


TEST REPORT IEC 62717: 2014+AMD1: 2015 LED MODULES FOR GENERAL LIGHTING – PERFORMANCE REQUIREMENTS	
Report No.	OI-2016-70067
Date of issue	Nov. 22, 2016
Testing Laboratory	SGS Taiwan Ltd., Optics Laboratory
Address	No. 33, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City 24886, Taiwan (R.O.C.)
Applicant's name	Top Win Optoelectronics Corp.
Address	5F.-2, No.120, Qiaoh Rd., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)
Test specification:	
Standard	IEC 62717: 2014+AMD1: 2015 LED MODULES FOR GENERAL LIGHTING – PERFORMANCE REQUIREMENTS
Test procedure	CE Marking Testing
Non-standard test method	N/A
Test item description	SLITE module
Trade Mark	TOPWIN
Manufacturer	Top Win Optoelectronics Corp.
Model/Type reference	MD5T01
Ratings	DC 1.5 A, 55 W
Conclusion:	In the opinion of SGS, the submitted <u>Device Under Test</u> (DUT) complies with the IEC 62717 test specification.
	Approved by: Benson DENG Supervisor Nov. 22, 2016
	 _____ Signature
<p>Details and test results are given in subsequent pages of this report. This report refers only to the unit(s) submitted for test. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Throughout this report a point is used as the decimal separator. This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com/terms_e-document.htm Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.</p>	

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Testing Location / Address.....: No. 33, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City 24886, Taiwan (R.O.C.)

No. 61, Kai-Fa Road, Nanzih Export Processing Zone, Kaohsiung 81170, Taiwan (R.O.C.)

Main Test Equipment:

Name	Brand	Model	S/N	Calibration Due Date
Digital Power Meter / DC Source	YOKOGAWA / Agilent	WT-1800 / E3634A	91L826815 / MY40013093	2016/10/20
Digital Power Meter / DC Source	YOKOGAWA / Agilent	WT-210 / E3634A	91NJ837766 / MY40013093	2017/2/23
Digital Power Meter / DC Source	YOKOGAWA / GW INSTEK	WT-310 / SPD-3606	C2QF11115V / EK181266	2017/6/8
Digital Power Meter / DC Source	YOKOGAWA / GW INSTEK	WT-210 / SPD-3606	91N808512 / EK181266	2016/12/17
Goniophotometer	SGS Define (CZIBULA & GRUNDMANN GMBH / everfine)	GO-R5000-PLUS	G108492CN132111 2	2017/1/31
Spectroradiometer / Integrating Sphere	Labsphere / AMA	CDS 1100 / SLM40T	1230088919 / OPT-0133	2016/12/31
Spectroradiometer / Integrating Sphere	OTSUKA / Labsphere	MCPD-9800 / LMS-760	98010303 / 0326099353	2016/12/6
Spectroradiometer / Integrating Sphere	OTSUKA / Labsphere	MCPD 9800 / CSTM-ILLUMIA-3M-US	98010239 / 822123316	2017/2/2
Timer	FRONTIER	TM-6331H	OPT-0122	2017/8/10
Digimatic Caliper	Mitutoyo	CD-12°C	1102296	2017/8/10
Humidity / Temperature Chamber	KSON	FPD-THS-A4T-150	A0230	2017/7/18
Surge	EMC Partner AG	MIG0603IN1 S-R	MIG0603IN1 S-R - 1504	2017/6/12

Summary of testing:

This test report was issued for Energy Efficiency requirements of IEC 62717 LED MODULES FOR GENERAL LIGHTING – PERFORMANCE REQUIREMENTS only.

The compliance with the requirements of other applicable standards may be needed in additional test reports.

Copy of marking plate:

Please see III. Mandatory marking on page 19.

Note: The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBS that own these marks.

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TEST REPORT	
Test item particulars:	
Classification of installation and use	For street lighting
Supply Connection.....	N/A
Class of equipment.....	LED module
Degree of protection	N/A
Mass of the equipment.....	2 kg
Possible test case verdicts:	
– test case does not apply to the test object.....: N (Not applicable)	
– test object does meet the requirement	
– test object does not meet the requirement.....: F (Fail)	
Testing:	
Date of receipt of test item	Jul. 19, 2016
Date (s) of performance of tests	Jul. 19, 2016 ~ Oct. 21, 2016
General remarks:	
<p>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 Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report. Clause numbers between brackets refer to clauses in IEC 62717 Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p>	
General product information:	
<p>The LED module (SLITE module) were use for general lighting (e.g. street lighting), the DUT operation under constant current with DC 1.5 A, and the controlgear is separate from the module, it's belongs type 3 LED module of IEC 62717. The product specification as next page.</p>	

