



## Goniophotometric Test Report

### MEASUREMENT METHOD

The measurements were made by a goniophotometer of type LUMI 180. Goniometer was operated in horizontal axis. The DUT was rotated with 2-axis goniometer around the axes. The Luminous Intensity of the DUT at different directions were measured with a calibrated photometer located at a known far-field position of the DUT.

### MEASUREMENT UNCERTAINTY

The photometer of type SSL L200-004 is traceable to national standard at NIST (Certificate of calibration CR 0234 signed on 08.2021). The photometer head of type LH1010-003\_CR-0112 is traceable to national standard at PTB (Certificate of calibration CR 0112 signed on 01.2022).

The power meter of type is traceable to national standard at NIST.

The expanded uncertainties of the Luminous flux and efficacy are  $\pm 3.8\%$  and  $\pm 4.0\%$  ( $k = 2$ ), respectively.

### MEASUREMENTS

Table below describes the measurement conditions. The luminaire under test and photometer/spectrometer were mounted onto the same optical axis and perpendicular by an alignment laser. The measurement distance from the rotation axis to the photometer optical receiving surface was measured by laser distance meter.

Table - Measurement information

Ambient temperature of the laboratory	25.0 degC
Power supply	230.0 Vac
Measurement distance	8893 mm
Location of the rotation axis (behind the outermost surface of the optics)	25 mm
Angular step, C plane	2.5 deg
Angular step, gamma angle	2.5 deg
Maximum gamma angle	180.0 deg
Stabilization time	31 min

**Table. Luminous Intesity (cd) in horizontal (rows) and vertical planes (columns).**

	0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0	67.5	70.0	72.5
0.0	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
2.5	37	38	39	38	38	39	40	40	41	42	43	43	42	45	46	47	47	48	49	50	51	52	53	54	55	56	57	58	59	60
5.0	40	41	42	40	42	43	45	46	48	49	51	52	51	55	57	59	60	62	63	65	67	69	71	72	74	76	78	80	82	84
7.5	46	47	49	44	46	48	50	52	54	56	58	60	62	65	67	70	72	75	77	80	83	86	89	92	94	97	100	102	105	108
10.0	59	60	61	51	54	56	58	60	63	65	68	71	72	75	79	82	84	87	91	94	97	102	106	110	114	118	122	126	129	132
12.5	57	58	58	63	65	67	69	71	73	76	78	80	84	85	89	92	95	99	103	108	112	116	121	126	131	136	142	147	153	157
15.0	51	51	52	61	63	65	67	69	71	73	76	78	95	84	88	92	95	100	103	109	113	119	124	130	135	141	147	153	159	165
17.5	42	43	44	55	57	59	61	64	66	68	70	73	93	78	83	86	89	93	97	102	106	112	117	124	130	136	142	149	156	162
20.0	34	35	36	47	49	51	54	56	59	61	64	67	87	72	77	80	83	87	91	96	100	105	111	117	123	130	137	145	151	159
22.5	28	30	31	39	41	44	46	48	51	53	56	59	80	65	70	74	77	81	85	90	94	99	104	110	117	124	131	140	147	155
25.0	29	31	32	34	36	38	40	42	44	47	49	51	71	57	62	66	69	74	78	83	87	92	97	103	110	117	125	133	142	150
27.5	31	33	35	35	36	38	39	40	41	42	44	45	62	49	53	56	60	64	69	74	79	85	90	96	103	110	118	127	136	145
30.0	31	34	36	38	40	41	43	43	44	44	44	43	54	43	46	48	50	54	58	64	69	76	82	89	96	103	111	121	130	140
32.5	30	33	35	39	41	43	45	46	47	47	46	45	49	41	40	40	42	44	48	53	59	66	74	81	88	97	105	114	123	134
35.0	30	32	34	38	41	43	44	45	46	47	46	45	50	41	40	38	36	36	39	44	49	57	65	73	81	90	98	108	117	128
37.5	29	31	34	37	40	41	43	44	44	44	43	42	50	40	39	37	35	33	33	36	40	48	56	65	74	83	91	101	111	122
40.0	28	31	33	37	39	40	41	42	42	41	40	39	48	36	36	35	33	32	31	31	34	40	47	56	65	75	85	94	104	115
42.5	28	31	33	36	38	39	40	40	39	38	36	35	43	32	32	31	31	31	31	30	30	33	40	47	57	67	77	87	97	108
45.0	27	30	32	36	37	38	38	38	36	35	33	31	38	28	28	28	28	29	29	30	30	30	33	40	49	59	70	80	90	101
47.5	27	30	32	35	36	36	36	35	34	32	30	28	34	25	25	25	25	26	27	29	30	30	30	34	41	50	61	73	83	94
50.0	26	29	31	34	35	35	34	33	31	29	27	25	30	22	22	22	23	24	25	27	28	29	29	30	34	42	52	64	74	85
52.5	26	28	30	33	34	33	32	30	28	26	24	22	27	19	19	20	20	21	23	24	26	27	29	29	30	35	44	54	65	76
55.0	25	28	29	32	32	32	30	28	26	23	21	19	24	17	17	18	18	19	20	22	23	25	27	28	28	30	37	46	56	67
57.5	25	27	28	31	31	30	28	26	23	21	19	17	21	15	16	16	16	17	18	20	21	22	24	26	27	27	31	38	47	58
60.0	24	26	27	29	29	27	26	23	21	18	17	15	18	14	14	14	15	15	16	17	19	20	22	24	25	26	27	32	39	49
62.5	24	25	26	28	27	25	24	21	18	16	15	13	16	12	12	13	13	14	15	16	16	18	19	21	23	24	25	27	32	41
65.0	23	24	25	27	25	24	22	19	16	15	13	11	14	11	11	12	12	13	13	14	15	16	17	18	20	22	23	24	27	34
67.5	22	23	24	25	23	22	20	17	15	13	11	10	13	10	10	11	11	11	12	12	13	14	15	16	18	19	21	22	23	27
70.0	21	22	22	23	21	20	18	15	13	11	10	9	12	9	9	9	10	10	10	11	12	12	13	14	15	17	18	20	20	22
72.5	20	21	20	21	20	18	16	14	12	10	9	9	10	8	8	8	9	9	9	10	10	11	12	12	13	15	16	17	18	18
75.0	20	19	18	20	19	16	14	12	10	9	8	8	9	7	8	8	8	8	8	9	9	10	10	11	12	13	14	15	16	16
77.5	19	17	16	18	17	14	13	11	9	8	7	7	8	7	7	7	7	7	7	8	8	9	9	10	10	11	12	13	14	14
80.0	19	15	15	18	15	13	12	10	8	7	7	6	8	6	6	6	6	7	7	7	7	8	8	9	9	10	10	11	12	13
82.5	17	13	15	17	13	11	11	8	7	7	6	5	7	5	6	6	6	6	6	6	6	7	7	7	8	8	9	10	11	11
85.0	16	11	15	15	11	11	9	7	6	6	5	5	6	5	5	5	5	5	5	5	6	6	6	6	7	8	8	9	9	10
87.5	14	10	14	13	9	11	8	6	6	5	5	5	6	4	5	4	5	5	5	5	5	5	6	6	6	7	7	7	8	9
90.0	11	11	13	11	9	10	7	5	6	5	4	4	5	4	4	4	4	4	4	4	4	5	5	5	5	6	6	7	7	7
92.5	9	13	13	9	9	9	6	5	5	5	4	4	5	4	4	4	4	4	4	4	4	4	4	5	5	5	5	6	6	6
95.0	7	13	12	7	9	8	5	5	5	4	4	4	4	4	4	4	3	3	3	3	4	4	4	4	4	5	5	5	5	6
97.5	7	12	10	6	9	8	5	5	5	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	4	4	4	4	5	5
100.0	8	11	8	6	8	7	5	5	4	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	3	4	4	4	4	4
102.5	9	10	7	7	8	6	5	5	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4	4
105.0	9	9	7	7	7	5	5	5	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4
107.5	8	8	6	7	6	5	5	5	4	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	3	4	4	4	4	4
110.0	8	7	6	7	6	5	5	4	4	4	4	4	4	4	3	4	3	3	3	3	3	3	3	3	4	4	4	4	4	4
112.5	7	7	6	6	6	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3	4	4	4	4	4	4	4
115.0	7	6	6	6	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
117.5	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
120.0	6	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
122.5	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
125.0	6	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
127.5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5
130.0	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	
132.5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	6	6	
135.0	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	6	6	6	
137.5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6	6	6	6	6	
140.0	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	6	6	7	6	5	
142.5	4	4	4	4																										

