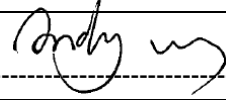
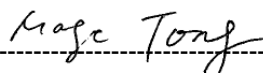




TEST REPORT IEC TR 62778 Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	
Report Number	4360716.51
Date of issue	2020-01-16
Total number of pages	15 pages
Name of Testing Laboratory preparing the Report	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch
Applicant's name	Huizhou Foryou Optoelectronics Technology Co., Ltd.
Address	No. 1 North Shangxia Road, Dongjiang Hi-tech Industry Park, Huizhou, Guangdong Province, 516005, P. R. China.
Test specification:	
Standard	IEC TR 62778:2014 (Second Edition)
Test procedure	Type test
Non-standard test method	N/A
Test Report Form No.	IEC62778A
Test Report Form(s) Originator	TÜV SÜD Product Service GmbH
Master TRF	Dated 2016-02
General disclaimer: 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.	

Test item description :	LED recessed luminaires
Trade Mark :	ADAYO
Manufacturer	Same as applicant
Model/Type reference	DL25U-W009A0-3XX, DL25U-W008N0-3XX, DL25U-W009A0-1XX, DL25U-W008N0-1XX, DL25U-W009A0-2XX, DL25U-W008N0-2XX, DL25U-W009A0-XXX, DL25U-W008N0-XXX, DY25H-W040N0-XXX, DY25H-W040A0-XXX, DY25H-W050A1-1XX, DY25H-W050N1-XXX, DY25H-W040N0-1XX, DY25H-W040A0-1XX, DY25H-W050N0-XXX, DY25H-W050N0-1XX, DY25H-W050A0-XXX, DY25H-W050A2-XXX, DY25I-W050N0-XXX, DY25H-W040N0-XXX-2, DY25H-W040A0-XXX-2, DY25H-W050A1-1XX-2, DY25H-W050N1-XXX-2, DY25H-W040N0-4XX-2 Note: "XX" stands for CCT, "XX"=27-65, "27": 2700 K, "65": 6500 K; "XXX" stands for CCT, "XXX"=027-065, "027": 2700 K, "065": 6500 K DY25H-W050A1-XXX, DY25H-W050S1-1XX, DY25H-W050S0-XXX, DY25H-W050S0-1XX Note: "X" has no special meaning.
Ratings :	220-240 Vac, 50/60 Hz, Class II, non-replaceable LEDs, DY25H-W040N0-1XX, DY25H-W040N0-XXX, DY25H-W040N0-4XX-2, DY25H-W040N0-XXX-2: 5 W; DY25H-W040A0-1XX, DY25H-W040A0-XXX, DY25H-W040A0-XXX-2: 5,5 W; DY25H-W050N1-XXX-2: 6 W; DY25H-W050N1-XXX: 6,3 W; DY25H-W050N0-XXX, DY25H-W050N0-1XX, DY25H-W050S0-1XX, DY25H-W050S0-XXX, DY25H-W050A1-1XX-2: 6,5 W; DY25H-W050A1-1XX: 6,8 W; DY25H-W050A0-XXX, DY25I-W050N0-XXX: 7 W; DY25H-W050S1-1XX, DY25H-W050A2-XXX, DY25H-W050A1-XXX: 7,3 W; DL25U-W008N0-2XX, DL25U-W008N0-XXX, DL25U-W008N0-3XX, DL25U-W008N0-1XX: 8 W; DL25U-W009A0-2XX, DL25U-W009A0-XXX, DL25U-W009A0-3XX, DL25U-W009A0-1XX: 9 W;

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	Testing Laboratory:	DEKRA Testing and Certification(Shanghai) Ltd., Guangzhou Branch
Testing location/ address.....:		No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Tested by (name, function, signature).....:		Andy Wang 
Approved by (name, function, signature)....:		Magic Tong 

List of Attachments (including a total number of pages in each attachment):	
Attachment 1: List of test equipment used (1 page)	
Attachment 2: Photo (2 pages)	
Attachment 3: LED chip specification (1 page)	
Summary of testing:	
Tests performed (name of test and test clause):	Testing location:
4350486.51 DL25U-W009A0-065 (with APT LEDs), DL25U-W009A0-065 (with seoul LEDs) and DY25H-W050S1-1XX were subjected to IEC TR 62778: 2014 test. Other models were subjected to construction check.	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
4360716.51 No additional test was need.	
Summary of compliance with National Differences (List of countries addressed):	
<input checked="" type="checkbox"/> EU Group Differences and National Differences	

Copy of marking plate: N/A

Test item particulars	Fixed General Purpose Luminaires
Product evaluated	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire
Rated voltage (V)	220-240 V~
Rated current (mA)	---
Rated CCT (K)	See attachment 3
Rated Luminance (Mcd/m²)	---
Component report data used	<input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp Report number: ---
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	2019-12-10
Date (s) of performance of tests	2019-12-10 to 2020-01-08

General remarks:	
<p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p> <p>The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result. This report is not used for social proof in China (or Mainland China) market or similar declaration (Not for HK).</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC60730-2:	
<p>The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable</p>
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) : Same as applicant	

General product information:

The products in this report were tested and compliant with following standards:

-IEC TR 62778: 2014

The products covered in this report are LED recessed luminaire used with integral LED driver.