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I. Product Specification

LED Module Specification	
Type	Main Type (A)
Model Name	SLITE module
Rated Luminous Flux (lm)	7150 lm
Photometric Code	750/7 ⁺ 7 ⁺ 9
Rated median useful life and the associated rated lumen maintenance factor (x)	L ₇₀
Rated Abrupt Failure Value AFV (%)	10 %
Lumen Maintenance Code	9
Categories of rated chromaticity coordinate values both initial and maintained	F5000 (7 ⁺ , 7 ⁺)
Correlated Colour Temperature (K)	5000 K
Rated Colour Rendering Index	70
<i>t_{p rated}</i> of LED module (°C)	50 °C
Ageing time	--
Ambient temperature range (°C)	-30 °C to 50 °C
Rated Input Voltage (V)	(32 to 42) V
Rated Input Current (A)	DC 1.5 A
Rated Input Frequency (Hz)	--
Rated Input Power (W)	53.6 W
Rated Efficacy (lm/W)	133 lm/W
Dimensions & Tolerances	150 mm x 265 mm x 40 mm ± 5 mm
Availability of a heat sink	AL 6063 T6
Displacement Factor	--
Temperature Ramping	1 K/min
Rated Life Time (h)	30000 h
Lumen intensity distribution	--
beam angle	--
peak intensity	--
Dimension (mm)	W 150 x L 265 x H 40
LED Light Source Specification	
LED Model	XPG2
Manufacture / Brand	CREE
Rated Input Voltage (V)	3.05 V
Rated Input Current (A)	750 mA
Rated Input Frequency (Hz)	DC
LED Quantity per Module	24 pcs
Dimension (mm)	W 3.45 x L 3.45 x H 2.26

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IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict

1	Scope		--
1.1	General		--
	Type 1: integrated LED modules for use on d.c. supplies up to 250 V or on a.c. supplies up to 1 000 V at 50 Hz or 60 Hz.		N
	Type 2: LED modules operating with part of separate controlgear connected to the mains voltage, and having further control means inside ("semi-integrated") for operation under constant voltage, constant current or constant power.		N
	Type 3: LED modules where the complete controlgear is separate from the module (nonintegrated) for operation under constant voltage, constant current or constant power.		P

4	Marking		--
4.1	Mandatory marking		--
	on LED module		P
	i) t_p rated of LED module (°C)	50 °C	P
	j) t_p - point	See II.A	P
	on packing		P
	a) Rated luminous flux (lm)	7150 lm	P
	b) Photometric code (See Annex D)	750/7 ⁺ 7 ⁺ 9	P
	on LED module datasheets, leaflets or website		P
	a) Rated luminous flux (lm)	7150 lm	P
	b) Photometric code (See Annex D)	750/7 ⁺ 7 ⁺ 9	P
	c) Rated median useful life (h) and the associated rated lumen maintenance factor (x)	L ₇₀	P
	d) Rated abrupt failure value (%)	10 %	P
	e) Lumen maintenance code (see Table 6)	7	P
	f) Categories of rated chromaticity coordinate values both initial and maintained (see Table 5)	F 5000 (7 ⁺ , 7 ⁺)	P
	g) Correlated colour temperature (K)	5000 K	P
	h) Rated colour rendering index	70	P
	i) t_p rated of LED module (°C)	50 °C	P
	j) t_p - point	See II.A	P

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Clause	Requirement + Test	Result - Remark	Verdict

	k) Ageing time (h), if different from 0 h	No ageing time	N
	l) Ambient temperature range	-30 °C to 50 °C	P
	m) Rated efficacy (lm/W)	133 lm/W	P
	n) Dimensions, including dimensional tolerances	150 x 265 x 40 (mm) ± 5 (mm)	P
	o) Availability of a heat sink	AL 6063 T6	P
	s) Displacement factor	--	N
	t) Temperature ramping	--	--
	1 K/min or	1 K/min	P
	10 K/min	--	N
4.2	Additional marking		--
	Life time information for built-in and integral LED module		N
	Life time information for independent LED module	30000 h	P
	Optional marking on LED module datasheets, leaflets or website		--
	a) luminous intensity distribution	--	N
	b) beam angle	--	N
	c) peak intensity	--	N

5	Dimensions		--
	Dimension and tolerances	150 x 265 x 40 (± 5)(mm)	P

6	Test conditions		--
6.1	General test conditions		--
	The LED modules for which compliance with this standard is claimed shall comply with the requirements of the safety standard IEC 62031.	IEC 62031 Report No.: 611401607501	P
	For compliance with EMC requirements except harmonics, reference is made to regional requirements. It should be regarded that only those types of LED modules are subject to EMC requirements which <ul style="list-style-type: none"> in case of harmonic current are directly connected to the mains and have active elements on board; in case of radiated or conducted disturbances are directly connected to the mains (Type 1) or to a battery; in case of immunity are directly connected to the mains (Type 1) or to a battery. 	Type 3 LED Module	N
	Testing duration is 25 % of rated life time up to a maximum of 6 000 h.	Use IES LM-80 report	N
	Alternatively, test data from IES LM-80 shall be used for the derivation of maintained values at 25 % of rated life, maximum 6 000 h.	LM-80 Report No.: CLD-AP125 REV 8	P

