



T e s t R e p o r t

Report No : **L15154 Final Report**
Client: : BSS LED Lighting
Unit 5 Ashwood Business Park
Ashington
Northumberland
NE63 0XD
Description : 100W LED Low Bay
Manufacturer : BSS LED Lighting
Type/Models : 80001
Test Specification : As per test report
Date Testing Started : 17/02/2015
Date of Issue : 08/01/2016
Date of Expiry : 07/01/2021

Tested by: **S. RICHARDS**
Position: Photometrics Engineer

A handwritten signature in blue ink, appearing to read "S. Richards".

Approved by: **J. ADAMS**
Position: Laboratory Supervisor

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INTRODUCTION

BSS LED Lighting have supplied the product identified in Table 1 for determination of luminous flux, colour temperature, colour rendering index and power characteristics at 0hr, 100hr, 2000hr and 6000hr operation.

REPORT STATUS

Testing is complete. The luminaires have achieved 6,000 hours of operation. No luminaires have failed during testing.

Table 1. Product Details

Product Description	100W LED Low Bay
Model No.	80001
Number of Samples	Three
Condition on Receipt	Good
Nominal Dimensions	L. 605mm; H. 190mm; W. 320mm
Classification	Class I
Product Supply Requirement	240V AC 50Hz
Lamp Type and Power	LED 100W

Table 2. Test Sample Details

Sample ID	Life Test	Beam Angle	Colorimetry & Luminous Flux
001	✓	N/A	✓
002	✓	N/A	✓

Sampling Method: Test samples selected and supplied by client, no sampling method specified.

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LIFE TEST

Table 3. Test Procedure and Equipment Used

Test Standard	LIA Laboratories Technical Scheme document TSD-004
Equipment Used	Stabilised 240V AC power supply
Switching Cycle	Switched off 8 times per day for 15 minutes

Table 4. Details of Failures

Sample ID	Age at failure (Hours)
001	N/A
002	N/A

Note: NA indicates lamp is still functioning

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LUMINOUS FLUX & COLORIMETRY

Table 5. Test Procedure and Equipment Used

Test Standard	BS EN 13032-1:2004 Clause 6.1.2
Equipment Used	1.8m diameter 4 π Integrating Sphere (105)
Reference Standard Used	SCL-1400 F124
Standard Traceability	NIST-RF0816
Power Supply	Stabilised 240V AC
Power Measurement	3 Phase Power Analyser (280)
Temperature Measurement	Testo925 Thermocouple reader (143)
Service conversion factor (K_T)	Unspecified

Table 6. Lamp Conditioning and Setup at 0 Hours

Sample ID	001	002
Lamp ageing Time (Hrs)	N/A	N/A
Stabilisation Time (Hrs)	1.5	1.5
Total Operating Time (Hrs)	1.67	1.67
Support Structure	None	
Orientation in Test	Downwards	

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Table 7. Colorimetry Results at 0 Hours

Sample ID		001	002
COLORIMETRY	x coordinate	0.3331	0.3337
	y coordinate	0.3348	0.3356
	u coordinate	0.2098	0.2099
	v coordinate	0.3163	0.3166
	u' coordinate	0.2098	0.2099
	v' coordinate	0.4744	0.4749
	Dominant Wavelength (nm)	593.0	592.0
	Purity (%)	7.3	7.7
	Colour Temperature (K)	5467	5438
	Ra (%)	87.1	87.0
	R1 (%)	87.3	87.1
	R2 (%)	92.1	91.9
	R3 (%)	93.2	93.1
	R4 (%)	87.4	87.3
	R5 (%)	87.5	87.4
	R6 (%)	86.4	86.3
	R7 (%)	88.4	88.3
	R8 (%)	74.8	74.6
	R9 (%)	29.6	29.0
	R10 (%)	79.5	79.2
R11 (%)	87.0	86.9	
R12 (%)	67.7	67.7	
R13 (%)	88.9	88.6	
R14 (%)	96.4	96.4	
Lumen Output (lm)	12820	13015	
OPERATING CONDITIONS	Ambient Temperature	25.9	24.9
	Voltage, V	240.1	240.4
	Current, mA	434.16	429.15
	Power, W	101.71	100.55
	Power Factor	0.98	0.97

