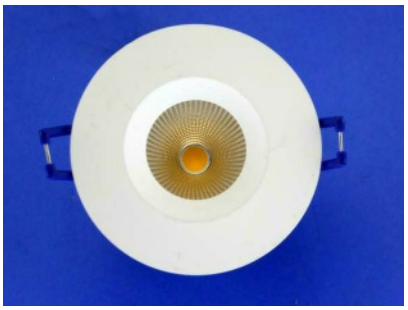
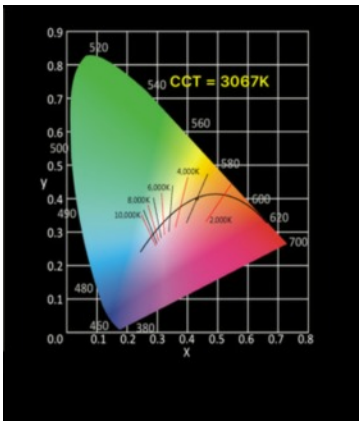
Report of Photometry & Chromaticity for Morgan Hope Industries Ltd.
ASTRID-PIXIE 15W LED WARM-WHITE DOWNLIGHTER



A. Product Description

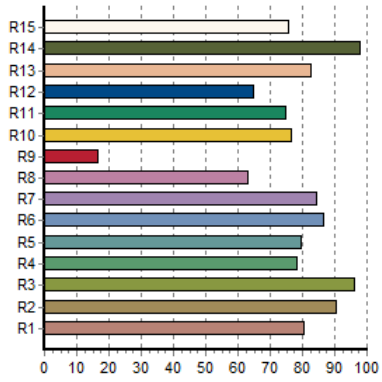
Product Name	ASTRID PIXIE 15W-WW		ASTRID-PIXIE-15W-WW
Date	01-07-2016		
Manufacturer	Morgan hope		
Tester	lightlab photometrics	Reviewer	KB
Temperature	25degC	Re. Humidity(%)	50
Spectrum Range : 380 ~ 780 nm.		Wavelength Step : 1 nm.	



CIE1931 Chromaticity Diagram

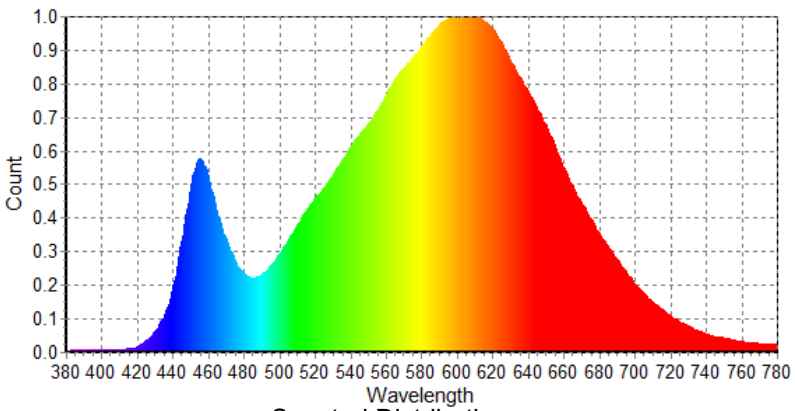
C. Photometry and Chromaticity

CIE_x	0.4312	Duv	-0.0007
CIE_y	0.4002	Ld(nm)	582.8
CIE_u'	0.2485	Purity(%)	50.0
CIE_v'	0.5190	FWHM(nm)	140.0
CCT(K)	3067	SP ratio	1.36
Luminaire lumens	760	PPFD(umol/sec m^2)	
Lp(nm)	611.0		51.5
TLCI(Qa)	71.97	GAI	56.3

