



Sistema de Cadastramento Unificado de Fornecedores - SICAF

Declaração

Declaramos para os fins exigidos na legislação, conforme documentação registrada no SICAF, que a situação do fornecedor no momento é a seguinte:

Dados do Fornecedor

CNPJ: 41.619.501/0001-38
Razão Social: NOVAK & SILVA LTDA
Nome Fantasia:
Situação do Fornecedor: **Credenciado** Data de Vencimento do Cadastro: **06/08/2026**
Natureza Jurídica: **SOCIEDADE EMPRESÁRIA LIMITADA**
MEI: **Não**
Porte da Empresa: **Empresa de Pequeno**

Ocorrências e Impedimentos

Ocorrência: **Nada Consta**
Impedimento de Licitar: **Nada Consta**
Ocorrências Impeditivas indiretas: **Nada Consta**
Vínculo com "Serviço Público": **Nada Consta**

Níveis cadastrados:

Automática: a certidão foi obtida através de integração direta com o sistema emissor. Manual: a certidão foi inserida manualmente pelo fornecedor.

I - Credenciamento**II - Habilitação Jurídica****III - Regularidade Fiscal e Trabalhista Federal**

Receita Federal e PGFN	Validade:	22/02/2026	Automática
FGTS	Validade:	09/01/2026	Automática
Trabalhista (http://www.tst.jus.br/certidao)	Validade:	14/06/2026	Automática

IV - Regularidade Fiscal Estadual/Distrital e Municipal

Receita Estadual/Distrital	Validade:	15/04/2026
Receita Municipal	Validade:	16/02/2026

VI - Qualificação Econômico-Financeira

Validade: 30/06/2026



CONTROLADORIA-GERAL DA UNIÃO

Certidão Negativa Correccional - Entes Privados (ePAD, CGU-PJ, CEIS, CNEP e CEPIM)

Consultado: **NOVAK & SILVA LTDA**

CPF/CNPJ: **41.619.501/0001-38**

Certifica-se que, em consulta aos sistemas ePAD e CGU-PJ e aos cadastros CEIS, CNEP e CEPIM, mantidos pela Corregedoria-Geral da União, **NÃO CONSTAM** registros de penalidades vigentes ou de procedimentos acusatórios em andamento, relativos ao CPF/CNPJ consultado.

Destaca-se que, nos termos da legislação vigente, os referidos cadastros consolidam informações prestadas pelos entes públicos, de todos os Poderes e esferas de governo.

Os [Sistemas ePAD e CGU-PJ](#) consolidam os dados sobre o andamento dos processos administrativos de responsabilização de entes privados no Poder Executivo Federal.

O [Cadastro Nacional de Empresas Inidôneas e Suspensas \(CEIS\)](#) apresenta a relação de empresas e pessoas físicas que sofreram sanções que implicaram a restrição de participar de licitações ou de celebrar contratos com a Administração Pública.

O [Cadastro Nacional de Empresas Punidas \(CNEP\)](#) apresenta a relação de empresas que sofreram quaisquer das punições previstas na Lei nº 12.846/2013 (Lei Anticorrupção).

O [Cadastro de Entidades Privadas sem Fins Lucrativos Impedidas \(CEPIM\)](#) apresenta a relação de entidades privadas sem fins lucrativos que estão impedidas de celebrar novos convênios, contratos de repasse ou termos de parceria com a Administração Pública Federal, em função de irregularidades não resolvidas em convênios, contratos de repasse ou termos de parceria firmados anteriormente.

Certidão emitida às 09:15:01 do dia 17/12/2025 , com validade até o dia 16/01/2026.

Link para consulta da verificação da certidão <https://certidoes.cgu.gov.br/>

Código de controle da certidão: lp2ozEH5OzzgSAqKoCxu

Qualquer rasura ou emenda invalidará este documento.



CONTROLADORIA-GERAL DA UNIÃO

Certidão Negativa Correccional - Entes Privados (ePAD, CGU-PJ, CEIS, CNEP e CEPIM)

Consultado: **JOSE RUBEM AREND DA SILVA**

CPF/CNPJ: **060.680.079-44**

Certifica-se que, em consulta aos sistemas ePAD e CGU-PJ e aos cadastros CEIS, CNEP e CEPIM, mantidos pela Corregedoria-Geral da União, **NÃO CONSTAM** registros de penalidades vigentes ou de procedimentos acusatórios em andamento, relativos ao CPF/CNPJ consultado.

Destaca-se que, nos termos da legislação vigente, os referidos cadastros consolidam informações prestadas pelos entes públicos, de todos os Poderes e esferas de governo.

Os [Sistemas ePAD e CGU-PJ](#) consolidam os dados sobre o andamento dos processos administrativos de responsabilização de entes privados no Poder Executivo Federal.

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Certidão emitida às 09:17:14 do dia 17/12/2025 , com validade até o dia 16/01/2026.

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Código de controle da certidão: mXCjSDwqdECPFLzoXEow

Qualquer rasura ou emenda invalidará este documento.



CONTROLADORIA-GERAL DA UNIÃO

Certidão Negativa Correccional - Entes Privados (ePAD, CGU-PJ, CEIS, CNEP e CEPIM)

Consultado: **GIOVANI RENAN NOVAK**

CPF/CNPJ: **050.994.549-09**

Certifica-se que, em consulta aos sistemas ePAD e CGU-PJ e aos cadastros CEIS, CNEP e CEPIM, mantidos pela Corregedoria-Geral da União, **NÃO CONSTAM** registros de penalidades vigentes ou de procedimentos acusatórios em andamento, relativos ao CPF/CNPJ consultado.

Destaca-se que, nos termos da legislação vigente, os referidos cadastros consolidam informações prestadas pelos entes públicos, de todos os Poderes e esferas de governo.

Os [Sistemas ePAD e CGU-PJ](#) consolidam os dados sobre o andamento dos processos administrativos de responsabilização de entes privados no Poder Executivo Federal.

O [Cadastro Nacional de Empresas Inidôneas e Suspensas \(CEIS\)](#) apresenta a relação de empresas e pessoas físicas que sofreram sanções que implicaram a restrição de participar de licitações ou de celebrar contratos com a Administração Pública.

O [Cadastro Nacional de Empresas Punidas \(CNEP\)](#) apresenta a relação de empresas que sofreram quaisquer das punições previstas na Lei nº 12.846/2013 (Lei Anticorrupção).

O [Cadastro de Entidades Privadas sem Fins Lucrativos Impedidas \(CEPIM\)](#) apresenta a relação de entidades privadas sem fins lucrativos que estão impedidas de celebrar novos convênios, contratos de repasse ou termos de parceria com a Administração Pública Federal, em função de irregularidades não resolvidas em convênios, contratos de repasse ou termos de parceria firmados anteriormente.

Certidão emitida às 09:17:43 do dia 17/12/2025 , com validade até o dia 16/01/2026.

Link para consulta da verificação da certidão <https://certidoes.cgu.gov.br/>

Código de controle da certidão: 48oo2G28US0KU40gQofX

Qualquer rasura ou emenda invalidará este documento.

NOVAK & SILVA LTDA

EDITAL DE PREGÃO Nº 089/2025
PROCESSO ADMINISTRATIVO ELETRÔNICO Nº 2347/2025
MODALIDADE: PREGÃO ELETRÔNICO
TIPO: MENOR PREÇO POR LOTE/GRUPO
OBJETO: REGISTRO DE PREÇOS para futura e eventual contratação de empresa para fornecimento de luminárias de LED e relés para super postes, atendendo as necessidades do Departamento de Urbanismo.

ANEXO II
MODELO DE PROPOSTA
(uso obrigatório por todas as licitantes)

A empresa NOVAK & SILVA LTDA, estabelecida na AV DAMBROS E PIVA, Nº 326, SALA 01, BAIRRO CENTRO, MARMELEIRO/PR, CEP 85.614-020, Email ENGENHARIA@RENOVAK.COM.BR, inscrita no CNPJ sob nº 41.619.501/0001-38, neste ato representada por JOSE RUBEM AREND A SILVA, Sócio Administrador, RG 9021422-5 SESP-PR, CPF 060.680.079-44, Rua Nelson Pizzani, nº 662, Bairro Centro, em Marmeleiro/PR, Cep: 85.615-000, propõe fornecer à Prefeitura Municipal de Marmeleiro, em estrito cumprimento ao previsto no Edital de Pregão Eletrônico nº 089/2025, conforme abaixo discriminado:

Lote/Grupo 01

ITEM	QNT.	UNID.	DESCRIÇÃO	VALOR UNIT.	VALOR TOTAL
1	100	UN.	Refletor; Marca: Lumanti; Modelo: luminária led Urbana	298,00	29.800,00
2	100	UN.	Sensor; Marca: Exatron; Modelo: relê foto elétrico	24,90	2.490,00
VALOR TOTAL ESTIMADO					32.290,00

A validade desta proposta é de 90 (noventa) dias corridos, contados da data de sua assinatura. A apresentação da proposta implicará na plena aceitação das condições estabelecidas neste edital e seus anexos.

Declaro que a proponente atende aos requisitos de habilitação e o declarante atesta a veracidade das informações prestadas (art. 63, I, da Lei nº 14.133/2021).

Responsável pela assinatura do Contrato ou da Ata de Registro de Preços:

- Nome: JOSE RUBEM AREND A SILVA
- CPF: 060.680.079-44
- Endereço: Rua Nelson Pizzani, nº 662, Bairro Centro, em Marmeleiro/PR, Cep: 85.615-000
- Telefone: (46) 98800-3025
- E-mail: engenharia@renovak.com.br

BANCO SICOOB 756
AGÊNCIA 4342
CC: 53548-6

Nos preços ofertados já estão inclusos os tributos, fretes, taxas, seguros, encargos sociais, trabalhistas e todas as demais despesas necessárias à execução do objeto.

Marmeleiro/PR, 17 de Dezembro de 2025.


JOSE RUBEM AREND A SILVA – Sócio Administrador



TRIBUNAL DE JUSTIÇA DO ESTADO DO PARANÁ
Secretaria do Ofício Distribuidor e Anexos de MARMELEIRO

CERTIDÃO DE DISTRIBUIÇÃO – FINS GERAIS – CÍVEIS – FALÊNCIA – NEGATIVA

Certifico que revendo os livros, sistemas e arquivos de distribuição CÍVEIS, especificamente: FALÊNCIA, CONCORDATA, RECUPERAÇÃO JUDICIAL, RECUPERAÇÃO EXTRAJUDICIAL desta Secretaria, verifiquei NÃO CONSTAR nenhum registro em andamento contra:

NOVAK E SILVA LTDA

CNPJ: 41.619.501/0001-38

Local da Sede: Marmeleiro - PR

Orientações:

Esta certidão NÃO APONTA ordinariamente os processos em que a pessoa cujo nome pesquisado figura como Autor(a).

São apontados os feitos em tramitação cadastrados no Sistema Informatizado referente à comarca de MARMELEIRO

Não existe qualquer conexão com qualquer outra base de dados de instituição pública ou com a Receita Federal que verifique a identidade do NOME/RAZÃO SOCIAL com o CPF/CNPJ. A conferência dos dados pessoais fornecidos pelo pesquisado é de responsabilidade exclusiva do destinatário da certidão.

A certidão em nome de pessoa jurídica considera os processos referentes à matriz e às filiais.

Considera-se NEGATIVA a certidão que aponta somente homônimos não qualificados, nos termos do art. 8º, §2º da Resolução CNJ 121/2010.

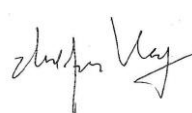
A presente certidão menciona somente o registro de distribuição, para dados complementares do procedimento, deve-se dirigir até a Secretaria para onde foi distribuído e solicitar uma CERTIDÃO DE OBJETO E PÉ.

A Busca de MICROEMPREENDEDOR INDIVIDUAL e EMPRESÁRIO INDIVIDUAL abrange também a pessoa física.

MARMELEIRO, 16 de dezembro de 2025

Douglas Eduardo Barbieri Scopel
Distribuidor



TEST REPORT INMETRO PORTARIA NO. 62 OF FEBRUARY 17, 2022 TECHNICAL QUALITY REGULATION FOR LED LIGHT LAMPS WITH BASE-INTEGRATED CONTROL DEVICE	
Report Reference No.	6182973.50P
Tested by (name + signature)	Zhijun Wang 
Approved by (name + signature)	Bingshan Wang
Date of issue	2024-02-28
Number of pages	31
Testing Laboratory	DEKRA Testing and Certification (Shanghai) Ltd.
Address	3/F, #250, Jiangchangsan Road building 16 Headquarter Economy Park Shibei Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436
Test procedure	CBTL ☒ SMT ☐ TMP ☐
Applicant's name	F. Bez Distribuidora Ltda
Address	Rua Carlos Reichmann, 67 – Bairro Santa Catarina, Erechim – RS, 99711-374, Brazil
	CNPJ No. 06.171.042/0001-71
Test specification:	
INMETRO PORTARIA No.	Portaria No. 62 of February 17, 2022
Test procedure	INMETRO
Non-standard test method	N/A
Test Report Form No.	Portaria No. 62-2022 V1.1
Test item description:	
Trademark	LUMANTI
Manufacturer	Guangdong Hongshi Care Lighting Technology Co.,LTD. B4 Building, NO.2 Southeast Industrial Zone, JiangHai District, JiangMen City, Guangdong Province, China.
Factory.....	Guangdong Hongshi Care Lighting Technology Co.,LTD. B4 Building, NO.2 Southeast Industrial Zone, JiangHai District, JiangMen City, Guangdong Province, China
Model/Type reference.....	Details see Appendix I
Summary of testing:	
Performance testing refer to test report.	

Standard Reference:

- | | |
|---|--|
| ☒ ABNT NBR 15129:2012 | ☒ ABNT NBR 5123:2016 |
| ☒ ABNT NBR 5101:2012 | ☒ ABNT NBR 16026:2012 |
| ☒ ASTM G154 | ☐ ABNT NBR IEC 60238:2005 |
| ☒ CISPR 15:2013 | ☒ ABNT NBR IEC 60598-1:2010 |
| ☒ BS EN 55015:2013 | ☐ ABNT NBR IEC 60662:1997 |
| ☒ IEC 61000-3-2:2014 | ☒ ABNT NBR IEC 62262:2015 |
| ☒ IES TM-21-11 | ☒ ABNT NBR IEC 61347-2-13:2012 |
| ☒ IESNA LM-79-08 | ☒ INMETRO Portaria No. 200 of 2021 |
| ☒ IESNA LM-80-08 | |

Test item particulars:

- Light source using.....: ☐ Discharge Lamps ☒ LED Technology
- a) Brand of origin: LUMANTI
- c) Photometric classification As below
- Energy Class: ☒ Class A ☐ Class B ☐ Class C ☐ Class D
- Transverse Light Distributions.....: ☐ Type I ☒ Type II ☐ Type III
- Longitudinal Light Distributions: ☐ Short ☒ Medium ☐ Long
- Lighting intensity distribution control : ☐ Totalmente limitada ☒ Limitada
☐ Semi- Limitada
- The corresponding elevation angle: ☒ 0° ☐ 5° ☐ 10° ☐ 15°
- e) Rated voltage (V): 90 – 305V
- f) Rated frequency (Hz): 50 / 60 Hz
- h) Control device used (Brand / Model / Power / Rated electrical output).....: N/A
- o) Rated expected life (h) corresponds to L₇₀ or L₈₀.....: 108000 (L₇₀)
- Declared lumen maintenance (%): 99,0 at 6000 h
- LED light source (Brand/Model): Shenzhen ZSOPTO Optoelectronic Technology Co., Ltd./ PCT3030
- Rated expected life (h) corresponds to t_c for LED control device: 108000 (t_c 90 °C)

Possible test case verdicts:

- test case does not apply to the test
object: N/A
- test object does meet the requirement
.....: P (Pass)
- test object does not meet the
requirement: F (Fail)

Testing:

Date of receipt of test item: 2024/01/19

Date (s) of performance of tests: 2024/01/19 to 2024/02/23

The test results shown in this report relate only to the tests performed according to the test program. The test object has not been submitted to a full test program.

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Number of the tested samples for each item		
Test	☐ Partial test	☒ Type Test
Safety		
Marking		1
Pakaging		
Electromagnetic interference and radio frequency		
Leakage Current		
Electric shock protection		
Torque resistance of screws and connections		
Internal and external wiring		1
Socket for photoelectric relay (when applicable)		
Degree of protection		
Dielectric strength		1
Insulation Resistance		
Wind force resistance		1
Vibration resistance		
Protection against external mechanical impacts		
Ultraviolet radiation resistance for polymer (UV) lenses and refractors		1
Energy Efficiency		
Power		3
Power factor		
Voltage and current output		
Supply current		
Harmonics Limit		
Energy efficiency		3
Correlated color temperature (TCC)		
Color reproduction index (IRC)		
Classification of distribution		
Classification of flux distribution control (CDL		
Maintenance of the luminous flux of the luminaire		1
Built-in control device durability		1
Standard / Regulation	As requested	Portaria No. 62-2022
Applicable Clauses which can be adopted for the application ☒ Clause 4.1 – ELECTRICAL SAFETY REQUIREMENTS ☒ Clause 4.2 – PERFORMRANCE REQUIREMENTS ☒ Clause 5 – MARKING REQUIREMENTS AND INSTRUCTIONS		

General remarks:

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced except in full without the written approval of the testing laboratory.

- Appendix I: Technical Specification Spreadsheet - PET
- Appendix II: Test Results
- Appendix III: LED source LM-80 report
- Appendix IV: Photos

General product information:

Model list:

model A	model B
LM450	LM450B
LM550	LM550B
LM460	LM460B
LM560	LM560B
LM4100	LM4100B
LM5100	LM5100B
LM4150	LM4150B
LM5150	LM5150B
LM4200	LM4200B
LM5200	LM5200B

According to the declaration from applicant, the models in column A are the same as those in column B, except that mechanical structure of the product (the models in Category B have a base). After review, All test data is based on the model in column A, and the corresponding test data is representative for the model in column B

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INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4	TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY		P
4.1	Electrical safety requirements		P
4.1.1	Conditions of operation		P
	a) altitude not exceeding 1,500 m; b) average ambient air temperature over a 24-hour period not exceeding +35 °C; c) ambient air temperature between -5 °C and +50 °C; d) relative humidity up to 100%. :	-25 to 50 °C	P
4.1.2	Packaging		P
	The luminaires must be individually packed in packages suitable for the type of transport (in which it is applied) and for the usual loading, unloading, handling and storage operations. :		P
4.1.3	Internal and external wiring		P
	The luminaire must be provided with adequate anchoring, so that the conductors of the supply cables are relieved of mechanical stress at the points where they are connected to the terminals. :		P
4.1.4	Socket for photoelectric relay (when applicable)		P
	The photoelectric relay socket (when applicable) must have insulation resistance, dielectric strength, ability to conduct currents from the appropriate contacts and adequate mechanical fixing of the conductors, in order to avoid the risk of electric shock, overheating and undue unlocking of the pins and cables. :		P
4.1.5	Degree of protection		P
	The housing of the luminaire must ensure the degree of protection against the penetration of dust, solid objects and moisture, in accordance with the classification of the luminaire and the IP code marked on the luminaire. :		P
	The housing of the vital parts (LED, secondary optical system and controller) must have at least a degree of protection IP-66, according to ABNT NBR IEC 60598-1:2010 (Light fixtures - Part 1: General requirements and tests). :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	If the controller is IP-65 or higher, the controller housing in the luminaire must be at least IP-44.....:		N/A
4.1.6	Dielectric strength and Insulation Resistance		P
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive.:		P
4.1.7	Leakage Current		P
	The leakage current that may occur during normal use of the luminaire must not cause an electric shock hazard.:		P
4.1.8	Electric shock protection		P
	Luminaires shall be constructed in such a way that their live parts are not accessible when the luminaire is installed and electrically connected for normal use.:		P
4.1.9	Electromagnetic interference and radio frequency		P
	Filters must be provided in the controller (driver) to suppress electromagnetic and radio frequency interference.:		P
4.1.10	Protection against external mechanical impacts		P
	Luminaires must have a resistance to external mechanical impacts to which they are subject under the conditions of use.:		P
	Luminaires must have, at least, degree of protection IK08, according to the ABNT NBR IEC 62262:2015 standard (Degrees of protection ensured by electrical equipment enclosures against external mechanical impacts (IK Code)).:		P
4.1.11	Torque resistance of screws and connections		P
	The screws used in the luminaires and in the connections intended for the installation of the luminaires must not show any deformation during tightening and loosening or cause deformation or breakage of the luminaire.:		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4.1.12	Wind force resistance		P
	Luminaires must be resistant to the wind force to which they are subjected when in normal use. :		P
4.1.13	Vibration resistance		P
	The luminaires must continue to work in situations of vibration to which they are subject when in normal use, not being able to present any electrical or mechanical failures such as cracks, breaks, warping, opening of the fasteners and others that may compromise their performance. :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict

4	TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY		P
4.2	Performance requirements		P
4.2.1	Power		P
	The total power of the circuit, at rated voltage, must not exceed 110% of the declared value. :	See table 1	P

4.2.2	Power factor		P
	The power factor of the luminaires must meet the following requirements: The measured power factor of the circuit cannot be less than the declared value by more than 0.05, when the luminaire is supplied with rated voltage and frequency. The power factor must be equal to or greater than 0.92. :	See table 1	P

4.2.3	Voltage and current output		P
	The output voltage and current conditions of the control device during operation shall be as follows: For control devices with non-stabilized output voltage, when supplied with the rated voltage, the output voltage must not differ by more than $\pm 10\%$ from the rated voltage of the LED modules. :	See table 2	N/A
	For control devices with a stabilized output voltage, when powered at any voltage between 92% and 106% of the rated voltage, the output voltage cannot differ by more than $\pm 10\%$ from the rated voltage of the LED modules. :	See table 2	N/A
	For control devices with non-stabilized output current, when supplied with the rated voltage, the output current cannot differ by more than $\pm 10\%$ from the rated current of the LED modules. :	See table 2	N/A
	For control devices with stabilized output current, when powered at any voltage between 92% and 106% of the rated voltage, the output current cannot vary more than $\pm 10\%$ of the rated current of the LED modules. :	See table 2	N/A
	The luminaire with LED technology must have a surge protection device. :	See table 2	P

4.2.4	Supply current and Harmonics Limit		P
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INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict

	The supply current, at rated voltage, must not differ by more than 10% from the value declared on the control device or in the supplier's literature :	See table 1	P
	The harmonics of the supply current must comply with the IEC 61000-3-2:2014 standard ((Electromagnetic compatibility (EMC) - Limits for harmonic current emissions (equipment input current < 16 A per phase)). :		P

4.2.5	Energy efficiency		P															
	The luminaires must meet the minimum energy efficiency (EE) of 68 lm/W, as well as be classified in the Energy Efficiency classes of Table 5: Table 5 LED Road Luminaire EE <table> <tr> <th>Classes</th> <th>Energy EfficiencyLevel (lm/W)</th> <th>Minimum Acceptable Value Measured (lm/W)</th> </tr> <tr> <td>A</td> <td>EE≥100</td> <td>98</td> </tr> <tr> <td>B</td> <td>90≤EE<100</td> <td>88</td> </tr> <tr> <td>C</td> <td>80≤EE<90</td> <td>78</td> </tr> <tr> <td>D</td> <td>70≤EE<80</td> <td>68</td> </tr> </table> :	Classes	Energy EfficiencyLevel (lm/W)	Minimum Acceptable Value Measured (lm/W)	A	EE≥100	98	B	90≤EE<100	88	C	80≤EE<90	78	D	70≤EE<80	68	See table 1	P
Classes	Energy EfficiencyLevel (lm/W)	Minimum Acceptable Value Measured (lm/W)																
A	EE≥100	98																
B	90≤EE<100	88																
C	80≤EE<90	78																
D	70≤EE<80	68																
	The average energy efficiency measured cannot be less than the minimum acceptable values defined in Table 5, nor less than 90% of the declared energy efficiency value..... :		P															

4.2.6	Correlated color temperature (TCC)	P																														
	A temperatura de cor correlata (TCC) nominal de uma lâmpada deve se situar entre 2.700 K e 6.500 K, seguindo as variações estabelecidas na Tabela 6: Table 6CCT <table><tr><th>Minimum value (K)</th><th>Rated TCC (K)</th><th>Maximum Value (K)</th></tr><tr><td>2580</td><td>2700</td><td>2870</td></tr><tr><td>2870</td><td>3000</td><td>3220</td></tr><tr><td>3220</td><td>3500</td><td>3710</td></tr><tr><td>3710</td><td>4000</td><td>4260</td></tr><tr><td>4260</td><td>4500</td><td>4746</td></tr><tr><td>4746</td><td>5000</td><td>5312</td></tr><tr><td>5312</td><td>5700</td><td>6022</td></tr><tr><td>6022</td><td>6500</td><td>7042</td></tr><tr><td>Flexible TCC (2800 – 5600K)</td><td>TF^I ± ΔT^{II}</td><td></td></tr></table> i) TF must be chosen in 100K steps (2800, 2900, ..., 6400K), excluding the TCC nominal values listed above. ii) ΔT must be calculated by ΔT= 1,1900 x 10⁻⁸ x T³ - 1,5434 x 10⁻⁴ x T² + 0,7168 x T - 902,55	Minimum value (K)	Rated TCC (K)	Maximum Value (K)	2580	2700	2870	2870	3000	3220	3220	3500	3710	3710	4000	4260	4260	4500	4746	4746	5000	5312	5312	5700	6022	6022	6500	7042	Flexible TCC (2800 – 5600K)	TF ^I ± ΔT ^{II}		See table 1 P
Minimum value (K)	Rated TCC (K)	Maximum Value (K)																														
2580	2700	2870																														
2870	3000	3220																														
3220	3500	3710																														
3710	4000	4260																														
4260	4500	4746																														
4746	5000	5312																														
5312	5700	6022																														
6022	6500	7042																														
Flexible TCC (2800 – 5600K)	TF ^I ± ΔT ^{II}																															

INMETRO Portaria No. 62-2022																		
Clause	Test Item and requirements	Results - Remark	Verdict															
4.2.7	Color reproduction index (IRC)		P															
	The General Color Reproduction Index (Ra), which characterizes the Color Reproduction Index (CRI), must be greater than or equal to 70 (Ra ≥ 70). ... :	See table 1	P															
4.2.8	Maintenance of the luminous flux of the luminaire		P															
	Minimum life expectancy for maintaining 70% luminous flux (L70) is 108000 hours. :	See table 5	P															
4.2.9	Built-in control device durability		P															
	The built-in control device must have a durability commensurate with the rated life of the lamp. :		P															
4.2.10	Classification of distribution		P															
	The luminaire must be classified according to the transverse and longitudinal light intensity distributions, according to the categories in Table 7, for an installation with an elevation angle of 0°). Table 7 Classification of light intensity distributions <table><tr><th>Distribution</th><th>Category of classification</th></tr><tr><td>Transversal</td><td>Type I / II / III</td></tr><tr><td>Longitudinal</td><td>Short / Mean / Long</td></tr></table> :	Distribution	Category of classification	Transversal	Type I / II / III	Longitudinal	Short / Mean / Long	See table 4	P									
Distribution	Category of classification																	
Transversal	Type I / II / III																	
Longitudinal	Short / Mean / Long																	
4.2.11	Classification of luminous distribution control (CDL)		P															
	The luminaire must be classified as to the control of light distribution (CDL), for an installation with an elevation angle of 0°, in the categories specified in Table 8 Table 8 CDL Category <table><tr><th rowspan="2">Category</th><th colspan="2">Criterion</th></tr><tr><th>Direction of light emitted by the light source</th><th>CDL</th></tr><tr><td rowspan="2">Totally limited</td><td>over 90°</td><td>0%</td></tr><tr><td>over 80° up to 90°</td><td>≤ 10%</td></tr><tr><td rowspan="2">Limited</td><td>over 90°</td><td>≤ 2,5%</td></tr><tr><td>over 80° up to 90°</td><td>≤ 10%</td></tr></table> :	Category	Criterion		Direction of light emitted by the light source	CDL	Totally limited	over 90°	0%	over 80° up to 90°	≤ 10%	Limited	over 90°	≤ 2,5%	over 80° up to 90°	≤ 10%	See table 4	P
Category	Criterion																	
	Direction of light emitted by the light source	CDL																
Totally limited	over 90°	0%																
	over 80° up to 90°	≤ 10%																
Limited	over 90°	≤ 2,5%																
	over 80° up to 90°	≤ 10%																
4.2.12	Ultraviolet radiation resistance for polymer (UV) lenses and refractors		N/A															

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) Polymer lenses and refractors subject to weather exposure must not show premature degradation that compromises the operational performance of the luminaires; b) The transparency of polymer lenses and refractors must not be less than 90% of the initial value; c) The refractors must be designed against UV rays and with uniform thickness, in order to avoid distortions in the photometric curve. :		N/A

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict

5	MARKING REQUIREMENTS AND INSTRUCTIONS		P
5.1	Marking		P
	The markings must be legibly and indelibly indicated on the luminaire, by means of an adhesive, engraving or other method that guarantees legibility and indelibility. Additionally, the luminaires must present the following information, in addition to that established in the ABNT NBR 15129:2012 standard (Luminaires for Public Lighting - Particular requirements):		P
	a) Serial number of manufacture of the luminaire;		P
:	b) Luminaire model.		P

5.2	Instruction leaflet		P
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive.		P
	a) name and/or brand of the supplier;		P
	b) model or supplier code;		P
	c) photometric classification, with indication of the corresponding elevation angle;		P
	d) rated power, in watts;		P
	e) rated voltage range, in volts;		P
	f) rated frequency, in hertz;		P
	g) country of origin of the product;		P
	h) user instructions for electrical installation, recommended handling and care;		P
	i) information about the importer or distributor;		P
	j) product warranty, from the date of the sales note to the consumer, being at least 60 months;		P
	k) expiry date for storage: undetermined;		P
	l) type of protection against electric shock;		P
	m) guidelines for obtaining the IES file of photometry.		P

5.3	Additional marking for LED road luminaire		P
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INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) The instruction leaflet must also contain information about the controller (brand, model, power, rated electrical current) and life expectancy (h) that corresponds to maintaining a luminous flux of 70% (L70) or 80% (L80)		P
	b) The controller must be marked according to ABNT NBR IEC 61347-2-13:2012 (Lamp Control Device - Part 2-13: Particular requirements for dc or ac powered electronic control for LED modules) and ABNT NBR 16026:2012 (DC or AC electronic control device for LED modules – Performance requirements)		P
	c) Packages must be identified externally with the following minimum information, legibly and indelibly marked, by means of an adhesive, engraving or other method that guarantees legibility and indelibility: - name and/or factory brand; - model or light fixture type; - CNPJ and supplier address; - Gross weight; and - Capacity and pile position.		P

Appendix I: Technical Specification Spreadsheet - PET

01 – COMMERCIAL NAME											
BRAND		LUMANTI									
SUPPLIER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
MANUFACTURER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
02 - IDENTIFICATION OF FAMILY											
FAMILY (*)				LUMANTI/LED Technology/ Street light LED/ 108000h							
LED BRAND / MODEL				LED Technology							
TYPE OF LIGHT				Street light LED							
DECLARED LIFE (hr)				108000h							
FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE											
BARCODE	MODEL	TEST VOLTAGE (V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
790859950 6145	LM450	90-305	50/60	50	>0.99	8500	/	170	>70	4000	6182973.50P
790859950 6244	LM550	90-305	50/60	50	>0.99	8500	/	170	>70	5000	6182973.50P
790859950 6152	LM460	90-305	50/60	60	>0.99	10200	/	170	>70	4000	6182973.50P
790859950 6251	LM560	90-305	50/60	60	>0.99	10200	/	170	>70	5000	6182973.50P
790859950 6169	LM4100	90-305	50/60	100	>0.99	17000	/	170	>70	4000	6182973.50P
790859950 6268	LM5100	90-305	50/60	100	>0.99	17000	/	170	>70	5000	6182973.50P

01 – COMMERCIAL NAME											
BRAND		LUMANTI									
SUPPLIER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
MANUFACTURER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
02 - IDENTIFICATION OF FAMILY											
FAMILY (*)				LUMANTI/LED Technology/ Street light LED/ 108000h							
LED BRAND / MODEL				LED Technology							
TYPE OF LIGHT				Street light LED							
DECLARED LIFE (hr)				108000h							
FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE											
BARCODE	MODEL	TEST VOLTAGE (V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
790859950 6176	LM4150	90-305	50/60	150	>0.99	25500	/	170	>70	4000	6182973.50P
790859950 6275	LM5150	90-305	50/60	150	>0.99	25500	/	170	>70	5000	6182973.50P
790859950 6183	LM4200	90-305	50/60	200	>0.99	34000	/	170	>70	4000	6182973.50P
790859950 6282	LM5200	90-305	50/60	200	>0.99	34000	/	170	>70	5000	6182973.50P
790859950 6091	LM450B	90-305	50/60	50	>0.99	8500	/	170	>70	4000	6182973.50P
790859950 6190	LM550B	90-305	50/60	50	>0.99	8500	/	170	>70	5000	6182973.50P
790859950 6107	LM460B	90-305	50/60	60	>0.99	10200	/	170	>70	4000	6182973.50P
790859950 6206	LM560B	90-305	50/60	60	>0.99	10200	/	170	>70	5000	6182973.50P

01 – COMMERCIAL NAME											
BRAND		LUMANTI									
SUPPLIER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
MANUFACTURER		Guangdong Hongshi Care Lighting Technology Co.,LTD.									
02 - IDENTIFICATION OF FAMILY											
FAMILY (*)				LUMANTI/LED Technology/ Street light LED/ 108000h							
LED BRAND / MODEL				LED Technology							
TYPE OF LIGHT				Street light LED							
DECLARED LIFE (hr)				108000h							
FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE											
BARCODE	MODEL	TEST VOLTAGE (V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
790859950 6114	LM4100 B	90-305	50/60	100	>0.99	17000	/	170	>70	4000	6182973.50P
790859950 6213	LM5100 B	90-305	50/60	100	>0.99	17000	/	170	>70	5000	6182973.50P
790859950 6121	LM4150 B	90-305	50/60	150	>0.99	25500	/	170	>70	4000	6182973.50P
790859950 6220	LM5150 B	90-305	50/60	150	>0.99	25500	/	170	>70	5000	6182973.50P
790859950 6138	LM4200 B	90-305	50/60	200	>0.99	34000	/	170	>70	4000	6182973.50P
790859950 6237	LM5200 B	90-305	50/60	200	>0.99	34000	/	170	>70	5000	6182973.50P

Add/Delete Rows as Necessary

Appendix II: Test Results**Table 1: Initial Test Results:**

Summary of test results (if applicable):

Test Results										
Model	Test Voltage (V)	Test Current (A)	Lamp Wattage (W)	Power factor	Luminous flux Φ (lm)	Efficacy (lm/W)	CRI	CCT (K)	Chromaticity	
									x	y
LM550	127	0.3865	48.8	0.995	8058.4	165.3	71.8	5030	/	/
	220	0.2256	47.4	0.96	7976.9	168.3	72.1	5046	/	/
	277									
LM5200	127	1.5980	201.5	0.998	31991.7	158.8	72.2	5122	/	/
	220	0.9241	198.9	0.98	31352.2	157.6	72.1	5117	/	/
	277									
LM5150	127	1.1680	147.7	0.998	23345.5	158.1	72.0	5089	/	/
	220	0.6664	144.0	0.98	23482.6	163.1	72.1	5096	/	/
	277									
LM5100	127	0.7879	99.5	0.998	16191.0	162.8	71.5	5001	/	/
	220	0.4529	97.5	0.98	16182.9	166.0	71.8	5013	/	/
	277									
LM560	127	0.4681	59.1	0.997	9297.0	157.3	72.4	5077	/	/
	220	0.2774	59.1	0.97	9343.6	158.1	72.2	5062	/	/
	277									
LM450	127	0.3861	48.8	0.999	8040.9	164.7	70.8	3879		
	220	0.2282	48.0	0.96	8040.2	167.7	70.8	3880		
	277									
LM460	127	0.4758	60.1	0.997	9575.9	159.4	70.8	3894	/	/

	220	0.2796	59.6	0.97	9709.6	163.0	70.8	3891	/	/
	277									
LM4100	127	0.7799	98.8	0.997	16022.2	162.1	70.6	3865	/	/
	220	0.4507	97.0	0.98	15958.4	164.5	70.6	3869	/	/
	277									
LM4150	127	1.1390	144.3	0.999	23529.7	163.1	70.8	3927		
	220	0.6674	144.4	0.98	24020.9	166.3	70.8	3920		
	277									
LM4200	127	1.6370	205.7	0.999	32680.0	158.9	70.7	3937		
	220	0.9341	201.7	0.98	32710.3	162.2	70.8	3943		
	277									

Table 2: Output voltage and current of control device during operation:

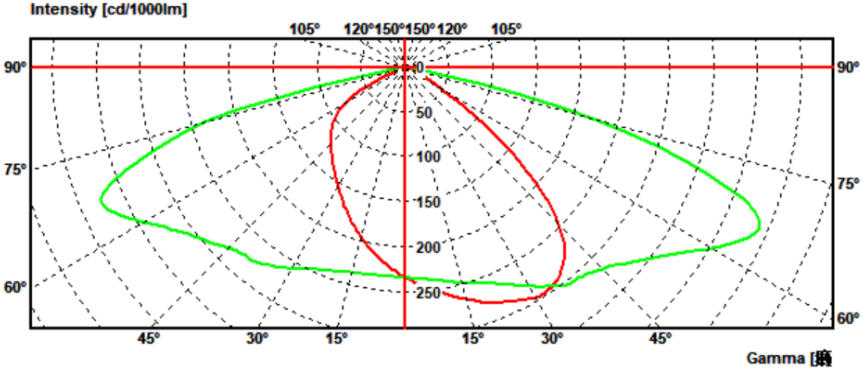
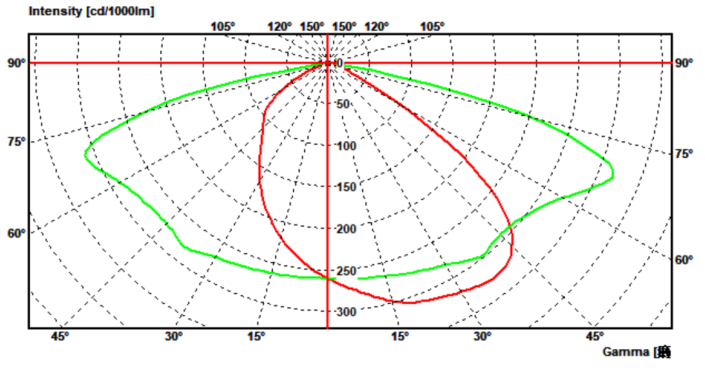
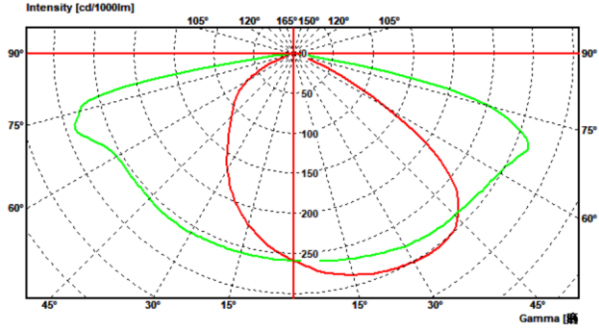
Test Results					
Sample No	Input Voltage (V)	Output voltage (V)		Output current (A)	
		Stabilized	Non- Stabilized (Range)	Stabilized	Non- Stabilized (Range)
1	101.0	/	/		/
	220.0	/	/		/
	294.0	/	/		/
2	101.0	/	/		/
	220.0	/	/		/
	294.0	/	/		/
3	101.0	/	/		/
	220.0	/	/		/
	294.0	/	/		/
4	101.0	/	/		/
	220.0	/	/		/
	294.0	/	/		/

Table 3: Test Result of Lumen Maintenance:

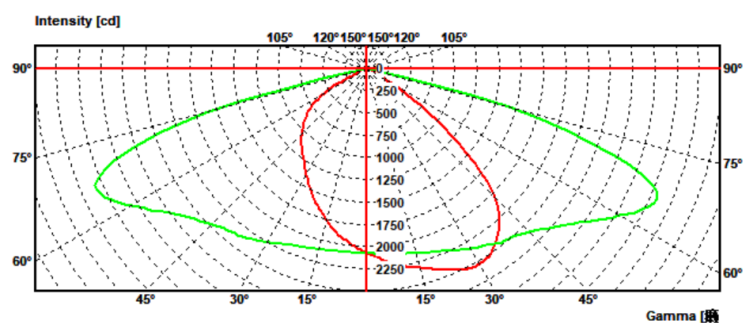
Test Results				
Sample No	Test Voltage (V)	Φ (lm)		Lumen Maintenance
		Initial	6000 H	6000 H
1	/	/	/	/
2	/	/	/	/
3	/	/	/	/
Average / Result	/	/	/	/

Table 4: Luminous Intensity Distribution:

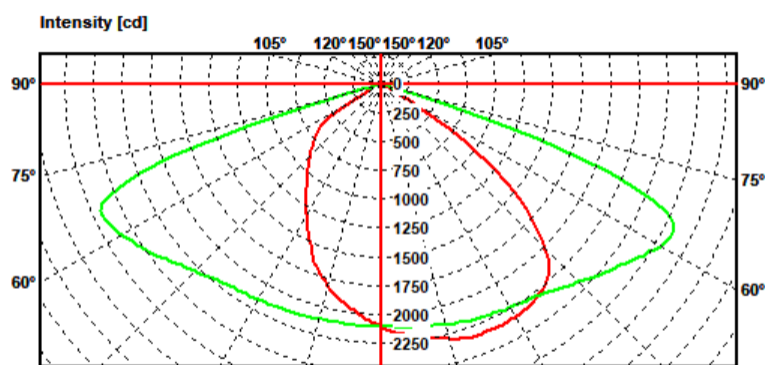
C interval 5° (0°-360°); Gama interval 2,5° (0°-120°):

Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM550	3874,0	117,2	0,4%	0,73%
				
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM510 0	6536,2	119,4	0,43%	0,82%
				
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM515 0	9748,9	118,0	0,39%	0,74%
				
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	

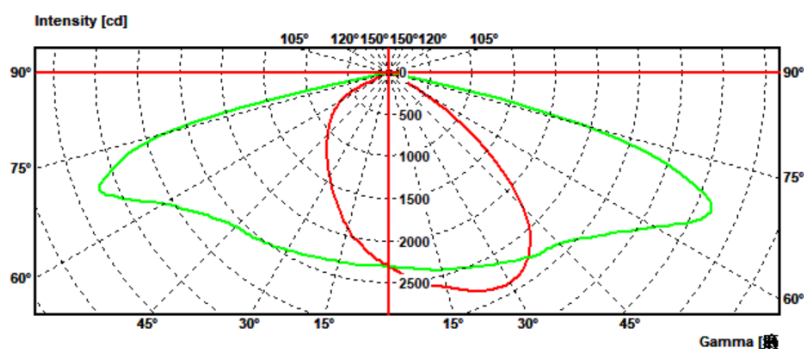
			Above 90°	Above 80° and until 90°
LM520 0	15567.5	112.3	0,33 %	0.5%



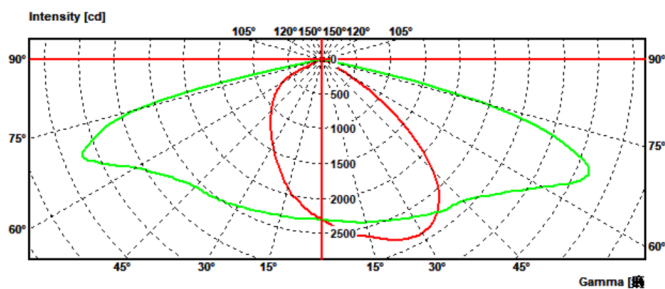
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM560	4450,6	116,7	0,35%	0,52%



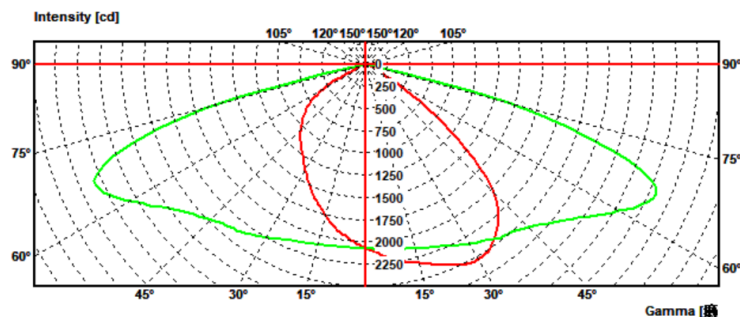
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM410 0	5496,5	118,1	0,42%	0,66%



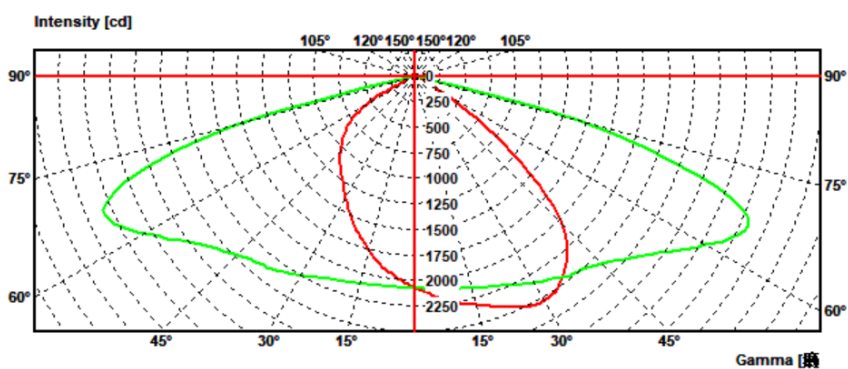
Model	I _{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM460	4450,1	116,9	0,32%	0,43%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM4150	8128,7	117,9	0,42%	0,89%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM4200	11995,0	119,6	0,41%	0,73%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
LM450	4377,8	117,4	0,31%	0,57%

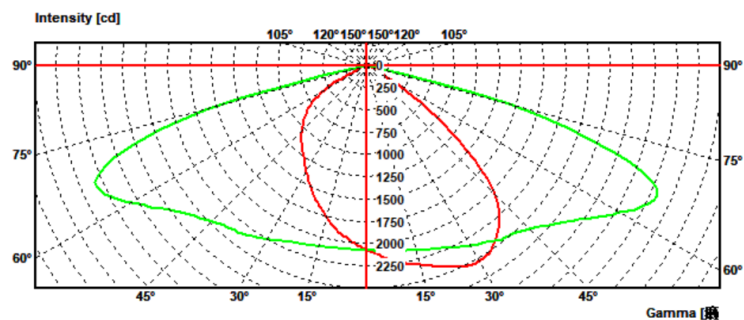


Table 5: In Situ Temperature Measurement Test and Qualification of the electronic control device:

Type reference	LM4200
Lamp source used	Refer to the Test item particulars mentioned on page 2
LM-80 report No.	Refer to the Test item particulars mentioned on page 2
LED driver used.....	Integrated
Mounting position	Reference to the TMP _{LED} point base on the LM 80 report
Supply wattage (W)	193.2
Supply current (A)	0.904
Power factor	0.971
Measured LED drive current (mA)	131,7
Maximum LED current listed on LM-80 report (mA)	160
Maximum temperature listed on LM-80 report (°C)	105
Table: measured temperatures corrected for ta 1 = 25 C and ta 2 = 35 C (only for tc)	
- test 1: rated voltage	220

In-suit Temperature Measurement Point	In-suit Temperature (°C)	
	test 1 (ta 1)	test 1 (ta 2)
TMP _{LED} (Ts)	81,1	--
TMP _{driver} (tc)	--	--

Time (t) at which to estimate lumen maintenance (hours):	108000
Lumen maintenance at time (t) (%):	90,5
Reported L ₇₀ (18k) (hours):	> 108000

Table 5: In Situ Temperature Measurement Test and Qualification of the electronic control device:

Type reference	LM5200
Lamp source used	Refer to the Test item particulars mentioned on page 2
LM-80 report No.	Refer to the Test item particulars mentioned on page 2
LED driver used.....	Integrated
Mounting position	Reference to the TMP _{LED} point base on the LM 80 report
Supply wattage (W)	144.4
Supply current (A)	0.667
Power factor	0.98
Measured LED drive current (mA)	105,1
Maximum LED current listed on LM-80 report (mA)	160
Maximum temperature listed on LM-80 report (°C)	105
Table: measured temperatures corrected for ta 1 = 25 C and ta 2 = 35 C (only for tc)	
- test 1: rated voltage	220

In-suit Temperature Measurement Point	In-suit Temperature (°C)	
	test 1 (ta 1)	test 1 (ta 2)
TMP _{LED} (Ts)	79,5	--
TMP _{driver} (tc)	--	--

Time (t) at which to estimate lumen maintenance (hours):	108000
Lumen maintenance at time (t) (%):	90,5
Reported L ₇₀ (18k) (hours):	> 108000

Appendix III: LED source LM-80 report




Test Report Of ANSI/IES LM-80-15

Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

Report Number..... : N02A23120233L01101

Client..... : SHENZHEN ZSOPTO OPTOELECTRONIC TECHNOLOGY CO.,LTD.

Address..... : Room no. 1015, 10th Floor, Yizhan Business Building, No. 8 Yizhan 4th Road, Shapu Community, Songgang Street, Bao'an District Shenzhen, Postal code 518105, Guangdong Province, Republic of China

Test Product Family. : PCT3030

Test Part Number..... : S-G3030

Brand Name..... : **ZSOPTO**

Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : 2021-03-22

Date of test : 2021-04-06 to 2023-06-12

Date of report..... : 2023-12-12

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

TRF No.: 02-N005-1A

Web: www.gtgroup.com

TRF Originator: GTG

E-mail: info@gtgroup.com

TRF Date: 2022-07-01

Tel.: 86-400 755 8988

Appendix IV: Photos



LM450 and LM550



LM460 and LM560



LM4100 and LM5100



LM4150 and LM5150



LM4200 and LM5200

Appendix V: list of Uncertainty

Test	Uncertainty ($U_{rel}, K=2$)	Uncertainty ($U, K=2$)
voltage	$2,2 \times 10^{-4}$	
power	$2,2 \times 10^{-4}$	
current	$8,2 \times 10^{-4}$	
power factor	$7,3 \times 10^{-5}$	
luminous flux	2,10%	
color temperature		18K

-----END-----

DECLARAÇÃO DE GARANTIA POR DEFEITO DE FABRICAÇÃO

A LUMANTI ILUMINAÇÃO LTDA, pessoa jurídica de direito privado, inscrita no CNPJ sob nº 06.171.042/0001-71, de nome fantasia Lumanti estabelecida na rua Carlos Reichmann, número 67, bairro Santa Catarina, neste ato representada por Fabrício Bez, brasileiro, casado, domiciliado na rua Carlos Reichmann, número 67, bairro Santa Catarina, CPF número 965.776.730-04 e RG número 1073152736.