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Clause	Requirement + Test	Result - Remark	Verdict
	All tests are conducted on <i>n</i> LED modules of the same type.		P
	LED modules used in the endurance tests shall not be used in other tests.		P
	LED modules with dimming control shall be adjusted to maximum light output for all tests.	Non dimming	N
	LED modules with adjustable colour point shall be adjusted/set to one fixed value as indicated by the manufacturer or responsible vendor.	Non adjustable colour	N
	LED modules which are scalable.	Non scalable	N
6.2	Creation of module families to reduce test effort		--
6.2.1	General	No Family	N
6.2.2	Variations within a family	--	N
6.2.3	Compliance testing of family members	--	N
7	Electrical LED module input		--
7.1	LED module power		--
	Measured module power	See II.F	P
	The initial power consumed by each individual LED module in the measured sample shall not exceed the rated power by more than 10 %.	Rated Power: 53.6 W	P
7.2	Displacement factor (u.c.)		--
	The displacement factor of integrated LED modules (Type 1) shall be measured. LED modules with dimming control shall be adjusted to maximum light output. Displacement factor measurement of semi- and non-integrated LED modules (Type 2 and Type 3) is not applicable.	Type 3 LED modules	N
	The measured displacement factor for each individual module of the sample shall not be less than the marked value by more than 0.05.	--	N
8	LIGHT OUTPUT		--
8.1	Luminous flux		--
	Measured luminous flux (lm)	See II.F	P
	The initial luminous flux of each individual LED module in the measured sample shall not be less than the rated luminous flux by more than 10 %.	Rated: 7150 lm	P
8.2	Luminous intensity distribution, peak intensity and beam angle.	--	--
8.2.1	General		
	The requirements of 8.2.4 and 8.2.5 shall be applied to LED modules having a directional (spot) distribution.	See II.D	P

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Clause	Requirement + Test	Result - Remark	Verdict

8.2.2	Measurement	See II.D	P
	The intensity of light emitted from the LED module in different directions is measured using a goniophotometer. All photometric data shall be declared for the LED module operating at its temperature $t_{p, rated}$ per Clause A.1. The allowed photometric variations detailed should take account of manufacturing tolerances.		
8.2.3	Luminous intensity distribution	See II.D	--
	The distribution of luminous intensity shall be in accordance with that declared by the manufacturer. The measurement is conducted according to A.3.3. Compliance is under consideration.		P
		--	N
8.2.4	Peak intensity value	--	N
	The initial peak intensity of a LED module shall not be less than 75 % of the rated intensity.		
8.2.5	Beam angle value	--	N
	The beam angle value of a LED module shall not deviate by more than 25 % of the rated value.		
8.3	Luminous efficacy		--
	Measured efficacy (lm/W)	See II.F	P
	For all tested LED modules in a sample, the LED module efficacy shall not be less than 80 % of the rated LED module efficacy as declared by the manufacturer or responsible vendor.	Rated: 133 lm/W	P

9	Chromaticity coordinates, correlated colour temperature (CCT) and colour rendering		--
9.1	Chromaticity coordinates		--
	Measured initial / maintained chromaticity co-ordinates	See II.F to I	P
	The measured chromaticity co-ordinate values of a LED module (the initial value and maintained value) shall not move beyond the chromaticity co-ordinate tolerance category	MacAdam ellipse colour variation category Rated value: F5000	P
9.2	Correlated colour temperature (CCT)		--
	Measured initial / maintained CCT.	See II.F to I	P
	The measured correlated colour temperature shall not move beyond the value as declared.	Rated value: 5000 K	P

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Clause	Requirement + Test	Result - Remark	Verdict

9.3	Colour rendering index (CRI)		--
	Measured initial / maintained CRI.	See II.F to I	P
	For all tested LED modules in a sample the measured CRI values shall not have decreased by more than:	Rated value:70	--
	- 3 points from the rated CRI value (see Table 1) for initial CRI values, and	See II.F to I	P
	- 5 points from the rated CRI value (see Table 1) for maintained CRI values.	See II.F to I	P
10	LED module life		--
10.1	General		P
10.2	Lumen maintenance	See II.F to I	P
	Measured maintained luminous flux	See II.F to I	P
	The measured lumen maintenance should correspond with the "lumen maintenance code"	lumen maintenance code: 9	P
	Given a sample of ii of LED modules according to Table 7 being subjected to the 25 % of rated lifetime test with a maximum of 6 000 h, it is deemed to having passed the test, if at the end of the tests at least 90 % of the LED modules have passed.	10 of 10 passed	P
10.3	Endurance tests		--
10.3.1	General		--
10.3.2	Temperature cycling test	See II.J to L	P
10.3.2.1	General		--
10.3.2.2	Alternative test 1 with 10 K/min		N
	At the end of the test all the LED modules shall operate and have a luminous flux which stays within the claimed lumen maintenance code for a period of at least 15 mm and show no physical effects of temperature cycling such as cracks or delaminating of the label.		N
10.3.2.3	Alternative test 2 with 1 K/min		P
	At the end of the test all the LED modules shall operate and have a luminous flux which stays within the claimed lumen maintenance code for a period of at least 15 mm and show no physical effects of temperature cycling such as cracks or delaminating of the label.	See II.J to L	P
10.3.3	Supply switching test		--
	At test voltage, current or power, the LED module shall be switched on and off for 30 s each. The cycling shall be repeated for a number equal to half the rated life in h.	Rated life:30000 Test cycle:15000	P
	At the end of the test all the LED modules shall operate and have a luminous flux which stays the	See II.J to L	P

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Clause	Requirement + Test	Result - Remark	Verdict
	claimed lumen maintenance code for a period of at least 15 mm.		
10.3.4	Accelerated operation life test		--
	The LED module shall be operated continuously without switching at test voltage and at a temperature corresponding to 10 K (see last paragraph) above the maximum recommended operating temperature $t_{p, rated}$, over an operational time of 1 000 h. Any thermal protecting devices that would switch off the LED module or reduces the light output at a threshold temperature $> t_{p, rated}$, shall be bypassed.	See II.J to L	P
	At the end of this period, and after cooling down to room temperature and being stabilised, all the LED modules have an allowed decrease of light output at the end of the test of max. 20 % compared to the initial value, for at least 15 min.	See II.J to L	P
11	Verification		--
	Sample sizes and DUT S/N	See table below	P