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Table 8. Colorimetry Results at 100 Hours

Sample ID		001	002
COLORIMETRY	x coordinate	0.3335	0.3334
	y coordinate	0.3357	0.3355
	u coordinate	0.2097	0.2097
	v coordinate	0.3166	0.3166
	u' coordinate	0.2097	0.2097
	v' coordinate	0.4749	0.4749
	Dominant Wavelength (nm)	591.0	592.0
	Purity (%)	7.7	7.6
	Colour Temperature (K)	5450	5454
	Ra (%)	86.9	87.0
	R1 (%)	87.0	87.1
	R2 (%)	91.9	92.0
	R3 (%)	93.1	93.2
	R4 (%)	87.2	87.2
	R5 (%)	87.2	87.3
	R6 (%)	86.2	86.3
	R7 (%)	88.3	88.3
	R8 (%)	74.5	74.5
	R9 (%)	28.6	28.8
	R10 (%)	79.1	79.4
R11 (%)	86.8	86.8	
R12 (%)	67.5	67.5	
R13 (%)	88.6	88.7	
R14 (%)	96.4	96.5	
Lumen Output (lm)	12960	12985	
OPERATING CONDITIONS	Ambient Temperature	24.7	24.7
	Voltage, V	240.0	240.0
	Current, mA	436.45	432.50
	Power, W	102.27	101.51
	Power Factor	0.98	0.98

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Table 9. Colorimetry Results at 2000 Hours

Sample ID		001	002
COLORIMETRY	x coordinate	0.3335	0.3336
	y coordinate	0.3359	0.3362
	u coordinate	0.2096	0.2096
	v coordinate	0.3167	0.3168
	u' coordinate	0.2096	0.2096
	v' coordinate	0.4750	0.4752
	Dominant Wavelength (nm)	591.0	590.7
	Purity (%)	7.7	7.9
	Colour Temperature (K)	5450	5442
	Ra (%)	86.8	86.8
	R1 (%)	86.8	86.8
	R2 (%)	91.8	91.8
	R3 (%)	93.1	93.1
	R4 (%)	87.1	87.0
	R5 (%)	87.1	87.1
	R6 (%)	86.2	86.2
	R7 (%)	88.3	88.2
	R8 (%)	74.2	74.2
	R9 (%)	28.0	27.8
	R10 (%)	79.0	78.9
R11 (%)	86.6	86.6	
R12 (%)	67.4	67.3	
R13 (%)	88.4	88.4	
R14 (%)	96.4	96.4	
Lumen Output (lm)	13046	13200	
OPERATING CONDITIONS	Ambient Temperature	26.8	26.8
	Voltage, V	240.0	240.0
	Current, mA	435.27	433.55
	Power, W	102.12	101.92
	Power Factor	0.98	0.98

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Table 10. Colorimetry Results at 6000 Hours

Sample ID		001	002
COLORIMETRY	x coordinate	0.3323	0.3325
	y coordinate	0.3342	0.3346
	u coordinate	0.2095	0.2095
	v coordinate	0.3160	0.3162
	u' coordinate	0.2095	0.2095
	v' coordinate	0.4740	0.4742
	Dominant Wavelength (nm)	594.0	593.0
	Purity (%)	6.9	7.1
	Colour Temperature (K)	5504	5493
	Ra (%)	87.1	87.0
	R1 (%)	87.1	87.0
	R2 (%)	92.1	92.0
	R3 (%)	93.2	93.2
	R4 (%)	87.3	87.2
	R5 (%)	87.4	87.3
	R6 (%)	86.4	86.4
	R7 (%)	88.4	88.3
	R8 (%)	74.6	74.4
	R9 (%)	29.2	28.8
	R10 (%)	79.6	79.4
R11 (%)	86.8	86.8	
R12 (%)	67.4	67.4	
R13 (%)	88.8	88.7	
R14 (%)	96.5	96.5	
Lumen Output (lm)	12451	12591	
OPERATING CONDITIONS	Ambient Temperature	25.9	26.0
	Voltage, V	240.0	240.3
	Current, mA	436.54	425.52
	Power, W	102.59	100.30
	Power Factor	0.98	0.98