Assegura a garantia de (5) cinco anos sobre:

- LM550B LUMINARIA PUBLICA LED METROPOLE G2 50W 5000K 8500 LUMENS AUTOVOLT PESCOCO 62MM C/ BASE
- LM550 LUMINARIA PUBLICA LED METROPOLE G2 50W 5000K 8500 LUMENS AUTOVOLT PESCOCO 62MM S/ BASE
- LM560B LUMINARIA PUBLICA LED METROPOLE G2 60W 5000K 10200 LUMENS AUTOVOLT PESCOCO 62MM C/ BASE
- LM560 LUMINARIA PUBLICA LED METROPOLE G2 60W 5000K 10200 LUMENS AUTOVOLT PESCOCO 62MM S/ BASE
- LM5100B LUMINARIA PUBLICA LED METROPOLE G2 100W 5000K 17000 LUMENS AUTOVOLT PESCOCO 62MM C/ BASE
- LM5100 LUMINARIA PUBLICA LED METROPOLE G2 100W 5000K 17000 LUMENS AUTOVOLT PESCOCO 62MM S/ BASE
- LM5150B LUMINARIA PUBLICA LED METROPOLE G2 150W 5000K 25500 LUMENS AUTOVOLT PESCOCO 62MM C/ BASE
- LM5200B LUMINARIA PUBLICA LED METROPOLE G2 200W 5000K 34000 LUMENS AUTOVOLT PESCOCO 62MM C/ BASE

• A LUMANTI garante os produtos contra defeitos de FABRICAÇÃO pelo prazo de 5 anos. O referido prazo será contado a partir da data da nota fiscal de aquisição dos produtos. A garantia, se comprovada, abrange a substituição do produto OU se possível do componente defeituoso. Em caso de indisponibilidade ou descontinuidade do produto, a LUMANTI oferecerá a substituição por outro produto equivalente.

• A garantia não acobertará produtos quebrados, trincados, amassados, defeitos ou falhas causados por queda, os danos causados durante o transporte, defeitos decorrentes de casos fortuitos, de força maior (como por exemplo: descarga elétrica, surtos de tensão,

inundações, etc...), instalação fora da especificação, uso impróprio ou qualquer tipo de violação às instruções contidas em normas de segurança ou elétricas.

- Será aplicada a garantia quando os produtos forem corretamente instalados e dentro dos valores elétricos de operação e em condições ambiente, conforme informações e condições de operação contidas nos catálogos, manuais de cada produto, embalagem e etiqueta do produto, devendo também, obedecer às normas estabelecidas por órgãos reguladores locais.

Não serão cobertos os custos referentes a qualquer atividade de remoção ou reinstalação, despesas com mão de obra e frete dos produtos defeituosos e seguro de transporte.

- Para uso da garantia será dever do consumidor levar o produto até o fabricante, revendedor ou assistência técnica autorizada (garantia de balcão), e apresentar o documento de aquisição (nota fiscal).

- Os produtos trocados ou consertados terão sempre o prazo de garantia legal do Código Consumidor ou o prazo restante, sempre tendo como início a data de aquisição da nota fiscal de compra. O prazo de garantia não será renovado por motivo conserto ou troca do produto.

- No prazo total da garantia oferecida pelo fabricante/importador já está incluso o período de garantia legal. Assim, quando a Lumanti oferece 5 anos de garantia, neste período já está incluída a garantia legal de 90 dias, complementada por mais 57 meses de garantia contratual.

- A LUMANTI reserva-se ainda ao direito de fazer visita técnica no local de instalação do produto que apresentou defeito para análise, bem como poderá solicitar detalhes ao consumidor sobre como ocorreu a falha do produto, componentes afetados, detalhes da nota fiscal, quantidade, percentual de falhas e horas de uso até o defeito.

- A garantia perderá a validade quando houver remoção e/ou alteração da data de fabricação, lote ou outras gravações de identificação do produto.

- A garantia será anulada em caso de reparos ou modificações realizados por qualquer pessoa ou empresa não autorizada pela LUMANTI. Devido aos constantes avanços tecnológicos, a LUMANTI se reserva o direito de promover alterações nos produtos por ela comercializados, sem comunicação prévia, desde que tais alterações não interfiram em perda de qualidade.

- Este Termo de Garantia terá eficácia até que o mesmo seja extinto ou substituído por um novo termo.

LUMANTI ILUMINACAO
LTDA:06171042000171

Assinado de forma digital por
LUMANTI ILUMINACAO
LTDA:06171042000171
Dados: 2025.02.11 11:17:35 -03'00'

Lumanti Iluminação LTDA.





Avaliação da Conformidade

Procurando algo?

Este plug-in não tem suporte

Buscar

Pagina inicial (<http://www.inmetro.gov.br/>) / Qualidade (<http://www.inmetro.gov.br/qualidade/>) / Registro de objeto (./) / Consultar registros concedidos

Registro de Objeto

Consultar registros concedidos

Detalhes do Registro 005286/2024

Status
Ativo

Concessão
13/05/2024

F BEZ DISTRIBUIDORA LTDA

Rua Carlos Reichmann, 67 Cep:99711-374 | Santa Catarina - Erechim - RS

Tel: (Telefone) 05435228848 - fernando@lumanti.com.br (mailto:fernando@lumanti.com.br) - CNPJ: (CNPJ)06.171.042/0001-71



Programa de Avaliação da Conformidade

Luminárias para Iluminação Pública Viária

Portaria Inmetro

nº (número) 62 de 17/02/2022

Nome de Família

Luminária Pública LED /
ZSOPTO / PCT3030 / IP66 /
108000H

Certificado

6182974.31

↵Pesquisar histórico de alterações

Data	Alteração	Marca	Modelo	Descrição
------	-----------	-------	--------	-----------

Data	Alteração	Marca	Modelo	Descrição
13/05/2024	Incluido	LUMANTI	LM450 - LM450B	50W/8500lm/170lm/W/FP>0.99/4000K
13/05/2024	Incluido	LUMANTI	LM550 - LM550B	50W/8500lm/170lm/W/FP>0.99/5000K
13/05/2024	Incluido	LUMANTI	LM460 - LM460B	60W/10200lm/170lm/W/FP>0.99/4000K
13/05/2024	Incluido	LUMANTI	LM560 - LM560B	60W/10200lm/170lm/W/FP>0.99/5000K
13/05/2024	Incluido	LUMANTI	LM4100 - LM4100B	100W/17000lm/170lm/W/FP>0.99/4000K
13/05/2024	Incluido	LUMANTI	LM5100 - LM5100B	100W/17000lm/170lm/W/FP>0.99/5000K
13/05/2024	Incluido	LUMANTI	LM4150 - LM4150B	150W/25500lm/170lm/W/FP>0.99/4000K
13/05/2024	Incluido	LUMANTI	LM5150 - LM5150B	150W/25500lm/170lm/W/FP>0.99/5000K
13/05/2024	Incluido	LUMANTI	LM4200 - LM4200B	200W/34000lm/170lm/W/FP>0.99/4000K
13/05/2024	Incluido	LUMANTI	LM5200 - LM5200B	200W/34000lm/170lm/W/FP>0.99/5000K

<< Voltar



Relé Fotocontrolador Compacto

MODELO LERL4001

O Relé Compacto LERL4001 Smart X-Control controla uma carga, ligando-a ao anoitecer e desligando-a ao amanhecer ou pelo tempo programado. É ideal para ser utilizado no controle de cargas e iluminação de vitrines, letreiros, fachadas, jardim e demais ambientes externos residenciais, comerciais, hotéis e condomínios. A tecnologia Smart X-Control possibilita ao usuário configurá-lo através de um smartphone, disponível para IOS e Android.

Produto



Características Técnicas

- Tensão: 100 - 240 V~ 50/60 Hz.
- Aplicação: comando automático de cargas e lâmpadas (LED, incandescentes, fluorescentes, mistas, eletrônicas e similares).
- Regulagem de tempo: Automático, 1, 1:30, 2, 2:30, 3, 3:30, 4, 4:30, 5, 5:30, 6, 6:30, 7, 7:30, 8, 8:30, 9, 9:30, 10, 10:30, 11, 11:30, 12 horas;
- LED indicador de programação.
- Fotocélula: 1 (à noite) a 30 (ao entardecer) com opção de AutoLux;
- IP67 – Uso externo, resistindo à chuva e umidade
- Consumo: menor que 1,0W. •Temperatura de operação: -5°C a 50°C.
- Amigo da lâmpada: sistema de acionamento da carga com baixa tensão elétrica < 50 V, aumentando a vida útil do conjunto (carga e relé).
- Filtro de tempo: duplo retardo que impede acionamentos indevidos devido a variações

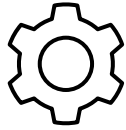
- bruscas de luminosidade como raios, laser, nuvens e etc. Entre 2 e 5 segundos para ligar ou para desligar.
- Contatos do relé quando desenergizado: normalmente aberto (NA)
 - Filtro de tempo: duplo retardo que impede acionamentos indevidos devido a variações bruscas de luminosidade como raios, laser...
 - Função Auto-Lux: permite memorizar a iluminação do ambiente a partir do qual o produto irá ligar a carga.
 - Função manter carga ligada (Hold On) ou desligada (hold off): tempo programado (1 a 12 horas).
 - Configurações de Fábrica: retorna todos os parâmetros aos valores originais de fábrica, função relé fotocontrolador.
 - Suporte de fixação removível.

TABELA DE POTÊNCIA

Tensão	Halógena	Eletrônica/LED
220Vac	1000W	300W
110Vac	1000W	200W

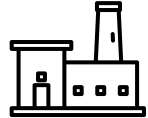
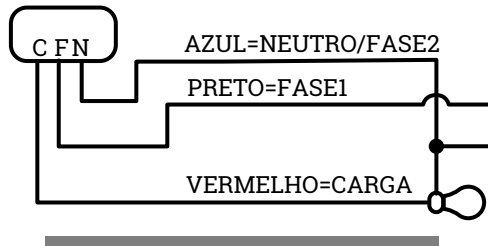
Relé Fotocontrolador Compacto

MODELO LERL4001



INSTALAÇÃO DO RELÉ

ATENÇÃO: não há necessidade de abrir o relé ou utilizar ferramentas para realizar a programação.



PROGRAMAÇÃO DE FÁBRICA

Ao energizar o relé, ele estará funcionando na programação padrão de fábrica:

Fotocélula nível 3.



INSTALAÇÃO DO APLICATIVO

Para alterar a programação do seu sensor, é necessário a utilização do APP Smart X-Control. Você consegue localizá-lo através de sua loja de preferência Google Play ou APP Store, buscando por "Exatron Smart X-Control", ou acessando o QRCode.



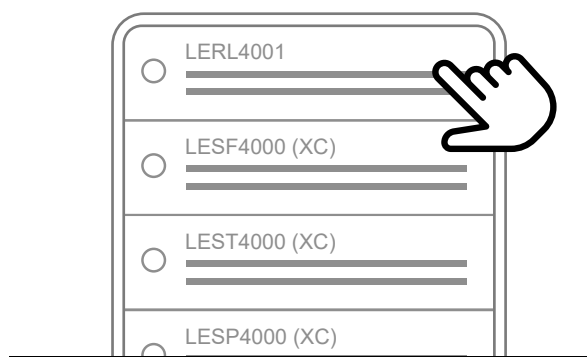
Disponível para smartphones com sistema Android (versão 5.0 ou superior) e iOS (versão 9.3 ou superior). Android, Google Play e o logotipo do Google Play são marcas registradas da Google LLC. iOS, App Store e o logotipo da App Store são marcas registradas da Apple Inc.



PROGRAMAÇÃO DO RELÉ

PASSO 1

Selecione o produto que você deseja configurar.



PASSO 2

Altere as programações de **TEMPO**, **NÍVEL DE LUZ AMBIENTE** ou defina o **AUTO-LUX**.



Nível de luz ambiente (fotocélula) - determina quando o relé deve acionar a lâmpada: em uma escala de 1 a 30, sendo 1 à noite e 30 ao entardecer.

Tempo - define o tempo que o relé manterá a lâmpada acesa. Obs: desabilitada, o sensor funcionará de modo automático.

Auto Lux - memoriza a luz ambiente atual como nível mínimo de luz ambiente.

PASSO 3

Para salvar a programação no seu sensor, aponte o flash do seu smartphone para a fotocélula do relé (em uma **distância de no máximo 5cm**). Em seguida, pressione "GRAVAR".



COMO IDENTIFICAR UMA GRAVAÇÃO BEM SUCEDIDA?

Se a configuração **for bem sucedida**, o dispositivo **irá piscar rapidamente** o led azul após o término da gravação.

Caso o LED permaneça **aceso por alguns segundos após efetuar a gravação**, o procedimento falhou. Neste caso, repita o processo.



Dicas: recomenda-se que a programação seja feita em locais onde não haja grande incidência de claridade. O aplicativo sempre inicia nas configurações padrões de fábrica



Ainda em dúvida ou precisando de ajuda?

Você pode entrar em contato conosco em horário comercial através dos telefones:

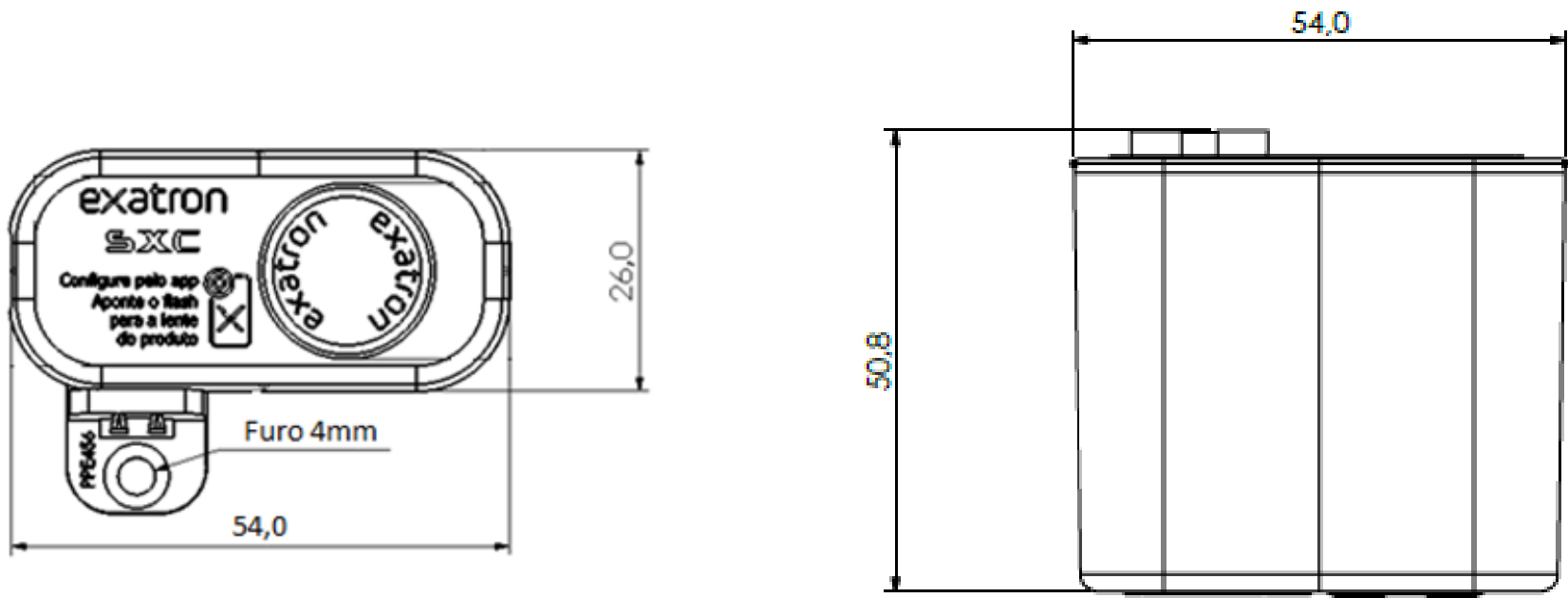
(51) 3357.5019 - Whatsapp

0800.541.3310

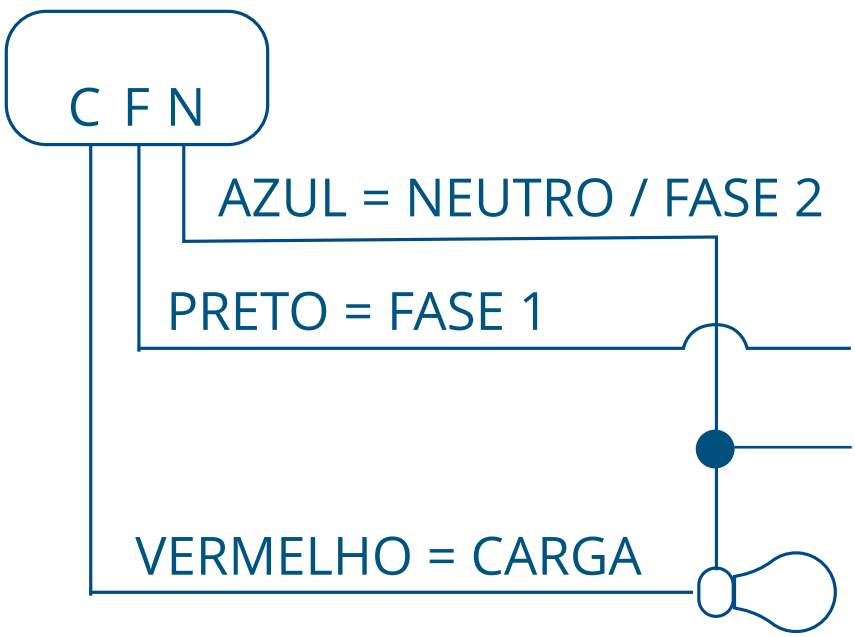
www.exatron.com.br

 Dimensões mecânicas:

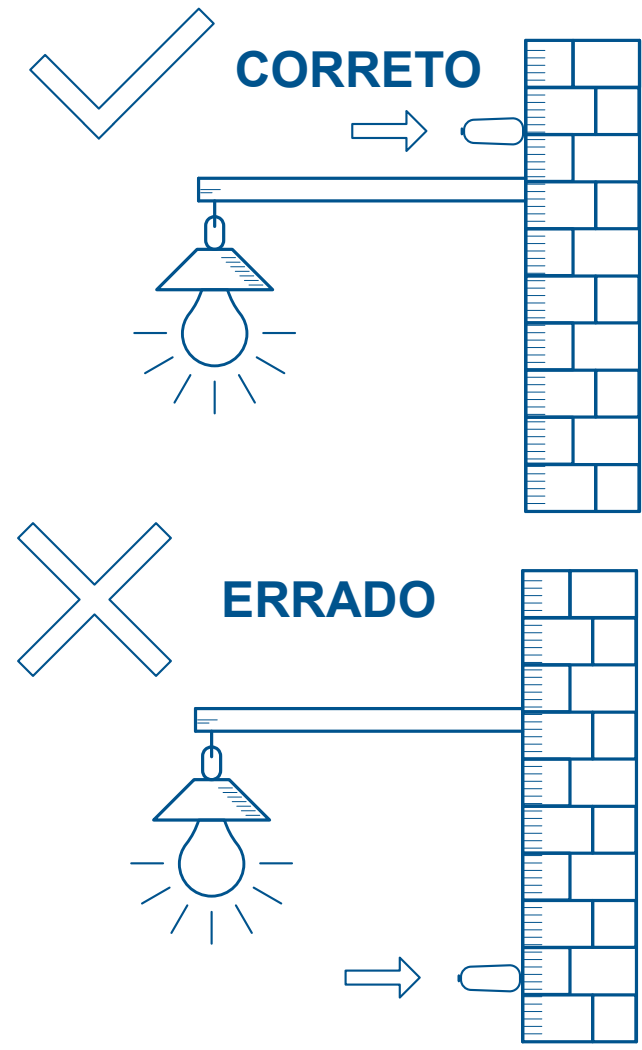
Medidas em milímetros



ESQUEMA ELÉTRICO



POSIÇÃO CORRETA DE INSTALAÇÃO





Test Report Of ANSI/IES LM-80-15

Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

Report Number..... : N02A23120233L01101

Client..... : SHENZHEN ZSOPTO OPTOELECTRONIC TECHNOLOGY CO.,LTD.

Address..... : Room no. 1015, 10th Floor, Yizhan Business Building, No. 8 Yizhan 4th Road,
Shapu Community, Songgang Street, Bao'an District Shenzhen, Postal code
518105, Guangdong Province, Republic of China

Test Product Family. : PCT3030

Test Part Number..... : S-G3030

Brand Name..... : **ZSOPTO**

Testing Laboratory... : Guangdong Meide Testing Technology Co., Ltd.

Address..... : 1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road, Songshan
Lake Hi-tech Industrial Development Zone, Dongguan City, Guangdong Pr., China.

Testing Location..... : As above

Date of receipt..... : 2021-03-22

Date of test : 2021-04-06 to 2023-06-12

Date of report..... : 2023-12-12

Tested by:

Jarvis Zhang

Jarvis Zhang/ Test Engineer

Checked by:

Sandy Chen

Sandy Chen/ Project Engineer

Approved by:

Jessie Li

Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

TRF No.: 02-N005-1A
Web: www.gtgggroup.com

TRF Originator: GTG
E-mail: info@gtgggroup.com

TRF Date: 2022-07-01
Tel.: 86-400 755 8988

ENERGY STAR® LM-80 Cover Sheet**Administrative Information**

Tested Product Family: PCT3030

Tested Part Number: S-G3030

DUT IdentificationDUT manufacture's name: SHENZHEN ZSOPTO OPTOELECTRONIC
TECHNOLOGY CO.,LTD.

DUT identification,e.g., model number: S-G3030

Description of DUT,including if the DUT is an LED
package or module: LED Package**DUT Characteristics**

Total input power(W): 1.2 W

Average current density per LED die(mA/mm²): 352 mA/mm²Average power density per LED die(W/mm²): 0.2816 W/mm²Representative CRI(Ra) of the tested sample set: 90
(Indicate whether the reported value is the mean or
Median value of the sample set,or per unit)

Minimum die edge to die edge spacing: 0.04mm

Table of Contents

1. General Information	4
1.1 Description of LED Light Sources	4
1.2 Standards Used	5
1.3 Test equipment list	5
1.4 Drive Level	5
1.5 Ambient Conditions for Maintenance Test	5
1.6 Photometric Measurement Method	6
1.7 Sample Set	7
2. Summary of Test Result	9
3. Test Data	21
3.1 Data Set 1, 55°C, 90mA (Lumen Maintenance)	21
3.2 Data Set 1, 55°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))	22
3.3 Data Set 1, 55°C, 90mA (Photon Flux Maintenance, Far-Red (PFMFR))	23
3.4 Data Set 1, 55°C, 90mA (Forward Voltage)	24
3.5 Data Set 1, 55°C, 90mA (Chromaticity Shift)	25
3.6 Data Set 2, 85°C, 90mA (Lumen Maintenance)	26
3.7 Data Set 2, 85°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))	27
3.8 Data Set 2, 85°C, 90mA (Photon Flux Maintenance, Far-Red (PFMFR))	28
3.9 Data Set 2, 85°C, 90mA (Forward Voltage)	29
3.10 Data Set 2, 85°C, 90mA (Chromaticity Shift)	30
3.11 Data Set 3, 105°C, 90mA (Lumen Maintenance)	31
3.12 Data Set 3, 105°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))	32
3.13 Data Set 3, 105°C, 90mA (Photon Flux Maintenance, Far-Red (PFMFR))	33
3.14 Data Set 3, 105°C, 90mA (Forward Voltage)	34
3.15 Data Set 3, 105°C, 90mA (Chromaticity Shift)	35
3.16 Data Set 4, 55°C, 160mA (Lumen Maintenance)	36
3.17 Data Set 4, 55°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))	37
3.18 Data Set 4, 55°C, 160mA (Photon Flux Maintenance, Far-Red (PFMFR))	38
3.19 Data Set 4, 55°C, 160mA (Forward Voltage)	39
3.20 Data Set 4, 55°C, 160mA (Chromaticity Shift)	40
3.21 Data Set 5, 85°C, 160mA (Lumen Maintenance)	41
3.22 Data Set 5, 85°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))	42
3.23 Data Set 5, 85°C, 160mA (Photon Flux Maintenance, Far-Red (PFMFR))	43
3.24 Data Set 5, 85°C, 160mA (Forward Voltage)	44
3.25 Data Set 5, 85°C, 160mA (Chromaticity Shift)	45
3.26 Data Set 6, 105°C, 160mA (Lumen Maintenance)	46
3.27 Data Set 6, 105°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))	47
3.28 Data Set 6, 105°C, 160mA (Photon Flux Maintenance, Far-Red (PFMFR))	48
3.29 Data Set 6, 105°C, 160mA (Forward Voltage)	49
3.30 Data Set 6, 105°C, 160mA (Chromaticity Shift)	50
3.31 Data Set 7, 55°C, 200mA (Lumen Maintenance)	51
3.32 Data Set 7, 55°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))	52
3.33 Data Set 7, 55°C, 200mA (Photon Flux Maintenance, Far-Red (PFMFR))	53
3.34 Data Set 7, 55°C, 200mA (Forward Voltage)	54
3.35 Data Set 7, 55°C, 200mA (Chromaticity Shift)	55
3.36 Data Set 8, 85°C, 200mA (Lumen Maintenance)	56
3.37 Data Set 8, 85°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))	57
3.38 Data Set 8, 85°C, 200mA (Photon Flux Maintenance, Far-Red (PFMFR))	58
3.39 Data Set 8, 85°C, 200mA (Forward Voltage)	59
3.40 Data Set 8, 85°C, 200mA (Chromaticity Shift)	60
3.41 Data Set 9, 105°C, 200mA (Lumen Maintenance)	61
3.42 Data Set 9, 105°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))	62
3.43 Data Set 9, 105°C, 200mA (Photon Flux Maintenance, Far-Red (PFMFR))	63
3.44 Data Set 9, 105°C, 200mA (Forward Voltage)	64
3.45 Data Set 9, 105°C, 200mA (Chromaticity Shift)	65
4. EUT Photo	66
4.1 Mechanical Dimensions	66
4.2 EUT Photo	67

1. General Information

1.1 Description of LED Light Sources

Sample Size:

225 pcs samples were received on 2021-03-22, the samples were numbered from S1 to S25, S26 to S50, S51 to S75, S76 to S100, S101 to S125, S126 to S150, S151 to S175, S176 to S200 and S201 to S225.

Manufacture: SHENZHEN ZSOPTO OPTOELECTRONIC TECHNOLOGY CO.,LTD.

Product Family: PCT3030

Part Number: S-G3030

Part Type: LED Package

Drive Level: DC 90mA/160mA/200mA

Nominal CCT: 2700K

Power: 0.5W/1W/1.2W

CRI: 90

Note: Full test data were based on original report number N02A23050461L00901. This report only updates client, brand and manufacture name.

Sampling Method:

LED samples for IESNA LM-80 testing consist of units built from three manufacturing lots with each manufacturing lot built from different wafer lots built on non-consecutive days.

These manufacturing lots are picked to represent a wide parametric distribution.

Family products covered by this report:

According to ENERGY STAR® Requirements for the Use of LM-80 Data, the following products can be covered by this report base on the information and declaration provided by manufacturer. The information of these models shows that the covered products meet all section 4 requirements of ENERGY STAR® Requirements for the Use of LM-80 Data (September 28, 2017)

This report covers the following models:

Product Family	Part Number	CCT (K)	Number of dies	Current density per die (mA/mm ²)	Current (mA)	Power density (W/mm ²)	Power (W)	Die Spacing (mm)	Current of die (mA)
PCT3030	Test Model S-G3030	2700	6	352	200	0.0004	1.2	0.04	250
	S-G3030XXXX-0101XXX	2700	1	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0102XXX	2700	2	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0103XXX	2700	3	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0104XXX	2700	4	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0105XXX	2700	5	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0106XXX	2700	6	352	400	0.0004	1.2	0.04	250
	S-G3030XXXX-0201XXX	2700	2	352	200	0.0004	1.2	0.04	250
	S-G3030XXXX-0202XXX	2700	4	352	200	0.0004	1.2	0.04	250
	S-G3030XXXX-0203XXX	2700	6	352	200	0.0004	1.2	0.04	250
	S-G3030XXXX-0301XXX	2700	3	352	135	0.0004	1.2	0.04	250
	S-G3030XXXX-0302XXX	2700	6	352	135	0.0004	1.2	0.04	250
	S-G3030XXXX-0401XXX	2700	4	352	100	0.0004	1.2	0.04	250
	S-G3030XXXX-0501XXX	2700	5	352	80	0.0004	1.2	0.04	250

Product Family	Part Number	CCT (K)	Number of dies	Current density per die (mA/mm ²)	Current (mA)	Power density (W/mm ²)	Power (W)	Die Spacing (mm)	Current of die (mA)
	S-G3030XXXXX-0601XXX	2700	6	352	70	0.0004	1.2	0.04	250

Disclaimer:

The truthfulness and accuracy of all the technical information above for the covered LED products is ensured by manufacturer of LED light source. Guangdong Meide Testing Technology Co., Ltd. isn't responsible or gives any guarantees for the truthfulness of the technical information.

1.2 Standards Used

- ANSI/IES LM-80-15 IES Approved Method for Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules
- ENERGY STAR® Requirements for the use of LM-80 Data (This standard was not accredited by NVLAP)

1.3 Test equipment list

Test Equipment	Serial No	Model No	Calibration due date
Integrating Sphere System	MD-E033	0.5m	2024/05/17
Standard Light Source	MD-E034	D062	2024/05/17
High Accuracy Array Spectroradiometer	MD-E011	HAAS-3000	2023/09/17
Digital Power Meter	MD-E008	PF310	2023/09/17
Precision digital stabilized DC power supply	MD-E009	WY305	2023/09/17
Temperature Tester	MD-E038	UFS-D8036	2023/08/28

Statement of Traceability: Guangdong Meide Testing Technology Co., Ltd. attested that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).

1.4 Drive Level

Samples are driven with a constant direct current (DC) during maintenance test, photometric and electrical measurement. The current value was regulated to within $\pm 3\%$ of the specified value of the manufacturer during maintenance test, and was within $\pm 0.5\%$ during photometric and electrical measurement test.

1.5 Ambient Conditions for Maintenance Test

For lumen maintenance test, samples within one data set, were installed on cooling boards in thermal chambers with minimal ambient airflow. The case temperature and ambient temperature was monitored by thermocouples which one was soldered to the coldest DUTs' case (TMP_{LED}) location, while the other is mounted at a distance of 5 mm above the TMP location. During life testing, TMP_{LED} of the coldest LEDs were maintained at a temperature that was greater than or equal to 2°C below the corresponding nominal case temperature. Surrounding air was maintained at a temperature that was greater than or equal to 5°C below the corresponding nominal case temperature. Thermocouples were shielded from direct DUT optical radiation

and comply with ASTM E230 Table 1 "Special Limits". Samples were connected to DC power supply in series circuits with a constant current. The forward current was regulated to within $\pm 3\%$ of the specified value of the manufacturer. The relative humidity within chamber was kept less than 65% during test. For photometry

measurement, the ambient temperature during test was set to $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH < 65%.

1.6 Photometric Measurement Method

Integrating sphere and spectroradiometer is used to measure luminous flux and chromaticity coordinate $u'v'$. 2π measurement was used and sample was driven by DC power supply. The forward current was regulated to within $\pm 0.5\%$ of the nominal value. The test system was calibrated by halogen reference lamp. The ambient temperature during test was set to $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, RH < 65%. The temperature measurement point was located in the sphere and the temperature was detected by a temperature probe. The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=18\text{K}$ ($K=2$), at the 95% confidence level. The uncertainty of the temperature is $U=0.5^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

1.7 Sample Set

Data Set 1:55°C,90mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>53^{\circ}\text{C}$
Ambient Temperature(T_A):	$>50^{\circ}\text{C}$
Life Test Drive Current:	90mA
Measurement Current:	90mA

Data Set 2:85°C,90mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>83^{\circ}\text{C}$
Ambient Temperature(T_A):	$>80^{\circ}\text{C}$
Life Test Drive Current:	90mA
Measurement Current:	90mA

Data Set 3:105°C,90mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>103^{\circ}\text{C}$
Ambient Temperature(T_A):	$>100^{\circ}\text{C}$
Life Test Drive Current:	90mA
Measurement Current:	90mA

Data Set 4:55°C,160mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>53^{\circ}\text{C}$
Ambient Temperature(T_A):	$>50^{\circ}\text{C}$
Life Test Drive Current:	160mA
Measurement Current:	160mA

Data Set 5:85°C,160mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>83^{\circ}\text{C}$
Ambient Temperature(T_A):	$>80^{\circ}\text{C}$
Life Test Drive Current:	160mA
Measurement Current:	160mA

Data Set 6:105°C,160mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>103^{\circ}\text{C}$
Ambient Temperature(T_A):	$>100^{\circ}\text{C}$
Life Test Drive Current:	160mA
Measurement Current:	160mA

Data Set 7:55°C,200mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>53^{\circ}\text{C}$
Ambient Temperature(T_A):	$>50^{\circ}\text{C}$
Life Test Drive Current:	200mA
Measurement Current:	200mA

Data Set 8:85°C,200mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>83^{\circ}\text{C}$
Ambient Temperature(T_A):	$>80^{\circ}\text{C}$
Life Test Drive Current:	200mA
Measurement Current:	200mA

Data Set 9:105°C,200mA	
Part number:	S-G3030
Number of Units:	25
Case Temperature(T_S):	$>103^{\circ}\text{C}$
Ambient Temperature(T_A):	$>100^{\circ}\text{C}$
Life Test Drive Current:	200mA
Measurement Current:	200mA

2. Summary of Test Result

Data Set:	Nominal Case & Ambient Temp.	Drive Current	Sample Size	Failures Observed:	Test Interval	Test Duration	Reported TM-21 L ₇₀ Lifetime	Reported TM-21 L ₈₀ Lifetime	Reported TM-21 L ₉₀ Lifetime
1	55°C	90mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	>108000hrs
2	85°C	90mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	>108000hrs
3	105°C	90mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	103000hrs
4	55°C	160mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	>108000hrs
5	85°C	160mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	100000hrs
6	105°C	160mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	88000hrs
7	55°C	200mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs	53000hrs
8	85°C	200mA	25	0	1000hrs	18000hrs	>108000hrs	103000hrs	48000hrs
9	105°C	200mA	25	0	1000hrs	18000hrs	>108000hrs	89000hrs	42000hrs

Data Set:	Nominal Case & Ambient Temp.	Drive Current	Sample Size	Failures Observed:	Test Interval	Test Duration	Reported TM-21 Q ₉₀ Lifetime(400-700nm)	Reported TM-21 Q ₉₀ Lifetime (700-800nm)
1	55°C	90mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs
2	85°C	90mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs
3	105°C	90mA	25	0	1000hrs	18000hrs	102000hrs	103000hrs
4	55°C	160mA	25	0	1000hrs	18000hrs	>108000hrs	>108000hrs
5	85°C	160mA	25	0	1000hrs	18000hrs	99000hrs	99000hrs
6	105°C	160mA	25	0	1000hrs	18000hrs	87000hrs	86000hrs
7	55°C	200mA	25	0	1000hrs	18000hrs	52000hrs	51000hrs
8	85°C	200mA	25	0	1000hrs	18000hrs	47000hrs	48000hrs
9	105°C	200mA	25	0	1000hrs	18000hrs	41000hrs	42000hrs

Data Set 1:55°C,90mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	531000	537000	549000	556000	568000	576000	605000	618000	692000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	331000	335000	342000	347000	354000	359000	378000	385000	431000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	154000	157000	160000	163000	166000	168000	177000	179000	201000

Data Set 2:85°C,90mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	382000	386000	394000	402000	412000	415000	421000	429000	436000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	238000	240000	246000	250000	257000	258000	262000	267000	272000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	111000	112000	115000	116000	120000	120000	122000	125000	127000

Data Set 3:105°C,90mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	335000	348000	356000	358000	365000	369000	377000	379000	386000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	208000	216000	221000	222000	226000	229000	234000	235000	239000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	97000	99000	101000	102000	104000	105000	107000	108000	110000

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
1	100.24%	100.11%	99.98%	99.85%	99.72%	99.59%	99.49%	99.39%	99.29%	99.21%	99.13%	99.06%	99.00%	98.93%	98.87%	98.83%	98.78%	98.73%
2	100.14%	100.02%	99.90%	99.75%	99.59%	99.43%	99.29%	99.14%	99.00%	98.89%	98.78%	98.67%	98.59%	98.51%	98.44%	98.36%	98.29%	98.21%
3	100.05%	99.91%	99.76%	99.57%	99.39%	99.18%	99.01%	98.84%	98.67%	98.53%	98.42%	98.32%	98.25%	98.15%	98.06%	97.98%	97.87%	97.76%

Average Photon Flux Maintenance, Photosynthetic (PFMp) (Percentage of Initial Photosynthetic Photon Flux)

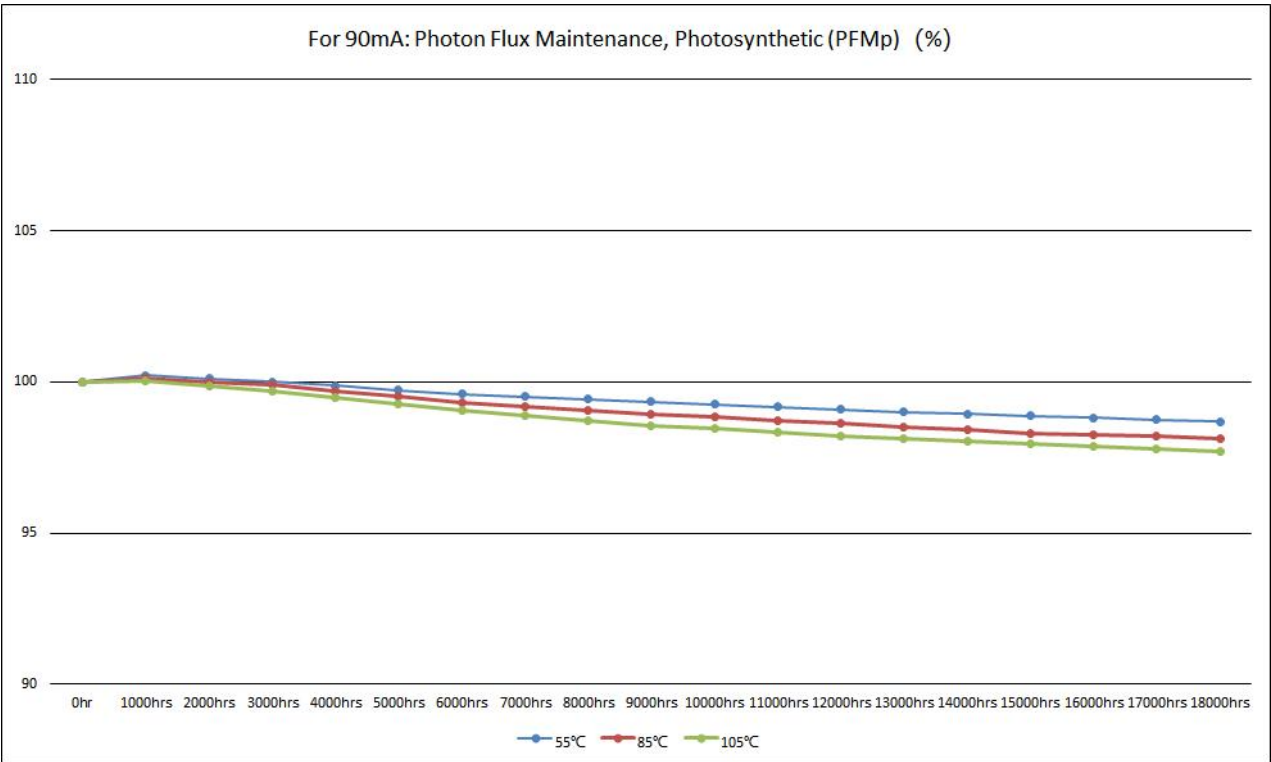
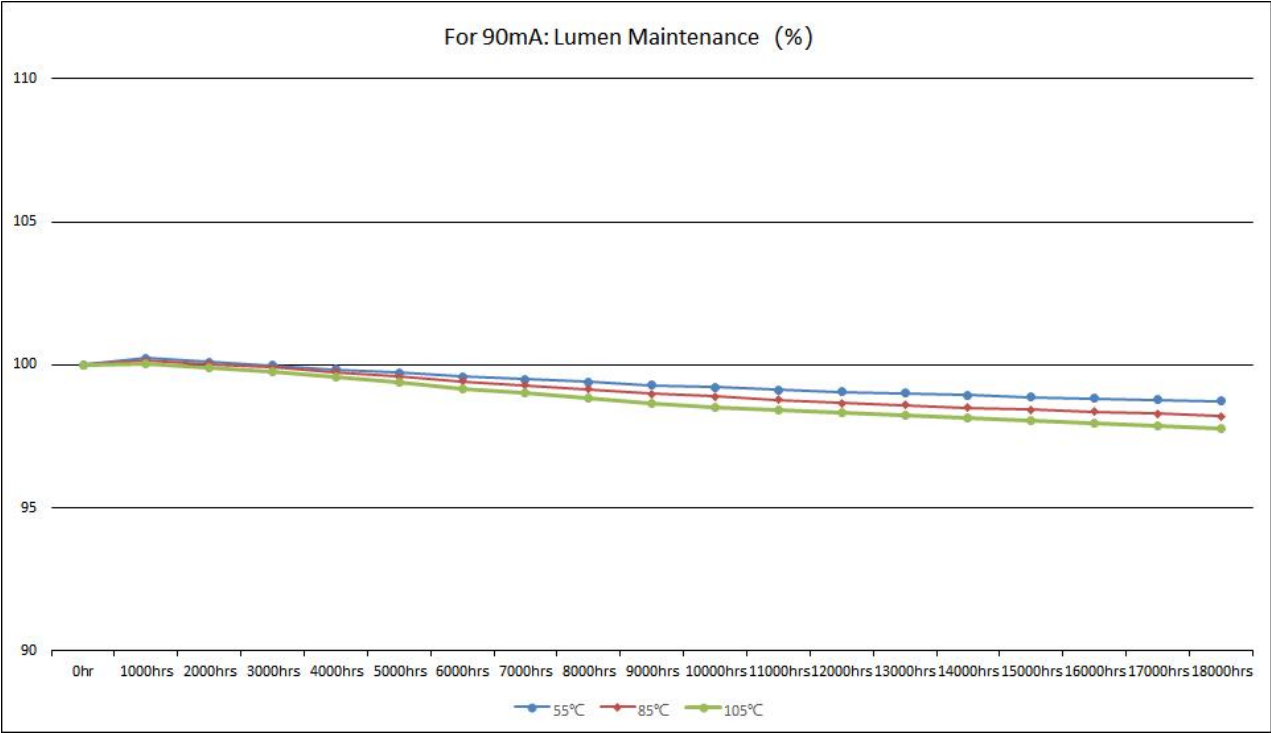
Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
1	100.22%	100.11%	100.00%	99.86%	99.73%	99.60%	99.51%	99.42%	99.33%	99.25%	99.16%	99.08%	99.01%	98.94%	98.87%	98.80%	98.75%	98.68%
2	100.12%	100.00%	99.89%	99.70%	99.51%	99.32%	99.19%	99.07%	98.94%	98.83%	98.72%	98.61%	98.51%	98.41%	98.31%	98.25%	98.19%	98.13%
3	100.02%	99.85%	99.69%	99.47%	99.26%	99.05%	98.87%	98.72%	98.56%	98.45%	98.34%	98.22%	98.11%	98.02%	97.93%	97.85%	97.76%	97.68%

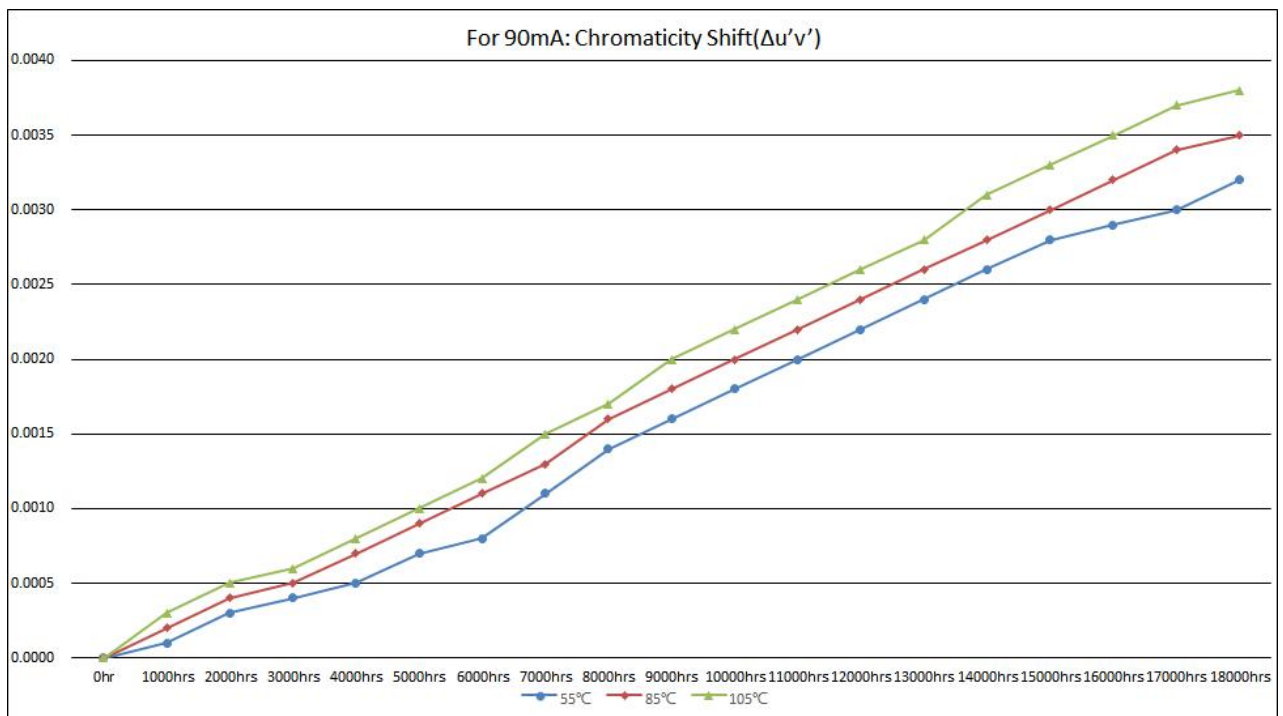
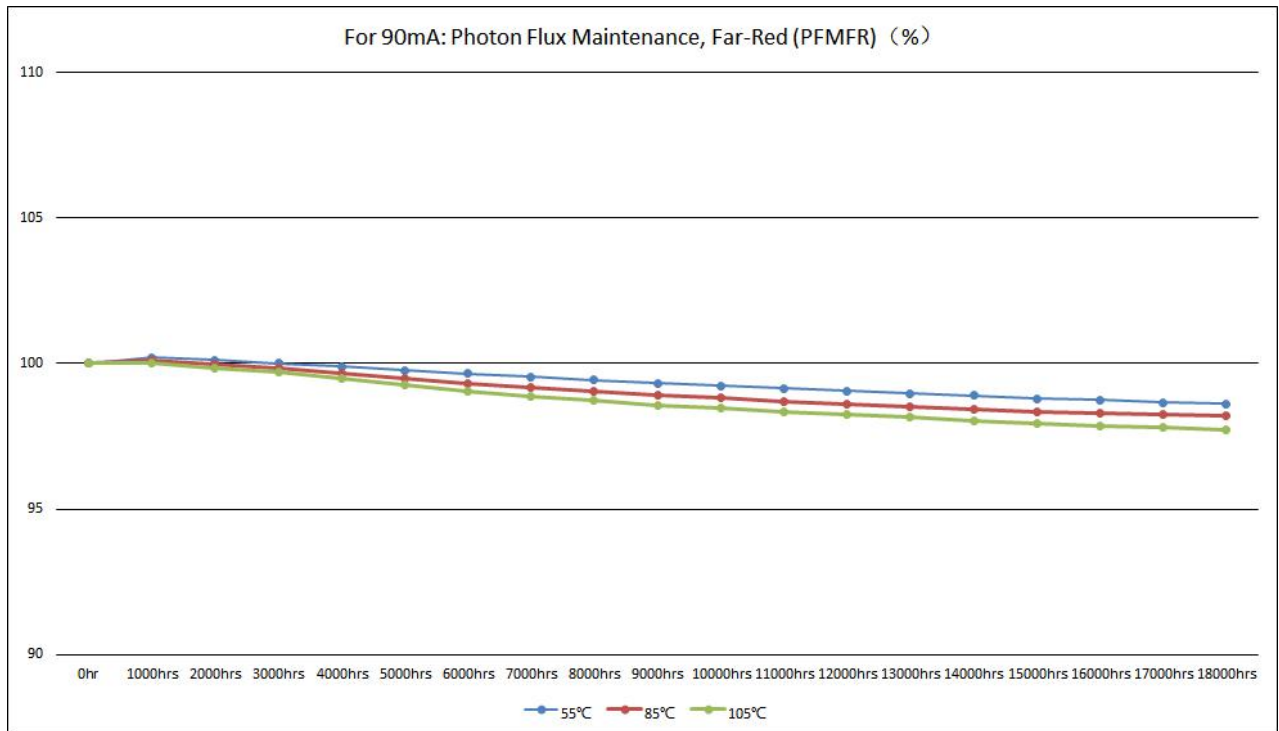
Average Photon Flux Maintenance,Far-Red (PFMFR) (Percentage of Initial Far-Red Photon Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
1	100.20%	100.11%	100.02%	99.89%	99.77%	99.65%	99.54%	99.43%	99.33%	99.24%	99.15%	99.06%	98.98%	98.90%	98.80%	98.74%	98.67%	98.61%
2	100.09%	99.98%	99.85%	99.67%	99.49%	99.30%	99.17%	99.05%	98.93%	98.82%	98.71%	98.59%	98.51%	98.43%	98.36%	98.31%	98.25%	98.19%
3	100.01%	99.85%	99.70%	99.50%	99.28%	99.06%	98.89%	98.74%	98.58%	98.46%	98.36%	98.26%	98.15%	98.06%	97.96%	97.88%	97.80%	97.72%

Average Chromaticity Shift ($\Delta u'v'$)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
1	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0030	0.0032
2	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0035
3	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0031	0.0033	0.0035	0.0037	0.0038





Data Set 4:55°C,160mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	408000	413000	424000	426000	428000	434000	444000	446000	456000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	255000	258000	265000	266000	267000	271000	277000	278000	284000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	120000	121000	124000	125000	126000	127000	129000	130000	133000

Data Set 5:85°C,160mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	328000	335000	341000	344000	349000	356000	363000	366000	370000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	204000	209000	211000	214000	217000	221000	225000	228000	230000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	95000	97000	98000	100000	101000	102000	104000	105000	106000

Data Set 6:105°C,160mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	295000	296000	303000	309000	315000	317000	322000	322000	324000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	183000	184000	188000	191000	195000	196000	199000	199000	201000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	84000	85000	87000	87000	89000	90000	91000	91000	92000

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
4	100.20%	100.09%	99.96%	99.82%	99.67%	99.53%	99.39%	99.25%	99.12%	99.02%	98.92%	98.82%	98.74%	98.66%	98.59%	98.52%	98.44%	98.36%
5	100.08%	99.96%	99.84%	99.64%	99.44%	99.25%	99.09%	98.93%	98.77%	98.65%	98.54%	98.45%	98.34%	98.24%	98.13%	98.04%	97.95%	97.88%
6	99.99%	99.82%	99.62%	99.42%	99.22%	99.02%	98.84%	98.66%	98.48%	98.35%	98.22%	98.08%	97.97%	97.85%	97.74%	97.65%	97.57%	97.49%

Average Photon Flux Maintenance, Photosynthetic (PFMp) (Percentage of Initial Photosynthetic Photon Flux)

