

Issue No. 2	الشركة السعودية للفحص والاختبار	
Issue Date : 01/10/2020	SAUDI INSPECTION & TESTING CO. (SAITCO)	
Revision No. 3	ملحق 7 - أ: ملاحق متطلبات العملية - نتائج الاختبارات مختبر الكهرباء	
Issue Date : 05/08/2023	Appendix 7-A: LAB process REQ. TEST RESULTS - ELECTRICAL LAB	

Code of product in Lab	C-051	--	 
LAB DATA		بيانات المختبر	
Laboratory name	اسم المختبر	Saudi Inspection & Testing Co.(SAITCO)	
Address	العنوان	1st Industrial Area, St. No.4,5,6,7-Riyadh	
Country	الدولة	Saudi Arabia	
Client Data		بيانات العميل	
Sample Date in	تاريخ استلام العينة	24 / 12 / 2023	
Date or period of tests	تاريخ / فترة الاختبار	24 / 12 / 2023	06 / 01 / 2024
Date of report issue	تاريخ إصدار التقرير	06 / 01 / 2024	
Laboratory test report number	رقم التقرير بالمختبر	E-231331	
Manufacturer Name	اسم العميل	Signify Luminares (Shanghai) Co.,Ltd.	
Manufacturer Address	عنوان العميل	2nd Floor Building No. 1, No. 2555, Hechuan Road, Minhang District, Shanghai, P.R.C., 200233	
Client Reference No. / Date	مرجع العميل	24 / 12 / 2023	
No of received Samples	عدد العينات المستلمة	5	
Sample Data		بيانات العينة	
Product description	وصف المنتج	Fixed Luminaire	
Brand name or trademark	العلامة التجارية	Nardeen	
Type or reference	النوع / المرجع	Nardeen WP007 47W/865-150	
Country of Origin	بلد الصنع	China	
Type of Driver	مزود الجهد	<input checked="" type="checkbox"/> Internal <input type="checkbox"/> داخلي	<input type="checkbox"/> External <input type="checkbox"/> خارجي
Luminaire type	نوع الانارة	<input type="checkbox"/> directional <input type="checkbox"/> مباشر	<input checked="" type="checkbox"/> Non-directional <input checked="" type="checkbox"/> غير مباشر
Factory Name	اسم المصنع	Ningbo Weilinma Electronics Co., Ltd.	
Factory Address	عنوان المصنع	DongQiao Industrial Zone, Haishu District, Ningbo City, P.R.C.	
Products Category	تصنيف المنتج	Fixed Luminaire	
Standard / TR No.	رقم المواصفة / اللانحة	SASO 2902:2018/ AMD1:2021	-
Test case verdicts		حالات الحكم على نتيجة الاختبار	
Conformity to articles tested		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Test case does not apply to the test object		Not Applicable	N/A
Test item does meet the requirement		Pass	P
Test item does not meet the requirement		Fail	F



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Clause	Requirement -Test	Result - Remark	Verdict