[illegible]

	122.5	125.0	127.5	130.0	132.5	135.0	137.5	140.0	142.5	145.0	147.5	150.0	152.5	155.0	157.5	160.0	162.5	165.0	167.5	170.0	172.5	175.0	177.5	180.0
0.0	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
2.5	61	60	59	57	57	55	54	53	51	50	49	48	46	45	44	43	42	41	40	39	38	38	37	37
5.0	85	83	81	78	76	74	71	69	67	64	62	60	57	55	53	51	49	48	46	44	42	41	39	39
7.5	109	106	103	100	97	93	90	87	84	81	77	74	71	68	65	62	59	57	54	51	49	46	44	46
10.0	134	130	126	122	119	115	111	107	103	100	96	92	89	86	82	79	76	73	70	67	64	61	58	59
12.5	142	137	133	127	124	119	115	110	106	102	99	95	92	88	85	82	80	77	75	73	71	69	67	58
15.0	134	129	125	120	116	111	107	103	99	95	92	88	85	82	79	76	74	71	69	67	65	63	61	52
17.5	127	121	117	112	108	104	100	96	92	88	85	81	78	74	72	69	66	63	61	59	57	55	54	44
20.0	120	114	110	105	101	97	93	88	85	81	77	73	70	66	63	60	58	55	52	50	48	46	44	35
22.5	112	107	103	98	94	89	85	80	76	72	68	64	61	58	55	52	49	46	44	41	39	37	36	29
25.0	104	98	94	89	84	79	75	71	67	63	60	57	54	51	48	45	43	40	38	36	34	32	30	29
27.5	94	88	83	77	73	68	65	61	58	56	53	51	50	49	47	46	44	42	40	38	36	33	31	31
30.0	82	75	70	65	61	57	55	53	52	52	53	53	53	53	52	50	49	46	44	41	39	36	33	31
32.5	70	63	58	53	50	48	49	50	52	54	55	56	56	55	54	52	50	48	45	42	39	36	33	30
35.0	59	52	47	43	44	45	48	50	52	53	54	55	54	54	53	51	49	47	44	41	38	35	32	29
37.5	49	43	41	41	43	44	46	47	48	49	50	51	51	51	50	49	48	46	43	41	37	34	31	28
40.0	41	39	39	40	41	41	42	42	43	44	45	46	47	48	48	48	47	45	43	40	37	34	30	28
42.5	39	39	39	38	38	37	37	38	38	39	41	42	44	45	46	46	45	44	42	40	37	33	30	27
45.0	39	38	37	35	34	33	33	33	34	35	36	38	40	42	43	44	44	43	41	39	36	33	29	26
47.5	38	36	34	32	31	30	30	29	30	31	32	34	36	38	40	41	42	41	40	38	36	32	29	26
50.0	35	33	32	30	28	27	26	26	26	27	29	30	33	35	37	39	40	40	39	37	35	32	28	26

