

Prüfbericht-Nr.: <i>Test Report No.:</i>	16064559 001	Auftrags-Nr.: <i>Order No.:</i>	174028120	Seite 1 von 9 <i>Page 1 of 9</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	Nov.04, 2014	
Auftraggeber: <i>Client:</i>	AOK LED Light Company Limited Building 1 St George's Science and Technology Industrial Park Outer Ring Road Bao'an, Shenzhen, Guangdong, China			
Prüfgegenstand: <i>Test item:</i>	LED Street light			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	AOK-160WiL			
Auftrags-Inhalt: <i>Order content:</i>	Type examination			
Prüfgrundlage: <i>Test specification:</i>	IES TM-21-11			
Wareneingangsdatum: <i>Date of receipt:</i>	Nov.12, 2014	Detaillierte Fotodokumentation siehe Anlage zu diesem Bericht Detailed photo documentation see appendix to this report		
Prüfmuster-Nr.: <i>Test sample No.:</i>	Engineering samples			
Prüfzeitraum: <i>Testing period:</i>	Nov.25, 2014 – Nov.28, 2014			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Guangdong) Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:	kontrolliert von / reviewed by:			
Zixu Huang/Project Engineer Dec.15, 2014 Datum Date	Zixu Huang Unterschrift Signature	2014.12.15 Leo Wang/ Reviewer Datum Date	Leo Wang Unterschrift Signature	
Sonstiges / Other: -				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

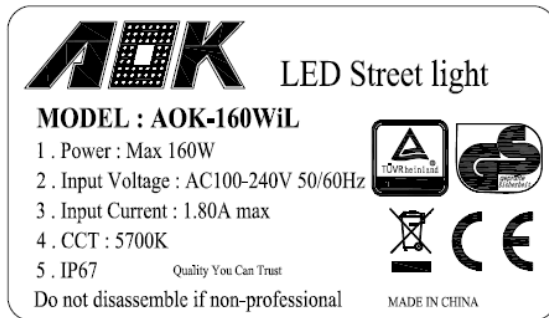
Summary of testing:**Tests performed (name of test and test clause):**

The model AOK-160WiL was chosen for type test.

Testing location:

TÜV Rheinland (Guangdong) Ltd.

No. 199 Kezhu Road, Guangzhou Science City, 510663, Guangzhou, P.R. China

Copy of marking plate:

Test item particulars : LED Street light

Classification of installation and use : IP 67

Supply Connection : Non-detachable power supply cord

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 : Nov.12, 2014

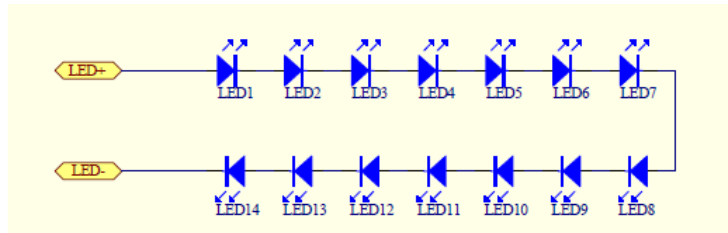
Date (s) of performance of tests..... : Nov.25, 2014 – Dec.28, 2014

General product information:

1. Model detail please see table below:

Model No.	Controlgear	Rated Voltage (V a.c.)	Rated Frequency (Hz)	Rated Power (W)	IP	Weight (Kg)	Dimension (cm)	LED quant (pcs)	CCT	LED module quantity
AOK-160WiL	HLG-185H-48	100-240	50/60	160	67	9.7	81*37*18	56	5700K	4 Modules

Circuit diagrams of Module:

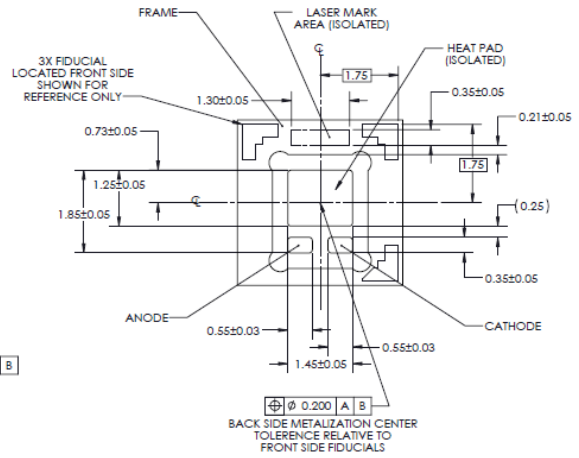
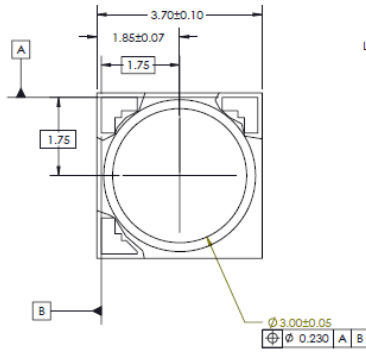
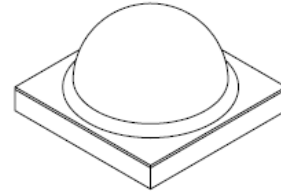
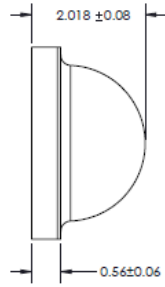


Remark: Total 14pcs of LEDs were series connection as a module. The modules of LEDs were parallel connection in the product.

