

## Report of Photometry & Chromaticity for Morgan Hope Industries Ltd.

### ASTRID STRATA 115 LED LUMINAIRE

#### A. Product Description



Product Name      astrid strata 115 45w      astrid-strata

Date      30-06-2016

Manufacturer      morganhope

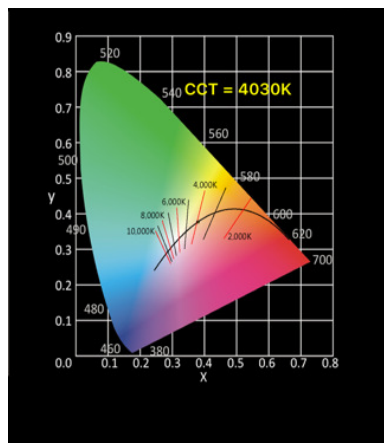
Tester      lightlab photometrics      Reviewer      KB

Temperature      25degC      Re. Humidity(%)      50

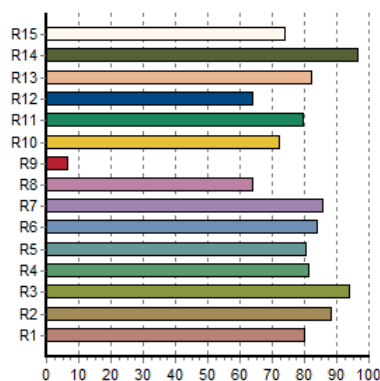
Spectrum Range : 380 ~ 780 nm.      Wavelength Step : 1 nm.

#### C. Photometry and Chromaticity
















CIE_x	0.3796	$\Delta v$	0.0006
CIE_y	0.3776	Ld(nm)	578.6
CIE_u'	0.2242	Purity(%)	27.0
CIE_v'	0.5018	FWHM(nm)	149.0
CCT(K)	4030	SP ratio	1.69
Luminaire lumens	3520	PPFD(umol/sec m <sup>2</sup> )	
Lp(nm)	591.0		19.7
TLCI(Qa)	66.22	GAI	73.0

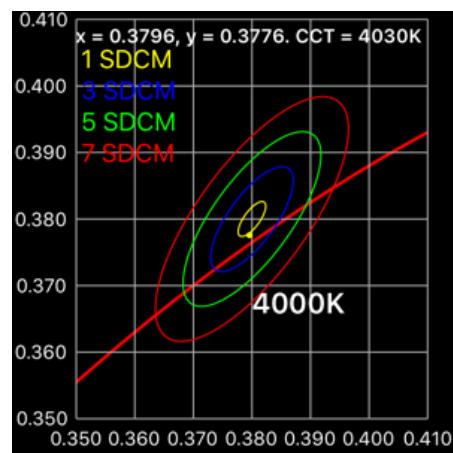
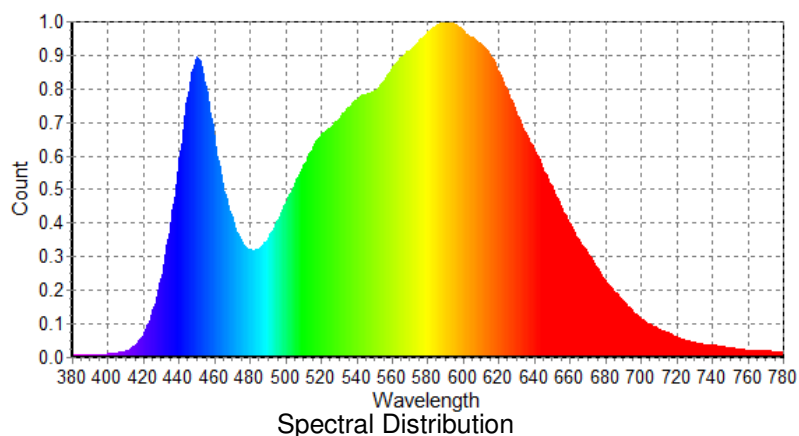