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	242.5	245.0	247.5	250.0	252.5	255.0	257.5	260.0	262.5	265.0	267.5	270.0	272.5	275.0	277.5	280.0	282.5	285.0	287.5	290.0	292.5	295.0	297.5	300
0.0	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
2.5	21	20	19	18	16	16	15	14	13	12	11	11	11	10	10	10	10	10	10	11	11	12	13	14
5.0	25	24	24	23	23	22	22	20	19	17	16	14	13	12	11	9	9	8	8	7	7	7	7	7
7.5	47	46	47	47	47	47	47	45	42	37	33	28	25	21	20	18	19	19	20	22	23	25	27	26
10.0	73	70	70	70	71	70	70	68	63	55	47	39	33	29	28	28	30	34	39	44	49	51	51	49
12.5	93	92	93	91	91	91	90	86	80	69	58	46	37	35	36	39	47	54	63	70	73	72	71	69
15.0	98	101	105	107	108	108	107	102	95	81	66	50	44	44	47	55	68	79	88	91	93	91	91	89
17.5	90	94	100	104	108	110	111	110	104	90	73	56	52	53	61	75	92	102	107	108	107	104	102	98
20.0	82	86	91	95	98	99	100	98	93	80	64	50	50	54	66	83	97	103	106	104	102	98	94	89
22.5	72	77	81	85	87	88	88	86	80	67	52	42	45	50	64	79	90	94	95	94	91	88	84	79
25.0	61	66	70	74	76	77	77	74	67	54	41	36	41	47	61	73	82	84	85	83	80	76	72	67
27.5	51	55	60	63	65	66	65	63	56	44	34	33	37	43	56	67	73	74	74	72	69	64	59	54
30.0	41	45	50	53	55	55	54	51	45	36	27	29	31	38	50	58	63	63	63	60	57	52	48	43
32.5	32	36	40	43	45	45	43	40	35	27	22	23	24	33	43	49	52	53	53	49	46	42	38	34
35.0	26	28	31	34	36	36	33	29	26	19	16	16	19	27	35	39	43	44	42	39	36	33	30	29
37.5	21	22	23	25	28	27	24	20	17	12	10	9	13	20	27	31	35	35	33	30	29	27	27	28
40.0	19	18	17	18	20	20	17	13	9	6	4	4	8	14	19	24	27	26	25	24	24	25	26	25
42.5	17	16	14	13	14	14	12	9	6	4	3	3	6	10	14	18	20	19	19	20	22	23	23	22
45.0	14	14	12	10	9	9	9	7	5	3	2	3	4	7	10	13	13	14	16	18	20	20	20	19
47.5	12	11	10	9	7	6	5	5	4	2	2	2	3	5	7	8	9	12	15	16	17	17	17	17
50.0	10	10	9	8	6	5	4	3	3	2	2	2	2	4	5	6	8	11	13	14	15	15	15	14
52.5	9	8	7	6	5	4	3	3	2	1	1	1	2	3	4	5	8	9	11	11	13	13	12	12
55.0	8	7	6	5	5	4	3	2	2	1	1	1	2	3	3	4	7	8	9	10	11	11	11	10
57.5	7	6	5	5	4	3	2	2	1	1	0	1	1	2	3	4	6	7	8	8	9	9	9	9
60.0	6	5	4	4	4	3	2	1	1	0	0	0	1	2	2	3	5	6	6	7	8	8	8	8
62.5	5	4	4	3	3	2	1	1	1	0	0	0	1	1	2	3	4	5	5	5	7	7	7	6
65.0	4	3	3	3	2	2	1	1	0	0	0	0	1	1	1	2	3	4	4	4	6	6	6	5
67.5	3	3	2	2	2	1	1	0	0	0	0	0	0	1	1	1	2	3	3	4	5	5	5	5
70.0	3	2	2	2	1	1	0	0	0	0	0	0	0	0	1	1	2	2	2	3	4	4	4	4
72.5	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	3	3	3	3
75.0	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	3	3	3	3
77.5	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	3	3	3
80.0	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2
82.5	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2
85.0	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2
87.5	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2
90.0	2	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	2	2	2
92.5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	2	2	2	2
95.0	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
97.5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
100.0	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	3	3
102.5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	2	2	2	2	3	3
105.0	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3
107.5	2	2	2	2	2	2	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	3	3	3
110.0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	3	3	3	3
112.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	2	3	3	3	3
115.0	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	4	3	3	3	3	3
117.5	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	4	4	4	3	3	3	3
120.0	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	4	4	4	4	3	3	4
122.5	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	4	5	5	5	4	4
125.0	4	3	3	3	2	2	2	2	2	2	3	2	2	2	3	3	3	3	4	5	5	5	5	4
127.5	4	3	3	3	3	2	2	2	3	2	3	2	2	3	3	3	3	4	4	5	5	5	6	5
130.0	4	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	4	4	5	5	6	6	6
132.5	4	3	3	3	3	3	3	3	3	2	2	2	3	3	3	3	3	4	4	4	5	6	6	6
135.0	4	3	3	3	3	3	3	3	3	2	2	2	3	3	3	3	4	4	4	4	5	6	6	6
137.5	4	3	3	3	3	3	3	3	2	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6
140.0	4	3	3	3	3	3	3	2	2	2	2	2	3	3	3	3	4	4	4	5	5	5	6	6
142.5	4	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	4	5	5	5	5	6	6
145.0	4	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	4	5	5	5	5	5	6
147.5	4	3	3	2	2	2	2	2	1	1	1	2	2	3	3	3	3	4	5	5	5	5	6	6
150.0	4	3	3	3	2	2	2	2	1	1	1	2	2	3	3	3	3	4	4	5	5	6	6	6
152.5	3	3	3	3	2	2	2	2	1	1	1	1	2	3	3	3	4	4	4	4	6	6	6	6
155.0	3	3	3	3	2	2	2	1	1	1	1	1	2	3	3	3	4	4	4	5	5	6	6	6

157.5	3	3	3	3	2	2	1	1	0	0	1	1	2	3	3	4	4	4	4	5	5	5	6	6
160.0	3	3	3	2	2	2	1	1	0	0	1	1	2	2	3	3	4	4	4	4	5	5	5	5
162.5	3	2	2	2	2	1	1	0	1	1	1	1	1	2	3	3	3	4	4	4	4	5	5	5
165.0	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	3	3	3	4	4	4	4	4	4
167.5	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	3	4	4
170.0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	2	2	2	2	3	3	3	3	3	3
172.5	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
175.0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1
177.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table. Measurement results of the main luminous parameters

Luminous flux	Input power	Luminous efficacy	LOR	DWFF	Luminous intensity (g=0)
203.6 lm	6.90 W	29.5 lm/W	100.0 %	85.8 %	38 cd

Table. Electrical parameters during the light measurements.

