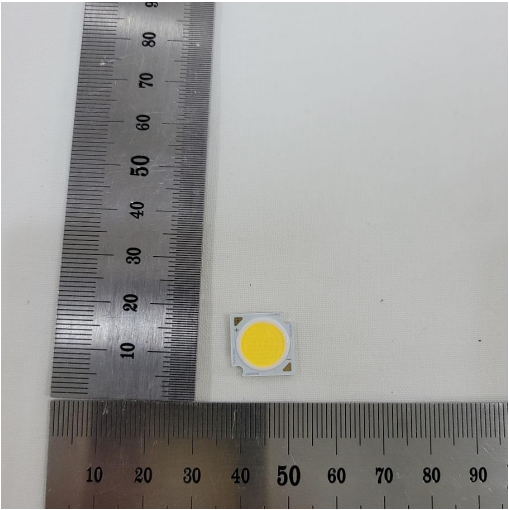



<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	KR22PV57 001	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	156146166	Seite 1 von 9 Page 1 of 9
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	2003090	<b>Auftragsdatum:</b> <i>Order date:</i>	2022-03-08	
<b>Auftraggeber:</b> <i>Client:</i>	Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 16677, Republic of Korea			
<b>Prüfgegenstand:</b> <i>Test item:</i>	Built-in LED module			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	SPHWAHDNEuvwwxyzz (u=A to Z or 0 to 9; v=3,5,7; ww=1Z,YZ,WJ; x=Y,W,V,U,T,R,Q,P,A; y=1,2,3,V,N,S; zz=A to Z or 0 to 9)			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Test Report			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	IEC TR 62778:2014			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2022-03-22			
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003250414-005			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2022-04-08			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Seoul, Rep. of Korea			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland Korea Ltd. 2F, N-Tower, Semicolon Mullae, 25, Mullae-ro 28-gil, Yeongdeungpo-gu, Seoul 07298, Rep. of Korea			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von:</b> <i>compiled by:</i>	<b>genehmigt von:</b> <i>authorized by:</i>			
<b>Datum:</b> <i>Date:</i>	2022-04-26	<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2022-04-26	
	Eun-Hye Park		Hyun-Seok Oh	
<b>Stellung / Position:</b>	Sachverständige(r)/Expert	<b>Stellung / Position:</b>	Sachverständige(r)/Expert	
<b>Sonstiges / Other:</b>				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
<b>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.</b> <i>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 v<sup>o</sup>s iplicated in extracts. This test report does not entitle to carry any test mark.</i>				

<p><b>List of Attachments (including a total number of pages in each attachment):</b> None</p>	
<p><b>Summary of testing:</b></p>	
<p><b>Tests performed (name of test and test clause):</b> All test according to IEC TR 62778:2014</p>	<p><b>Testing location:</b> TÜV Rheinland Korea Ltd. 2F, N-Tower, Semicolon Mullaee, 25, Mullaee-ro 28-gil, Yeongdeungpo-gu, Seoul #07298, Rep. of Korea</p>
<p><b>Summary of compliance with National Differences (List of countries addressed):</b> None</p>	
<p><b>Copy of marking plate:</b></p> 	

<b>Test item particulars</b> .....	Built-in LED module
<b>Product evaluated</b> .....	<input type="checkbox"/> LED package <input checked="" type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire
<b>Rated voltage (V)</b> .....	DC 36.6 V
<b>Rated current (mA)</b> .....	0.9 A
<b>Rated CCT (K)</b> .....	6500 K
<b>Rated Luminance (Mcd/m<sup>2</sup>)</b> .....	N/A
<b>Component report data used</b> .....	<input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp Report number:
<b>Possible test case verdicts:</b>	
- 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)	
<b>Testing</b> ..... :	
<b>Date of receipt of test item</b> .....	
2022-03-22	
<b>Date (s) of performance of tests</b> .....	
2020-04-08	
<b>General remarks:</b>	
"(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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IEC62778A:</b>	
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 ..... :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	

**Name and address of factory (ies) .....** : Guangzhou LEDteen Optoelectronics Co., Ltd.  
 2F, A4 Building, NO. 11 Kaiyuan Avenue, Science City, Guangzhou, Guangdong, 510663, P.R. China

**General product information:**

This product is a constant current type integral LED module using LED as a light source.

