

L I A V e r i f i e d S c h e d u l e o f C e r t i f i c a t i o n



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Certificate No. : 004-0067
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This Schedule is to be read in conjunction with the accompanying certificate. The data shown relates only to the unit(s) tested. This schedule and any subsequent schedule(s) may not be reproduced except in full without the written approval of the Testing Laboratory.

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Contents

1. INTRODUCTION	3
2. CERTIFICATION STATUS	3
3. SCOPE	3
4. DOCUMENTATION	4
5. OBSERVATIONS AND LIMITATIONS	4
APPENDIX A	5
A.1. 2D LED Small 7" 9W Cool White	6
A.1.1. PRODUCT DETAILS	6
A.1.2. SAFETY EVALUATION	7
A.1.3. CENTRE BEAM INTENSITY AND BEAM ANGLE	8
A.1.4. COLORIMETRY	9
A.1.5. LIFE TEST	11
A.2. 2D LED Small 6" 5W Cool White	12
A.2.1. PRODUCT DETAILS	12
A.2.2. SAFETY EVALUATION	13
A.2.3. CENTRE BEAM INTENSITY AND BEAM ANGLE	14
A.2.4. COLORIMETRY	15
A.2.5. LIFE TEST	17



1. INTRODUCTION

This Schedule of certification accompanies the certificate identified on page one as part of the LIA Verified scheme for LED products. Assessment is carried out in line with the requirements set out in LIA Laboratorys' Technical Scheme Document TSD-004.

2. CERTIFICATION STATUS

Final - The products have passed the safety assessment and have achieved 2000 hours of operation as required by the scheme.

3. SCOPE

The products listed in Table 1, supplied by the certificate holder identified on page one have been assessed and are covered under certificate no. 004-0067

Table 1. *Products covered under scope*

Model No.	Product Name
2DS-709-840-N02	2D LED Small 7" 9W Cool White
2DS-605-840-N02	2D LED Small 6" 5W Cool White



4. DOCUMENTATION

As part of the assessment process the following documents have been evaluated and form part of the Technical File held by the certificate holder and LIA Laboratory Ltd. It should be noted that in order to maintain certification the certificate holder is required to maintain up to date technical documentation related to all of the products identified in section three of this schedule.

All client documentation held by LIA Laboratory Ltd is maintained as strictly confidential.

Table 2. Critical Documents

Document reference	Title/Description
PV167	Safety Test Report
PV167B Final Report	Performance Test Report
2D 20180219v1	Installation Instructions

5. OBSERVATIONS AND LIMITATIONS

When installed in accordance with the manufacturer's instructions, this product is deemed to comply with the specified end use.



APPENDIX A

PRODUCT TECHNICAL SPECIFICATIONS

A.1. 2D LED Small 7" 9W Cool White

A.1.1. PRODUCT DETAILS

Table A.1 Product Specifications

Product Name	2D LED Small 7" 9W Cool White
Model No.	2DS-709-840-N02
Product Description	2D LED Replacement Lamp
Nominal Dimensions	Ø – 85mm; H – 28mm
Product Supply Requirement	220-240V AC, 50/60Hz
Lamp Type and Power	LED, 9W



Figure 1. Product Images

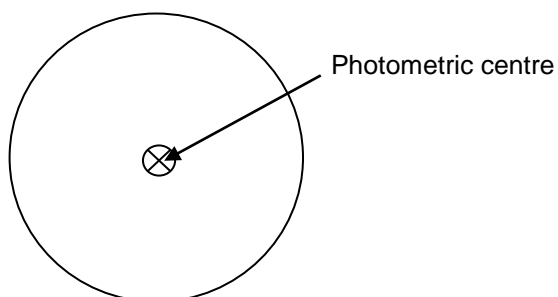


Figure 2. Product diagram

A.1.2. SAFETY EVALUATION

Safety assessment was carried out in accordance with the requirements set in LIA Laboratorys' technical scheme document TSD-004, the clauses verified are shown in Table 2 and have been evaluated against IEC 62560:2011+A1:2015.

The product has been found to conform to the requirements laid out in the identified clauses.