	Pin	PF	Vin	If
Value	6.947 W	0.3461	230.0 V	0.0870 A
St.dev.	0.12 %	0.11 %	0.00 %	0.00 %

Table. Maximum Luminous Intesity and its direction

Iv	g	C plane
181 cd	20.0°	87.5°

Table. Beam widths at two perpendicular planes

	Beam angle, FWHM, 50% (deg)	Beam angle, 10% (deg)	Effective beam direction from g=0
C0-180	154.9°	329.6°	-0.7°
C90-270	78.2°	143.0°	28.4°

Figure. Polar curve of the angular Luminous Intensity distribution at two perpendicular C planes and at C plane with maximum Luminous Intensity.

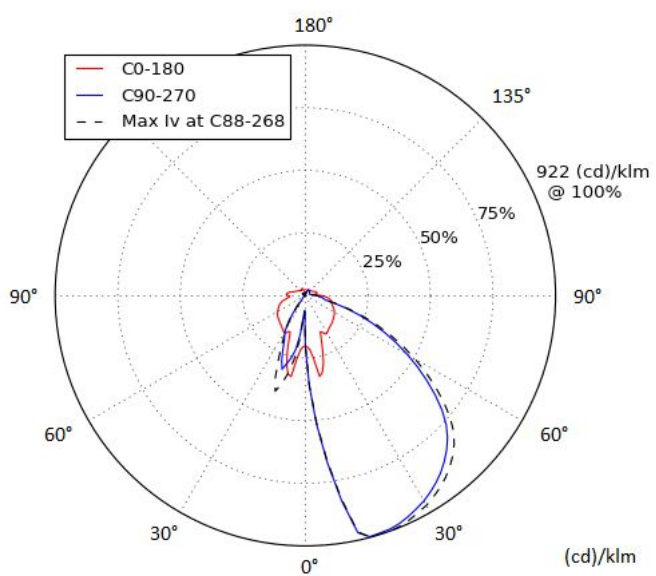




Figure. Luminous Intensity distribution in cartesian diagram at all measured C planes.

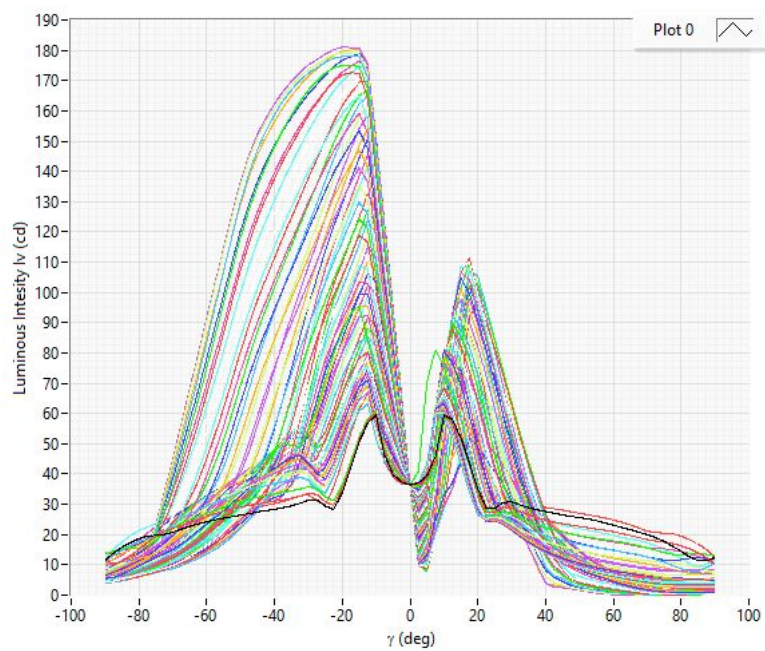
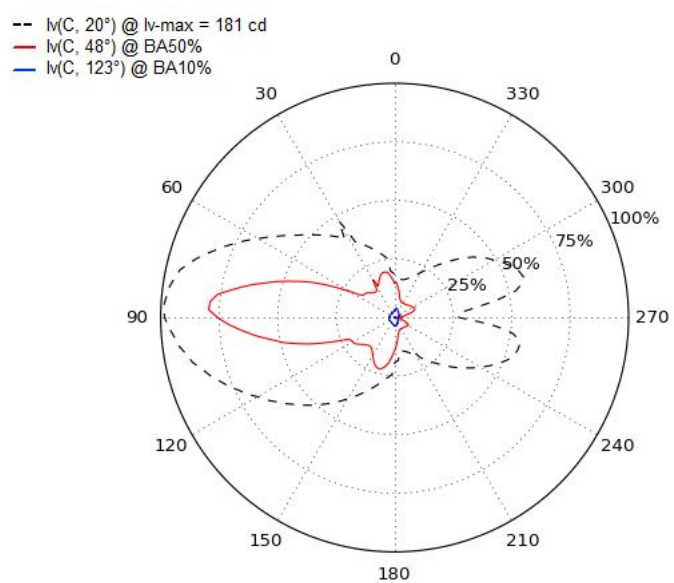


Figure. Isocandela as a function of C plane at gamma angle with maximum luminous intensity