SASO2902																											
Clause	Requirement-Test	Result-Remarks	Verdict																								
4	Requirements for Non- directional / directional lamps, control gears and luminaires																										
4.1	Energy efficiency requirements																										
	Lamps listed in Annex A of this Standard shall comply with the energy efficiency requirements specified in Annex C for non-directional lamps and Annex E for directional lamps.	Applied Annex E	-																								
	For Incandescent, Halogen, and CFLi with luminous flux above or equal to 12,000 lumens the tests and criteria described in SASO 2870 apply	-	-																								
	For LED lamps, tests and criteria described in SASO 2870 apply.	-	N/A																								
	Energy efficiency classes and the methods of calculating the EEI for lamps are also detailed in Annex C for non-directional lamps and Annex E for directional lamps.	-	N/A																								
	Ballasts and control gears shall comply with the Energy Efficiency Requirements specified in Annex H.	-	N/A																								
	Luminaires in the scope of this standard (integrated luminaires) shall comply with energy efficiency requirements expressed in Annex M of this standard.	-	P																								
	Annex A – Regulated products in the scope of this standard	Integrated luminaires	P																								
	This Standard establishes requirements for the placing on the market of the below listed lamp types, and of control gears (ballasts) able to operate such lamps, even when they are integrated into other energy-using products This Standard is applicable to lamps and luminaires with a luminous flux above 60 lumens.	-	N/A																								
	A.2 Luminaires																										
	This standard establishes requirements for the placing on the market of the below list of with integrated luminaires (provided with non-replaceable lamps) which are designated under the categories:	-	-																								
	Directional integrated luminaires	Non Directional	-																								
	Non-directional luminaires	-	-																								
	Annex M – Energy efficiency for (integrated) luminaires																										
	M.1 Types of luminaires																										
<p>M.1 - Types of luminaires</p> <p>Definitions for the different types of luminaires are presented in Clause 3 Luminaires within the scope of this standard (integrated luminaires) are characterized as direct or indirect lighting sources depending of the beam angle of the light emission.</p> <p>For information only, luminaires can be identified per type of use as expressed in Table 34</p> <p>Table 34: Use types for luminaires (informative)</p> <table><tr><th>Terms</th><th>Description</th><th>Content</th></tr><tr><td>LT_1</td><td>General (artificial) lighting</td><td>Lighting designed to provide an uniform level of illumination</td></tr><tr><td>LT_2</td><td>Local lighting</td><td>Lighting designed to provide designed level of illumination over a specific area surrounding with lower illumination from spilled light source(s)</td></tr><tr><td>LT_3</td><td>Accent lighting</td><td>Lighting that calls attention or adds interest to a particular object or unusual feature or interest of a room. Highlights, emphasizes illumination with a strong light from behind in order to embrace depth or to separate the object from the background, sidelights is highlights coming from the side.</td></tr><tr><td>LT_4</td><td>Task lighting</td><td>Lighting designed to provide a strong illumination for visually demanding activities. It needs to be glare-free. Effective task lighting enhances visual clarity and keeps the eyes from getting tired.</td></tr><tr><td>LT_5</td><td>Ambient lighting</td><td>An ambient source of light that washes the room with a glow. It flattens an interior and creates very little shadow.</td></tr><tr><td>LT_6</td><td>Aesthetic lighting</td><td>Lighting as a piece of art. A neon sculpture would be purely decorative and illustrates aesthetic lighting.</td></tr><tr><td>LT_7</td><td>Natural lighting</td><td>Lighting provided without any artificial lighting sources</td></tr></table>		Terms	Description	Content	LT_1	General (artificial) lighting	Lighting designed to provide an uniform level of illumination	LT_2	Local lighting	Lighting designed to provide designed level of illumination over a specific area surrounding with lower illumination from spilled light source(s)	LT_3	Accent lighting	Lighting that calls attention or adds interest to a particular object or unusual feature or interest of a room. Highlights, emphasizes illumination with a strong light from behind in order to embrace depth or to separate the object from the background, sidelights is highlights coming from the side.	LT_4	Task lighting	Lighting designed to provide a strong illumination for visually demanding activities. It needs to be glare-free. Effective task lighting enhances visual clarity and keeps the eyes from getting tired.	LT_5	Ambient lighting	An ambient source of light that washes the room with a glow. It flattens an interior and creates very little shadow.	LT_6	Aesthetic lighting	Lighting as a piece of art. A neon sculpture would be purely decorative and illustrates aesthetic lighting.	LT_7	Natural lighting	Lighting provided without any artificial lighting sources	LT_1 / general lighting	P
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M.2 – Minimum efficacy for luminaires																											

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SAITCO ,First Industrial City area ,Riyadh Station area beside dry customs St.4,5,6,7 Building No.2433 , Riyadh 11427, PO 27711 , Tel : +966 11 2043000,Fax +966 1 2042888, www.saitco.com.sa			