All models have similar construction except CCT, LED quantity and lens.

For the blue light hazard required by IEC TR 62778: 2014, DL25U-W009A0-065 (with APT LEDs), DL25U-W009A0-065 (with seoul LEDs) and DY25H-W050S1-1XX had been tested and classified as Risk Group 1. Therefore, the products in this report need not mark d_{thr} .

4360716.51

This report is based on original report 4350486.51 issued on 2019-01-21. It is issued concerning the following modifications:

- Added models DY25H-W040N0-XXX-2, DY25H-W040A0-XXX-2, DY25H-W050A1-1XX-2, DY25H-W050N1-XXX-2, they have same as original models except model number. Details see below information.

The power of DY25H-W050A1-1XX-2 and DY25H-W050N1-XXX-2 is lower than the original models.

Original models	New models
DY25H-W040N0-XXX	DY25H-W040N0-XXX-2
DY25H-W040A0-XXX	DY25H-W040A0-XXX-2
DY25H-W050A1-1XX	DY25H-W050A1-1XX-2
DY25H-W050N1-XXX	DY25H-W050N1-XXX-2

- Added model DY25H-W040N0-4XX-2, DY25H-W040N0-4XX-2 have same construction as DY25H-W040N0-XXX except the lens material.

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict
	MEASUREMENT INFORMATION FLOW		
7.1	Basic flow		P
	'Law of conservation of luminance' applied		N/A
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		N/A
	In case E_{thr} value for RG2 was established the peak value was derived from angular light distribution		N/A
7.2	Conditions for the radiance measurement		P
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N/A
7.3	Special cases (I): Replacement by a lamp or LED module of another type		N/A
	Light source is a white light source		N/A
	Evaluation done based on highest luminance		N/A
	Evaluation done based on CCT value		N/A
7.4	Special cases (II): Arrays and clusters of primary light sources		N/A
	LED package is evaluated as : <input type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited		N/A
	E_{thr} of LED package applies to array		N/A
8	RISK GROUP CLASSIFICATION		
	Risk group achieved:		P
	- ..Risk Group 0 unlimited		N/A
	- ..Risk Group 1 unlimited		P
	- E_{thr} (lx) : Distance to reach RG1 (m) :		N/A

IEC TR 62778				
Clause	Requirement + Test		Result - Remark	Verdict
	TABLE: Spectroradiometric measurement			P
	Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		
	Model number.....	DL25U-W009A0-065 (with APT LEDs)		
	Test voltage (V)	240		—
	Test current (mA)	--		—
	Test frequency (Hz).....	50		—
	Ambient, t (°C)	25		—
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
	Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm		—
	Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	6344	
x/y colour coordinates			0,3146/0,3381	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	2632,595	
Blue light hazard irradiance	E _B	W/m ²	---	
Luminance	L	cd/m ²	2960125	
Illuminance	E	lx	33023	
Supplementary information: ---				

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE: Spectroradiometric measurement			P	
Measurement performed on:		<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire		
Model number.....		DL25U-W009A0-065 (with seoul LEDs)		
Test voltage (V)		240	—	
Test current (mA)		--	—	
Test frequency (Hz).....		50	—	
Ambient, t (°C)		25	—	
Measurement distance.....		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—	
Source size		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm	—	
Field of view		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	—	
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	6228	
x/y colour coordinates			0,3168/0,3400	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	1787,780	
Blue light hazard irradiance	E _B	W/m ²	---	
Luminance	L	cd/m ²	2114078,3	
Illuminance	E	lx	23626	
Supplementary information: ---				