Clause	Test	Type and S/N	
		A (Main)	
4.1 i)	$t_{p, rated}$	A26	
4.1 j)	$t_{p-point}$		
5	Dimensions include dimensional tolerances		
8.2.3	Luminous intensity distribution	A1 - A5	
8.2.4	Peak intensity value		
8.2.5	Beam angle value		
7	Power	A1 - A10	
8.1	Luminous flux		
8.3	Efficacy		
9.1	Chromaticity coordinates		
9.2	Correlated colour temperature		
9.3	Colour Rendering Index		
10.2	Lumen maintenance		
10.3.2	Temperature cycling, energised	A11 - A15	
10.3.3	Supply voltage switching	A16 - A20	
10.3.4	Accelerated operation life test	A21 - A25	
Note: --			

Annex I	Use of IES LM-80 for lumen maintenance, colour rendering index and maintained chromaticity coordinates data		Verdict
I.1	General	Data from IES LM-80 Report No.: CLD-AP125 REV 8	P

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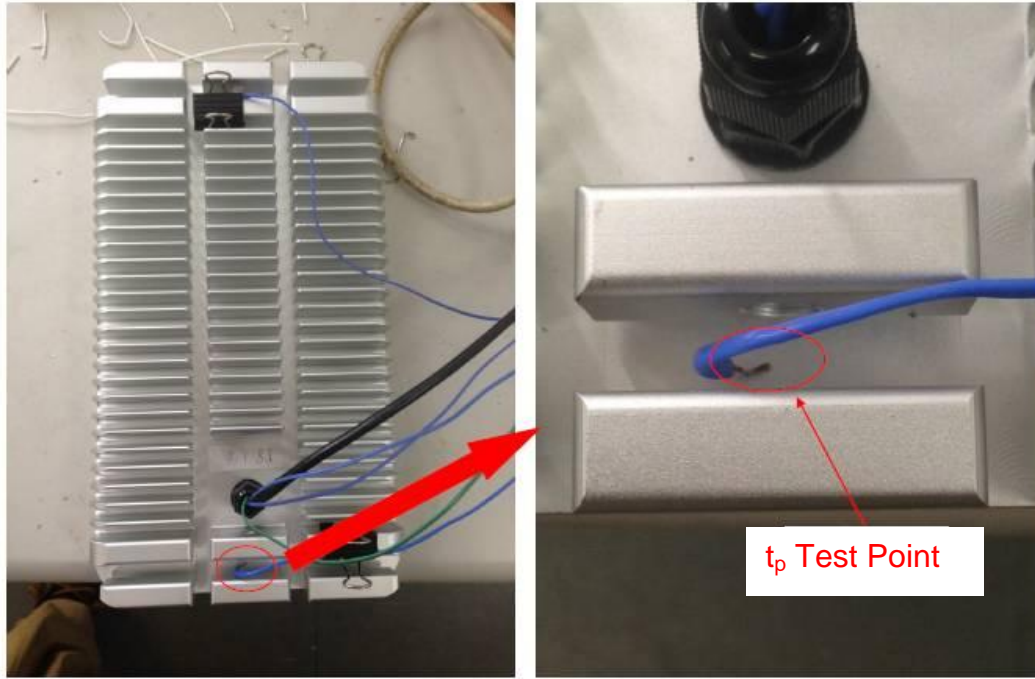
IEC 62717			
Clause	Requirement + Test	Result - Remark	Verdict
I.2	Criteria for the use of IES LM-80		--
I.2.1	LED package data used for LED module	Cree® XLamp® XP-G2 White LEDs	--
	If data from an IES LM-80 test report applied to an LED package is available, the test conditions in 6.1 are applicable for LED modules with a test duration of 1 000 h.	See II.I	P
	For compliance criteria after 1 000 h testing, see Clause I.3.	See II.I	P
I.2.2	LED module with IES LM-80 data		N
I.2.3	Boundary conditions		--
I.2.3.1	General		--
I.2.3.2	Temperature		--
	All performance data of this standard are related to the reference temperature $t_{p, rated}$ on the LED module. $t_{p, rated}$ is measured at the reference location t_p -point on the LED module, defined by the manufacturer.	See II.A	P
	With the LED module operating at its own $t_{p, rated}$ the LED package case temperature, T_s , as defined by IES LM-80, shall be measured. The highest measured value of T_s , inside the LED module, shall not exceed the limit temperature T_s taken from the IES LM-80 report.	See II.A	P
	In case of an LED module family according to Table 4, the T_s temperature measurement shall be performed with the LED module configuration that results in the highest T_s temperature.	See II.A	P
I.2.3.3	LED package input current		--
	The maximum r.m.s. input current of the LED package in the LED module shall not exceed the r.m.s. input current that was tested as a part of the IES LM-80 test.		P
	Where IES LM-80 is used for achieving lumen maintenance and maintained chromaticity coordinates data, any control gear control circuits for automated compensation of the light output degradation over time shall be disabled.	No control gear	N
I.3	Compliance criteria		--
I.3.1	Chromaticity coordinates		P
I.3.2	Colour rendering index (CRI)		P
I.3.3	Lumen maintenance factor		P