CIE1931 Chromaticity Diagram



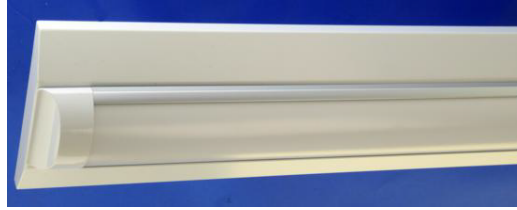
Histogram Diagram of CRI

CRI(Ra)		83	Re(thru R1~R15)		76
Qa		82			
 R1	80.7	 R6	84.3	 R11	80.0
 R2	88.6	 R7	86.1	 R12	64.4
 R3	94.4	 R8	64.4	 R13	82.5
 R4	81.6	 R9	7.0	 R14	97.0
 R5	80.9	 R10	72.7	 R15	74.4



IEC SDCM

filename : ASTRID-STRATA-115.LDT  
 meas. number : 1942  
 luminaire number : ASTRID-STRATA-115  
 date / operator : 30-06-2016



**default lamp type(s)**

no of lamps	lamp type	luminaire lumens	input wattage
1	LED MODULE	3520 lm	46.3 W

**dimensions**

luminaire		luminous area	
length	: 1500 mm	length	: 1420 mm
width	: 155 mm	width	: 60 mm
height	: 50 mm	height	: 10 mm

**coordinate system**

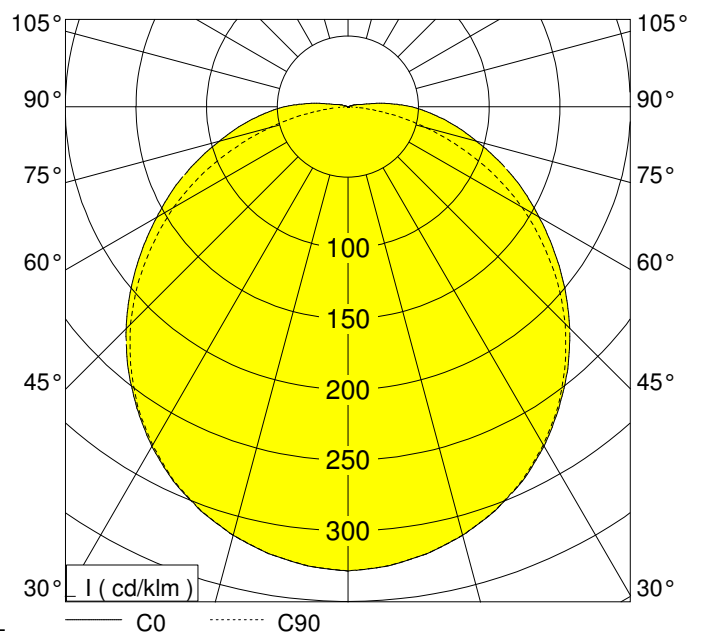
no of planes	: 7	samples / plane	: 37
first c-plane	: 0.0 °	first gamma-angle	: 0.0 °
step angle	: 15.0 °	step angle	: 5.0 °
last c-plane	: 90.0 °	last gamma-angle	: 180.0 °
symmetrics : symmetry to C0 / C90			