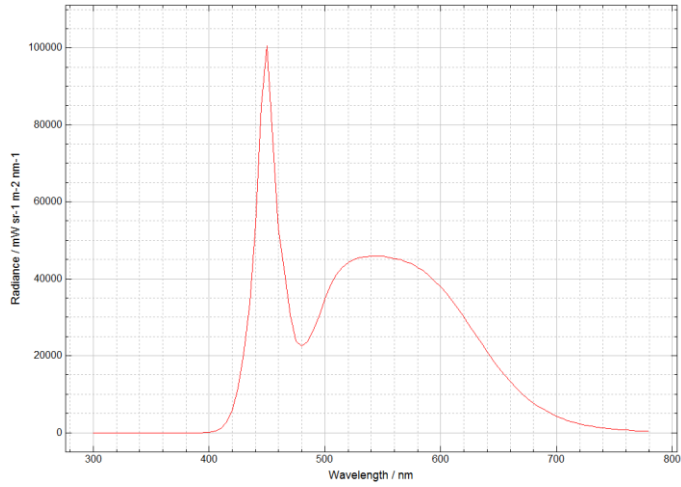
IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

TABLE: Spectroradiometric measurement			P	
Measurement performed on:	<input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input checked="" type="checkbox"/> Luminaire			
Model number.....	DY25H-W050S1-1XX			
Test voltage (V)	240		—	
Test current (mA)	--		—	
Test frequency (Hz).....	50		—	
Ambient, t (°C)	25		—	
Measurement distance.....	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—	
Source size	<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small : mm		—	
Field of view	<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—	
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	5836	
x/y colour coordinates			0,3248/0,3448	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	150,062	
Blue light hazard irradiance	E _B	W/m ²	---	
Luminance	L	cd/m ²	145843,41	
Illuminance	E	lx	5476	
Supplementary information: ---				

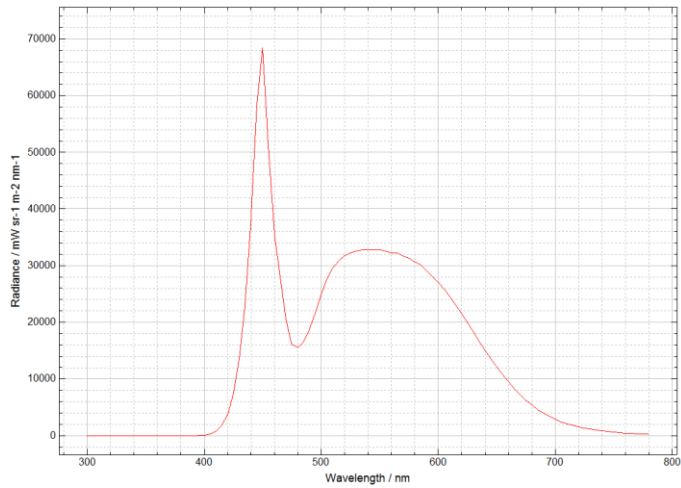
TABLE: Angular light distribution

P

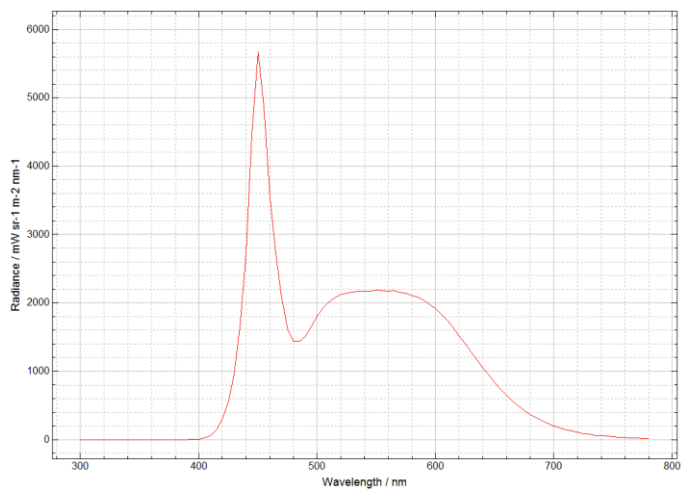
DL25U-W009A0-065 (with APT LEDs):



DL25U-W009A0-065 (with seoul LEDs):