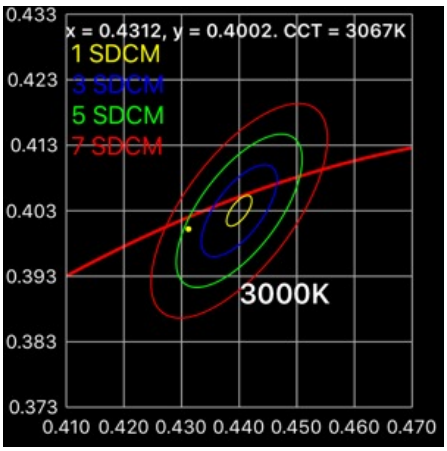


Histogram Diagram of CRI

CRI(Ra)	83			Re(thru R1~R15)	77
Qa	83				
R1	81.0	R6	86.7	R11	75.1
R2	90.7	R7	84.6	R12	65.4
R3	96.4	R8	63.4	R13	83.2
R4	78.6	R9	17.2	R14	98.2
R5	80.1	R10	77.1	R15	76.1

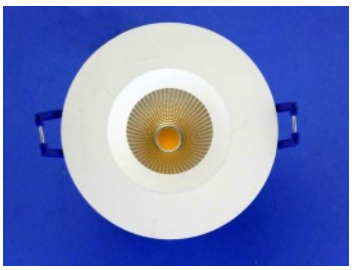


Spectral Distribution



IEC SDCM

filename	: ASTRID-PIXIE-15W-WW.LDT
meas. number	: 1945
luminaire number	: ASTRID-PIXIE-15W-WW
date / operator	: 01-07-2016



defau t amp type s

no of lamps	lamp type	luminaire lumens	input wattage
1	LED MODULE	760 lm	13.8 W

dimensions

luminaire			luminous area		
diameter	:	90 mm	diameter	:	30 mm
height	:	3 mm	height	:	0 mm

coordinate system

no of planes	:	7	samples / plane	:	37
first c-plane	:	0.0 °	first gamma-angle	:	0.0 °
step angle	:	15.0 °	step angle	:	5.0 °
last c-plane	:	90.0 °	last gamma-angle	:	180.0 °
symmetrics	:	symmetry to C0 / C90			

