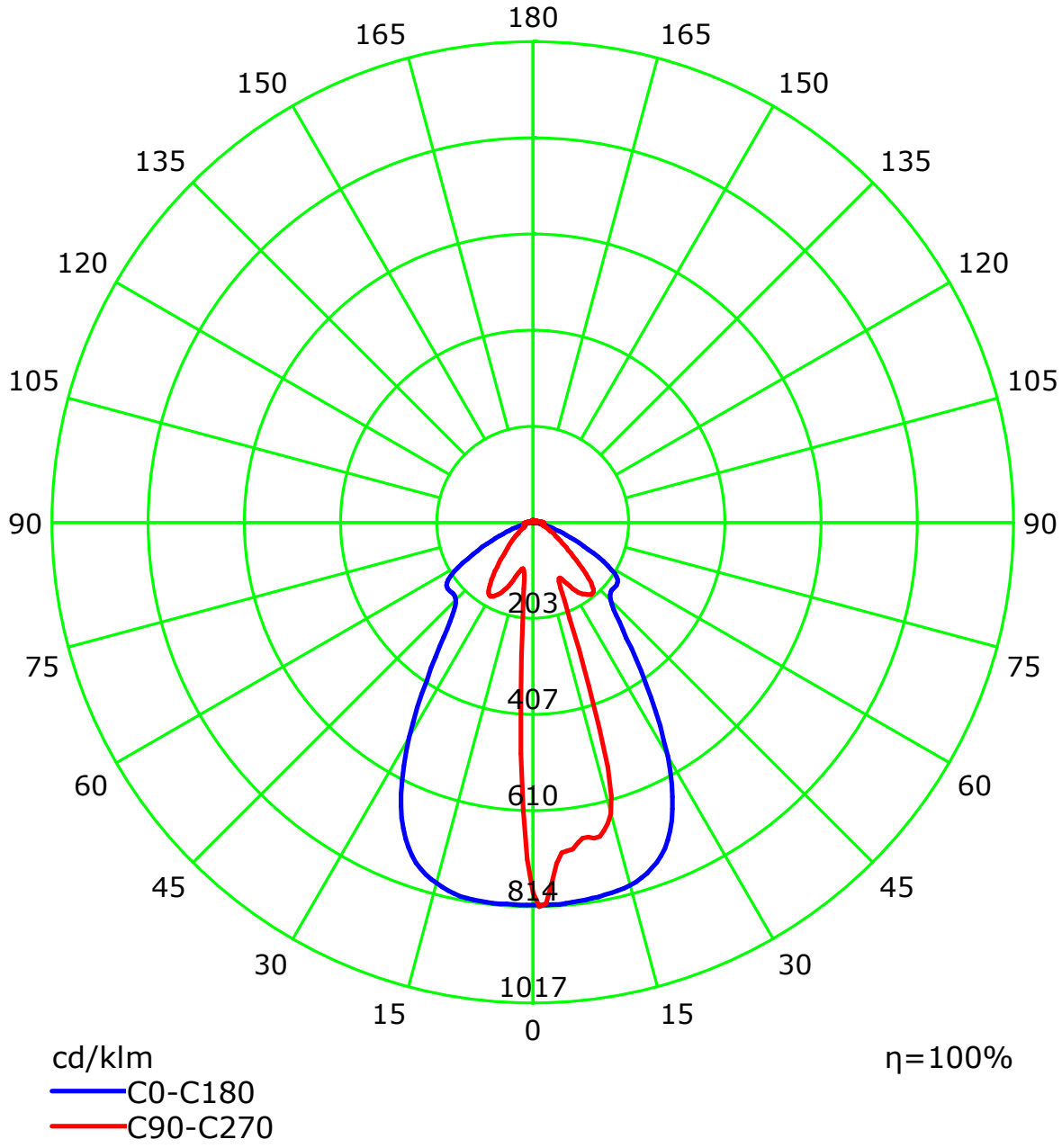
Inspector:

Luminous Intensity Distribution Curve(cd/klm)