Table A.2 Safety Test Results

Clause No.	Title
4	General Requirements
5	Marking
6	Interchangeability
7	Protection Against Accidental Contact with Live Parts
8	Insulation Resistance Electric Strength
9	Mechanical Strength
10	Cap Temperature Rise
11	Resistance to Heat
12	Resistance to Flame and Ignition
13	Fault Conditions
14	Creepage Distances and Clearances

A.1.3. CENTRE BEAM INTENSITY AND BEAM ANGLE

Table A.3 *Beam angle value for model 2DS-709-840-N02*

Centre Beam Intensity (cd)	Beam Angle (<i>Lamp orientation</i>)	Beam Angle Result (°)
458	0° - 180°	117.4
	90° - 270°	117.5

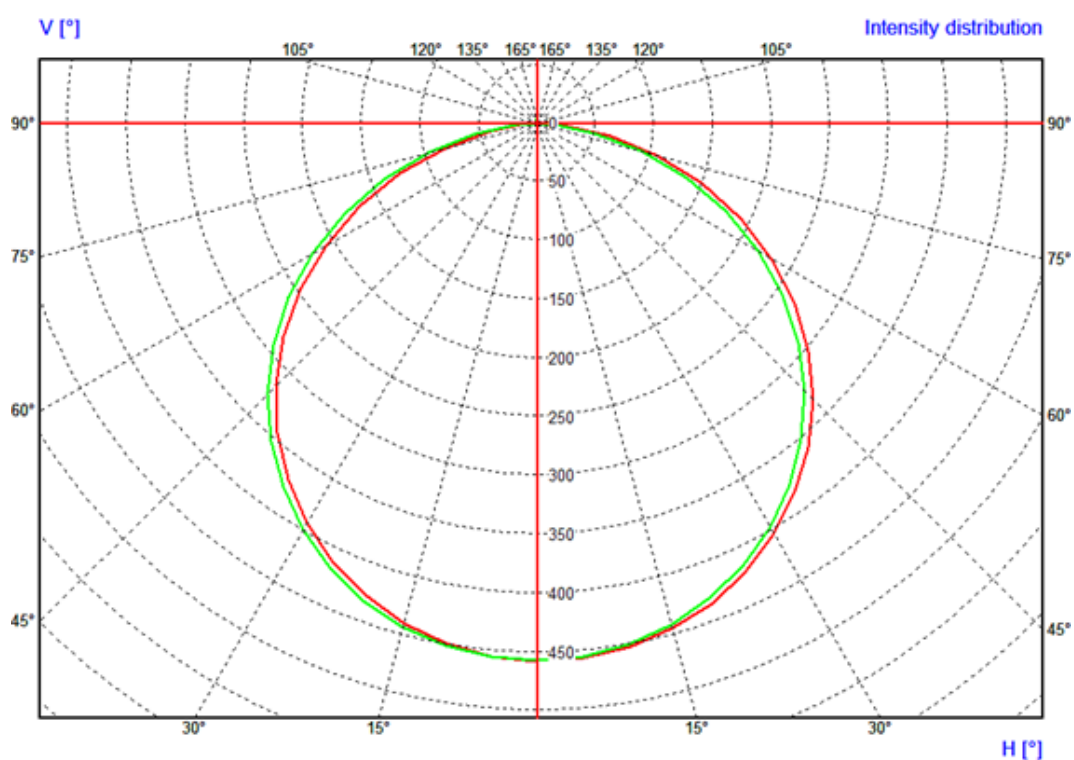


Figure 3. *Polar diagram for model 2DS-709-840-N02*

A.1.4. COLORIMETRY

Table A.4 Colorimetry values for model 2DS-709-840-N02

COLORIMETRY & LUMINOUS FLUX	x coordinate	0.3766
	y coordinate	0.3777
	u' coordinate	0.2222
	v' coordinate	0.5014
	Correlated Colour Temperature (K)	4114
	Ra (%)	83
	R1 (%)	82
	R2 (%)	92
	R3 (%)	96
	R4 (%)	79
	R5 (%)	81
	R6 (%)	87
	R7 (%)	85
	R8 (%)	64
	R9 (%)	11
	R10 (%)	79
	R11 (%)	77
	R12 (%)	56
R13 (%)	85	
R14 (%)	98	
Lumen Output (lm)	1382	