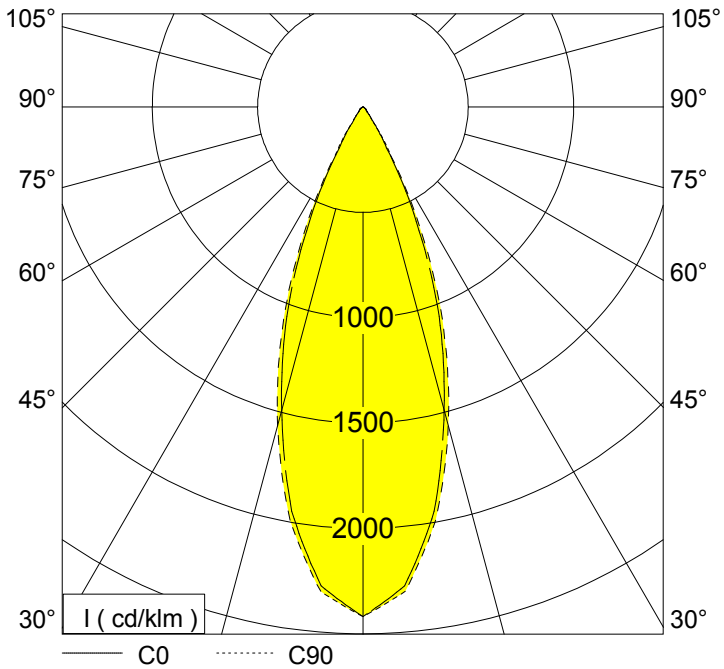
performance

light output ratio	:	100.0 %
DFF	:	100.0 %
UFF	:	0.0 %

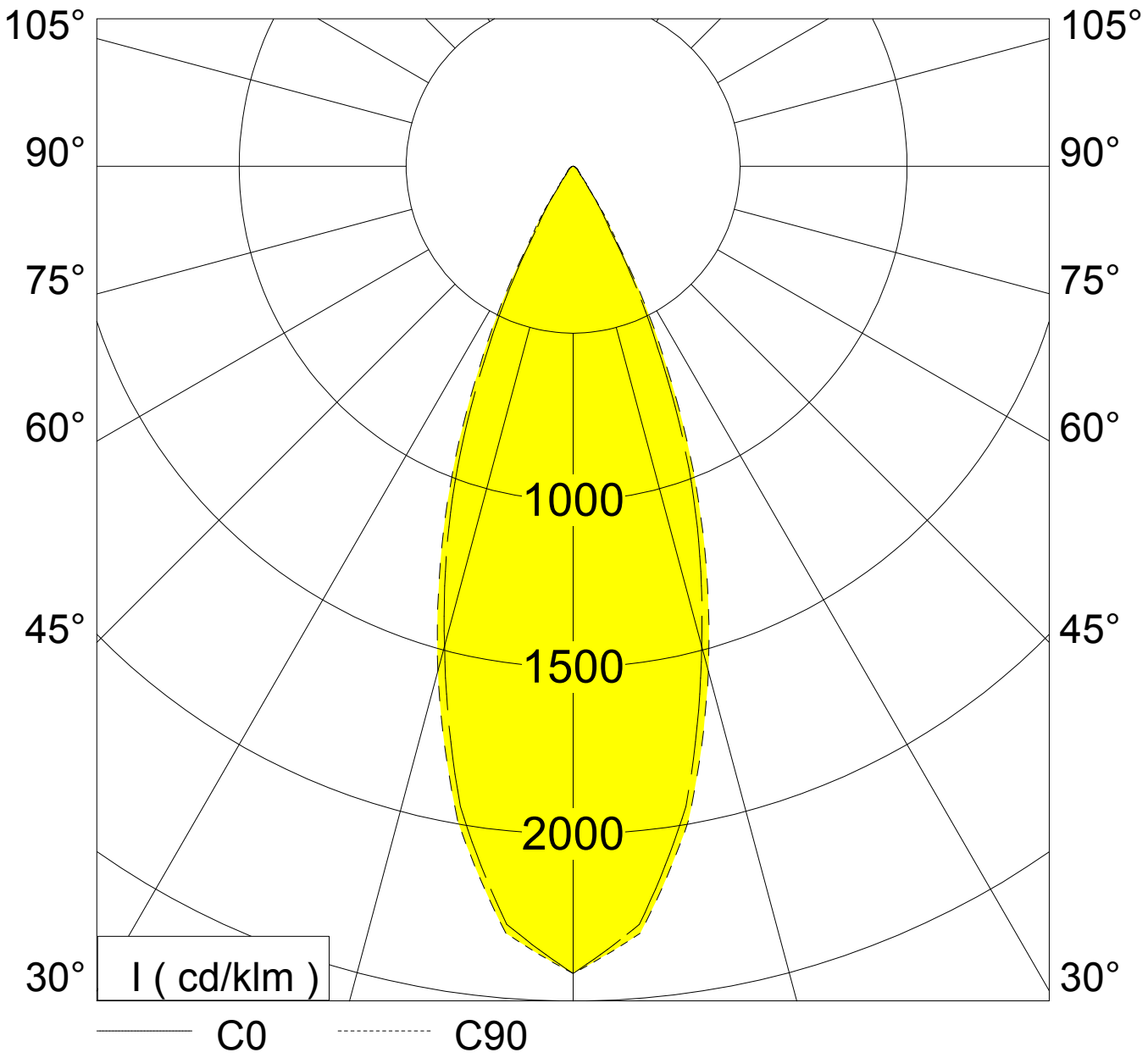
c assification

LiTG / DIN	: A60
UTE	: 1.00A
CIE	: 96 99 100 100 100
BZ	: 1 1 1 1 1 1 1 1 1

Ambient Temperature	: 25 degC
Input Voltage	: 240 V
Circuit Watts	: 13.8W
Amps (running)	: 0.063A
V.A.	: 15.16VA
Power Factor	: 0.91
CCT	: 3067K (measured): 3000K (declared)
CRI (Ra)	: 83
Luminaire Lumens	: 760 LLm
Output Current DC	: 430mA
Output Voltage DC	: 26.5V
Output Power	: 11.40W
Luminaire Lm/circ.Watt	: 55.1 Lm/circ.Watt
Driver Efficiency	: 82.6%
Driver Details	: EAGLERISE EIPO16CO45OLI



Measurements made are in absolute units. The luminaire is treated as if it was a lamp as it is not possible to measure each LED separately - hence an LOR of 100%
The Light output ratio in real terms would be less than 100%. If it was possible to compare real LED lumens with the total output from the luminaire we could obtain an actual LOR
This also means that the total lumens emitted from the LED's would be greater than the Luminaire Lumens measured. In reality the LED lumens would approximate to this value divided by the actual Light Output.