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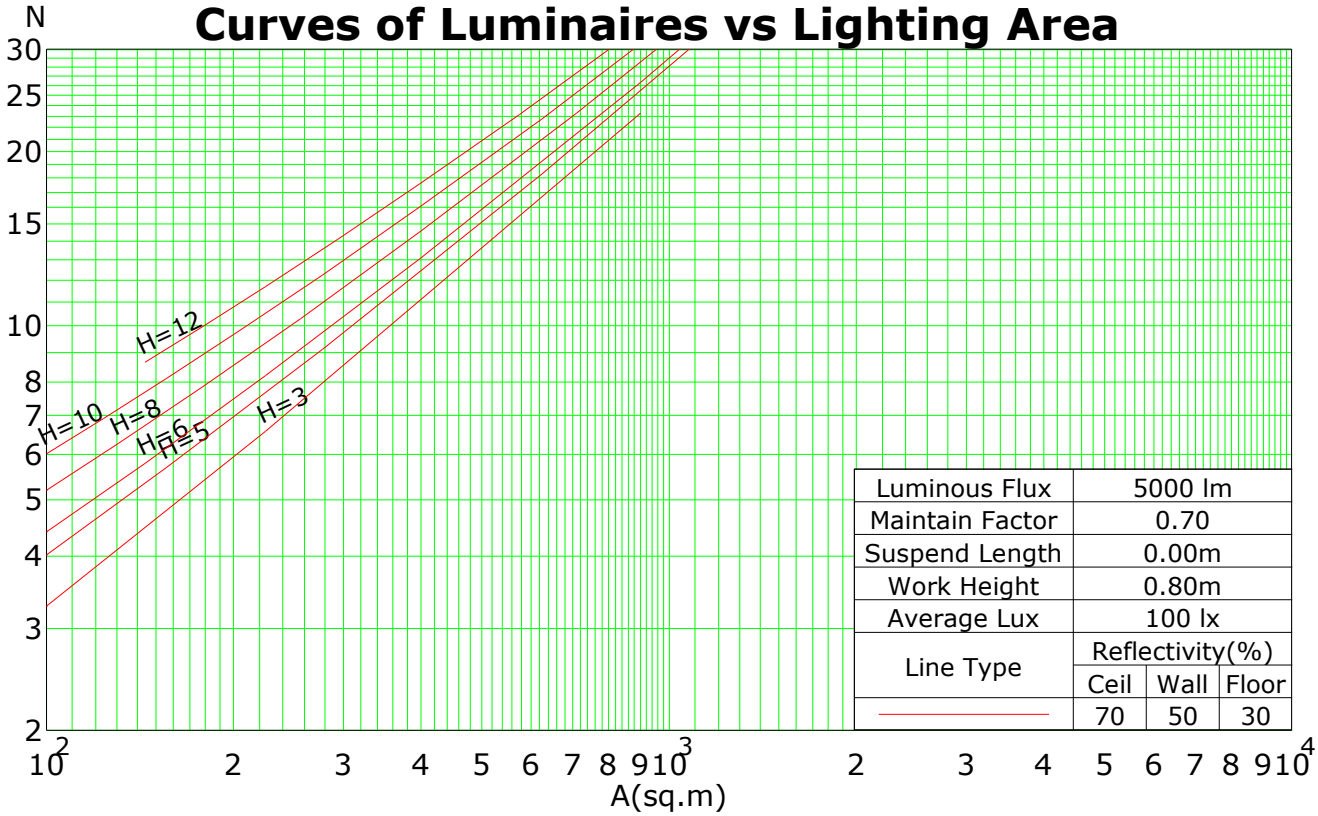
Coefficients Of Utilization - Zonal Cavity Method

RC	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0
RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
RCR	RF = 0.2																	
0	118	118	118	118	115	115	115	115	109	109	109	104	104	104	99	99	99	97
1	110	106	102	99	107	103	100	97	98	96	93	94	92	90	90	88	87	85
2	102	95	89	84	99	92	87	83	88	84	80	85	81	78	81	79	76	74
3	94	85	78	72	91	83	77	72	80	74	70	77	72	68	74	70	67	65
4	87	77	69	63	85	75	68	63	73	66	62	70	65	61	68	63	59	57
5	81	70	62	56	79	69	61	56	66	60	55	64	59	54	62	57	53	51
6	76	64	56	50	74	63	56	50	61	54	49	59	53	49	57	52	48	46
7	71	59	51	46	69	58	51	45	56	50	45	55	49	44	53	48	44	42
8	67	54	47	42	65	54	46	41	52	46	41	51	45	41	49	44	40	38
9	63	51	43	38	61	50	43	38	49	42	38	47	42	37	46	41	37	35
10	59	47	40	35	58	47	40	35	45	39	35	44	39	35	43	38	34	33

Spacing Criteria (0-180): 1.08
Spacing Criteria (90-270): 0.30
Spacing Criteria (Diagonal): 0.88