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	<p>M.2 - Minimum Efficacy for luminaires</p> <p>The minimum energy efficacy for luminaires are reported in Table 35, depending on the total power of the luminaires.</p> <p>Table 35: Minimum energy efficacy for (MEPS) Luminaires</p> <table><tr><th>Power of the luminaire</th><th>Minimum value for efficacy</th></tr><tr><td>$P_{rated} < 15 \text{ W}$</td><td>$\geq 65 \text{ Lumen/Watt}$</td></tr><tr><td>$P_{rated} \geq 15 \text{ W}$</td><td>$\geq 70 \text{ Lumen/Watt}$</td></tr></table>	Power of the luminaire	Minimum value for efficacy	$P_{rated} < 15 \text{ W}$	$\geq 65 \text{ Lumen/Watt}$	$P_{rated} \geq 15 \text{ W}$	$\geq 70 \text{ Lumen/Watt}$	-	P																		
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M.3 – Energy efficiency Index for luminaires (EEI)																											
The energy efficiency for luminaires is calculated as for the EEI for lamps of the same category (directional or non-directional) according respectively to Annex C for non-directional luminaires and E for directional luminaires, based on illuminance (Lumen) and Power deducted from the Energy Efficacy.		Annex M	P																								
or the calculation of the energy efficiency index (EEI) of a model, its corrected (electric) power P_{cor} for any control gear losses is compared with its reference power P_{ref} (based on the luminous flux emitted).		-	P																								
The EEI is calculated as follows and rounded to three decimal places:		-	P																								
$EEI = P_{cor} / P_{ref}$		$EEI = 0.136$	P																								
P_{cor} (without control gear)= rated power (P_{rated})		$P_{cor} = 47\text{W}$	P																								
For models with external control gear P_{cor} is the rated power (P_{rated}) corrected in accordance with the corrections factors listed below:		-	N/A																								
The rated power (P_{rated}) of the lamps/luminaires is measured at their nominal input voltage.		220-240V	P																								
Correction factors presented in Table 36 apply to moderated the electric power of the luminaires		-	N/A																								
Correction factor cumulative with those expressed in annex C for indirect lamps and Annex E for direct lamps.		-	N/A																								
P_{ref} is the reference power obtained from the useful luminous flux of the model (Φ_{use}) by the formula:		-	-																								
$\Phi_{use} < 1300 \text{ lumen}$: $P_{ref} = 0.88\sqrt{\Phi_{use}} + 0.049 \times \Phi_{use}$		345.02	P																								
$\Phi_{use} \geq 1300 \text{ lumen}$: $P_{ref} = 0.07341 \times \Phi_{use}$		-	N/A																								
For non-directional lamps, the useful luminous flux (Φ_{use}) is the total rated luminous flux (Φ)		-	-																								
M.4 - Classification of Energy Efficiency Index for (integrated luminaires (EEI)																											
This clause only for the measured value no need to verdict (P,F,or N) except if it exceed allowable limit at this case F		-	-																								
The energy efficiency rating of luminaires shall be determined on the basis of their energy efficiency index (EEI) as outlined in Table 37.		-	-																								
	<p>Table 37: Energy efficiency classes for luminaires</p> <table><tr><th>Energy efficiency index (EEI)</th><th>Energy efficiency class (Arabic)</th><th>Equivalent energy efficiency class (English)</th></tr><tr><td>$EEI \leq 0.11$</td><td>أ</td><td>A</td></tr><tr><td>$0.11 < EEI \leq 0.13$</td><td>ب</td><td>B</td></tr><tr><td>$0.13 < EEI \leq 0.18$</td><td>ج</td><td>C</td></tr><tr><td>$0.18 < EEI \leq 0.24$</td><td>د</td><td>D</td></tr><tr><td>$0.24 < EEI \leq 0.50$</td><td>هـ</td><td>E</td></tr><tr><td>$0.50 < EEI \leq 0.95$</td><td>و</td><td>F</td></tr><tr><td>$0.95 < EEI \leq 1.75$</td><td>ز</td><td>G</td></tr></table> <p><i>Note: For labelling purposes, the Arabic letters shall be used. The equivalent English version is only provided for informational purposes</i></p>	Energy efficiency index (EEI)	Energy efficiency class (Arabic)	Equivalent energy efficiency class (English)	$EEI \leq 0.11$	أ	A	$0.11 < EEI \leq 0.13$	ب	B	$0.13 < EEI \leq 0.18$	ج	C	$0.18 < EEI \leq 0.24$	د	D	$0.24 < EEI \leq 0.50$	هـ	E	$0.50 < EEI \leq 0.95$	و	F	$0.95 < EEI \leq 1.75$	ز	G	Measured = C	P
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$0.24 < EEI \leq 0.50$	هـ	E																									
$0.50 < EEI \leq 0.95$	و	F																									
$0.95 < EEI \leq 1.75$	ز	G																									
4.2	Functionality requirements																										
	Integrated luminaires listed in Annex A shall comply with requirements specified in Annex D, F and M, when applicable.	-	P																								
Annex D – Functionality and endurance requirements for non-directional lamps and luminaires																											
D.3 – Functionality and Endurance requirements for non-		-	-																								

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	directional LED lamps and luminaires																						
	<p>D.3 - Functionality and endurance requirements for non-directional LED lamps and luminaires</p> <p><i>Table 13: Functionality and endurance requirements for non-directional LED lamps and luminaires</i></p> <table><tr><th>Parameter</th><th>Performance required</th></tr><tr><td>Lamp survival factor at 6,000 h</td><td>≥ 0.90</td></tr><tr><td>Lumen Maintenance at 6,000 h</td><td>≥ 0.80</td></tr><tr><td>Number of switching cycles before failure</td><td>≥ 15,000 if rated lamp life ≥ 30,000 h otherwise: ≥ half the rated lamp life expressed in hours</td></tr><tr><td>Starting time</td><td>< 0.5 s</td></tr><tr><td>Lamp warm-up time to 95 % Φ</td><td>< 2 s</td></tr><tr><td>Premature failure rate</td><td>≤ 5.0 % at 1,000 h</td></tr><tr><td>Color rendering (Ra)</td><td>≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications</td></tr><tr><td>Color consistency</td><td>Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.</td></tr><tr><td>Lamp displacement factor (Df) with integrated control gear and integrated luminaires</td><td>P ≤ 2 W: no requirement 2 W < P ≤ 5 W: Df ≥ 0.4 5 W < P ≤ 25 W: Df ≥ 0.7⁽¹⁾ P > 25 W: Df ≥ 0.9 ⁽¹⁾ During one year after date of enforcement Df ≥ 0.5 is accepted for lamps with 5 W < P ≤ 25 W</td></tr></table>	Parameter	Performance required	Lamp survival factor at 6,000 h	≥ 0.90	Lumen Maintenance at 6,000 h	≥ 0.80	Number of switching cycles before failure	≥ 15,000 if rated lamp life ≥ 30,000 h otherwise: ≥ half the rated lamp life expressed in hours	Starting time	< 0.5 s	Lamp warm-up time to 95 % Φ	< 2 s	Premature failure rate	≤ 5.0 % at 1,000 h	Color rendering (Ra)	≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications	Color consistency	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	Lamp displacement factor (Df) with integrated control gear and integrated luminaires	P ≤ 2 W: no requirement 2 W < P ≤ 5 W: Df ≥ 0.4 5 W < P ≤ 25 W: Df ≥ 0.7 ⁽¹⁾ P > 25 W: Df ≥ 0.9 ⁽¹⁾ During one year after date of enforcement Df ≥ 0.5 is accepted for lamps with 5 W < P ≤ 25 W	-	P
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	Annex F – Functionality requirements for directional LED lamps and integrated luminaires	-	-																				
	The lamp functionality requirements are outlined in table 18 for directional LED lamps and integrated luminaires. For the purpose of testing the number of times the lamp can be switched on and off before failure, the switching cycle shall consist of periods comprising 1 minute on and 3 minutes off or 5 minutes on and 5 minutes off. For the purposes of testing lamp lifetime, lamp survival factor, lumen maintenance and premature failure, the standard switching cycle shall be used.	-	-																				
	Add Before table 18 (2902:2021) Lumen maintenance and survival factors values at 6000 h shall meet the limits in table 18 in accordance with IEC 62722 or IES LM 84 and shall be submitted in registration system. In case IEC 62717 or IES LM 80 or test report is available then, Lumen maintenance and survival factors values at 2000 h are accepted and shall meet the limits in the table 18 in accordance with IEC 62722 or IES LM 84.	-	-																				