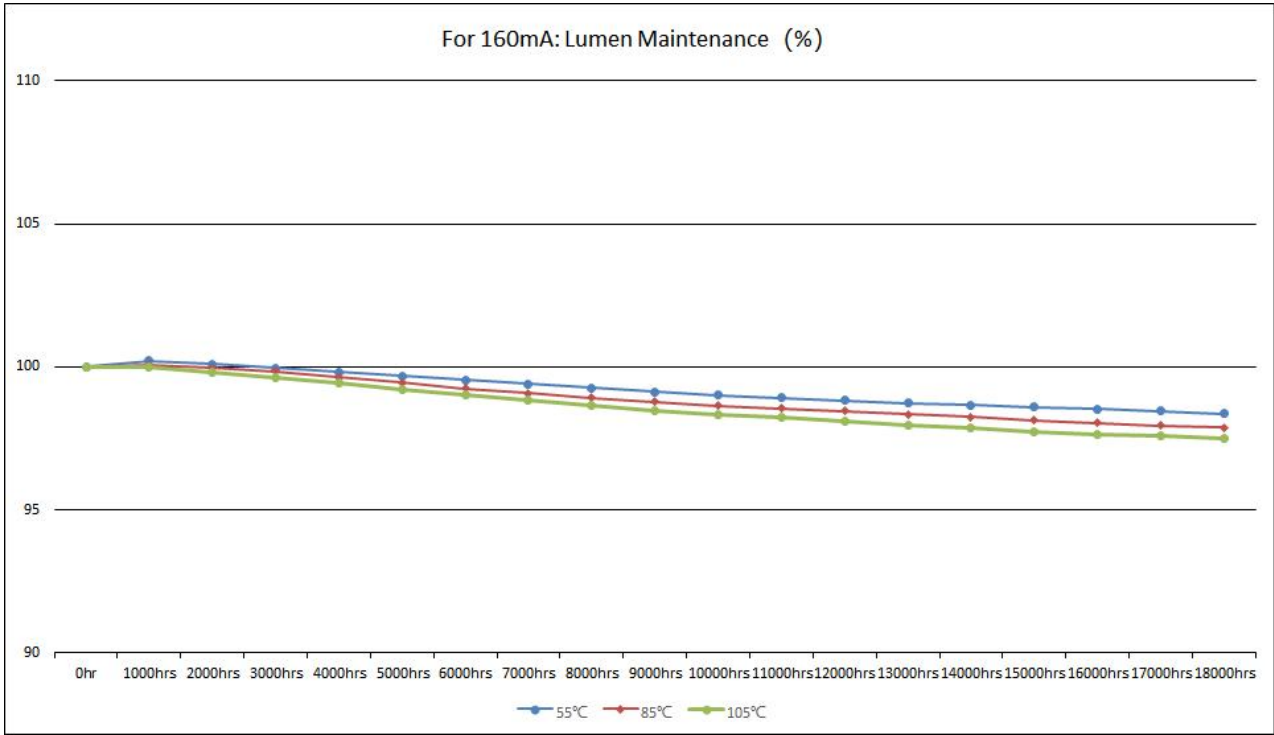
Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
4	100.18%	100.07%	99.95%	99.79%	99.63%	99.48%	99.36%	99.24%	99.13%	99.01%	98.90%	98.79%	98.70%	98.62%	98.54%	98.46%	98.39%	98.31%
5	100.06%	99.89%	99.73%	99.55%	99.38%	99.21%	99.04%	98.90%	98.74%	98.59%	98.48%	98.36%	98.26%	98.19%	98.08%	97.99%	97.90%	97.81%
6	99.98%	99.78%	99.56%	99.33%	99.10%	98.90%	98.71%	98.54%	98.39%	98.24%	98.10%	97.96%	97.86%	97.76%	97.66%	97.54%	97.45%	97.38%

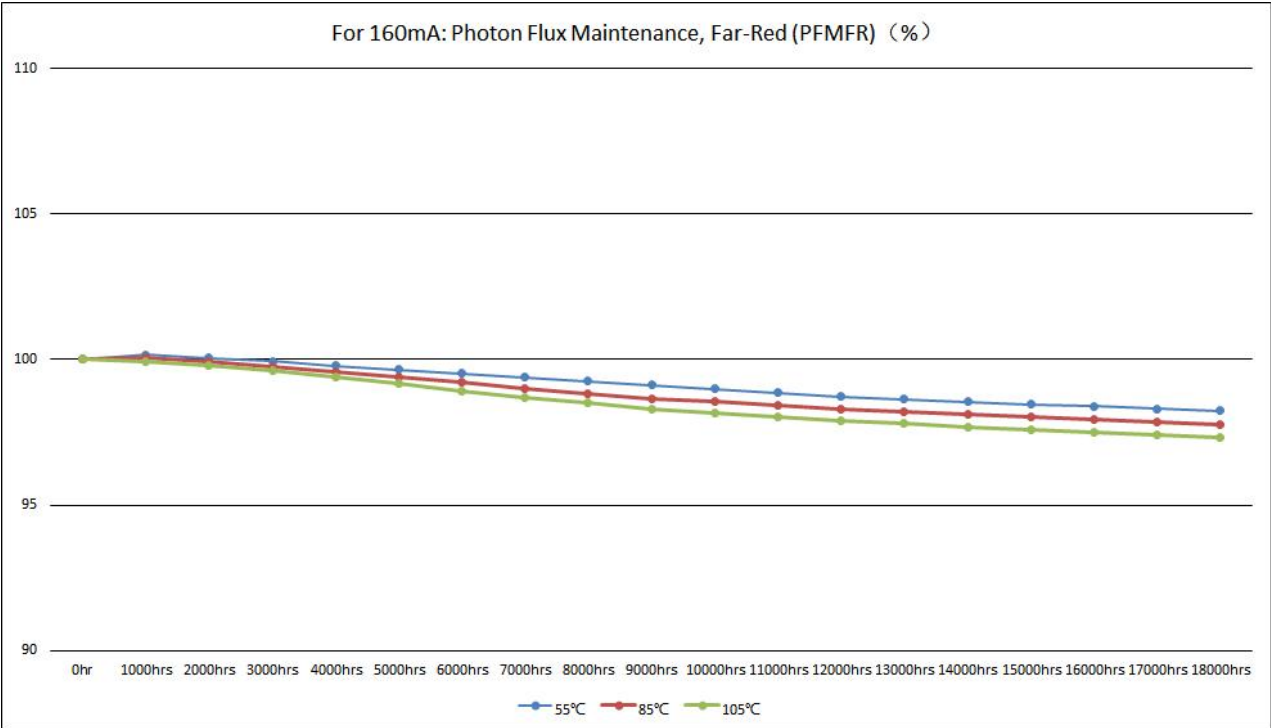
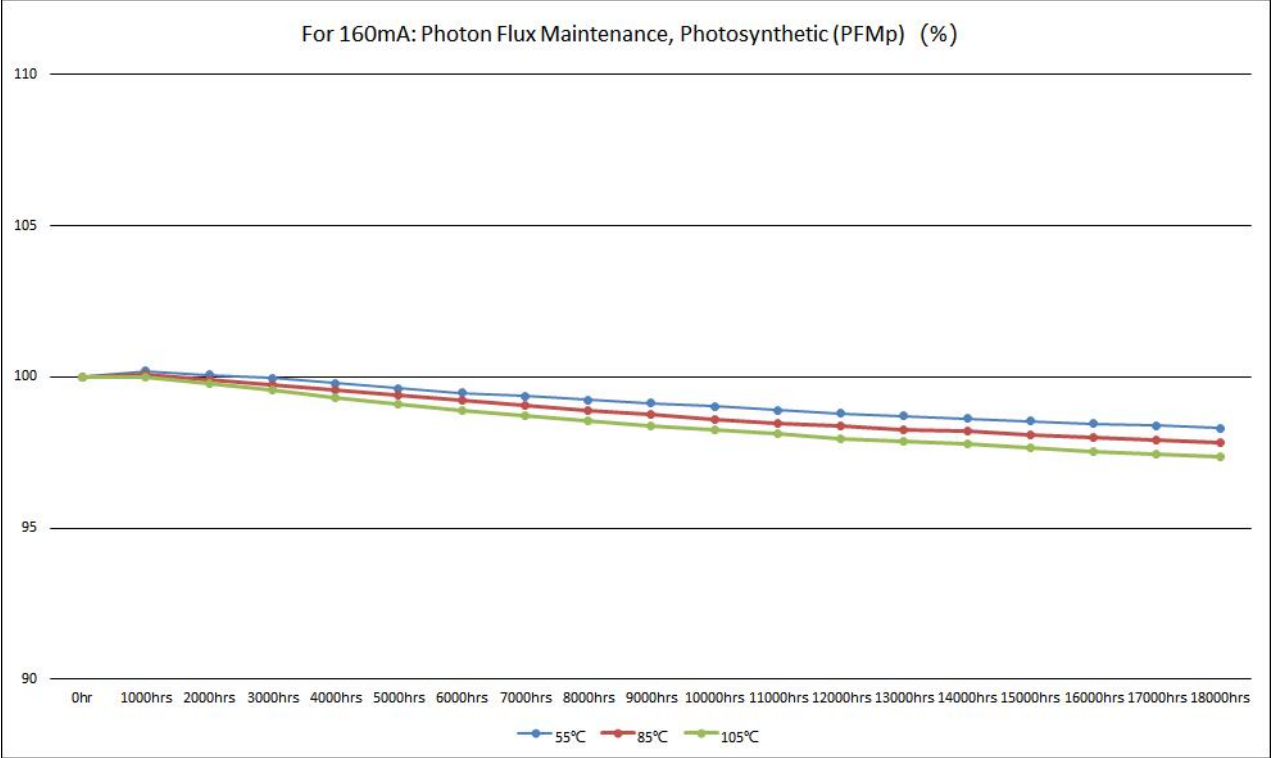
Average Photon Flux Maintenance, Far-Red (PFMR) (Percentage of Initial Far-Red Photon Flux)

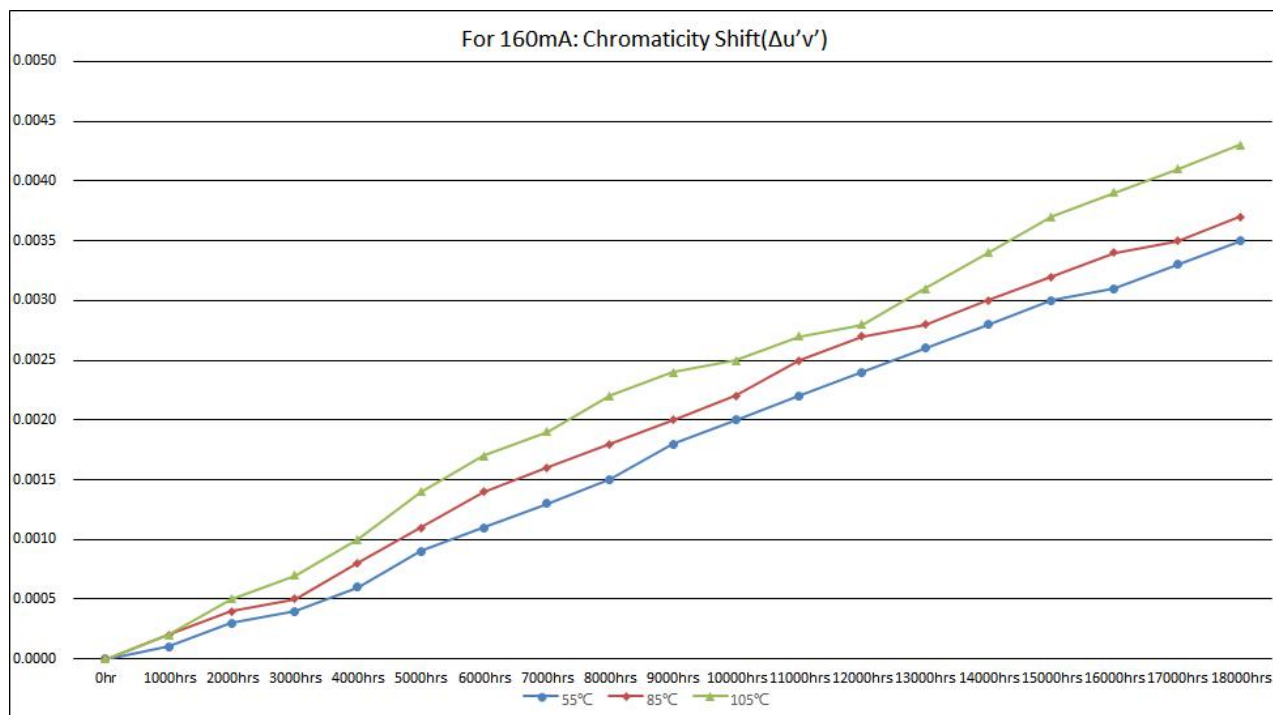
Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
4	100.16%	100.05%	99.94%	99.80%	99.66%	99.52%	99.39%	99.26%	99.12%	98.99%	98.86%	98.74%	98.65%	98.56%	98.47%	98.39%	98.31%	98.25%
5	100.05%	99.92%	99.75%	99.57%	99.40%	99.22%	99.02%	98.81%	98.67%	98.55%	98.43%	98.31%	98.23%	98.11%	98.03%	97.94%	97.86%	97.76%
6	99.95%	99.79%	99.60%	99.38%	99.17%	98.92%	98.70%	98.51%	98.32%	98.17%	98.03%	97.92%	97.81%	97.69%	97.58%	97.49%	97.40%	97.31%

Average Chromaticity Shift ($\Delta u'v'$)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
4	0.0001	0.0003	0.0004	0.0006	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035
5	0.0002	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0035	0.0037
6	0.0002	0.0005	0.0007	0.0010	0.0014	0.0017	0.0019	0.0022	0.0024	0.0025	0.0027	0.0028	0.0031	0.0034	0.0037	0.0039	0.0041	0.0043







Data Set 7:55°C,200mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	166000	172000	175000	176000	178000	179000	183000	185000	193000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	104000	108000	110000	110000	111000	112000	115000	116000	121000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	50000	51000	52000	53000	53000	54000	54000	55000	57000

Data Set 8:85°C,200mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	152000	157000	165000	165000	167000	169000	176000	177000	183000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	95000	98000	103000	103000	104000	105000	109000	110000	114000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	45000	46000	48000	48000	49000	49000	50000	50000	53000

Data Set 9:105°C,200mA:

Metric	L ₇₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	135000	136000	141000	144000	145000	146000	147000	150000	152000
Metric	L ₈₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	84000	85000	88000	89000	90000	91000	92000	93000	94000
Metric	L ₉₀ B _y								
y	10	20	30	40	50	60	70	80	90
hour	39000	40000	41000	42000	42000	42000	43000	43000	44000

Average Lumen Maintenance (Percentage of Initial Luminous Flux)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
7	100.16%	99.97%	99.80%	99.58%	99.36%	99.13%	98.87%	98.63%	98.38%	98.15%	97.94%	97.72%	97.53%	97.34%	97.13%	96.96%	96.78%	96.59%
8	100.05%	99.85%	99.63%	99.37%	99.11%	98.84%	98.55%	98.24%	97.94%	97.64%	97.40%	97.17%	96.97%	96.75%	96.54%	96.35%	96.20%	96.07%
9	99.94%	99.73%	99.51%	99.20%	98.89%	98.59%	98.26%	97.94%	97.61%	97.33%	97.07%	96.80%	96.56%	96.33%	96.09%	95.87%	95.66%	95.47%

Average Photon Flux Maintenance, Photosynthetic (PFMp) (Percentage of Initial Photosynthetic Photon Flux)

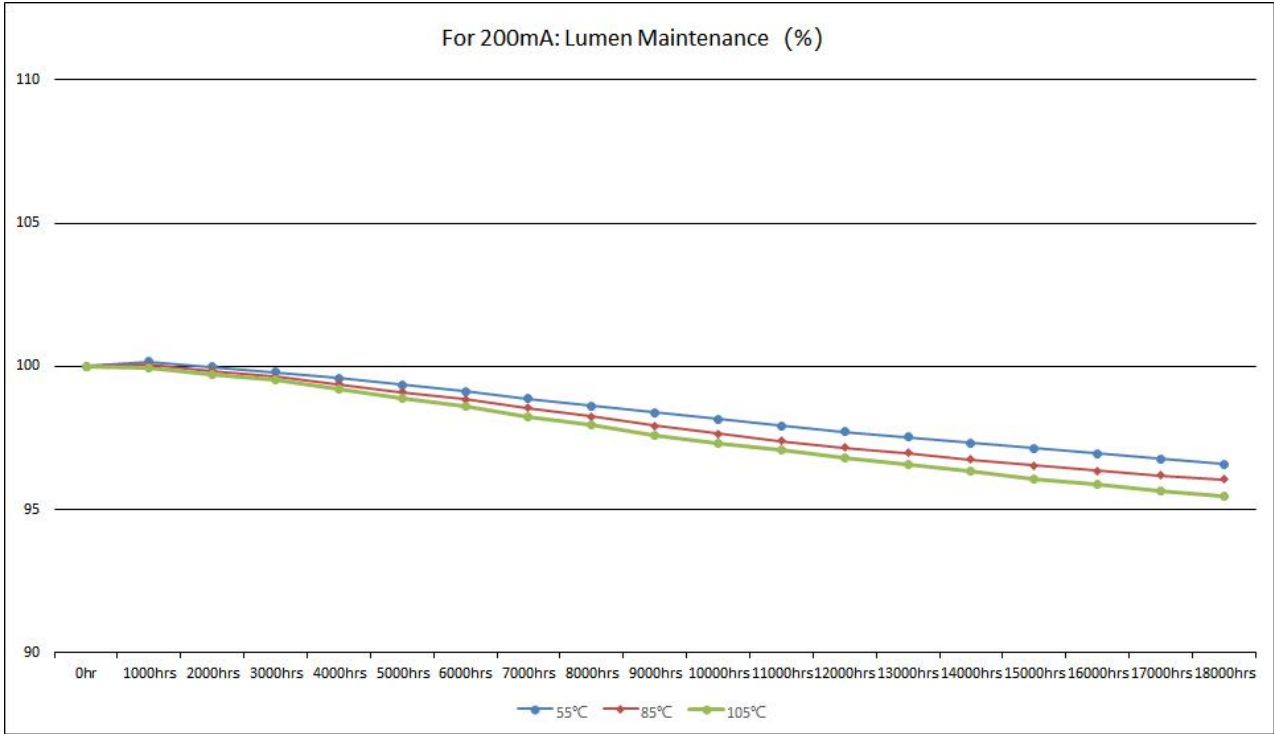
Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
7	100.12%	99.96%	99.80%	99.58%	99.35%	99.12%	98.85%	98.58%	98.30%	98.04%	97.78%	97.52%	97.34%	97.16%	96.98%	96.82%	96.66%	96.52%
8	100.03%	99.85%	99.66%	99.36%	99.08%	98.79%	98.49%	98.19%	97.88%	97.61%	97.34%	97.08%	96.87%	96.67%	96.46%	96.29%	96.13%	95.96%
9	99.93%	99.70%	99.48%	99.16%	98.85%	98.54%	98.20%	97.86%	97.52%	97.27%	97.02%	96.77%	96.52%	96.28%	96.03%	95.80%	95.57%	95.34%

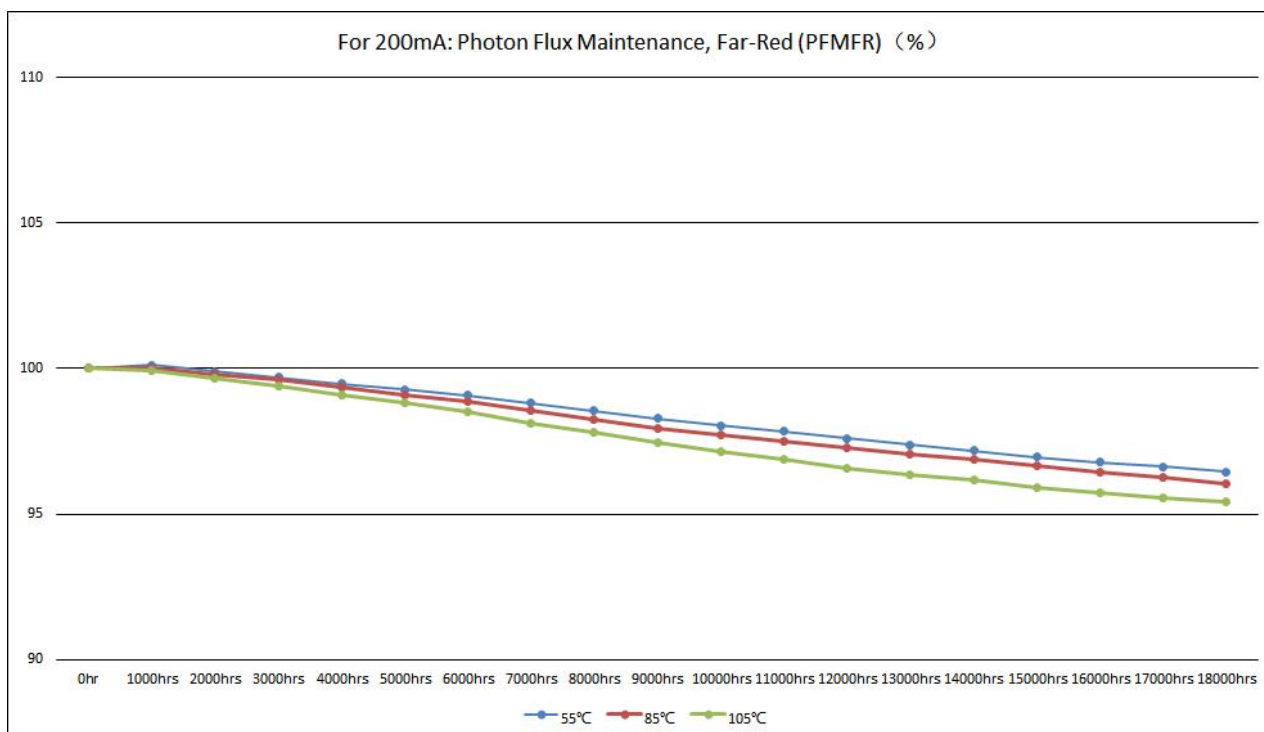
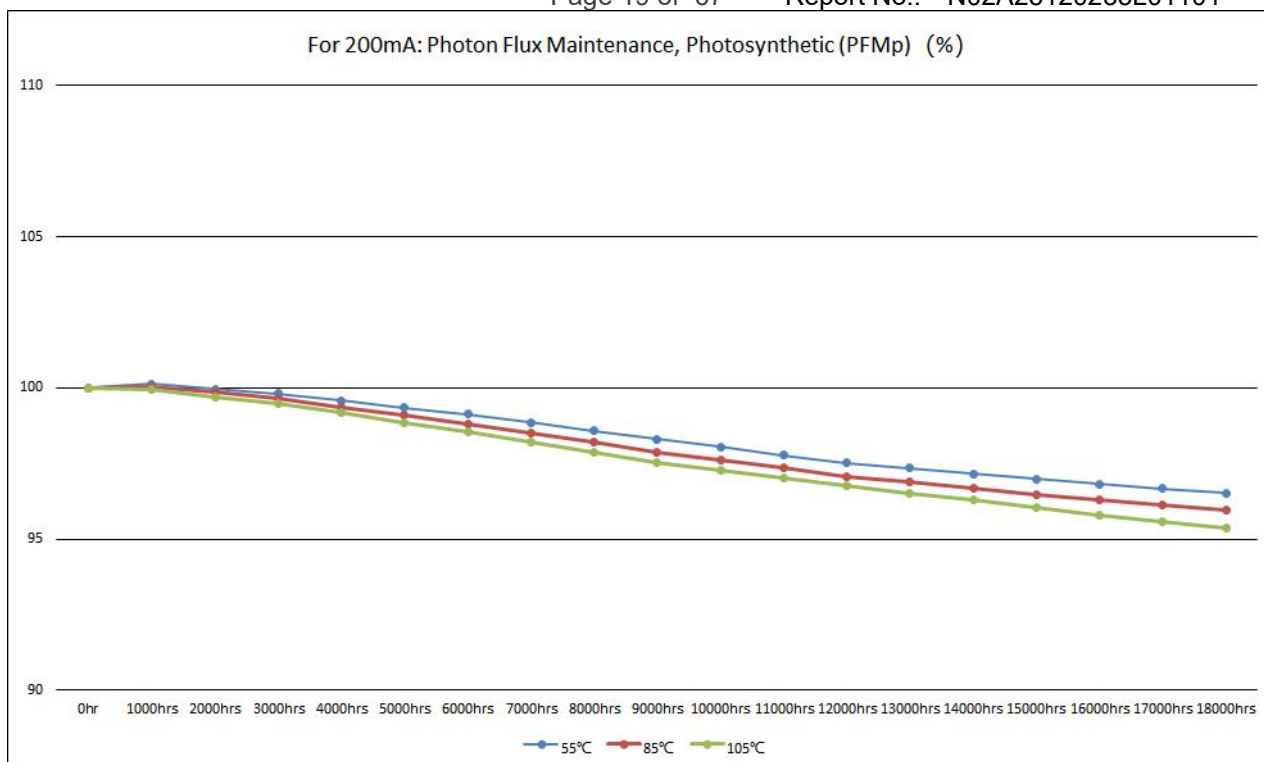
Average Photon Flux Maintenance,Far-Red (PFMFR) (Percentage of Initial Far-Red Photon Flux)

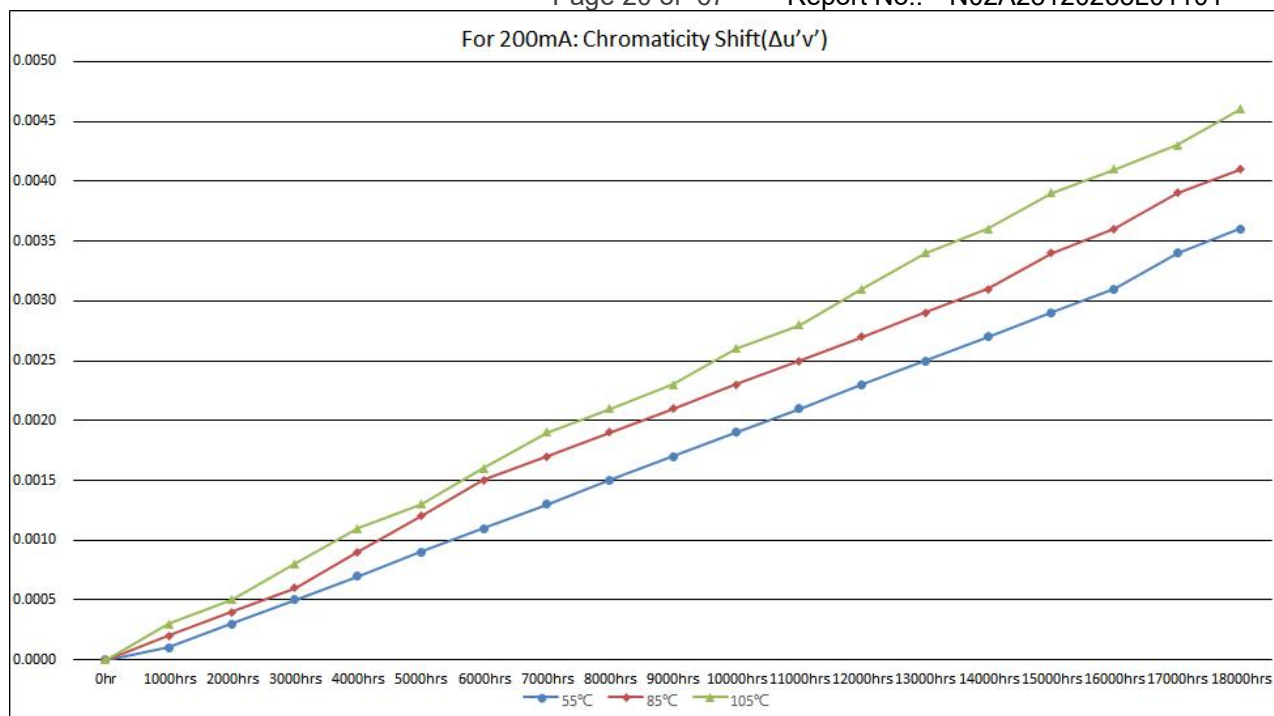
Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
7	100.13%	99.91%	99.69%	99.49%	99.28%	99.08%	98.81%	98.55%	98.29%	98.05%	97.84%	97.59%	97.39%	97.17%	96.96%	96.80%	96.64%	96.46%
8	100.04%	99.81%	99.60%	99.36%	99.11%	98.87%	98.56%	98.26%	97.96%	97.73%	97.51%	97.28%	97.08%	96.88%	96.67%	96.46%	96.25%	96.03%
9	99.92%	99.67%	99.42%	99.11%	98.81%	98.50%	98.14%	97.81%	97.45%	97.17%	96.88%	96.58%	96.37%	96.16%	95.91%	95.75%	95.58%	95.41%

Average Chromaticity Shift ($\Delta u'v'$)

Data Set:	1000hrs	2000hrs	3000hrs	4000hrs	5000hrs	6000hrs	7000hrs	8000hrs	9000hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
7	0.0001	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036
8	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036	0.0039	0.0041
9	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0023	0.0026	0.0028	0.0031	0.0034	0.0036	0.0039	0.0041	0.0043	0.0046







3. Test Data

3.1 Data Set 1, 55°C, 90mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S1	82.10	100.28	100.15	100.02	99.91	99.77	99.64	99.56	99.45	99.37	99.28	99.21	99.14	99.09	99.00	98.96	98.93	98.89	98.86
S2	81.87	100.20	100.07	99.94	99.82	99.69	99.57	99.50	99.38	99.27	99.20	99.11	99.02	98.98	98.89	98.84	98.80	98.75	98.69
S3	81.84	100.26	100.13	100.01	99.89	99.75	99.62	99.54	99.43	99.32	99.23	99.14	99.07	99.02	98.93	98.89	98.82	98.77	98.74
S4	81.59	100.29	100.16	100.03	99.92	99.78	99.66	99.55	99.44	99.36	99.27	99.20	99.13	99.08	99.03	98.99	98.95	98.92	98.89
S5	81.59	100.26	100.14	100.01	99.89	99.75	99.62	99.54	99.43	99.32	99.25	99.18	99.10	99.05	98.96	98.87	98.84	98.81	98.77
S6	81.69	100.26	100.13	100.00	99.87	99.73	99.60	99.48	99.40	99.33	99.26	99.17	99.08	99.03	98.99	98.90	98.87	98.83	98.79
S7	81.95	100.24	100.11	99.97	99.84	99.70	99.57	99.49	99.38	99.30	99.21	99.13	99.06	99.00	98.95	98.90	98.83	98.78	98.73
S8	82.03	100.23	100.10	99.98	99.86	99.74	99.60	99.49	99.38	99.26	99.17	99.10	99.03	98.99	98.95	98.90	98.87	98.84	98.80
S9	81.74	100.27	100.14	100.01	99.88	99.74	99.61	99.53	99.42	99.30	99.21	99.14	99.07	98.98	98.89	98.84	98.77	98.71	98.66
S10	81.54	100.19	100.07	99.94	99.80	99.67	99.53	99.42	99.30	99.19	99.12	99.05	98.96	98.87	98.83	98.74	98.69	98.66	98.62
S11	81.93	100.21	100.08	99.95	99.82	99.68	99.54	99.47	99.39	99.28	99.19	99.12	99.05	99.00	98.91	98.82	98.79	98.74	98.69
S12	82.09	100.20	100.07	99.94	99.83	99.69	99.57	99.46	99.35	99.23	99.16	99.09	99.02	98.97	98.92	98.87	98.80	98.73	98.67
S13	81.75	100.23	100.10	99.97	99.86	99.72	99.60	99.49	99.41	99.34	99.27	99.20	99.11	99.06	98.97	98.92	98.89	98.82	98.77
S14	82.19	100.19	100.06	99.93	99.80	99.68	99.54	99.43	99.32	99.20	99.12	99.03	98.96	98.91	98.82	98.78	98.71	98.68	98.63
S15	81.94	100.18	100.05	99.92	99.79	99.65	99.52	99.44	99.33	99.21	99.13	99.06	98.98	98.93	98.84	98.79	98.76	98.69	98.66
S16	81.72	100.21	100.08	99.95	99.83	99.72	99.58	99.50	99.39	99.31	99.22	99.14	99.06	99.01	98.92	98.83	98.76	98.70	98.65
S17	82.27	100.19	100.06	99.94	99.80	99.66	99.55	99.43	99.36	99.24	99.17	99.08	98.99	98.95	98.86	98.81	98.76	98.71	98.66
S18	81.99	100.29	100.16	100.03	99.90	99.76	99.63	99.55	99.47	99.36	99.27	99.20	99.13	99.09	99.03	98.98	98.93	98.86	98.82
S19	81.87	100.25	100.12	100.00	99.86	99.73	99.59	99.48	99.40	99.29	99.22	99.14	99.07	98.98	98.94	98.89	98.84	98.79	98.72
S20	82.05	100.28	100.15	100.02	99.89	99.77	99.64	99.52	99.45	99.33	99.26	99.19	99.12	99.07	99.03	98.94	98.89	98.86	98.81
S21	81.94	100.21	100.08	99.95	99.83	99.70	99.56	99.45	99.37	99.26	99.19	99.10	99.03	98.98	98.94	98.89	98.84	98.78	98.73
S22	82.25	100.21	100.08	99.95	99.84	99.70	99.58	99.51	99.43	99.32	99.23	99.16	99.09	99.00	98.91	98.82	98.75	98.70	98.63
S23	81.93	100.27	100.15	100.02	99.89	99.77	99.63	99.52	99.41	99.33	99.24	99.17	99.10	99.05	99.00	98.96	98.93	98.89	98.84
S24	82.34	100.21	100.08	99.95	99.81	99.68	99.54	99.43	99.31	99.24	99.15	99.08	99.01	98.92	98.83	98.77	98.74	98.71	98.64
S25	82.03	100.28	100.15	100.02	99.91	99.77	99.64	99.52	99.41	99.33	99.26	99.17	99.10	99.05	99.00	98.95	98.90	98.85	98.79
Ave.	81.93	100.24	100.11	99.98	99.85	99.72	99.59	99.49	99.39	99.29	99.21	99.13	99.06	99.00	98.93	98.87	98.83	98.78	98.73
Med.	81.94	100.23	100.10	99.97	99.86	99.72	99.59	99.49	99.40	99.30	99.22	99.14	99.07	99.00	98.94	98.89	98.83	98.78	98.73
St dev	0.2156	0.0354	0.0362	0.0369	0.0387	0.0394	0.0390	0.0427	0.0448	0.0504	0.0499	0.0513	0.0527	0.0580	0.0658	0.0689	0.0736	0.0766	0.0799
Min.	81.54	100.18	100.05	99.92	99.79	99.65	99.52	99.42	99.30	99.19	99.12	99.03	98.96	98.87	98.82	98.74	98.69	98.66	98.62
Max.	82.34	100.29	100.16	100.03	99.92	99.78	99.66	99.56	99.47	99.37	99.28	99.21	99.14	99.09	99.03	98.99	98.95	98.92	98.89

3.2 Data Set 1, 55°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S1	1.292	100.19	100.06	99.98	99.83	99.74	99.64	99.57	99.48	99.40	99.30	99.20	99.13	99.04	98.95	98.88	98.79	98.75	98.69
S2	1.291	100.24	100.11	100.03	99.89	99.74	99.60	99.51	99.40	99.33	99.23	99.15	99.08	98.99	98.92	98.85	98.81	98.75	98.70
S3	1.285	100.24	100.11	99.97	99.83	99.66	99.56	99.47	99.38	99.29	99.22	99.14	99.04	98.97	98.91	98.84	98.79	98.73	98.64
S4	1.285	100.24	100.11	100.03	99.93	99.76	99.62	99.51	99.41	99.32	99.21	99.15	99.08	99.00	98.93	98.88	98.82	98.73	98.68
S5	1.286	100.22	100.14	100.06	99.91	99.75	99.65	99.56	99.49	99.40	99.32	99.24	99.13	99.08	99.02	98.95	98.89	98.80	98.75
S6	1.286	100.21	100.13	100.05	99.91	99.81	99.66	99.57	99.48	99.41	99.33	99.25	99.17	99.10	99.01	98.94	98.90	98.85	98.80
S7	1.286	100.26	100.13	100.05	99.95	99.78	99.64	99.55	99.44	99.37	99.27	99.20	99.13	99.06	98.97	98.88	98.84	98.78	98.74
S8	1.286	100.17	100.09	100.01	99.91	99.77	99.67	99.57	99.50	99.39	99.32	99.22	99.14	99.08	99.03	98.95	98.91	98.82	98.73
S9	1.286	100.16	100.03	99.89	99.75	99.61	99.46	99.37	99.28	99.19	99.11	99.03	98.96	98.89	98.84	98.77	98.67	98.63	98.59
S10	1.287	100.27	100.19	100.06	99.91	99.74	99.57	99.50	99.40	99.31	99.20	99.12	99.06	99.00	98.94	98.85	98.81	98.77	98.72
S11	1.285	100.26	100.18	100.05	99.88	99.78	99.68	99.58	99.51	99.44	99.36	99.28	99.21	99.15	99.06	98.97	98.88	98.84	98.79
S12	1.285	100.20	100.12	100.04	99.87	99.77	99.63	99.52	99.42	99.34	99.27	99.20	99.13	99.07	99.01	98.96	98.91	98.87	98.78
S13	1.285	100.17	100.09	100.01	99.91	99.74	99.64	99.54	99.47	99.36	99.29	99.21	99.14	99.07	98.98	98.91	98.87	98.82	98.78
S14	1.285	100.22	100.14	100.06	99.96	99.86	99.69	99.59	99.50	99.43	99.32	99.22	99.14	99.05	99.00	98.94	98.85	98.79	98.75
S15	1.285	100.21	100.08	99.95	99.81	99.64	99.47	99.36	99.29	99.20	99.12	99.04	98.94	98.88	98.81	98.75	98.66	98.62	98.58
S16	1.285	100.23	100.10	99.97	99.82	99.65	99.48	99.39	99.29	99.20	99.13	99.03	98.92	98.83	98.75	98.69	98.63	98.54	98.49
S17	1.285	100.23	100.10	99.97	99.82	99.72	99.63	99.55	99.46	99.37	99.27	99.17	99.09	99.00	98.93	98.84	98.75	98.70	98.61
S18	1.285	100.25	100.12	99.99	99.84	99.75	99.58	99.49	99.38	99.28	99.21	99.14	99.03	98.95	98.87	98.80	98.71	98.66	98.57
S19	1.285	100.24	100.10	99.97	99.80	99.70	99.61	99.52	99.42	99.32	99.24	99.17	99.07	99.01	98.92	98.87	98.78	98.73	98.64
S20	1.286	100.21	100.13	100.00	99.86	99.72	99.55	99.48	99.41	99.30	99.23	99.16	99.06	98.99	98.90	98.83	98.77	98.73	98.64
S21	1.286	100.19	100.06	99.93	99.83	99.69	99.52	99.45	99.38	99.29	99.21	99.14	99.06	98.99	98.93	98.87	98.78	98.73	98.67
S22	1.286	100.24	100.16	100.03	99.88	99.74	99.60	99.49	99.42	99.33	99.26	99.16	99.09	99.03	98.96	98.90	98.81	98.72	98.63
S23	1.286	100.16	100.08	99.94	99.85	99.75	99.65	99.56	99.45	99.38	99.28	99.18	99.10	99.01	98.95	98.89	98.85	98.80	98.74
S24	1.286	100.17	100.09	100.01	99.84	99.75	99.60	99.53	99.43	99.36	99.29	99.18	99.10	99.02	98.94	98.89	98.84	98.80	98.74
S25	1.286	100.22	100.09	99.96	99.79	99.69	99.52	99.45	99.36	99.29	99.21	99.14	99.04	98.98	98.91	98.86	98.76	98.67	98.63
Ave.	1.286	100.22	100.11	100.00	99.86	99.73	99.60	99.51	99.42	99.33	99.25	99.16	99.08	99.01	98.94	98.87	98.80	98.75	98.68
Med.	1.286	100.22	100.11	100.01	99.86	99.74	99.61	99.52	99.42	99.33	99.26	99.17	99.09	99.01	98.94	98.88	98.81	98.75	98.69
St dev	0.0017	0.0327	0.0368	0.0455	0.0528	0.0552	0.0654	0.0628	0.0639	0.0682	0.0648	0.0626	0.0684	0.0708	0.0706	0.0682	0.0760	0.0781	0.0804
Min.	1.285	100.16	100.03	99.89	99.75	99.61	99.46	99.36	99.28	99.19	99.11	99.03	98.92	98.83	98.75	98.69	98.63	98.54	98.49
Max.	1.292	100.27	100.19	100.06	99.96	99.86	99.69	99.59	99.51	99.44	99.36	99.28	99.21	99.15	99.06	98.97	98.91	98.87	98.80

3.3 Data Set 1, 55°C, 90mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S1	0.0946	100.16	100.06	99.97	99.86	99.76	99.65	99.50	99.43	99.36	99.28	99.19	99.10	98.99	98.94	98.89	98.84	98.79	98.75
S2	0.0945	100.15	100.06	99.97	99.80	99.64	99.47	99.32	99.18	99.08	98.98	98.90	98.79	98.74	98.69	98.59	98.54	98.48	98.43
S3	0.0941	100.21	100.12	100.03	99.87	99.70	99.59	99.50	99.43	99.35	99.24	99.15	99.08	99.03	98.92	98.81	98.72	98.63	98.53
S4	0.0941	100.25	100.16	100.06	99.96	99.85	99.68	99.59	99.52	99.37	99.26	99.19	99.10	99.05	98.95	98.84	98.75	98.70	98.61
S5	0.0941	100.22	100.13	100.04	99.93	99.83	99.73	99.65	99.56	99.41	99.32	99.21	99.12	99.07	98.97	98.87	98.78	98.72	98.67
S6	0.0941	100.19	100.10	100.00	99.84	99.73	99.56	99.41	99.27	99.19	99.12	99.03	98.96	98.91	98.86	98.76	98.71	98.62	98.57
S7	0.0942	100.13	100.04	99.95	99.78	99.67	99.51	99.36	99.29	99.21	99.14	99.05	98.96	98.86	98.81	98.70	98.65	98.60	98.55
S8	0.0942	100.26	100.17	100.08	99.97	99.80	99.64	99.55	99.45	99.36	99.29	99.22	99.14	99.09	99.04	98.94	98.89	98.84	98.78
S9	0.0942	100.17	100.07	99.98	99.81	99.71	99.60	99.51	99.37	99.29	99.18	99.07	98.98	98.87	98.77	98.67	98.61	98.52	98.47
S10	0.0943	100.20	100.11	100.01	99.91	99.74	99.64	99.49	99.40	99.32	99.21	99.12	99.05	98.94	98.89	98.79	98.74	98.65	98.59
S11	0.0939	100.27	100.18	100.08	99.92	99.75	99.64	99.55	99.40	99.33	99.22	99.13	99.02	98.91	98.86	98.76	98.71	98.66	98.61
S12	0.0939	100.24	100.15	100.06	99.95	99.85	99.68	99.53	99.46	99.37	99.28	99.17	99.08	98.97	98.87	98.76	98.71	98.61	98.56
S13	0.0939	100.24	100.14	100.05	99.94	99.84	99.73	99.66	99.59	99.44	99.37	99.28	99.21	99.10	99.00	98.90	98.85	98.76	98.71
S14	0.0940	100.22	100.13	100.03	99.93	99.76	99.65	99.51	99.41	99.27	99.18	99.07	99.00	98.89	98.84	98.73	98.67	98.63	98.58
S15	0.0939	100.16	100.07	99.97	99.87	99.76	99.66	99.51	99.44	99.34	99.27	99.18	99.09	98.98	98.88	98.77	98.68	98.59	98.49
S16	0.0940	100.26	100.17	100.07	99.96	99.86	99.75	99.66	99.51	99.44	99.34	99.24	99.14	99.04	98.99	98.89	98.83	98.79	98.74
S17	0.0940	100.23	100.13	100.04	99.93	99.83	99.73	99.58	99.43	99.36	99.29	99.18	99.07	99.02	98.97	98.87	98.78	98.68	98.64
S18	0.0941	100.12	100.03	99.94	99.83	99.72	99.55	99.40	99.33	99.24	99.17	99.08	98.97	98.86	98.81	98.71	98.65	98.61	98.55
S19	0.0939	100.23	100.14	100.04	99.93	99.83	99.72	99.57	99.50	99.41	99.30	99.19	99.12	99.07	98.97	98.87	98.81	98.72	98.67
S20	0.0941	100.24	100.15	100.06	99.95	99.84	99.74	99.67	99.57	99.48	99.37	99.26	99.19	99.08	98.98	98.92	98.88	98.79	98.69
S21	0.0940	100.14	100.05	99.95	99.78	99.62	99.51	99.44	99.34	99.20	99.13	99.02	98.92	98.82	98.71	98.60	98.55	98.50	98.41
S22	0.0939	100.21	100.12	100.03	99.92	99.81	99.70	99.61	99.54	99.46	99.37	99.30	99.19	99.14	99.03	98.93	98.89	98.83	98.78
S23	0.0940	100.14	100.04	99.95	99.84	99.74	99.63	99.55	99.41	99.32	99.22	99.15	99.06	99.01	98.96	98.86	98.80	98.75	98.70
S24	0.0940	100.26	100.17	100.08	99.97	99.86	99.75	99.66	99.59	99.44	99.33	99.26	99.17	99.07	98.97	98.86	98.77	98.68	98.63
S25	0.0940	100.16	100.07	99.98	99.88	99.77	99.67	99.60	99.45	99.30	99.20	99.10	99.03	98.93	98.83	98.73	98.69	98.59	98.50
Ave.	0.0941	100.20	100.11	100.02	99.89	99.77	99.65	99.54	99.43	99.33	99.24	99.15	99.06	98.98	98.90	98.80	98.74	98.67	98.61
Med.	0.0940	100.21	100.12	100.03	99.92	99.76	99.65	99.55	99.43	99.35	99.26	99.17	99.08	98.99	98.92	98.81	98.74	98.66	98.61
St dev	0.0002	0.0474	0.0471	0.0468	0.0609	0.0702	0.0801	0.0953	0.1030	0.0958	0.0943	0.0938	0.0967	0.1010	0.0947	0.0993	0.0972	0.0987	0.1052
Min.	0.0939	100.12	100.03	99.94	99.78	99.62	99.47	99.32	99.18	99.08	98.98	98.90	98.79	98.74	98.69	98.59	98.54	98.48	98.41
Max.	0.0946	100.27	100.18	100.08	99.97	99.86	99.75	99.67	99.59	99.48	99.37	99.30	99.21	99.14	99.04	98.94	98.89	98.84	98.78

3.4 Data Set 1, 55°C, 90mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S1	5.493	5.482	5.478	5.482	5.478	5.469	5.473	5.464	5.466	5.467	5.461	5.463	5.459	5.462	5.454	5.462	5.457	5.451	5.451
S2	5.503	5.470	5.470	5.468	5.467	5.470	5.470	5.456	5.461	5.451	5.461	5.457	5.455	5.454	5.454	5.446	5.445	5.442	5.446
S3	5.454	5.489	5.485	5.484	5.488	5.478	5.485	5.471	5.479	5.472	5.468	5.466	5.463	5.469	5.463	5.458	5.457	5.454	5.455
S4	5.490	5.481	5.478	5.473	5.476	5.477	5.469	5.471	5.463	5.463	5.462	5.459	5.456	5.461	5.455	5.452	5.446	5.455	5.452
S5	5.497	5.479	5.475	5.471	5.471	5.468	5.475	5.468	5.461	5.459	5.462	5.451	5.457	5.459	5.453	5.448	5.450	5.455	5.445
S6	5.490	5.476	5.477	5.471	5.471	5.470	5.470	5.467	5.463	5.464	5.460	5.452	5.459	5.446	5.451	5.446	5.442	5.442	5.449
S7	5.482	5.443	5.445	5.441	5.436	5.435	5.434	5.429	5.427	5.428	5.423	5.420	5.417	5.425	5.425	5.414	5.415	5.414	5.414
S8	5.487	5.475	5.472	5.469	5.475	5.462	5.466	5.457	5.456	5.456	5.454	5.457	5.449	5.447	5.444	5.443	5.446	5.446	5.441
S9	5.486	5.495	5.490	5.494	5.489	5.490	5.481	5.484	5.476	5.474	5.471	5.476	5.470	5.467	5.463	5.465	5.460	5.465	5.460
S10	5.503	5.483	5.482	5.481	5.479	5.476	5.474	5.467	5.468	5.465	5.464	5.462	5.466	5.456	5.458	5.457	5.461	5.451	5.447
S11	5.498	5.476	5.474	5.478	5.474	5.469	5.472	5.469	5.466	5.466	5.458	5.455	5.451	5.448	5.448	5.448	5.444	5.449	5.446
S12	5.458	5.505	5.505	5.498	5.501	5.494	5.495	5.491	5.486	5.491	5.487	5.485	5.478	5.473	5.473	5.484	5.472	5.473	5.466
S13	5.502	5.491	5.495	5.491	5.488	5.481	5.490	5.483	5.478	5.481	5.474	5.477	5.468	5.474	5.468	5.465	5.470	5.463	5.463
S14	5.487	5.464	5.464	5.457	5.455	5.459	5.452	5.453	5.446	5.451	5.451	5.447	5.440	5.444	5.438	5.437	5.435	5.429	5.438
S15	5.490	5.502	5.501	5.494	5.496	5.496	5.487	5.488	5.482	5.485	5.487	5.475	5.475	5.474	5.474	5.469	5.476	5.465	5.466
S16	5.507	5.508	5.508	5.507	5.502	5.501	5.495	5.498	5.497	5.495	5.487	5.484	5.486	5.479	5.488	5.477	5.474	5.483	5.482
S17	5.492	5.497	5.500	5.497	5.494	5.496	5.492	5.489	5.488	5.482	5.479	5.479	5.480	5.475	5.481	5.472	5.469	5.466	5.470
S18	5.495	5.493	5.494	5.493	5.488	5.488	5.489	5.482	5.480	5.480	5.475	5.467	5.470	5.461	5.464	5.473	5.461	5.463	5.455
S19	5.494	5.494	5.494	5.497	5.494	5.491	5.485	5.487	5.487	5.485	5.481	5.473	5.479	5.467	5.469	5.471	5.469	5.463	5.463
S20	5.488	5.496	5.493	5.496	5.491	5.484	5.485	5.484	5.478	5.474	5.479	5.477	5.470	5.469	5.468	5.476	5.467	5.462	5.460
S21	5.498	5.514	5.514	5.513	5.505	5.508	5.499	5.499	5.500	5.495	5.498	5.494	5.490	5.481	5.485	5.482	5.478	5.479	5.482
S22	5.487	5.501	5.501	5.495	5.496	5.492	5.492	5.485	5.490	5.487	5.484	5.481	5.487	5.484	5.472	5.478	5.481	5.469	5.468
S23	5.494	5.497	5.495	5.496	5.492	5.487	5.488	5.481	5.482	5.480	5.480	5.482	5.478	5.469	5.469	5.473	5.474	5.468	5.464
S24	5.492	5.495	5.495	5.488	5.489	5.487	5.481	5.480	5.482	5.474	5.471	5.469	5.475	5.463	5.468	5.463	5.460	5.465	5.458
S25	5.495	5.499	5.496	5.494	5.493	5.489	5.488	5.483	5.492	5.484	5.481	5.484	5.483	5.470	5.475	5.472	5.466	5.467	5.466
Ave.	5.490	5.488	5.487	5.485	5.484	5.481	5.479	5.476	5.474	5.473	5.470	5.468	5.466	5.463	5.462	5.461	5.459	5.458	5.456
Med.	5.492	5.493	5.493	5.491	5.488	5.484	5.485	5.481	5.478	5.474	5.471	5.469	5.470	5.467	5.464	5.465	5.461	5.463	5.458
St dev	0.0120	0.0155	0.0156	0.0161	0.0156	0.0158	0.0146	0.0158	0.0166	0.0158	0.0155	0.0159	0.0165	0.0136	0.0147	0.0164	0.0156	0.0152	0.0144
Min.	5.454	5.443	5.445	5.441	5.436	5.435	5.434	5.429	5.427	5.428	5.423	5.420	5.417	5.425	5.425	5.414	5.415	5.414	5.414
Max.	5.507	5.514	5.514	5.513	5.505	5.508	5.499	5.499	5.500	5.495	5.498	5.494	5.490	5.484	5.488	5.484	5.481	5.483	5.482