**Table. Zonal lumen summary**

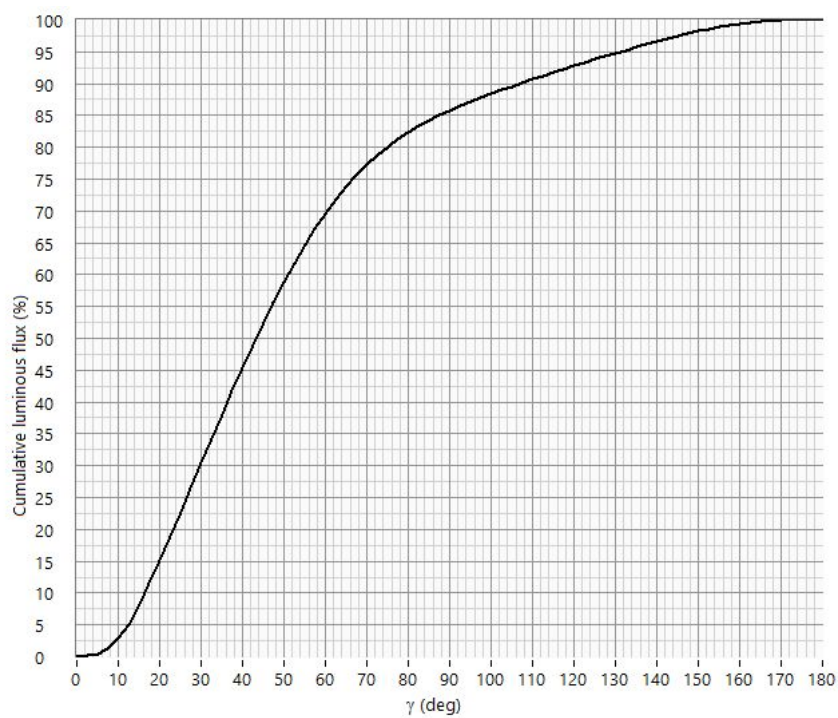
	<b>Lumens</b>	<b>Relative lumens (%)</b>
<b>0-20</b>	30.80	15.13
<b>0-30</b>	61.80	30.35
<b>0-40</b>	92.60	45.48
<b>0-60</b>	141.80	69.65
<b>0-80</b>	167.70	82.37
<b>0-90</b>	174.70	85.81
<b>10-90</b>	168.90	82.96
<b>20-40</b>	61.80	30.35
<b>20-50</b>	89.00	43.71
<b>40-70</b>	64.90	31.88
<b>40-90</b>	82.10	40.32
<b>60-80</b>	25.90	12.72
<b>60-90</b>	32.90	16.16
<b>70-80</b>	10.20	5.01
<b>80-90</b>	7.00	3.44
<b>90-110</b>	10.00	4.91
<b>90-120</b>	14.30	7.02
<b>90-130</b>	18.30	8.99
<b>90-150</b>	25.30	12.43
<b>90-180</b>	28.90	14.19
<b>110-180</b>	18.90	9.28
<b>0-180</b>	203.60	100.00

**Table. Cumulative and Zonal luminous flux**

gamma (deg)	Zone Flux (lm)	Sum Flux (lm)	Zone Flux (%)	Sum Flux (%)
0.0	0.0	0.0	0.0	0.0
2.5	0.5	0.2	0.2	0.1
5.0	1.1	1.0	0.5	0.5
7.5	2.3	2.7	1.1	1.3
10.0	3.9	5.8	1.9	2.8
12.5	5.5	10.5	2.7	5.1
15.0	6.5	16.5	3.2	8.1
17.5	7.2	23.4	3.6	11.5
20.0	7.6	30.8	3.7	15.1
22.5	7.7	38.4	3.8	18.9
25.0	7.8	46.1	3.8	22.7
27.5	7.9	53.9	3.9	26.5
30.0	7.9	61.8	3.9	30.4
32.5	7.9	69.7	3.9	34.2
35.0	7.7	77.5	3.8	38.1
37.5	7.6	85.1	3.7	41.8
40.0	7.3	92.6	3.6	45.5
42.5	7.1	99.8	3.5	49.0
45.0	6.8	106.7	3.4	52.4
47.5	6.6	113.4	3.2	55.7
50.0	6.2	119.8	3.1	58.8
52.5	5.9	125.9	2.9	61.8
55.0	5.5	131.6	2.7	64.6
57.5	5.1	136.9	2.5	67.2
60.0	4.7	141.8	2.3	69.6
62.5	4.3	146.3	2.1	71.8
65.0	3.9	150.4	1.9	73.9
67.5	3.5	154.2	1.7	75.7
70.0	3.2	157.5	1.6	77.4
72.5	2.8	160.5	1.4	78.8
75.0	2.5	163.1	1.2	80.1
77.5	2.2	165.5	1.1	81.3
80.0	2.1	167.7	1.0	82.3
82.5	1.9	169.6	0.9	83.3
85.0	1.7	171.5	0.9	84.2
87.5	1.6	173.1	0.8	85.0
90.0	1.5	174.7	0.7	85.8
92.5	1.4	176.2	0.7	86.5
95.0	1.3	177.5	0.7	87.2
97.5	1.3	178.8	0.6	87.8
100.0	1.2	180.1	0.6	88.4
102.5	1.2	181.3	0.6	89.0
105.0	1.2	182.4	0.6	89.6
107.5	1.1	183.6	0.6	90.2
110.0	1.1	184.7	0.5	90.7
112.5	1.1	185.8	0.5	91.2
115.0	1.1	186.9	0.5	91.8
117.5	1.1	187.9	0.5	92.3
120.0	1.0	189.0	0.5	92.8
122.5	1.0	190.0	0.5	93.3
125.0	1.0	191.0	0.5	93.8
127.5	1.0	192.0	0.5	94.3
130.0	1.0	193.0	0.5	94.8
132.5	1.0	194.0	0.5	95.2
135.0	0.9	194.9	0.5	95.7
137.5	0.9	195.8	0.4	96.2
140.0	0.9	196.7	0.4	96.6
142.5	0.9	197.6	0.4	97.0
145.0	0.8	198.4	0.4	97.4