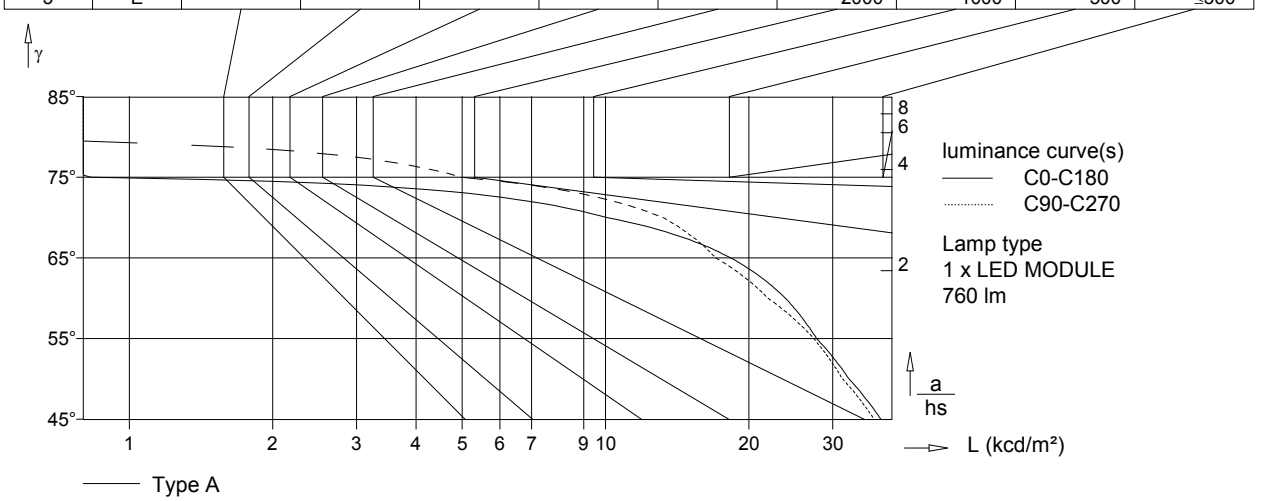


	C 0.0	C 15.0	C 30.0	C 45.0	C 60.0	C 75.0	C 90.0
0.0°	2416.90	2416.90	2416.90	2416.90	2416.90	2416.90	2416.90
5.0°	2278.50	2266.80	2255.10	2261.10	2267.10	2286.30	2305.50
10.0°	1946.40	1933.20	1920.10	1927.70	1935.30	1962.70	1990.10
15.0°	1487.50	1486.60	1485.70	1498.50	1511.40	1538.50	1565.60
20.0°	1056.20	1050.30	1044.40	1061.30	1078.30	1099.30	1120.30
25.0°	598.70	599.40	600.10	611.50	623.00	643.20	663.40
30.0°	224.90	224.70	224.60	230.70	236.80	250.40	263.90
35.0°	80.00	80.00	79.90	79.80	79.70	83.00	86.30
40.0°	35.50	34.00	32.60	33.10	33.60	34.30	35.00
45.0°	24.90	24.50	24.00	23.90	23.70	23.90	24.10
50.0°	19.40	18.70	18.00	18.00	18.00	18.40	18.80
55.0°	14.80	14.70	14.60	14.30	14.10	14.30	14.60
60.0°	11.10	10.00	9.00	9.10	9.20	9.70	10.20
65.0°	7.20	6.20	5.30	5.40	5.50	6.10	6.70
70.0°	3.20	2.50	1.80	1.80	1.80	3.00	4.20
75.0°	0.20	0.70	1.20	0.70	0.20	0.70	1.20
80.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							cd / klm