3.5 Data Set 1, 55°C, 90mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	12000hrs	18000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S1	0.2560	0.5271	2840	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0010	0.0012	0.0015	0.0016	0.0018	0.0020	0.0022	0.0023	0.0024	0.0025	0.0027	0.0028
S2	0.2557	0.5268	2850	0.0001	0.0003	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0025	0.0026	0.0028	0.0029	0.0030	0.0032
S3	0.2562	0.5268	2839	0.0002	0.0003	0.0004	0.0006	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0019	0.0020	0.0023	0.0025	0.0026	0.0027	0.0028	0.0030
S4	0.2562	0.5273	2836	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022	0.0023	0.0024	0.0025	0.0027
S5	0.2564	0.5276	2831	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021	0.0024	0.0027	0.0028	0.0029	0.0031	0.0032	0.0033
S6	0.2560	0.5266	2843	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0016	0.0018	0.0021	0.0023	0.0026	0.0027	0.0029	0.0030	0.0031	0.0032
S7	0.2568	0.5279	2819	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0021	0.0024	0.0027	0.0028	0.0029	0.0031	0.0032
S8	0.2562	0.5283	2830	0.0001	0.0003	0.0004	0.0006	0.0007	0.0009	0.0012	0.0014	0.0017	0.0019	0.0021	0.0022	0.0025	0.0026	0.0029	0.0031	0.0032	0.0033
S9	0.2565	0.5284	2824	0.0001	0.0002	0.0004	0.0006	0.0008	0.0009	0.0012	0.0014	0.0016	0.0018	0.0019	0.0020	0.0023	0.0026	0.0028	0.0029	0.0030	0.0032
S10	0.2559	0.5267	2846	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0010	0.0012	0.0016	0.0018	0.0019	0.0021	0.0024	0.0025	0.0028	0.0030	0.0031	0.0033
S11	0.2567	0.5280	2821	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0010	0.0013	0.0016	0.0019	0.0021	0.0023	0.0024	0.0025	0.0027	0.0028	0.0030	0.0031
S12	0.2568	0.5278	2820	0.0001	0.0003	0.0004	0.0006	0.0008	0.0009	0.0012	0.0014	0.0017	0.0018	0.0020	0.0023	0.0024	0.0025	0.0027	0.0028	0.0029	0.0030
S13	0.2569	0.5285	2814	0.0001	0.0003	0.0004	0.0006	0.0008	0.0009	0.0012	0.0015	0.0019	0.0020	0.0022	0.0024	0.0027	0.0030	0.0032	0.0033	0.0035	0.0036
S14	0.2574	0.5291	2802	0.0001	0.0002	0.0004	0.0005	0.0007	0.0009	0.0012	0.0015	0.0017	0.0018	0.0019	0.0020	0.0021	0.0024	0.0026	0.0027	0.0029	0.0030
S15	0.2570	0.5294	2807	0.0002	0.0003	0.0004	0.0006	0.0007	0.0008	0.0012	0.0014	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	0.0031	0.0032	0.0033	0.0034
S16	0.2564	0.5277	2829	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021	0.0023	0.0026	0.0029	0.0030	0.0032	0.0033	0.0034
S17	0.2568	0.5293	2814	0.0002	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0015	0.0017	0.0019	0.0021	0.0023	0.0026	0.0027	0.0028	0.0030	0.0031	0.0033
S18	0.2565	0.5275	2828	0.0001	0.0003	0.0004	0.0006	0.0007	0.0008	0.0012	0.0015	0.0018	0.0020	0.0022	0.0023	0.0026	0.0029	0.0032	0.0033	0.0035	0.0036
S19	0.2567	0.5282	2819	0.0001	0.0003	0.0004	0.0006	0.0008	0.0009	0.0012	0.0015	0.0018	0.0020	0.0022	0.0023	0.0025	0.0026	0.0027	0.0029	0.0030	0.0032
S20	0.2564	0.5278	2828	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0012	0.0015	0.0016	0.0017	0.0019	0.0021	0.0022	0.0023	0.0025	0.0026	0.0027
S21	0.2567	0.5280	2820	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0021	0.0023	0.0024	0.0027	0.0028	0.0030	0.0031
S22	0.2573	0.5291	2803	0.0001	0.0002	0.0004	0.0005	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0019	0.0022	0.0023	0.0024	0.0027	0.0029	0.0030	0.0031
S23	0.2567	0.5283	2821	0.0002	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0023	0.0024	0.0026	0.0027	0.0028	0.0029	0.0031
S24	0.2567	0.5293	2814	0.0001	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0015	0.0016	0.0019	0.0020	0.0023	0.0024	0.0025	0.0027	0.0028	0.0030
S25	0.2565	0.5276	2827	0.0001	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0016	0.0019	0.0021	0.0023	0.0026	0.0029	0.0030	0.0031	0.0033	0.0034
Ave.	0.2565	0.5280	2825	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0030	0.0032
Med.	0.2565	0.5279	2824	0.0001	0.0003	0.0004	0.0005	0.0007	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0030	0.0032
St dev	0.0004	0.0008	12.7246	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2557	0.5266	2802	0.0001	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022	0.0023	0.0024	0.0025	0.0027
Max.	0.2574	0.5294	2850	0.0002	0.0003	0.0004	0.0006	0.0008	0.0009	0.0012	0.0015	0.0019	0.0020	0.0022	0.0024	0.0027	0.0030	0.0032	0.0033	0.0035	0.0036

3.6 Data Set 2, 85°C, 90mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S26	81.60	100.14	100.01	99.87	99.70	99.58	99.45	99.32	99.16	98.99	98.91	98.77	98.64	98.58	98.52	98.41	98.35	98.29	98.18
S27	81.87	100.18	100.07	99.94	99.81	99.64	99.46	99.32	99.19	99.05	98.92	98.78	98.70	98.63	98.52	98.45	98.38	98.32	98.21
S28	81.48	100.12	99.99	99.86	99.68	99.50	99.33	99.16	99.00	98.85	98.77	98.66	98.53	98.43	98.35	98.29	98.18	98.11	98.04
S29	81.57	100.13	100.00	99.89	99.77	99.59	99.41	99.27	99.14	98.97	98.86	98.75	98.61	98.54	98.46	98.40	98.33	98.27	98.21
S30	81.92	100.17	100.04	99.93	99.75	99.59	99.41	99.27	99.10	98.96	98.85	98.76	98.63	98.55	98.45	98.37	98.27	98.20	98.10
S31	81.64	100.18	100.07	99.94	99.76	99.64	99.46	99.33	99.19	99.05	98.97	98.86	98.74	98.68	98.58	98.50	98.39	98.33	98.26
S32	81.78	100.12	100.01	99.91	99.78	99.66	99.49	99.32	99.15	98.98	98.90	98.82	98.69	98.61	98.55	98.48	98.42	98.31	98.25
S33	81.73	100.19	100.08	99.97	99.80	99.62	99.45	99.31	99.14	98.97	98.84	98.71	98.59	98.53	98.45	98.39	98.32	98.26	98.19
S34	81.40	100.17	100.04	99.93	99.81	99.64	99.46	99.32	99.19	99.06	98.92	98.81	98.70	98.64	98.57	98.50	98.43	98.32	98.26
S35	81.64	100.17	100.03	99.90	99.78	99.60	99.48	99.34	99.21	99.06	98.93	98.82	98.74	98.68	98.57	98.50	98.39	98.28	98.22
S36	81.97	100.10	100.00	99.89	99.71	99.59	99.47	99.33	99.20	99.05	98.97	98.89	98.76	98.68	98.58	98.52	98.45	98.38	98.32
S37	81.89	100.19	100.08	99.95	99.83	99.70	99.53	99.38	99.22	99.07	98.96	98.85	98.72	98.64	98.58	98.51	98.45	98.39	98.32
S38	82.13	100.13	99.99	99.88	99.71	99.53	99.35	99.19	99.06	98.91	98.81	98.73	98.60	98.53	98.43	98.37	98.26	98.15	98.09
S39	82.25	100.14	100.01	99.88	99.76	99.58	99.41	99.24	99.07	98.91	98.79	98.71	98.58	98.52	98.42	98.31	98.25	98.18	98.08
S40	82.02	100.18	100.08	99.97	99.79	99.67	99.49	99.35	99.21	99.04	98.93	98.85	98.77	98.67	98.60	98.53	98.46	98.40	98.29
S41	81.95	100.11	99.98	99.85	99.68	99.50	99.38	99.21	99.08	98.94	98.86	98.74	98.63	98.56	98.49	98.39	98.33	98.27	98.16
S42	82.10	100.12	99.98	99.88	99.70	99.53	99.41	99.26	99.13	98.99	98.88	98.75	98.64	98.57	98.47	98.39	98.29	98.22	98.15
S43	82.36	100.11	99.98	99.87	99.70	99.52	99.34	99.21	99.08	98.95	98.82	98.74	98.61	98.53	98.45	98.37	98.31	98.24	98.18
S44	82.40	100.13	100.00	99.87	99.69	99.52	99.35	99.18	99.05	98.91	98.82	98.69	98.58	98.52	98.44	98.37	98.26	98.19	98.13
S45	82.12	100.11	100.00	99.87	99.75	99.57	99.44	99.28	99.11	98.94	98.81	98.67	98.59	98.52	98.44	98.38	98.31	98.24	98.13
S46	81.93	100.17	100.04	99.93	99.81	99.63	99.51	99.37	99.23	99.10	98.99	98.90	98.77	98.69	98.63	98.55	98.49	98.43	98.36
S47	82.19	100.19	100.06	99.95	99.78	99.60	99.48	99.35	99.22	99.08	99.00	98.92	98.84	98.73	98.63	98.57	98.46	98.39	98.33
S48	82.05	100.09	99.99	99.86	99.73	99.61	99.44	99.31	99.18	99.05	98.96	98.85	98.77	98.71	98.65	98.57	98.46	98.39	98.33
S49	82.26	100.15	100.04	99.91	99.79	99.66	99.49	99.36	99.23	99.06	98.92	98.84	98.73	98.63	98.55	98.49	98.43	98.36	98.29
S50	82.16	100.10	99.99	99.86	99.68	99.56	99.39	99.22	99.09	98.95	98.83	98.72	98.61	98.51	98.41	98.34	98.28	98.22	98.11
Ave.	81.94	100.14	100.02	99.90	99.75	99.59	99.43	99.29	99.14	99.00	98.89	98.78	98.67	98.59	98.51	98.44	98.36	98.29	98.21
Med.	81.95	100.14	100.01	99.89	99.76	99.59	99.45	99.31	99.15	98.99	98.90	98.77	98.64	98.58	98.52	98.41	98.35	98.28	98.21
St dev	0.2757	0.0323	0.0347	0.0375	0.0474	0.0552	0.0550	0.0638	0.0651	0.0664	0.0665	0.0737	0.0802	0.0790	0.0816	0.0822	0.0855	0.0853	0.0915
Min.	81.40	100.09	99.98	99.85	99.68	99.50	99.33	99.16	99.00	98.85	98.77	98.66	98.53	98.43	98.35	98.29	98.18	98.11	98.04
Max.	82.40	100.19	100.08	99.97	99.83	99.70	99.53	99.38	99.23	99.10	99.00	98.92	98.84	98.73	98.65	98.57	98.49	98.43	98.36

3.7 Data Set 2, 85°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S26	1.296	100.12	100.02	99.93	99.72	99.56	99.35	99.24	99.11	98.97	98.88	98.79	98.68	98.59	98.50	98.39	98.31	98.26	98.18
S27	1.296	100.07	99.98	99.84	99.68	99.52	99.32	99.18	99.04	98.93	98.80	98.69	98.57	98.47	98.38	98.27	98.23	98.18	98.10
S28	1.296	100.14	100.00	99.87	99.66	99.50	99.34	99.23	99.12	99.01	98.92	98.82	98.70	98.59	98.48	98.37	98.33	98.28	98.20
S29	1.296	100.15	100.06	99.92	99.76	99.56	99.40	99.26	99.12	99.01	98.89	98.78	98.68	98.59	98.50	98.40	98.35	98.27	98.19
S30	1.296	100.11	100.02	99.92	99.71	99.55	99.35	99.24	99.10	98.99	98.86	98.75	98.62	98.52	98.41	98.30	98.25	98.20	98.12
S31	1.297	100.15	100.01	99.92	99.71	99.50	99.29	99.16	99.02	98.89	98.78	98.66	98.55	98.45	98.36	98.25	98.17	98.12	98.08
S32	1.296	100.13	99.99	99.90	99.74	99.53	99.37	99.26	99.12	98.99	98.87	98.78	98.67	98.57	98.46	98.36	98.32	98.27	98.23
S33	1.297	100.09	100.00	99.90	99.74	99.53	99.32	99.19	99.05	98.92	98.80	98.68	98.59	98.49	98.38	98.28	98.23	98.19	98.14
S34	1.297	100.14	100.00	99.86	99.70	99.54	99.34	99.23	99.12	99.01	98.90	98.79	98.69	98.60	98.51	98.42	98.34	98.26	98.21
S35	1.297	100.12	99.98	99.89	99.73	99.52	99.36	99.25	99.14	99.03	98.94	98.81	98.68	98.57	98.48	98.37	98.33	98.24	98.16
S36	1.297	100.08	99.99	99.85	99.65	99.44	99.23	99.10	98.96	98.82	98.71	98.62	98.49	98.39	98.28	98.17	98.12	98.08	97.99
S37	1.294	100.10	100.00	99.86	99.70	99.49	99.29	99.15	99.04	98.91	98.82	98.73	98.63	98.54	98.43	98.34	98.26	98.22	98.17
S38	1.297	100.13	100.04	99.94	99.74	99.53	99.37	99.23	99.12	98.99	98.88	98.79	98.66	98.57	98.48	98.37	98.32	98.28	98.23
S39	1.297	100.07	99.94	99.84	99.63	99.42	99.22	99.08	98.95	98.81	98.68	98.57	98.44	98.35	98.25	98.14	98.06	98.01	97.93
S40	1.298	100.12	99.98	99.85	99.64	99.43	99.23	99.12	98.98	98.87	98.78	98.69	98.56	98.45	98.34	98.25	98.20	98.16	98.11
S41	1.298	100.11	100.02	99.93	99.72	99.56	99.40	99.26	99.15	99.02	98.91	98.78	98.65	98.56	98.45	98.34	98.30	98.26	98.21
S42	1.298	100.12	100.03	99.89	99.68	99.48	99.32	99.18	99.07	98.94	98.81	98.70	98.57	98.48	98.37	98.26	98.18	98.14	98.09
S43	1.298	100.13	100.04	99.94	99.73	99.57	99.37	99.23	99.10	98.99	98.86	98.75	98.66	98.55	98.46	98.35	98.27	98.22	98.18
S44	1.298	100.08	99.98	99.84	99.64	99.48	99.27	99.14	99.00	98.89	98.78	98.69	98.56	98.47	98.38	98.27	98.23	98.14	98.10
S45	1.298	100.12	100.03	99.93	99.73	99.57	99.36	99.22	99.09	98.95	98.82	98.73	98.60	98.51	98.40	98.30	98.21	98.13	98.09
S46	1.298	100.14	100.00	99.90	99.74	99.53	99.33	99.19	99.08	98.97	98.86	98.75	98.66	98.55	98.45	98.34	98.29	98.21	98.13
S47	1.298	100.14	100.00	99.86	99.70	99.49	99.33	99.19	99.06	98.95	98.82	98.69	98.60	98.49	98.40	98.31	98.26	98.22	98.17
S48	1.298	100.16	100.02	99.88	99.72	99.52	99.31	99.20	99.07	98.96	98.83	98.70	98.61	98.50	98.39	98.28	98.24	98.16	98.11
S49	1.299	100.11	99.97	99.83	99.62	99.46	99.26	99.12	98.99	98.85	98.72	98.63	98.54	98.43	98.32	98.22	98.17	98.09	98.04
S50	1.299	100.08	99.99	99.85	99.69	99.48	99.27	99.14	99.03	98.92	98.83	98.70	98.59	98.48	98.39	98.30	98.25	98.21	98.16
Ave.	1.297	100.12	100.00	99.89	99.70	99.51	99.32	99.19	99.07	98.94	98.83	98.72	98.61	98.51	98.41	98.31	98.25	98.19	98.13
Med.	1.297	100.12	100.00	99.89	99.71	99.52	99.33	99.19	99.07	98.95	98.83	98.73	98.61	98.51	98.40	98.30	98.25	98.21	98.14
St dev	0.0011	0.0253	0.0259	0.0361	0.0393	0.0425	0.0502	0.0532	0.0575	0.0611	0.0641	0.0627	0.0652	0.0659	0.0687	0.0700	0.0721	0.0708	0.0726
Min.	1.294	100.07	99.94	99.83	99.62	99.42	99.22	99.08	98.95	98.81	98.68	98.57	98.44	98.35	98.25	98.14	98.06	98.01	97.93
Max.	1.299	100.16	100.06	99.94	99.76	99.57	99.40	99.26	99.15	99.03	98.94	98.82	98.70	98.60	98.51	98.42	98.35	98.28	98.23

3.8 Data Set 2, 85°C, 90mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S26	0.0944	100.14	99.99	99.85	99.67	99.49	99.31	99.18	99.03	98.93	98.80	98.71	98.58	98.51	98.45	98.34	98.28	98.23	98.17
S27	0.0944	100.08	100.00	99.86	99.67	99.49	99.31	99.16	99.06	98.91	98.81	98.68	98.59	98.52	98.42	98.31	98.25	98.19	98.13
S28	0.0944	100.08	99.99	99.85	99.67	99.49	99.31	99.21	99.05	98.93	98.83	98.74	98.61	98.51	98.44	98.37	98.32	98.27	98.21
S29	0.0944	100.10	99.96	99.88	99.69	99.51	99.32	99.20	99.10	99.00	98.88	98.79	98.67	98.60	98.50	98.44	98.37	98.32	98.26
S30	0.0943	100.06	99.92	99.78	99.60	99.42	99.24	99.09	98.99	98.86	98.77	98.68	98.56	98.49	98.43	98.36	98.32	98.27	98.20
S31	0.0944	100.06	99.98	99.83	99.65	99.46	99.28	99.15	99.05	98.90	98.81	98.71	98.62	98.51	98.45	98.39	98.34	98.29	98.23
S32	0.0944	100.08	99.94	99.86	99.67	99.49	99.31	99.16	99.03	98.93	98.84	98.71	98.59	98.49	98.38	98.32	98.26	98.20	98.14
S33	0.0944	100.14	100.05	99.97	99.79	99.60	99.41	99.29	99.13	99.04	98.92	98.82	98.73	98.67	98.61	98.55	98.49	98.43	98.38
S34	0.0944	100.13	99.99	99.85	99.66	99.48	99.29	99.20	99.04	98.94	98.82	98.72	98.63	98.57	98.46	98.36	98.31	98.24	98.18
S35	0.0944	100.08	99.94	99.85	99.67	99.48	99.29	99.19	99.04	98.89	98.80	98.67	98.54	98.47	98.41	98.30	98.24	98.18	98.12
S36	0.0944	100.04	99.89	99.81	99.63	99.45	99.27	99.15	99.00	98.90	98.77	98.64	98.51	98.40	98.34	98.27	98.21	98.15	98.09
S37	0.0929	100.10	99.96	99.81	99.63	99.45	99.27	99.14	98.99	98.84	98.71	98.62	98.50	98.39	98.33	98.27	98.21	98.16	98.09
S38	0.0930	100.06	99.98	99.89	99.71	99.52	99.34	99.24	99.14	99.02	98.92	98.83	98.71	98.65	98.58	98.52	98.47	98.40	98.34
S39	0.0930	100.08	99.94	99.86	99.67	99.48	99.30	99.17	99.07	98.97	98.86	98.73	98.60	98.53	98.43	98.36	98.30	98.25	98.20
S40	0.0930	100.14	100.06	99.91	99.73	99.54	99.36	99.21	99.06	98.96	98.83	98.74	98.62	98.51	98.45	98.39	98.33	98.26	98.20
S41	0.0930	100.13	99.99	99.85	99.66	99.48	99.30	99.14	99.02	98.89	98.80	98.71	98.61	98.51	98.40	98.33	98.27	98.21	98.15
S42	0.0931	100.09	100.01	99.87	99.69	99.50	99.33	99.20	99.10	99.00	98.88	98.75	98.64	98.57	98.50	98.44	98.38	98.32	98.26
S43	0.0931	100.11	99.97	99.83	99.64	99.46	99.28	99.16	99.06	98.96	98.83	98.71	98.59	98.53	98.43	98.37	98.31	98.26	98.19
S44	0.0930	100.07	99.93	99.85	99.67	99.48	99.30	99.15	98.99	98.90	98.77	98.64	98.51	98.40	98.30	98.23	98.18	98.12	98.07
S45	0.0931	100.08	99.94	99.79	99.61	99.43	99.25	99.12	99.02	98.87	98.74	98.61	98.49	98.43	98.36	98.30	98.24	98.18	98.12
S46	0.0931	100.13	100.04	99.90	99.72	99.54	99.35	99.20	99.10	98.95	98.83	98.71	98.59	98.53	98.47	98.40	98.35	98.29	98.23
S47	0.0931	100.14	100.00	99.85	99.67	99.48	99.30	99.15	99.05	98.92	98.80	98.71	98.58	98.52	98.45	98.38	98.32	98.26	98.21
S48	0.0931	100.09	100.01	99.86	99.68	99.50	99.32	99.22	99.10	99.00	98.90	98.78	98.67	98.61	98.54	98.43	98.38	98.33	98.28
S49	0.0931	100.05	99.97	99.83	99.64	99.46	99.28	99.15	99.05	98.93	98.81	98.69	98.57	98.47	98.40	98.33	98.28	98.22	98.17
S50	0.0931	100.04	99.96	99.82	99.63	99.45	99.26	99.14	99.01	98.89	98.77	98.65	98.52	98.41	98.35	98.29	98.23	98.18	98.12
Ave.	0.0936	100.09	99.98	99.85	99.67	99.49	99.30	99.17	99.05	98.93	98.82	98.71	98.59	98.51	98.43	98.36	98.31	98.25	98.19
Med.	0.0931	100.08	99.98	99.85	99.67	99.48	99.30	99.16	99.05	98.93	98.81	98.71	98.59	98.51	98.43	98.36	98.31	98.25	98.19
St dev	0.0007	0.0319	0.0405	0.0396	0.0395	0.0384	0.0373	0.0419	0.0424	0.0509	0.0534	0.0576	0.0622	0.0730	0.0743	0.0748	0.0756	0.0759	0.0761
Min.	0.0929	100.04	99.89	99.78	99.60	99.42	99.24	99.09	98.99	98.84	98.71	98.61	98.49	98.39	98.30	98.23	98.18	98.12	98.07
Max.	0.0944	100.14	100.06	99.97	99.79	99.60	99.41	99.29	99.14	99.04	98.92	98.83	98.73	98.67	98.61	98.55	98.49	98.43	98.38

3.9 Data Set 2, 85°C, 90mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S26	5.487	5.483	5.480	5.478	5.484	5.481	5.469	5.469	5.470	5.465	5.469	5.461	5.455	5.455	5.451	5.456	5.454	5.458	5.455
S27	5.479	5.475	5.474	5.476	5.473	5.473	5.463	5.467	5.456	5.456	5.454	5.452	5.454	5.447	5.447	5.443	5.440	5.448	5.438
S28	5.494	5.492	5.494	5.491	5.488	5.483	5.476	5.484	5.481	5.477	5.475	5.474	5.469	5.462	5.458	5.458	5.466	5.459	5.453
S29	5.486	5.481	5.484	5.480	5.477	5.476	5.473	5.476	5.471	5.472	5.459	5.467	5.465	5.453	5.453	5.454	5.449	5.445	5.444
S30	5.484	5.483	5.482	5.478	5.474	5.477	5.474	5.473	5.464	5.471	5.466	5.459	5.459	5.452	5.456	5.456	5.449	5.455	5.440
S31	5.482	5.480	5.480	5.473	5.479	5.476	5.472	5.464	5.468	5.459	5.455	5.457	5.450	5.450	5.458	5.453	5.443	5.447	5.439
S32	5.450	5.450	5.450	5.444	5.445	5.443	5.440	5.432	5.434	5.427	5.425	5.424	5.417	5.418	5.420	5.417	5.413	5.414	5.417
S33	5.480	5.476	5.476	5.474	5.475	5.469	5.470	5.470	5.458	5.463	5.453	5.462	5.456	5.452	5.454	5.450	5.445	5.444	5.444
S34	5.499	5.500	5.495	5.493	5.496	5.491	5.487	5.485	5.483	5.476	5.482	5.480	5.467	5.467	5.475	5.466	5.468	5.464	5.455
S35	5.490	5.488	5.485	5.488	5.485	5.483	5.474	5.472	5.476	5.475	5.464	5.463	5.465	5.464	5.460	5.454	5.450	5.454	5.448
S36	5.484	5.482	5.480	5.481	5.481	5.477	5.475	5.468	5.470	5.462	5.465	5.458	5.460	5.459	5.456	5.451	5.444	5.444	5.452
S37	5.509	5.507	5.504	5.506	5.504	5.496	5.500	5.499	5.493	5.487	5.483	5.490	5.479	5.480	5.481	5.478	5.469	5.470	5.467
S38	5.499	5.497	5.494	5.491	5.490	5.492	5.489	5.489	5.477	5.486	5.472	5.474	5.472	5.466	5.475	5.471	5.471	5.466	5.458
S39	5.469	5.467	5.464	5.466	5.463	5.463	5.456	5.460	5.452	5.447	5.443	5.444	5.440	5.442	5.445	5.433	5.433	5.428	5.427
S40	5.505	5.500	5.500	5.499	5.496	5.494	5.495	5.487	5.492	5.483	5.487	5.479	5.480	5.479	5.481	5.469	5.465	5.466	5.473
S41	5.513	5.508	5.514	5.507	5.505	5.500	5.495	5.501	5.499	5.491	5.486	5.488	5.487	5.481	5.477	5.480	5.476	5.474	5.481
S42	5.506	5.504	5.505	5.503	5.498	5.494	5.496	5.488	5.490	5.483	5.479	5.481	5.481	5.479	5.470	5.470	5.478	5.465	5.474
S43	5.498	5.493	5.494	5.491	5.491	5.485	5.488	5.480	5.481	5.476	5.480	5.471	5.466	5.470	5.469	5.466	5.461	5.461	5.454
S44	5.503	5.498	5.498	5.496	5.498	5.494	5.491	5.493	5.486	5.487	5.478	5.484	5.473	5.479	5.470	5.468	5.470	5.466	5.460
S45	5.501	5.499	5.496	5.496	5.498	5.488	5.491	5.491	5.486	5.479	5.481	5.474	5.474	5.473	5.472	5.475	5.464	5.462	5.469
S46	5.518	5.513	5.516	5.511	5.512	5.505	5.505	5.507	5.501	5.496	5.498	5.492	5.493	5.490	5.482	5.482	5.487	5.487	5.476
S47	5.509	5.510	5.507	5.506	5.503	5.499	5.498	5.497	5.492	5.486	5.489	5.491	5.482	5.476	5.473	5.473	5.476	5.469	5.467
S48	5.505	5.506	5.503	5.500	5.497	5.496	5.491	5.495	5.485	5.482	5.486	5.478	5.484	5.475	5.481	5.476	5.470	5.464	5.464
S49	5.499	5.497	5.495	5.496	5.493	5.490	5.485	5.487	5.486	5.482	5.480	5.472	5.471	5.467	5.468	5.467	5.464	5.458	5.456
S50	5.506	5.501	5.501	5.501	5.503	5.495	5.494	5.492	5.486	5.489	5.486	5.479	5.473	5.482	5.477	5.470	5.473	5.466	5.470
Ave.	5.494	5.492	5.491	5.489	5.488	5.485	5.482	5.481	5.477	5.474	5.472	5.470	5.467	5.465	5.464	5.461	5.459	5.457	5.455
Med.	5.499	5.497	5.494	5.491	5.491	5.488	5.487	5.485	5.481	5.477	5.478	5.474	5.469	5.467	5.469	5.466	5.464	5.461	5.455
St dev	0.0153	0.0151	0.0154	0.0154	0.0151	0.0137	0.0153	0.0164	0.0159	0.0155	0.0165	0.0159	0.0162	0.0161	0.0148	0.0153	0.0167	0.0149	0.0158
Min.	5.450	5.450	5.450	5.444	5.445	5.443	5.440	5.432	5.434	5.427	5.425	5.424	5.417	5.418	5.420	5.417	5.413	5.414	5.417
Max.	5.518	5.513	5.516	5.511	5.512	5.505	5.505	5.507	5.501	5.496	5.498	5.492	5.493	5.490	5.482	5.482	5.487	5.487	5.481

3.10 Data Set 2, 85°C, 90mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S26	0.2571	0.5231	2836	0.0002	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0025	0.0028	0.0031	0.0033	0.0036	0.0037
S27	0.2579	0.5245	2811	0.0002	0.0003	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0023	0.0026	0.0028	0.0030	0.0031	0.0033
S28	0.2575	0.5240	2823	0.0003	0.0005	0.0007	0.0008	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0031	0.0033	0.0034	0.0036
S29	0.2572	0.5238	2830	0.0002	0.0004	0.0005	0.0007	0.0009	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0033	0.0035
S30	0.2573	0.5248	2823	0.0003	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0032	0.0034
S31	0.2576	0.5250	2815	0.0001	0.0004	0.0005	0.0007	0.0009	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0026	0.0028	0.0029	0.0031	0.0032	0.0034
S32	0.2572	0.5233	2832	0.0002	0.0004	0.0007	0.0008	0.0011	0.0012	0.0015	0.0017	0.0020	0.0022	0.0023	0.0026	0.0027	0.0030	0.0032	0.0035	0.0037	0.0038
S33	0.2570	0.5232	2838	0.0002	0.0003	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0030	0.0033	0.0034	0.0036
S34	0.2570	0.5232	2837	0.0003	0.0004	0.0006	0.0008	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	0.0031	0.0034	0.0035	0.0038	0.0040
S35	0.2573	0.5235	2830	0.0003	0.0004	0.0006	0.0008	0.0011	0.0013	0.0016	0.0018	0.0021	0.0022	0.0025	0.0026	0.0028	0.0031	0.0033	0.0034	0.0035	0.0038
S36	0.2573	0.5248	2822	0.0002	0.0004	0.0007	0.0008	0.0011	0.0012	0.0015	0.0017	0.0020	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0032	0.0034	0.0036
S37	0.2574	0.5235	2827	0.0001	0.0003	0.0004	0.0006	0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0022	0.0024	0.0027	0.0028	0.0030	0.0031	0.0034	0.0035
S38	0.2571	0.5232	2835	0.0001	0.0003	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0025	0.0027	0.0029	0.0030	0.0031	0.0033
S39	0.2574	0.5232	2828	0.0002	0.0003	0.0005	0.0007	0.0009	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	0.0031	0.0032	0.0033	0.0034
S40	0.2573	0.5237	2828	0.0001	0.0002	0.0003	0.0006	0.0007	0.0009	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0033	0.0034
S41	0.2575	0.5240	2822	0.0003	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0032	0.0035	0.0037
S42	0.2571	0.5229	2837	0.0002	0.0003	0.0005	0.0006	0.0009	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0034	0.0036
S43	0.2579	0.5244	2811	0.0002	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0027	0.0029	0.0032	0.0034	0.0037
S44	0.2575	0.5247	2820	0.0003	0.0004	0.0005	0.0006	0.0008	0.0009	0.0012	0.0014	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0027	0.0030	0.0031	0.0032
S45	0.2577	0.5249	2814	0.0003	0.0005	0.0007	0.0008	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0037	0.0039
S46	0.2570	0.5232	2837	0.0002	0.0003	0.0004	0.0005	0.0008	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0029	0.0031	0.0032	0.0033
S47	0.2573	0.5235	2829	0.0003	0.0004	0.0005	0.0007	0.0008	0.0010	0.0012	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0030	0.0031	0.0033
S48	0.2574	0.5237	2827	0.0002	0.0003	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0032	0.0033	0.0034	0.0036
S49	0.2570	0.5232	2837	0.0002	0.0003	0.0005	0.0006	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0036
S50	0.2572	0.5230	2835	0.0002	0.0003	0.0005	0.0007	0.0008	0.0010	0.0012	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034
Ave.	0.2573	0.5238	2827	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0035
Med.	0.2573	0.5235	2828	0.0002	0.0003	0.0005	0.0007	0.0009	0.0010	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0036
St dev	0.0003	0.0007	8.4945	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002
Min.	0.2570	0.5229	2811	0.0001	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0022	0.0023	0.0026	0.0027	0.0030	0.0031	0.0032
Max.	0.2579	0.5250	2838	0.0003	0.0005	0.0007	0.0008	0.0011	0.0013	0.0016	0.0018	0.0021	0.0022	0.0025	0.0026	0.0029	0.0031	0.0034	0.0035	0.0038	0.0040

3.11 Data Set 3, 105°C, 90mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S51	81.80	100.07	99.91	99.76	99.58	99.39	99.15	99.01	98.83	98.69	98.57	98.48	98.39	98.29	98.21	98.13	98.06	97.96	97.86
S52	81.60	100.07	99.92	99.77	99.58	99.39	99.20	99.01	98.83	98.69	98.54	98.41	98.31	98.22	98.14	98.06	97.99	97.87	97.77
S53	82.14	100.02	99.87	99.72	99.53	99.34	99.11	98.92	98.74	98.56	98.43	98.35	98.22	98.17	98.05	97.97	97.88	97.78	97.66
S54	81.85	100.05	99.90	99.75	99.54	99.34	99.15	98.96	98.82	98.64	98.52	98.43	98.30	98.20	98.08	98.00	97.91	97.81	97.70
S55	81.77	100.08	99.93	99.78	99.57	99.38	99.16	98.98	98.80	98.61	98.50	98.40	98.28	98.23	98.10	98.02	97.95	97.85	97.74
S56	81.96	100.10	99.95	99.80	99.60	99.41	99.19	99.05	98.91	98.73	98.57	98.48	98.39	98.34	98.22	98.14	98.06	97.96	97.86
S57	82.05	100.06	99.91	99.76	99.60	99.44	99.25	99.07	98.93	98.79	98.66	98.54	98.41	98.32	98.24	98.11	98.04	97.94	97.83
S58	81.72	100.09	99.94	99.79	99.59	99.38	99.15	98.97	98.79	98.60	98.48	98.35	98.26	98.17	98.09	97.97	97.89	97.79	97.69
S59	82.15	100.08	99.93	99.78	99.62	99.43	99.21	99.03	98.89	98.70	98.59	98.46	98.37	98.28	98.16	98.08	97.99	97.89	97.79
S60	81.87	100.04	99.90	99.75	99.57	99.38	99.19	99.01	98.82	98.68	98.57	98.44	98.31	98.26	98.18	98.10	98.01	97.91	97.79
S61	81.72	100.01	99.87	99.72	99.55	99.37	99.18	98.99	98.81	98.63	98.47	98.34	98.25	98.16	98.04	97.96	97.87	97.75	97.64
S62	82.23	100.01	99.87	99.72	99.52	99.36	99.17	99.03	98.89	98.75	98.59	98.50	98.41	98.32	98.19	98.11	98.02	97.92	97.82
S63	81.90	100.10	99.95	99.81	99.65	99.44	99.21	99.07	98.89	98.70	98.54	98.42	98.32	98.27	98.19	98.12	98.03	97.92	97.81
S64	82.57	100.01	99.86	99.71	99.52	99.32	99.08	98.90	98.76	98.58	98.46	98.33	98.20	98.11	98.03	97.95	97.88	97.76	97.66
S65	82.43	100.00	99.86	99.71	99.52	99.36	99.17	98.99	98.81	98.63	98.47	98.37	98.28	98.23	98.15	98.07	97.98	97.86	97.76
S66	82.07	100.06	99.92	99.77	99.57	99.38	99.19	99.05	98.86	98.68	98.52	98.40	98.31	98.26	98.13	98.05	97.98	97.88	97.78
S67	82.02	100.05	99.91	99.76	99.57	99.38	99.19	99.01	98.83	98.64	98.52	98.43	98.35	98.30	98.17	98.09	98.02	97.90	97.78
S68	82.38	100.09	99.95	99.80	99.64	99.45	99.26	99.12	98.94	98.75	98.60	98.47	98.34	98.29	98.21	98.13	98.04	97.94	97.83
S69	82.18	100.10	99.95	99.80	99.61	99.41	99.19	99.01	98.83	98.65	98.53	98.44	98.36	98.26	98.19	98.11	98.03	97.93	97.81
S70	82.23	100.04	99.90	99.75	99.55	99.39	99.17	98.99	98.80	98.62	98.50	98.40	98.27	98.22	98.14	98.02	97.95	97.83	97.71
S71	82.49	100.08	99.93	99.78	99.62	99.46	99.24	99.06	98.92	98.74	98.58	98.49	98.40	98.30	98.18	98.06	97.98	97.86	97.76
S72	82.27	100.00	99.85	99.70	99.51	99.35	99.12	98.93	98.75	98.57	98.45	98.37	98.27	98.22	98.10	98.02	97.93	97.83	97.73
S73	82.27	100.05	99.91	99.76	99.55	99.39	99.17	98.99	98.81	98.67	98.51	98.42	98.29	98.24	98.16	98.03	97.96	97.86	97.74
S74	82.23	99.99	99.85	99.70	99.51	99.35	99.12	98.94	98.80	98.61	98.49	98.40	98.28	98.18	98.10	98.02	97.95	97.85	97.75
S75	82.49	100.08	99.94	99.79	99.59	99.40	99.18	99.04	98.86	98.72	98.60	98.51	98.41	98.36	98.24	98.16	98.08	97.97	97.85
Ave.	82.10	100.05	99.91	99.76	99.57	99.39	99.18	99.01	98.84	98.67	98.53	98.42	98.32	98.25	98.15	98.06	97.98	97.87	97.76
Med.	82.14	100.06	99.91	99.76	99.57	99.38	99.18	99.01	98.83	98.67	98.52	98.42	98.31	98.26	98.16	98.06	97.98	97.87	97.77
St dev	0.2703	0.0350	0.0337	0.0336	0.0392	0.0366	0.0424	0.0507	0.0544	0.0616	0.0568	0.0561	0.0606	0.0613	0.0605	0.0613	0.0614	0.0628	0.0626
Min.	81.60	99.99	99.85	99.70	99.51	99.32	99.08	98.90	98.74	98.56	98.43	98.33	98.20	98.11	98.03	97.95	97.87	97.75	97.64
Max.	82.57	100.10	99.95	99.81	99.65	99.46	99.26	99.12	98.94	98.79	98.66	98.54	98.41	98.36	98.24	98.16	98.08	97.97	97.86

3.12 Data Set 3, 105°C, 90mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S51	1.295	100.00	99.83	99.66	99.47	99.28	99.07	98.91	98.77	98.62	98.52	98.40	98.29	98.22	98.16	98.04	97.92	97.87	97.80
S52	1.296	100.03	99.86	99.69	99.50	99.29	99.10	98.92	98.75	98.60	98.49	98.38	98.26	98.12	98.06	97.95	97.83	97.71	97.64
S53	1.296	99.97	99.80	99.63	99.44	99.23	99.04	98.86	98.72	98.54	98.42	98.31	98.21	98.07	98.00	97.90	97.85	97.78	97.66
S54	1.296	100.02	99.85	99.68	99.45	99.21	99.00	98.82	98.69	98.56	98.44	98.33	98.23	98.16	98.03	97.93	97.86	97.73	97.61
S55	1.296	100.03	99.86	99.69	99.48	99.29	99.10	98.94	98.80	98.63	98.52	98.40	98.28	98.15	98.01	97.91	97.84	97.72	97.65
S56	1.296	100.01	99.84	99.67	99.48	99.25	99.03	98.86	98.72	98.58	98.47	98.35	98.25	98.11	98.04	98.00	97.93	97.81	97.74
S57	1.296	100.05	99.88	99.72	99.48	99.25	99.01	98.81	98.67	98.49	98.38	98.27	98.17	98.10	98.03	98.00	97.93	97.86	97.80
S58	1.296	100.00	99.83	99.66	99.47	99.28	99.09	98.88	98.73	98.56	98.45	98.34	98.22	98.16	98.09	97.97	97.90	97.78	97.66
S59	1.296	100.04	99.88	99.71	99.47	99.28	99.09	98.93	98.80	98.65	98.54	98.42	98.32	98.25	98.18	98.07	98.01	97.96	97.91
S60	1.296	100.01	99.84	99.67	99.48	99.27	99.03	98.87	98.72	98.59	98.47	98.36	98.24	98.11	98.04	98.00	97.93	97.81	97.76
S61	1.296	100.02	99.84	99.68	99.47	99.23	99.02	98.86	98.68	98.55	98.44	98.34	98.23	98.16	98.09	97.98	97.85	97.73	97.66
S62	1.297	100.07	99.90	99.74	99.50	99.27	99.05	98.85	98.70	98.55	98.45	98.33	98.21	98.08	98.01	97.91	97.86	97.80	97.73
S63	1.290	99.99	99.82	99.66	99.42	99.23	99.02	98.86	98.68	98.53	98.42	98.31	98.19	98.06	97.93	97.89	97.82	97.70	97.63
S64	1.295	100.08	99.90	99.73	99.50	99.29	99.08	98.91	98.77	98.59	98.47	98.35	98.23	98.09	97.94	97.83	97.78	97.66	97.60
S65	1.294	99.99	99.83	99.66	99.43	99.24	99.03	98.82	98.68	98.51	98.40	98.28	98.17	98.03	97.89	97.85	97.73	97.68	97.55
S66	1.294	100.05	99.88	99.72	99.53	99.34	99.10	98.93	98.78	98.60	98.50	98.38	98.26	98.19	98.13	98.09	98.02	97.95	97.88
S67	1.295	100.07	99.90	99.73	99.49	99.26	99.07	98.90	98.77	98.64	98.52	98.41	98.31	98.24	98.11	97.99	97.87	97.82	97.77
S68	1.295	100.03	99.86	99.69	99.48	99.27	99.04	98.83	98.65	98.50	98.39	98.27	98.16	98.09	97.94	97.83	97.78	97.65	97.53
S69	1.295	99.98	99.81	99.64	99.45	99.24	99.03	98.82	98.65	98.50	98.38	98.27	98.15	98.01	97.94	97.82	97.75	97.69	97.56
S70	1.295	100.07	99.90	99.73	99.52	99.30	99.07	98.86	98.68	98.54	98.42	98.31	98.19	98.04	97.98	97.87	97.75	97.63	97.51
S71	1.295	100.01	99.83	99.67	99.46	99.22	99.03	98.82	98.69	98.51	98.39	98.28	98.17	98.03	97.88	97.85	97.79	97.72	97.67
S72	1.295	100.00	99.84	99.66	99.45	99.24	99.05	98.84	98.71	98.58	98.46	98.35	98.25	98.11	97.97	97.87	97.80	97.75	97.63
S73	1.295	99.97	99.81	99.64	99.40	99.21	99.00	98.84	98.66	98.51	98.41	98.30	98.19	98.04	97.97	97.86	97.74	97.67	97.62
S74	1.295	100.08	99.91	99.74	99.55	99.32	99.11	98.90	98.72	98.57	98.46	98.34	98.23	98.16	98.02	97.91	97.84	97.77	97.70
S75	1.295	99.99	99.83	99.66	99.47	99.28	99.07	98.91	98.73	98.55	98.45	98.33	98.22	98.08	98.02	97.98	97.93	97.87	97.75
Ave.	1.295	100.02	99.85	99.69	99.47	99.26	99.05	98.87	98.72	98.56	98.45	98.34	98.22	98.11	98.02	97.93	97.85	97.76	97.68
Med.	1.295	100.02	99.84	99.68	99.47	99.27	99.05	98.86	98.72	98.56	98.45	98.34	98.23	98.11	98.02	97.91	97.85	97.75	97.66
St dev	0.0013	0.0334	0.0330	0.0326	0.0332	0.0328	0.0331	0.0401	0.0452	0.0451	0.0466	0.0453	0.0462	0.0666	0.0776	0.0769	0.0797	0.0893	0.1024
Min.	1.290	99.97	99.80	99.63	99.40	99.21	99.00	98.81	98.65	98.49	98.38	98.27	98.15	98.01	97.88	97.82	97.73	97.63	97.51
Max.	1.297	100.08	99.91	99.74	99.55	99.34	99.11	98.94	98.80	98.65	98.54	98.42	98.32	98.25	98.18	98.09	98.02	97.96	97.91

3.13 Data Set 3, 105°C, 90mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S51	0.0948	100.04	99.91	99.77	99.59	99.37	99.16	98.97	98.83	98.65	98.52	98.42	98.31	98.23	98.16	98.04	97.93	97.84	97.80
S52	0.0948	99.96	99.83	99.65	99.45	99.23	99.01	98.86	98.68	98.49	98.37	98.27	98.16	98.02	97.89	97.83	97.77	97.68	97.64
S53	0.0949	99.99	99.81	99.68	99.49	99.27	99.04	98.90	98.75	98.57	98.45	98.34	98.24	98.15	98.08	97.96	97.91	97.81	97.78
S54	0.0948	100.03	99.85	99.72	99.51	99.30	99.08	98.90	98.72	98.57	98.45	98.34	98.26	98.17	98.10	98.05	97.93	97.84	97.75
S55	0.0949	99.98	99.80	99.67	99.48	99.27	99.05	98.87	98.68	98.53	98.43	98.32	98.21	98.12	98.00	97.94	97.88	97.84	97.75
S56	0.0949	100.02	99.84	99.70	99.52	99.29	99.05	98.87	98.69	98.50	98.38	98.28	98.19	98.04	97.98	97.86	97.75	97.65	97.56
S57	0.0949	100.03	99.85	99.71	99.51	99.27	99.06	98.91	98.77	98.58	98.48	98.39	98.29	98.14	98.07	98.01	97.90	97.81	97.71
S58	0.0949	100.02	99.89	99.71	99.53	99.31	99.09	98.94	98.76	98.61	98.50	98.39	98.29	98.14	98.08	98.02	97.90	97.87	97.77
S59	0.0948	99.96	99.82	99.65	99.44	99.21	98.99	98.84	98.70	98.52	98.41	98.31	98.21	98.12	97.99	97.87	97.82	97.72	97.63
S60	0.0950	100.03	99.85	99.71	99.51	99.27	99.06	98.92	98.78	98.62	98.50	98.39	98.29	98.14	98.07	97.96	97.90	97.81	97.77
S61	0.0949	100.03	99.85	99.68	99.47	99.26	99.05	98.86	98.72	98.54	98.43	98.33	98.24	98.10	98.03	97.96	97.85	97.76	97.67
S62	0.0949	100.02	99.89	99.71	99.51	99.29	99.05	98.91	98.73	98.59	98.46	98.35	98.27	98.18	98.11	98.05	97.99	97.96	97.87
S63	0.0936	100.00	99.83	99.69	99.50	99.27	99.06	98.90	98.76	98.58	98.47	98.37	98.27	98.12	98.05	97.94	97.82	97.73	97.69
S64	0.0937	99.98	99.80	99.67	99.48	99.24	99.03	98.84	98.66	98.51	98.40	98.30	98.22	98.13	98.00	97.94	97.88	97.79	97.70
S65	0.0938	99.98	99.84	99.67	99.48	99.27	99.05	98.91	98.76	98.61	98.49	98.38	98.28	98.19	98.12	98.00	97.95	97.85	97.76
S66	0.0937	100.04	99.86	99.68	99.50	99.29	99.07	98.89	98.74	98.59	98.49	98.38	98.28	98.19	98.06	97.94	97.89	97.85	97.82
S67	0.0937	100.04	99.90	99.77	99.58	99.35	99.11	98.93	98.75	98.60	98.49	98.40	98.30	98.21	98.08	98.02	97.91	97.82	97.73
S68	0.0936	99.99	99.86	99.72	99.54	99.31	99.09	98.94	98.80	98.66	98.53	98.43	98.34	98.20	98.07	97.95	97.84	97.75	97.65
S69	0.0938	100.04	99.87	99.73	99.55	99.31	99.08	98.90	98.74	98.60	98.48	98.37	98.28	98.19	98.07	97.95	97.84	97.80	97.71
S70	0.0937	100.02	99.84	99.66	99.47	99.24	99.00	98.82	98.67	98.52	98.41	98.32	98.22	98.13	98.06	98.00	97.89	97.80	97.71
S71	0.0937	100.03	99.85	99.67	99.49	99.26	99.02	98.88	98.74	98.59	98.47	98.37	98.27	98.18	98.05	97.99	97.88	97.79	97.75
S72	0.0937	100.01	99.83	99.69	99.51	99.29	99.07	98.93	98.79	98.60	98.50	98.39	98.28	98.20	98.13	98.01	97.95	97.86	97.77
S73	0.0937	100.03	99.90	99.72	99.54	99.32	99.11	98.96	98.82	98.64	98.52	98.43	98.32	98.18	98.11	97.99	97.94	97.84	97.75
S74	0.0937	100.01	99.87	99.69	99.51	99.29	99.06	98.88	98.69	98.55	98.43	98.34	98.23	98.14	98.07	97.96	97.84	97.75	97.66
S75	0.0937	100.01	99.84	99.66	99.45	99.22	98.98	98.83	98.68	98.54	98.43	98.35	98.24	98.09	97.97	97.85	97.74	97.70	97.61
Ave.	0.0943	100.01	99.85	99.70	99.50	99.28	99.06	98.89	98.74	98.58	98.46	98.36	98.26	98.15	98.06	97.96	97.88	97.80	97.72
Med.	0.0938	100.02	99.85	99.69	99.51	99.27	99.06	98.90	98.74	98.58	98.47	98.37	98.27	98.14	98.07	97.96	97.89	97.81	97.73
St dev	0.0006	0.0248	0.0297	0.0333	0.0363	0.0374	0.0393	0.0397	0.0471	0.0460	0.0437	0.0444	0.0433	0.0502	0.0593	0.0610	0.0636	0.0676	0.0700
Min.	0.0936	99.96	99.80	99.65	99.44	99.21	98.98	98.82	98.66	98.49	98.37	98.27	98.16	98.02	97.89	97.83	97.74	97.65	97.56
Max.	0.0950	100.04	99.91	99.77	99.59	99.37	99.16	98.97	98.83	98.66	98.53	98.43	98.34	98.23	98.16	98.05	97.99	97.96	97.87