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	<p>Table 18: Functionality and endurance requirements for directional LED lamps and integrated luminaires</p> <table><tr><th>Parameter</th><th>Requirements</th></tr><tr><td>Lamp survival factor at 6,000 h</td><td>≥ 0.90</td></tr><tr><td>Lumen Maintenance at 6,000 h</td><td>≥ 0.80</td></tr><tr><td>Number of switching cycles before failure</td><td>≥ 15,000 if rated lamp life ≥ 30,000 h otherwise: ≥ half the rated lamp life expressed in hours</td></tr><tr><td>Starting time</td><td>< 0.5 s</td></tr><tr><td>Premature failure rate</td><td>≤ 5.0 % at 1,000 h</td></tr><tr><td>Color rendering (Ra)</td><td>≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications</td></tr><tr><td>Color consistency</td><td>Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.</td></tr><tr><td>Lamp displacement factor (Df) for lamps with integrated control gear and integrated luminaires</td><td>P ≤ 2 W: no requirement 2 W < P ≤ 5 W: Df > 0.4 5 W < P ≤ 25 W: Df > 0.7⁽¹⁾ P > 25 W: Df > 0.9 ⁽¹⁾ during one year after date of enforcement Df ≥ 0.5 is accepted for lamps with 5 W < P ≤ 25 W</td></tr></table>	Parameter	Requirements	Lamp survival factor at 6,000 h	≥ 0.90	Lumen Maintenance at 6,000 h	≥ 0.80	Number of switching cycles before failure	≥ 15,000 if rated lamp life ≥ 30,000 h otherwise: ≥ half the rated lamp life expressed in hours	Starting time	< 0.5 s	Premature failure rate	≤ 5.0 % at 1,000 h	Color rendering (Ra)	≥ 80 ≥ 65 if the lamp is intended for outdoor or industrial applications	Color consistency	Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.	Lamp displacement factor (Df) for lamps with integrated control gear and integrated luminaires	P ≤ 2 W: no requirement 2 W < P ≤ 5 W: Df > 0.4 5 W < P ≤ 25 W: Df > 0.7 ⁽¹⁾ P > 25 W: Df > 0.9 ⁽¹⁾ during one year after date of enforcement Df ≥ 0.5 is accepted for lamps with 5 W < P ≤ 25 W	-	-
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4.3	Marking requirements																				
	Instruction manuals supplied with products and available on website shall be:	Instruction provided	P																		
	Cautionary and/or any safety warnings for the direct user or consumer shall be in the Arabic and English language.	provided	P																		
	International accepted pictograms are permitted instead of verbally expressed language.	Provided	P																		
	Available on a Website (English only is permitted).	Instruction provided	P																		
	Lamps, ballasts and luminaires listed in Annex A of this Standard shall comply with the marking requirements specified in Annex G (directional lamps, non-directional lamps and luminaires) and Annex H.2 (ballasts / control gears).	-	P																		
2902 (2021) replacement	“Special purpose” products (Annex B.1) do not need to comply with the marking requirements specified in Annex G. Instead, the following information shall be clearly and prominently indicated on their packaging and in all forms of product information accompanying the lamp when it is placed on the market:	Not special purpose	N/A																		
	<input type="checkbox"/> Brand Name	-	N/A																		
	<input type="checkbox"/> Model number	-	N/A																		
	<input type="checkbox"/> Rated power(Watt)	-	N/A																		
	<input type="checkbox"/> Rated Voltage (Voltage)	-	N/A																		
	<input type="checkbox"/> Rated Lumen(Lumen)	-	N/A																		
	<input type="checkbox"/> Rated color temperature (Kelvin)	-	N/A																		
	<input type="checkbox"/> Country of origin	-	N/A																		
	<input type="checkbox"/> Their intended purpose	-	N/A																		
	Products listed in Annex B.1.2 shall fulfill the documentation and information requirements specified for them in the same Annex.	-	N/A																		