LED Package:

Manufacturer/ trademark	Type/model	Technical data
SAMSUNG ELECTRONICS CO., LTD.	LC016D	Max. I <sub>F</sub> =900mA, Max. V <sub>F</sub> =36.6V, 6500K

**Model Differences**

SPHWHAHDNEuvwwxyzz

(u=A to Z or 0 to 9; v=3,5,7,8,V; ww=1Z,YZ,WJ; x=Y,W,V,U,T,R,Q,P,A; Y=1,2,3,V,N,S; zz=A to Z or 0 to 9)

1. u (Internal Code) : A to Z or 0 to 9
2. v (CRI RA and Sorting Temp.) : 3(Min. 70), 5(Min. 80), 7(Min. 90), 8(Min. 95), V(Vivid)
3. ww (Forward Voltage) : 1Z(46.4-54.8 Vdc), YZ(31.8-37.5 Vdc), WJ(15.6-18.5 Vdc)
4. x (CCT) : Y(2200K), W(2700K), V(3000K), U(3500K), T(4000K or Meat), R(5000K or Vegetable), Q(5700K), P(6500K), A(3300K)
5. y (MacAdam/ANSI) : 1(MacAdam 1-step), 2(MacAdam 2-step), 3(MacAdam 3-step), V(Vivid coclor Mac3), S(Samsung special color)
6. zz (Luminous Flux Rank) : A to Z or 0 to 9

Model SPHWHAHDNE25YZP3D4 was considered as the most unfavourable condition with highest CCT.

**Additional information:**

The test result is performed at maximum rated current. These COB series are classified as Risk Group 1 if they are used according to the maximum currents listed below:

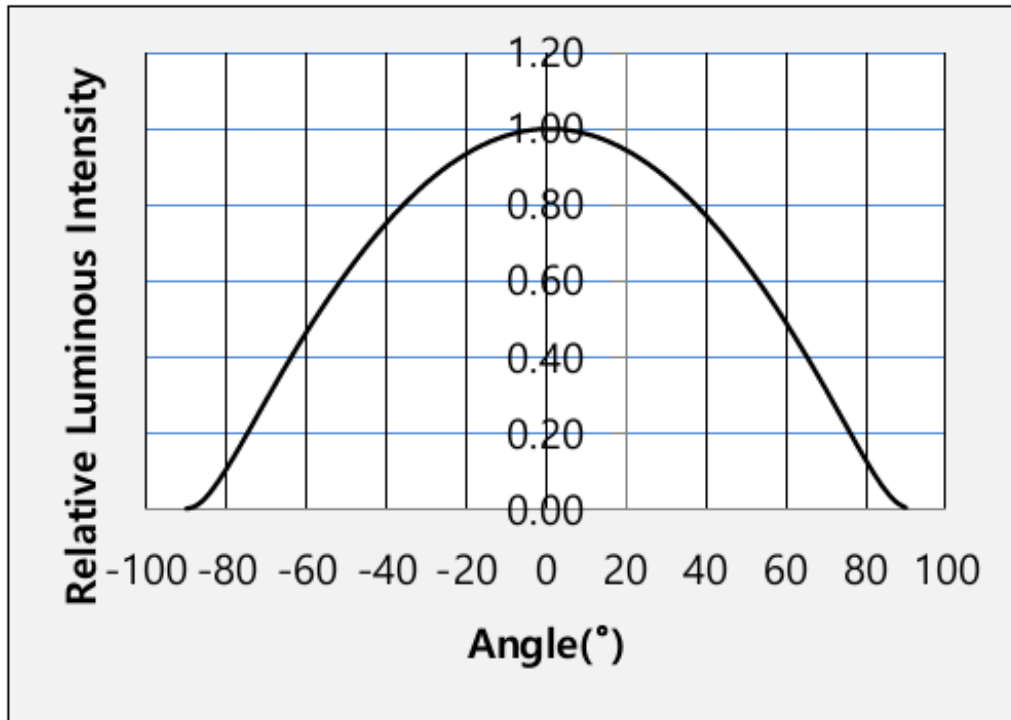
	COB type										
	LC003D	LC006D	LC009D	LC013D	LC016D	LC019D	LC026D	LC033D	LC040D	LC060D	LC080D
Maximum currents for RG1 Classifi. (mA)	230	300	340	320	850	760	900	830	1500	1100	720