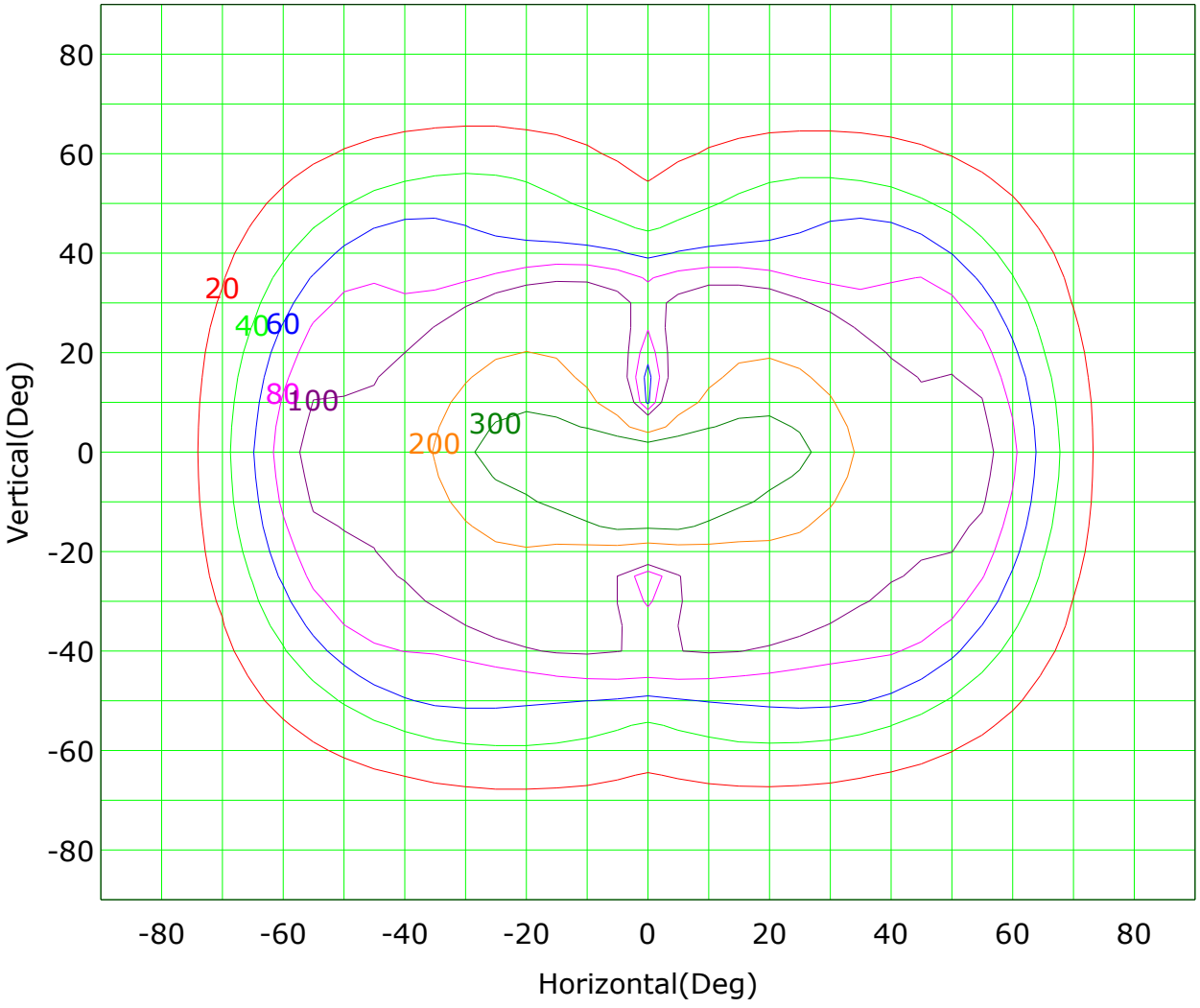
Curves of Luminaires vs Lighting Area



C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Isocandela (rectangle)