ANNEX G	Marking requirements for non-directional and directional lamps		
2902(2021)	ANNEX Title correction: Marking requirements for non-directional and directional lamps and luminaire.		
G.1	Information to be displayed on the lamp itself.		-
2902(2021)	For lamps other than high-intensity discharge lamps, the following shall be printed on the bulb with non-removable ink:	-	P
	• Brand name	Nardeen	P
	• Input voltage *	AC220-240V	P
	• Rated power (Watt)	47W	P

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	• Country of origin	China	P
G.2	Information to be visibly displayed to end-users, prior to their purchase, on the packaging and on free access websites		-
2902(2021)	Title correction: Information to be visibly displayed to end- users, prior to their purchase and on the packaging.		-
2902(2021)	The information does not need to use the exact wording on the list below. It may be displayed in the form of graphs, drawings or symbols rather than text	-	-
	The information in paragraphs (a) to (p) below shall be visibly displayed on the packaging if the product is intended to be displayed to the end-users	-	-
	a. Brand name;	Nardeen	P
	b. Model number;	Nardeen WP007 47W/865-150	P
	c. Country of origin;	China	P
	d. Rated voltage and rated frequency;	220-240V 50/60Hz	P
	e. Rated luminous flux (Lumen);	4700	P
	f. Rated Efficacy (Lumen/Watt);	100	P
	g. Rated power (Watt);	47W	P
	h. Rated beam angle in degrees (only for directional lamps);	-	N/A
	i. Lamp displacement factor (only for LED lamps with integrated control gear);	0.9	P
	j. Rated life time of the lamp in hours;	20000	P
	k. Rated Color temperature, as a value in Kelvins, expressed graphically or in words;	6500	P
	l. Number of switching cycles before premature failure (only for LED lamps or if claimed by the manufacturer for other type of lamps);	10000	P
	m. Rated Color rendering index (Ra);	80	P
	n. Stating all hazardous material contained in the lamp/luminaire, as relevant;	-	N/A
	o. A warning if the lamp cannot be dimmed or can be dimmed only on specific dimmers; in the latter case, a list of compatible dimmers shall be also provided on the manufacturer's website or any other form the manufacturer deems appropriate	marked	P
	p. Following information are optional:	-	-
	- Lamp type: directional or non-directional	-	N/A
	- Color consistency (only for LED lamps);	-	N/A
	- Lumen maintenance factor at the end of the nominal life;	-	N/A
	- Warm-up time up to 60 % of the full light output (may be indicated as 'instant full light' if less than 1 second), when relevant;	-	N/A
	- If designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25^\circ\text{C}$ or specific thermal management is necessary), provide information on those conditions;	-	N/A
	- Rated peak intensity in candela (cd), when available;	-	N/A
	An equivalence claim involving the power of a replaced lamp type may be displayed only if the lamp type is listed in Part 1 - Table 13 and if the luminous flux of the lamp in a 90° cone ($\square\square\square^\circ$) is not lower than the corresponding reference luminous flux in Part 1 - Table 13 The reference luminous flux shall be multiplied by the correction factor in Part 1 - Table 14. For LED lamps, it shall be in addition multiplied by the correction factor in Part 1 - Table 15. The intermediate values of both the	-	N/A

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Issue No : 2	Issue Date : 01/10/2020	Revision No: 3	Revision Date 05/08/2023
SAITCO ,First Industrial City area ,Riyadh Station area beside dry customs St.4,5,6,7 Building No.2433 , Riyadh 11427, PO 27711 , Tel : +966 11 2043000,Fax +966 1 2042888, www.saitco.com.sa			

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	luminous flux and the claimed equivalent lamp.		
	For LED lamps, if intended for use in outdoor or industrial applications, an indication to this effect;	-	N/A
	Lamp dimensions in millimeters (length and largest diameter);	-	N/A
	- Actual values of all hazardous material contained in the lamp/luminaire	-	N/A
	q. Following information shall be displayed on free-access websites or in any other form the manufacturer deems appropriate:	-	-
	- how to clean lamp debris in case of accidental lamp breakage and disposal of lamp at the end of life, when relevant;	-	N/A
	- About actual values of the hazardous content, when relevant	-	N/A
G.3 (new clause)2902 2021	Information on control gear and ballast	-	N/A
	For control gear and ballast, the following shall be printed on the product and packaging:	-	N/A
	- Brand name;	-	N/A
	- Model number;	-	N/A
	- Country of origin;	-	N/A
	- Rated voltage and rated frequency;	-	N/A
	- Rated efficiency %	-	N/A
	- Rated input power (Watt);	-	N/A
	- Rated power factor	-	N/A
	- Rated ambient temperature (Ta) and Rated case	-	N/A
	- Temperature (Tc)	-	N/A

4.4	Energy efficiency label	-	-
	Lamps and integrated luminaires in the scope of this standard shall have label printed directly on the individual packaging of the product.	Not provided	N/A
4.5	Hazardous chemicals: Substance restrictions for lamps and control gears	-	-
	According to MOC amendments: this clause NA		-
	<p>The following products are exempted from requirements on hazardous substances (Clause 4.5)</p> <ul style="list-style-type: none"> • Luminaires • Control gears 	Luminaires	N/A

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ANNEX N – Criteria for market surveillance

The enforcer may draw a sample of batch of a minimum of twenty (20) lamps or ten (10) luminaires of the same model from the same manufacturer, where possible obtained in equal proportion from four randomly selected sources, unless specified otherwise in Table 38.