g are rating according to GR

ρ-ceiling		70	70	50	50	30	70	70	50	50	30
ρ-walls		50	30	50	30	30	50	30	50	30	30
ρ-workplane		20	20	20	20	20	20	20	20	20	20
room dimensions X	Y	viewed crosswise					viewed endwise				
2H	2H	18.1	18.8	18.3	19.0	19.1	18.4	19.1	18.6	19.2	19.4
	3H	17.8	18.4	18.1	18.6	18.8	18.1	18.7	18.3	18.9	19.0
	4H	17.9	18.5	18.2	18.7	18.9	18.2	18.8	18.4	19.0	19.2
	6H	17.9	18.5	18.2	18.7	18.9	18.2	18.8	18.5	19.0	19.2
	8H	17.9	18.5	18.2	18.7	19.0	18.2	18.8	18.5	19.0	19.3
	12H	17.9	18.5	18.2	18.8	19.0	18.2	18.8	18.5	19.1	19.3
4H	2H	17.8	18.4	18.1	18.6	18.8	18.1	18.7	18.3	18.9	19.1
	3H	18.2	18.7	18.5	19.0	19.2	18.4	19.0	18.7	19.2	19.5
	4H	18.2	18.8	18.6	19.1	19.4	18.5	19.1	18.8	19.3	19.6
	6H	18.1	18.6	18.5	18.9	19.2	18.4	18.8	18.7	19.2	19.5
	8H	18.1	18.5	18.5	18.9	19.3	18.4	18.8	18.8	19.2	19.5
	12H	18.2	18.6	18.6	19.0	19.5	18.5	18.9	18.9	19.3	19.7
8H	4H	18.1	18.5	18.5	18.9	19.3	18.4	18.8	18.8	19.2	19.6
	6H	18.2	18.6	18.7	19.1	19.5	18.5	18.9	19.0	19.3	19.8
	8H	18.3	18.6	18.8	19.1	19.6	18.5	18.9	19.0	19.4	19.9
	12H	18.2	18.5	18.7	19.0	19.6	18.5	18.8	19.0	19.3	19.9
12H	4H	18.2	18.6	18.7	19.0	19.5	18.5	18.9	18.9	19.3	19.7
	6H	18.3	18.6	18.8	19.1	19.6	18.5	18.9	19.0	19.4	19.9
	8H	18.2	18.5	18.7	19.0	19.6	18.5	18.8	19.0	19.3	19.9
variation of observer position											
S =	1.0H			+4.1/	-2.6			+4.5/	-2.9		
	1.5H			+6.6/	-3.9			+7.0/	-4.1		
	2.0H			+8.5/	-7.1			+9.0/	-6.9		
standard-table				BK01				BK01			
correction for luminaire				0.0				0.2			
correct glare indices for a total flux of 760lm											

class		g are rating for ser ice a ue of i uminance								
A	A	1000	750	500	--	≤ 300				
1	B	2000	1500	1000	750	500	≤ 300			
2	D					2000	1000	500	≤ 300	
3	E						2000	1000	500	≤300