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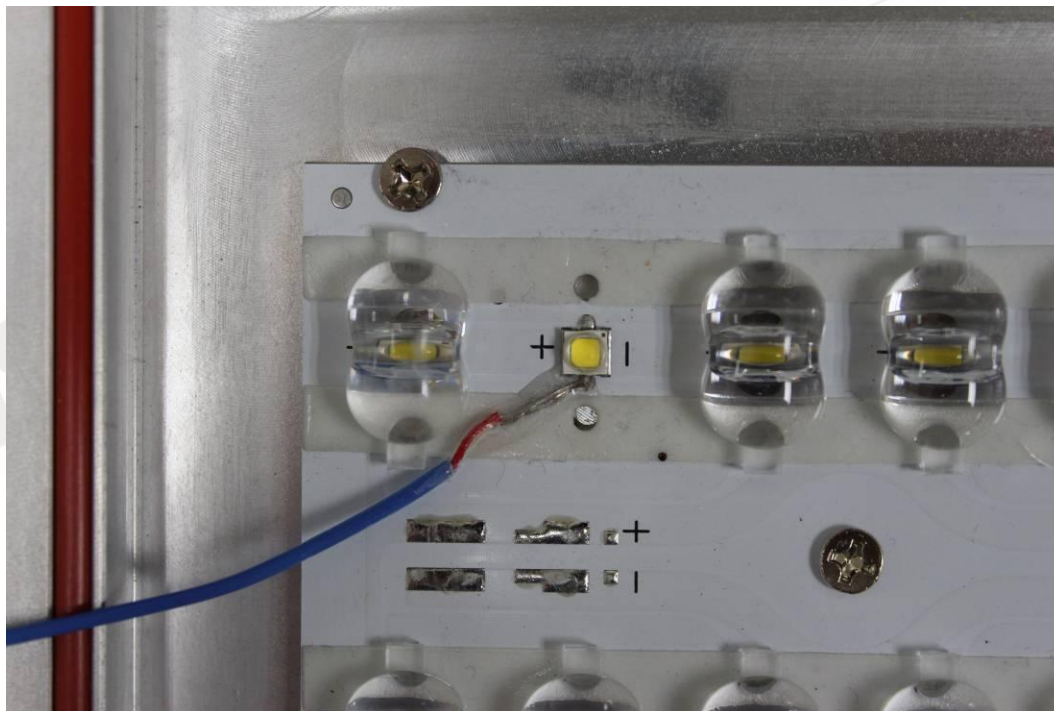
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II. TESTING VALUE

A. $t_{p\ rated}$ marking & T_{LED} point



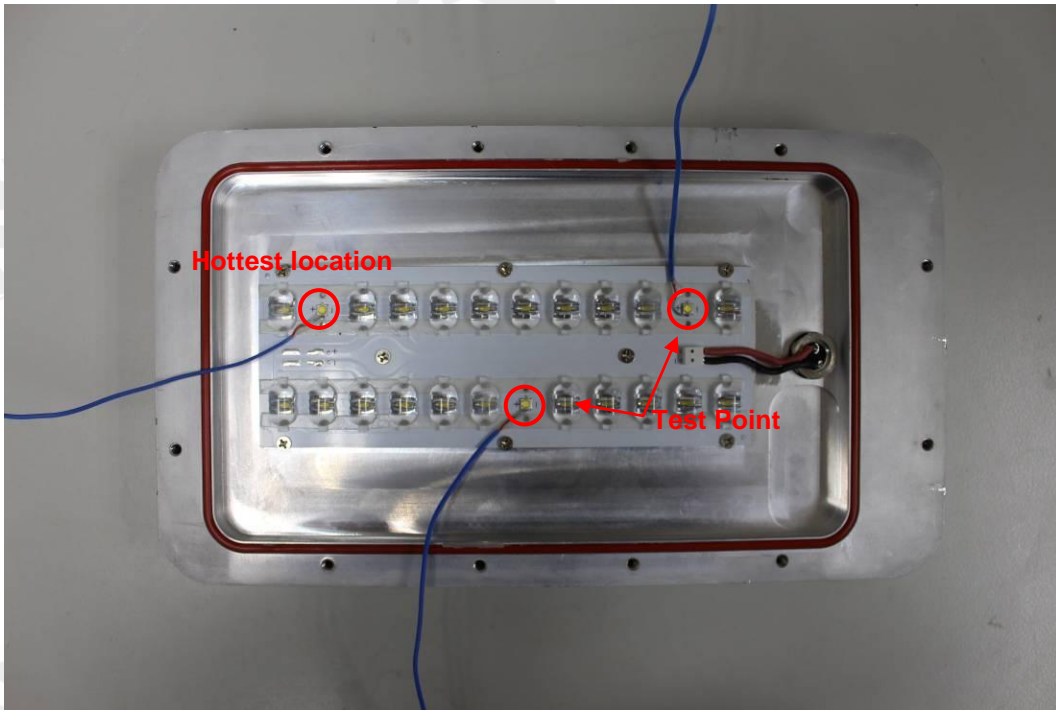
t_p point



T_{LED} Test Point

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Thermocouple test location



Through hole

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B. t_p – point

S/N	Stabilization Time	Input Voltage	Input Current	Input Power	T_{LED} Temp.(°C)	t_p Temp.(°C)
	0 minute	35.992 Vdc	1.5004	54.001	55.0	45.8
A26	15 minutes	35.992 Vdc	1.5004	54.002	55.0	45.9
	30 minutes	35.993 Vdc	1.5004	54.004	55.0	45.9