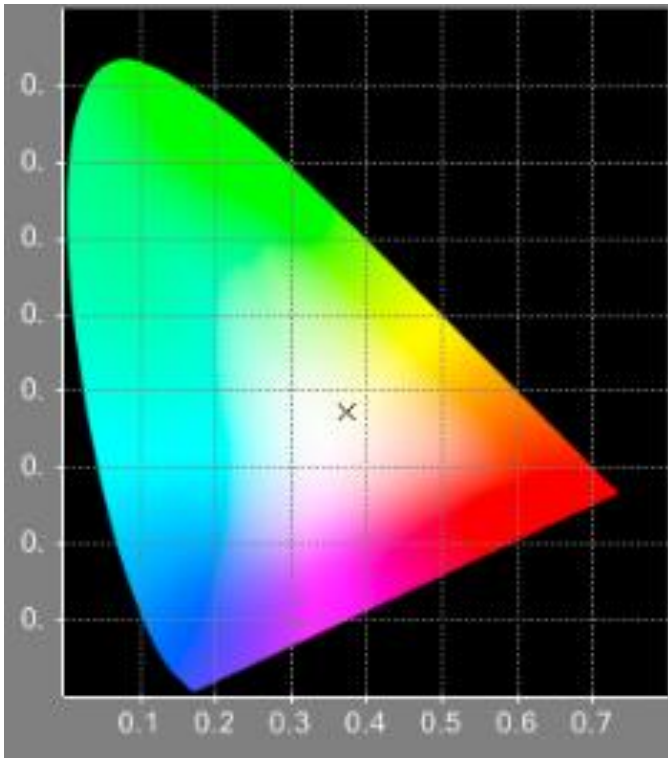


Figure 4. CIE 1931 diagram for model 2DS-709-840-N02

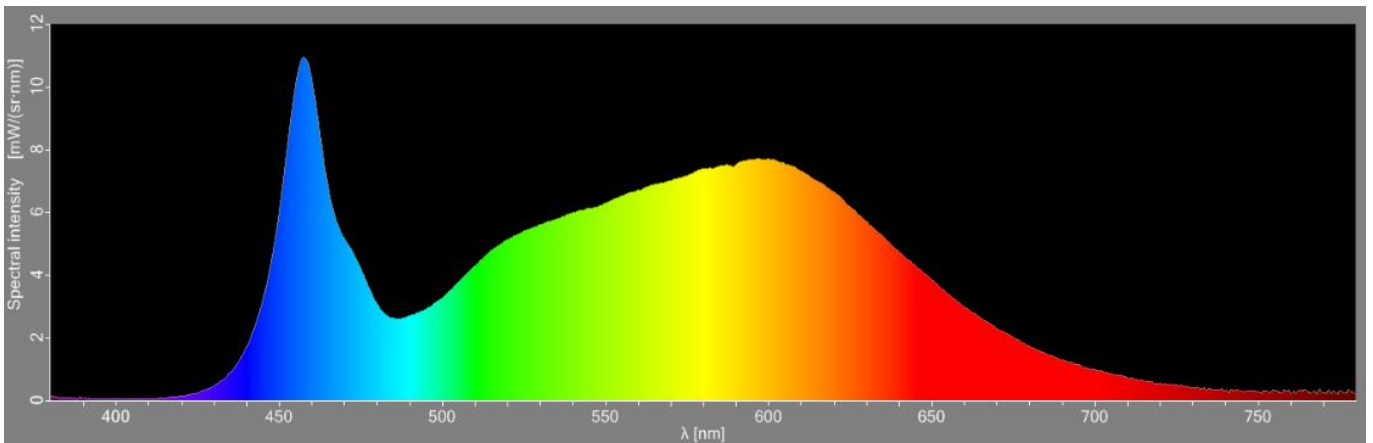


Figure 5. Spectral flux for model 2DS-709-840-N02

A.1.5. LIFE TEST

Table A.5 Colorimetry depreciation of model 2DS-709-840-N02

Measured Value	0 hours	100 hours	% Maintained (0-100hrs)	2000 hours	% Maintained (0-2000hrs)
Correlated Colour Temperature (K)	4114	4119	100.1	4019	97.7
Ra (%)	83	83	100.0	83	100.0
Luminous Flux (lm)	1382	1385	100.2	1472	106.5
Luminous Efficacy (lm/W)	161	156	96.9	168	104.3