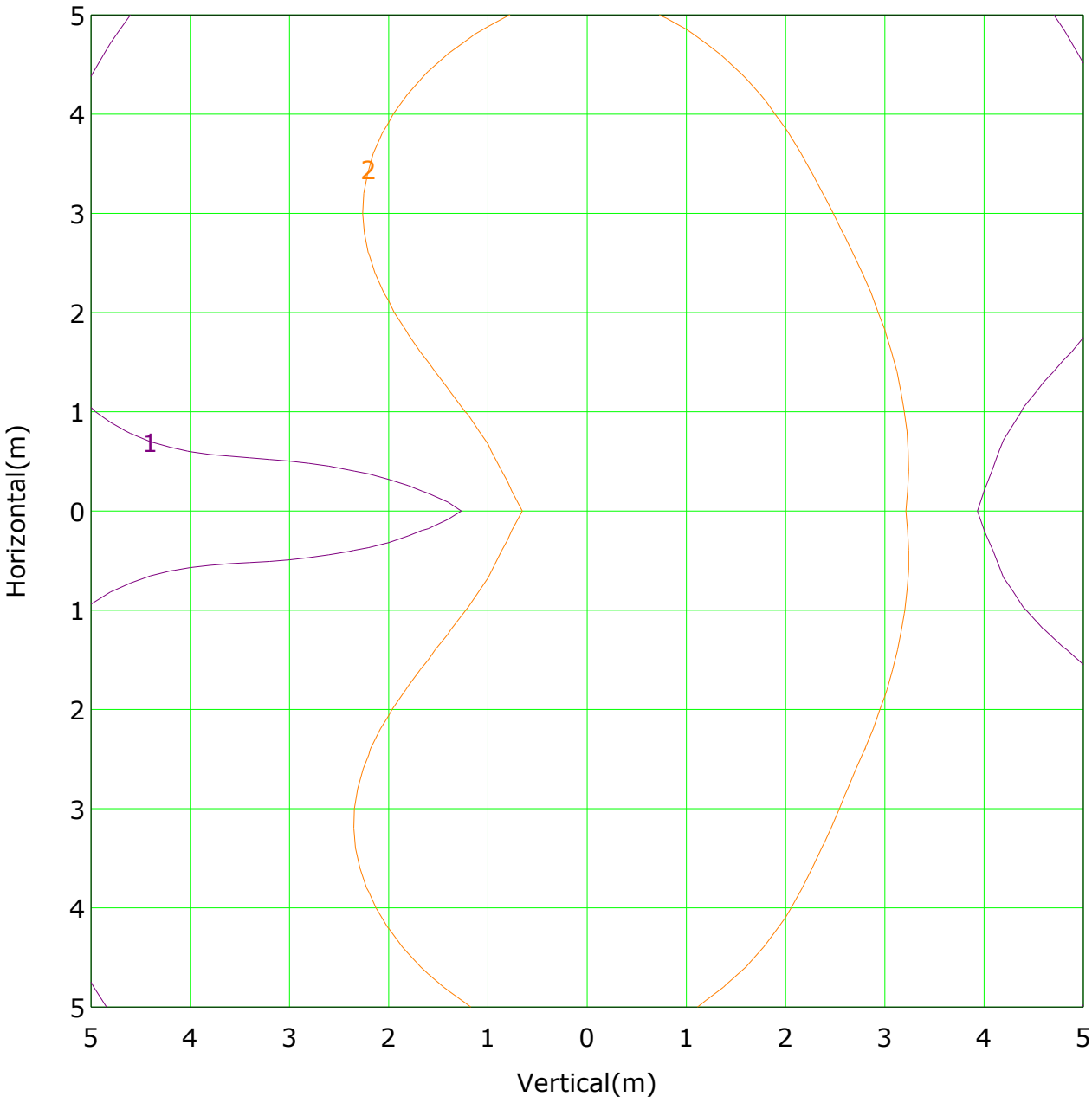
Imax (100%): 399 cd

(5%): 20 cd	(10%): 40 cd
(15%): 60 cd	(20%): 80 cd
(25%): 100 cd	(50%): 200 cd
(75%): 300 cd	(100%): 399 cd

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

IsoLux Plot



Mounting Height: 10.0m Max Lux(100%): 4.0 lx

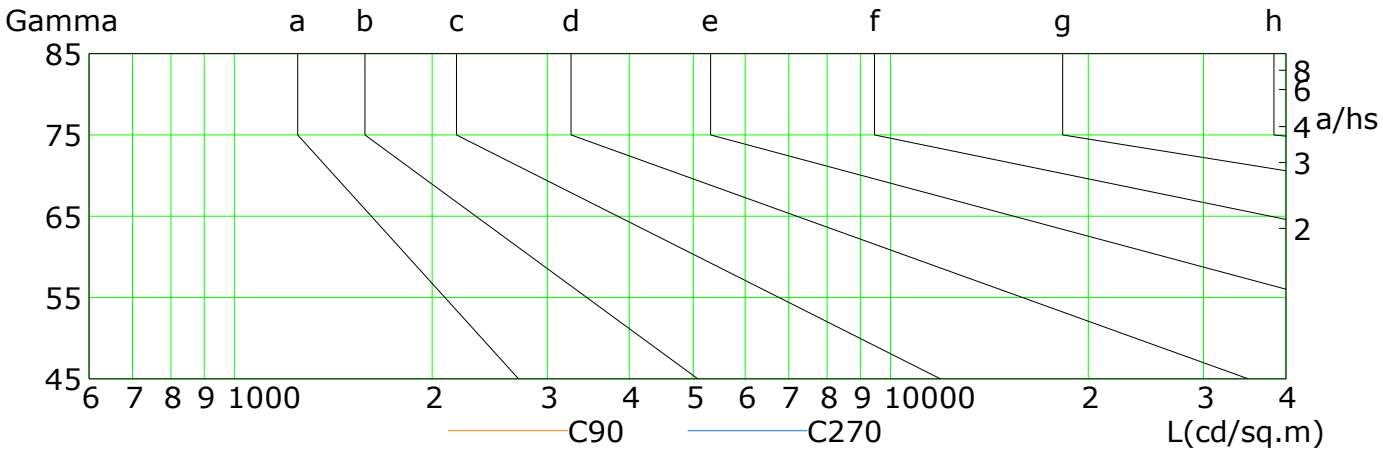
(1%): 0.0 lx	(2%): 0.1 lx
(5%): 0.2 lx	(10%): 0.4 lx
(20%): 0.8 lx	(50%): 2.0 lx
(100%): 4.0 lx	(200%): 8.0 lx