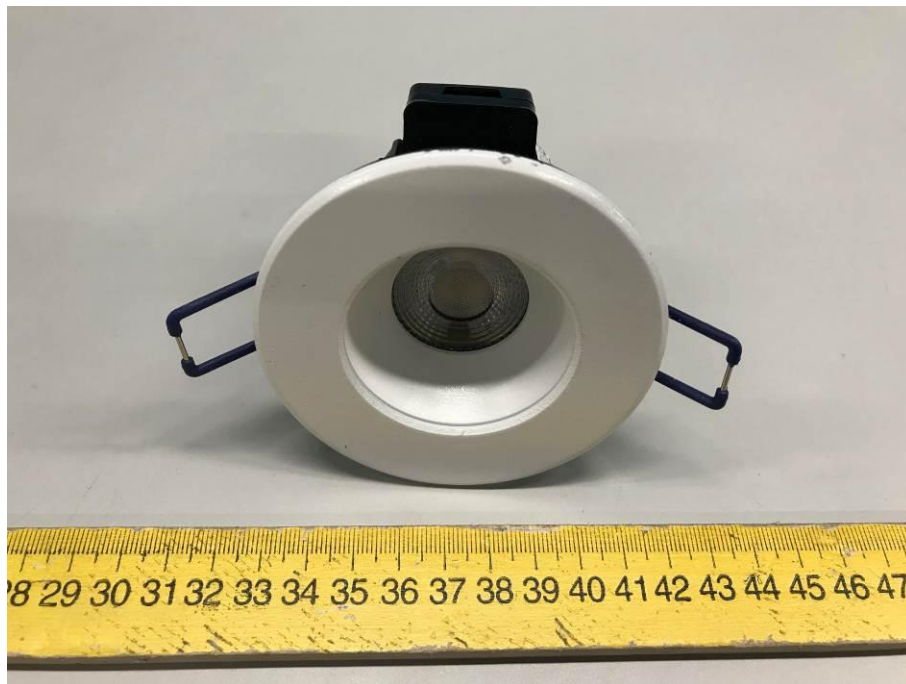
DY25H-W050S1-1XX



Attachment 1: List of test equipment used

Clause	Measurement/ testing	Registration Number	Testing/measuring equipment/material used	Range used
5	Irradiance measurements Radiance measurements	G/L655	Spectroradiometer	200-3000nm

Attachment 2: Photos



Overview, DL25U-W009A0-XXX



LED view,



Overview, DY25H-W050S1-1XX



LED view, DY25H-W050S1-1XX

Attachment 3: LED chip specification

Manufacturer	LED type no.	Technical Data	Remark
APT Electronics Co., Ltd.	PBD-U8Q0-0000-VNU1-1 PBD-S8Q0-0000-RNS1-1 PBD-Y8Q0-0000-RNY1-1 PBD-R8Q0-0000-VNR1-1	5,8-6,4 Vdc, 240 mA, 2700-6500 K	DL25U-W009A0-3XX, DL25U-W008N0-3XX, DL25U-W009A0-1XX, DL25U-W008N0-1XX, DL25U-W009A0-2XX, DL25U-W008N0-2XX, DL25U-W009A0-XXX, DL25U-W008N0-XXX
Seoul semiconductor	STW8A2SD	5,8-6,4 Vdc, 150 mA, 2700-6500 K	DL25U-W009A0-3XX, DL25U-W008N0-3XX, DL25U-W009A0-1XX, DL25U-W008N0-1XX, DL25U-W009A0-2XX, DL25U-W008N0-2XX, DL25U-W009A0-XXX, DL25U-W008N0-XXX
APT Electronics Co., Ltd.	PFS-R8Q0-0000-KNR1-1 PFS-S8Q0-0000-KNS1-1 PFS-U8Q0-0000-KNU1-1 PFS-Y8Q0-0000-KNY1-1 PFS-Y8Q1-0000-KNY1-1	9,7 Vdc, 150 mA, 2700-6500 K	DY25H-W040N0-1XX, DY25H-W040A0-1XX, DY25H-W050N0-XXX, DY25H-W050N0-1XX, DY25H-W050A0-XXX, DY25H-W050A2-XXX, DY25H-W050A1-XXX, DY25H-W050S1-1XX, DY25H-W050S0-XXX, DY25H-W050S0-1XX, DY25H-W040A0-XXX, DY25H-W040N0-XXX, DY25H-W050N1-XXX, DY25H-W050A1-1XX, DY25H-W040N0-XXX-2, DY25H-W040A0-XXX-2, DY25H-W050A1-1XX-2, DY25H-W050N1-XXX-2, DY25H-W040N0-4XX-2
Seoul semiconductor	SAW8A32E	10 Vdc, 120 mA, 2700-6500 K	DY25H-W040N0-1XX, DY25H-W040A0-1XX, DY25H-W050N0-XXX, DY25H-W050N0-1XX, DY25H-W050A0-XXX, DY25H-W050A2-XXX, DY25H-W050A1-XXX, DY25H-W050S1-1XX, DY25H-W050S0-XXX, DY25H-W050S0-1XX, DY25H-W040A0-XXX, DY25H-W040N0-XXX, DY25H-W050N1-XXX, DY25H-W050A1-1XX, DY25H-W040N0-XXX-2, DY25H-W040A0-XXX-2, DY25H-W050A1-1XX-2, DY25H-W050N1-XXX-2, DY25H-W040N0-4XX-2
APT Electronics Co., Ltd	PCD-C8K1-0000-QKC3-1	6,4 Vdc, 280 mA, 2100-2400 K	DY25H-W050S1-1XX

---END---