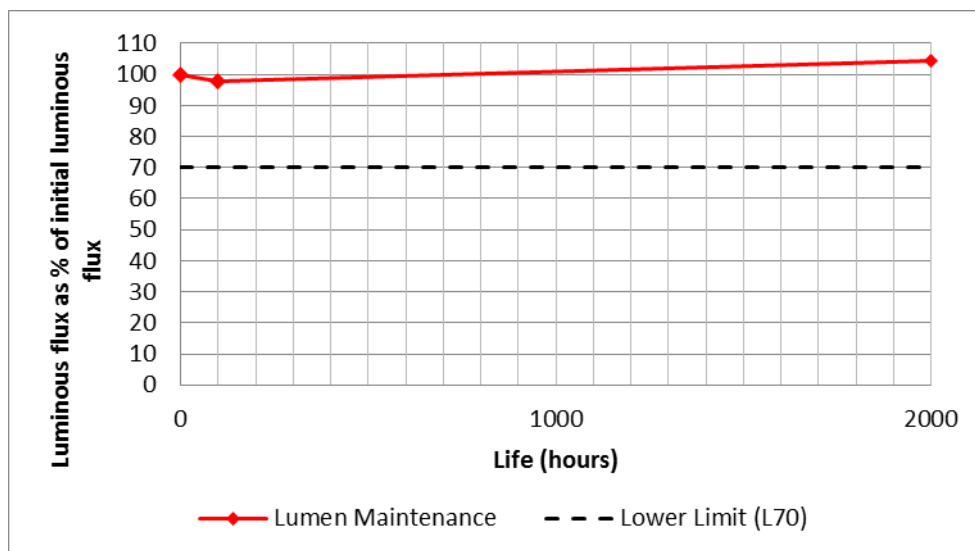


Figure 6. Luminous flux depreciation curve for model 2DS-709-840-N02

A.2. 2D LED Small 6" 5W Cool White

A.2.1. PRODUCT DETAILS

Table A.6 Product Specifications

Product Name	2D LED Small 6" 5W Cool White
Model No.	2DS-605-840-N02
Product Description	2D LED Replacement Lamp
Nominal Dimensions	Ø – 85mm; H – 28mm
Product Supply Requirement	220-240V AC, 50/60Hz
Lamp Type and Power	LED, 5W



Figure 7. Product Images

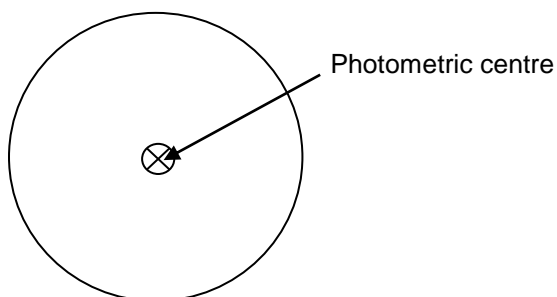


Figure 8. Product diagram

A.2.2. SAFETY EVALUATION

Safety assessment was carried out in accordance with the requirements set in LIA Laboratorys' technical scheme document TSD-004, the clauses verified are shown in Table 2 and have been evaluated against IEC 62560:2011+A1:2015.

The product has been found to conform to the requirements laid out in the identified clauses.