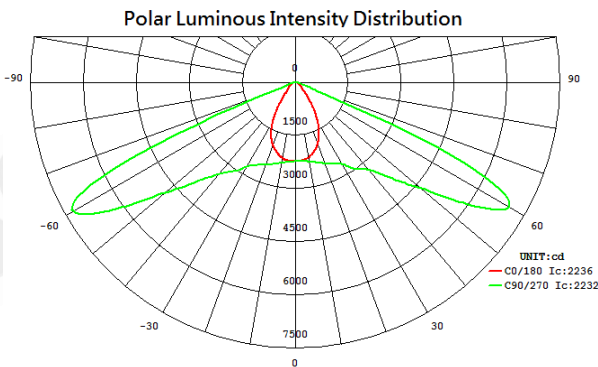
※Note: Single LED drive current: 751 mA.

C. Dimensions including dimensional tolerances

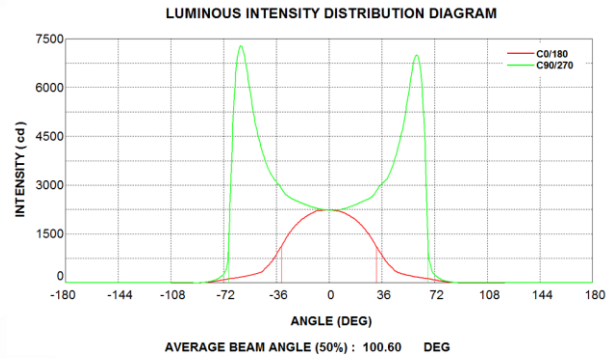
S/N	Dimensions	Dimensional & Tolerances	Verdict
A26	W 150 x L 265 x H 45 (mm)	W 150 x L 265 x H 40 (mm) ± 5 (mm)	P

D. Luminous intensity distribution

S/N A1

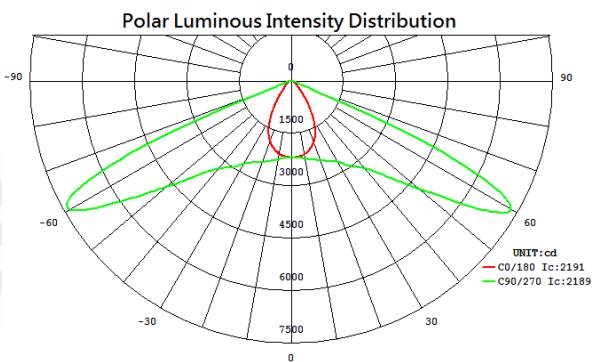


Polar Luminous Intensity Distribution

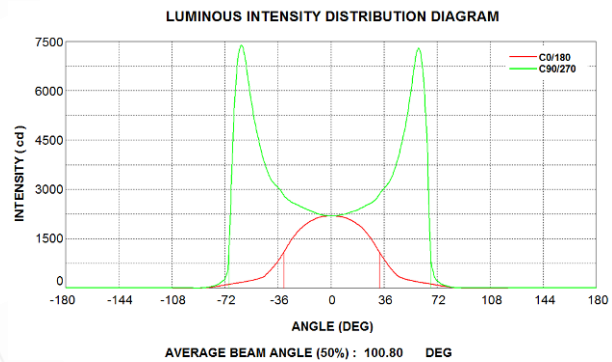


Cartesian Coordinates Luminous Intensity Distribution

S/N A2



Polar Luminous Intensity Distribution

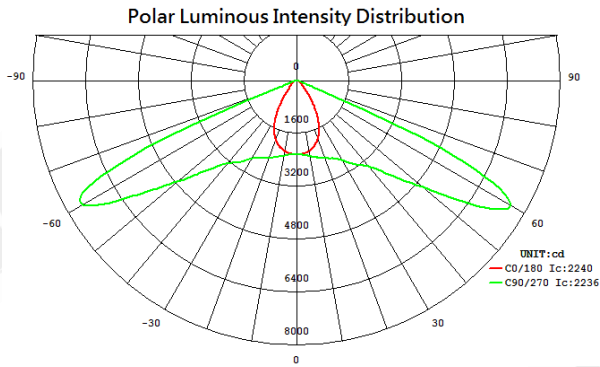


Cartesian Coordinates Luminous Intensity Distribution

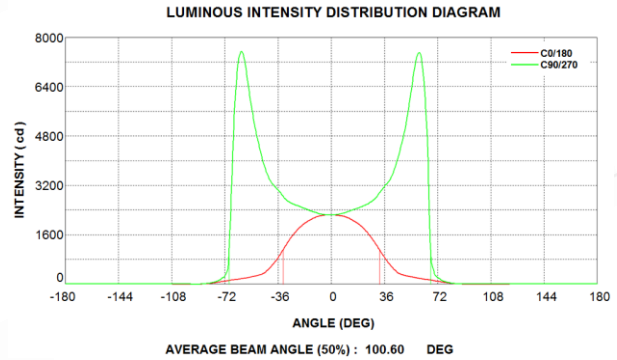
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S/N A3