3.14 Data Set 3, 105°C, 90mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S51	5.495	5.478	5.481	5.471	5.476	5.471	5.464	5.466	5.462	5.455	5.457	5.457	5.458	5.456	5.453	5.458	5.454	5.456	5.446
S52	5.504	5.467	5.466	5.465	5.463	5.460	5.465	5.459	5.454	5.458	5.457	5.444	5.448	5.444	5.450	5.440	5.439	5.444	5.438
S53	5.489	5.487	5.486	5.479	5.476	5.473	5.477	5.474	5.473	5.470	5.464	5.469	5.470	5.464	5.466	5.464	5.461	5.450	5.458
S54	5.492	5.480	5.480	5.470	5.471	5.473	5.467	5.464	5.465	5.453	5.465	5.455	5.456	5.451	5.450	5.447	5.442	5.442	5.446
S55	5.491	5.478	5.471	5.474	5.474	5.467	5.465	5.462	5.459	5.456	5.462	5.455	5.453	5.449	5.448	5.455	5.451	5.445	5.443
S56	5.485	5.476	5.472	5.465	5.472	5.467	5.458	5.460	5.457	5.457	5.456	5.458	5.447	5.450	5.446	5.442	5.443	5.438	5.436
S57	5.455	5.439	5.440	5.440	5.440	5.433	5.431	5.429	5.429	5.425	5.424	5.421	5.426	5.421	5.410	5.409	5.406	5.418	5.410
S58	5.499	5.471	5.467	5.469	5.468	5.463	5.466	5.462	5.459	5.456	5.459	5.449	5.448	5.445	5.441	5.448	5.441	5.436	5.444
S59	5.484	5.493	5.493	5.481	5.485	5.478	5.481	5.479	5.481	5.469	5.473	5.468	5.469	5.468	5.459	5.459	5.460	5.461	5.453
S60	5.487	5.482	5.478	5.476	5.474	5.474	5.469	5.468	5.469	5.460	5.458	5.461	5.458	5.455	5.461	5.454	5.455	5.457	5.453
S61	5.499	5.472	5.477	5.474	5.468	5.470	5.461	5.463	5.466	5.459	5.458	5.453	5.449	5.453	5.445	5.444	5.448	5.448	5.445
S62	5.489	5.500	5.496	5.499	5.493	5.496	5.495	5.488	5.488	5.479	5.484	5.485	5.481	5.481	5.479	5.477	5.474	5.472	5.476
S63	5.500	5.490	5.486	5.487	5.481	5.485	5.478	5.479	5.479	5.478	5.470	5.471	5.475	5.470	5.470	5.465	5.466	5.459	5.455
S64	5.494	5.460	5.456	5.453	5.453	5.446	5.446	5.446	5.448	5.444	5.437	5.434	5.438	5.445	5.440	5.441	5.438	5.437	5.433
S65	5.460	5.499	5.498	5.494	5.487	5.492	5.486	5.483	5.482	5.475	5.481	5.474	5.473	5.475	5.469	5.465	5.473	5.465	5.465
S66	5.504	5.501	5.501	5.496	5.496	5.495	5.496	5.495	5.490	5.492	5.483	5.478	5.488	5.478	5.480	5.472	5.477	5.469	5.467
S67	5.509	5.501	5.498	5.496	5.490	5.489	5.490	5.483	5.486	5.481	5.473	5.481	5.482	5.471	5.474	5.471	5.467	5.471	5.461
S68	5.490	5.487	5.485	5.484	5.483	5.475	5.481	5.476	5.477	5.472	5.465	5.463	5.467	5.468	5.458	5.465	5.456	5.459	5.458
S69	5.496	5.494	5.490	5.492	5.488	5.486	5.490	5.478	5.483	5.471	5.479	5.474	5.468	5.474	5.473	5.475	5.468	5.472	5.458
S70	5.497	5.492	5.489	5.486	5.483	5.483	5.478	5.477	5.480	5.471	5.473	5.470	5.473	5.466	5.470	5.461	5.470	5.466	5.459
S71	5.489	5.507	5.505	5.502	5.507	5.497	5.495	5.498	5.495	5.494	5.494	5.490	5.487	5.487	5.486	5.489	5.487	5.485	5.482
S72	5.492	5.497	5.496	5.498	5.499	5.488	5.492	5.486	5.484	5.476	5.483	5.485	5.474	5.474	5.478	5.478	5.478	5.465	5.463
S73	5.500	5.498	5.496	5.494	5.489	5.491	5.489	5.485	5.482	5.480	5.475	5.474	5.473	5.473	5.477	5.464	5.472	5.469	5.464
S74	5.497	5.493	5.487	5.483	5.489	5.476	5.483	5.481	5.475	5.474	5.473	5.471	5.471	5.469	5.467	5.467	5.467	5.461	5.467
S75	5.460	5.500	5.497	5.492	5.488	5.493	5.485	5.485	5.488	5.484	5.476	5.474	5.481	5.481	5.476	5.473	5.468	5.462	5.474
Ave.	5.490	5.486	5.484	5.481	5.480	5.477	5.475	5.473	5.472	5.468	5.467	5.465	5.464	5.463	5.461	5.459	5.458	5.456	5.454
Med.	5.492	5.490	5.486	5.483	5.483	5.476	5.478	5.477	5.477	5.471	5.470	5.469	5.469	5.468	5.466	5.464	5.461	5.459	5.458
St dev	0.0135	0.0156	0.0154	0.0153	0.0146	0.0157	0.0162	0.0155	0.0155	0.0154	0.0151	0.0162	0.0158	0.0153	0.0174	0.0166	0.0173	0.0150	0.0157
Min.	5.455	5.439	5.440	5.440	5.440	5.433	5.431	5.429	5.429	5.425	5.424	5.421	5.426	5.421	5.410	5.409	5.406	5.418	5.410
Max.	5.509	5.507	5.505	5.502	5.507	5.497	5.496	5.498	5.495	5.494	5.494	5.490	5.488	5.487	5.486	5.489	5.487	5.485	5.482

3.15 Data Set 3, 105°C, 90mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S51	0.2575	0.5244	2821	0.0002	0.0004	0.0006	0.0007	0.0009	0.0012	0.0015	0.0017	0.0020	0.0022	0.0025	0.0027	0.0029	0.0032	0.0034	0.0036	0.0037	0.0038
S52	0.2572	0.5241	2830	0.0003	0.0004	0.0006	0.0008	0.0011	0.0012	0.0013	0.0017	0.0019	0.0022	0.0024	0.0027	0.0029	0.0032	0.0034	0.0037	0.0038	0.0039
S53	0.2576	0.5256	2814	0.0003	0.0006	0.0007	0.0010	0.0013	0.0014	0.0018	0.0021	0.0024	0.0026	0.0029	0.0032	0.0035	0.0037	0.0040	0.0042	0.0044	0.0043
S54	0.2572	0.5239	2829	0.0002	0.0004	0.0005	0.0007	0.0008	0.0010	0.0013	0.0016	0.0017	0.0020	0.0021	0.0022	0.0025	0.0027	0.0030	0.0031	0.0032	0.0033
S55	0.2575	0.5247	2820	0.0002	0.0005	0.0006	0.0008	0.0009	0.0010	0.0012	0.0013	0.0016	0.0018	0.0019	0.0021	0.0023	0.0026	0.0029	0.0030	0.0033	0.0033
S56	0.2571	0.5241	2831	0.0002	0.0005	0.0006	0.0008	0.0009	0.0012	0.0015	0.0017	0.0020	0.0023	0.0024	0.0027	0.0030	0.0032	0.0034	0.0036	0.0037	0.0038
S57	0.2575	0.5242	2822	0.0003	0.0006	0.0007	0.0010	0.0011	0.0014	0.0017	0.0018	0.0020	0.0022	0.0023	0.0026	0.0028	0.0031	0.0034	0.0035	0.0037	0.0038
S58	0.2576	0.5249	2816	0.0002	0.0004	0.0006	0.0009	0.0011	0.0013	0.0015	0.0018	0.0021	0.0022	0.0024	0.0026	0.0029	0.0031	0.0033	0.0036	0.0038	0.0038
S59	0.2581	0.5254	2803	0.0003	0.0006	0.0007	0.0010	0.0011	0.0014	0.0016	0.0019	0.0020	0.0021	0.0023	0.0025	0.0028	0.0031	0.0033	0.0035	0.0037	0.0038
S60	0.2578	0.5258	2808	0.0002	0.0003	0.0005	0.0007	0.0008	0.0009	0.0010	0.0014	0.0015	0.0018	0.0020	0.0023	0.0025	0.0028	0.0030	0.0033	0.0035	0.0035
S61	0.2576	0.5248	2816	0.0003	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0022	0.0025	0.0027	0.0029	0.0031	0.0034	0.0037	0.0039	0.0041	0.0041
S62	0.2574	0.5256	2816	0.0003	0.0004	0.0007	0.0008	0.0009	0.0012	0.0015	0.0019	0.0020	0.0022	0.0023	0.0025	0.0027	0.0030	0.0032	0.0034	0.0036	0.0036
S63	0.2570	0.5262	2823	0.0002	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0017	0.0019	0.0022	0.0023	0.0025	0.0028	0.0030	0.0033	0.0035	0.0037	0.0038
S64	0.2567	0.5274	2824	0.0002	0.0006	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0018	0.0019	0.0020	0.0022	0.0024	0.0027	0.0030	0.0032	0.0033	0.0034
S65	0.2566	0.5259	2832	0.0003	0.0004	0.0006	0.0008	0.0010	0.0011	0.0014	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	0.0030	0.0032	0.0034	0.0035
S66	0.2568	0.5266	2824	0.0002	0.0005	0.0006	0.0008	0.0011	0.0014	0.0015	0.0018	0.0021	0.0023	0.0025	0.0028	0.0030	0.0032	0.0035	0.0037	0.0040	0.0039
S67	0.2563	0.5258	2840	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0017	0.0020	0.0024	0.0027	0.0029	0.0031	0.0033	0.0035	0.0038	0.0040	0.0041	0.0042
S68	0.2563	0.5259	2841	0.0003	0.0005	0.0007	0.0010	0.0011	0.0014	0.0017	0.0020	0.0022	0.0024	0.0027	0.0029	0.0032	0.0035	0.0037	0.0040	0.0042	0.0042
S69	0.2566	0.5264	2831	0.0003	0.0005	0.0007	0.0008	0.0011	0.0013	0.0014	0.0017	0.0020	0.0021	0.0023	0.0025	0.0028	0.0031	0.0033	0.0035	0.0037	0.0037
S70	0.2564	0.5257	2838	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0015	0.0018	0.0022	0.0024	0.0026	0.0028	0.0030	0.0033	0.0035	0.0037	0.0039	0.0039
S71	0.2572	0.5271	2814	0.0003	0.0004	0.0006	0.0007	0.0008	0.0011	0.0015	0.0018	0.0021	0.0022	0.0024	0.0025	0.0028	0.0030	0.0033	0.0035	0.0036	0.0037
S72	0.2570	0.5275	2818	0.0003	0.0006	0.0007	0.0008	0.0009	0.0011	0.0012	0.0014	0.0016	0.0018	0.0019	0.0021	0.0023	0.0026	0.0029	0.0031	0.0033	0.0033
S73	0.2567	0.5261	2830	0.0002	0.0005	0.0006	0.0008	0.0011	0.0014	0.0017	0.0020	0.0021	0.0024	0.0026	0.0028	0.0030	0.0033	0.0035	0.0037	0.0039	0.0039
S74	0.2565	0.5257	2837	0.0003	0.0004	0.0006	0.0009	0.0012	0.0013	0.0014	0.0016	0.0019	0.0021	0.0024	0.0026	0.0029	0.0031	0.0034	0.0036	0.0038	0.0039
S75	0.2566	0.5260	2834	0.0003	0.0005	0.0006	0.0009	0.0010	0.0011	0.0015	0.0018	0.0021	0.0022	0.0024	0.0025	0.0028	0.0030	0.0033	0.0034	0.0036	0.0037
Ave.	0.2571	0.5256	2824	0.0003	0.0005	0.0006	0.0008	0.0010	0.0012	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0031	0.0033	0.0035	0.0037	0.0038
Med.	0.2571	0.5257	2824	0.0003	0.0004	0.0006	0.0008	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0031	0.0033	0.0035	0.0037	0.0038
St dev	0.0005	0.0010	10.0379	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Min.	0.2563	0.5239	2803	0.0002	0.0003	0.0005	0.0007	0.0008	0.0009	0.0010	0.0013	0.0015	0.0018	0.0019	0.0021	0.0023	0.0026	0.0029	0.0030	0.0032	0.0033
Max.	0.2581	0.5275	2841	0.0003	0.0006	0.0007	0.0010	0.0013	0.0014	0.0018	0.0021	0.0024	0.0027	0.0029	0.0032	0.0035	0.0037	0.0040	0.0042	0.0044	0.0043

3.16 Data Set 4, 55°C, 160mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S76	141.1	100.23	100.13	99.98	99.85	99.71	99.56	99.41	99.30	99.15	99.03	98.95	98.84	98.76	98.68	98.59	98.54	98.48	98.42
S77	141.5	100.17	100.06	99.96	99.81	99.66	99.51	99.37	99.22	99.07	98.96	98.86	98.74	98.68	98.60	98.51	98.40	98.34	98.27
S78	141.3	100.15	100.05	99.90	99.76	99.61	99.46	99.31	99.17	99.02	98.94	98.83	98.75	98.66	98.57	98.51	98.44	98.39	98.32
S79	141.4	100.20	100.09	99.99	99.84	99.69	99.54	99.40	99.26	99.14	99.04	98.92	98.84	98.78	98.69	98.63	98.56	98.45	98.39
S80	141.8	100.21	100.10	100.00	99.85	99.70	99.55	99.40	99.26	99.11	99.00	98.92	98.84	98.77	98.71	98.62	98.55	98.49	98.38
S81	140.9	100.21	100.11	99.96	99.81	99.67	99.54	99.39	99.24	99.09	98.99	98.87	98.77	98.69	98.62	98.53	98.48	98.43	98.32
S82	141.2	100.24	100.14	99.99	99.84	99.69	99.56	99.42	99.27	99.13	99.01	98.93	98.85	98.76	98.70	98.63	98.52	98.47	98.42
S83	141.1	100.22	100.12	100.02	99.89	99.74	99.61	99.46	99.31	99.20	99.10	98.99	98.89	98.80	98.74	98.65	98.59	98.53	98.47
S84	140.8	100.21	100.06	99.92	99.77	99.62	99.48	99.36	99.21	99.06	98.98	98.87	98.76	98.68	98.61	98.53	98.48	98.37	98.26
S85	141.6	100.21	100.06	99.92	99.79	99.64	99.49	99.34	99.23	99.08	99.00	98.92	98.81	98.75	98.66	98.59	98.49	98.43	98.38
S86	141.2	100.25	100.15	100.04	99.91	99.77	99.62	99.48	99.36	99.22	99.14	99.03	98.93	98.84	98.78	98.71	98.66	98.55	98.45
S87	141.0	100.16	100.06	99.92	99.79	99.64	99.49	99.38	99.26	99.15	99.05	98.97	98.85	98.76	98.68	98.59	98.54	98.47	98.42
S88	140.4	100.25	100.14	100.00	99.85	99.70	99.57	99.43	99.31	99.17	99.05	98.94	98.82	98.73	98.67	98.60	98.54	98.47	98.36
S89	140.7	100.24	100.10	100.00	99.85	99.70	99.55	99.43	99.32	99.20	99.10	99.02	98.91	98.83	98.75	98.66	98.55	98.50	98.44
S90	140.3	100.24	100.14	99.99	99.85	99.70	99.55	99.43	99.29	99.18	99.07	98.97	98.85	98.79	98.72	98.63	98.57	98.51	98.41
S91	140.0	100.20	100.09	99.95	99.82	99.67	99.52	99.40	99.29	99.15	99.07	98.98	98.90	98.82	98.73	98.66	98.59	98.53	98.42
S92	140.8	100.22	100.08	99.93	99.78	99.64	99.49	99.34	99.20	99.05	98.93	98.85	98.77	98.70	98.64	98.55	98.50	98.45	98.34
S93	140.4	100.19	100.08	99.98	99.85	99.72	99.57	99.43	99.28	99.13	99.02	98.90	98.82	98.73	98.67	98.60	98.53	98.47	98.40
S94	140.2	100.15	100.00	99.86	99.71	99.58	99.45	99.30	99.15	99.00	98.92	98.81	98.71	98.62	98.56	98.49	98.44	98.33	98.22
S95	140.3	100.24	100.13	100.03	99.88	99.75	99.60	99.46	99.32	99.17	99.06	98.94	98.86	98.80	98.71	98.62	98.57	98.46	98.41
S96	140.8	100.21	100.11	100.00	99.86	99.73	99.60	99.48	99.33	99.22	99.14	99.03	98.93	98.86	98.77	98.71	98.64	98.53	98.47
S97	139.9	100.19	100.04	99.90	99.75	99.62	99.49	99.34	99.19	99.05	98.96	98.88	98.80	98.72	98.64	98.55	98.44	98.39	98.28
S98	139.3	100.16	100.06	99.92	99.77	99.62	99.49	99.34	99.19	99.05	98.93	98.82	98.74	98.65	98.57	98.50	98.45	98.39	98.34
S99	139.9	100.17	100.07	99.97	99.82	99.67	99.52	99.37	99.22	99.11	99.00	98.88	98.77	98.68	98.61	98.55	98.44	98.33	98.22
S100	140.4	100.16	100.01	99.87	99.74	99.59	99.44	99.29	99.15	99.01	98.92	98.84	98.74	98.65	98.56	98.48	98.41	98.34	98.29
Ave.	140.7	100.20	100.09	99.96	99.82	99.67	99.53	99.39	99.25	99.12	99.02	98.92	98.82	98.74	98.66	98.59	98.52	98.44	98.36
Med.	140.8	100.21	100.09	99.97	99.82	99.67	99.54	99.40	99.26	99.13	99.01	98.92	98.82	98.75	98.67	98.59	98.53	98.46	98.38
St dev	0.6135	0.0322	0.0395	0.0500	0.0507	0.0505	0.0505	0.0537	0.0589	0.0660	0.0639	0.0653	0.0637	0.0660	0.0657	0.0662	0.0692	0.0679	0.0731
Min.	139.3	100.15	100.00	99.86	99.71	99.58	99.44	99.29	99.15	99.00	98.92	98.81	98.71	98.62	98.56	98.48	98.40	98.33	98.22
Max.	141.8	100.25	100.15	100.04	99.91	99.77	99.62	99.48	99.36	99.22	99.14	99.03	98.93	98.86	98.78	98.71	98.66	98.55	98.47

3.17 Data Set 4, 55°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S76	2.194	100.16	100.03	99.89	99.74	99.58	99.43	99.30	99.17	99.06	98.93	98.79	98.67	98.59	98.51	98.43	98.34	98.28	98.20
S77	2.194	100.21	100.08	99.94	99.79	99.59	99.45	99.32	99.22	99.10	99.02	98.93	98.84	98.76	98.67	98.59	98.51	98.42	98.36
S78	2.194	100.14	100.01	99.91	99.77	99.58	99.43	99.30	99.19	99.08	98.94	98.82	98.70	98.62	98.54	98.46	98.40	98.35	98.26
S79	2.193	100.19	100.05	99.92	99.73	99.59	99.43	99.32	99.21	99.08	98.96	98.85	98.73	98.64	98.56	98.48	98.39	98.30	98.21
S80	2.194	100.23	100.14	100.04	99.90	99.75	99.61	99.48	99.35	99.24	99.15	99.03	98.91	98.83	98.75	98.67	98.58	98.52	98.44
S81	2.194	100.21	100.08	99.94	99.75	99.61	99.47	99.36	99.25	99.12	99.03	98.90	98.78	98.70	98.62	98.53	98.44	98.39	98.30
S82	2.194	100.11	99.98	99.88	99.74	99.60	99.46	99.35	99.24	99.11	99.02	98.91	98.82	98.73	98.65	98.57	98.51	98.45	98.37
S83	2.194	100.15	100.05	99.91	99.77	99.62	99.47	99.34	99.21	99.10	98.98	98.86	98.74	98.66	98.58	98.50	98.42	98.36	98.27
S84	2.194	100.15	100.06	99.96	99.76	99.61	99.47	99.36	99.25	99.12	98.99	98.90	98.78	98.70	98.62	98.54	98.45	98.36	98.31
S85	2.194	100.19	100.10	100.00	99.85	99.65	99.50	99.39	99.28	99.17	99.08	98.94	98.83	98.74	98.66	98.58	98.52	98.47	98.41
S86	2.194	100.22	100.09	99.95	99.81	99.62	99.47	99.36	99.25	99.12	99.03	98.91	98.79	98.71	98.62	98.54	98.45	98.39	98.34
S87	2.195	100.20	100.06	99.92	99.77	99.63	99.44	99.31	99.20	99.09	98.95	98.87	98.75	98.67	98.58	98.50	98.41	98.32	98.24
S88	2.186	100.21	100.11	99.98	99.82	99.63	99.48	99.35	99.22	99.11	98.99	98.90	98.76	98.68	98.60	98.52	98.43	98.35	98.26
S89	2.185	100.14	100.04	99.94	99.79	99.60	99.46	99.35	99.24	99.11	98.97	98.84	98.72	98.64	98.56	98.48	98.39	98.30	98.22
S90	2.184	100.22	100.08	99.99	99.79	99.64	99.50	99.39	99.28	99.17	99.04	98.92	98.78	98.70	98.62	98.54	98.45	98.37	98.28
S91	2.184	100.11	100.01	99.88	99.72	99.57	99.38	99.27	99.14	99.03	98.89	98.80	98.72	98.63	98.55	98.47	98.38	98.32	98.23
S92	2.185	100.21	100.11	99.98	99.82	99.63	99.44	99.31	99.18	99.07	98.95	98.81	98.73	98.64	98.56	98.48	98.39	98.30	98.24
S93	2.185	100.17	100.08	99.94	99.79	99.63	99.49	99.36	99.25	99.14	99.05	98.94	98.82	98.73	98.65	98.57	98.48	98.42	98.37
S94	2.185	100.19	100.09	99.96	99.80	99.65	99.51	99.38	99.27	99.16	99.07	98.95	98.86	98.78	98.70	98.62	98.53	98.44	98.35
S95	2.185	100.20	100.10	99.97	99.83	99.68	99.48	99.37	99.26	99.15	99.02	98.93	98.79	98.71	98.63	98.55	98.49	98.43	98.34
S96	2.184	100.24	100.14	100.04	99.89	99.69	99.54	99.43	99.32	99.21	99.08	98.94	98.85	98.77	98.69	98.60	98.52	98.46	98.38
S97	2.185	100.19	100.05	99.96	99.76	99.62	99.49	99.38	99.27	99.14	99.02	98.88	98.76	98.68	98.60	98.52	98.43	98.38	98.32
S98	2.175	100.24	100.14	100.01	99.85	99.70	99.56	99.45	99.34	99.23	99.11	99.02	98.90	98.82	98.73	98.65	98.57	98.48	98.40
S99	2.179	100.17	100.04	99.90	99.76	99.61	99.47	99.36	99.25	99.14	99.05	98.91	98.80	98.72	98.63	98.55	98.49	98.44	98.35
S100	2.180	100.15	100.01	99.92	99.78	99.62	99.47	99.36	99.25	99.14	99.05	98.93	98.81	98.73	98.65	98.56	98.48	98.39	98.31
Ave.	2.188	100.18	100.07	99.95	99.79	99.63	99.48	99.36	99.24	99.13	99.01	98.90	98.79	98.70	98.62	98.54	98.46	98.39	98.31
Med.	2.186	100.19	100.08	99.94	99.79	99.62	99.47	99.36	99.25	99.12	99.02	98.91	98.78	98.70	98.62	98.54	98.45	98.39	98.31
St dev	0.0060	0.0371	0.0432	0.0442	0.0463	0.0409	0.0464	0.0477	0.0500	0.0507	0.0600	0.0600	0.0603	0.0603	0.0597	0.0599	0.0618	0.0646	0.0673
Min.	2.175	100.11	99.98	99.88	99.72	99.57	99.38	99.27	99.14	99.03	98.89	98.79	98.67	98.59	98.51	98.43	98.34	98.28	98.20
Max.	2.195	100.24	100.14	100.04	99.90	99.75	99.61	99.48	99.35	99.24	99.15	99.03	98.91	98.83	98.75	98.67	98.58	98.52	98.44

3.18 Data Set 4, 55°C, 160mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S76	0.1564	100.16	100.04	99.93	99.81	99.69	99.53	99.40	99.25	99.12	99.00	98.86	98.74	98.66	98.54	98.47	98.41	98.36	98.30
S77	0.1564	100.15	100.04	99.93	99.78	99.66	99.50	99.35	99.22	99.07	98.96	98.82	98.68	98.61	98.54	98.42	98.37	98.31	98.24
S78	0.1565	100.18	100.07	99.96	99.80	99.68	99.53	99.38	99.25	99.10	98.96	98.85	98.72	98.60	98.53	98.45	98.35	98.30	98.24
S79	0.1566	100.15	100.04	99.92	99.77	99.62	99.46	99.33	99.22	99.07	98.95	98.82	98.71	98.63	98.51	98.43	98.33	98.23	98.20
S80	0.1565	100.20	100.09	99.98	99.86	99.71	99.57	99.44	99.31	99.17	99.06	98.92	98.80	98.72	98.65	98.58	98.53	98.44	98.41
S81	0.1565	100.17	100.06	99.95	99.83	99.67	99.55	99.40	99.28	99.13	99.01	98.89	98.78	98.66	98.53	98.46	98.36	98.27	98.20
S82	0.1566	100.18	100.07	99.96	99.84	99.71	99.59	99.44	99.33	99.18	99.04	98.92	98.78	98.66	98.58	98.46	98.37	98.27	98.20
S83	0.1565	100.20	100.09	99.97	99.82	99.66	99.51	99.40	99.27	99.12	99.00	98.86	98.75	98.67	98.55	98.47	98.38	98.32	98.30
S84	0.1566	100.17	100.06	99.95	99.81	99.68	99.56	99.45	99.34	99.19	99.06	98.94	98.83	98.70	98.63	98.56	98.47	98.38	98.35
S85	0.1565	100.10	99.99	99.88	99.73	99.58	99.46	99.34	99.23	99.12	99.00	98.86	98.74	98.67	98.59	98.47	98.41	98.32	98.26
S86	0.1565	100.15	100.04	99.93	99.81	99.65	99.53	99.42	99.31	99.19	99.06	98.92	98.80	98.67	98.55	98.48	98.38	98.28	98.22
S87	0.1566	100.19	100.07	99.96	99.82	99.66	99.54	99.43	99.28	99.15	99.01	98.87	98.75	98.63	98.55	98.47	98.42	98.33	98.26
S88	0.1595	100.22	100.11	100.00	99.85	99.69	99.57	99.44	99.33	99.20	99.08	98.96	98.84	98.71	98.64	98.52	98.42	98.36	98.29
S89	0.1593	100.13	100.02	99.91	99.79	99.67	99.51	99.38	99.27	99.15	99.03	98.89	98.76	98.68	98.60	98.48	98.39	98.34	98.26
S90	0.1594	100.16	100.05	99.94	99.78	99.62	99.46	99.31	99.16	99.05	98.93	98.80	98.66	98.54	98.47	98.34	98.29	98.19	98.13
S91	0.1595	100.19	100.08	99.97	99.82	99.70	99.58	99.43	99.30	99.15	99.03	98.90	98.79	98.72	98.64	98.52	98.46	98.36	98.30
S92	0.1595	100.15	100.04	99.93	99.77	99.63	99.48	99.33	99.20	99.05	98.93	98.79	98.67	98.54	98.42	98.30	98.21	98.15	98.08
S93	0.1595	100.22	100.11	99.99	99.84	99.68	99.52	99.41	99.26	99.13	98.99	98.87	98.75	98.68	98.61	98.54	98.45	98.35	98.27
S94	0.1594	100.14	100.03	99.92	99.76	99.64	99.52	99.40	99.25	99.10	98.96	98.85	98.73	98.66	98.53	98.46	98.35	98.25	98.18
S95	0.1594	100.14	100.03	99.92	99.80	99.68	99.53	99.42	99.27	99.14	99.00	98.86	98.73	98.66	98.58	98.50	98.41	98.32	98.25
S96	0.1594	100.13	100.02	99.91	99.76	99.62	99.47	99.36	99.21	99.08	98.96	98.84	98.73	98.65	98.58	98.46	98.40	98.30	98.24
S97	0.1594	100.14	100.02	99.91	99.77	99.61	99.45	99.30	99.17	99.02	98.91	98.77	98.63	98.56	98.48	98.41	98.35	98.26	98.20
S98	0.1587	100.14	100.03	99.92	99.76	99.64	99.52	99.37	99.22	99.09	98.98	98.85	98.73	98.66	98.54	98.46	98.37	98.31	98.25
S99	0.1590	100.15	100.04	99.93	99.78	99.62	99.47	99.32	99.20	99.09	98.95	98.84	98.70	98.62	98.55	98.48	98.37	98.32	98.25
S100	0.1590	100.17	100.05	99.94	99.80	99.65	99.50	99.38	99.25	99.10	98.97	98.83	98.69	98.62	98.55	98.47	98.42	98.36	98.30
Ave.	0.1580	100.16	100.05	99.94	99.80	99.66	99.52	99.39	99.26	99.12	98.99	98.86	98.74	98.65	98.56	98.47	98.39	98.31	98.25
Med.	0.1587	100.16	100.04	99.93	99.80	99.66	99.52	99.40	99.25	99.12	99.00	98.86	98.74	98.66	98.55	98.47	98.38	98.32	98.25
St dev	0.0014	0.0280	0.0284	0.0284	0.0310	0.0343	0.0408	0.0444	0.0476	0.0478	0.0469	0.0471	0.0505	0.0485	0.0551	0.0592	0.0613	0.0611	0.0673
Min.	0.1564	100.10	99.99	99.88	99.73	99.58	99.45	99.30	99.16	99.02	98.91	98.77	98.63	98.54	98.42	98.30	98.21	98.15	98.08
Max.	0.1595	100.22	100.11	100.00	99.86	99.71	99.59	99.45	99.34	99.20	99.08	98.96	98.84	98.72	98.65	98.58	98.53	98.44	98.41

3.19 Data Set 4, 55°C, 160mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S76	5.677	5.678	5.671	5.675	5.673	5.665	5.664	5.668	5.661	5.657	5.664	5.646	5.659	5.648	5.653	5.637	5.646	5.644	5.650
S77	5.666	5.659	5.660	5.663	5.657	5.654	5.656	5.655	5.650	5.655	5.649	5.635	5.641	5.648	5.636	5.626	5.635	5.628	5.628
S78	5.667	5.668	5.668	5.665	5.660	5.653	5.656	5.649	5.656	5.646	5.644	5.637	5.646	5.649	5.631	5.636	5.644	5.641	5.634
S79	5.637	5.640	5.631	5.630	5.633	5.624	5.627	5.626	5.622	5.618	5.619	5.612	5.616	5.605	5.614	5.607	5.597	5.596	5.596
S80	5.671	5.666	5.664	5.664	5.663	5.657	5.658	5.653	5.660	5.657	5.658	5.640	5.644	5.638	5.647	5.631	5.641	5.639	5.637
S81	5.681	5.676	5.679	5.675	5.674	5.674	5.672	5.666	5.668	5.654	5.660	5.666	5.663	5.649	5.645	5.658	5.641	5.654	5.643
S82	5.669	5.670	5.670	5.667	5.665	5.656	5.658	5.654	5.658	5.646	5.641	5.655	5.640	5.637	5.639	5.639	5.629	5.636	5.625
S83	5.672	5.669	5.669	5.670	5.665	5.662	5.659	5.661	5.656	5.655	5.659	5.646	5.651	5.650	5.639	5.639	5.632	5.631	5.631
S84	5.686	5.679	5.680	5.684	5.678	5.676	5.680	5.671	5.670	5.669	5.663	5.656	5.665	5.665	5.646	5.656	5.646	5.659	5.645
S85	5.666	5.660	5.659	5.659	5.659	5.653	5.653	5.651	5.655	5.647	5.653	5.638	5.645	5.633	5.635	5.630	5.631	5.632	5.628
S86	5.676	5.674	5.677	5.669	5.669	5.666	5.668	5.663	5.667	5.653	5.658	5.648	5.643	5.658	5.645	5.652	5.653	5.643	5.637
S87	5.673	5.674	5.674	5.669	5.667	5.662	5.660	5.662	5.655	5.657	5.642	5.643	5.651	5.655	5.650	5.640	5.637	5.634	5.634
S88	5.667	5.669	5.662	5.665	5.660	5.657	5.654	5.654	5.649	5.655	5.654	5.654	5.647	5.635	5.636	5.634	5.636	5.633	5.633
S89	5.627	5.620	5.620	5.626	5.619	5.617	5.615	5.612	5.612	5.613	5.604	5.606	5.594	5.606	5.604	5.604	5.587	5.589	5.595
S90	5.658	5.659	5.653	5.655	5.648	5.652	5.645	5.647	5.649	5.641	5.630	5.641	5.629	5.622	5.634	5.622	5.628	5.624	5.620
S91	5.670	5.663	5.664	5.663	5.663	5.663	5.658	5.659	5.654	5.650	5.652	5.644	5.649	5.643	5.639	5.647	5.640	5.636	5.643
S92	5.655	5.656	5.650	5.651	5.646	5.646	5.643	5.642	5.644	5.629	5.629	5.638	5.630	5.619	5.632	5.624	5.615	5.611	5.617
S93	5.657	5.655	5.655	5.650	5.648	5.645	5.645	5.642	5.644	5.637	5.632	5.644	5.621	5.639	5.626	5.632	5.627	5.619	5.630
S94	5.662	5.660	5.657	5.654	5.654	5.652	5.649	5.651	5.651	5.640	5.645	5.636	5.640	5.630	5.632	5.639	5.622	5.629	5.623
S95	5.663	5.665	5.660	5.655	5.656	5.649	5.657	5.648	5.648	5.636	5.648	5.638	5.642	5.643	5.630	5.632	5.627	5.631	5.619
S96	5.660	5.654	5.654	5.656	5.654	5.652	5.653	5.651	5.645	5.643	5.643	5.634	5.638	5.638	5.637	5.625	5.620	5.636	5.616
S97	5.675	5.676	5.676	5.665	5.667	5.663	5.663	5.664	5.660	5.663	5.650	5.658	5.642	5.644	5.652	5.645	5.642	5.637	5.637
S98	5.675	5.673	5.673	5.673	5.668	5.667	5.663	5.666	5.657	5.658	5.645	5.662	5.654	5.654	5.645	5.650	5.652	5.637	5.637
S99	5.662	5.656	5.656	5.658	5.656	5.656	5.651	5.647	5.646	5.645	5.644	5.637	5.626	5.641	5.632	5.639	5.632	5.624	5.628
S100	5.655	5.653	5.657	5.648	5.646	5.646	5.648	5.639	5.640	5.641	5.638	5.627	5.637	5.634	5.624	5.632	5.630	5.617	5.624
Ave.	5.665	5.663	5.661	5.660	5.658	5.655	5.654	5.652	5.651	5.647	5.645	5.642	5.641	5.639	5.636	5.635	5.632	5.630	5.628
Med.	5.667	5.665	5.662	5.663	5.660	5.656	5.656	5.653	5.654	5.647	5.645	5.641	5.642	5.641	5.636	5.636	5.632	5.633	5.630
St dev	0.0128	0.0130	0.0139	0.0132	0.0130	0.0132	0.0133	0.0133	0.0130	0.0132	0.0141	0.0137	0.0153	0.0147	0.0114	0.0131	0.0152	0.0155	0.0133
Min.	5.627	5.620	5.620	5.626	5.619	5.617	5.615	5.612	5.612	5.613	5.604	5.606	5.594	5.605	5.604	5.604	5.587	5.589	5.595
Max.	5.686	5.679	5.680	5.684	5.678	5.676	5.680	5.671	5.670	5.669	5.664	5.666	5.665	5.665	5.653	5.658	5.653	5.659	5.650

3.20 Data Set 4, 55°C, 160mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	12000hrs	18000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S76	0.2554	0.5270	2855	0.0001	0.0004	0.0005	0.0007	0.0010	0.0012	0.0014	0.0016	0.0018	0.0020	0.0023	0.0025	0.0026	0.0028	0.0031	0.0032	0.0034	0.0035
S77	0.2559	0.5279	2838	0.0001	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017	0.0018	0.0020	0.0021	0.0023	0.0025	0.0027	0.0028	0.0029	0.0031
S78	0.2551	0.5266	2864	0.0001	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0016	0.0018	0.0020	0.0023	0.0025	0.0028	0.0030	0.0032	0.0033	0.0035	0.0036
S79	0.2554	0.5268	2857	0.0002	0.0004	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0035
S80	0.2553	0.5282	2851	0.0001	0.0003	0.0004	0.0005	0.0008	0.0010	0.0011	0.0014	0.0017	0.0020	0.0022	0.0023	0.0026	0.0028	0.0030	0.0032	0.0034	0.0035
S81	0.2554	0.5275	2851	0.0001	0.0003	0.0004	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0030	0.0033	0.0035
S82	0.2557	0.5284	2842	0.0001	0.0003	0.0004	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0021	0.0023	0.0026	0.0028	0.0030	0.0032	0.0033	0.0034	0.0037
S83	0.2553	0.5271	2856	0.0002	0.0004	0.0004	0.0007	0.0008	0.0010	0.0012	0.0015	0.0017	0.0019	0.0022	0.0023	0.0025	0.0026	0.0029	0.0031	0.0032	0.0035
S84	0.2550	0.5266	2866	0.0002	0.0004	0.0005	0.0006	0.0009	0.0011	0.0013	0.0016	0.0018	0.0021	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0032	0.0035
S85	0.2559	0.5280	2838	0.0001	0.0004	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0020	0.0022	0.0025	0.0027	0.0029	0.0031	0.0033	0.0035	0.0036	0.0038
S86	0.2553	0.5270	2857	0.0002	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015	0.0018	0.0019	0.0022	0.0024	0.0026	0.0027	0.0029	0.0031	0.0032	0.0034	0.0037
S87	0.2553	0.5272	2856	0.0001	0.0003	0.0004	0.0006	0.0009	0.0011	0.0012	0.0015	0.0017	0.0019	0.0021	0.0024	0.0025	0.0027	0.0029	0.0031	0.0032	0.0034
S88	0.2561	0.5294	2828	0.0002	0.0005	0.0005	0.0007	0.0009	0.0011	0.0014	0.0015	0.0017	0.0019	0.0022	0.0025	0.0027	0.0028	0.0030	0.0032	0.0035	0.0037
S89	0.2561	0.5292	2828	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0030	0.0031	0.0033
S90	0.2565	0.5307	2811	0.0001	0.0003	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0017	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034
S91	0.2563	0.5299	2822	0.0002	0.0005	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0023	0.0025	0.0027	0.0029	0.0031	0.0033	0.0036	0.0037
S92	0.2566	0.5303	2812	0.0001	0.0003	0.0004	0.0006	0.0009	0.0011	0.0013	0.0016	0.0019	0.0020	0.0023	0.0025	0.0026	0.0028	0.0030	0.0032	0.0034	0.0035
S93	0.2558	0.5291	2836	0.0001	0.0003	0.0004	0.0006	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0022	0.0024	0.0026	0.0028	0.0029	0.0032	0.0033	0.0035
S94	0.2560	0.5295	2828	0.0002	0.0005	0.0006	0.0009	0.0011	0.0013	0.0014	0.0017	0.0019	0.0021	0.0022	0.0025	0.0027	0.0029	0.0030	0.0032	0.0034	0.0036
S95	0.2559	0.5289	2835	0.0001	0.0003	0.0004	0.0005	0.0007	0.0009	0.0012	0.0015	0.0016	0.0018	0.0020	0.0023	0.0025	0.0027	0.0029	0.0031	0.0032	0.0034
S96	0.2561	0.5306	2821	0.0001	0.0003	0.0004	0.0006	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0022	0.0024	0.0027	0.0028	0.0030	0.0032	0.0034	0.0035
S97	0.2558	0.5291	2836	0.0001	0.0003	0.0004	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035
S98	0.2556	0.5290	2840	0.0001	0.0003	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0017	0.0019	0.0022	0.0024	0.0026	0.0028	0.0029	0.0030	0.0032
S99	0.2559	0.5295	2831	0.0002	0.0004	0.0005	0.0006	0.0009	0.0011	0.0014	0.0017	0.0020	0.0021	0.0023	0.0025	0.0027	0.0030	0.0031	0.0032	0.0035	0.0036
S100	0.2565	0.5302	2815	0.0001	0.0003	0.0004	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0019	0.0021	0.0022	0.0024	0.0027	0.0028	0.0029	0.0031	0.0033
Ave.	0.2558	0.5285	2839	0.0001	0.0003	0.0004	0.0006	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035
Med.	0.2558	0.5289	2838	0.0001	0.0003	0.0004	0.0006	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0028	0.0030	0.0032	0.0034	0.0035
St dev	0.0004	0.0013	16.2005	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002
Min.	0.2550	0.5266	2811	0.0001	0.0003	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0016	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0028	0.0029	0.0031
Max.	0.2566	0.5307	2866	0.0002	0.0005	0.0006	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0025	0.0027	0.0029	0.0031	0.0033	0.0035	0.0036	0.0038

3.21 Data Set 5, 85°C, 160mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S101	140.8	100.10	99.98	99.86	99.65	99.44	99.28	99.11	98.97	98.83	98.72	98.61	98.49	98.38	98.28	98.19	98.12	98.02	97.93
S102	140.2	100.12	100.00	99.88	99.67	99.47	99.27	99.10	98.93	98.76	98.65	98.56	98.50	98.37	98.29	98.16	98.09	97.99	97.90
S103	140.8	100.12	100.01	99.88	99.72	99.50	99.34	99.17	99.00	98.83	98.68	98.57	98.45	98.33	98.24	98.14	98.04	97.96	97.88
S104	141.0	100.08	99.95	99.83	99.61	99.41	99.25	99.11	98.94	98.77	98.62	98.53	98.46	98.38	98.26	98.15	98.08	97.97	97.89
S105	140.8	100.08	99.97	99.84	99.67	99.47	99.26	99.12	98.95	98.78	98.67	98.58	98.50	98.38	98.29	98.19	98.09	97.98	97.93
S106	141.3	100.08	99.97	99.85	99.65	99.48	99.31	99.15	99.01	98.84	98.69	98.58	98.46	98.33	98.25	98.15	98.07	98.00	97.94
S107	140.6	100.04	99.92	99.80	99.64	99.42	99.22	99.08	98.91	98.75	98.60	98.49	98.42	98.30	98.22	98.13	98.06	97.96	97.87
S108	140.5	100.05	99.94	99.81	99.61	99.40	99.18	99.02	98.88	98.71	98.61	98.52	98.40	98.32	98.24	98.15	98.05	97.95	97.87
S109	140.7	100.12	99.99	99.87	99.66	99.46	99.25	99.08	98.91	98.77	98.62	98.51	98.39	98.29	98.18	98.08	97.98	97.87	97.79
S110	141.1	100.04	99.92	99.79	99.59	99.43	99.22	99.08	98.92	98.75	98.65	98.56	98.44	98.34	98.23	98.11	98.03	97.93	97.88
S111	140.3	100.08	99.95	99.83	99.62	99.42	99.22	99.05	98.88	98.72	98.62	98.47	98.39	98.27	98.16	98.08	97.98	97.88	97.79
S112	140.4	100.09	99.97	99.86	99.69	99.49	99.29	99.12	98.98	98.84	98.69	98.59	98.47	98.37	98.26	98.14	98.04	97.94	97.88
S113	140.6	100.04	99.91	99.79	99.58	99.42	99.20	99.04	98.87	98.73	98.62	98.47	98.35	98.24	98.12	98.04	97.96	97.89	97.80
S114	140.2	100.08	99.96	99.84	99.67	99.47	99.27	99.10	98.93	98.79	98.70	98.59	98.52	98.44	98.34	98.23	98.13	98.06	97.97
S115	140.0	100.13	100.00	99.89	99.68	99.48	99.28	99.14	98.97	98.80	98.69	98.60	98.54	98.41	98.31	98.18	98.08	97.98	97.92
S116	140.3	100.09	99.97	99.84	99.63	99.43	99.22	99.08	98.91	98.74	98.63	98.52	98.44	98.31	98.21	98.13	98.02	97.92	97.84
S117	140.8	100.04	99.92	99.79	99.58	99.41	99.25	99.08	98.91	98.74	98.65	98.54	98.48	98.39	98.27	98.17	98.09	97.99	97.91
S118	140.9	100.09	99.97	99.85	99.64	99.44	99.23	99.06	98.89	98.75	98.64	98.55	98.43	98.31	98.20	98.08	98.00	97.93	97.84
S119	140.3	100.03	99.91	99.78	99.57	99.36	99.15	98.98	98.81	98.64	98.53	98.42	98.36	98.23	98.13	98.01	97.90	97.83	97.75
S120	139.9	100.12	99.99	99.87	99.71	99.50	99.29	99.12	98.96	98.82	98.71	98.60	98.48	98.39	98.31	98.21	98.10	98.03	97.95
S121	140.3	100.06	99.94	99.82	99.65	99.45	99.28	99.11	98.95	98.78	98.69	98.58	98.46	98.35	98.25	98.12	98.02	97.92	97.86
S122	140.0	100.12	100.01	99.88	99.67	99.47	99.25	99.09	98.92	98.75	98.60	98.51	98.44	98.36	98.24	98.11	98.01	97.94	97.88
S123	140.3	100.07	99.94	99.81	99.61	99.40	99.20	99.06	98.92	98.78	98.63	98.52	98.45	98.35	98.27	98.16	98.06	97.98	97.90
S124	140.6	100.06	99.95	99.82	99.62	99.41	99.20	99.04	98.90	98.73	98.62	98.51	98.44	98.36	98.24	98.11	98.01	97.91	97.85
S125	140.5	100.12	99.99	99.87	99.66	99.44	99.28	99.14	99.00	98.83	98.72	98.57	98.45	98.34	98.22	98.12	98.01	97.94	97.86
Ave.	140.5	100.08	99.96	99.84	99.64	99.44	99.25	99.09	98.93	98.77	98.65	98.54	98.45	98.34	98.24	98.13	98.04	97.95	97.88
Med.	140.5	100.08	99.97	99.84	99.65	99.44	99.25	99.09	98.92	98.77	98.65	98.55	98.45	98.35	98.24	98.14	98.04	97.95	97.88
St dev	0.3577	0.0311	0.0314	0.0324	0.0396	0.0356	0.0434	0.0437	0.0456	0.0475	0.0450	0.0477	0.0459	0.0507	0.0532	0.0521	0.0533	0.0526	0.0540
Min.	139.9	100.03	99.91	99.78	99.57	99.36	99.15	98.98	98.81	98.64	98.53	98.42	98.35	98.23	98.12	98.01	97.90	97.83	97.75
Max.	141.3	100.13	100.01	99.89	99.72	99.50	99.34	99.17	99.01	98.84	98.72	98.61	98.54	98.44	98.34	98.23	98.13	98.06	97.97

3.22 Data Set 5, 85°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S101	2.222	100.02	99.86	99.70	99.52	99.33	99.14	98.98	98.84	98.68	98.52	98.41	98.28	98.20	98.12	98.01	97.92	97.81	97.70
S102	2.222	100.02	99.86	99.69	99.54	99.38	99.19	99.02	98.88	98.72	98.55	98.42	98.29	98.17	98.09	98.00	97.92	97.83	97.72
S103	2.221	100.09	99.92	99.76	99.57	99.39	99.23	99.07	98.93	98.76	98.63	98.50	98.37	98.27	98.18	98.08	97.99	97.88	97.79
S104	2.222	100.09	99.93	99.76	99.57	99.38	99.19	99.02	98.88	98.72	98.58	98.48	98.35	98.23	98.16	98.07	97.96	97.87	97.78
S105	2.222	100.02	99.86	99.69	99.52	99.36	99.20	99.03	98.90	98.73	98.59	98.49	98.36	98.26	98.19	98.07	97.96	97.89	97.78
S106	2.221	100.03	99.88	99.71	99.53	99.35	99.17	99.01	98.87	98.70	98.57	98.47	98.36	98.26	98.20	98.10	98.03	97.95	97.86
S107	2.221	100.05	99.90	99.73	99.57	99.41	99.23	99.07	98.93	98.76	98.63	98.50	98.37	98.28	98.19	98.07	97.98	97.91	97.82
S108	2.221	100.01	99.85	99.69	99.51	99.32	99.14	98.97	98.84	98.67	98.54	98.44	98.34	98.23	98.15	98.05	97.94	97.86	97.77
S109	2.221	100.09	99.92	99.75	99.58	99.42	99.23	99.06	98.93	98.76	98.63	98.52	98.41	98.31	98.23	98.11	98.02	97.93	97.84
S110	2.221	100.04	99.88	99.72	99.56	99.41	99.25	99.08	98.95	98.78	98.65	98.55	98.44	98.32	98.25	98.13	98.06	97.97	97.88
S111	2.197	100.09	99.92	99.75	99.56	99.40	99.24	99.08	98.94	98.77	98.61	98.51	98.38	98.28	98.22	98.12	98.01	97.93	97.82
S112	2.197	100.11	99.94	99.78	99.59	99.43	99.24	99.08	98.94	98.78	98.64	98.54	98.43	98.33	98.27	98.15	98.06	97.95	97.88
S113	2.197	100.06	99.90	99.74	99.55	99.36	99.20	99.03	98.89	98.73	98.56	98.43	98.33	98.21	98.15	98.05	97.96	97.88	97.77
S114	2.198	100.02	99.85	99.70	99.54	99.35	99.16	98.99	98.86	98.70	98.57	98.47	98.34	98.23	98.16	98.08	97.97	97.89	97.80
S115	2.198	100.05	99.88	99.72	99.53	99.37	99.19	99.02	98.89	98.73	98.60	98.49	98.36	98.27	98.20	98.08	97.97	97.88	97.77
S116	2.198	100.07	99.90	99.74	99.55	99.36	99.20	99.04	98.90	98.73	98.60	98.47	98.37	98.28	98.21	98.09	98.02	97.94	97.83
S117	2.198	100.05	99.88	99.71	99.53	99.37	99.21	99.05	98.91	98.74	98.61	98.50	98.39	98.30	98.22	98.10	98.01	97.92	97.81
S118	2.198	100.07	99.91	99.74	99.55	99.37	99.19	99.02	98.89	98.72	98.59	98.46	98.33	98.21	98.12	98.01	97.93	97.82	97.75
S119	2.197	100.04	99.88	99.71	99.55	99.36	99.17	99.01	98.87	98.70	98.57	98.44	98.30	98.22	98.15	98.06	97.95	97.86	97.78
S120	2.198	100.06	99.89	99.72	99.54	99.35	99.19	99.03	98.89	98.72	98.56	98.43	98.33	98.23	98.16	98.04	97.96	97.87	97.78
S121	2.197	100.11	99.94	99.78	99.59	99.41	99.24	99.07	98.93	98.77	98.63	98.50	98.40	98.31	98.25	98.13	98.04	97.95	97.88
S122	2.198	100.07	99.91	99.74	99.56	99.41	99.22	99.05	98.92	98.75	98.59	98.46	98.33	98.24	98.18	98.08	97.97	97.90	97.82
S123	2.198	100.07	99.90	99.73	99.56	99.37	99.21	99.04	98.91	98.75	98.59	98.46	98.35	98.26	98.19	98.10	98.03	97.95	97.86
S124	2.198	100.09	99.93	99.77	99.61	99.46	99.30	99.13	98.99	98.82	98.66	98.53	98.40	98.31	98.24	98.14	98.07	97.99	97.88
S125	2.198	100.05	99.88	99.71	99.56	99.40	99.22	99.06	98.92	98.76	98.59	98.49	98.39	98.28	98.20	98.10	98.01	97.94	97.86
Ave.	2.207	100.06	99.89	99.73	99.55	99.38	99.21	99.04	98.90	98.74	98.59	98.48	98.36	98.26	98.19	98.08	97.99	97.90	97.81
Med.	2.198	100.06	99.90	99.73	99.55	99.37	99.20	99.04	98.90	98.73	98.59	98.48	98.36	98.26	98.19	98.08	97.98	97.90	97.81
St dev	0.0119	0.0288	0.0271	0.0278	0.0250	0.0325	0.0355	0.0354	0.0352	0.0347	0.0358	0.0373	0.0406	0.0421	0.0448	0.0415	0.0443	0.0479	0.0508
Min.	2.197	100.01	99.85	99.69	99.51	99.32	99.14	98.97	98.84	98.67	98.52	98.41	98.28	98.17	98.09	98.00	97.92	97.81	97.70
Max.	2.222	100.11	99.94	99.78	99.61	99.46	99.30	99.13	98.99	98.82	98.66	98.55	98.44	98.33	98.27	98.15	98.07	97.99	97.88