Table A.7 Safety Test Results

Clause No.	Title
4	General Requirements
5	Marking
6	Interchangeability
7	Protection Against Accidental Contact with Live Parts
8	Insulation Resistance Electric Strength
9	Mechanical Strength
10	Cap Temperature Rise
11	Resistance to Heat
12	Resistance to Flame and Ignition
13	Fault Conditions
14	Creepage Distances and Clearances

A.2.3. CENTRE BEAM INTENSITY AND BEAM ANGLE

Table A.8 *Beam angle value for model 2DS-605-840-N02*

Centre Beam Intensity (cd)	Beam Angle (<i>Lamp orientation</i>)	Beam Angle Result (°)
458	0° - 180°	117.4
	90° - 270°	117.5

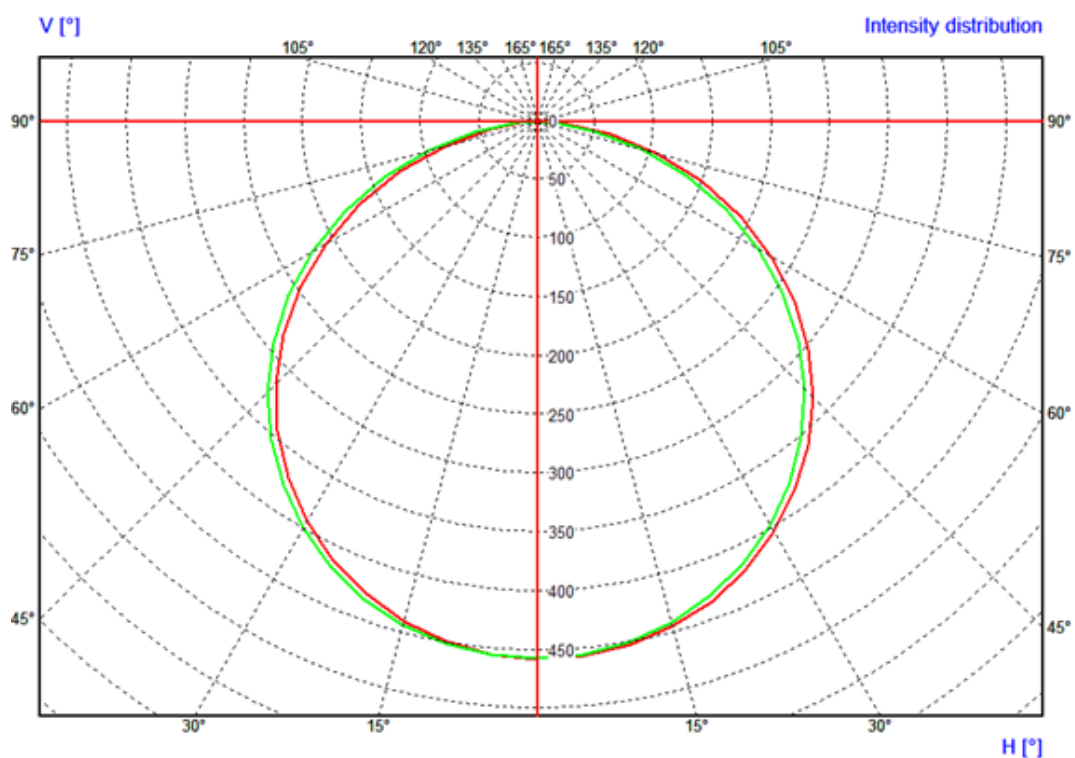


Figure 9. *Polar diagram for model 2DS-605-840-N02*



A.2.4. COLORIMETRY

Table A.9 Colorimetry values for model 2DS-605-840-N02

COLORIMETRY & LUMINOUS FLUX	x coordinate	0.3766
	y coordinate	0.3777
	u' coordinate	0.2222
	v' coordinate	0.5014
	Dominant Wavelength (nm)	4114
	Ra (%)	83
	R1 (%)	82
	R2 (%)	92
	R3 (%)	96
	R4 (%)	79
	R5 (%)	81
	R6 (%)	87
	R7 (%)	85
	R8 (%)	64
	R9 (%)	11
	R10 (%)	79
	R11 (%)	77
R12 (%)	56	
R13 (%)	85	
R14 (%)	98	
Lumen Output (lm)	1382	