The model shall be considered to comply with the requirements laid down in this Standard if:

- The lamps in the batch are accompanied by the required and correct product information,
- All parameters listed in Table 38 are met.

Parameter	Procedure
Energy efficiency index ¹	Compliance: The Energy Efficiency Index (EEI) value for lamps in the scope of this Standard shall be less than or equal to the specified values in Tables 2 and 8, when calculated at both rated and average tested power and luminous flux. Furthermore, the average EEI of the sample tested should be not higher than 10% of the rated EEI, and each lamp in the sample should have an EEI value within 10% of the sample's average EEI. For Luminaires the MEPS for Energy Efficacy shall be respected for each product; furthermore, the average efficacy of the sample tested should not be lower 10% of the rated efficacy (in Lumen/W), and each luminaire in the sample should have an efficacy value within 10% of the sample's average efficacy. Non-compliance: otherwise
Lamp survival factor at 6000 h (for LED lamps only)	The test shall end <input type="checkbox"/> when the required number of hours is met, or <input type="checkbox"/> when more than two lamps fail, whichever occurs first Compliance: a maximum of two out of every 20 lamps in the test batch may fail before the required number of hours Non-compliance: otherwise
Number of switching cycles before failure	The test shall end when the required number of switching cycles is reached, or when more than one out of every 20 lamps in the test batch have reached the end of their life, whichever occurs first Compliance: at least 19 of every 20 lamps in the batch have no failure after the required number of switching cycles is reached Non-compliance: otherwise
Starting time	Compliance: the average starting time of the lamps in the test batch is not higher than the required starting time plus 10 %, and no lamp in the sample batch has a starting time longer than two times the required starting time Non-compliance: otherwise
Lamp warm-up time to 60 % Φ	Compliance: the average warm-up time of the lamps in the test batch is not higher than the required warm-up time plus 10%, and no lamp in the sample batch has a warm-up time that exceeds the required warm-up time multiplied by 1.5
1 The tolerances for variation indicated above relate only to the verification of the measured parameters by the authorities and shall not be used by the supplier as an allowed tolerance on the values in the technical documentation to achieve a more efficient energy class. The declared values shall not be more favorable for the supplier than the values reported in the technical documentation. Non-compliance: otherwise	
Premature failure rate	The test shall end <input type="checkbox"/> when the required number of hours is met, or <input type="checkbox"/> When more than one lamp fails, whichever occurs first Compliance: a maximum of one out of every 20 lamps in the test batch fails before the required number of hours Non-compliance: otherwise
Color rendering (Ra)	Compliance: the average Ra of the lamps in the test batch is not lower than three points below the required value, and no lamp in the test batch has a Ra value that is more than 3,9 points below the required value Non-compliance: otherwise
Lumen maintenance at end of life and rated lifetime (for LED lamps only)	For these purposes, 'end of life' shall mean the point in time when only 50 % of the lamps are projected to survive or when the average lumen maintenance of the batch is projected to fall below 70 %, whichever is projected to occur first Compliance: the lumen maintenance at end of life and the lifetime values obtained by extrapolation from the lamp survival factor and from the average lumen maintenance of the lamps in the test batch at 6000 h are not lower than respectively the lumen maintenance and the rated lifetime values declared in the product information minus 10 % Non-compliance: otherwise
If only the equivalence claim is verified for compliance, it is sufficient to test 10 lamps, where	

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Equivalence claims for retrofit lamps according to Annex G	possible obtained approximately in equal proportion from four randomly selected sources Compliance: the average results of the lamps in the test batch do not vary from the limit, threshold or declared values by more than 10 % Non-compliance: otherwise
Beam angle	Compliance: the average results of the lamps in the test batch do not vary from the declared beam angle by more than 25 % and the beam angle value of each individual lamp in the test batch does not deviate by more than 25 % of the rated value Non-compliance: otherwise
Peak intensity	Compliance: the peak intensity of each individual lamp in the test batch is not less than 75 % of the rated intensity of the model Non-compliance: otherwise
Other parameters	Compliance: the average results of the lamps in the test batch do not vary from the limit, threshold or declared values by more than 10 %. Non-compliance: otherwise

If a model within the registered family of product fails, the registration of all models under the same family of product will be automatically canceled.