3.23 Data Set 5, 85°C, 160mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S101	0.1624	100.02	99.91	99.77	99.57	99.38	99.19	99.00	98.79	98.65	98.53	98.40	98.28	98.17	98.04	97.99	97.92	97.82	97.71
S102	0.1623	100.07	99.96	99.77	99.58	99.44	99.29	99.10	98.90	98.75	98.63	98.53	98.44	98.38	98.26	98.14	98.05	97.98	97.90
S103	0.1624	100.02	99.91	99.72	99.53	99.39	99.19	98.98	98.77	98.62	98.50	98.37	98.25	98.14	98.01	97.90	97.80	97.73	97.62
S104	0.1624	100.03	99.87	99.73	99.54	99.40	99.20	99.01	98.81	98.66	98.54	98.41	98.29	98.24	98.17	98.12	98.02	97.93	97.85
S105	0.1623	100.05	99.89	99.75	99.56	99.38	99.19	98.98	98.77	98.61	98.49	98.36	98.27	98.15	98.02	97.91	97.84	97.74	97.64
S106	0.1624	100.00	99.84	99.65	99.51	99.36	99.18	98.97	98.76	98.62	98.50	98.40	98.30	98.25	98.13	98.08	98.00	97.91	97.80
S107	0.1624	100.03	99.92	99.73	99.58	99.44	99.25	99.04	98.84	98.71	98.58	98.46	98.33	98.22	98.09	97.97	97.87	97.80	97.69
S108	0.1624	100.08	99.96	99.82	99.68	99.53	99.39	99.20	98.98	98.85	98.73	98.63	98.50	98.38	98.26	98.14	98.05	97.96	97.85
S109	0.1625	100.06	99.90	99.76	99.56	99.38	99.18	98.97	98.76	98.61	98.52	98.39	98.27	98.21	98.09	97.97	97.90	97.81	97.73
S110	0.1624	100.03	99.92	99.73	99.58	99.39	99.19	98.98	98.77	98.62	98.50	98.37	98.24	98.19	98.13	98.08	98.01	97.94	97.84
S111	0.1586	100.06	99.90	99.75	99.57	99.43	99.24	99.03	98.83	98.68	98.56	98.43	98.34	98.23	98.10	98.04	97.95	97.88	97.77
S112	0.1585	100.10	99.99	99.80	99.61	99.47	99.28	99.07	98.87	98.72	98.59	98.50	98.37	98.25	98.13	98.01	97.94	97.85	97.75
S113	0.1585	100.00	99.89	99.70	99.50	99.36	99.21	99.02	98.81	98.66	98.56	98.44	98.31	98.19	98.13	98.08	98.01	97.94	97.85
S114	0.1586	100.04	99.93	99.74	99.55	99.36	99.17	98.96	98.75	98.60	98.47	98.35	98.22	98.11	97.99	97.94	97.85	97.78	97.67
S115	0.1585	100.04	99.88	99.69	99.50	99.30	99.11	98.90	98.69	98.54	98.41	98.29	98.16	98.05	97.93	97.82	97.75	97.65	97.54
S116	0.1586	100.11	100.00	99.81	99.62	99.44	99.25	99.03	98.84	98.69	98.56	98.44	98.31	98.20	98.08	97.96	97.89	97.83	97.73
S117	0.1586	100.06	99.90	99.76	99.58	99.39	99.21	99.01	98.80	98.65	98.53	98.43	98.34	98.22	98.10	98.05	97.96	97.89	97.81
S118	0.1585	100.04	99.93	99.74	99.55	99.40	99.21	99.00	98.81	98.67	98.58	98.48	98.39	98.33	98.20	98.09	98.01	97.91	97.81
S119	0.1585	100.04	99.93	99.74	99.60	99.40	99.26	99.05	98.84	98.70	98.61	98.48	98.39	98.33	98.20	98.09	98.01	97.94	97.83
S120	0.1586	99.99	99.83	99.69	99.55	99.36	99.16	98.97	98.76	98.61	98.48	98.39	98.26	98.15	98.02	97.91	97.83	97.74	97.66
S121	0.1586	100.10	99.94	99.74	99.55	99.36	99.21	99.02	98.82	98.67	98.55	98.43	98.30	98.25	98.12	98.01	97.92	97.84	97.74
S122	0.1587	100.09	99.98	99.84	99.65	99.50	99.36	99.15	98.95	98.80	98.68	98.58	98.45	98.34	98.28	98.23	98.16	98.06	97.96
S123	0.1586	100.04	99.93	99.79	99.60	99.41	99.21	99.00	98.79	98.66	98.53	98.44	98.31	98.26	98.13	98.01	97.93	97.84	97.76
S124	0.1586	100.01	99.90	99.76	99.62	99.42	99.23	99.02	98.82	98.67	98.55	98.42	98.30	98.24	98.12	98.07	97.99	97.92	97.81
S125	0.1586	100.07	99.91	99.72	99.53	99.34	99.16	98.95	98.75	98.60	98.48	98.35	98.26	98.20	98.08	98.03	97.95	97.85	97.77
Ave.	0.1601	100.05	99.92	99.75	99.57	99.40	99.22	99.02	98.81	98.67	98.55	98.43	98.31	98.23	98.11	98.03	97.94	97.86	97.76
Med.	0.1586	100.04	99.91	99.74	99.57	99.39	99.21	99.01	98.81	98.66	98.54	98.43	98.30	98.22	98.12	98.03	97.95	97.85	97.77
St dev	0.0019	0.0322	0.0410	0.0430	0.0439	0.0506	0.0605	0.0622	0.0652	0.0669	0.0674	0.0749	0.0763	0.0821	0.0874	0.0931	0.0914	0.0922	0.0927
Min.	0.1585	99.99	99.83	99.65	99.50	99.30	99.11	98.90	98.69	98.54	98.41	98.29	98.16	98.05	97.93	97.82	97.75	97.65	97.54
Max.	0.1625	100.11	100.00	99.84	99.68	99.53	99.39	99.20	98.98	98.85	98.73	98.63	98.50	98.38	98.28	98.23	98.16	98.06	97.96

3.24 Data Set 5, 85°C, 160mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S101	5.671	5.663	5.667	5.661	5.669	5.662	5.656	5.662	5.660	5.654	5.653	5.650	5.646	5.646	5.644	5.648	5.645	5.646	5.639
S102	5.680	5.678	5.677	5.677	5.672	5.670	5.672	5.668	5.667	5.665	5.665	5.657	5.662	5.657	5.659	5.647	5.654	5.653	5.645
S103	5.661	5.657	5.661	5.651	5.651	5.651	5.647	5.647	5.644	5.644	5.645	5.647	5.636	5.639	5.634	5.630	5.632	5.636	5.636
S104	5.631	5.626	5.623	5.627	5.622	5.617	5.623	5.617	5.617	5.615	5.614	5.610	5.614	5.606	5.604	5.607	5.606	5.604	5.604
S105	5.663	5.660	5.658	5.655	5.655	5.657	5.651	5.654	5.644	5.647	5.650	5.642	5.637	5.640	5.636	5.632	5.637	5.636	5.637
S106	5.664	5.660	5.659	5.656	5.656	5.651	5.656	5.650	5.654	5.650	5.650	5.646	5.638	5.647	5.641	5.635	5.631	5.628	5.632
S107	5.666	5.663	5.663	5.658	5.659	5.659	5.654	5.656	5.648	5.646	5.652	5.650	5.643	5.643	5.639	5.642	5.633	5.640	5.629
S108	5.674	5.669	5.672	5.672	5.664	5.667	5.659	5.659	5.655	5.654	5.651	5.652	5.649	5.649	5.650	5.648	5.651	5.645	5.637
S109	5.667	5.666	5.661	5.657	5.659	5.661	5.657	5.653	5.647	5.654	5.644	5.644	5.650	5.643	5.640	5.641	5.642	5.632	5.640
S110	5.659	5.659	5.659	5.657	5.649	5.644	5.647	5.647	5.641	5.641	5.638	5.644	5.641	5.636	5.635	5.630	5.626	5.632	5.633
S111	5.656	5.655	5.656	5.648	5.646	5.647	5.648	5.642	5.642	5.638	5.638	5.635	5.639	5.639	5.628	5.633	5.630	5.622	5.619
S112	5.646	5.638	5.643	5.636	5.638	5.638	5.632	5.634	5.634	5.627	5.633	5.624	5.623	5.621	5.619	5.621	5.616	5.614	5.617
S113	5.616	5.609	5.610	5.608	5.608	5.602	5.608	5.608	5.597	5.598	5.601	5.594	5.593	5.590	5.589	5.586	5.590	5.582	5.587
S114	5.652	5.652	5.644	5.648	5.647	5.644	5.640	5.640	5.638	5.633	5.631	5.639	5.627	5.629	5.628	5.628	5.626	5.623	5.618
S115	5.660	5.658	5.656	5.652	5.651	5.651	5.646	5.650	5.648	5.643	5.637	5.639	5.635	5.635	5.633	5.634	5.635	5.623	5.623
S116	5.653	5.653	5.653	5.651	5.643	5.644	5.641	5.639	5.642	5.635	5.636	5.630	5.636	5.631	5.632	5.627	5.624	5.621	5.619
S117	5.645	5.639	5.642	5.643	5.640	5.638	5.631	5.637	5.633	5.630	5.622	5.630	5.619	5.619	5.622	5.612	5.616	5.618	5.609
S118	5.650	5.647	5.642	5.648	5.642	5.643	5.642	5.636	5.636	5.632	5.627	5.627	5.632	5.633	5.623	5.617	5.617	5.622	5.623
S119	5.648	5.644	5.640	5.640	5.640	5.641	5.636	5.636	5.637	5.634	5.633	5.631	5.627	5.622	5.627	5.619	5.622	5.621	5.616
S120	5.665	5.662	5.658	5.655	5.658	5.658	5.656	5.657	5.653	5.648	5.642	5.644	5.640	5.640	5.642	5.633	5.632	5.628	5.633
S121	5.656	5.648	5.656	5.654	5.654	5.642	5.646	5.646	5.636	5.636	5.638	5.640	5.631	5.633	5.629	5.632	5.627	5.621	5.628
S122	5.660	5.656	5.660	5.652	5.650	5.653	5.651	5.648	5.650	5.643	5.644	5.636	5.643	5.634	5.639	5.636	5.629	5.625	5.624
S123	5.653	5.648	5.649	5.649	5.649	5.647	5.645	5.641	5.640	5.633	5.632	5.630	5.631	5.628	5.629	5.630	5.620	5.628	5.626
S124	5.616	5.616	5.608	5.606	5.608	5.610	5.606	5.602	5.602	5.601	5.601	5.601	5.598	5.594	5.598	5.590	5.593	5.590	5.587
S125	5.646	5.644	5.643	5.636	5.644	5.640	5.638	5.637	5.634	5.635	5.632	5.623	5.629	5.620	5.619	5.616	5.620	5.618	5.611
Ave.	5.654	5.651	5.650	5.648	5.647	5.645	5.643	5.642	5.640	5.638	5.636	5.635	5.633	5.631	5.629	5.627	5.626	5.624	5.623
Med.	5.656	5.655	5.656	5.651	5.649	5.647	5.646	5.646	5.642	5.638	5.638	5.639	5.636	5.634	5.632	5.630	5.627	5.623	5.624
St dev	0.0156	0.0160	0.0168	0.0162	0.0157	0.0163	0.0152	0.0157	0.0159	0.0156	0.0152	0.0155	0.0152	0.0162	0.0156	0.0159	0.0153	0.0158	0.0150
Min.	5.616	5.609	5.608	5.606	5.608	5.602	5.606	5.602	5.597	5.598	5.601	5.594	5.593	5.590	5.589	5.586	5.590	5.582	5.587
Max.	5.680	5.678	5.677	5.677	5.672	5.670	5.672	5.668	5.667	5.665	5.665	5.657	5.662	5.657	5.659	5.648	5.654	5.653	5.645

3.25 Data Set 5, 85°C, 160mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S101	0.2560	0.5243	2856	0.0002	0.0003	0.0005	0.0008	0.0011	0.0015	0.0016	0.0019	0.0020	0.0023	0.0024	0.0027	0.0029	0.0030	0.0032	0.0034	0.0036	0.0038
S102	0.2557	0.5239	2864	0.0002	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0019	0.0021	0.0023	0.0024	0.0026	0.0028	0.0030	0.0032	0.0033	0.0035	0.0037
S103	0.2557	0.5239	2864	0.0001	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0019	0.0021	0.0022	0.0025	0.0027	0.0029	0.0031	0.0032	0.0034	0.0036	0.0038
S104	0.2559	0.5240	2858	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0021	0.0022	0.0025	0.0028	0.0030	0.0031	0.0033	0.0035	0.0037	0.0039
S105	0.2563	0.5256	2842	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0015	0.0018	0.0021	0.0022	0.0025	0.0027	0.0029	0.0030	0.0032	0.0034	0.0036	0.0038
S106	0.2560	0.5255	2849	0.0002	0.0003	0.0005	0.0009	0.0012	0.0015	0.0016	0.0017	0.0020	0.0023	0.0024	0.0026	0.0028	0.0029	0.0031	0.0033	0.0035	0.0037
S107	0.2559	0.5244	2857	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0017	0.0018	0.0021	0.0023	0.0025	0.0026	0.0028	0.0029	0.0031	0.0033	0.0034	0.0036
S108	0.2560	0.5247	2852	0.0001	0.0003	0.0005	0.0008	0.0011	0.0014	0.0015	0.0018	0.0020	0.0022	0.0024	0.0027	0.0029	0.0030	0.0032	0.0034	0.0035	0.0037
S109	0.2558	0.5237	2862	0.0002	0.0003	0.0005	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021	0.0022	0.0025	0.0028	0.0029	0.0031	0.0033	0.0035	0.0036	0.0038
S110	0.2566	0.5252	2838	0.0002	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0024	0.0026	0.0027	0.0029	0.0030	0.0032	0.0034	0.0035	0.0037
S111	0.2561	0.5261	2844	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0021	0.0022	0.0024	0.0026	0.0027	0.0029	0.0031	0.0033	0.0034	0.0036
S112	0.2557	0.5257	2854	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0016	0.0019	0.0022	0.0024	0.0027	0.0030	0.0032	0.0033	0.0035	0.0037	0.0039	0.0041
S113	0.2560	0.5259	2846	0.0002	0.0003	0.0005	0.0008	0.0011	0.0013	0.0015	0.0016	0.0018	0.0021	0.0023	0.0025	0.0026	0.0028	0.0030	0.0032	0.0033	0.0035
S114	0.2560	0.5263	2845	0.0002	0.0003	0.0005	0.0008	0.0011	0.0013	0.0015	0.0017	0.0019	0.0020	0.0023	0.0024	0.0026	0.0027	0.0029	0.0031	0.0033	0.0035
S115	0.2562	0.5265	2840	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0015	0.0016	0.0019	0.0021	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	0.0037
S116	0.2558	0.5256	2853	0.0001	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0018	0.0020	0.0023	0.0024	0.0025	0.0027	0.0028	0.0030	0.0032	0.0033	0.0035
S117	0.2566	0.5270	2828	0.0002	0.0004	0.0006	0.0008	0.0011	0.0014	0.0015	0.0018	0.0021	0.0022	0.0024	0.0027	0.0029	0.0030	0.0032	0.0034	0.0036	0.0038
S118	0.2561	0.5273	2838	0.0002	0.0004	0.0005	0.0008	0.0010	0.0013	0.0016	0.0019	0.0022	0.0025	0.0027	0.0030	0.0031	0.0033	0.0035	0.0036	0.0038	0.0040
S119	0.2564	0.5275	2830	0.0001	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0017	0.0020	0.0023	0.0024	0.0026	0.0028	0.0030	0.0031	0.0033	0.0035	0.0037
S120	0.2557	0.5257	2854	0.0002	0.0004	0.0006	0.0009	0.0012	0.0014	0.0015	0.0018	0.0019	0.0021	0.0023	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0036
S121	0.2559	0.5260	2848	0.0002	0.0004	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016	0.0017	0.0020	0.0022	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0036
S122	0.2562	0.5265	2839	0.0002	0.0004	0.0005	0.0009	0.0012	0.0014	0.0017	0.0020	0.0022	0.0024	0.0026	0.0027	0.0029	0.0031	0.0033	0.0034	0.0036	0.0038
S123	0.2559	0.5255	2852	0.0002	0.0004	0.0005	0.0008	0.0011	0.0014	0.0017	0.0018	0.0020	0.0023	0.0026	0.0028	0.0030	0.0032	0.0033	0.0035	0.0037	0.0038
S124	0.2561	0.5258	2846	0.0001	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0019	0.0020	0.0022	0.0023	0.0025	0.0026	0.0028	0.0029	0.0031	0.0033	0.0035
S125	0.2557	0.5258	2854	0.0002	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0019	0.0022	0.0025	0.0028	0.0031	0.0032	0.0034	0.0036	0.0037	0.0039	0.0041
Ave.	0.2560	0.5255	2849	0.0002	0.0004	0.0005	0.0008	0.0011	0.0014	0.0016	0.0018	0.0020	0.0022	0.0025	0.0027	0.0028	0.0030	0.0032	0.0034	0.0035	0.0037
Med.	0.2560	0.5257	2849	0.0002	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0018	0.0021	0.0022	0.0024	0.0027	0.0029	0.0030	0.0032	0.0034	0.0035	0.0037
St dev	0.0003	0.0011	9.6830	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2557	0.5237	2828	0.0001	0.0003	0.0005	0.0008	0.0010	0.0013	0.0015	0.0016	0.0017	0.0020	0.0022	0.0024	0.0026	0.0027	0.0029	0.0031	0.0033	0.0035
Max.	0.2566	0.5275	2864	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0020	0.0022	0.0025	0.0028	0.0031	0.0032	0.0034	0.0036	0.0037	0.0039	0.0041

3.26 Data Set 6, 105°C, 160mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S126	139.6	100.02	99.84	99.66	99.48	99.27	99.07	98.88	98.73	98.54	98.37	98.21	98.09	97.97	97.85	97.73	97.63	97.56	97.49
S127	141.0	99.98	99.79	99.56	99.35	99.14	98.93	98.78	98.59	98.41	98.29	98.17	98.05	97.94	97.83	97.72	97.62	97.53	97.43
S128	141.5	100.04	99.91	99.73	99.52	99.32	99.14	98.95	98.80	98.61	98.49	98.37	98.25	98.14	98.03	97.92	97.83	97.75	97.65
S129	141.2	99.95	99.82	99.59	99.40	99.19	98.98	98.79	98.60	98.41	98.29	98.17	98.06	97.93	97.82	97.71	97.61	97.54	97.47
S130	141.4	99.94	99.81	99.59	99.39	99.20	99.00	98.81	98.62	98.43	98.31	98.20	98.08	97.96	97.83	97.72	97.64	97.54	97.47
S131	140.7	100.03	99.85	99.62	99.43	99.23	99.02	98.83	98.64	98.45	98.28	98.17	98.05	97.94	97.83	97.71	97.61	97.53	97.44
S132	140.9	100.03	99.84	99.62	99.43	99.23	99.03	98.88	98.73	98.54	98.42	98.31	98.19	98.06	97.95	97.82	97.75	97.67	97.60
S133	141.6	99.98	99.85	99.68	99.46	99.28	99.08	98.89	98.74	98.55	98.43	98.31	98.19	98.07	97.96	97.85	97.77	97.69	97.60
S134	140.8	100.02	99.83	99.66	99.46	99.27	99.07	98.88	98.73	98.54	98.38	98.26	98.14	98.01	97.90	97.79	97.72	97.65	97.55
S135	141.1	100.02	99.83	99.61	99.42	99.23	99.02	98.83	98.65	98.46	98.34	98.22	98.10	97.98	97.85	97.74	97.67	97.59	97.52
S136	141.1	99.94	99.81	99.64	99.43	99.25	99.06	98.87	98.68	98.50	98.38	98.21	98.05	97.94	97.83	97.72	97.62	97.53	97.45
S137	141.5	99.99	99.80	99.63	99.42	99.21	99.01	98.82	98.67	98.48	98.36	98.19	98.02	97.91	97.79	97.68	97.61	97.53	97.43
S138	141.5	99.95	99.76	99.59	99.38	99.18	98.99	98.80	98.61	98.46	98.29	98.13	97.96	97.83	97.72	97.61	97.52	97.42	97.35
S139	141.6	99.98	99.79	99.62	99.41	99.21	99.01	98.86	98.71	98.52	98.35	98.23	98.12	98.01	97.88	97.75	97.68	97.61	97.53
S140	141.8	99.99	99.85	99.63	99.43	99.22	99.00	98.82	98.67	98.52	98.35	98.18	98.01	97.91	97.78	97.65	97.58	97.51	97.44
S141	141.2	99.98	99.85	99.62	99.41	99.23	99.04	98.85	98.66	98.51	98.39	98.27	98.15	98.04	97.93	97.82	97.75	97.65	97.55
S142	141.9	100.01	99.82	99.59	99.41	99.21	99.00	98.85	98.67	98.48	98.36	98.25	98.08	97.97	97.84	97.73	97.66	97.56	97.49
S143	141.5	99.96	99.78	99.55	99.35	99.14	98.93	98.74	98.59	98.41	98.29	98.12	98.01	97.88	97.77	97.66	97.56	97.47	97.40
S144	141.4	99.94	99.75	99.53	99.32	99.11	98.91	98.73	98.54	98.39	98.22	98.10	97.94	97.83	97.72	97.61	97.54	97.46	97.39
S145	141.4	99.98	99.85	99.63	99.44	99.23	99.03	98.84	98.65	98.46	98.34	98.23	98.11	98.00	97.88	97.77	97.67	97.59	97.50
S146	142.0	99.93	99.79	99.57	99.36	99.15	98.95	98.77	98.58	98.39	98.27	98.15	97.98	97.87	97.75	97.62	97.54	97.47	97.40
S147	141.1	100.01	99.82	99.65	99.45	99.24	99.03	98.84	98.65	98.50	98.33	98.22	98.10	97.99	97.88	97.77	97.70	97.60	97.53
S148	141.3	99.95	99.76	99.53	99.33	99.14	98.94	98.75	98.56	98.37	98.26	98.14	98.02	97.91	97.80	97.68	97.61	97.51	97.43
S149	141.6	100.04	99.90	99.68	99.49	99.29	99.08	98.89	98.74	98.59	98.42	98.25	98.14	98.01	97.89	97.76	97.69	97.62	97.52
S150	141.9	99.99	99.86	99.69	99.50	99.30	99.10	98.95	98.76	98.62	98.50	98.33	98.21	98.10	97.98	97.85	97.76	97.68	97.61
Ave.	141.3	99.99	99.82	99.62	99.42	99.22	99.02	98.84	98.66	98.48	98.35	98.22	98.08	97.97	97.85	97.74	97.65	97.57	97.49
Med.	141.4	99.98	99.82	99.62	99.42	99.23	99.02	98.84	98.66	98.48	98.35	98.21	98.08	97.97	97.84	97.73	97.64	97.56	97.49
St dev	0.4920	0.0347	0.0398	0.0503	0.0531	0.0540	0.0555	0.0574	0.0672	0.0693	0.0685	0.0676	0.0796	0.0790	0.0789	0.0787	0.0785	0.0812	0.0767
Min.	139.6	99.93	99.75	99.53	99.32	99.11	98.91	98.73	98.54	98.37	98.22	98.10	97.94	97.83	97.72	97.61	97.52	97.42	97.35
Max.	142.0	100.04	99.91	99.73	99.52	99.32	99.14	98.95	98.80	98.62	98.50	98.37	98.25	98.14	98.03	97.92	97.83	97.75	97.65

3.27 Data Set 6, 105°C, 160mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S126	2.191	100.01	99.83	99.61	99.42	99.19	98.99	98.81	98.63	98.48	98.31	98.22	98.13	98.02	97.93	97.83	97.71	97.62	97.54
S127	2.214	99.97	99.77	99.56	99.32	99.09	98.86	98.68	98.50	98.35	98.19	98.02	97.86	97.75	97.64	97.54	97.42	97.32	97.25
S128	2.215	99.99	99.81	99.60	99.33	99.10	98.90	98.72	98.51	98.33	98.17	98.07	97.91	97.80	97.70	97.59	97.47	97.38	97.30
S129	2.214	99.97	99.78	99.55	99.32	99.06	98.86	98.68	98.47	98.34	98.25	98.08	97.99	97.90	97.81	97.71	97.59	97.50	97.42
S130	2.214	99.92	99.74	99.51	99.28	99.01	98.85	98.70	98.52	98.37	98.28	98.18	98.02	97.91	97.82	97.72	97.60	97.51	97.43
S131	2.215	99.91	99.73	99.52	99.28	99.09	98.92	98.71	98.56	98.38	98.22	98.05	97.96	97.85	97.75	97.66	97.54	97.45	97.37
S132	2.214	99.95	99.77	99.54	99.28	99.09	98.85	98.68	98.50	98.35	98.25	98.16	98.00	97.89	97.79	97.70	97.58	97.49	97.41
S133	2.214	100.01	99.81	99.58	99.32	99.12	98.92	98.74	98.53	98.35	98.19	98.02	97.85	97.75	97.66	97.57	97.45	97.37	97.29
S134	2.214	99.99	99.79	99.57	99.31	99.05	98.89	98.68	98.50	98.32	98.22	98.13	98.04	97.95	97.84	97.75	97.63	97.54	97.46
S135	2.215	99.97	99.77	99.54	99.35	99.09	98.92	98.71	98.50	98.38	98.29	98.12	97.95	97.85	97.74	97.63	97.52	97.43	97.35
S136	2.214	100.01	99.81	99.57	99.34	99.11	98.95	98.77	98.61	98.49	98.32	98.23	98.07	97.96	97.85	97.76	97.65	97.55	97.47
S137	2.216	100.00	99.82	99.60	99.41	99.15	98.95	98.74	98.58	98.46	98.29	98.13	97.96	97.86	97.77	97.66	97.54	97.46	97.37
S138	2.223	99.99	99.79	99.56	99.30	99.07	98.84	98.66	98.48	98.33	98.16	98.07	97.91	97.80	97.69	97.59	97.46	97.38	97.29
S139	2.223	99.95	99.76	99.55	99.32	99.12	98.96	98.75	98.54	98.36	98.19	98.03	97.93	97.84	97.74	97.63	97.51	97.42	97.34
S140	2.223	100.00	99.80	99.59	99.39	99.13	98.97	98.76	98.61	98.48	98.32	98.15	98.06	97.97	97.87	97.78	97.66	97.57	97.49
S141	2.223	99.99	99.79	99.55	99.32	99.13	98.90	98.72	98.56	98.38	98.22	98.05	97.96	97.85	97.76	97.66	97.54	97.44	97.37
S142	2.223	100.02	99.84	99.61	99.38	99.12	98.89	98.68	98.50	98.37	98.21	98.11	97.95	97.84	97.74	97.63	97.51	97.42	97.34
S143	2.223	99.95	99.75	99.54	99.31	99.07	98.87	98.69	98.54	98.41	98.25	98.08	97.99	97.88	97.78	97.67	97.55	97.47	97.39
S144	2.223	99.91	99.73	99.51	99.28	99.05	98.85	98.69	98.51	98.33	98.17	98.00	97.84	97.73	97.64	97.55	97.44	97.35	97.27
S145	2.222	99.95	99.77	99.54	99.34	99.11	98.88	98.73	98.52	98.34	98.17	98.01	97.84	97.74	97.63	97.52	97.40	97.32	97.24
S146	2.223	100.00	99.80	99.57	99.30	99.07	98.84	98.66	98.51	98.36	98.20	98.10	98.01	97.90	97.82	97.71	97.59	97.50	97.42
S147	2.223	99.95	99.75	99.54	99.31	99.11	98.95	98.74	98.58	98.40	98.24	98.15	97.98	97.89	97.80	97.70	97.58	97.48	97.40
S148	2.223	99.98	99.78	99.54	99.31	99.08	98.92	98.70	98.55	98.37	98.21	98.04	97.88	97.77	97.67	97.56	97.45	97.36	97.27
S149	2.223	99.99	99.80	99.59	99.36	99.16	98.93	98.72	98.57	98.45	98.35	98.19	98.02	97.92	97.83	97.72	97.60	97.51	97.44
S150	2.224	99.98	99.78	99.57	99.34	99.10	98.90	98.72	98.57	98.44	98.35	98.18	98.02	97.93	97.82	97.74	97.62	97.53	97.44
Ave.	2.218	99.98	99.78	99.56	99.33	99.10	98.90	98.71	98.54	98.39	98.24	98.10	97.96	97.86	97.76	97.66	97.54	97.45	97.38
Med.	2.222	99.98	99.78	99.56	99.32	99.10	98.90	98.71	98.53	98.37	98.22	98.10	97.96	97.86	97.77	97.66	97.54	97.46	97.37
St dev	0.0071	0.0308	0.0292	0.0293	0.0390	0.0385	0.0434	0.0358	0.0433	0.0524	0.0593	0.0676	0.0750	0.0774	0.0789	0.0801	0.0807	0.0795	0.0795
Min.	2.191	99.91	99.73	99.51	99.28	99.01	98.84	98.66	98.47	98.32	98.16	98.00	97.84	97.73	97.63	97.52	97.40	97.32	97.24
Max.	2.224	100.02	99.84	99.61	99.42	99.19	98.99	98.81	98.63	98.49	98.35	98.23	98.13	98.02	97.93	97.83	97.71	97.62	97.54

3.28 Data Set 6, 105°C, 160mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S126	0.1598	99.93	99.76	99.58	99.35	99.14	98.91	98.66	98.45	98.24	98.11	97.97	97.88	97.74	97.61	97.48	97.39	97.29	97.20
S127	0.1615	100.01	99.86	99.68	99.48	99.26	99.00	98.75	98.54	98.33	98.20	98.08	97.93	97.79	97.70	97.60	97.51	97.42	97.33
S128	0.1614	99.91	99.77	99.57	99.33	99.12	98.88	98.64	98.44	98.24	98.12	97.97	97.82	97.76	97.66	97.60	97.51	97.42	97.33
S129	0.1613	99.94	99.77	99.60	99.36	99.16	98.89	98.66	98.45	98.29	98.15	98.02	97.93	97.86	97.70	97.56	97.47	97.38	97.29
S130	0.1615	99.92	99.75	99.55	99.34	99.13	98.89	98.70	98.49	98.27	98.13	97.99	97.84	97.78	97.68	97.58	97.49	97.40	97.30
S131	0.1615	99.94	99.77	99.59	99.38	99.18	98.94	98.75	98.59	98.37	98.19	98.05	97.94	97.84	97.71	97.65	97.56	97.47	97.37
S132	0.1615	99.99	99.82	99.64	99.44	99.23	98.97	98.72	98.56	98.36	98.22	98.04	97.89	97.75	97.66	97.56	97.46	97.37	97.27
S133	0.1616	100.00	99.83	99.65	99.44	99.21	98.97	98.73	98.57	98.41	98.26	98.12	98.03	97.96	97.84	97.70	97.60	97.51	97.42
S134	0.1614	99.89	99.72	99.54	99.33	99.12	98.88	98.65	98.46	98.24	98.10	97.92	97.82	97.76	97.67	97.60	97.51	97.42	97.32
S135	0.1616	99.90	99.73	99.55	99.32	99.11	98.88	98.68	98.47	98.27	98.13	98.01	97.91	97.78	97.68	97.55	97.45	97.36	97.27
S136	0.1614	99.97	99.82	99.62	99.41	99.20	98.94	98.69	98.53	98.32	98.19	98.01	97.90	97.76	97.67	97.57	97.48	97.39	97.30
S137	0.1615	99.90	99.73	99.54	99.33	99.10	98.83	98.59	98.39	98.23	98.05	97.90	97.81	97.75	97.58	97.44	97.36	97.27	97.18
S138	0.1630	99.95	99.80	99.60	99.38	99.15	98.90	98.71	98.55	98.38	98.24	98.10	98.01	97.87	97.71	97.57	97.48	97.39	97.30
S139	0.1630	99.97	99.80	99.63	99.41	99.20	98.97	98.78	98.56	98.35	98.21	98.07	97.92	97.78	97.62	97.52	97.42	97.34	97.25
S140	0.1630	99.96	99.81	99.63	99.42	99.21	98.98	98.75	98.58	98.42	98.28	98.10	97.99	97.92	97.79	97.73	97.64	97.55	97.46
S141	0.1630	99.96	99.79	99.59	99.37	99.16	98.91	98.67	98.47	98.26	98.13	97.99	97.88	97.82	97.65	97.59	97.50	97.41	97.32
S142	0.1629	99.94	99.79	99.59	99.36	99.12	98.86	98.67	98.50	98.34	98.21	98.09	97.99	97.90	97.73	97.67	97.57	97.48	97.39
S143	0.1629	100.00	99.85	99.65	99.42	99.18	98.95	98.72	98.50	98.31	98.12	97.98	97.87	97.77	97.64	97.51	97.42	97.33	97.24
S144	0.1630	99.99	99.85	99.67	99.44	99.22	98.95	98.76	98.55	98.39	98.26	98.12	98.02	97.93	97.83	97.73	97.64	97.55	97.46
S145	0.1629	99.95	99.78	99.60	99.38	99.17	98.92	98.73	98.52	98.32	98.18	98.05	97.96	97.82	97.66	97.52	97.43	97.35	97.25
S146	0.1629	99.93	99.76	99.58	99.37	99.13	98.89	98.65	98.48	98.28	98.10	97.96	97.85	97.71	97.55	97.41	97.32	97.22	97.14
S147	0.1631	99.89	99.74	99.56	99.36	99.12	98.88	98.68	98.47	98.26	98.13	97.99	97.88	97.74	97.65	97.52	97.42	97.33	97.24
S148	0.1630	99.98	99.81	99.61	99.39	99.18	98.94	98.75	98.59	98.42	98.24	98.12	98.00	97.94	97.85	97.78	97.69	97.60	97.51
S149	0.1630	99.96	99.79	99.59	99.38	99.16	98.90	98.67	98.45	98.26	98.11	97.97	97.88	97.74	97.61	97.52	97.42	97.33	97.24
S150	0.1630	99.97	99.80	99.62	99.39	99.18	98.92	98.69	98.53	98.36	98.18	98.06	97.96	97.83	97.73	97.67	97.58	97.49	97.40
Ave.	0.1622	99.95	99.79	99.60	99.38	99.17	98.92	98.70	98.51	98.32	98.17	98.03	97.92	97.81	97.69	97.58	97.49	97.40	97.31
Med.	0.1629	99.95	99.79	99.60	99.38	99.16	98.91	98.69	98.50	98.32	98.18	98.02	97.91	97.78	97.67	97.57	97.48	97.39	97.30
St dev	0.0009	0.0353	0.0385	0.0395	0.0403	0.0426	0.0418	0.0459	0.0536	0.0614	0.0614	0.0623	0.0658	0.0721	0.0762	0.0917	0.0911	0.0918	0.0916
Min.	0.1598	99.89	99.72	99.54	99.32	99.10	98.83	98.59	98.39	98.23	98.05	97.90	97.81	97.71	97.55	97.41	97.32	97.22	97.14
Max.	0.1631	100.01	99.86	99.68	99.48	99.26	99.00	98.78	98.59	98.42	98.28	98.12	98.03	97.96	97.85	97.78	97.69	97.60	97.51

3.29 Data Set 6, 105°C, 160mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S126	5.688	5.688	5.681	5.681	5.681	5.681	5.677	5.677	5.671	5.671	5.666	5.667	5.660	5.663	5.661	5.654	5.660	5.653	5.651
S127	5.688	5.686	5.687	5.682	5.680	5.681	5.677	5.674	5.677	5.670	5.666	5.663	5.666	5.664	5.662	5.660	5.653	5.653	5.654
S128	5.677	5.677	5.677	5.669	5.673	5.669	5.664	5.663	5.665	5.660	5.659	5.656	5.657	5.652	5.651	5.642	5.643	5.645	5.637
S129	5.678	5.678	5.671	5.672	5.672	5.670	5.667	5.661	5.666	5.660	5.662	5.658	5.656	5.653	5.652	5.649	5.648	5.646	5.642
S130	5.648	5.641	5.641	5.640	5.642	5.640	5.635	5.632	5.631	5.630	5.626	5.624	5.620	5.623	5.618	5.621	5.620	5.613	5.614
S131	5.697	5.696	5.693	5.693	5.689	5.690	5.687	5.682	5.684	5.680	5.680	5.677	5.671	5.672	5.672	5.663	5.669	5.661	5.666
S132	5.683	5.683	5.683	5.679	5.680	5.671	5.676	5.672	5.667	5.668	5.660	5.662	5.661	5.657	5.657	5.653	5.655	5.648	5.645
S133	5.681	5.681	5.676	5.673	5.673	5.674	5.668	5.665	5.665	5.665	5.663	5.659	5.657	5.655	5.657	5.651	5.653	5.647	5.647
S134	5.691	5.684	5.685	5.684	5.683	5.684	5.679	5.680	5.676	5.670	5.669	5.664	5.663	5.665	5.666	5.660	5.654	5.656	5.654
S135	5.679	5.672	5.679	5.673	5.670	5.672	5.667	5.663	5.662	5.657	5.658	5.653	5.659	5.655	5.648	5.649	5.642	5.647	5.640
S136	5.684	5.683	5.681	5.681	5.681	5.671	5.672	5.667	5.672	5.669	5.668	5.664	5.657	5.656	5.660	5.653	5.654	5.649	5.650
S137	5.648	5.643	5.646	5.643	5.645	5.639	5.636	5.634	5.635	5.625	5.627	5.628	5.621	5.622	5.622	5.615	5.620	5.612	5.618
S138	5.678	5.674	5.672	5.671	5.670	5.669	5.671	5.666	5.661	5.661	5.657	5.652	5.658	5.652	5.648	5.650	5.643	5.646	5.644
S139	5.668	5.666	5.666	5.660	5.660	5.658	5.660	5.652	5.651	5.647	5.652	5.642	5.646	5.643	5.642	5.639	5.638	5.635	5.634
S140	5.638	5.632	5.636	5.634	5.630	5.625	5.626	5.625	5.624	5.622	5.620	5.618	5.611	5.612	5.612	5.613	5.611	5.610	5.602
S141	5.682	5.675	5.682	5.679	5.674	5.670	5.669	5.670	5.669	5.659	5.659	5.660	5.655	5.656	5.651	5.654	5.655	5.647	5.647
S142	5.667	5.666	5.660	5.663	5.659	5.659	5.659	5.654	5.651	5.651	5.651	5.647	5.645	5.636	5.642	5.638	5.637	5.632	5.636
S143	5.670	5.670	5.667	5.662	5.664	5.657	5.659	5.654	5.654	5.654	5.654	5.650	5.643	5.643	5.646	5.642	5.637	5.638	5.641
S144	5.674	5.667	5.674	5.669	5.667	5.661	5.664	5.663	5.661	5.651	5.658	5.654	5.654	5.648	5.649	5.646	5.645	5.641	5.640
S145	5.675	5.674	5.669	5.669	5.667	5.663	5.664	5.660	5.661	5.659	5.657	5.653	5.655	5.647	5.650	5.648	5.640	5.650	5.635
S146	5.672	5.672	5.672	5.664	5.667	5.665	5.660	5.659	5.656	5.656	5.651	5.651	5.650	5.646	5.646	5.647	5.644	5.644	5.635
S147	5.687	5.681	5.683	5.683	5.680	5.676	5.678	5.673	5.670	5.670	5.664	5.665	5.667	5.662	5.659	5.659	5.659	5.656	5.659
S148	5.682	5.680	5.675	5.678	5.674	5.675	5.674	5.666	5.670	5.667	5.659	5.655	5.655	5.656	5.651	5.649	5.652	5.646	5.646
S149	5.675	5.668	5.669	5.672	5.667	5.668	5.668	5.664	5.660	5.659	5.659	5.653	5.654	5.644	5.644	5.640	5.645	5.646	5.640
S150	5.638	5.633	5.635	5.630	5.631	5.631	5.626	5.626	5.621	5.621	5.615	5.612	5.617	5.607	5.614	5.601	5.604	5.610	5.604
Ave.	5.674	5.671	5.670	5.668	5.667	5.665	5.663	5.660	5.659	5.656	5.654	5.651	5.650	5.648	5.647	5.644	5.643	5.641	5.639
Med.	5.678	5.674	5.674	5.672	5.670	5.669	5.667	5.663	5.662	5.659	5.659	5.654	5.655	5.652	5.650	5.649	5.645	5.646	5.641
St dev	0.0156	0.0167	0.0157	0.0162	0.0155	0.0161	0.0162	0.0156	0.0162	0.0159	0.0158	0.0157	0.0161	0.0165	0.0156	0.0159	0.0156	0.0149	0.0156
Min.	5.638	5.632	5.635	5.630	5.630	5.625	5.626	5.625	5.621	5.621	5.615	5.612	5.611	5.607	5.612	5.601	5.604	5.610	5.602
Max.	5.697	5.696	5.693	5.693	5.689	5.690	5.687	5.682	5.684	5.680	5.680	5.677	5.671	5.672	5.672	5.663	5.669	5.661	5.666

3.30 Data Set 6, 105°C, 160mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs s	11000hrs s	12000hrs s	13000hrs s	14000hrs s	15000hrs s	16000hrs s	17000hrs s	18000hrs s
S126	0.2561	0.5262	2843	0.0002	0.0004	0.0005	0.0009	0.0012	0.0016	0.0018	0.0020	0.0024	0.0025	0.0026	0.0028	0.0031	0.0033	0.0036	0.0039	0.0042	0.0044
S127	0.2562	0.5261	2842	0.0003	0.0006	0.0008	0.0011	0.0014	0.0018	0.0020	0.0021	0.0023	0.0025	0.0026	0.0028	0.0030	0.0033	0.0035	0.0037	0.0039	0.0042
S128	0.2568	0.5271	2824	0.0003	0.0005	0.0008	0.0011	0.0015	0.0018	0.0020	0.0022	0.0023	0.0025	0.0026	0.0028	0.0030	0.0033	0.0035	0.0037	0.0039	0.0041
S129	0.2559	0.5257	2851	0.0002	0.0004	0.0006	0.0010	0.0013	0.0017	0.0021	0.0023	0.0024	0.0026	0.0027	0.0029	0.0032	0.0035	0.0037	0.0039	0.0040	0.0042
S130	0.2562	0.5259	2843	0.0002	0.0004	0.0005	0.0009	0.0013	0.0016	0.0018	0.0019	0.0023	0.0025	0.0027	0.0028	0.0032	0.0034	0.0038	0.0041	0.0042	0.0045
S131	0.2559	0.5259	2850	0.0003	0.0005	0.0008	0.0010	0.0013	0.0017	0.0018	0.0020	0.0022	0.0023	0.0024	0.0026	0.0028	0.0032	0.0034	0.0037	0.0040	0.0043
S132	0.2562	0.5264	2841	0.0002	0.0004	0.0005	0.0009	0.0013	0.0017	0.0018	0.0020	0.0024	0.0025	0.0027	0.0028	0.0031	0.0034	0.0037	0.0039	0.0041	0.0044
S133	0.2563	0.5273	2834	0.0002	0.0004	0.0006	0.0009	0.0012	0.0016	0.0020	0.0024	0.0026	0.0027	0.0029	0.0030	0.0033	0.0036	0.0039	0.0041	0.0043	0.0045
S134	0.2563	0.5267	2835	0.0003	0.0005	0.0008	0.0010	0.0014	0.0018	0.0019	0.0023	0.0025	0.0027	0.0028	0.0030	0.0032	0.0036	0.0039	0.0041	0.0044	0.0046
S135	0.2565	0.5275	2829	0.0002	0.0003	0.0006	0.0010	0.0014	0.0017	0.0019	0.0021	0.0022	0.0024	0.0025	0.0027	0.0029	0.0032	0.0034	0.0036	0.0038	0.0040
S136	0.2560	0.5257	2849	0.0002	0.0004	0.0008	0.0010	0.0014	0.0017	0.0019	0.0023	0.0025	0.0026	0.0028	0.0030	0.0033	0.0036	0.0039	0.0042	0.0044	0.0047
S137	0.2561	0.5259	2844	0.0002	0.0004	0.0005	0.0009	0.0013	0.0016	0.0018	0.0019	0.0021	0.0023	0.0024	0.0026	0.0029	0.0032	0.0035	0.0037	0.0039	0.0040
S138	0.2561	0.5266	2842	0.0003	0.0005	0.0007	0.0010	0.0014	0.0018	0.0019	0.0021	0.0023	0.0024	0.0026	0.0027	0.0031	0.0034	0.0037	0.0038	0.0041	0.0043
S139	0.2556	0.5262	2853	0.0002	0.0004	0.0005	0.0009	0.0013	0.0016	0.0018	0.0022	0.0026	0.0028	0.0029	0.0031	0.0033	0.0037	0.0039	0.0042	0.0045	0.0048
S140	0.2560	0.5264	2844	0.0002	0.0006	0.0008	0.0010	0.0014	0.0017	0.0019	0.0023	0.0024	0.0026	0.0028	0.0029	0.0032	0.0035	0.0038	0.0041	0.0043	0.0045
S141	0.2562	0.5271	2837	0.0003	0.0005	0.0007	0.0011	0.0015	0.0018	0.0020	0.0022	0.0023	0.0025	0.0026	0.0028	0.0031	0.0034	0.0037	0.0040	0.0043	0.0045
S142	0.2567	0.5275	2824	0.0002	0.0005	0.0007	0.0010	0.0014	0.0018	0.0022	0.0024	0.0026	0.0027	0.0028	0.0030	0.0032	0.0035	0.0038	0.0039	0.0042	0.0044
S143	0.2564	0.5280	2828	0.0002	0.0004	0.0006	0.0009	0.0013	0.0017	0.0018	0.0020	0.0022	0.0023	0.0024	0.0026	0.0028	0.0031	0.0033	0.0035	0.0037	0.0039
S144	0.2560	0.5268	2842	0.0002	0.0004	0.0006	0.0010	0.0013	0.0017	0.0018	0.0020	0.0022	0.0023	0.0024	0.0026	0.0028	0.0031	0.0034	0.0035	0.0038	0.0040
S145	0.2559	0.5260	2849	0.0003	0.0005	0.0008	0.0012	0.0015	0.0019	0.0022	0.0024	0.0026	0.0028	0.0029	0.0031	0.0034	0.0037	0.0040	0.0042	0.0044	0.0046
S146	0.2561	0.5278	2835	0.0002	0.0004	0.0006	0.0009	0.0013	0.0017	0.0021	0.0023	0.0027	0.0028	0.0030	0.0031	0.0034	0.0037	0.0039	0.0042	0.0044	0.0046
S147	0.2558	0.5262	2851	0.0003	0.0006	0.0007	0.0011	0.0014	0.0018	0.0020	0.0021	0.0025	0.0027	0.0029	0.0030	0.0033	0.0037	0.0039	0.0041	0.0043	0.0044
S148	0.2562	0.5270	2837	0.0002	0.0005	0.0006	0.0010	0.0013	0.0017	0.0018	0.0020	0.0022	0.0023	0.0025	0.0026	0.0030	0.0033	0.0035	0.0037	0.0039	0.0041
S149	0.2558	0.5261	2850	0.0003	0.0005	0.0008	0.0010	0.0014	0.0017	0.0019	0.0020	0.0024	0.0026	0.0027	0.0029	0.0032	0.0034	0.0037	0.0039	0.0042	0.0043
S150	0.2561	0.5263	2843	0.0003	0.0006	0.0007	0.0010	0.0014	0.0017	0.0021	0.0023	0.0025	0.0026	0.0027	0.0029	0.0031	0.0034	0.0037	0.0039	0.0040	0.0042
Ave.	0.2561	0.5266	2841	0.0002	0.0005	0.0007	0.0010	0.0014	0.0017	0.0019	0.0022	0.0024	0.0025	0.0027	0.0028	0.0031	0.0034	0.0037	0.0039	0.0041	0.0043
Med.	0.2561	0.5264	2842	0.0002	0.0005	0.0007	0.0010	0.0014	0.0017	0.0019	0.0021	0.0024	0.0025	0.0027	0.0028	0.0031	0.0034	0.0037	0.0039	0.0042	0.0044
St dev	0.0003	0.0007	8.4410	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2556	0.5257	2824	0.0002	0.0003	0.0005	0.0009	0.0012	0.0016	0.0018	0.0019	0.0021	0.0023	0.0024	0.0026	0.0028	0.0031	0.0033	0.0035	0.0037	0.0039
Max.	0.2568	0.5280	2853	0.0003	0.0006	0.0008	0.0012	0.0015	0.0019	0.0022	0.0024	0.0027	0.0028	0.0030	0.0031	0.0034	0.0037	0.0040	0.0042	0.0045	0.0048

3.31 Data Set 7, 55°C, 200mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S151	172.6	100.17	99.97	99.81	99.57	99.36	99.15	98.91	98.67	98.43	98.14	97.95	97.74	97.58	97.40	97.17	96.98	96.75	96.53
S152	173.0	100.18	100.02	99.87	99.67	99.42	99.18	98.97	98.75	98.45	98.26	98.08	97.87	97.71	97.47	97.23	97.10	96.91	96.73
S153	172.3	100.16	100.00	99.85	99.64	99.39	99.15	98.91	98.70	98.45	98.16	97.98	97.77	97.60	97.36	97.19	97.05	96.87	96.74
S154	173.0	100.12	99.92	99.76	99.55	99.35	99.14	98.90	98.69	98.44	98.24	97.95	97.74	97.58	97.41	97.24	97.01	96.82	96.60
S155	172.6	100.17	100.02	99.82	99.61	99.36	99.16	98.94	98.73	98.52	98.23	98.04	97.75	97.58	97.41	97.24	97.11	96.88	96.65
S156	172.3	100.18	100.02	99.82	99.58	99.38	99.10	98.85	98.61	98.36	98.17	97.97	97.73	97.49	97.26	97.02	96.83	96.64	96.41
S157	173.3	100.13	99.98	99.78	99.58	99.38	99.17	98.95	98.71	98.41	98.22	98.04	97.83	97.65	97.42	97.25	97.07	96.84	96.65
S158	171.2	100.18	99.98	99.78	99.58	99.34	99.11	98.87	98.62	98.32	98.09	97.88	97.68	97.51	97.35	97.11	96.89	96.75	96.53
S159	171.8	100.14	99.99	99.76	99.51	99.22	98.96	98.69	98.44	98.21	97.96	97.75	97.55	97.34	97.14	96.97	96.78	96.63	96.46
S160	171.7	100.14	99.94	99.78	99.54	99.29	99.09	98.85	98.64	98.33	98.13	97.84	97.63	97.46	97.28	97.05	96.91	96.73	96.50
S161	172.5	100.12	99.96	99.80	99.60	99.36	99.15	98.91	98.70	98.39	98.19	98.00	97.81	97.58	97.34	97.17	96.94	96.72	96.49
S162	173.6	100.14	99.94	99.74	99.54	99.29	99.08	98.78	98.57	98.32	98.12	97.93	97.75	97.57	97.33	97.10	96.87	96.74	96.61
S163	173.8	100.18	100.02	99.86	99.62	99.42	99.21	98.97	98.76	98.45	98.25	98.04	97.83	97.67	97.49	97.33	97.10	96.97	96.84
S164	173.9	100.20	99.99	99.84	99.59	99.39	99.15	98.85	98.54	98.33	98.12	97.92	97.63	97.45	97.28	97.04	96.91	96.68	96.46
S165	173.6	100.13	99.93	99.73	99.53	99.32	99.11	98.87	98.66	98.44	98.15	97.95	97.74	97.50	97.34	97.16	97.03	96.90	96.77
S166	173.4	100.19	99.99	99.83	99.59	99.39	99.18	98.97	98.72	98.51	98.33	98.14	97.95	97.79	97.61	97.44	97.31	97.12	96.89
S167	173.2	100.12	99.97	99.81	99.57	99.37	99.12	98.82	98.51	98.30	98.01	97.72	97.53	97.36	97.19	96.96	96.83	96.60	96.47
S168	174.2	100.18	100.02	99.82	99.62	99.42	99.17	98.87	98.63	98.32	98.14	97.85	97.66	97.42	97.26	97.08	96.95	96.73	96.60
S169	174.0	100.20	99.99	99.79	99.59	99.35	99.11	98.89	98.65	98.41	98.22	98.02	97.83	97.65	97.42	97.18	97.05	96.92	96.69
S170	173.6	100.17	99.97	99.77	99.53	99.33	99.08	98.84	98.60	98.39	98.18	97.89	97.68	97.45	97.28	97.12	96.93	96.74	96.52
S171	174.0	100.11	99.91	99.75	99.55	99.34	99.09	98.79	98.58	98.36	98.18	97.97	97.78	97.62	97.38	97.22	97.03	96.90	96.67
S172	172.7	100.10	99.90	99.75	99.54	99.34	99.09	98.80	98.50	98.25	97.96	97.76	97.51	97.31	97.14	96.96	96.74	96.55	96.42
S173	173.3	100.17	99.97	99.81	99.61	99.40	99.16	98.85	98.61	98.40	98.19	97.90	97.61	97.44	97.26	97.03	96.90	96.67	96.44
S174	173.1	100.15	99.95	99.79	99.55	99.31	99.11	98.89	98.59	98.34	98.16	97.95	97.75	97.51	97.27	97.04	96.85	96.62	96.44
S175	173.7	100.16	100.00	99.80	99.59	99.35	99.11	98.86	98.56	98.26	98.07	97.88	97.68	97.50	97.27	97.03	96.90	96.77	96.58
Ave.	173.1	100.16	99.97	99.80	99.58	99.36	99.13	98.87	98.63	98.38	98.15	97.94	97.72	97.53	97.34	97.13	96.96	96.78	96.59
Med.	173.2	100.16	99.98	99.80	99.58	99.36	99.12	98.87	98.63	98.39	98.16	97.95	97.74	97.51	97.34	97.12	96.94	96.75	96.58
St dev	0.7848	0.0281	0.0366	0.0379	0.0389	0.0466	0.0496	0.0662	0.0824	0.0782	0.0878	0.1017	0.1076	0.1163	0.1089	0.1196	0.1256	0.1336	0.1352
Min.	171.2	100.10	99.90	99.73	99.51	99.22	98.96	98.69	98.44	98.21	97.96	97.72	97.51	97.31	97.14	96.96	96.74	96.55	96.41
Max.	174.2	100.20	100.02	99.87	99.67	99.42	99.21	98.97	98.76	98.52	98.33	98.14	97.95	97.79	97.61	97.44	97.31	97.12	96.89