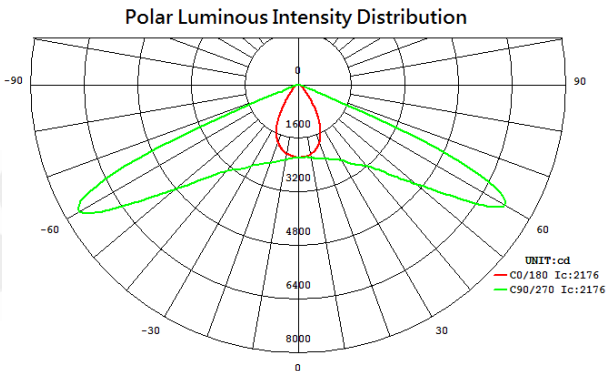


Polar Luminous Intensity Distribution

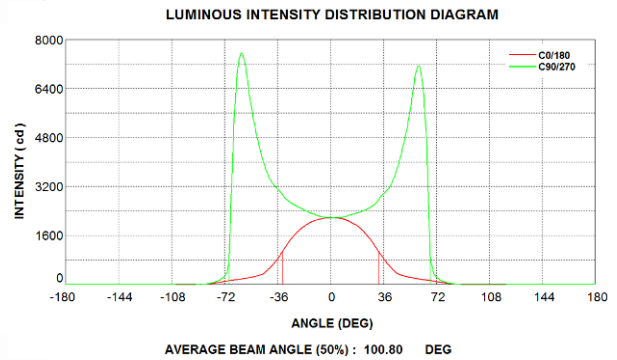


Cartesian Coordinates Luminous Intensity Distribution

S/N A4

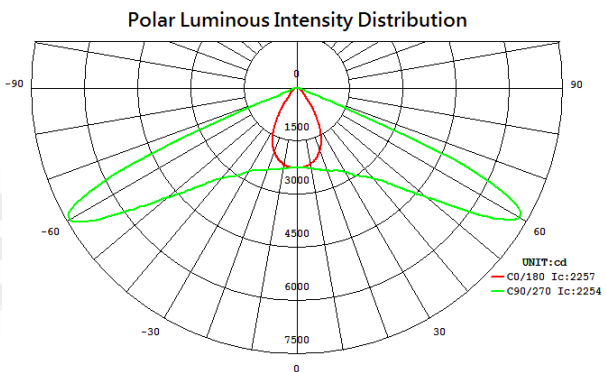


Polar Luminous Intensity Distribution

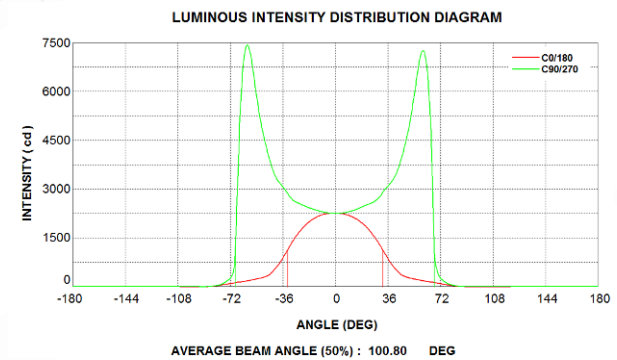


Cartesian Coordinates Luminous Intensity Distribution

S/N A5



Polar Luminous Intensity Distribution



Cartesian Coordinates Luminous Intensity Distribution

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E. Peak intensity & Beam angle

S/N	Peak intensity (cd)	Beam angle (50%)(°)
A1	7284.16 cd	100.6°
A2	7378.02 cd	100.8°
A3	7534.73 cd	100.6°
A4	7557.71 cd	100.8°
A5	7420.08 cd	100.8°

F. Optical Properties & Electrical Characteristics

S/N	Input Voltage	Input Current	Input Power	Luminous Flux	Luminous Efficacy
A1	35.8 Vdc	1.500 A	53.6 W	7181.7 lm	133.9 lm
A2	36.0 Vdc	1.500 A	54.0 W	7146.3 lm	132.3 lm
A3	35.9 Vdc	1.500 A	53.9 W	7229.8 lm	134.2 lm
A4	36.0 Vdc	1.500 A	54.1 W	7147.0 lm	132.2 lm
A5	35.8 Vdc	1.500 A	53.6 W	7223.4 lm	134.7 lm
A6	36.0 Vdc	1.500 A	54.1 W	7312.7 lm	135.2 lm
A7	36.1 Vdc	1.500 A	54.2 W	7187.9 lm	132.6 lm
A8	36.0 Vdc	1.500 A	54.0 W	7161.0 lm	132.6 lm
A9	36.1 Vdc	1.500 A	54.1 W	7270.9 lm	134.4 lm
A10	36.0 Vdc	1.500 A	54.1 W	7172.5 lm	132.7 lm

S/N	CCT	Ra	CIEx	CIey	SDCM (Standard)	
A1	4951 K	71.3	0.3469	0.3571	F 5000	1.54
A2	4876 K	70.3	0.3489	0.3560	F 5000	3.37
A3	4905 K	70.9	0.3483	0.3579	F 5000	2.10
A4	4847 K	70.1	0.3500	0.3588	F 5000	3.05
A5	4940 K	71.2	0.3473	0.3582	F 5000	1.30
A6	4944 K	72.3	0.3474	0.3594	F 5000	0.89
A7	4920 K	70.8	0.3476	0.3558	F 5000	2.64
A8	4919 K	71.2	0.3475	0.3541	F 5000	3.43
A9	4887 K	71.0	0.3488	0.3586	F 5000	2.27
A10	4922 K	71.0	0.3474	0.3538	F 5000	3.51