147.5	0.8	199.2	0.4	97.8
150.0	0.7	200.0	0.4	98.2
152.5	0.7	200.7	0.3	98.6
155.0	0.6	201.4	0.3	98.9
157.5	0.5	202.0	0.3	99.2
160.0	0.4	202.4	0.2	99.4
162.5	0.3	202.8	0.2	99.6
165.0	0.3	203.1	0.1	99.8
167.5	0.2	203.4	0.1	99.9
170.0	0.1	203.5	0.1	99.9
172.5	0.1	203.6	0.0	100.0
175.0	0.0	203.6	0.0	100.0
177.5	0.0	203.6	0.0	100.0
180.0	0.0	203.6	0.0	100.0

Figure. Cumulative luminous flux



**Table. Luminance at different angles based on the defined luminous areas and measured luminous intensities.**

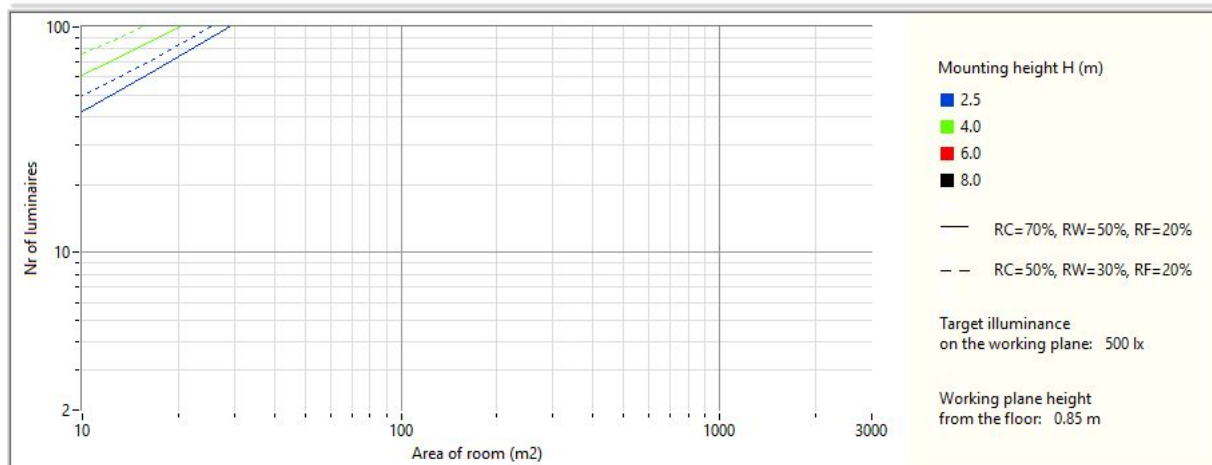
	<b>C 0</b>	<b>C 45</b>	<b>C 90</b>
<b>g 0</b>	6306	6306	6306
<b>g 45</b>	2771	3218	27330
<b>g 55</b>	2524	2227	22628
<b>g 65</b>	2294	1469	15715
<b>g 75</b>	2087	1011	7067
<b>g 85</b>	1818	699	4913

UGR table

Ceiling		70	70	50	50	30		70	70	50	50	30
Walls		50	30	50	30	30		50	30	50	30	30
Floor		20	20	20	20	20		20	20	20	20	20
Room size		Viewing direction at right angles to lamp axis						Viewing direction parallel to lamp axis				
	X	Y										
	2H	2H	13.9	15.2	14.5	15.8	16.4	16.6	17.9	17.2	18.4	19.1
		3H	16.3	17.4	16.8	18.0	18.7	18.4	19.6	19.0	20.2	20.9
		4H	17.3	18.4	17.9	19.0	19.7	19.1	20.1	19.7	20.7	21.4
		6H	18.1	19.1	18.8	19.8	20.5	19.5	20.5	20.1	21.1	21.8
		8H	18.5	19.4	19.1	20.1	20.8	19.7	20.6	20.3	21.3	22.0
		12H	18.7	19.6	19.4	20.3	21.0	19.8	20.7	20.5	21.4	22.1
	4H	2H	14.1	15.2	14.7	15.8	16.5	16.6	17.7	17.2	18.3	19.0
		3H	16.4	17.3	17.0	18.0	18.7	18.6	19.5	19.2	20.1	20.8
		4H	17.5	18.3	18.1	18.9	19.7	19.3	20.1	19.9	20.8	21.5
		6H	18.4	19.2	19.1	19.8	20.6	19.9	20.7	20.6	21.3	22.1
		8H	18.9	19.6	19.6	20.2	21.0	20.2	20.9	20.9	21.6	22.3
		12H	19.3	20.0	20.0	20.7	21.4	20.5	21.1	21.2	21.8	22.6
	8H	4H	17.6	18.2	18.2	18.9	19.7	19.3	20.0	20.0	20.7	21.5
		6H	18.6	19.1	19.3	19.8	20.6	20.1	20.6	20.8	21.3	22.1
		8H	19.0	19.6	19.8	20.3	21.1	20.4	20.9	21.1	21.6	22.4
		12H	19.6	20.1	20.3	20.8	21.6	20.8	21.2	21.5	21.9	22.8
	12H	4H	17.6	18.2	18.3	18.9	19.7	19.3	19.9	20.0	20.6	21.4
		6H	18.6	19.1	19.3	19.8	20.6	20.1	20.6	20.8	21.3	22.1
		8H	19.1	19.6	19.8	20.3	21.1	20.5	20.9	21.2	21.6	22.5