M.2 - Minimum Efficacy for luminaires			
The minimum energy efficacy for luminaires are reported in Table 35, depending on the total power of the luminaires.			
Table 35: Minimum energy efficacy for (MEPS) Luminaires			
Power of the luminaire	Minimum value for efficacy	Measured value	Verdict
Prated < 15 W	≥ 65 Lumen/Watt	-	N/A
Prated ≥ 15 W	≥ 70 Lumen/Watt	-	P

M.4 - Classification of Energy Efficiency Index for (integrated luminaires (EEI))		
Number of sample	Measured EEI	Measured EEI class
1	0.138	C
2	0.138	C
3	0.135	C
4	0.135	C
5	0.132	C

Table 37	Energy efficiency classes for luminaire		
	EEI ≤ 0.11	أ	A
	0.11 < EEI ≤ 0.13	ب	B
	0.13 < EEI ≤ 0.18	ج	C
	0.18 < EEI ≤ 0.24	د	D
	0.24 < EEI ≤ 0.50	هـ	E
	0.50 < EEI ≤ 0.95	و	F
	0.95 < EEI ≤ 1.75	ز	G
Note: For labelling purposes, the Arabic letters should be used. The equivalent English version is only provided for informational purposes			

Annex D – Functionality and endurance requirements for non- directional lamps and luminaires
D.3 – Functionality and Endurance requirements for non-directional LED lamps and luminaires

Add Before table 13 (2902:2021)	Lumen maintenance and survival factors values at 6000 h shall meet the limits in table 13 in accordance with IEC 62722 or IES LM 84 and shall be submitted in registration system. In case IEC 62717 or IES LM 80 test report is available then, Lumen maintenance and survival factors values at 2000 h are accepted and shall meet the limits in the table 13 in accordance with IEC 62722 or IES LM 84.
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Table 13: Functionality and endurance requirements for non-directional LED lamps and luminaires

Functionality parameter	Requirement	Result(s)	N/A
Lamp survival factor at 6 000h (2000H as SASO amendment)	≥0.90	≥0.90	N/A
Lumen Maintenance at 6 000h (2000H as SASO amendment)	≥0.80	≥0.80	N/A
Number of switching cycles before failure	≥15 000 if rated lamp life ≥30000h otherwise:	-	N/A
	≥half the rated lamp life expressed in hours	10000	P
Starting time	< 0.5s	0.011	P
Lamp warm-up time to 95 % Φ	< 2 s	0.033	P
Premature failure rate	≤5.0% at 1 000h	0	P
Color rendering (Ra)	≥80 / ≥65 if the lamp is intended for outdoor or industrial applications	≥80	P
Color consistency	Variation of chromaticity coordinates within a six-step Mac Adam ellipse or less.	-	N/A
Lamp displacement factor (Df) with integrated control gear	P ≤ 2W : no requirement	-	N/A
	2W < P ≤ 5W : DF ≥ 0.4	-	N/A
	5 W < P ≤ 25W : DF ≥ 0.7	-	N/A
	P > 25W : DF ≥ 0.9	≥ 0.9	P

Annex F Functionality requirements for directional lamps and integrated Luminaires

Table 18: Functionality and endurance requirements for directional LED lamps and integrated luminaires

Functionality parameter	Requirement	Result(s)	
Lamp survival factor at 6 000h	≥0.90	-	-
Lumen Maintenance at 6 000h	≥0.90	-	-
Number of switching cycles before failure	≥15 000 if rated lamp life ≥30000h otherwise:	-	-
	≥half the rated lamp life expressed in hours	-	-
Starting time	< 0.5s	-	-
Premature failure rate	≤5.0% at 1 000h	-	-
Color rendering (Ra)	≥80 ≥65 if the lamp is intended for outdoor or industrial applications	-	-
Color consistency	Variation of chromaticity coordinates within a six-step Mac Adam ellipse or less.	-	-
Lamp displacement factor (Df) with integrated control gear	P ≤ 2W : no requirement	-	-
	2W < P ≤ 5W : DF > 0.4	-	-
	5W < P ≤ 25W : DF > 0.7	-	-
	P > 25W : DF > 0.9	-	-

Parameter (Measured value)								
No. of sample	Power (W)	Luminous Flux (lm)	CCT (Colour temperature)(K)	CRI (Ra)	Beam Angle	EEI	EEL	Power Factor
1	46.1	4567	6212	81.3	-	0.138	C	0.96
2	46.4	4562	6214	82.3	-	0.138	C	0.96
3	45.6	4570	6216	82.2	-	0.135	C	0.96
4	45.3	4568	6238	82.2	-	0.135	C	0.95
5	44.5	4566	6212	82.3	-	0.132	C	0.95
Average	45.58	4566.6	6218.4	82.06	-	0.135	C	0.956

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			Verdict

Annex N Criteria for market surveillance (table 38)				
Parameter	Rated	Measured (average)	Limit	Verdict
Energy Efficacy	100	100.18	Min. 10% rated efficacy	P
Color rendering (Ra)	80	82.06	Min. -3, Max. +3.9	P
Beam angle	-	-	±25% rated beam angle	-
Peak intensity	-	-	Min. 75% rated intensity	-
Lamp displacement factor	0.9	0.956	±10% rated	P
Color temperature	6500	6218.4	±10% rated	P
Color consistency	-	-	±10% rated	-
Power	47W	45.58	+10% rated	P
Luminous Flux	4700	4566.6	-10% rated	P
Calculated Rated EEI	0.136	0.135	±10% rated	P

Table 13: Functionality and endurance requirements for non-directional LED lamps and luminaires