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict
<b>7</b>	<b>MEASUREMENT INFORMATION FLOW</b>		<b>P</b>
<b>7.1</b>	<b>Basic flow</b>		<b>P</b>
	'Law of conservation of luminance' applied		P
	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		P
	In case $E_{thr}$ value for RG2 was established the peak value was derived from angular light distribution		N/A
<b>7.2</b>	<b>Conditions for the radiance measurement</b>		<b>P</b>
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N/A
<b>7.3</b>	<b>Special cases (I): Replacement by a lamp or LED module of another type</b>		<b>N/A</b>
	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
<b>7.4</b>	<b>Special cases (II): Arrays and clusters of primary light sources</b>		<b>N/A</b>
	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
<b>8</b>	<b>RISK GROUP CLASSIFICATION</b>		<b>P</b>
	Risk group achieved:		P
	- .. Risk Group 0 unlimited		N/A
	- .. Risk Group 1 unlimited		N/A
	- $E_{thr}$ ..... (lx) :	970.982	P
	Distance to reach RG1 ..... (m) :	1.55	

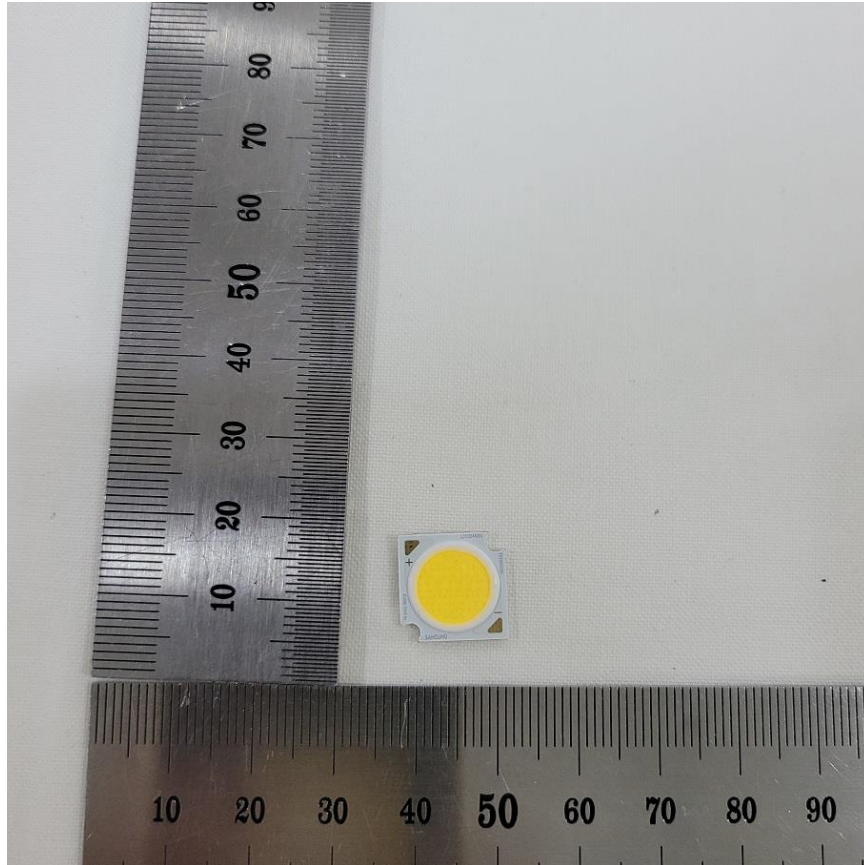
TABLE: Spectroradiometric measurement					P
Measurement performed on:		<input type="checkbox"/> LED package <input checked="" type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire			
Model number .....		SPHWHAHDNE25YZP3D4			
Test voltage (V) .....		DC 36.6 V			—
Test current (mA) .....		0.9 A			—
Test frequency (Hz).....		-			—
Ambient, t (°C) .....		25±1 °C			—
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	7979	-	
x/y colour coordinates	-	-	0.2961 / 0.303	-	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	1.20E+07	-	
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	-	-	
Luminance	L	cd/m <sup>2</sup>	1.17E+07	-	
Illuminance	E	lx	-	-	
Supplementary information:					

TABLE: Angular light distribution

P



Photographs



<Fig.1>



Measuring equipment list			
Equipment name	Maker	Type/Model	Next calibration date
Spectroradiometer	BENTHAM	IDR300	2022-11-16
Telescope	BENTHAM	TEL310	2022-11-16
Note:			