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Table 11. Summary of Colorimetry Results

Sample ID	Measured Value	0 hours	100 hours	% Maintained (0-100hrs)	2000 hours	% Maintained (0-2000hrs)	6000 hours	% Maintained (0-6000hrs)
001	Colour Temperature (K)	5467	5450	99.7	5450	99.7	5504	100.7
	Ra (%)	87.1	86.9	99.8	86.8	99.7	87.1	100.0
	Luminous Flux (lm)	12820	12960	101.1	13046	101.8	12451	97.1
002	Colour Temperature (K)	5438	5454	100.3	5442	100.1	5493	101.0
	Ra (%)	87.0	87.0	100.0	86.8	99.8	87.0	100.0
	Luminous Flux (lm)	13015	12985	99.8	13200	101.4	12591	96.7

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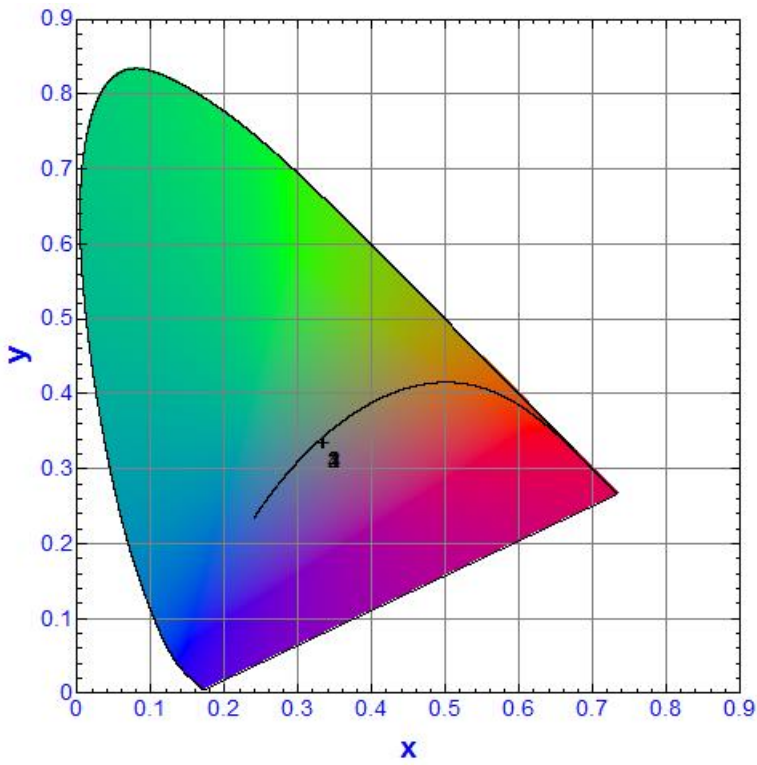