CU table

RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
0	116	116	116	116	111	111	111	111	103	103	103	96	96	96	89	89	89
1	91	87	84	80	90	86	83	80	85	82	80	84	82	80	83	81	79
2	86	79	74	69	85	78	73	69	77	72	68	75	71	68	73	70	67
3	81	72	66	60	79	71	65	60	69	64	59	67	63	59	65	61	58
4	76	66	59	53	74	65	58	53	63	57	52	61	56	51	59	54	51
5	71	60	53	47	69	59	52	47	57	51	46	55	50	45	53	49	45
6	67	55	48	42	65	54	47	42	52	46	41	50	45	40	49	44	40
7	63	51	43	38	61	50	43	38	48	42	37	46	41	36	45	40	36
8	59	47	39	34	57	46	39	34	44	38	33	43	37	33	41	36	32
9	55	44	36	31	54	43	36	31	41	35	30	40	34	30	38	33	29
10	52	40	33	29	51	40	33	28	38	32	28	37	31	27	36	31	27





WEC table

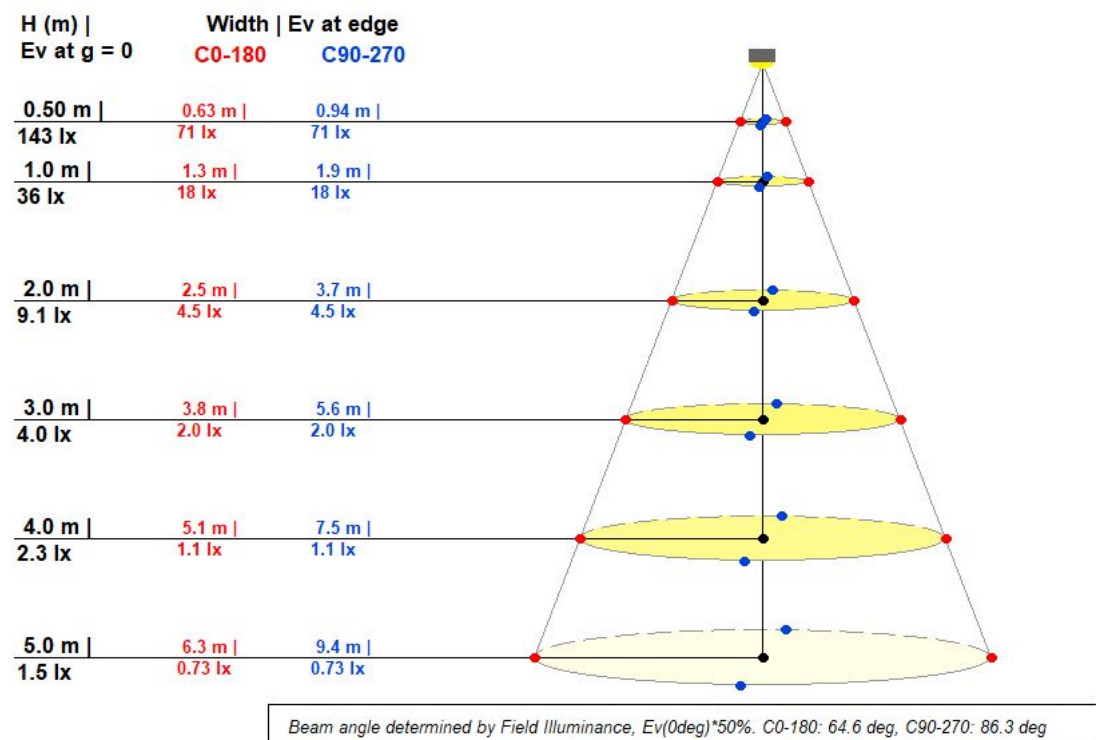
RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
1	47.9	32.6	18.7	6.0	46.1	31.5	18.1	5.8	29.2	16.9	5.4	26.7	15.5	5.0	23.9	13.9	4.5
2	45.7	30.1	16.8	5.2	43.9	29.0	16.2	5.1	26.9	15.1	4.7	24.5	13.8	4.4	21.8	12.4	3.9
3	43.8	28.0	15.3	4.7	42.0	27.0	14.8	4.5	24.9	13.7	4.2	22.7	12.5	3.9	20.1	11.2	3.5
4	41.9	26.2	14.1	4.3	40.2	25.3	13.6	4.1	23.2	12.6	3.8	21.1	11.5	3.5	18.7	10.2	3.1
5	40.3	24.7	13.1	4.0	38.5	23.8	12.7	3.8	21.8	11.7	3.5	19.7	10.6	3.2	17.4	9.4	2.8
6	38.7	23.4	12.4	3.7	37.0	22.5	11.9	3.6	20.6	10.9	3.3	18.5	9.8	3.0	16.3	8.7	2.6
7	37.3	22.3	11.7	3.5	35.6	21.4	11.3	3.4	19.5	10.3	3.1	17.5	9.2	2.8	15.3	8.1	2.4
8	36.1	21.4	11.2	3.4	34.4	20.5	10.7	3.2	18.6	9.7	2.9	16.6	8.7	2.6	14.5	7.5	2.2
9	34.9	20.5	10.8	3.2	33.2	19.6	10.3	3.1	17.8	9.3	2.8	15.8	8.2	2.4	13.7	7.1	2.1
10	33.8	19.8	10.4	3.2	32.2	18.9	9.9	3.0	17.1	8.9	2.7	15.1	7.8	2.3	13.1	6.7	1.9