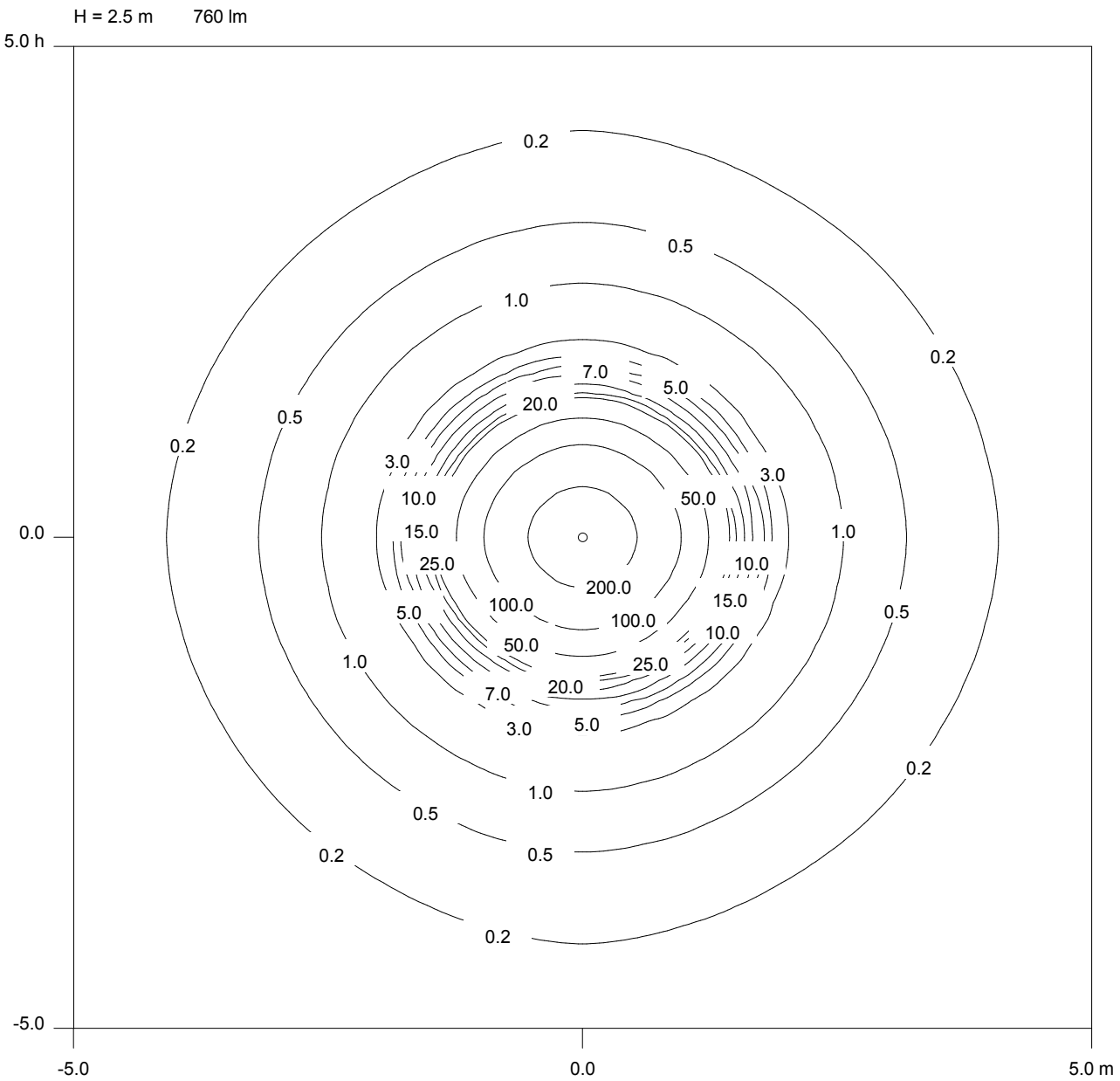
Ta e e der erechneten Leuchtdichten

gamma	C	C	C 1	C
45°	37861.3	36644.9	37861.3	36644.9
50°	32450.1	31446.4	32450.1	31446.4
55°	27742.9	27368.0	27742.9	27368.0
60°	23869.0	21933.7	23869.0	21933.7
65°	18317.5	17045.4	18317.5	17045.4
70°	10059.6	13203.2	10059.6	13203.2
75°	830.8	4985.0	830.8	4985.0
80°	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0

alle Werte in cd/m²

uti i ation factors TM5

reflection			room index								
C	W	F	0.75	1.0	1.25	1.5	2.0	2.5	3.0	4.0	5.0
70	50	20	85	92	96	99	103	105	107	109	110
70	30	20	81	88	92	95	99	102	104	107	109
70	10	20	78	84	89	92	97	100	102	105	107
50	50	20	84	90	94	96	100	102	103	105	106
50	30	20	80	86	91	93	97	100	101	103	105
50	10	20	77	84	88	91	95	98	99	102	104
30	50	20	83	89	92	94	97	99	100	102	103
30	30	20	80	85	89	92	95	97	99	100	102
30	10	20	77	83	87	90	93	96	97	99	101
0	0	0	76	81	85	87	90	92	93	95	96
BZ-class			1	1	1	1	1	1	1	1	1
SHRnom : 0.50 SHRmax : 0.746											


H = 2.5 m
760 lm
5.0 h
0.0
-5.0
-5.0
0.0
5.0 m
0.2
0.5
1.0
7.0
5.0
20.0
3.0
50.0
10.0
15.0
25.0
200.0
100.0