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G. Chromaticity Coordinates (SDCM)

S/N	initial	Maintenance					
	0 h	1000 h	2000 h	3000 h	4000 h	5000 h	6000 h
A1	1.54	1.49	--	--	--	--	--
A2	3.37	3.29	--	--	--	--	--
A3	2.10	1.98	--	--	--	--	--
A4	3.05	2.80	--	--	--	--	--
A5	1.30	1.22	--	--	--	--	--
A6	0.89	0.63	--	--	--	--	--
A7	2.64	2.71	--	--	--	--	--
A8	3.43	3.52	--	--	--	--	--
A9	2.27	0.62	--	--	--	--	--
A10	3.51	2.69	--	--	--	--	--

H. Colour Rendering Index (CRI)

S/N	initial	Maintenance					
	0 h	1000 h	2000 h	3000 h	4000 h	5000 h	6000 h
A1	71.3	71.2	--	--	--	--	--
A2	70.3	70.4	--	--	--	--	--
A3	70.9	70.8	--	--	--	--	--
A4	70.1	70.0	--	--	--	--	--
A5	71.2	71.2	--	--	--	--	--
A6	72.3	72.3	--	--	--	--	--
A7	70.8	70.8	--	--	--	--	--
A8	71.2	71.1	--	--	--	--	--
A9	71.0	72.3	--	--	--	--	--
A10	71.0	70.8	--	--	--	--	--

I. Lumen Maintenance

S/N	initial	Maintenance (%)					
	0 h	1000 h	2000 h	3000 h	4000 h	5000 h	6000 h
A1	100.0 %	100.2 %	--	--	--	--	--
A2	100.0 %	100.3 %	--	--	--	--	--
A3	100.0 %	100.0 %	--	--	--	--	--
A4	100.0 %	99.8 %	--	--	--	--	--
A5	100.0 %	100.2 %	--	--	--	--	--
A6	100.0 %	99.7 %	--	--	--	--	--
A7	100.0 %	99.9 %	--	--	--	--	--
A8	100.0 %	99.9 %	--	--	--	--	--
A9	100.0 %	100.2 %	--	--	--	--	--
A10	100.0 %	99.9 %	--	--	--	--	--

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J. Temperature cycling

S/N	Initial Luminous Flux	Maintenance Luminous Flux	Maintenance (%)	Rated Maintenance Code	Verdict
A11	7245.3	7246.4	100.0 %	7	P
A12	7248.8	7277.8	100.4 %	7	P
A13	7232.4	7203.2	99.6 %	7	P
A14	7268.3	7186.4	98.9 %	7	P
A15	7291.7	7240.9	99.3 %	7	P

K. Supply voltage switching

S/N	Initial Luminous Flux	Maintenance Luminous Flux	Maintenance (%)	Rated Maintenance Code	Verdict
A16	7117.6	7177.5	100.8 %	7	P
A17	7232.0	7238.5	100.1 %	7	P
A18	7260.9	7264.0	100.0 %	7	P
A19	7254.7	7315.6	100.8 %	7	P
A20	7137.9	7053.4	98.8 %	7	P

L. Accelerated operation life test

S/N	Initial Luminous Flux	Maintenance Luminous Flux	Maintenance (%)	Rated Maintenance Code	Verdict
A21	7291.6	7240.8	99.3 %	7	P
A22	7335.4	7273.6	99.2 %	7	P
A23	7183.0	7112.5	99.0 %	7	P
A24	7267.5	7212.9	99.2 %	7	P
A25	7325.3	7268.3	99.2 %	7	P

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III. Mandatory marking

LED Module Specification	
Type	Type 3
Model Name	SLITE module
Rated Luminous Flux (lm)	7150
Photometric Code	750/7 ⁺ 7 ⁺ 9
Rated median useful life and the associated rated lumen maintenance factor (x)	70
Rated Abrupt Failure Value AFV (%)	10
Lumen Maintenance Code	9
Categories of rated chromaticity coordinate values both initial and maintained	F5000 (7 ⁺ , 7 ⁺)
Correlated Colour Temperature (K)	5000 K
Rated Colour Rendering Index	70
$t_{p\ rated}$ of LED module (°C)	50°C
Ageing time	--
Ambient temperature range (°)	-30°C ~ 50°C
Rated Input Voltage (V)	32~42 V
Rated Input Current (A)	Max 1.5A
Rated Input Frequency (Hz)	--
Rated Input Power (W)	53.6W
Rated Efficacy (lm/W)	133 lm/W
Dimensions & Tolerances	150 x 265 x 40 (mm) ± 5 (mm)
Availability of a heat sink	AL 6063 T6
Displacement Factor	--
Temperature Ramping	1 K/min
Rated Life Time (h)	30000
Lumen intensity distribution	--
beam angle	--
peak intensity	--
Note	
LED Light Source Specification	
LED Model	XPG2
Manufacture / Brand	CREE
Rated Input Voltage (V)	3.05
Rated Input Current (A)	0.75
Rated Input Power (W)	2.29
LED Quantity per Module	24

LED Module life time information			
t_p temperature(°C) measured at the t_p -point	50	60	70
Rated Life Time (h)	30000	25000	20000

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IV. Attachment Photos



Front View



Back View

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Lens

- End of Report -

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