**performance**

light output ratio : 100.0 %  
 DFF : 98.3 %  
 UFF : 1.7 %

**classification**

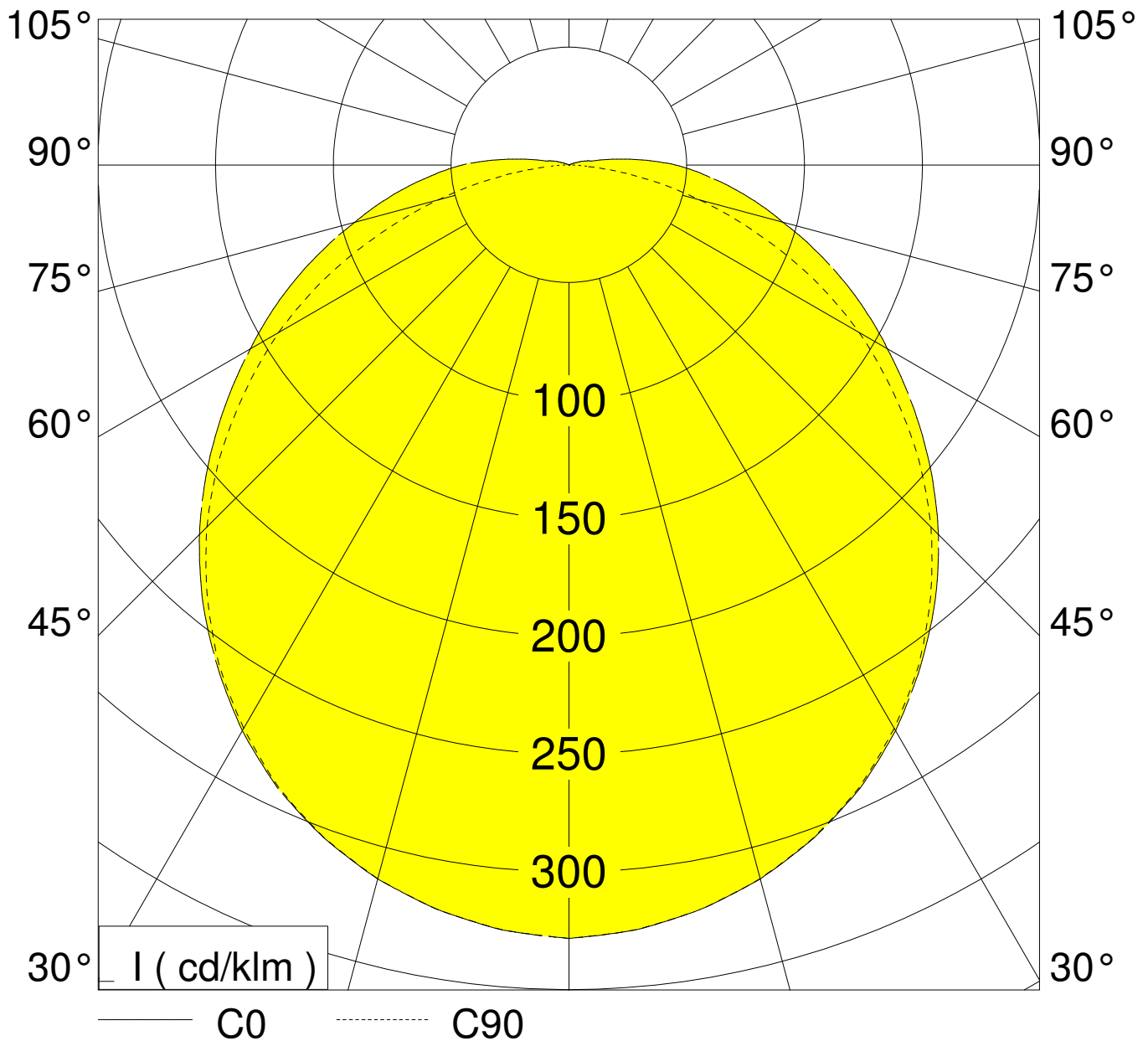
LITG / DIN : A41  
 UTE : 0.98E+0.02T  
 CIE : 45 75 93 98 100  
 BZ : 5 5 5 5 5 5 5 5 5  
 Ambient Temperature : 25 degC  
 Input Voltage : 240 V  
 Circuit Watts : 46.3W  
 Amps (running) : 0.200A  
 V.A. : 48.23VA  
 Power Factor : 0.96  
 CCT : 4030K (measured): 4000K (declared)  
 CRI (Ra) : 83  
 Luminaire Lumens : 3520 LLm  
 Output Current DC : 560mA  
 Output Voltage DC : 74.9V  
 Output Power : 41.94W  
 Luminaire Lm/circ.Watt : 76 Lm/circ.Watt  
 Driver Efficiency : 91%  
 Driver Details : OPTOTRONIC OTi 60/220-240/550D LT2L