Figure 1. CIE 1931 diagram for Sample 001

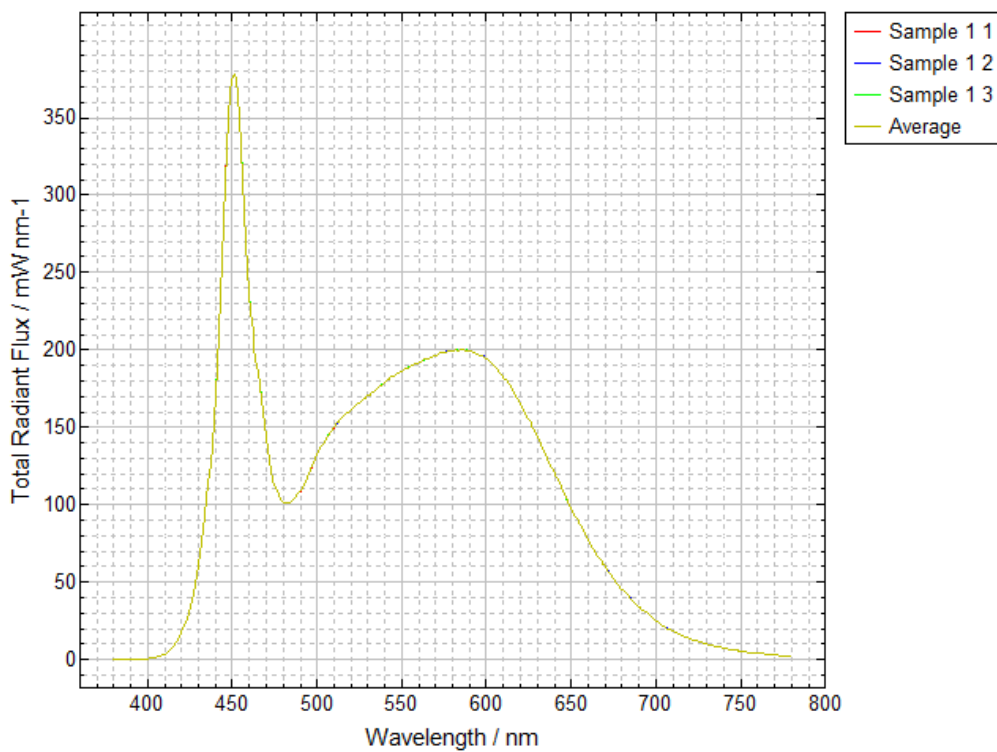


Figure 2. Spectral Irradiance for Sample 001

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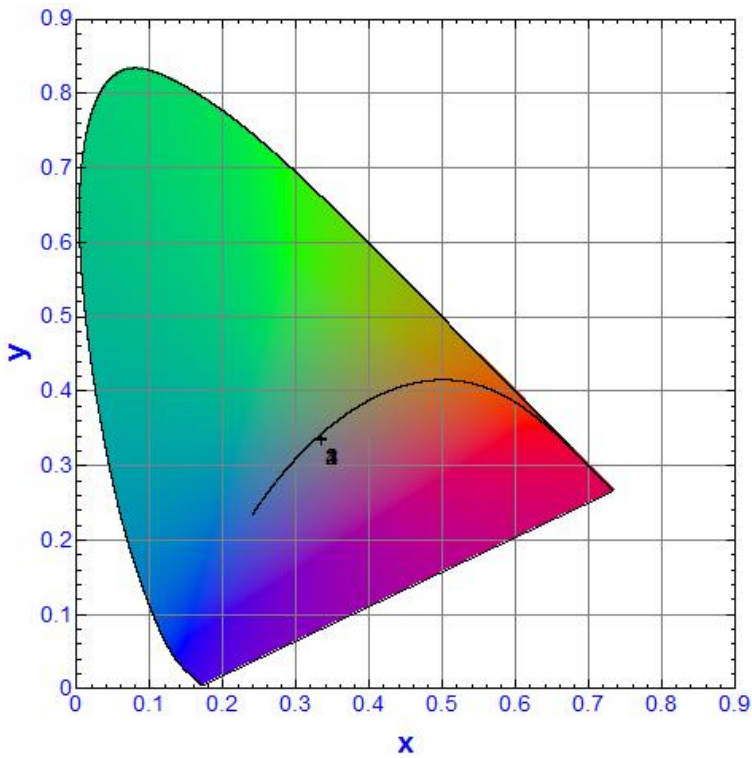