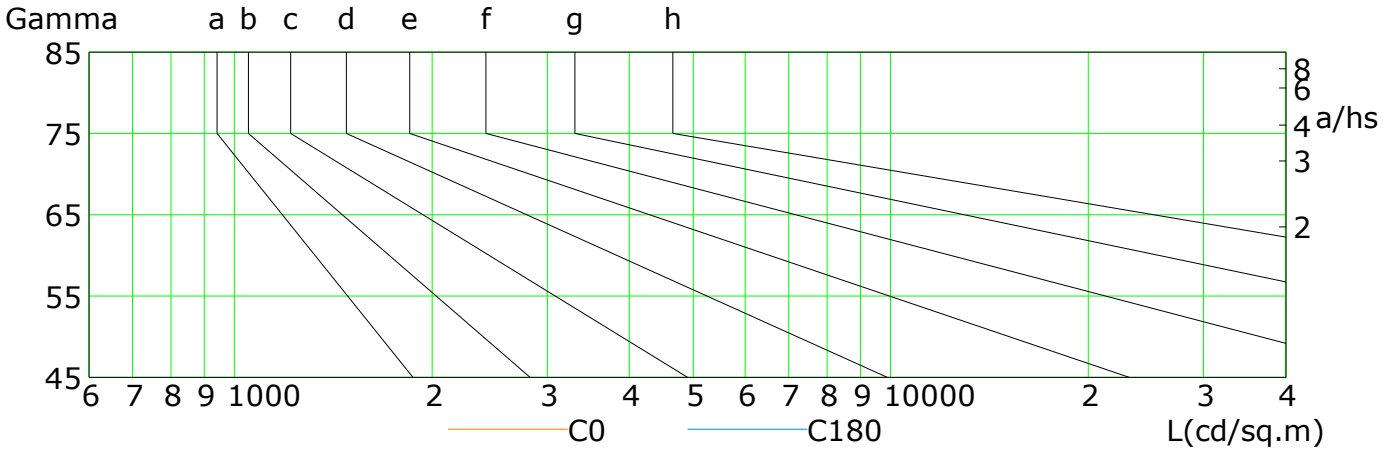
C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Lum Limit Curve

Dazzle	Quality	Illuminance (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h



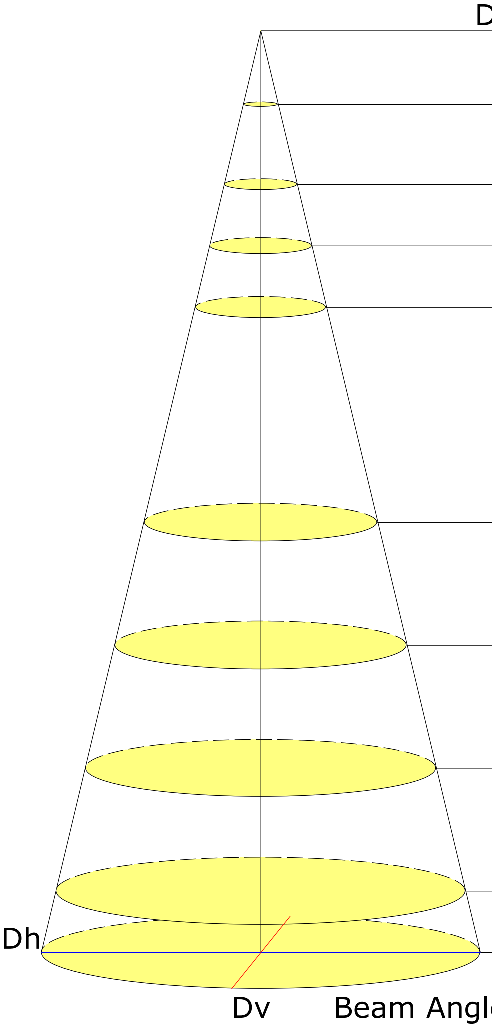


L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	115	108	108	90	58	33	17	8	3
C90	82	55	38	28	19	14	11	11	11
C180	114	112	109	84	53	30	15	7	3
C270	38	27	19	13	10	10	10	10	9