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°	328.00	328.00	328.00	328.00	328.00	328.00	328.00
5.0°	325.70	325.80	325.90	326.00	326.00	325.80	325.60
10.0°	320.70	320.80	321.00	321.00	321.00	320.80	320.70
15.0°	313.50	313.80	314.00	313.90	313.80	313.60	313.40
20.0°	303.80	304.00	304.30	304.00	303.60	303.60	303.60
25.0°	291.90	291.90	291.80	291.70	291.60	291.40	291.30
30.0°	277.10	276.90	276.70	276.30	275.90	275.90	275.90
35.0°	259.90	259.80	259.70	258.90	258.20	258.50	258.80
40.0°	241.70	241.20	240.70	239.60	238.60	238.70	238.70
45.0°	221.70	220.90	220.10	218.50	216.80	217.00	217.20
50.0°	200.20	198.90	197.60	195.50	193.40	193.40	193.50
55.0°	178.00	176.10	174.20	170.80	167.40	167.60	167.80
60.0°	156.00	153.90	151.80	147.20	142.60	142.40	142.20
65.0°	135.40	132.60	129.80	123.00	116.30	115.30	114.40
70.0°	114.30	111.00	107.70	98.90	90.10	87.60	85.00
75.0°	94.10	90.00	85.90	76.20	66.30	62.00	57.60
80.0°	76.80	72.00	67.30	56.60	45.90	38.70	31.50
85.0°	60.10	55.60	51.10	39.50	27.90	18.20	8.40
90.0°	45.30	41.30	37.30	25.70	14.10	7.00	0.00
95.0°	27.60	23.70	19.80	11.10	2.50	1.20	0.00
100.0°	9.90	8.30	6.70	3.30	0.00	0.00	0.00
105.0°	6.30	4.50	2.60	1.30	0.00	0.00	0.00
110.0°	2.60	1.30	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						

glare rating according to UGR											
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	20.9	22.5	21.2	22.7	22.9	21.0	22.5	21.3	22.7	23.0
	3H	22.2	23.3	22.4	23.6	23.8	21.9	23.1	22.2	23.3	23.5
	4H	23.0	24.2	23.3	24.4	24.7	22.6	23.7	22.9	24.0	24.2
	6H	23.8	24.9	24.2	25.2	25.5	23.0	24.1	23.3	24.3	24.6
	8H	24.3	25.4	24.6	25.6	25.9	23.1	24.2	23.5	24.5	24.8
	12H	24.7	25.8	25.0	26.1	26.4	23.2	24.3	23.6	24.6	24.9
4H	2H	21.1	22.2	21.4	22.5	22.7	21.1	22.3	21.4	22.5	22.8
	3H	23.2	24.3	23.6	24.6	24.9	22.9	24.0	23.3	24.3	24.6
	4H	24.3	25.4	24.7	25.7	26.0	23.8	24.8	24.1	25.1	25.5
	6H	25.1	25.9	25.5	26.3	26.6	24.1	25.0	24.5	25.3	25.7
	8H	25.6	26.4	26.0	26.8	27.1	24.3	25.1	24.7	25.5	25.9
	12H	26.2	27.0	26.7	27.4	27.9	24.5	25.3	25.0	25.8	26.2
8H	4H	24.5	25.3	24.9	25.7	26.0	24.0	24.8	24.4	25.2	25.6
	6H	25.9	26.7	26.4	27.1	27.6	24.9	25.7	25.4	26.2	26.6
	8H	26.6	27.4	27.1	27.8	28.4	25.3	26.1	25.8	26.5	27.1
	12H	27.1	27.8	27.7	28.3	28.8	25.4	26.0	25.9	26.5	27.0
12H	4H	24.7	25.5	25.1	25.9	26.3	24.2	25.0	24.7	25.4	25.9
	6H	26.1	26.8	26.6	27.3	27.8	25.2	25.9	25.7	26.4	26.9
	8H	26.7	27.3	27.2	27.8	28.3	25.4	26.0	25.9	26.5	27.1
variation of observer position											
S =	1.0H	+0.1/                      -0.1				+0.1/                      -0.1					
	1.5H	+0.2/                      -0.2				+0.2/                      -0.3					
	2.0H	+0.2/                      -0.4				+0.4/                      -0.5					
standard-table		BK08					BK06				
correction for luminaire		9.8					8.0				
correct glare indices for a total flux of 3520lm											