3.32 Data Set 7, 55°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S151	2.708	100.09	99.94	99.78	99.55	99.29	99.09	98.85	98.61	98.32	98.08	97.80	97.57	97.39	97.21	97.01	96.83	96.65	96.48
S152	2.707	100.10	99.94	99.78	99.56	99.37	99.18	98.88	98.64	98.40	98.13	97.86	97.62	97.44	97.24	97.06	96.91	96.78	96.63
S153	2.708	100.09	99.93	99.76	99.57	99.35	99.16	98.92	98.62	98.34	98.07	97.80	97.53	97.35	97.15	96.97	96.84	96.66	96.51
S154	2.707	100.13	99.96	99.80	99.53	99.31	99.12	98.82	98.52	98.28	98.02	97.74	97.47	97.26	97.08	96.92	96.77	96.64	96.51
S155	2.708	100.19	100.02	99.86	99.67	99.48	99.29	99.01	98.73	98.43	98.20	97.92	97.66	97.49	97.29	97.11	96.93	96.76	96.63
S156	2.707	100.11	99.95	99.79	99.57	99.30	99.08	98.78	98.54	98.24	97.97	97.73	97.46	97.26	97.10	96.89	96.71	96.58	96.45
S157	2.709	100.11	99.95	99.79	99.57	99.35	99.12	98.83	98.53	98.25	97.98	97.71	97.43	97.25	97.05	96.89	96.74	96.56	96.41
S158	2.698	100.08	99.92	99.77	99.55	99.32	99.13	98.89	98.59	98.35	98.12	97.88	97.61	97.45	97.29	97.11	96.96	96.81	96.68
S159	2.699	100.10	99.94	99.78	99.56	99.37	99.18	98.94	98.64	98.36	98.09	97.82	97.58	97.40	97.20	97.02	96.87	96.72	96.59
S160	2.698	100.13	99.97	99.82	99.60	99.37	99.10	98.86	98.59	98.35	98.07	97.81	97.54	97.33	97.17	96.99	96.86	96.71	96.56
S161	2.699	100.08	99.92	99.76	99.49	99.30	99.03	98.79	98.55	98.25	97.99	97.71	97.45	97.27	97.09	96.88	96.71	96.56	96.43
S162	2.716	100.13	99.97	99.81	99.62	99.40	99.17	98.87	98.64	98.34	98.07	97.80	97.53	97.37	97.19	97.03	96.88	96.75	96.62
S163	2.716	100.08	99.92	99.77	99.58	99.39	99.12	98.82	98.58	98.30	98.06	97.80	97.52	97.34	97.14	96.96	96.83	96.68	96.55
S164	2.715	100.09	99.94	99.78	99.52	99.25	99.02	98.73	98.45	98.17	97.89	97.66	97.42	97.24	97.08	96.88	96.73	96.55	96.42
S165	2.716	100.11	99.96	99.80	99.61	99.38	99.16	98.88	98.60	98.33	98.06	97.79	97.52	97.34	97.16	96.98	96.81	96.66	96.53
S166	2.716	100.09	99.93	99.77	99.58	99.31	99.04	98.74	98.47	98.23	97.95	97.68	97.41	97.21	97.00	96.84	96.66	96.48	96.35
S167	2.715	100.13	99.98	99.83	99.56	99.33	99.11	98.87	98.63	98.35	98.09	97.85	97.61	97.45	97.29	97.13	96.98	96.80	96.67
S168	2.715	100.14	99.98	99.82	99.63	99.44	99.17	98.93	98.65	98.36	98.12	97.88	97.65	97.47	97.31	97.10	96.97	96.82	96.69
S169	2.715	100.18	100.02	99.85	99.59	99.32	99.05	98.77	98.47	98.19	97.96	97.68	97.42	97.24	97.08	96.90	96.72	96.54	96.37
S170	2.715	100.14	99.98	99.83	99.56	99.34	99.15	98.85	98.57	98.27	98.00	97.77	97.50	97.34	97.16	96.98	96.81	96.68	96.50
S171	2.717	100.18	100.03	99.87	99.60	99.38	99.11	98.83	98.55	98.25	98.02	97.74	97.48	97.30	97.14	96.93	96.75	96.58	96.45
S172	2.706	100.18	100.02	99.86	99.67	99.45	99.18	98.88	98.60	98.30	98.04	97.77	97.49	97.29	97.13	96.92	96.79	96.61	96.48
S173	2.707	100.07	99.91	99.75	99.53	99.30	99.11	98.87	98.59	98.30	98.03	97.79	97.56	97.38	97.20	97.02	96.84	96.67	96.54
S174	2.706	100.14	99.98	99.82	99.63	99.41	99.18	98.89	98.59	98.31	98.04	97.77	97.54	97.33	97.17	97.01	96.88	96.73	96.60
S175	2.706	100.08	99.92	99.77	99.50	99.28	99.01	98.71	98.47	98.17	97.94	97.66	97.39	97.21	97.05	96.84	96.67	96.54	96.41
Ave.	2.709	100.12	99.96	99.80	99.58	99.35	99.12	98.85	98.58	98.30	98.04	97.78	97.52	97.34	97.16	96.98	96.82	96.66	96.52
Med.	2.708	100.11	99.95	99.79	99.57	99.35	99.12	98.86	98.59	98.30	98.04	97.79	97.52	97.34	97.16	96.98	96.83	96.66	96.51
St dev	0.0062	0.0356	0.0358	0.0347	0.0461	0.0564	0.0627	0.0693	0.0672	0.0669	0.0697	0.0709	0.0773	0.0841	0.0831	0.0857	0.0932	0.0961	0.0990
Min.	2.698	100.07	99.91	99.75	99.49	99.25	99.01	98.71	98.45	98.17	97.89	97.66	97.39	97.21	97.00	96.84	96.66	96.48	96.35
Max.	2.717	100.19	100.03	99.87	99.67	99.48	99.29	99.01	98.73	98.43	98.20	97.92	97.66	97.49	97.31	97.13	96.98	96.82	96.69

3.33 Data Set 7, 55°C, 200mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S151	0.1923	100.15	99.93	99.71	99.53	99.30	99.09	98.84	98.55	98.30	98.11	97.86	97.66	97.43	97.22	97.01	96.79	96.67	96.45
S152	0.1923	100.12	99.90	99.68	99.46	99.28	99.05	98.80	98.56	98.31	98.03	97.81	97.56	97.35	97.12	96.89	96.67	96.45	96.31
S153	0.1922	100.14	99.92	99.70	99.48	99.30	99.07	98.83	98.58	98.33	98.05	97.83	97.56	97.34	97.16	96.98	96.84	96.72	96.58
S154	0.1921	100.07	99.86	99.63	99.45	99.23	99.02	98.73	98.48	98.23	98.04	97.79	97.54	97.36	97.18	96.95	96.74	96.61	96.49
S155	0.1923	100.18	99.96	99.73	99.51	99.30	99.08	98.80	98.51	98.23	97.95	97.78	97.51	97.29	97.06	96.85	96.63	96.49	96.27
S156	0.1925	100.09	99.88	99.65	99.47	99.25	99.07	98.78	98.50	98.25	97.97	97.73	97.53	97.30	97.07	96.84	96.62	96.48	96.34
S157	0.1922	100.17	99.95	99.73	99.55	99.36	99.18	98.93	98.68	98.43	98.15	97.91	97.63	97.42	97.19	97.01	96.79	96.57	96.36
S158	0.1921	100.19	99.96	99.75	99.52	99.34	99.15	98.90	98.65	98.40	98.13	97.91	97.66	97.48	97.30	97.07	96.95	96.82	96.61
S159	0.1922	100.08	99.87	99.65	99.43	99.22	99.03	98.78	98.53	98.25	98.00	97.83	97.55	97.34	97.11	96.88	96.66	96.45	96.23
S160	0.1922	100.15	99.93	99.71	99.52	99.30	99.09	98.84	98.58	98.33	98.08	97.92	97.72	97.54	97.33	97.11	96.97	96.85	96.73
S161	0.1921	100.18	99.95	99.74	99.52	99.30	99.09	98.80	98.55	98.30	98.05	97.83	97.64	97.42	97.21	96.98	96.86	96.74	96.52
S162	0.1974	100.12	99.91	99.69	99.51	99.32	99.10	98.81	98.53	98.24	98.04	97.80	97.52	97.34	97.13	96.95	96.83	96.61	96.39
S163	0.1973	100.15	99.92	99.70	99.51	99.29	99.10	98.82	98.53	98.29	98.04	97.87	97.67	97.49	97.28	97.10	96.96	96.83	96.69
S164	0.1975	100.10	99.88	99.66	99.44	99.23	99.01	98.73	98.48	98.19	97.94	97.70	97.50	97.27	97.09	96.91	96.79	96.57	96.35
S165	0.1974	100.15	99.94	99.72	99.51	99.29	99.11	98.82	98.57	98.32	98.13	97.96	97.68	97.47	97.26	97.03	96.88	96.74	96.60
S166	0.1974	100.09	99.87	99.66	99.43	99.25	99.02	98.77	98.49	98.24	97.99	97.77	97.52	97.29	97.06	96.83	96.70	96.49	96.34
S167	0.1974	100.07	99.86	99.63	99.45	99.23	99.05	98.76	98.51	98.26	97.99	97.82	97.54	97.37	97.15	96.92	96.78	96.66	96.44
S168	0.1974	100.14	99.91	99.70	99.51	99.33	99.10	98.82	98.57	98.32	98.07	97.85	97.57	97.36	97.18	97.00	96.78	96.66	96.54
S169	0.1973	100.12	99.90	99.68	99.46	99.27	99.09	98.84	98.59	98.30	98.10	97.88	97.69	97.51	97.28	97.06	96.85	96.72	96.51
S170	0.1972	100.11	99.88	99.66	99.47	99.25	99.04	98.79	98.54	98.25	98.00	97.84	97.56	97.35	97.12	96.89	96.77	96.55	96.41
S171	0.1981	100.07	99.86	99.64	99.45	99.23	99.02	98.77	98.52	98.27	98.02	97.85	97.60	97.37	97.16	96.98	96.86	96.64	96.50
S172	0.1971	100.16	99.94	99.72	99.51	99.32	99.11	98.86	98.58	98.33	98.13	97.91	97.66	97.48	97.27	97.04	96.89	96.68	96.46
S173	0.1973	100.16	99.95	99.73	99.54	99.36	99.14	98.89	98.65	98.40	98.15	97.90	97.63	97.39	97.16	96.95	96.73	96.61	96.49
S174	0.1972	100.09	99.87	99.65	99.42	99.20	98.98	98.69	98.44	98.19	97.94	97.70	97.45	97.24	97.01	96.78	96.65	96.51	96.29
S175	0.1972	100.17	99.94	99.72	99.51	99.32	99.13	98.88	98.63	98.38	98.19	97.94	97.69	97.48	97.26	97.03	96.89	96.77	96.55
Ave.	0.1951	100.13	99.91	99.69	99.49	99.28	99.08	98.81	98.55	98.29	98.05	97.84	97.59	97.39	97.17	96.96	96.80	96.64	96.46
Med.	0.1972	100.14	99.91	99.70	99.51	99.29	99.09	98.81	98.55	98.30	98.04	97.84	97.57	97.37	97.16	96.98	96.79	96.64	96.46
St dev	0.0026	0.0367	0.0352	0.0367	0.0375	0.0445	0.0483	0.0555	0.0580	0.0631	0.0697	0.0700	0.0730	0.0814	0.0851	0.0887	0.1017	0.1208	0.1294
Min.	0.1921	100.07	99.86	99.63	99.42	99.20	98.98	98.69	98.44	98.19	97.94	97.70	97.45	97.24	97.01	96.78	96.62	96.45	96.23
Max.	0.1981	100.19	99.96	99.75	99.55	99.36	99.18	98.93	98.68	98.43	98.19	97.96	97.72	97.54	97.33	97.11	96.97	96.85	96.73

3.34 Data Set 7, 55°C, 200mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S151	5.764	5.768	5.768	5.761	5.766	5.762	5.763	5.761	5.749	5.754	5.749	5.752	5.753	5.750	5.739	5.744	5.735	5.746	5.735
S152	5.723	5.763	5.763	5.763	5.758	5.753	5.751	5.756	5.752	5.753	5.753	5.749	5.740	5.736	5.747	5.743	5.736	5.743	5.733
S153	5.767	5.771	5.767	5.769	5.762	5.761	5.764	5.762	5.757	5.756	5.750	5.754	5.747	5.752	5.743	5.738	5.747	5.747	5.740
S154	5.752	5.759	5.754	5.757	5.753	5.747	5.752	5.749	5.750	5.737	5.741	5.741	5.741	5.728	5.733	5.735	5.735	5.724	5.723
S155	5.755	5.760	5.755	5.755	5.760	5.757	5.751	5.747	5.752	5.742	5.743	5.746	5.747	5.738	5.737	5.728	5.737	5.728	5.729
S156	5.758	5.763	5.761	5.760	5.762	5.758	5.759	5.745	5.749	5.752	5.742	5.748	5.741	5.743	5.734	5.742	5.730	5.730	5.732
S157	5.756	5.755	5.755	5.751	5.753	5.747	5.752	5.751	5.741	5.747	5.745	5.740	5.745	5.742	5.736	5.726	5.738	5.737	5.735
S158	5.771	5.730	5.722	5.725	5.725	5.719	5.723	5.717	5.717	5.714	5.709	5.713	5.712	5.703	5.704	5.695	5.706	5.704	5.702
S159	5.762	5.752	5.757	5.751	5.749	5.750	5.748	5.751	5.743	5.745	5.745	5.743	5.743	5.733	5.740	5.724	5.736	5.733	5.726
S160	5.759	5.772	5.770	5.767	5.768	5.767	5.763	5.762	5.758	5.764	5.757	5.756	5.760	5.747	5.753	5.754	5.754	5.743	5.745
S161	5.756	5.769	5.764	5.762	5.760	5.762	5.758	5.755	5.755	5.753	5.753	5.742	5.746	5.750	5.743	5.742	5.733	5.744	5.735
S162	5.764	5.769	5.765	5.755	5.755	5.754	5.751	5.750	5.752	5.751	5.751	5.750	5.740	5.740	5.748	5.740	5.741	5.743	5.729
S163	5.754	5.765	5.761	5.754	5.761	5.759	5.757	5.751	5.745	5.740	5.750	5.748	5.741	5.746	5.734	5.741	5.731	5.742	5.732
S164	5.724	5.755	5.756	5.753	5.746	5.749	5.741	5.745	5.747	5.734	5.740	5.731	5.741	5.731	5.732	5.727	5.733	5.722	5.722
S165	5.756	5.710	5.713	5.712	5.713	5.704	5.708	5.707	5.703	5.703	5.702	5.701	5.690	5.691	5.698	5.693	5.682	5.682	5.684
S166	5.759	5.757	5.757	5.756	5.749	5.754	5.747	5.747	5.750	5.746	5.746	5.744	5.734	5.735	5.729	5.737	5.725	5.725	5.734
S167	5.767	5.746	5.739	5.734	5.741	5.736	5.735	5.734	5.734	5.725	5.732	5.728	5.726	5.724	5.720	5.715	5.722	5.722	5.711
S168	5.757	5.748	5.745	5.746	5.743	5.735	5.743	5.735	5.737	5.727	5.727	5.729	5.730	5.722	5.721	5.724	5.717	5.713	5.714
S169	5.752	5.746	5.743	5.737	5.735	5.730	5.733	5.729	5.731	5.725	5.722	5.719	5.719	5.715	5.720	5.721	5.722	5.721	5.711
S170	5.760	5.745	5.750	5.740	5.743	5.741	5.738	5.739	5.736	5.736	5.731	5.724	5.724	5.732	5.721	5.725	5.716	5.716	5.717
S171	5.759	5.755	5.744	5.746	5.741	5.748	5.741	5.739	5.740	5.731	5.739	5.733	5.735	5.727	5.730	5.729	5.718	5.718	5.728
S172	5.768	5.750	5.748	5.748	5.746	5.743	5.734	5.739	5.736	5.733	5.729	5.723	5.731	5.724	5.724	5.719	5.724	5.714	5.716
S173	5.756	5.758	5.758	5.754	5.756	5.750	5.751	5.752	5.751	5.751	5.750	5.742	5.737	5.739	5.745	5.738	5.738	5.739	5.737
S174	5.755	5.750	5.746	5.748	5.749	5.748	5.740	5.739	5.742	5.737	5.739	5.733	5.733	5.733	5.727	5.728	5.718	5.729	5.720
S175	5.748	5.739	5.739	5.734	5.738	5.732	5.735	5.736	5.729	5.731	5.721	5.729	5.723	5.720	5.715	5.711	5.715	5.722	5.719
Ave.	5.756	5.754	5.752	5.750	5.749	5.747	5.746	5.744	5.742	5.740	5.739	5.737	5.735	5.732	5.731	5.729	5.728	5.727	5.724
Med.	5.757	5.755	5.755	5.753	5.749	5.749	5.748	5.747	5.745	5.740	5.742	5.741	5.740	5.733	5.733	5.728	5.731	5.728	5.728
St dev	0.0113	0.0138	0.0138	0.0133	0.0130	0.0146	0.0132	0.0132	0.0127	0.0141	0.0140	0.0137	0.0144	0.0145	0.0134	0.0147	0.0146	0.0152	0.0133
Min.	5.723	5.710	5.713	5.712	5.713	5.704	5.708	5.707	5.703	5.703	5.702	5.701	5.690	5.691	5.698	5.693	5.682	5.682	5.684
Max.	5.771	5.772	5.770	5.769	5.768	5.767	5.764	5.762	5.758	5.764	5.757	5.756	5.760	5.752	5.753	5.754	5.754	5.747	5.745

3.35 Data Set 7, 55°C, 200mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	12000hrs	18000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S151	0.2558	0.5233	2866	0.0001	0.0003	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0020	0.0021	0.0024	0.0025	0.0027	0.0029	0.0031	0.0032	0.0036	0.0037
S152	0.2558	0.5230	2867	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0012	0.0013	0.0015	0.0017	0.0020	0.0022	0.0024	0.0026	0.0027	0.0029	0.0032	0.0034
S153	0.2559	0.5237	2859	0.0001	0.0002	0.0003	0.0006	0.0008	0.0011	0.0012	0.0015	0.0018	0.0020	0.0022	0.0023	0.0025	0.0026	0.0028	0.0029	0.0033	0.0034
S154	0.2564	0.5242	2846	0.0002	0.0003	0.0004	0.0006	0.0008	0.0011	0.0013	0.0014	0.0017	0.0019	0.0021	0.0022	0.0025	0.0027	0.0028	0.0030	0.0034	0.0036
S155	0.2561	0.5247	2852	0.0001	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0020	0.0022	0.0024	0.0026	0.0029	0.0031	0.0032	0.0035	0.0036
S156	0.2557	0.5235	2865	0.0002	0.0003	0.0005	0.0007	0.0010	0.0012	0.0014	0.0016	0.0019	0.0022	0.0023	0.0025	0.0026	0.0028	0.0031	0.0033	0.0036	0.0038
S157	0.2559	0.5245	2856	0.0001	0.0003	0.0005	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0020	0.0021	0.0023	0.0024	0.0026	0.0028	0.0030	0.0033	0.0035
S158	0.2560	0.5228	2863	0.0002	0.0003	0.0005	0.0008	0.0010	0.0012	0.0013	0.0015	0.0019	0.0021	0.0023	0.0024	0.0026	0.0028	0.0029	0.0031	0.0035	0.0036
S159	0.2563	0.5233	2854	0.0001	0.0003	0.0005	0.0008	0.0010	0.0012	0.0014	0.0015	0.0019	0.0020	0.0023	0.0026	0.0029	0.0030	0.0032	0.0034	0.0037	0.0039
S160	0.2562	0.5228	2859	0.0001	0.0003	0.0005	0.0007	0.0010	0.0012	0.0013	0.0015	0.0018	0.0019	0.0021	0.0022	0.0025	0.0028	0.0031	0.0033	0.0036	0.0038
S161	0.2563	0.5245	2847	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0012	0.0014	0.0017	0.0018	0.0021	0.0024	0.0025	0.0027	0.0030	0.0032	0.0035	0.0037
S162	0.2559	0.5264	2845	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0012	0.0015	0.0017	0.0019	0.0022	0.0024	0.0025	0.0027	0.0029	0.0030	0.0034	0.0036
S163	0.2556	0.5262	2854	0.0001	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0015	0.0018	0.0019	0.0021	0.0022	0.0025	0.0028	0.0030	0.0031	0.0034	0.0036
S164	0.2560	0.5262	2846	0.0001	0.0003	0.0005	0.0007	0.0010	0.0012	0.0014	0.0016	0.0019	0.0020	0.0022	0.0023	0.0025	0.0028	0.0030	0.0031	0.0035	0.0037
S165	0.2563	0.5278	2832	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0018	0.0020	0.0021	0.0023	0.0026	0.0028	0.0029	0.0032	0.0034
S166	0.2559	0.5267	2845	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0013	0.0015	0.0018	0.0019	0.0020	0.0023	0.0024	0.0026	0.0029	0.0030	0.0033	0.0035
S167	0.2561	0.5269	2839	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019	0.0020	0.0023	0.0026	0.0028	0.0031	0.0033	0.0036	0.0038
S168	0.2560	0.5277	2837	0.0002	0.0003	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0019	0.0021	0.0024	0.0026	0.0027	0.0029	0.0032	0.0033	0.0036	0.0038
S169	0.2565	0.5274	2827	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0012	0.0014	0.0017	0.0018	0.0020	0.0023	0.0026	0.0027	0.0030	0.0032	0.0035	0.0036
S170	0.2557	0.5260	2854	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	0.0029	0.0030	0.0034	0.0036
S171	0.2558	0.5282	2840	0.0001	0.0002	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0016	0.0017	0.0019	0.0020	0.0021	0.0023	0.0025	0.0026	0.0030	0.0031
S172	0.2554	0.5278	2851	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0012	0.0013	0.0015	0.0016	0.0018	0.0020	0.0023	0.0025	0.0027	0.0028	0.0032	0.0033
S173	0.2555	0.5276	2849	0.0002	0.0003	0.0004	0.0006	0.0009	0.0011	0.0013	0.0014	0.0016	0.0017	0.0019	0.0020	0.0022	0.0023	0.0025	0.0027	0.0030	0.0032
S174	0.2557	0.5283	2842	0.0001	0.0003	0.0004	0.0006	0.0009	0.0010	0.0012	0.0013	0.0016	0.0018	0.0020	0.0023	0.0025	0.0028	0.0030	0.0031	0.0034	0.0036
S175	0.2563	0.5290	2825	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0014	0.0015	0.0018	0.0020	0.0021	0.0022	0.0024	0.0026	0.0028	0.0029	0.0033	0.0035
Ave.	0.2560	0.5257	2849	0.0001	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036
Med.	0.2559	0.5262	2849	0.0002	0.0003	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036
St dev	0.0003	0.0020	11.5072	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2554	0.5228	2825	0.0001	0.0002	0.0003	0.0006	0.0008	0.0010	0.0012	0.0013	0.0015	0.0016	0.0018	0.0020	0.0021	0.0023	0.0025	0.0026	0.0030	0.0031
Max.	0.2565	0.5290	2867	0.0002	0.0003	0.0005	0.0008	0.0010	0.0012	0.0014	0.0017	0.0020	0.0022	0.0024	0.0026	0.0029	0.0030	0.0032	0.0034	0.0037	0.0039

3.36 Data Set 8, 85°C, 200mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S176	172.5	100.03	99.86	99.62	99.40	99.17	98.90	98.61	98.34	98.04	97.78	97.58	97.26	97.09	96.90	96.64	96.47	96.34	96.16
S177	172.7	100.02	99.85	99.61	99.33	99.06	98.76	98.49	98.19	97.92	97.54	97.34	97.14	96.91	96.71	96.52	96.35	96.22	96.04
S178	172.9	100.07	99.83	99.59	99.37	99.14	98.92	98.65	98.38	98.11	97.85	97.65	97.44	97.28	97.01	96.75	96.52	96.40	96.28
S179	172.3	100.10	99.93	99.75	99.45	99.23	98.95	98.68	98.34	98.00	97.74	97.42	97.22	97.06	96.80	96.60	96.44	96.31	96.13
S180	172.1	100.00	99.83	99.59	99.36	99.14	98.84	98.55	98.21	97.91	97.65	97.45	97.24	97.01	96.82	96.55	96.39	96.20	96.09
S181	172.5	100.03	99.79	99.61	99.39	99.12	98.89	98.62	98.35	98.01	97.75	97.43	97.23	97.00	96.73	96.54	96.31	96.19	96.07
S182	173.1	100.06	99.89	99.72	99.44	99.22	98.92	98.65	98.38	98.09	97.82	97.62	97.30	97.07	96.87	96.68	96.51	96.39	96.21
S183	173.2	100.03	99.79	99.56	99.26	98.95	98.65	98.38	98.09	97.75	97.49	97.17	96.96	96.80	96.61	96.41	96.24	96.11	96.00
S184	172.5	100.00	99.83	99.59	99.29	99.01	98.74	98.40	98.06	97.76	97.50	97.30	97.09	96.93	96.67	96.47	96.31	96.18	96.06
S185	172.0	100.09	99.85	99.68	99.45	99.15	98.85	98.58	98.29	97.95	97.68	97.48	97.28	97.12	96.85	96.66	96.43	96.30	96.12
S186	172.2	100.04	99.80	99.56	99.29	99.01	98.71	98.42	98.15	97.81	97.43	97.23	96.91	96.68	96.41	96.15	95.99	95.80	95.62
S187	172.9	100.01	99.78	99.60	99.30	99.00	98.73	98.46	98.16	97.89	97.63	97.42	97.22	97.02	96.83	96.63	96.43	96.27	96.15
S188	172.5	100.02	99.85	99.68	99.46	99.23	98.96	98.66	98.32	97.98	97.72	97.52	97.31	97.15	96.96	96.76	96.60	96.47	96.35
S189	171.9	100.06	99.82	99.65	99.38	99.15	98.85	98.56	98.27	97.97	97.59	97.39	97.07	96.84	96.58	96.39	96.15	96.03	95.91
S190	172.5	100.10	99.93	99.69	99.41	99.14	98.86	98.52	98.18	97.85	97.47	97.15	96.83	96.60	96.33	96.14	95.98	95.85	95.73
S191	173.1	100.09	99.92	99.75	99.48	99.25	98.95	98.68	98.41	98.12	97.85	97.65	97.45	97.28	97.09	96.89	96.72	96.53	96.42
S192	172.8	100.09	99.85	99.61	99.34	99.11	98.81	98.52	98.22	97.88	97.62	97.42	97.10	96.87	96.61	96.42	96.19	96.06	95.94
S193	172.3	100.07	99.89	99.66	99.38	99.11	98.88	98.59	98.25	97.98	97.71	97.40	97.19	97.03	96.83	96.57	96.41	96.28	96.10
S194	172.0	100.03	99.85	99.68	99.38	99.08	98.80	98.51	98.17	97.88	97.61	97.41	97.21	97.04	96.85	96.65	96.42	96.30	96.18
S195	172.1	100.07	99.83	99.61	99.39	99.11	98.89	98.55	98.21	97.91	97.60	97.36	97.11	96.89	96.70	96.51	96.34	96.19	96.07
S196	172.7	100.09	99.85	99.61	99.31	99.09	98.86	98.52	98.18	97.89	97.63	97.31	97.10	96.87	96.68	96.49	96.26	96.13	96.02
S197	172.4	100.02	99.85	99.67	99.45	99.23	98.93	98.59	98.29	97.95	97.57	97.37	97.17	96.94	96.74	96.55	96.32	96.20	96.08
S198	173.1	100.01	99.77	99.53	99.26	98.95	98.68	98.34	98.07	97.80	97.42	97.22	97.01	96.78	96.59	96.40	96.16	95.97	95.79
S199	172.4	100.08	99.84	99.60	99.30	99.03	98.80	98.53	98.24	97.95	97.57	97.36	97.04	96.88	96.68	96.42	96.19	96.00	95.89
S200	172.4	100.05	99.88	99.64	99.36	99.14	98.87	98.57	98.28	97.98	97.72	97.48	97.28	97.07	96.88	96.69	96.52	96.39	96.21
Ave.	172.5	100.05	99.85	99.63	99.37	99.11	98.84	98.55	98.24	97.94	97.64	97.40	97.17	96.97	96.75	96.54	96.35	96.20	96.07
Med.	172.5	100.05	99.85	99.61	99.38	99.12	98.86	98.55	98.24	97.95	97.63	97.41	97.19	97.00	96.74	96.55	96.35	96.20	96.08
St dev	0.3778	0.0333	0.0436	0.0577	0.0657	0.0859	0.0873	0.0936	0.0980	0.0990	0.1252	0.1356	0.1493	0.1647	0.1737	0.1729	0.1764	0.1820	0.1821
Min.	171.9	100.00	99.77	99.53	99.26	98.95	98.65	98.34	98.06	97.75	97.42	97.15	96.83	96.60	96.33	96.14	95.98	95.80	95.62
Max.	173.2	100.10	99.93	99.75	99.48	99.25	98.96	98.68	98.41	98.12	97.85	97.65	97.45	97.28	97.09	96.89	96.72	96.53	96.42

3.37 Data Set 8, 85°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S176	2.707	99.99	99.78	99.57	99.26	98.95	98.64	98.38	98.12	97.85	97.60	97.35	97.03	96.83	96.64	96.44	96.28	96.11	95.94
S177	2.708	100.04	99.83	99.63	99.33	99.07	98.76	98.46	98.12	97.86	97.54	97.29	97.06	96.87	96.67	96.48	96.31	96.14	95.97
S178	2.710	100.06	99.90	99.69	99.39	99.08	98.78	98.44	98.09	97.83	97.58	97.26	96.94	96.75	96.57	96.31	96.16	95.98	95.83
S179	2.708	99.98	99.77	99.61	99.35	99.09	98.79	98.52	98.18	97.84	97.52	97.30	97.07	96.88	96.70	96.53	96.36	96.21	96.03
S180	2.708	100.06	99.89	99.73	99.47	99.17	98.87	98.60	98.31	98.01	97.69	97.47	97.15	96.96	96.78	96.52	96.34	96.19	96.02
S181	2.708	100.02	99.85	99.64	99.34	99.09	98.78	98.48	98.19	97.85	97.59	97.37	97.15	96.95	96.69	96.44	96.28	96.12	95.93
S182	2.709	99.99	99.83	99.67	99.36	99.10	98.84	98.50	98.20	97.86	97.64	97.32	97.00	96.80	96.55	96.37	96.19	96.01	95.86
S183	2.710	100.02	99.86	99.65	99.35	99.04	98.74	98.45	98.15	97.81	97.56	97.33	97.01	96.76	96.56	96.30	96.13	95.95	95.77
S184	2.709	100.02	99.81	99.61	99.35	99.05	98.79	98.49	98.15	97.81	97.49	97.27	97.04	96.78	96.61	96.44	96.29	96.12	95.94
S185	2.709	99.99	99.83	99.62	99.32	99.06	98.80	98.54	98.27	97.93	97.71	97.39	97.07	96.81	96.62	96.36	96.19	96.04	95.87
S186	2.711	100.04	99.88	99.72	99.42	99.16	98.86	98.57	98.30	97.96	97.64	97.39	97.07	96.90	96.73	96.53	96.38	96.21	96.03
S187	2.711	100.02	99.81	99.65	99.35	99.05	98.75	98.40	98.06	97.80	97.55	97.30	97.04	96.79	96.61	96.44	96.29	96.12	95.95
S188	2.704	100.06	99.85	99.64	99.34	99.03	98.72	98.38	98.04	97.74	97.49	97.17	96.92	96.75	96.49	96.32	96.15	95.97	95.80
S189	2.705	100.03	99.82	99.66	99.36	99.06	98.76	98.47	98.17	97.83	97.51	97.26	97.04	96.86	96.61	96.41	96.26	96.09	95.94
S190	2.704	99.99	99.83	99.67	99.36	99.05	98.79	98.45	98.19	97.92	97.61	97.29	97.04	96.78	96.60	96.41	96.26	96.10	95.92
S191	2.704	100.02	99.86	99.65	99.35	99.04	98.74	98.48	98.21	97.87	97.65	97.33	97.10	96.93	96.73	96.48	96.31	96.14	95.99
S192	2.702	100.00	99.83	99.63	99.33	99.02	98.76	98.49	98.20	97.86	97.61	97.35	97.13	96.87	96.68	96.48	96.31	96.15	95.98
S193	2.703	100.08	99.92	99.71	99.41	99.15	98.89	98.55	98.28	98.02	97.70	97.48	97.25	97.06	96.89	96.63	96.47	96.32	96.17
S194	2.704	100.07	99.90	99.74	99.43	99.18	98.87	98.53	98.23	97.94	97.62	97.39	97.07	96.82	96.62	96.43	96.24	96.09	95.91
S195	2.703	100.07	99.86	99.65	99.34	99.03	98.73	98.39	98.05	97.71	97.46	97.23	97.01	96.81	96.64	96.38	96.21	96.03	95.88
S196	2.704	100.02	99.81	99.64	99.39	99.13	98.87	98.53	98.26	97.92	97.60	97.35	97.10	96.92	96.75	96.55	96.39	96.23	96.08
S197	2.703	100.01	99.80	99.59	99.28	99.02	98.76	98.50	98.16	97.82	97.59	97.27	97.05	96.86	96.66	96.46	96.30	96.14	95.99
S198	2.704	100.03	99.87	99.66	99.36	99.10	98.84	98.55	98.28	97.99	97.74	97.42	97.10	96.90	96.64	96.45	96.27	96.10	95.95
S199	2.704	100.06	99.85	99.69	99.43	99.17	98.86	98.60	98.30	98.01	97.78	97.56	97.31	97.14	96.96	96.77	96.60	96.45	96.26
S200	2.704	100.05	99.89	99.68	99.38	99.07	98.76	98.47	98.20	97.91	97.68	97.43	97.18	97.01	96.75	96.55	96.40	96.22	96.07
Ave.	2.706	100.03	99.85	99.66	99.36	99.08	98.79	98.49	98.19	97.88	97.61	97.34	97.08	96.87	96.67	96.46	96.29	96.13	95.96
Med.	2.705	100.02	99.85	99.65	99.35	99.07	98.78	98.49	98.19	97.86	97.60	97.33	97.07	96.86	96.64	96.44	96.29	96.12	95.95
St dev	0.0029	0.0286	0.0377	0.0425	0.0467	0.0561	0.0591	0.0620	0.0802	0.0819	0.0823	0.0867	0.0859	0.0977	0.1039	0.1029	0.1040	0.1104	0.1099
Min.	2.702	99.98	99.77	99.57	99.26	98.95	98.64	98.38	98.04	97.71	97.46	97.17	96.92	96.75	96.49	96.30	96.13	95.95	95.77
Max.	2.711	100.08	99.92	99.74	99.47	99.18	98.89	98.60	98.31	98.02	97.78	97.56	97.31	97.14	96.96	96.77	96.60	96.45	96.26

3.38 Data Set 8, 85°C, 200mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S176	0.1936	100.07	99.83	99.63	99.39	99.13	98.89	98.58	98.24	97.97	97.77	97.57	97.37	97.11	96.94	96.77	96.56	96.35	96.15
S177	0.1938	100.09	99.88	99.68	99.45	99.22	98.97	98.67	98.36	98.05	97.78	97.57	97.30	97.13	96.96	96.70	96.47	96.26	96.04
S178	0.1937	100.05	99.81	99.58	99.35	99.12	98.88	98.61	98.35	98.04	97.76	97.48	97.29	97.03	96.77	96.60	96.39	96.16	95.94
S179	0.1937	99.99	99.76	99.56	99.30	99.06	98.80	98.53	98.27	98.00	97.80	97.52	97.32	97.15	96.89	96.72	96.52	96.31	96.11
S180	0.1936	100.08	99.84	99.65	99.40	99.14	98.91	98.65	98.30	97.96	97.68	97.48	97.28	97.11	96.85	96.60	96.37	96.17	95.94
S181	0.1936	100.00	99.76	99.54	99.30	99.07	98.84	98.57	98.31	97.96	97.77	97.49	97.29	97.12	96.95	96.78	96.55	96.35	96.14
S182	0.1936	100.08	99.88	99.65	99.42	99.19	98.93	98.62	98.35	98.01	97.81	97.61	97.41	97.15	96.98	96.81	96.59	96.38	96.16
S183	0.1937	100.02	99.81	99.58	99.32	99.09	98.85	98.54	98.28	98.01	97.81	97.54	97.34	97.17	97.00	96.74	96.53	96.32	96.10
S184	0.1935	100.03	99.79	99.56	99.32	99.06	98.83	98.48	98.18	97.87	97.67	97.48	97.27	97.10	96.93	96.76	96.54	96.31	96.11
S185	0.1935	100.01	99.77	99.57	99.31	99.07	98.83	98.57	98.26	97.92	97.72	97.44	97.25	96.99	96.82	96.56	96.36	96.13	95.92
S186	0.1937	100.07	99.86	99.64	99.38	99.12	98.87	98.53	98.26	97.92	97.72	97.52	97.32	97.06	96.89	96.72	96.51	96.30	96.10
S187	0.1938	100.00	99.76	99.53	99.29	99.05	98.80	98.54	98.27	97.93	97.73	97.53	97.25	97.08	96.82	96.57	96.36	96.16	95.94
S188	0.1968	100.01	99.78	99.58	99.32	99.09	98.83	98.48	98.18	97.87	97.67	97.47	97.27	97.01	96.75	96.49	96.29	96.08	95.86
S189	0.1969	100.04	99.80	99.57	99.33	99.10	98.86	98.60	98.25	97.99	97.79	97.51	97.31	97.14	96.97	96.80	96.60	96.38	96.18
S190	0.1969	100.01	99.81	99.58	99.34	99.10	98.84	98.50	98.19	97.93	97.73	97.53	97.25	97.08	96.83	96.57	96.34	96.12	95.91
S191	0.1968	100.03	99.79	99.60	99.35	99.09	98.86	98.52	98.25	97.95	97.75	97.54	97.35	97.09	96.92	96.75	96.52	96.32	96.09
S192	0.1968	100.08	99.87	99.64	99.38	99.12	98.86	98.52	98.25	97.99	97.71	97.51	97.30	97.13	96.96	96.71	96.50	96.30	96.09
S193	0.1968	100.09	99.88	99.68	99.44	99.21	98.95	98.60	98.26	98.00	97.72	97.44	97.16	96.99	96.82	96.65	96.45	96.25	96.03
S194	0.1968	99.99	99.76	99.56	99.33	99.07	98.83	98.57	98.26	97.96	97.75	97.55	97.35	97.18	97.01	96.84	96.63	96.42	96.20
S195	0.1968	100.06	99.85	99.63	99.37	99.12	98.89	98.55	98.24	97.93	97.73	97.53	97.25	97.08	96.91	96.74	96.53	96.31	96.10
S196	0.1969	100.02	99.81	99.62	99.38	99.14	98.91	98.56	98.22	97.91	97.64	97.44	97.24	97.07	96.90	96.64	96.44	96.23	96.02
S197	0.1967	100.06	99.85	99.65	99.42	99.18	98.93	98.63	98.29	97.94	97.66	97.39	97.11	96.94	96.68	96.51	96.30	96.08	95.87
S198	0.1969	100.04	99.81	99.58	99.32	99.09	98.84	98.58	98.27	98.01	97.73	97.53	97.25	96.99	96.82	96.56	96.34	96.13	95.91
S199	0.1969	99.99	99.79	99.56	99.32	99.07	98.84	98.57	98.23	97.96	97.69	97.48	97.29	97.03	96.77	96.60	96.39	96.16	95.94
S200	0.1969	100.04	99.80	99.60	99.36	99.10	98.87	98.53	98.22	97.95	97.68	97.47	97.20	96.94	96.77	96.60	96.37	96.16	95.94
Ave.	0.1953	100.04	99.81	99.60	99.36	99.11	98.87	98.56	98.26	97.96	97.73	97.51	97.28	97.08	96.88	96.67	96.46	96.25	96.03
Med.	0.1967	100.04	99.81	99.58	99.35	99.10	98.86	98.57	98.26	97.96	97.73	97.51	97.29	97.08	96.89	96.70	96.47	96.26	96.04
St dev	0.0016	0.0326	0.0409	0.0432	0.0458	0.0466	0.0446	0.0485	0.0476	0.0462	0.0479	0.0491	0.0639	0.0690	0.0882	0.1007	0.1000	0.1023	0.1052
Min.	0.1935	99.99	99.76	99.53	99.29	99.05	98.80	98.48	98.18	97.87	97.64	97.39	97.11	96.94	96.68	96.49	96.29	96.08	95.86
Max.	0.1969	100.09	99.88	99.68	99.45	99.22	98.97	98.67	98.36	98.05	97.81	97.61	97.41	97.18	97.01	96.84	96.63	96.42	96.20

3.39 Data Set 8, 85°C, 200mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S176	5.763	5.762	5.765	5.757	5.758	5.758	5.761	5.753	5.755	5.751	5.745	5.749	5.742	5.748	5.744	5.746	5.734	5.738	5.732
S177	5.753	5.759	5.760	5.758	5.755	5.755	5.753	5.752	5.750	5.747	5.742	5.740	5.739	5.741	5.745	5.735	5.740	5.739	5.735
S178	5.723	5.773	5.771	5.765	5.762	5.762	5.769	5.754	5.754	5.760	5.752	5.755	5.751	5.752	5.742	5.744	5.743	5.736	5.738
S179	5.758	5.757	5.751	5.751	5.754	5.749	5.743	5.748	5.750	5.744	5.745	5.735	5.730	5.738	5.725	5.729	5.723	5.721	5.731
S180	5.766	5.763	5.755	5.752	5.757	5.754	5.749	5.755	5.743	5.745	5.739	5.742	5.744	5.739	5.738	5.740	5.727	5.724	5.732
S181	5.759	5.758	5.758	5.756	5.759	5.754	5.752	5.754	5.749	5.750	5.753	5.742	5.738	5.737	5.744	5.739	5.737	5.729	5.738
S182	5.751	5.761	5.754	5.755	5.755	5.750	5.752	5.746	5.746	5.740	5.740	5.738	5.733	5.740	5.734	5.724	5.725	5.724	5.727
S183	5.756	5.722	5.724	5.726	5.722	5.721	5.720	5.718	5.714	5.714	5.708	5.701	5.707	5.709	5.705	5.700	5.700	5.690	5.693
S184	5.754	5.752	5.752	5.748	5.748	5.752	5.751	5.743	5.740	5.744	5.740	5.738	5.738	5.736	5.738	5.728	5.735	5.732	5.728
S185	5.771	5.773	5.774	5.772	5.767	5.764	5.764	5.759	5.758	5.765	5.757	5.759	5.755	5.748	5.757	5.755	5.741	5.751	5.741
S186	5.766	5.763	5.762	5.767	5.762	5.757	5.761	5.754	5.749	5.744	5.750	5.746	5.740	5.747	5.738	5.732	5.745	5.732	5.732
S187	5.723	5.761	5.766	5.760	5.754	5.755	5.751	5.756	5.751	5.745	5.750	5.742	5.746	5.735	5.735	5.736	5.730	5.735	5.735
S188	5.763	5.762	5.760	5.759	5.758	5.751	5.758	5.755	5.745	5.747	5.747	5.746	5.744	5.740	5.740	5.734	5.737	5.729	5.727
S189	5.772	5.750	5.750	5.754	5.754	5.744	5.751	5.743	5.738	5.743	5.742	5.730	5.735	5.730	5.734	5.733	5.728	5.725	5.718
S190	5.755	5.717	5.712	5.708	5.708	5.703	5.702	5.701	5.707	5.696	5.696	5.691	5.689	5.692	5.692	5.694	5.680	5.686	5.681
S191	5.756	5.760	5.755	5.748	5.749	5.752	5.744	5.744	5.750	5.745	5.747	5.739	5.744	5.733	5.730	5.734	5.734	5.728	5.723
S192	5.751	5.742	5.738	5.734	5.739	5.731	5.732	5.730	5.731	5.733	5.725	5.721	5.729	5.720	5.724	5.717	5.715	5.719	5.714
S193	5.759	5.740	5.742	5.736	5.744	5.739	5.739	5.737	5.737	5.732	5.723	5.726	5.727	5.723	5.720	5.712	5.716	5.716	5.708
S194	5.766	5.745	5.745	5.736	5.736	5.738	5.729	5.734	5.735	5.724	5.726	5.722	5.718	5.717	5.722	5.708	5.712	5.719	5.707
S195	5.758	5.749	5.743	5.743	5.740	5.737	5.738	5.735	5.735	5.727	5.739	5.733	5.727	5.724	5.723	5.722	5.722	5.714	5.720
S196	5.722	5.745	5.745	5.749	5.741	5.739	5.737	5.733	5.733	5.739	5.728	5.732	5.728	5.722	5.725	5.715	5.722	5.726	5.716
S197	5.751	5.742	5.745	5.741	5.742	5.745	5.745	5.738	5.733	5.734	5.725	5.733	5.727	5.729	5.724	5.719	5.721	5.713	5.710
S198	5.756	5.757	5.757	5.761	5.757	5.751	5.749	5.756	5.754	5.748	5.748	5.741	5.737	5.737	5.739	5.740	5.729	5.737	5.733
S199	5.754	5.745	5.747	5.741	5.744	5.745	5.739	5.737	5.738	5.731	5.734	5.725	5.728	5.725	5.728	5.722	5.724	5.714	5.721
S200	5.759	5.744	5.743	5.739	5.739	5.738	5.736	5.734	5.735	5.730	5.731	5.721	5.717	5.724	5.714	5.722	5.717	5.711	5.706
Ave.	5.755	5.752	5.751	5.749	5.748	5.746	5.745	5.743	5.741	5.739	5.737	5.734	5.733	5.731	5.730	5.727	5.725	5.724	5.722
Med.	5.756	5.757	5.752	5.751	5.754	5.750	5.749	5.744	5.743	5.744	5.740	5.738	5.735	5.735	5.734	5.729	5.727	5.725	5.727
St dev	0.0134	0.0136	0.0136	0.0141	0.0132	0.0134	0.0146	0.0135	0.0122	0.0144	0.0145	0.0152	0.0142	0.0135	0.0138	0.0144	0.0143	0.0143	0.0148
Min.	5.722	5.717	5.712	5.708	5.708	5.703	5.702	5.701	5.707	5.696	5.696	5.691	5.689	5.692	5.692	5.694	5.680	5.686	5.681
Max.	5.772	5.773	5.774	5.772	5.767	5.764	5.769	5.759	5.758	5.765	5.757	5.759	5.755	5.752	5.757	5.755	5.745	5.751	5.741