CCEC table

RC	80				70				50			30			10		
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RF / RCR	20				20				20			20			20		
1	152.7	141.9	132.2	123.4	57.9	53.0	48.5	44.5	16.2	14.5	13.0	7.2	6.4	5.7	2.1	1.9	1.7
2	148.4	129.1	113.1	99.6	57.0	48.3	41.0	34.8	15.1	12.2	9.8	6.8	5.5	4.4	2.0	1.7	1.4
3	142.8	116.8	96.8	80.7	55.5	43.8	34.5	27.1	13.9	10.3	7.4	6.4	4.8	3.4	2.0	1.5	1.1
4	136.3	105.3	82.6	65.3	53.5	39.4	29.0	20.9	12.8	8.7	5.5	6.0	4.2	2.7	1.9	1.4	0.9
5	129.2	94.5	70.2	52.3	51.1	35.3	24.1	15.7	11.7	7.3	4.0	5.7	3.7	2.1	1.8	1.2	0.8
6	121.9	84.4	59.3	41.2	48.5	31.5	19.8	11.3	10.7	6.1	2.7	5.3	3.2	1.6	1.7	1.1	0.7
7	114.5	75.1	49.6	31.7	45.9	27.9	16.0	7.6	9.7	5.0	1.6	4.9	2.8	1.3	1.6	1.0	0.6
8	107.2	66.6	41.1	23.5	43.1	24.6	12.6	4.4	8.8	4.1	0.7	4.6	2.5	0.9	1.5	0.9	0.5
9	100.1	58.8	33.5	16.4	40.4	21.5	9.6	1.5	7.9	3.2	-0.1	4.3	2.2	0.7	1.5	0.9	0.4
10	93.3	51.7	26.8	10.2	37.8	18.7	7.0	-0.9	7.1	2.4	-0.7	4.0	1.9	0.4	1.4	0.8	0.4

# CONE DIAGRAM

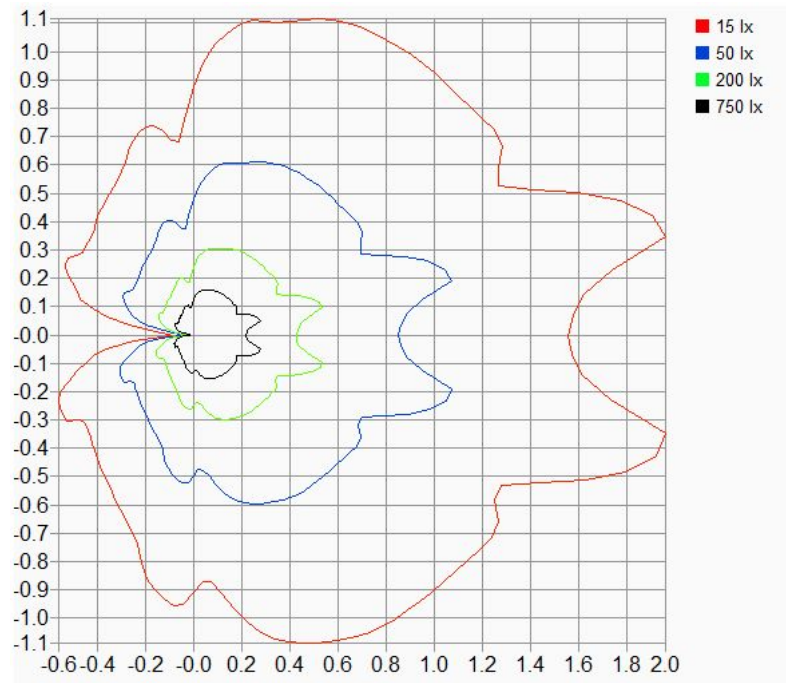
- Cone is limited by the beam angle at the planes of C0 and C90
- H = Mounting Height
- D = Cone diameter
- Ev Edge = Illuminance at the edge of the cone of the C0/90 plane
- Ev Center = Illuminance at the center of the cone



# Vertical isolux



### Horizontal isolux



Illumination uniformity figures at the perpendicular plane to the lamp axis.

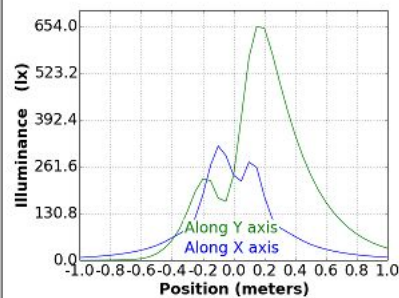
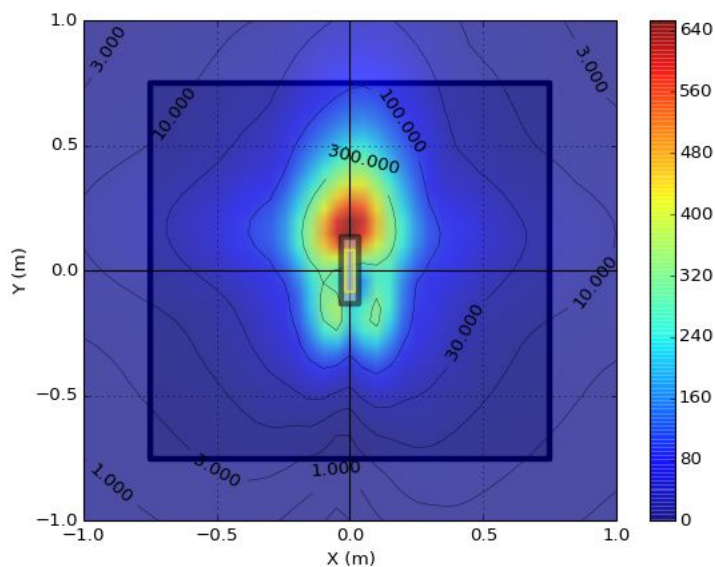
Mounting height of 0.60 m.

C rotation of 0.0 deg. Gamma rotation of 0.0 deg.

Maintenance factor = 1.00.

Nr of lamps: X = 1 pcs, Y = 1 pcs.

Distance between lamps: X = 1.00 meters, Y = 1.00 meters.



**Average Ev:** 80 lx  
**Uniformity:** 1.7 %  
**Max Ev:** 653 lx  
**Min Ev:** 1.4 lx  
**Power Consumption:** 0.01 kW