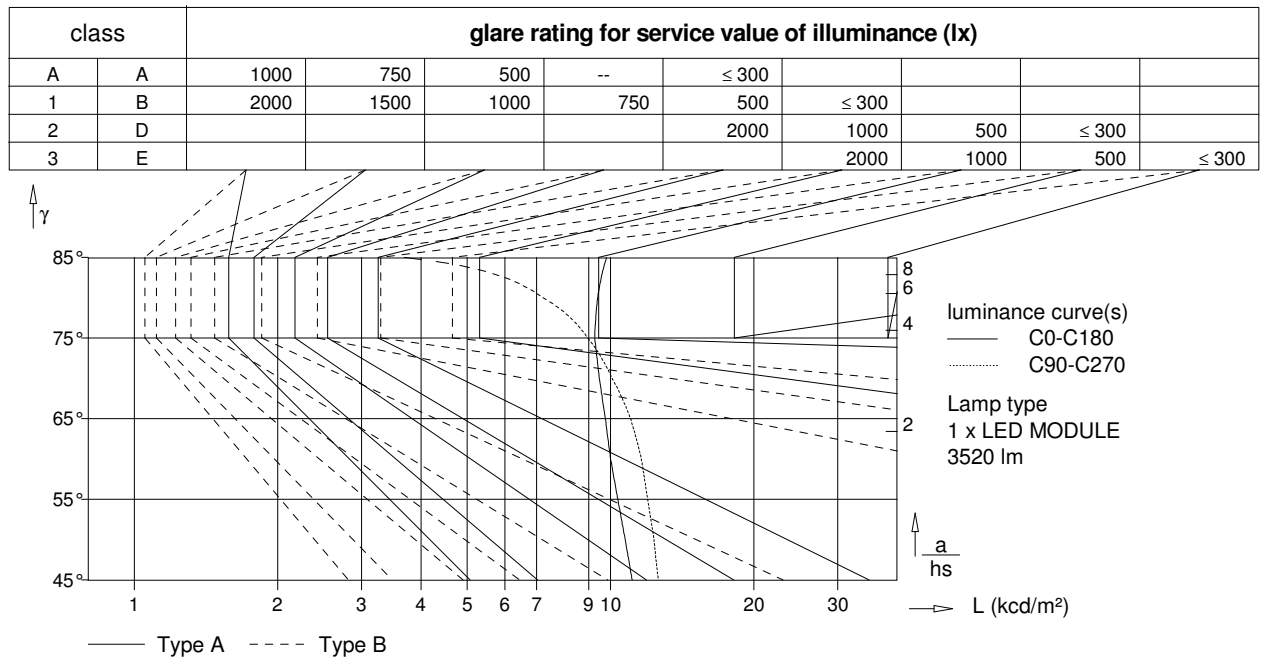


Tabelle der berechneten Leuchtdichten

gamma	C 0	C 90	C 180	C 270
45°	11102.9	12601.7	11102.9	12601.7
50°	10735.3	12333.5	10735.3	12333.5
55°	10356.2	11966.2	10356.2	11966.2
60°	10002.6	11608.3	10002.6	11608.3
65°	9751.2	11017.2	9751.2	11017.2
70°	9470.4	10072.7	9470.4	10072.7
75°	9260.7	8959.1	9260.7	8959.1
80°	9393.5	7206.7	9393.5	7206.7
85°	9807.0	3685.2	9807.0	3685.2

alle Werte in cd/m²

<b>utilization factors / TM5</b>											
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	58	66	73	78	85	90	94	98	101
70	30	20	50	58	66	71	79	84	88	94	97
70	10	20	44	52	60	65	74	79	84	90	94
50	50	20	56	64	70	75	82	86	90	94	97
50	30	20	49	57	64	69	76	81	85	90	93
50	10	20	44	51	59	64	72	77	81	87	91
30	50	20	54	61	68	72	79	83	86	90	92
30	30	20	48	55	62	67	74	79	82	87	90
30	10	20	44	51	58	63	70	75	79	84	87
0	0	0	41	48	55	60	66	71	75	79	82
BZ-class			5	5	5	5	5	5	5	5	5
SHRnom : 1.50						SHRmax : 1.612					