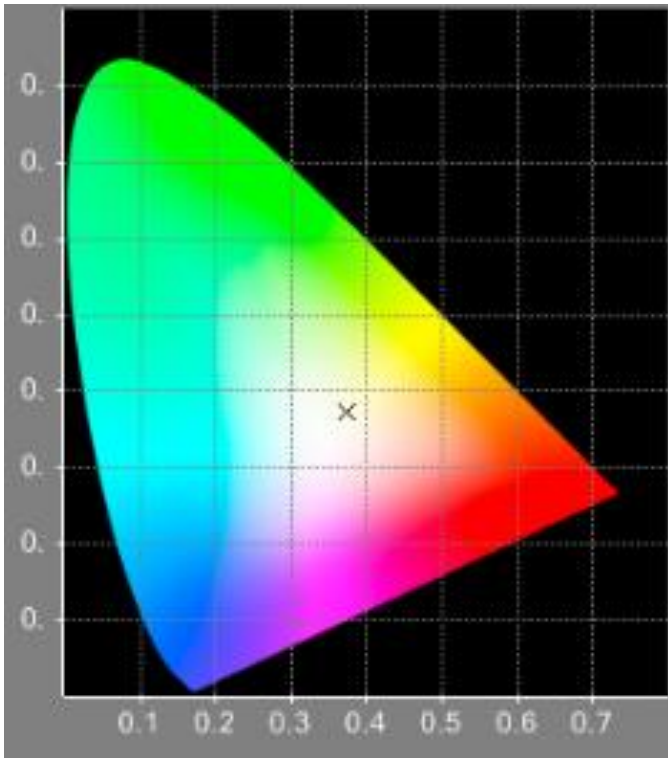


Figure 10. CIE 1931 diagram for model 2DS-605-840-N02

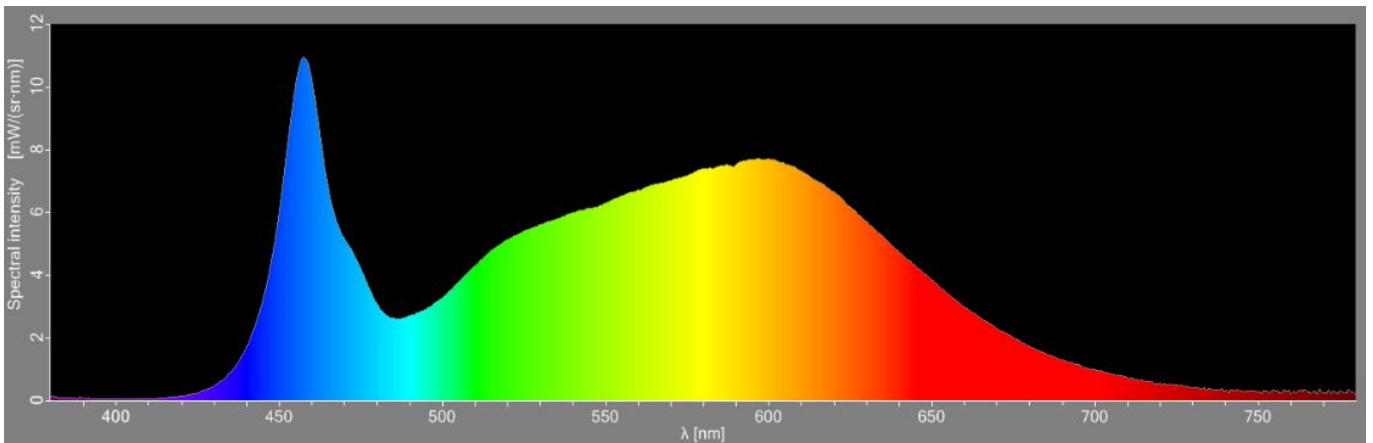


Figure 11. Spectral flux for model 2DS-605-840-N02



A.2.5. LIFE TEST

Due to the identical construction and critical components used in this model, the life assessment was carried out as a family variant. Life testing was conducted on the 2D LED Small 6" 5W Cool White, model - 605-840-N02 as this was considered to be the most onerous. Refer to section A.1.5 for the measured values

END