3.40 Data Set 8, 85°C, 200mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S176	0.2562	0.5233	2856	0.0002	0.0005	0.0007	0.0011	0.0013	0.0016	0.0018	0.0020	0.0023	0.0025	0.0026	0.0028	0.0030	0.0034	0.0037	0.0039	0.0041	0.0043
S177	0.2559	0.5230	2864	0.0002	0.0004	0.0006	0.0009	0.0012	0.0016	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0033	0.0037	0.0038	0.0041	0.0043
S178	0.2562	0.5231	2857	0.0001	0.0003	0.0006	0.0010	0.0012	0.0015	0.0017	0.0018	0.0020	0.0024	0.0027	0.0028	0.0032	0.0035	0.0037	0.0039	0.0041	0.0043
S179	0.2561	0.5235	2856	0.0002	0.0004	0.0006	0.0009	0.0010	0.0014	0.0015	0.0018	0.0020	0.0022	0.0024	0.0025	0.0026	0.0029	0.0033	0.0035	0.0037	0.0039
S180	0.2564	0.5237	2848	0.0002	0.0004	0.0006	0.0010	0.0011	0.0015	0.0017	0.0019	0.0021	0.0024	0.0026	0.0028	0.0032	0.0033	0.0036	0.0038	0.0040	0.0042
S181	0.2561	0.5228	2862	0.0001	0.0003	0.0006	0.0010	0.0012	0.0016	0.0019	0.0020	0.0023	0.0025	0.0027	0.0028	0.0031	0.0032	0.0035	0.0037	0.0039	0.0041
S182	0.2568	0.5243	2836	0.0002	0.0004	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0018	0.0021	0.0022	0.0023	0.0026	0.0027	0.0029	0.0031	0.0033	0.0035
S183	0.2562	0.5246	2848	0.0002	0.0004	0.0006	0.0010	0.0012	0.0015	0.0017	0.0019	0.0020	0.0023	0.0024	0.0027	0.0031	0.0035	0.0037	0.0039	0.0041	0.0043
S184	0.2566	0.5246	2840	0.0002	0.0005	0.0006	0.0010	0.0012	0.0016	0.0017	0.0019	0.0021	0.0024	0.0026	0.0027	0.0029	0.0030	0.0034	0.0036	0.0038	0.0040
S185	0.2558	0.5229	2866	0.0001	0.0004	0.0007	0.0009	0.0012	0.0015	0.0018	0.0020	0.0022	0.0026	0.0027	0.0030	0.0032	0.0036	0.0038	0.0040	0.0042	0.0044
S186	0.2564	0.5238	2849	0.0002	0.0004	0.0006	0.0009	0.0011	0.0015	0.0016	0.0019	0.0021	0.0024	0.0025	0.0027	0.0031	0.0032	0.0033	0.0035	0.0037	0.0039
S187	0.2562	0.5229	2859	0.0002	0.0004	0.0006	0.0010	0.0012	0.0016	0.0017	0.0020	0.0022	0.0024	0.0026	0.0028	0.0032	0.0035	0.0039	0.0041	0.0043	0.0046
S188	0.2553	0.5261	2861	0.0001	0.0003	0.0006	0.0009	0.0012	0.0015	0.0017	0.0018	0.0020	0.0023	0.0024	0.0025	0.0027	0.0029	0.0033	0.0035	0.0037	0.0039
S189	0.2551	0.5259	2868	0.0002	0.0004	0.0006	0.0008	0.0010	0.0014	0.0015	0.0017	0.0019	0.0022	0.0024	0.0026	0.0030	0.0031	0.0035	0.0037	0.0039	0.0041
S190	0.2557	0.5275	2847	0.0002	0.0005	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0021	0.0025	0.0026	0.0028	0.0029	0.0030	0.0034	0.0036	0.0038	0.0040
S191	0.2555	0.5274	2851	0.0001	0.0004	0.0006	0.0010	0.0012	0.0015	0.0017	0.0019	0.0022	0.0024	0.0026	0.0027	0.0029	0.0030	0.0033	0.0035	0.0037	0.0039
S192	0.2560	0.5270	2842	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0015	0.0018	0.0020	0.0022	0.0024	0.0025	0.0027	0.0029	0.0030	0.0033	0.0035	0.0037
S193	0.2552	0.5256	2867	0.0002	0.0004	0.0006	0.0009	0.0010	0.0013	0.0014	0.0017	0.0019	0.0022	0.0023	0.0026	0.0029	0.0031	0.0035	0.0037	0.0039	0.0041
S194	0.2555	0.5266	2853	0.0001	0.0003	0.0006	0.0010	0.0012	0.0016	0.0018	0.0020	0.0023	0.0025	0.0028	0.0029	0.0031	0.0032	0.0036	0.0038	0.0040	0.0042
S195	0.2554	0.5263	2859	0.0002	0.0004	0.0007	0.0009	0.0011	0.0013	0.0016	0.0018	0.0020	0.0023	0.0025	0.0027	0.0029	0.0031	0.0035	0.0037	0.0039	0.0041
S196	0.2553	0.5259	2862	0.0002	0.0005	0.0006	0.0009	0.0011	0.0014	0.0017	0.0019	0.0022	0.0024	0.0026	0.0027	0.0030	0.0034	0.0036	0.0038	0.0041	0.0043
S197	0.2551	0.5258	2868	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0015	0.0017	0.0018	0.0020	0.0022	0.0024	0.0026	0.0027	0.0030	0.0031	0.0033	0.0035
S198	0.2555	0.5274	2852	0.0001	0.0004	0.0006	0.0010	0.0012	0.0016	0.0017	0.0018	0.0020	0.0022	0.0024	0.0025	0.0026	0.0030	0.0034	0.0036	0.0038	0.0040
S199	0.2558	0.5275	2844	0.0002	0.0005	0.0007	0.0009	0.0011	0.0013	0.0015	0.0016	0.0018	0.0022	0.0024	0.0025	0.0028	0.0029	0.0030	0.0032	0.0035	0.0037
S200	0.2551	0.5256	2868	0.0002	0.0004	0.0006	0.0010	0.0012	0.0015	0.0017	0.0018	0.0020	0.0022	0.0024	0.0027	0.0031	0.0032	0.0036	0.0038	0.0040	0.0042
Ave.	0.2558	0.5251	2855	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0021	0.0023	0.0025	0.0027	0.0029	0.0031	0.0034	0.0036	0.0039	0.0041
Med.	0.2558	0.5256	2856	0.0002	0.0004	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0020	0.0023	0.0025	0.0027	0.0029	0.0031	0.0035	0.0037	0.0039	0.0041
St dev	0.0005	0.0017	9.4106	0.0000	0.0001	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003
Min.	0.2551	0.5228	2836	0.0001	0.0003	0.0006	0.0008	0.0010	0.0013	0.0014	0.0016	0.0018	0.0020	0.0022	0.0023	0.0026	0.0027	0.0029	0.0031	0.0033	0.0035
Max.	0.2568	0.5275	2868	0.0002	0.0005	0.0007	0.0011	0.0013	0.0016	0.0019	0.0020	0.0023	0.0026	0.0028	0.0030	0.0032	0.0036	0.0039	0.0041	0.0043	0.0046

3.41 Data Set 9, 105°C, 200mA (Lumen Maintenance)

Sample Number	Φ(lm)	Lumen Maintenance (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S201	172.9	99.99	99.76	99.52	99.23	98.93	98.64	98.34	98.02	97.72	97.50	97.29	97.07	96.88	96.59	96.36	96.10	95.89	95.73
S202	172.9	99.93	99.70	99.50	99.20	98.87	98.57	98.25	97.95	97.65	97.35	97.07	96.77	96.48	96.29	96.10	95.91	95.75	95.59
S203	172.6	99.88	99.65	99.45	99.15	98.86	98.56	98.19	97.81	97.51	97.21	96.90	96.60	96.31	96.03	95.84	95.64	95.44	95.23
S204	173.5	99.89	99.66	99.46	99.16	98.87	98.57	98.19	97.87	97.49	97.27	97.05	96.84	96.60	96.31	96.03	95.77	95.56	95.34
S205	174.7	99.98	99.75	99.54	99.25	98.95	98.62	98.24	97.91	97.59	97.28	97.01	96.73	96.54	96.25	96.06	95.81	95.60	95.39
S206	173.8	99.96	99.76	99.55	99.25	98.96	98.66	98.34	98.04	97.72	97.44	97.22	96.95	96.66	96.42	96.13	95.90	95.69	95.48
S207	173.9	99.93	99.73	99.49	99.19	98.90	98.61	98.28	97.99	97.69	97.41	97.20	96.92	96.68	96.49	96.20	96.01	95.79	95.56
S208	174.2	99.92	99.69	99.46	99.12	98.78	98.44	98.07	97.77	97.47	97.25	97.04	96.76	96.57	96.33	96.14	95.95	95.73	95.50
S209	174.1	99.94	99.73	99.50	99.21	98.87	98.58	98.28	97.96	97.66	97.35	97.08	96.86	96.57	96.38	96.14	95.89	95.73	95.52
S210	173.3	99.89	99.69	99.49	99.20	98.86	98.57	98.19	97.89	97.59	97.38	97.07	96.80	96.61	96.41	96.13	95.89	95.68	95.47
S211	173.9	99.92	99.71	99.51	99.21	98.92	98.63	98.33	98.03	97.66	97.35	97.05	96.74	96.46	96.17	95.93	95.74	95.58	95.37
S212	173.9	99.97	99.77	99.56	99.27	98.97	98.67	98.30	97.97	97.59	97.32	97.01	96.71	96.47	96.18	95.95	95.75	95.53	95.31
S213	173.7	99.92	99.71	99.51	99.17	98.88	98.58	98.20	97.91	97.53	97.23	97.01	96.73	96.54	96.35	96.11	95.86	95.63	95.47
S214	172.5	99.98	99.78	99.55	99.21	98.87	98.53	98.24	97.94	97.61	97.34	97.06	96.75	96.52	96.28	96.04	95.85	95.69	95.46
S215	172.8	99.95	99.75	99.54	99.25	98.95	98.66	98.33	97.95	97.58	97.30	97.00	96.72	96.48	96.24	96.05	95.86	95.64	95.43
S216	172.0	99.90	99.67	99.43	99.13	98.84	98.55	98.17	97.85	97.52	97.22	97.00	96.73	96.49	96.25	96.06	95.82	95.61	95.45
S217	172.9	99.99	99.79	99.55	99.25	98.92	98.58	98.28	97.98	97.66	97.44	97.14	96.86	96.67	96.48	96.24	96.05	95.83	95.62
S218	172.3	99.98	99.78	99.54	99.21	98.87	98.57	98.25	97.87	97.54	97.24	97.02	96.72	96.43	96.19	95.91	95.65	95.45	95.22
S219	172.4	99.99	99.76	99.55	99.26	98.97	98.68	98.35	98.05	97.76	97.45	97.18	96.90	96.66	96.42	96.18	95.99	95.83	95.67
S220	172.2	99.90	99.70	99.46	99.13	98.83	98.54	98.24	97.91	97.59	97.31	97.01	96.73	96.44	96.21	95.97	95.71	95.51	95.34
S221	172.3	99.96	99.76	99.55	99.26	98.92	98.58	98.26	97.96	97.58	97.28	97.00	96.78	96.59	96.35	96.16	95.93	95.72	95.51
S222	173.0	99.94	99.73	99.50	99.21	98.91	98.61	98.24	97.94	97.64	97.36	97.06	96.75	96.56	96.37	96.09	95.83	95.61	95.45
S223	171.8	99.97	99.74	99.51	99.17	98.88	98.59	98.26	97.94	97.56	97.34	97.13	96.82	96.58	96.39	96.11	95.85	95.64	95.48
S224	172.3	99.88	99.68	99.48	99.18	98.89	98.59	98.29	97.91	97.62	97.31	97.09	96.88	96.69	96.40	96.16	95.92	95.72	95.51
S225	173.0	99.93	99.73	99.53	99.19	98.89	98.60	98.30	98.00	97.68	97.37	97.10	96.79	96.60	96.36	96.13	95.93	95.73	95.56
Ave.	173.1	99.94	99.73	99.51	99.20	98.89	98.59	98.26	97.94	97.61	97.33	97.07	96.80	96.56	96.33	96.09	95.87	95.66	95.47
Med.	172.9	99.94	99.73	99.51	99.21	98.89	98.58	98.26	97.94	97.59	97.34	97.06	96.77	96.57	96.35	96.11	95.86	95.68	95.47
St dev	0.7822	0.0361	0.0389	0.0386	0.0443	0.0468	0.0508	0.0653	0.0704	0.0747	0.0778	0.0838	0.0968	0.1122	0.1215	0.1127	0.1137	0.1153	0.1235
Min.	171.8	99.88	99.65	99.43	99.12	98.78	98.44	98.07	97.77	97.47	97.21	96.90	96.60	96.31	96.03	95.84	95.64	95.44	95.22
Max.	174.7	99.99	99.79	99.56	99.27	98.97	98.68	98.35	98.05	97.76	97.50	97.29	97.07	96.88	96.59	96.36	96.10	95.89	95.73

3.42 Data Set 9, 105°C, 200mA (Photon Flux Maintenance, Photosynthetic (PFMp))

Sample Number	PPF (umol/s)	Photon Flux Maintenance, Photosynthetic (PFMp) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S201	2.692	99.93	99.69	99.44	99.10	98.81	98.52	98.19	97.87	97.54	97.27	97.00	96.74	96.48	96.23	95.98	95.72	95.51	95.25
S202	2.691	99.92	99.68	99.43	99.09	98.74	98.45	98.14	97.74	97.41	97.14	96.88	96.66	96.43	96.18	95.93	95.72	95.46	95.26
S203	2.692	99.87	99.66	99.42	99.07	98.73	98.44	98.12	97.80	97.47	97.20	96.98	96.71	96.46	96.21	95.96	95.70	95.47	95.26
S204	2.693	99.95	99.70	99.50	99.21	98.92	98.63	98.30	97.96	97.65	97.42	97.16	96.94	96.68	96.43	96.18	95.95	95.75	95.49
S205	2.703	99.91	99.66	99.46	99.17	98.83	98.53	98.14	97.82	97.49	97.22	96.96	96.73	96.48	96.22	95.97	95.71	95.50	95.24
S206	2.702	99.95	99.75	99.50	99.21	98.92	98.63	98.31	97.98	97.65	97.43	97.16	96.89	96.66	96.41	96.16	95.93	95.72	95.52
S207	2.702	99.92	99.72	99.47	99.13	98.84	98.49	98.17	97.78	97.45	97.23	96.96	96.69	96.44	96.19	95.94	95.69	95.45	95.25
S208	2.701	99.91	99.71	99.51	99.21	98.87	98.52	98.13	97.81	97.49	97.27	97.01	96.78	96.53	96.27	96.04	95.81	95.55	95.29
S209	2.702	99.91	99.66	99.46	99.17	98.83	98.54	98.14	97.81	97.49	97.23	97.00	96.74	96.51	96.26	96.00	95.74	95.54	95.33
S210	2.702	99.93	99.73	99.49	99.20	98.91	98.56	98.23	97.91	97.52	97.25	96.99	96.77	96.54	96.28	96.03	95.83	95.62	95.39
S211	2.701	99.94	99.69	99.45	99.16	98.86	98.58	98.26	97.94	97.61	97.38	97.12	96.90	96.65	96.40	96.14	95.91	95.71	95.48
S212	2.701	99.96	99.71	99.47	99.12	98.83	98.49	98.15	97.84	97.44	97.22	96.95	96.69	96.43	96.21	95.98	95.77	95.54	95.31
S213	2.702	99.91	99.71	99.47	99.12	98.83	98.53	98.14	97.81	97.49	97.27	97.00	96.74	96.48	96.23	95.97	95.76	95.56	95.30
S214	2.672	99.95	99.75	99.50	99.16	98.86	98.52	98.20	97.88	97.55	97.28	97.06	96.80	96.57	96.34	96.08	95.88	95.62	95.41
S215	2.672	99.97	99.72	99.48	99.18	98.89	98.59	98.20	97.80	97.41	97.14	96.92	96.65	96.42	96.18	95.95	95.74	95.51	95.31
S216	2.670	99.88	99.63	99.43	99.14	98.85	98.56	98.22	97.83	97.51	97.29	97.02	96.75	96.50	96.27	96.04	95.84	95.58	95.37
S217	2.670	99.95	99.70	99.45	99.16	98.82	98.47	98.08	97.76	97.36	97.10	96.83	96.57	96.34	96.08	95.83	95.57	95.31	95.11
S218	2.669	99.97	99.72	99.48	99.19	98.84	98.55	98.22	97.89	97.57	97.30	97.04	96.77	96.51	96.27	96.01	95.78	95.52	95.31
S219	2.670	99.95	99.75	99.55	99.26	98.96	98.67	98.35	98.02	97.63	97.41	97.18	96.92	96.69	96.44	96.18	95.95	95.69	95.49
S220	2.670	99.91	99.67	99.42	99.13	98.83	98.49	98.17	97.84	97.52	97.25	96.99	96.72	96.49	96.24	95.99	95.76	95.52	95.29
S221	2.669	99.93	99.73	99.53	99.23	98.89	98.54	98.21	97.88	97.56	97.34	97.07	96.85	96.60	96.37	96.12	95.89	95.63	95.40
S222	2.669	99.96	99.72	99.47	99.18	98.83	98.54	98.22	97.89	97.57	97.35	97.13	96.91	96.65	96.42	96.17	95.94	95.73	95.53
S223	2.669	99.95	99.71	99.51	99.16	98.87	98.58	98.25	97.92	97.52	97.26	96.99	96.73	96.47	96.22	95.99	95.73	95.53	95.30
S224	2.670	99.94	99.69	99.49	99.20	98.86	98.51	98.19	97.80	97.41	97.18	96.92	96.69	96.44	96.22	95.99	95.73	95.52	95.29
S225	2.671	99.92	99.72	99.52	99.18	98.89	98.59	98.27	97.94	97.61	97.39	97.12	96.86	96.60	96.35	96.12	95.89	95.63	95.37
Ave.	2.685	99.93	99.70	99.48	99.16	98.85	98.54	98.20	97.86	97.52	97.27	97.02	96.77	96.52	96.28	96.03	95.80	95.57	95.34
Med.	2.691	99.93	99.71	99.47	99.17	98.85	98.54	98.20	97.84	97.52	97.27	97.00	96.74	96.50	96.26	96.00	95.77	95.54	95.31
St dev	0.0150	0.0254	0.0295	0.0335	0.0450	0.0510	0.0560	0.0660	0.0723	0.0781	0.0886	0.0902	0.0943	0.0926	0.0942	0.0917	0.0988	0.1019	0.1012
Min.	2.669	99.87	99.63	99.42	99.07	98.73	98.44	98.08	97.74	97.36	97.10	96.83	96.57	96.34	96.08	95.83	95.57	95.31	95.11
Max.	2.703	99.97	99.75	99.55	99.26	98.96	98.67	98.35	98.02	97.65	97.43	97.18	96.94	96.69	96.44	96.18	95.95	95.75	95.53

3.43 Data Set 9, 105°C, 200mA (Photon Flux Maintenance,Far-Red (PFMFR))

Sample Number	PPF (umol/s)	Photon Flux Maintenance,Far-Red (PFMFR) (%)																	
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S201	0.1961	99.91	99.68	99.40	99.10	98.81	98.48	98.10	97.75	97.44	97.15	96.90	96.62	96.42	96.21	95.97	95.77	95.61	95.45
S202	0.1961	99.88	99.65	99.41	99.12	98.82	98.49	98.17	97.83	97.44	97.11	96.82	96.54	96.31	96.09	95.85	95.69	95.53	95.38
S203	0.1960	99.89	99.65	99.38	99.05	98.75	98.43	98.04	97.70	97.31	97.06	96.78	96.45	96.24	96.02	95.76	95.56	95.40	95.25
S204	0.1960	99.92	99.68	99.45	99.15	98.86	98.57	98.25	97.91	97.53	97.20	96.91	96.63	96.43	96.22	95.96	95.81	95.65	95.49
S205	0.1962	99.94	99.71	99.44	99.15	98.85	98.55	98.17	97.83	97.44	97.19	96.91	96.58	96.35	96.13	95.89	95.73	95.57	95.38
S206	0.1962	99.95	99.72	99.44	99.12	98.79	98.49	98.10	97.82	97.51	97.26	97.01	96.67	96.48	96.27	96.03	95.87	95.72	95.57
S207	0.1961	99.90	99.67	99.43	99.10	98.81	98.51	98.12	97.78	97.39	97.06	96.81	96.56	96.36	96.16	95.90	95.75	95.56	95.36
S208	0.1961	99.92	99.65	99.38	99.05	98.76	98.46	98.15	97.87	97.55	97.30	96.97	96.64	96.42	96.21	95.95	95.79	95.63	95.48
S209	0.1960	99.94	99.71	99.43	99.13	98.81	98.48	98.09	97.81	97.43	97.18	96.89	96.65	96.42	96.20	95.96	95.80	95.64	95.48
S210	0.1961	99.89	99.66	99.42	99.10	98.80	98.48	98.16	97.81	97.49	97.16	96.83	96.58	96.38	96.15	95.91	95.76	95.60	95.44
S211	0.1961	99.90	99.63	99.36	99.03	98.70	98.41	98.03	97.68	97.36	97.03	96.70	96.37	96.15	95.92	95.68	95.53	95.33	95.18
S212	0.1960	99.89	99.66	99.42	99.13	98.84	98.51	98.13	97.78	97.40	97.11	96.78	96.45	96.25	96.05	95.79	95.63	95.44	95.25
S213	0.1962	99.95	99.72	99.48	99.15	98.85	98.56	98.18	97.90	97.58	97.33	97.05	96.80	96.57	96.37	96.13	95.97	95.81	95.65
S214	0.1915	99.94	99.70	99.47	99.18	98.89	98.59	98.21	97.93	97.55	97.26	96.93	96.60	96.39	96.19	95.96	95.80	95.60	95.41
S215	0.1918	99.88	99.65	99.41	99.08	98.79	98.50	98.18	97.84	97.45	97.17	96.88	96.60	96.40	96.17	95.93	95.78	95.58	95.42
S216	0.1916	99.90	99.62	99.39	99.09	98.80	98.47	98.15	97.87	97.56	97.31	96.98	96.73	96.50	96.30	96.04	95.88	95.73	95.58
S217	0.1916	99.93	99.69	99.42	99.09	98.80	98.50	98.11	97.77	97.38	97.05	96.77	96.52	96.32	96.11	95.87	95.68	95.48	95.33
S218	0.1915	99.97	99.70	99.42	99.09	98.80	98.50	98.11	97.77	97.38	97.05	96.80	96.47	96.25	96.05	95.78	95.59	95.44	95.29
S219	0.1915	99.95	99.68	99.44	99.14	98.85	98.52	98.14	97.80	97.41	97.16	96.91	96.58	96.36	96.13	95.89	95.70	95.51	95.31
S220	0.1915	99.87	99.64	99.36	99.04	98.74	98.45	98.06	97.71	97.33	97.05	96.80	96.55	96.32	96.13	95.86	95.67	95.52	95.36
S221	0.1915	99.94	99.70	99.43	99.10	98.80	98.47	98.09	97.81	97.43	97.14	96.81	96.52	96.32	96.10	95.86	95.67	95.51	95.35
S222	0.1914	99.91	99.68	99.44	99.11	98.82	98.49	98.18	97.83	97.45	97.20	96.87	96.53	96.33	96.13	95.89	95.73	95.57	95.37
S223	0.1916	99.87	99.64	99.40	99.08	98.78	98.48	98.16	97.81	97.43	97.14	96.86	96.53	96.33	96.13	95.88	95.73	95.58	95.39
S224	0.1917	99.96	99.72	99.49	99.19	98.90	98.57	98.18	97.83	97.52	97.23	96.98	96.73	96.53	96.31	96.05	95.90	95.74	95.58
S225	0.1916	99.94	99.67	99.43	99.13	98.83	98.54	98.15	97.81	97.49	97.24	96.99	96.70	96.48	96.28	96.02	95.86	95.70	95.55
Ave.	0.1939	99.92	99.67	99.42	99.11	98.81	98.50	98.14	97.81	97.45	97.17	96.88	96.58	96.37	96.16	95.91	95.75	95.58	95.41
Med.	0.1960	99.92	99.68	99.42	99.10	98.81	98.49	98.15	97.81	97.44	97.16	96.88	96.58	96.36	96.15	95.90	95.75	95.58	95.39
St dev	0.0023	0.0288	0.0296	0.0327	0.0411	0.0445	0.0452	0.0523	0.0610	0.0718	0.0871	0.0872	0.0987	0.0980	0.1008	0.0998	0.1071	0.1133	0.1166
Min.	0.1914	99.87	99.62	99.36	99.03	98.70	98.41	98.03	97.68	97.31	97.03	96.70	96.37	96.15	95.92	95.68	95.53	95.33	95.18
Max.	0.1962	99.97	99.72	99.49	99.19	98.90	98.59	98.25	97.93	97.58	97.33	97.05	96.80	96.57	96.37	96.13	95.97	95.81	95.65

3.44 Data Set 9, 105°C, 200mA (Forward Voltage)

Sample Number	Forward Voltage(V)																		
	0hr (Initial)	1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000 hrs	11000 hrs	12000 hrs	13000 hrs	14000 hrs	15000 hrs	16000 hrs	17000 hrs	18000 hrs
S201	5.770	5.763	5.762	5.758	5.762	5.755	5.758	5.748	5.751	5.750	5.746	5.743	5.746	5.739	5.741	5.735	5.737	5.743	5.741
S202	5.767	5.760	5.767	5.764	5.760	5.754	5.754	5.758	5.752	5.746	5.743	5.737	5.740	5.735	5.734	5.735	5.733	5.729	5.729
S203	5.774	5.770	5.770	5.766	5.772	5.769	5.762	5.755	5.764	5.751	5.752	5.754	5.749	5.743	5.742	5.741	5.746	5.745	5.735
S204	5.759	5.755	5.751	5.756	5.750	5.749	5.750	5.748	5.740	5.744	5.734	5.732	5.732	5.730	5.728	5.727	5.725	5.719	5.721
S205	5.764	5.765	5.760	5.762	5.755	5.758	5.752	5.745	5.747	5.746	5.739	5.748	5.744	5.737	5.731	5.732	5.731	5.737	5.728
S206	5.766	5.762	5.762	5.760	5.754	5.755	5.756	5.751	5.753	5.745	5.742	5.742	5.742	5.735	5.735	5.729	5.733	5.730	5.737
S207	5.762	5.758	5.755	5.754	5.750	5.747	5.749	5.747	5.751	5.741	5.741	5.737	5.738	5.741	5.743	5.730	5.729	5.728	5.722
S208	5.730	5.731	5.725	5.721	5.717	5.725	5.717	5.719	5.717	5.708	5.714	5.703	5.705	5.703	5.699	5.701	5.695	5.701	5.694
S209	5.760	5.756	5.757	5.752	5.748	5.755	5.752	5.744	5.738	5.741	5.745	5.736	5.739	5.741	5.729	5.729	5.728	5.724	5.720
S210	5.779	5.780	5.774	5.770	5.771	5.767	5.764	5.766	5.764	5.763	5.763	5.749	5.751	5.746	5.746	5.746	5.746	5.743	5.743
S211	5.769	5.770	5.761	5.763	5.763	5.760	5.754	5.747	5.758	5.753	5.745	5.742	5.744	5.738	5.737	5.733	5.734	5.729	5.740
S212	5.767	5.759	5.763	5.765	5.755	5.756	5.754	5.756	5.750	5.742	5.751	5.748	5.740	5.738	5.745	5.741	5.736	5.738	5.733
S213	5.766	5.761	5.762	5.758	5.763	5.756	5.753	5.750	5.745	5.745	5.751	5.736	5.737	5.742	5.738	5.737	5.730	5.736	5.730
S214	5.758	5.753	5.754	5.749	5.745	5.749	5.747	5.739	5.736	5.742	5.737	5.737	5.734	5.737	5.731	5.729	5.724	5.719	5.718
S215	5.718	5.719	5.719	5.705	5.712	5.710	5.707	5.702	5.699	5.697	5.694	5.698	5.690	5.690	5.687	5.685	5.688	5.682	5.678
S216	5.761	5.758	5.757	5.759	5.753	5.756	5.751	5.740	5.740	5.746	5.739	5.742	5.737	5.730	5.740	5.728	5.728	5.727	5.731
S217	5.746	5.742	5.738	5.744	5.740	5.741	5.741	5.735	5.733	5.731	5.728	5.727	5.719	5.715	5.715	5.718	5.717	5.710	5.712
S218	5.748	5.743	5.743	5.744	5.740	5.739	5.733	5.731	5.729	5.725	5.730	5.728	5.719	5.729	5.716	5.714	5.712	5.708	5.708
S219	5.746	5.747	5.742	5.742	5.739	5.739	5.735	5.733	5.733	5.731	5.730	5.730	5.730	5.715	5.718	5.718	5.711	5.710	5.710
S220	5.752	5.745	5.753	5.739	5.745	5.745	5.743	5.730	5.735	5.736	5.734	5.736	5.728	5.720	5.721	5.719	5.726	5.718	5.714
S221	5.753	5.750	5.753	5.746	5.751	5.746	5.745	5.738	5.738	5.737	5.734	5.729	5.725	5.722	5.731	5.722	5.721	5.719	5.715
S222	5.750	5.746	5.745	5.742	5.741	5.742	5.735	5.728	5.735	5.726	5.729	5.722	5.723	5.721	5.717	5.722	5.713	5.720	5.714
S223	5.765	5.761	5.766	5.756	5.763	5.756	5.753	5.755	5.749	5.743	5.741	5.745	5.735	5.743	5.737	5.739	5.730	5.727	5.729
S224	5.753	5.746	5.749	5.749	5.744	5.745	5.738	5.743	5.742	5.731	5.728	5.732	5.728	5.731	5.720	5.723	5.723	5.719	5.719
S225	5.746	5.738	5.747	5.744	5.733	5.737	5.733	5.727	5.724	5.725	5.725	5.727	5.725	5.725	5.718	5.717	5.713	5.716	5.708
Ave.	5.757	5.754	5.753	5.751	5.749	5.748	5.745	5.742	5.741	5.738	5.736	5.734	5.732	5.730	5.728	5.726	5.725	5.723	5.721
Med.	5.760	5.756	5.755	5.754	5.750	5.749	5.750	5.744	5.740	5.742	5.739	5.736	5.735	5.735	5.731	5.729	5.728	5.724	5.721
St dev	0.0136	0.0133	0.0131	0.0144	0.0145	0.0127	0.0134	0.0138	0.0145	0.0141	0.0136	0.0130	0.0139	0.0136	0.0143	0.0133	0.0136	0.0142	0.0151
Min.	5.718	5.719	5.719	5.705	5.712	5.710	5.707	5.702	5.699	5.697	5.694	5.698	5.690	5.690	5.687	5.685	5.688	5.682	5.678
Max.	5.779	5.780	5.774	5.770	5.772	5.769	5.764	5.766	5.764	5.763	5.763	5.754	5.751	5.746	5.746	5.746	5.746	5.745	5.743

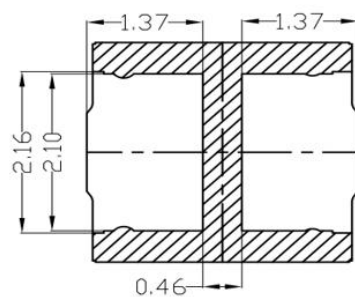
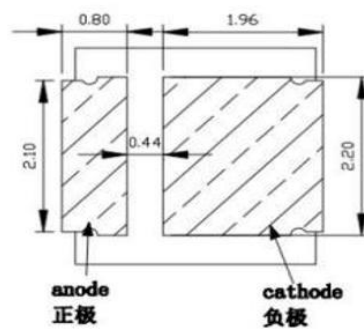
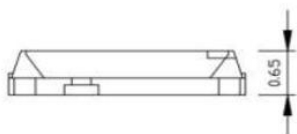
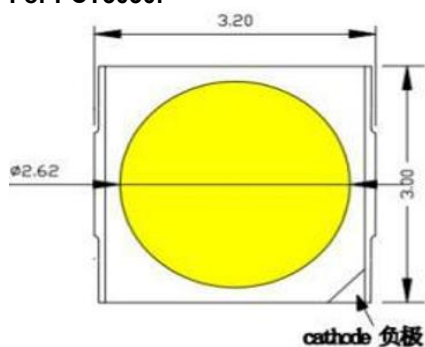
3.45 Data Set 9, 105°C, 200mA (Chromaticity Shift)

Sample Number	u'	v'	CCT(K)	Chromaticity Shift ($\Delta u'v'$)																	
	0hr (Initial)			1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs	7000 hrs	8000 hrs	9000 hrs	10000hrs	11000hrs	12000hrs	13000hrs	14000hrs	15000hrs	16000hrs	17000hrs	18000hrs
S201	0.2555	0.5283	2846	0.0002	0.0005	0.0008	0.0010	0.0013	0.0016	0.0019	0.0021	0.0023	0.0026	0.0029	0.0032	0.0035	0.0037	0.0039	0.0041	0.0044	0.0046
S202	0.2553	0.5278	2852	0.0002	0.0004	0.0006	0.0009	0.0011	0.0015	0.0017	0.0019	0.0021	0.0024	0.0027	0.0029	0.0031	0.0033	0.0035	0.0038	0.0041	0.0044
S203	0.2556	0.5288	2841	0.0003	0.0005	0.0007	0.0009	0.0012	0.0016	0.0019	0.0020	0.0024	0.0026	0.0029	0.0031	0.0034	0.0037	0.0039	0.0041	0.0043	0.0046
S204	0.2561	0.5292	2828	0.0003	0.0006	0.0008	0.0011	0.0013	0.0015	0.0017	0.0019	0.0021	0.0024	0.0027	0.0030	0.0032	0.0034	0.0036	0.0039	0.0041	0.0044
S205	0.2550	0.5295	2852	0.0003	0.0005	0.0007	0.0010	0.0013	0.0016	0.0019	0.0020	0.0024	0.0027	0.0028	0.0030	0.0032	0.0035	0.0037	0.0039	0.0041	0.0043
S206	0.2548	0.5286	2859	0.0002	0.0005	0.0008	0.0010	0.0012	0.0016	0.0018	0.0019	0.0023	0.0024	0.0027	0.0030	0.0032	0.0035	0.0038	0.0040	0.0042	0.0044
S207	0.2553	0.5297	2844	0.0003	0.0005	0.0007	0.0011	0.0014	0.0017	0.0020	0.0022	0.0026	0.0029	0.0032	0.0035	0.0037	0.0039	0.0042	0.0044	0.0047	0.0049
S208	0.2549	0.5281	2860	0.0002	0.0005	0.0007	0.0009	0.0013	0.0016	0.0017	0.0019	0.0021	0.0024	0.0027	0.0030	0.0033	0.0036	0.0039	0.0042	0.0045	0.0047
S209	0.2546	0.5280	2867	0.0003	0.0006	0.0009	0.0011	0.0015	0.0018	0.0021	0.0022	0.0024	0.0026	0.0029	0.0032	0.0034	0.0036	0.0039	0.0042	0.0045	0.0048
S210	0.2546	0.5280	2867	0.0003	0.0006	0.0009	0.0011	0.0013	0.0016	0.0019	0.0022	0.0023	0.0026	0.0029	0.0032	0.0035	0.0037	0.0039	0.0042	0.0045	0.0048
S211	0.2549	0.5283	2860	0.0003	0.0005	0.0007	0.0009	0.0013	0.0017	0.0019	0.0022	0.0025	0.0028	0.0030	0.0031	0.0034	0.0037	0.0039	0.0042	0.0044	0.0047
S212	0.2547	0.5279	2865	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0016	0.0018	0.0019	0.0021	0.0024	0.0027	0.0030	0.0033	0.0036	0.0038	0.0040	0.0043
S213	0.2549	0.5285	2859	0.0003	0.0006	0.0009	0.0012	0.0014	0.0016	0.0019	0.0021	0.0024	0.0027	0.0028	0.0030	0.0032	0.0035	0.0037	0.0039	0.0041	0.0044
S214	0.2548	0.5285	2860	0.0003	0.0005	0.0007	0.0009	0.0011	0.0014	0.0017	0.0019	0.0021	0.0023	0.0025	0.0028	0.0030	0.0033	0.0035	0.0038	0.0040	0.0043
S215	0.2548	0.5283	2861	0.0003	0.0005	0.0007	0.0011	0.0013	0.0017	0.0020	0.0023	0.0025	0.0028	0.0030	0.0033	0.0036	0.0039	0.0042	0.0045	0.0047	0.0050
S216	0.2551	0.5289	2853	0.0002	0.0005	0.0007	0.0009	0.0012	0.0014	0.0016	0.0018	0.0021	0.0024	0.0026	0.0029	0.0031	0.0033	0.0035	0.0038	0.0040	0.0043
S217	0.2554	0.5294	2843	0.0003	0.0006	0.0009	0.0012	0.0015	0.0017	0.0019	0.0020	0.0023	0.0024	0.0027	0.0030	0.0033	0.0035	0.0037	0.0040	0.0042	0.0044
S218	0.2552	0.5298	2846	0.0003	0.0006	0.0008	0.0012	0.0015	0.0017	0.0019	0.0022	0.0024	0.0026	0.0029	0.0032	0.0034	0.0037	0.0039	0.0042	0.0044	0.0046
S219	0.2546	0.5281	2868	0.0003	0.0006	0.0009	0.0011	0.0015	0.0017	0.0019	0.0022	0.0024	0.0027	0.0029	0.0032	0.0034	0.0037	0.0040	0.0043	0.0045	0.0048
S220	0.2548	0.5287	2859	0.0003	0.0006	0.0009	0.0012	0.0016	0.0019	0.0022	0.0024	0.0028	0.0029	0.0031	0.0034	0.0037	0.0039	0.0042	0.0044	0.0046	0.0048
S221	0.2546	0.5280	2868	0.0002	0.0005	0.0008	0.0012	0.0014	0.0016	0.0019	0.0023	0.0026	0.0029	0.0031	0.0034	0.0036	0.0039	0.0041	0.0044	0.0046	0.0049
S222	0.2548	0.5296	2854	0.0003	0.0006	0.0009	0.0012	0.0015	0.0018	0.0020	0.0023	0.0025	0.0028	0.0030	0.0031	0.0034	0.0037	0.0039	0.0041	0.0044	0.0046
S223	0.2545	0.5281	2869	0.0002	0.0005	0.0008	0.0011	0.0015	0.0018	0.0019	0.0021	0.0023	0.0025	0.0028	0.0031	0.0033	0.0036	0.0039	0.0042	0.0044	0.0047
S224	0.2547	0.5279	2867	0.0003	0.0005	0.0008	0.0011	0.0014	0.0016	0.0018	0.0019	0.0023	0.0024	0.0027	0.0029	0.0032	0.0034	0.0037	0.0040	0.0043	0.0045
S225	0.2555	0.5294	2841	0.0003	0.0006	0.0009	0.0011	0.0015	0.0017	0.0020	0.0023	0.0025	0.0028	0.0031	0.0034	0.0036	0.0039	0.0042	0.0044	0.0046	0.0048
Ave.	0.2550	0.5286	2856	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0023	0.0026	0.0028	0.0031	0.0034	0.0036	0.0039	0.0041	0.0043	0.0046
Med.	0.2549	0.5285	2859	0.0003	0.0005	0.0008	0.0011	0.0013	0.0016	0.0019	0.0021	0.0024	0.0026	0.0029	0.0031	0.0034	0.0036	0.0039	0.0041	0.0044	0.0046
St dev	0.0004	0.0006	10.7784	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Min.	0.2545	0.5278	2828	0.0002	0.0004	0.0006	0.0009	0.0011	0.0014	0.0016	0.0018	0.0019	0.0021	0.0024	0.0027	0.0030	0.0033	0.0035	0.0038	0.0040	0.0043
Max.	0.2561	0.5298	2869	0.0003	0.0006	0.0009	0.0012	0.0016	0.0019	0.0022	0.0024	0.0028	0.0029	0.0032	0.0035	0.0037	0.0039	0.0042	0.0045	0.0047	0.0050

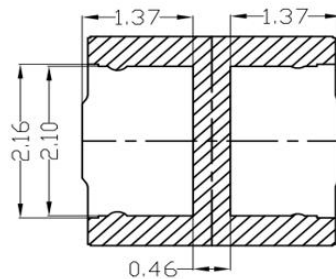
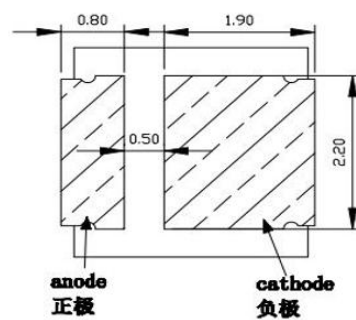
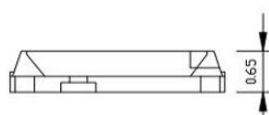
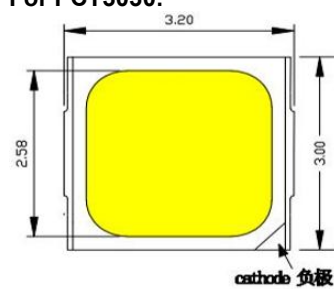
4. EUT Photo

4.1 Mechanical Dimensions

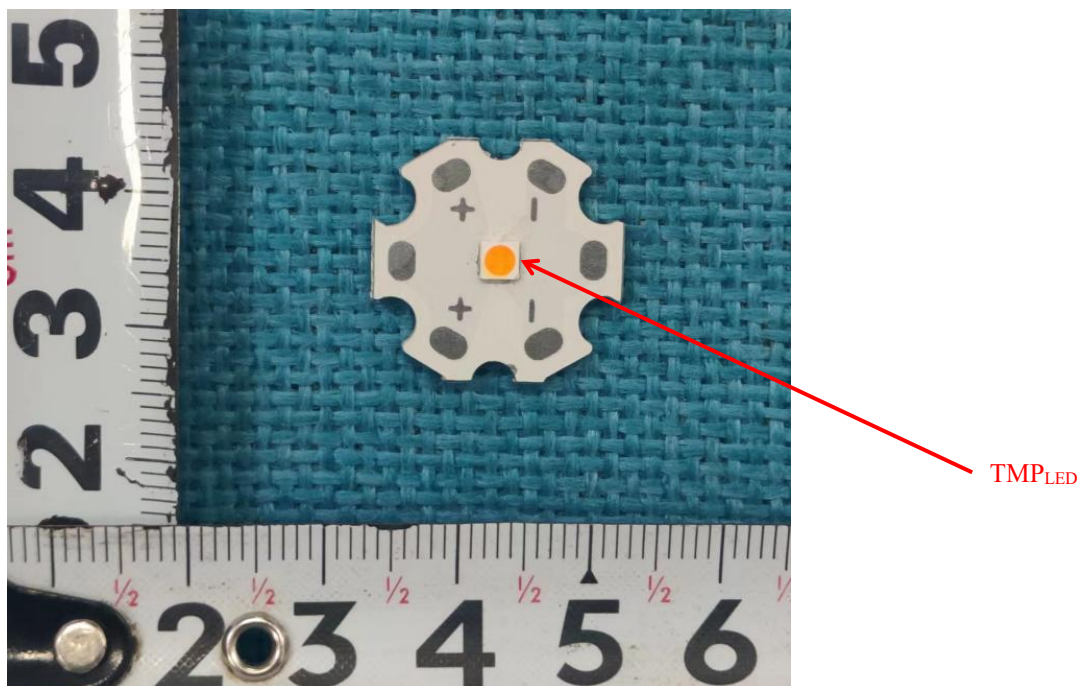
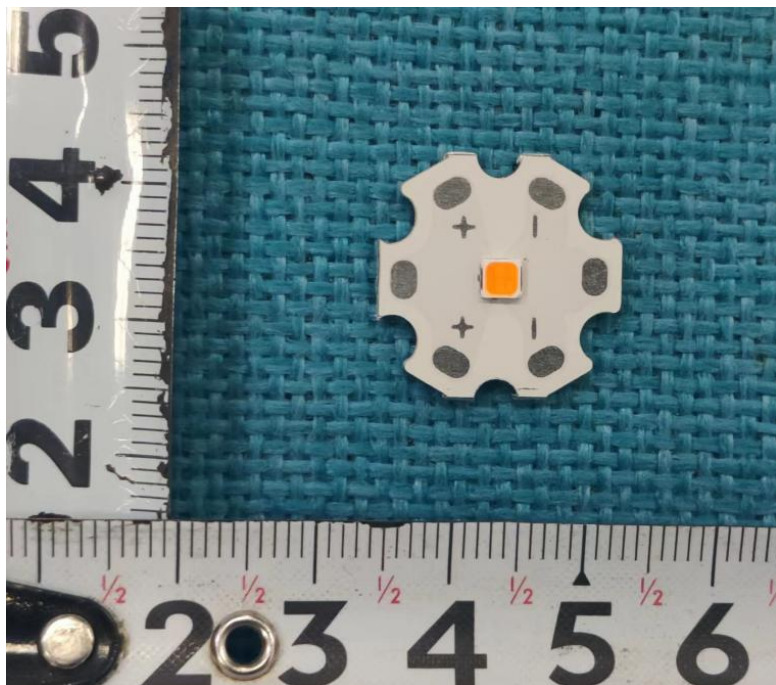
For PCT3030:



For PCT3030:



All dimensions are in millimeter

4.2 EUT Photo**For PCT3030 (Test Model):****For PCT3030:**

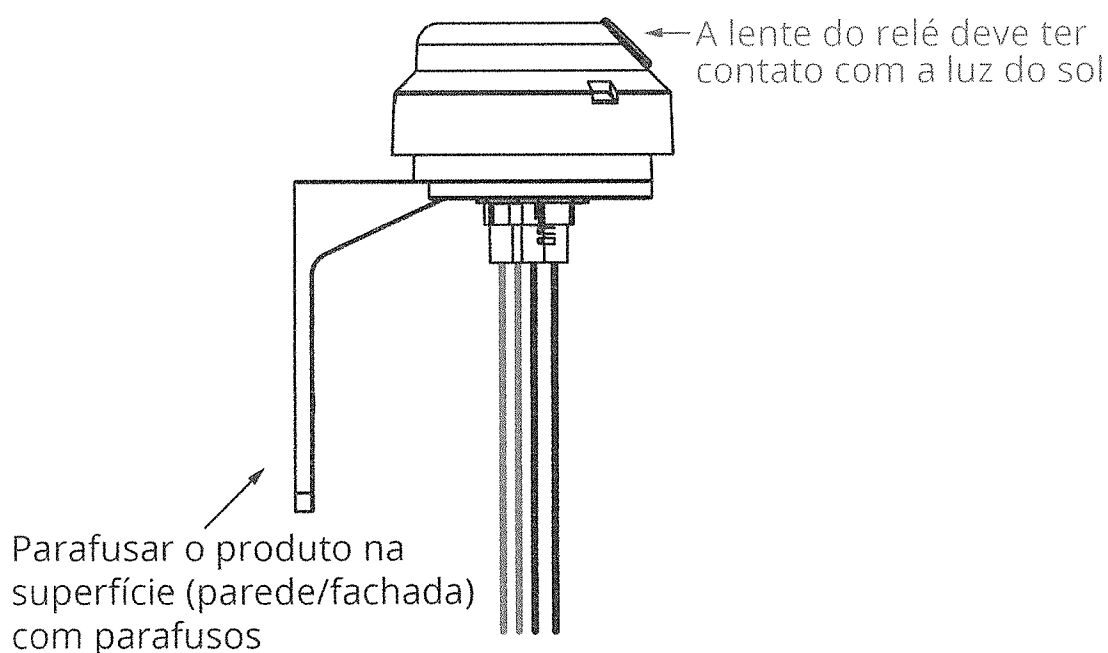
---End of Report---



Instalação

Para a instalação do produto, conecte o relé na sua rede elétrica e observe que a lâmpada permanecerá acesa, pois o contato é Normalmente Fechado (NF). Aguarde o tempo de retardo de 1 a 5 minutos, que dependerá da luminosidade do ambiente (dia). O relé deverá estar em contato com a luz do sol, então a lâmpada desligará, o que indica que o Relé está funcionando corretamente.

Atenção: desligue a sua rede elétrica antes de iniciar a instalação do produto.



Fale conosco

Fone: 51 3357 5000

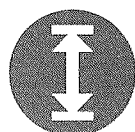
e-mail: contato@exatron.com.br

www.exatron.com.br

Exatron Indústria LTDA.

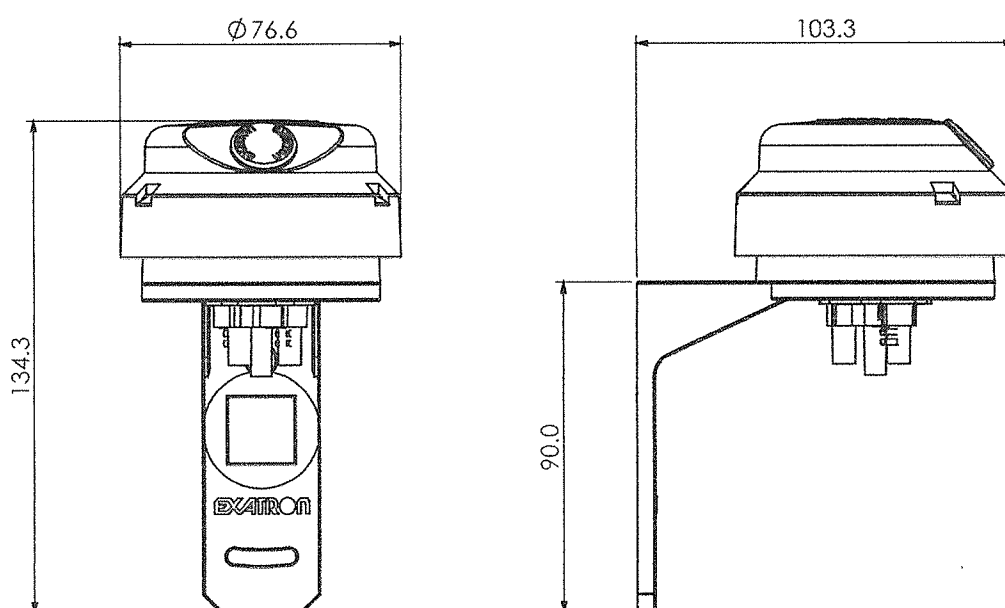
Rua Eng. Homero Carlos Simon, 1089 | Canoas - RS

- Observação: Mapa de marcação indelével do momento de retirada e colocação em campo;
- Estrutura/material (case): Copo e base em resina Polipropileno (PP) com proteção UV;
- Cor: Vinho;
- Grau de proteção (IP): IP55;
- Dimensões: 134,3x103,3xØ76,6mm.

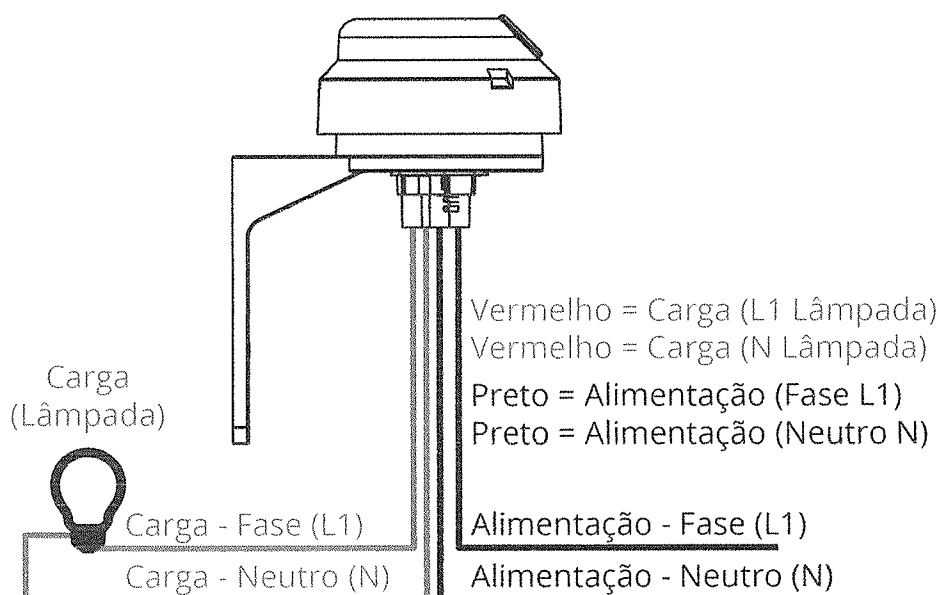


Dimensões

Medidas em milímetros



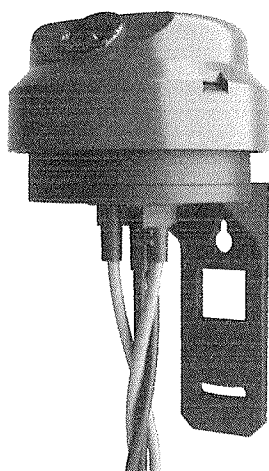
Esquema de ligação elétrica



O Relé fotoelétrico + Fácil 220V (RFG2FC) é ideal para o acionamento de pontos luminosos e outras cargas. Este equipamento mantém acesas luminárias na ausência de luz natural e é insensível a variações bruscas de luminosidade, relâmpagos e faróis. Pode ser instalado com qualquer tipo de lâmpada. Sistema de acionamento tipo térmico.



Produto



Características técnicas e mecânicas

- Tensão nominal: 220V;
- Frequência de operação: 50/60Hz;

Potência de comando	Resistiva	Indutiva	Corrigido	LED FP>0,9	LED FP<0,9
	1000W	1800VA	500VA	300W	200W

- Consumo próprio: Durante o dia 1,2W e noite 0,05W;
- Tensão de surto: 4000V / 2000A;
- Tipo de contato quando desenergizado: Normalmente fechado (NF);
- Filtro de tempo: Impede acionamentos indevidos devido a variações bruscas de luminosidade como raios, laser, nuvens e etc. Tempo de retardo de 1 a 5 minutos para comutação dos contatos;
- Luminosidade para ligar: Menor que 20 Lux;
- Luminosidade para desligar: Menor que 80 Lux respeitando a relação de histerese;
- Relação entre liga e desliga (histerese): 1, 2 a 4 vezes;
- Código de operação: T1LNFLRNAL;
- Ligação: 4 fios;