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Illuminance at a Distance



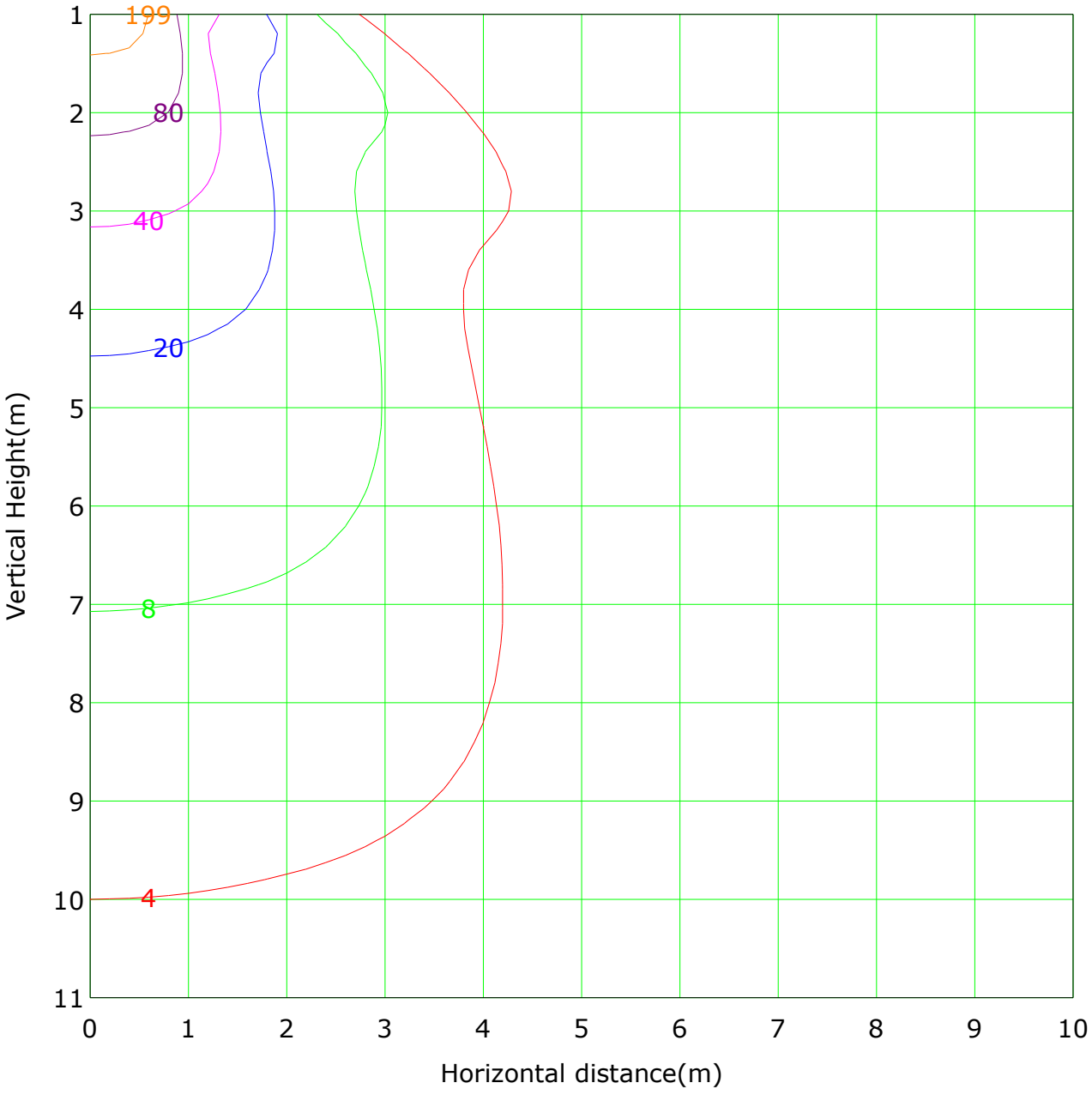
Dist(m)	Emax(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
0.0	1.#J	0.00/0.00	0.0	1.#J
1.2	276.17	1.66/0.48	0.9	125.54
2.5	63.63	3.46/0.99	4.0	28.92
3.5	32.46	4.84/1.39	7.9	14.76
4.5	19.64	6.23/1.78	13.0	8.93
8.0	6.21	11.07/3.17	41.1	2.82
10.0	3.98	13.84/3.96	64.2	1.81
12.0	2.76	16.61/4.75	92.4	1.26
14.0	2.03	19.38/5.54	125.8	0.92
15.0	1.77	20.76/5.94	144.4	0.80

Beam Angle(B): H69.4 V22.4 Field Angle(F): H136.1 V99.0

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Vertical IsoLux Plot



Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 397.7 lx

(1%): 4.0 lx	(2%): 8.0 lx
(5%): 19.9 lx	(10%): 39.8 lx
(20%): 79.5 lx	(50%): 198.8 lx
(100%): 397.7 lx	(200%): 795.4 lx