No. of sample	Test Voltage (V)	Luminous Flux (lm)		Lumen Maintenance (%)	Premature failure rate	Lamp survival Factor	Ra	DF
		Initial	2000H	2000H	At 1000H	At 2000H	2000H	2000H
1	230	4567	4252	93.1	0	100	81.3	0.96
2	230	4562	4276	93.7	0	100	82.3	0.96
3	230	4570	4269	93.41	0	100	82.2	0.96
4	230	4568	4275	93.5	0	100	82.2	0.95
5	230	4566	4264	93.3	0	100	82.3	0.95
Average	230	4566.6	4267.2	93.402	-	100	82.06	0.956
Requirement	-	-	-	≥80%	≤5%	≥90%	≥80	>0.90

Remarks

Photo no.1 (Marking



Item Code:	Power 47W	القدرة 47 واط
9114 018 97485	Lumen 4700	شدة الاضاءة 4700 لومن
Nardeen WP007 47W/865-150	Efficacy (lumen/wattage) 100 lm/W	الكفاءة 100 لومن/واط
	Lamps displacement factor (Df) > 0.9	معامل القدرة 0.9
	Color rendering index (Ra) ≥ 80	معامل وضوح اللون ≥ 80
	Voltage 220-240V	الفولت 240-220V
	Rated frequency 50/60Hz	التردد 50/60Hz
	Beam angle SWB (150°)	درجة الانتشار واسع متماثل (150°)
	Lifetime 20,000 hrs	العمر 20000 ساعة
	Switching Cycle 10000	دورة التشغيل/الاعلاق 10000
	Non-dimmable	غير قابل للتعتيم
	Made in China	صنع في الصين

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Photo no.2 (General view / External package)



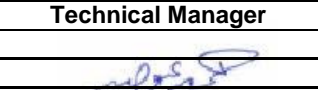

Item Code: 9114 018 97485 Nardeen WP007 47W/865-150	Power 47W Lumen 4700 Efficacy (lumen/wattage) 100 lm/W Lamps displacement factor (Df) > 0.9 Color rendering index (Ra)>80 Voltage 220-240V Rated frequency 50/60Hz Beam angle SWB (150°) Lifetime 20,000 hrs Switching Cycle 10000 Non-dimmable Made in China	القدرة 47 واط شدة الاضاءة 4700 لومن الكفاءة 100 لومن/واط معامل القدرة 0.9 معامل وضوح اللون >80 الفولت 240-220V التردد 50/60Hz درجة الانتشار واسع (150°) العمر 20000 ساعة دورة التشغيل/الاعلاق 10000 غير قابل للتعتيم صنع في الصين
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Conformity Decision is usually included in the report, unless the agreement states otherwise by the client.

Results Notes: The acceptance criterion is based on :		A-The relevant TR Requirements <input type="checkbox"/>	B-The relevant standard specifications <input type="checkbox"/>
Acceptance Rule is based on:		C- Manufacturer's manual (product technical data sheet) <input type="checkbox"/>	D- Customer requirements <input type="checkbox"/>
Acceptance Rule is based on:		Special Case	Rejection Rule (Failing) is based on:
A- The measured value (+) measurement uncertainty value is less than the maximum required to criteria of acceptance.	Accept when a confidence level of less than 95% is acceptable	May be accept if: Measured result \leq the upper limit Measured result \geq lower limit May be rejected if : measured value < the upper limit measured result > lower limit	Reject when a confidence level of less than 95% is acceptable
B- The measured value (-) measurement uncertainty value is greater than the minimum required to criteria of acceptance.			A- The measured value (+) measurement uncertainty value is greater than the maximum required to criteria of acceptance. B- The measured value (-) measurement uncertainty value is less than the minimum required to criteria of acceptance.
♦ = measurement result with agreed method		I = uncertainty interval of agreed method	

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Clause	Requirement -Test	Result - Remark	Verdict

Notes on results: The acceptance criterion is based on; A-Relevant standard specification <input type="checkbox"/> B-Manufacturer's manual (product technical data sheet) <input type="checkbox"/> C-Customer requirements . <input checked="" type="checkbox"/>			
The rule of acceptance is based on: The measured value fulfills the requirement according to the acceptance criterion, taking into account the uncertainty value in the measurement The rule of rejection is based on: The measured value does not achieve the required according to the acceptance criterion, taking into account the uncertainty value in the measurement			
<input checked="" type="checkbox"/> The sample passed all the above-mentioned tests in accordance with the requirements of the product			
<input type="checkbox"/> The sample passed all the tests mentioned above in accordance with the requirements for the product, except for the test where the measured value does not meet the requirements of the product mentioned in the attached standard specifications.			
The result is for the sample referred to in the report, which has been tested only and is only representative of itself.			
Accreditation statues :		All tests are accredit : <input type="checkbox"/>	All tests are accredit except:
REMARK : SOFT COPY OF THE CONTROL TEST RESULT SHEET IS AUDITED BY THE LAB SUPERVISOR			
	Inspected by	Lab supervisor/ Reviewer	Technical Manager
Name			
Sign			
Date	06 / 01 / 2024	06 / 01 / 2024	06 / 01 / 2024
"End of Report"			
 <p> SAITCO Saudi Inspection & Testing Co. الشركة السعودية للفحص والاختبار مختبر المنتجات الكهربائية والإلكترونية Electrical & Electronic Lab. اعتماد رقم N-T-00047 ت. 41 </p>			