2. LED specification:

Model:	Manufacturer	If (mA)	Vf (V)	CCT	View angle(°)
LUXEON T	Philips Lumileds Lighting Company	350	2.71	2700-6500K	120
		700	2.80		
		1000	2.86		

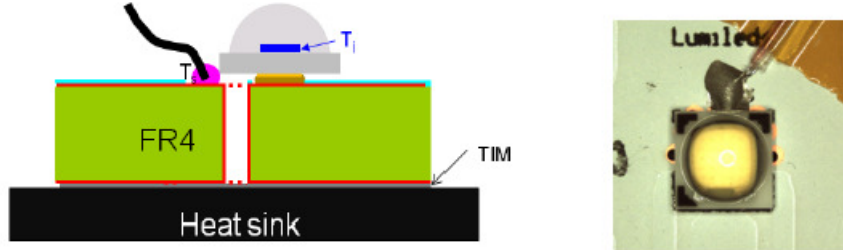
Mechanical dimensions:



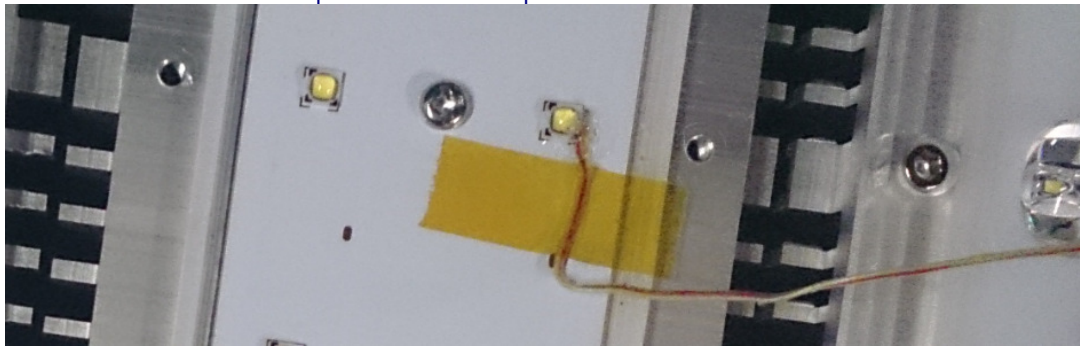
1. Test result:

1.1 In-situ case temperature measurements test location

The location of the Ts measurement point for LUXEON T is shown below (According to the LM-80 test report of Philips Lumileds, For further information on measuring the in-situ Ts, please see Philips Lumileds Applications Brief AB106 "LUXEON T Assembly and Handling Information", December, 2012.):



The location on Ts measurement point of thermocouple:



1.2 Ts measurement

Tc measurement in LED Street light				
Model No. AOK-160WiL	Test voltage	Input Current	Input wattage	Test time
	120V, 60Hz	1.359A	162.9W	4hours
Tc measured in luminaire with relevant LED module	Temperature			
A(1#)	66.4 °C			
B (2#)	67.7 °C			
C (3#)	63.4 °C			
The highest in-situ temperature	67.7 °C			

1.3 Input current of LED measurement

If of LED, measurement in LED Street light			
Model No. AOK-160WiL	Test voltage	Input Current	Input wattage
	120V, 60Hz	1.359A	162.9W
IF measured in luminaire with relevant LED	841.6mA		

2. Lumen maintenance projection according to TM-21

2.1 LM-80 testing details

LM-80 Testing Details	
Total number of units tested per case temperature:	25
Number of failures:	0
Number of units measured:	25
Test duration (hours):	9000
Tested drive current (mA):	1000
Tested case temperature 1 (T_c , °C):	55
Tested case temperature 2 (T_c , °C):	85
Tested case temperature 3 (T_c , °C):	105

2.2 Test data for 55°C, 85°C and 105°C case temperature

Test Data for 55°C Case Temperature		Test Data for 85°C Case Temperature		Test Data for 105°C Case Temperature	
Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
0	100.00%	0	100.00%	0	100.00%
1000	97.85%	1000	98.22%	1000	97.53%
2000	97.38%	2000	97.81%	2000	95.74%
3000	99.51%	3000	98.44%	3000	95.63%
4000	98.49%	4000	96.97%	4000	94.07%
5000	97.68%	5000	96.31%	5000	92.78%
6000	98.17%	6000	96.00%	6000	92.22%
7000	96.95%	7000	95.14%	7000	92.21%
8000	96.57%	8000	94.64%	8000	91.29%
9000	95.89%	9000	93.75%	9000	90.42%

2.3 In-situ inputs

Drive current for each LED package/array/module (mA):	841.6
<i>In-situ</i> case temperature (T_c , °C):	67.7
Percentage of initial lumens to project to (e.g. for L_{70} , enter 70):	70

2.4 Calculated of L70

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	75.11%
Calculated L70 (hours):	62,000
Reported L70 (hours):	>54000

3. Conclusion

According to the method of IES TM-21-11, the rated lumen maintenance of product may 75.11% at 50000 hours.

Photo documentation:

Picture 1: The obverse side of LED street light(AOK-160WiL)



Picture 2: The reverse side of LED street light(AOK-160WiL)



Equipment List:

Equipment	ID No.	Model	Calibration due date
Hybrid Recorder	1.004	DR230	2015-11-20
Digital Power meter	1.013J	WT210 760401- H/C1/HRM	2015-08-19
Digital Power meter	1.016F	8793B1	2015-11-19
Digital Multi-meter	1.029F	F287	2015-05-12
Humidity/Temperature Datalogger	1.265F	SD500	2015-03-04

-- End of report --