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

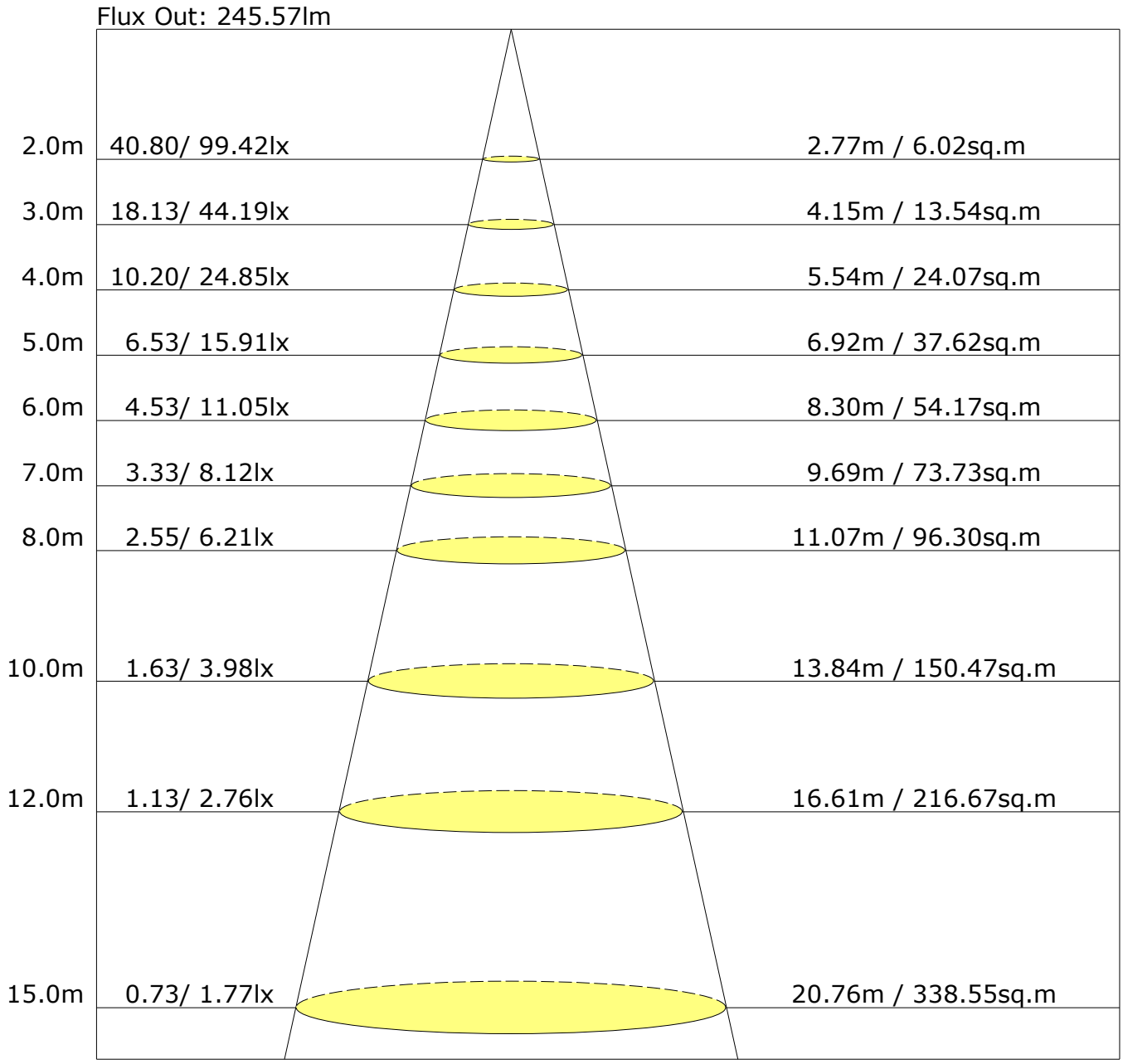
Area Flux Table

Unit: lm

Horizontal plane \ Vertical plane	Flux(E)	Flux(T)	90	80	70	60	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60	-70	-80	-90
-90	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
-80	0.0	1.3	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
-70	2.8	5.7	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.1	0.0	
-60	12.2	14.6	0.1	0.1	0.2	0.4	0.7	1.1	1.4	1.6	1.8	1.8	1.6	1.3	1.0	0.6	0.4	0.2	0.1	0.1	
-50	19.8	22.2	0.1	0.2	0.4	0.8	1.3	1.8	2.1	2.3	2.5	2.4	2.2	1.9	1.7	1.2	0.7	0.4	0.2	0.1	
-40	30.1	32.7	0.2	0.3	0.5	1.1	1.8	2.3	2.8	3.6	4.4	4.4	3.4	2.5	1.9	1.6	1.0	0.5	0.3	0.2	
-30	45.8	48.6	0.2	0.3	0.7	1.4	2.1	2.9	3.9	5.7	7.9	7.9	5.8	3.8	2.3	1.6	1.1	0.5	0.3	0.2	
-20	53.5	56.9	0.3	0.3	0.7	1.4	2.4	3.3	4.3	7.2	10.6	9.3	6.3	4.5	2.7	1.5	1.0	0.5	0.3	0.2	
-10	47.7	51.6	0.3	0.3	0.7	1.3	2.5	3.0	3.2	8.7	11.2	7.6	3.8	3.4	2.6	1.3	0.8	0.4	0.3	0.3	
0	47.9	51.9	0.3	0.3	0.7	1.3	2.5	3.1	3.3	8.7	11.2	7.5	3.8	3.4	2.6	1.3	0.8	0.4	0.3	0.3	
10	54.6	58.1	0.3	0.4	0.7	1.4	2.4	3.4	4.5	7.4	10.6	9.4	6.5	4.7	2.8	1.5	1.0	0.5	0.3	0.2	
20	48.2	51.0	0.2	0.3	0.7	1.4	2.1	3.0	4.2	6.1	8.3	8.3	6.2	4.1	2.3	1.6	1.1	0.6	0.3	0.2	
30	31.9	34.5	0.2	0.3	0.6	1.2	1.8	2.3	3.0	3.9	4.8	4.8	3.7	2.6	1.9	1.6	1.0	0.5	0.3	0.2	
40	20.1	22.5	0.1	0.2	0.4	0.8	1.4	1.8	2.1	2.3	2.5	2.5	2.2	1.9	1.7	1.3	0.7	0.4	0.2	0.1	
50	12.8	15.1	0.1	0.1	0.2	0.4	0.7	1.1	1.4	1.7	1.8	1.8	1.6	1.4	1.1	0.7	0.4	0.2	0.1	0.1	
60	3.5	6.2	0.1	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.8	0.7	0.5	0.4	0.3	0.2	0.1	0.1	0.0	
70	0.0	1.4	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
80	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
90 Flux(T)		475	2.7	3.5	6.8	13.4	22.4	30.0	37.5	60.7	79.4	69.5	48.7	36.7	25.5	16.6	10.4	5.5	3.3	2.3	
Flux(E)	431		0.0	0.0	0.0	9.2	21.1	29.2	36.8	60.2	78.9	69.0	48.1	36.1	24.6	14.4	3.3	0.0	0.0	0.0	