Figure 3. CIE 1931 diagram for Sample 002

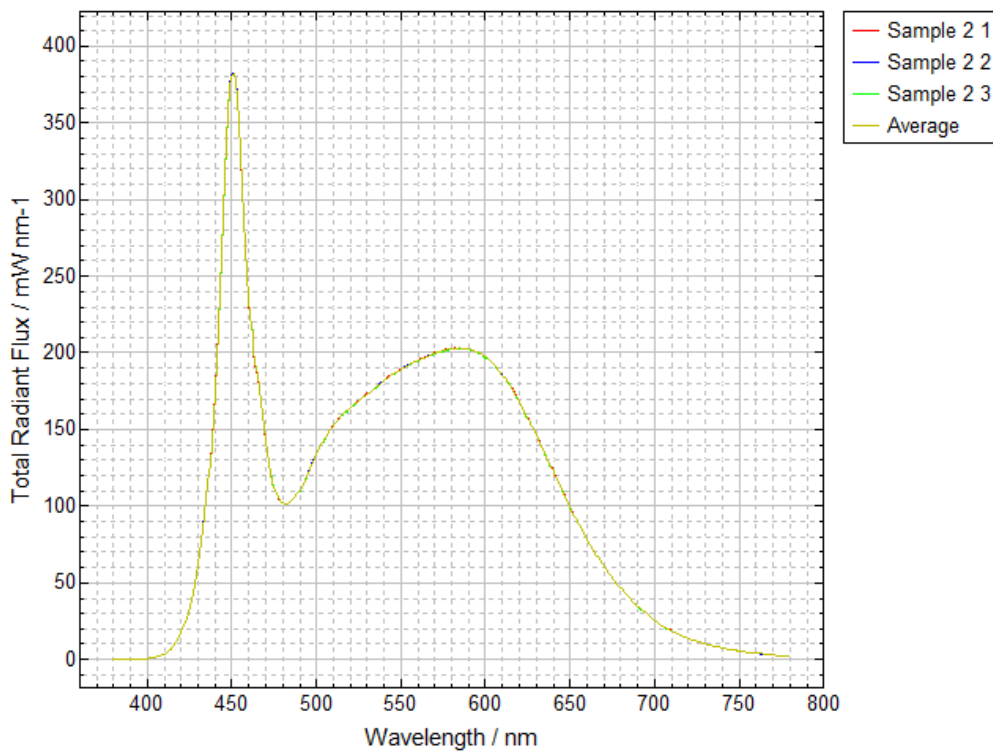


Figure 4. Spectral Irradiance for Sample 002

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DEVIATION(S) FROM TEST STANDARD

No deviations to report.

MEASUREMENT UNCERTAINTY

The following expanded uncertainties apply to the measurements shown in the results;

Chromaticity x coordinate (x): $\pm 7.0\%$
Chromaticity y coordinate (y): $\pm 7.0\%$
Chromaticity u' coordinate (u'): $\pm 7.0\%$
Chromaticity v' coordinate (v'): $\pm 7.0\%$
Colour Temperature (K): $\pm 9.08\%$
Colour Rendering Index (%): $\pm 8.54\%$
Luminous Flux (lm): $\pm 6.24\%$

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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SCHEMATIC DIAGRAM & IDENTIFICATION OF PHOTOMETRIC CENTRE

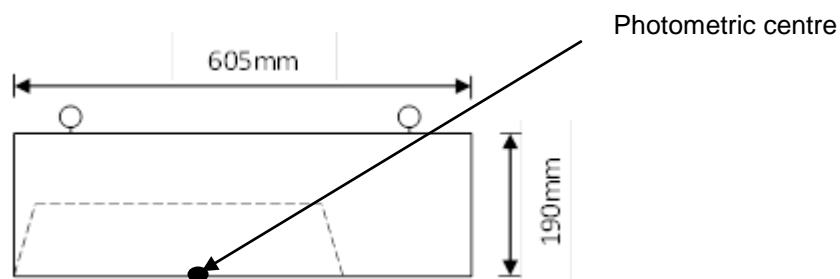


Figure 5. *Product diagram*

ILLUSTRATION



Figure 6. *Image of tested samples*

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