C Plane (°):0.0-360.0: 90.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: Inventfine instrument
Test Device: GPM-1800B
Test Type: TYPE C
Distance: 8.082 m
Temperature: 28
Humidity: 58
Operator: Jacky tang
Inspector:

The Average Illuminance Effective Figure



C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

UGR Table

Reflectance:										
Ceiling (cavity)	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
X=2H Y=2H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
3H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
4H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
6H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
8H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
12H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
X=4H Y=2H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
3H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
4H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
6H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
8H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
12H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
X=8H Y=4H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
6H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
8H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
12H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
X=12H Y=4H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
6H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$
8H	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$	1.$

Calculate in accordance with CIE 190:2010

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Utilisation Factor Table(Floor cavity)

Utilisation Factors UF(F)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.63	0.73	0.79	0.84	0.91	0.95	0.98	1.02	1.05
	0.30		0.56	0.66	0.73	0.78	0.86	0.90	0.94	0.99	1.02
	0.20		0.51	0.61	0.68	0.73	0.81	0.86	0.90	0.96	0.99
0.50	0.50	0.20	0.61	0.70	0.77	0.81	0.87	0.91	0.94	0.98	1.00
	0.30		0.55	0.64	0.71	0.76	0.83	0.87	0.91	0.95	0.97
	0.20		0.51	0.60	0.67	0.72	0.79	0.84	0.87	0.92	0.95
0.30	0.50	0.20	0.60	0.68	0.74	0.78	0.84	0.88	0.90	0.94	0.96
	0.30		0.54	0.63	0.69	0.74	0.80	0.84	0.87	0.91	0.94
	0.20		0.50	0.59	0.65	0.70	0.77	0.82	0.85	0.89	0.92
0.00	0.00	0.00	0.48	0.56	0.62	0.67	0.73	0.77	0.80	0.84	0.86

Rating:9W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Utilisation Factor Table(Wall)

Utilisation Factors UF(W)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.89	0.73	0.62	0.54	0.42	0.35	0.30	0.23	0.19
	0.30		0.74	0.63	0.54	0.47	0.38	0.32	0.28	0.22	0.18
	0.20		0.64	0.55	0.48	0.42	0.35	0.30	0.26	0.21	0.17
0.50	0.50	0.20	0.85	0.70	0.59	0.51	0.40	0.36	0.28	0.22	0.18
	0.30		0.72	0.60	0.52	0.45	0.36	0.31	0.26	0.21	0.17
	0.20		0.63	0.53	0.46	0.41	0.34	0.28	0.25	0.20	0.16
0.30	0.50	0.20	0.82	0.66	0.56	0.48	0.38	0.31	0.26	0.20	0.17
	0.30		0.70	0.58	0.50	0.43	0.35	0.29	0.25	0.19	0.16
	0.20		0.61	0.52	0.45	0.40	0.32	0.27	0.24	0.19	0.15
0.00	0.00	0.00	0.50	0.41	0.35	0.30	0.24	0.20	0.17	0.13	0.11

Rating:9W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector:

Utilisation Factor Table(Ceiling cavity)

Utilisation Factors UF(C)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.19	0.20	0.21	0.22	0.23	0.23	0.24	0.24	0.25
	0.30		0.13	0.14	0.16	0.17	0.18	0.20	0.20	0.22	0.22
	0.20		0.08	0.10	0.11	0.13	0.15	0.16	0.18	0.19	0.20
0.50	0.50	0.20	0.18	0.19	0.20	0.21	0.22	0.22	0.23	0.23	0.24
	0.30		0.12	0.14	0.15	0.16	0.18	0.19	0.20	0.21	0.22
	0.20		0.08	0.10	0.11	0.13	0.15	0.16	0.17	0.19	0.20
0.30	0.50	0.20	0.17	0.19	0.19	0.20	0.21	0.21	0.22	0.22	0.23
	0.30		0.12	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21
	0.20		0.08	0.10	0.11	0.12	0.14	0.16	0.17	0.18	0.19
0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

Rating:9W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 90.0
Test Lab: Inventfine instrument
Test Type: TYPE C
Temperature: 28
Operator: Jacky tang

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1800B
Distance: 8.082 m
Humidity: 58
Inspector: