Issue No. 2	الشركة السعودية للفحص والاختبار	
lssue Date : 01/10/2020	SAUDI INSPECTION & TESTING CO. (SAITCO)	
Revision No. 3	ملحق7 - أ:ملاحق متطلبات العملية- نتائج الاختبارات مختبر الكهرباء	Saudi Inspection & Testing Co
Issue Date : 05/08/2023	Appendix 7-A: LAB process REQ. TEST RESULTS -ELECTRICAL LAB	الشركة السعودية للفحص والاختبار

Code of product in Lab :F-051الحكة الحكة الحكة المكترالحكة الحكة			1	
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Standard / TR No.اللائحة رقم المواصفة / اللائحة (SASO 2902:2018 +Amd1:2021 SASO 2902:2018 +Amd1:2021Test case verdictsالكت الحكم على نتيجة الاختبارIEC 60598-1:2020 RLV SASO 2902:2018 +Amd1:2021 SASO 2902:2018 (SASO 2902:2018 Test case verdictsIEC 60598-1:2020 RLV SASO 2902:2018 (SASO 2902:2018 (SASO 2902:2018 (SASO 2902:2018 (SASO 2902:2018 (SASO 2902:2018) (SASO 2902:2018 (SASO 2902:2018) (SASO 2902:2018 (SASO 2902:2018) (SASO 2902:2018) 	Products Category	تصنيف المنتج	Particular requireme	ents: Fixed luminaires.
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Test case does not apply to the test objectNot ApplicableN/ATest item does meet the requirementPassP				-
Test item does meet the requirement Pass P	Conformity to articles tested		⊠Yes	□No
Test item does meet the requirement Pass P	Test case does not apply to the	test object	Not Applicable	N/A
Test item does not meet the requirement Fail F	Test item does meet the require	ment		
Technical Lab supervisor / Manager			Fail	F

Technical Lab supervisor / Manager

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4	F07-08-02 A	Page 1 of 52	Issued By: QGM	Approved By: GM
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict

1.5 (2)	CLASSIFICATION OF LUMINAIRE		
(2.1)	Luminaires are classified according to the type of protection against electric shock, the degree of protection against ingress of dust, solid objects and moisture, the material of the supporting surface and the circumstances of use.		Р
2.2	Luminaires shall be classified according to the type of protection against electric shock provided, as class I, class II or class III (see definitions in Section 1).	Class II	Р
	Luminaires shall have only a single classification. For example, for a luminaire with a built-in extra-low- voltage transformer with provision for protective earthing, the luminaire shall be classified as class I and no part of the luminaire shall be classified as class III even though the lamp compartment is separated by a barrier from the transformer compartment.		Ρ
2.3	Luminaires shall be classified in accordance with the "IP number" system of classification described in IEC 60529.	-	N/A
2.4	Luminaires shall be classified according to suitability for direct mounting on normally flammable surfaces or suitability for mounting on non-combustible surfaces		Р
1.6	MARKING		-
(3.2)	The following information shall be distinctly and durably marked on the luminaire (see Table 3.1). Each marking in Table 3.1 shall be read with the corresponding subclause as detailed in the table.		Р
(3.2)	Marking to be observed when replacing lamps or other replaceable components shall be visible on the outside of the luminaire (except the mounting side) or behind a cover which is removed during lamp or other component replacement and with the lamp removed.		N/A
	Marking to be observed during installation shall be visible during installation on the outside of the luminaire or behind a cover or part which is removed during installation.		Р
	Marking to be observed after installation shall be visible with the luminaire assembled and installed as for normal use and with the lamp in place.		Р
(3.4)	The durability of the marking is checked by trying to remove it by rubbing lightly for 15 s with a piece of cloth soaked with water and, after drying, for a further 15 s with a piece of cloth soaked with petroleum spirit and by inspection after the tests detailed in Section 12 have been completed.		Р
(3.4)	After the test, the marking shall be legible, marking labels shall not be easily removable and they shall show no curling.		Р
(3.2.1)	Mark of origin Country Trademark	China OPPLE	P P
(3.2.2)	Rated voltage(s) in volts Portable class III luminaires shall be marked with the	220-240V	Р
	rated voltage on the outside of the luminaire.		N/A

P-F07-08-02 A	Page 2 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R			1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

3.2.10(598-1)	Information concerning special lamps, if applicable.		N/A
	According to MOCI no need to verdict any size of the sy	rmbol	
	Minimum size of 25mm	-	N/A
	the manufacturer's instructions provided with the luminaire		N/A
	insulating material The symbol shall be explained on the luminaire or in	<u> </u>	
	Luminaires not suitable for covering with thermally	-	N/A
	non- combustible surfaces		
	normally flammable surfaces (suitable only for mounting on		N/A
(3.2.9) (598-1)	Luminaires not suitable for direct mounting on		
	insufficient, the number of lamps and the type shall also be given.		
	the type or types of lamp for which the luminaire is designed. Where the lamp wattage alone is		N/A
5.2.0.3	the designation as indicated on the lamp data sheet of		
3.2.8.3	rated input power of the luminaire. For all other luminaires, rated wattage of the lamp or		
3.2.8.2	Luminaires designed for non-replaceable or non-user replaceable light sources shall be marked with the	Led 13W	Р
0.0.0	" $n \times MAX W$ ", <i>n</i> being the number of lampholders.		
	tungsten filament lamps with more than one lampholder may be in the form:		N/A
	Marking of maximum rated wattage for luminaires for		
	marked with the maximum rated wattage and number of lamps.		N/A
3.2.8.1	Luminaires for tungsten filament lamps shall be		
	maximum rated light source power or maximum input power according to 3.2.8.1, 3.2.8.2 and 3.2.8.3.	13W	Р
(3.2.8)	Luminaires shall be marked with information for the		
(3.2.7)	Marking of IP20 on ordinary luminaires is not required. Maker's model number or type reference	LED HC260 13W White	N/A P
*	objects and moisture	-	N/A
(3.2.5) (3.2.6)	IP number for degree of protection against dust, solid	-	
(3.2.5)	luminaires. Class III symbol if applicable		N/A N/A
	be on the outside of the luminaire. The class II symbol shall not be applied to semi-		N/A
	For portable luminaires provided with a supply cord, the symbol for class II construction, if applicable, shall	Annuary	N/A
(3.2.4)	Class II symbol if applicable		Р
(3.2.3)	The rated maximum ambient temperature ta, if other than 25 °C		N/A
	marked rated voltage, which is within the voltage range of the values given in Table Y.2, for the chosen communication cable/connectors.		N/A
	or 3.2.26, additional marking of the rated voltage is not required. Luminaires supplied via an external PSE shall have a		N/A
	accordance with 3.2.8. Where marking is provided in accordance with 3.2.25		
	current of the light source to ensure correct replacement. This marking shall be positioned in		N/A
	Luminaires with built-in transformers or convertors, shall be marked with the nominal voltage and/or		

P-F07-08-02 A	Page 3 of 52	Issued By: QGM	Approved By- GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict

	In particular, this applies to the symbols (see Figure 1) for luminaires for use with high pressure sodium lamps		
	having either an internal starting device or requiring an external ignitor where the lamp is required to be		N/A
	marked with the same symbol according to IEC 60662.		
3.2.11(598-1)	Symbol (see Figure 1), if applicable, for luminaires for		
	lamps of similar shape to "cool beam" lamps but		N1/A
	where the use of a dichroic reflectorized "cool beam" lamp might impair safety.		N/A
(3.2.12) (598-1)	Except for type Z attachments, terminations shall be		
(-) ()	marked to identify live, neutral and earth in case of	Turne V	Р
	connection of the luminaire to the supply mains to	Туре Ү	F
	ensure safe and satisfactory operation		
	Symbols, when applied, indicating mains supply		N/A
	terminations shall be according to IEC 60417.		-
	The earthing termination shall be marked by the	-	N/A
	relevant symbol of IEC 60417 only. Leads (tails) and terminations used for the connection		
	to extra-low voltage DC supplies shall indicate their		
	intended connection choosing one of the below		N/A
	mentioned combination (see Table 3.2):		
	Luminaires with supply cords which are not fitted with		
	a plug shall include with the manufacturer's		
	instructions any information necessary to ensure safe		_
	connection, e.g. deviations from the national		Р
	standardized colour coding of the cores where this		
	does not create the possibility of an unsafe situation during installation, use or maintenance.		
3.2.13(598-1)	Symbol (see Figure 1) for minimum distance from		
0.2.10(000 1)	lighted objects, if applicable, for luminaires which		
	might otherwise overheat the lighted objects due to,		
	for example, the applied lamp type, the shape of the		N/A
	reflector, the adjustability of the mounting means or		
	the location of mounting as indicated in the		
	installations instructions.		
	The minimum distance marked shall be determined by the temperature test described in item j) of 12.4.1.		N/A
	The distance is measured on the optical axis of the		
	luminaire from that part of the luminaire or lamp which		N/A
	is nearest to the lighted object.		
	The symbol for minimum distance and explanation of		
	its meaning shall also be given either on the luminaire		N/A
	or in the instructions with the luminaire.		
3.2.14(598-1)	Symbol (see Figure 1), if applicable, for rough service luminaires.		N/A
3.2.15(598-1)	Symbol (see Figure 1), if applicable, for luminaires		N/A
	which are designed for use with bowl mirror lamps.		11/7
3.2.16(598-1)	Luminaires incorporating a protective shield shall be marked as follows:		N/A
	"Replace any cracked protective shield" or		N/A
	With the symbol (see Figure 1).		N/A
3.2.17(598-1)	The maximum number of luminaires that may be		
5.2.17(530-1)	interconnected or the maximum total current that may		
	be drawn by means of couplers provided for looping-in		
	connection to the mains supply. For fixed luminaires,		N/A
	this information may alternatively be provided within		
	the		
	installation instructions.		

P = F07-08-02 A	Page 4 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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,	Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
	Clause	Requ	irement -Test	Result - Remark	Verdict

3.2.18(598-1)	A warning symbol or notice for luminaires with ignitors	
	intended for use with double ended high pressure	
	discharge lamps and luminaires with double-capped	N/A
	Fa8 tubular lamps if the voltage measured according	
	to Figure 26 exceeds 34 V peak.	
	a.) Warning symbol in accordance with IEC	
	60417-5036 (2002-10) visible during	
	replacement of the lamp. The symbol shall be	N/A
	explained on the luminaire or in the	
	manufacturer's instructions provided with the	
	luminaire, or	
	b.) A warning notice near to the holder of a	
	replaceable ignitor or replaceable switching	
	element, if any: "Attention, remove	N/A
	replaceable device before replacement of	
	lamp. After lamp replacement reinsert	
2.2.40/509.4)	replaceable device".	
3.2.19(598-1)	Symbol (see Figure 1) for luminaires which are designed to be used only with self-shielded tungsten	N/A
	halogen lamps or self-shielded metal halide lamps.	IN/ <i>F</i>
3.2.20(598-1)	Where necessary, the means of adjustment where not	
5.2.20(596-1)	obvious, needs to be identified.	N/A
3.2.21(598-1)	The relevant symbol (see Figure 1) for luminaires not	
5.2.21(590-1)	suitable for covering with thermally insulated material.	
	The symbol shall be explained on the luminaire or in	
	the manufacturer's instructions provided with the	N/A
	luminaire. See Table N.1. The minimum size of	
	the symbol shall be 25 mm for each side.	
	NOTE A warning notice and symbol is required when	
	a luminaire is not suitable for covering with thermally	N/A
	insulated material.	
3.2.22(598-1)	Symbol (see Figure 1 from IEC 61558-1), if applicable,	
5.2.22(550 1)	for luminaires with internal replaceable fuses. Such a	
	luminaire shall, in addition, be provided with	
	information regarding the rated current (in A or mA) of	
	the fuse. Where the time/current characteristic of the	N//
	fuse is important for safety, the rating and type of any	14/7
	fuse shall be marked on the holder or in the proximity	
	of the fuse in accordance with what is stated in the	
	relevant fuse standard.	
3.2.23(598-1)	Warning symbol "Do not stare at the operating light	
0.2.20(000 1)	source" (see Figure 1) for portable and handheld	
	luminaires that have been classified as having a	
	threshold illuminance <i>E</i> thr in accordance with IEC TR	
	62778. This marking shall be visible as detailed by	
	condition 'c' of Clause 3.2 and Table 3.1. In addition,	N/A
	the symbol should be positioned so that it can be read	
	without looking into the operating light source. This	
	requirement is applicable only when Ethr is reached at	
	a distance further than 200 mm from the luminaire.	
3.2.24(598-1)	Where required for protection against electric shock,	
	covers fixed over non-user replaceable light sources	
	shall be marked with the 'caution, risk of electric	
	shock' symbol given by IEC 60417-6042:2010-11. The	/// P
	minimum height of this symbol shall be 15 mm (see	
	Figure 1).	
3.2.25(598-1)	Figure 1). Rated constant input voltage when a luminaire is	
3.2.25(598-1)	Rated constant input voltage when a luminaire is operated from a constant voltage controlgear not	N/A

P-F07-08-02 A	Page 5 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

				-
3.2.26(598-1)	Rated constant input current when the lu			
	operated from a constant current control			
	provided with the luminaire. Luminaires supplied with constant current shall also be marked with the highest			N/A
3.2.27(598-1)	allowed Uout value of the controlgear. For luminaires operating a LED light sou	urce and		
5.2.27(590-1)	containing built-in controlgear, the maxim			
	electrical output characteristics from the			
	(e.g. current for constant current control			
	which the luminaire has been designed,			
	marked as required in the first column of			
	belonging to item a). For luminaires inco			Р
	constant light output function, this marking			
	indicate the maximum operating conditio			
	the luminaire has been designed. For lur			
	external independent controlgear deliver luminaire, this marking shall be visible ad			
	second column of			
	Table 3.1 belonging to item b).			
	NOTE This marking is additional to any i	information		N1/A
	already marked on the controlgear.			N/A
3.3(598-1)	In addition to the above marking, all deta	ails which are		Р
, , , , , , , , , , , , , , , , , , ,	necessary to ensure proper installation, use and			
	maintenance shall be given either on the luminaire,			
	semi-luminaire or on built-in ballasts or in the			
	manufacturer's instructions provided with the			
	luminaire, for instance:			
	Written instructions related to safety shall be in a language which is	Marking	English	P
	acceptable in the country in which the			Р
		Manual	English and Arabic	
	equipment is to be installed. For combination luminaires, the permiss	ible ambient		
	For combination luminaires, the permiss temperature, the class of protection or th			
(3.3.1)(598-1)	For combination luminaires, the permiss	ne protection		N/A
(3.3.1)(598-1)	For combination luminaires, the permiss temperature, the class of protection or th against ingress of dust, solid objects and an alternative part if not at least equal to	ne protection d moisture of		N/A
	For combination luminaires, the permiss temperature, the class of protection or th against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire.	ne protection d moisture of		
(3.3.2)(598-1)	For combination luminaires, the permiss temperature, the class of protection or th against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency	ne protection d moisture of	50/60Hz	P
(3.3.2)(598-1)	For combination luminaires, the permiss temperature, the class of protection or th against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures	ne protection d moisture of that of the	50/60Hz	
(3.3.2)(598-1)	 For combination luminaires, the permission temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures 	e protection d moisture of that of the emperature (of	50/60Hz	P N/A
(3.3.2)(598-1)	For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire.Nominal frequencyOperating temperaturesa.) The rated maximum operating te a winding) <i>t</i> w in degrees Celsius	e protection d moisture of that of the emperature (of 5.	50/60Hz	P
(3.3.2)(598-1)	 For combination luminaires, the permission temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures b.) The rated maximum operating temperatures 	e protection d moisture of that of the emperature (of S. emperature (of	50/60Hz	P N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures b.) The rated maximum operating temperatures b.) The rated maximum operating temperatures 	emperature (of s. emperature (of s. emperature (of s.	50/60Hz	P N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures b.) The rated maximum operating temperature to maximum operating temperature to whether the maximum temperature temperature to whether the maximum temperature temper	emperature (of s. emperature (of s. emperature (of s.	50/60Hz	P N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>t</i>w in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and 	emperature (of s. mperature (of s. mperature (of s. nich the	50/60Hz	P N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>tw</i> in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be supply cables and interconnecting cables will be supply cables. 	eprotection d moisture of that of the emperature (of s. mperature (of is. nich the ubjected within	50/60Hz	P N/A N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>t</i>w in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be su the luminaire under the most unfilted to the second secon	eprotection d moisture of that of the emperature (of s. mperature (of is. hich the ubjected within favourable	50/60Hz	P N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permission temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures b.) The rated maximum operating temperature to whe insulation of supply cables and interconnecting cables will be sufficient to the luminaire under the most und conditions of normal operation, in the sufficient operation, in the sufficient operation, in the sufficient operation, in the sufficient operation. 	e protection d moisture of that of the emperature (of s. mperature (of is. hich the ubjected within favourable f in excess of	50/60Hz	P N/A N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>t</i>w in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be su the luminaire under the most unfilted to the second secon	eprotection d moisture of that of the emperature (of s. emperature (of is. hich the ubjected within favourable f in excess of relating to	50/60Hz	P N/A N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>tw</i> in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be sut the luminaire under the most unformation of normal operation, in 90 °C (see note c to Table 12.2) 	eprotection d moisture of that of the emperature (of s. mperature (of ls. hich the ubjected within favourable f in excess of relating to nbol to	50/60Hz	P N/A N/A N/A
(3.3.2)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) tw in degrees Celsius b.) The rated maximum operating te a capacitor) tc in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be su the luminaire under the most und conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver 	erprotection d moisture of that of the emperature (of s. mich the ubjected within favourable f in excess of relating to nbol to n in Figure 1.	50/60Hz	P N/A N/A N/A
(3.3.2)(598-1) (3.3.3)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>t</i>w in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be sut the luminaire under the most unf conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver d.) Spacing requirements to be obseriented to the set of the syminstallation. 	erprotection d moisture of that of the emperature (of s. mich the ubjected within favourable f in excess of relating to nbol to n in Figure 1.	50/60Hz	P N/A N/A N/A N/A
(3.3.2)(598-1) (3.3.3)(598-1) 3.3.4(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>tw</i> in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be sut the luminaire under the most und conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver d.) Spacing requirements to be observation. 	e protection d moisture of that of the emperature (of s. mich the ubjected within favourable f in excess of relating to nbol to n in Figure 1. erved during	50/60Hz	P N/A N/A N/A N/A N/A
(3.3.1)(598-1) (3.3.2)(598-1) (3.3.3)(598-1) (3.3.3)(598-1) (3.3.4(598-1) (3.3.5)(598-1)	 For combination luminaires, the permission temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating temperatures b.) The rated maximum operating temperature to what insulation of supply cables and interconnecting cables will be surt the luminaire under the most und conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver installation. Not used A wiring diagram, except where the luminaire temperature to luminaire temperature to a capacitor. 	e protection d moisture of that of the emperature (of s. mperature (of is. hich the ubjected within favourable f in excess of relating to nbol to n in Figure 1. erved during naire is	50/60Hz	P N/A N/A N/A N/A
(3.3.2)(598-1) (3.3.3)(598-1) 3.3.4(598-1) (3.3.5)(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>tw</i> in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be sut the luminaire under the most und conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver d.) Spacing requirements to be observation. 	e protection d moisture of that of the emperature (of s. mperature (of is. hich the ubjected within favourable f in excess of relating to holol to n in Figure 1. erved during naire is as supply	50/60Hz	P N/A N/A N/A N/A N/A
(3.3.2)(598-1) (3.3.3)(598-1) 3.3.4(598-1)	 For combination luminaires, the permiss temperature, the class of protection or the against ingress of dust, solid objects and an alternative part if not at least equal to basic luminaire. Nominal frequency Operating temperatures a.) The rated maximum operating te a winding) <i>tw</i> in degrees Celsius b.) The rated maximum operating te a capacitor) <i>t</i>c in degrees Celsius c.) The maximum temperature to wh insulation of supply cables and interconnecting cables will be sut the luminaire under the most und conditions of normal operation, i 90 °C (see note c to Table 12.2 unsleeved fixed wiring). The symindicate this requirement is giver d.) Spacing requirements to be observed installation. 	eprotection d moisture of that of the emperature (of s. mperature (of s. hich the ubjected within favourable f in excess of relating to nbol to n in Figure 1. erved during naire is ns supply re, including	50/60Hz	P N/A N/A N/A N/A N/A

P-F07-08-02 A	Page 6 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

(3.3.7)(598-1)	Luminaires provided with metal halide lamps shall, if applicable, be provided with the following warning	N/A
	notice: The luminaire shall only be used complete with its protective shield	N/A
3.3.8(598-1)	The manufacturer of semi-luminaires shall supply information on limitations of use of such devices, particularly where overheating may be caused by the position or thermal distribution of the replaceable light source being different from the light sources they will replace.	N/A
3.3.9(598-1)	In addition, the manufacturer shall be prepared to supply information on the power factor and the supply current.	N/A
	For connections suitable for both resistive and inductive loads, the rated current for the inductive load shall be indicated between brackets and shall immediately follow the rated current for the resistive load. The marking may accordingly be as follows:	N/A
	$3(1)A 250 \lor \text{ or } 3(1)/250 \text{ or } \frac{3(1)}{250}$	N/A
3.3.10(598-1)	Suitability for use "indoors" including the related ambient temperature.	Р
3.3.11(598-1)	For luminaires using remote control gear, the range of lamps for which the luminaire is designed.	N/A
3.3.12(598-1)	For clip-mounted luminaires, a warning when the luminaire is not suitable for mounting on tubular material.	N/A
3.3.13(598-1)	The manufacturer shall provide the specifications of all protective shields.	N/A
(3.3.14)(598-1)	Where necessary for correct operation, the luminaire shall be marked with the symbol for nature of supply (see Figure 1).	Р
3.3.15(598-1)	The rated current at rated voltage shall be declared by the manufacturer for any socket outlet incorporated in the luminaire, if less than the rated value.	N/A
3.3.16(598-1)	The information about rough service luminaires concerning:	N/A
	 the connection to IPX4 rated socket outlets; the correct mounting taking into account the 	N/A
	temporary installation; – the correct fixing to a stand, and also where the	N/A
	stand is not supplied with the luminaire, the maximum height of a possible stand, and its required stability by the indication of the number and minimum length of the legs.	N/A
(3.3.17)(598-1)	For luminaires with type X, Y or Z attachments, the mounting instructions shall contain the substance of the following information	Р
	 – for type X attachments having a specially prepared cord 	N/A
	If the external flexible cable or cord of this luminaire is damaged, it shall be replaced by a special cord or cord exclusively available from the manufacturer or his service agent.	- N/A
	for type Y attachments	P

F07-08-02 A	Page 7 of 52	Issued By: QGM	Approved By: GMJ	
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023	
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 co				

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

	If the external flexible cable or cord of this luminaire is	
	damaged, it shall be exclusively replaced by the	
	manufacturer or his service agent or a similar qualified	P
	person in order to avoid a hazard	
	– for type Z attachments	N/A
	The external flexible cable or cord of this luminaire	
	cannot be replaced; if the cord is damaged, the	N/A
	luminaire shall be destroyed	
3.3.18(598-1)	Luminaires which are other than ordinary, provided	
5.5.10(550 1)	with a PVC supply cord, shall be provided with	
	information about the intended use, i.e. "For indoor	N/A
	use only".	
3.3.19(598-1)	For Class I luminaires having a supply current > 20 A,	
5.5.19(590-1)		
	which generate a protective conductor current greater	N/A
	than 10 mA and intended for permanent connection,	IN/A
	the protective conductor current shall be clearly stated	
2 2 4 0 (5 0 0 4)	in the manufacturers' instructions.	
3.3.19(598-1)	For luminaires which generate a protective conductor	
	current greater than 10 mA and intended for	N1/A
	permanent connection, the protective conductor	N/A
	current shall be clearly stated in the manufacturers'	
	instructions.	
3.3.20(598-1)	Wall mounted, settable and adjustable luminaires not	
	intended to be mounted within arm's reach shall be	
	provided with information to advise their correct	N/A
	installation, i.e. "Only to be installed outside arm's	
	reach".	
3.3.21(598-1)	For luminaires with non-replaceable and non-user	
	replaceable light source, the instruction sheet shall	P
	contain the substance of the following information:	
	 For non-replaceable light sources: 	
	"The light source of this luminaire is not replaceable;	N/A
	when the light source reaches its end of life the whole	IV/A
	luminaire shall be replaced";	
	 For non-user replaceable light sources: 	
	"The light source contained in this luminaire shall only	Р
	be replaced by the manufacturer or his service agent	P
	or a similar qualified person".	
3.3.22(598-1)	For controllable luminaires the classification of	
, , , , , , , , , , , , , , , , , , ,	insulation that has been maintained between LV	N1/A
	supply and control conductors shall be provided (e.g.	N/A
	basic insulation, reinforced insulation).	
3.3.23(598-1)	Luminaires delivered without controlgear shall be	
()	provided with the necessary information for the	
	selection of the appropriate component (in particular	
	the maximum wiring distance and size between	
	controlgear and luminaire), together with the highest	
	allowed Uout	
	value of the controlgear and the maximum Up or	N/A
	equivalent peak voltage <i>U</i> p where pulse voltages are	
	used. In addition, the classification of insulation of the	
	external controlgear that has been maintained	
	between LV supply and secondary output shall be	
	provided if there is a need for at least basic insulation.	
	- For luminaires that require no insulation between LV	N1/A
	supply and output of the external controlgear no	N/A
	additional information is required.	
	- For luminaires that require basic insulation between	
	the primary and secondary part of the controlgear the	N/A
	substance of the following information is required:	

F07-08-02 A	Page 8 of 52	Issued By: QGM	Approved By: GM1
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

		· · · · · · · · · · · · · · · · · · ·
	- For luminaires that are not classified as Class III but	
	require double or reinforced insulation between the	
	primary and secondary part of the controlgear the	N/A
	substance of the following information is required:	
	External controlgear shall provide at least double or	
	reinforced insulation between LV supply and output.	
	 For luminaires that are classified as Class III, an 	
	indication that the controlgear shall be SELV/PELV is	
	required, except where exposed parts have a voltage	N/A
	higher than 12 V AC or 30 V DC, where an indication	
	that the controlgear shall be SELV only is required.	
3.3.24(598-1)	Where the terminal block is not supplied with the	
	luminaire, the packaging shall contain the following	Р
	wording: "Terminal block not included. Installation	
	must be performed by a qualified person."	
3.3.25	Luminaire manufacturers shall provide information	
	about the protection for on-site mains wiring for	
	luminaires employing light sources that emit UV on the	N/A
	mains wiring insulation. The information shall contain	
	the substance of the following:	
	"For installation, the use of additional UV resistant	
	sleeves is required for on-site mains supply cables	N/A
	which are not UV resistant (in particular some	
	halogen-free low smoke cable)."	
3.3.26	For fixed wall mounted and portable wall mounted	
	luminaires using an external flexible cable or cord	
	longer than 30 cm, the manufacturer's instructions	
	shall include the substance of the following wording:	N/A
	"To reduce the risk of strangulation the flexible wiring	
	connected to this luminaire shall be effectively fixed to	
	the wall if the wiring is within arm's reach".	

1.9 (7.2)	PROVISION FOR EARTHING			
7.1(598-1)	This section specifies requirements, where applicable, for the earthing of luminaires.	- N/A		
7.2(598-1	Provision for earthing	- N/A		
7.2.1 (598-1	Metal parts of class I luminaires which are accessible when the luminaire has been mounted, or is opened for replacement of a replaceable light source or replaceable starter or for cleaning purposes, and which may become live in the event of an insulation fault, shall be permanently and reliably connected to a protective earthing terminal or protective earthing contact.	- N/A		
	Metal parts screened from live parts by metal parts which are connected to the protective earthing terminal or protective earthing contact, and metal parts separated from live parts by double insulation or by reinforced insulation, are not, for the purpose of this requirement, regarded as likely to become live in the event of an insulation fault.	- N/A		
	NOTE 1 If a lamp breaks during a re-lamping operation, the breakage is not regarded as an insulation fault according to 7.2.1, as the lamp in this sense is not considered to be a part of the luminaire (see 0.4.2 and 8.2.3 item a) for clarification).	N/A		
	Metal parts of luminaires which may become live in the event of an insulation fault and which are not accessible when the luminaire has been mounted, but are liable to come into contact with the supporting surface, shall be	- N/A		

F07-08-02 A	Page 9 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

	permanently and reliably connected to an earthing		
	terminal.		
	NOTE 2 The earthing of starters and lamp caps is not a requirement but earthing of lamp caps may be necessary as a starting aid.	N	/A
	The protective earthing connections shall be of low resistance.	N	/A
	Self-tapping screws may be used to provide earthing continuity, provided they comply with the requirements given in 4.12.1	N	/A
	Thread-forming screws may be used to provide earthing.	N	/A
	A thread forming screw used in a groove of a metallic material could provide earth continuity for a luminaire if all the tests required within this standard regarding earthing connection were passed. See Figure 30.	N	/A
	For class I luminaires with detachable parts provided with connectors or similar connection devices, the protective earth connection shall be made before the current-carrying contacts are made and the current-carrying contacts shall separate before the protective earth connection is broken	N	//A
	For terminal blocks with integrated screwless protective earthing contacts, the additional tests of Annex V are to be applied. It is allowed to earth built-in controlgear by means of fixing the controlgear to earthed metal parts of the luminaire. Connection to protective earthing of the luminaire via the built-in controlgear is not allowed.	N	/A
7.2.2 (598-1	Surfaces in adjustable joints, telescopic tubes, etc., providing earthing continuity, shall be such that a good electrical contact is ensured.	N	/A
7.2.3 (598-1	Compliance with the requirements of 7.2.1 and 7.2.2 is checked by inspection and, for protective earth, by the following test.	N	/A
	A current of at least 10 A, derived from a source with a no-load voltage not exceeding 12 V, shall be passed between the earthing terminal or earthing contact and each of the accessible metal parts in turn.	N	/A
	The voltage drop between the earthing terminal or earthing contact and the accessible metal part shall be measured and the resistance calculated from the current and the voltage drop. In no case shall the resistance exceed $0,5 \Omega$. When type testing, the current shall be applied for a period of at least 1 min.	N	/A
	NOTE In the case of a luminaire with a supply cord, the earthing contact is at the plug or supply end of the flexible cable or cord.	N	/A
7.2.4 (598-1	Protective Earthing terminals shall comply with the requirements of 4.7.3. The connection shall be adequately locked against accidental loosening.	N	/A
	For screw terminals, it shall not be possible to loosen the clamping means by hand.	N	/A
	For screwless terminals, it shall not be possible to loosen the clamping means unintentionally.	N	/A
	Compliance is checked by inspection, by manual test and by the tests specified in 4.7.3.	N	/A
	NOTE In general, the designs commonly used for current-carrying terminals provide sufficient resilience to	N	/A

P F07-08-02 A	Page 10 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
		ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 ⁻	11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

comply with this requirement: for other designs, special	
	N/A
	N/A
	N/A
	NI/A
	N/A
	N/A
	N/A
metal or a material with a non-rusting surface and the	N/A
contact	
Compliance with the requirements of 7.2.5 to 7.2.8 is	N/A
checked by inspection and by manual test.	N/A
If a fixed class II luminaire designed for looping-in is	
provided with internal terminal(s) for maintaining the	
	51/0
	N/A
A fixed connected class II luminaire may have an earth	
	N/A
	N/A
, , ,	IN/A
o o	N/A
	N/A
* *	
	N/A
For luminaires with supply cords, the arrangement of	
the terminals, or the length of the conductors between	
the cord anchorage and the terminals, shall be such	N1/A
that, should the cable or cord move out of the cord	N/A
anchorage, the current-carrying conductor becomes	
taut before the earthing conductor.	
	 with this requirement; for other designs, special provisions, such as the use of an adequately resilient part which is not likely to be removed inadvertently, can be necessary. For terminal blocks with integrated screwless earthing contacts, the additional tests of Annex V apply. For a luminaire provided with a connector socket for a mains supply, the earth contact shall be an integral part of the socket. For a luminaire to be connected to supply cables (fixed wiring) or to a supply cord, the earth terminal shall be adjacent to the mains terminal. NOTE Luminaires may be provided with type X or Y attachments. For luminaires which are other than ordinary luminaires, all parts of an earth terminal shall be such as to minimize the danger of electrolytic corrosion resulting from contact with the earth conductor or any other metal in contact with them. Either the screw or the other part of the protective earth conduct or or any other metal. <i>Compliance with the requirements of 7.2.5 to 7.2.8 is checked by inspection and by manual test.</i> If a fixed class II luminaire designed for looping-in is provided with internal terminal(s) for maintaining the electrical continuity of an earth circuit shall be suparated from accessible metal parts by double insulation. A fixed connected class II luminaire may have an earth connection for functional purposes, for example for looping in, to assist the starting of a lamp or to avoid radio. <i>Compliance is checked by inspection.</i> When a class 1 the parts by double or reinforced insulation. <i>Compliance is checked by inspection.</i> A fixed connected to the plug if one is attached. All conductors, whether internal or external, which are identified by the green and yellow colour combination shall only be connected to the earthing terminal. For luminaire with supply cords, the arrangement of the terminals, or the length of the conductors between the c

F07-08-02 A	Page 11 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

7.2.12 (598-1	Where a PELV circuit is connected to a protective earth for functional purposes, this circuit shall not be used for interconnection with other luminaires to avoid overload of the circuit conductor.	N/A
	NOTE The overload of the conductor can be caused by fault current coming from a different point of the earth circuit of a building to earth.	N/A

1.14 (9)	RESISTANCE TO DUST, SOLID OBJECTS AND MOISTURE			
9.1	General	N/A		
	This section specifies the requirements and tests for			
	luminaires classified as resistant to dust, solid objects	N/A		
	and moisture in accordance with Section 2, including	IN/A		
	ordinary luminaires.			
9.2	Tests for ingress of dust, solid objects and	N/A		
	moisture	N/A		
	The enclosure of a luminaire shall provide the degree			
	of protection against ingress of dust, solid objects and	N/A		
	moisture in accordance with the classification of the			
	luminaire and the IP number marked on the luminaire.			
	NOTE 1 The tests for the ingress of dust, solid objects			
	and moisture specified in this standard are not all			
	identical to the tests in IEC 60529 because of the	N/A		
	technical characteristics of luminaires. An explanation	N/A		
	of the IP numbering			
	system is given in Annex J.			
	Compliance is checked by the appropriate tests			
	specified in 9.2.0 to 9.2.9, and for other IP ratings by	N/A		
	the appropriate tests specified in IEC 60529.			
	Before the tests for the second characteristic numeral,			
	with the exception of IPX8, the luminaire complete			
	with lamp(s) shall be switched on and brought to a	N/A		
	stable operating temperature at			
	rated voltage.			
	The water for the tests shall be at a temperature of 15			
	°C ± 10 °C except for IPX9 where the temperature	N/A		
	shall be 80 °C (±5 °C) or 15 °C (±10 °C) following the	N/A		
	marking of the luminaire.			
	Luminaires shall be mounted and wired as in normal			
	use and placed in the most unfavourable position,			
	complete with their protective translucent covers, if	N/A		
	any, for the tests of 9.2.0 to			
	9.2.11.			
	Where connection is made by a plug or a similar			
	device, then this shall be regarded as part of the	N/A		
	complete luminaire and shall be included in the tests	IN/A		
	and similarly for any separate control gear.			
	For tests of 9.2.3 to 9.2.11, a fixed luminaire intended			
	for mounting with its body in contact with a surface			
	shall be tested with an expanded metal spacer			
	interposed between the luminaire and the mounting	N/A		
	surface. The spacer shall be at least equal in overall			
	size to the projection of the luminaire, and have			
	dimensions as follows:			

P-F07-08-02 A	Page 12 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

Long way of mesh 10 mm to 20 mm	
Short way of mesh 4 mm to 7 mm	
Strand width 1,5 mm to 2 mm	N/A
Strand thickness 0,3 mm to 0,5 mm	
Overall thickness 1,8 mm to 3 mm	
Luminaires having provision for draining water by	
means of drain holes shall be mounted with the lowest	
drain hole open unless otherwise specified in the	N/A
manufacturer's installation instructions.	
If the installation instructions indicate that a drip-proof	
luminaire is for ceiling or under-canopy mounting, the	
luminaire shall be attached to the underside of a flat	N/A
board or plate which extends 10 mm beyond that part	
of the luminaire perimeter in contact with the mounting	
surface.	
For recessed luminaires, the parts in the recess and	
the parts protruding from the recess shall each be	
tested according to their IP classification as indicated	
in the manufacturer's mounting instructions. A box	N/A
encapsulating the part in the recess may be necessary	
for the tests of 9.2.4 to 9.2.11.	
NOTE 2 The claimed IP rating is only applicable to the	
enclosure of the luminaire. In the case of a recessed	
luminaire, the IP rating of the luminaire does not	N/A
protect the integrity of any seals outside of the	
luminaire, e.g. between the lower and upper parts of	
the ceiling.	
For IP2X luminaires, the enclosure denotes that part	
of the luminaire containing the main part other than	N/A
the lamp and optical controls.	
NOTE 3 Since luminaires have no hazardous moving	
parts, the level of safety as specified in IEC 60529 is	N/A
achieved.	
Portable luminaires, wired as in normal use, shall be	
placed in the most unfavourable position of normal	N/A
use.	
Glands, if any, shall be tightened with a torque equal	
to two-thirds of that applied to glands in the test of	N/A
4.12.5.	
Fixing screws of covers, other than hand-operated	
fixing screws of glass covers, shall be tightened with a	
torque equal to two-thirds of that specified in Table	N/A
4.1.	
Screwed lids shall be tightened with a torque having a	
value in newton meters numerically equal to one-tenth	
of the nominal diameter of the screw thread in	N/A
millimeters. Screws fixing	
other caps shall be tightened with a torque equal to	
two-thirds of that specified in Table 4.1.	
After completion of the tests, the luminaire shall	
withstand the electric strength test specified in Section	N/A
10, and inspection shall show:	
a) no deposit of talcum powder in dust-proof	
luminaires, such that, if the powder were conductive,	N/A
the insulation would fail to meet the requirements of	
this standard;	
b) no deposit of talcum powder inside enclosures for	N/A
dust-tight luminaires;	11/7

P = F07-08-02 A	Page 13 of 52	Issued By: QGM	Approved By-GMS
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

	Solid-object-proof luminaires (first characteristic IP numerals 3 and 4) shall be tested at every possible point (excluding gaskets) with a probe in accordance with test probe C or D of IEC 61032, applied with a force as specified in Table 9.1:	N/A
	Luminaires with first characteristic IP numeral 2 are not required to be tested with the sphere specified in IEC 60529.	N/A
	Solid-object-proof luminaires (first characteristic IP numeral 2) shall be tested with the standard test finger specified in IEC 60529 in accordance with the requirements of Sections 8 and 11.	N/A
9.2.0	Tests	N/A
	g) no damage, for example, cracking or breakage of a protective shield or glass envelope, such that safety or protection against the ingress of moisture is impaired.	N/A
	 f) no trace of water on any part of a lamp requiring protection from splashing water as indicated in the "information for luminaire design" section of the applicable lamp standard; 	N/A
	the drain holes and ventilation slots with the relevant test probe for the first characteristic IP numerals 3 and 4;	
	e) no contact permitted with live parts by the relevant test probe for first characteristic IP numeral 2; no entry into the luminaire enclosure by the relevant test probe for first characteristic IP numerals 3 and 4; for luminaires with drain holes in accordance with Clause 4.17 and luminaires with ventilation slots for forced cooling, no contact with live parts is permitted through	N/A
	 d) no trace of water having entered in any part of a watertight or pressure watertight luminaire or high pressure and temperature water jet-proof luminaire or high pressure and cold water jet-proof luminaire; 	N/A
	including condensation is allowed during the tests if it can drain out effectively and provided it does not reduce the creepage and clearance distances below the minimum levels specified in this document;	
	 are covered by Clause 4.18. 1) For luminaires without drain holes, there shall be no water entry. NOTE 5 Care is taken not to mistake condensation for water entry. 2) For luminaires with drain holes, water entry 	N/A
	interrupted DC voltage for frequencies between 10 Hz and 200 Hz, 12 V RMS or 30 V ripple free DC and the conductors are protected from corrosion. NOTE 4 Some aspects of protection against corrosion	
	a hazard for the user or surroundings, for example where it could reduce the creepage distances below the values specified in Section 11; the only exception to this is for SELV or PELV conductors where the voltage under load does not exceed 12 V peak	N/A
	c) no trace of water on electrical connections, current carrying parts or on insulation where it could become	

P = F07-08-02 A	Page 14 of 52	Issued By: QGM	Approved By- GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict

	The end of the probe wire shall be cut at right angles to its length and be free from burrs.	N/A
9.2.1	Dust-proof luminaires (first characteristic IP numeral 5) shall be tested in a dust chamber similar to that shown in Figure 6, in which talcum powder is maintained in suspension by an air current. The chamber shall contain 2 kg of powder for every cubic metre of its volume. The talcum powder used shall be able to pass through a square-meshed sieve whose nominal wire diameter is 50 µm and whose nominal free distance between wires is 75 µm. It shall not have been used	N/A
	for more than 20 tests. The test shall proceed as follows:	
	 a) The luminaire is suspended outside the dust chamber and operated at rated supply voltage until operating temperature is achieved. 	N/A
	b) The luminaire, whilst still operating, is placed with the minimum disturbance in the dust chamber.	N/A
	c) The door of the dust chamber is closed.d) The fan/blower causing the talcum powder to be in	N/A
	suspension is switched on.	N/A
	e) After 1 min, the luminaire is switched off and allowed to cool for 3 h whilst the talcum powder remains in suspension.	N/A
	NOTE The 1 min interval between switching on the fan/blower and switching off the luminaire is to ensure that the talcum powder is properly in suspension around the luminaire during initial cooling, which is most important with smaller luminaires. The luminaire is operated initially as in item a) to ensure the test chamber is not overheated.	N/A
9.2.2	Dust-tight luminaires (first characteristic IP numeral 6) are tested in accordance with 9.2.1.	N/A
9.2.3	Drip-proof luminaires	N/A
9.2.3.1	Drip-proof luminaires (second characteristic IP numeral 1) are subjected for 10 min to an artificial rainfall of 0 5 1 0+, mm/min, falling vertically from a height of 200 mm above the top of the luminaire.	N/A
9.2.3.2	Drip-proof luminaires (second characteristic IP numeral 2) are subjected for 10 min to an artificial rainfall of 0 5 3 0+ , mm/min, falling vertically from a height of 200 mm above the top of the luminaire, when the luminaire is in the most onerous position and tilted at any angle up to 15° on either side of the vertical.	N/A
9.2.4	Rain-proof luminaires (second characteristic IP numeral 3) are sprayed with water for 10 min by means of a spray apparatus as shown in Figure 7. The radius of the semicircular tube shall be as small as possible and compatible with the size and position of the luminaire.	N/A
	The tube shall be perforated so that jets of water are directed towards the centre of the circle and the water flow rate at the inlet of the apparatus shall be approximately 0,07 l/min with a tolerance of ± 5 % per hole multiplied by the number of holes (approximately 80 kN/m2).	N/A

P F07-08-02 A	Page 15 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

	The tube shall be caused to oscillate through an angle	
	of 120°, 60° on either side of the vertical, the time for	N/A
	one complete oscillation (2	
	The luminaire shall be mounted above the pivot line of	
	the tube so that the ends of the luminaire receive	
	adequate coverage from the jets. The luminaire shall	N/A
	be turned about its vertical axis during the test at a	
	rate of 1 r/min.	
	After this 10 min period, the luminaire shall be	
	switched off and allowed to cool naturally whilst the	N/A
	water spray is continued for a further 10 min.	
	NOTE In Japan, the oscillating tube test and the spray	N/A
	nozzle test as specified in IEC 60529 are accepted.	
9.2.5	splash-proof luminaires (second characteristic IP	
	numeral 4) are sprayed from every direction with water	
	for 10 min by means of the spray apparatus shown in	N1/A
	Figure 7 and described in 9.2.4. The luminaire shall be	N/A
	mounted under the pivot line of the tube so that the	
	ends of the luminaire receive adequate coverage from	
	the jets.	
	The tube shall be caused to oscillate through an angle	
	of almost 360°, 180° on either side of the vertical, the time for one complete coefficient (2 $\Box \Box 260^{\circ}$) being	N/A
	time for one complete oscillation (2 $\Box \Box 360^{\circ}$) being about 12 s. The luminaire shall be turned about its	IN/A
	vertical axis during the test at a rate of 1 r/min.	
	The support for the equipment under test shall be grid	
	shaped in order to avoid acting as a baffle. After this	
	10 min period, the luminaire shall be switched off and	
	allowed to cool naturally	N/A
	whilst the water spray is continued for a further 10	
	min.	
	NOTE In Japan, the oscillating tube test and the spray	
	nozzle test as specified in IEC 60529 are	N/A
	accepted.	
9.2.6	Jet-proof luminaires (second characteristic IP numeral	
3.2.0	5) are switched off and immediately subjected to a	
	water jet for 15 min from all directions by means of a	
	hose having a nozzle with the shape and dimensions	N/A
	shown in Figure 8. The nozzle shall be held 3 m away	
	the sample.	
	The water pressure at the nozzle shall be adjusted to	
	achieve a water flow rate of 12,5 l/min with a tolerance	N/A
	of ± 5 % (approximately 30 kN/m2).	
9.2.7	Powerful water jet-proof luminaires (second	
0.2.1	characteristic IP numeral 6) are switched off and	
	immediately subjected to a water jet for 3 min from all	
	directions by means of a hose having a nozzle with	N/A
	the shape and dimensions shown in Figure 8. The	
	nozzle shall be held 3 m away from the sample.	
	The water pressure at the nozzle shall be adjusted to	
	achieve a water flow rate of 100 l/min with a tolerance	N/A
	of ± 5 % (approximately 100 kN/m2).	

P-F07-08-02 A	Page 16 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
		ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

٦	Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
	Clause	Requ	irement -Test	Result - Remark	Verdict

9.2.8	Watertight luminaires (second characteristic IP numeral 7) are switched off and immediately immersed for 30 min in water, so that there is at least 150 mm of water above the top of the luminaire and the lowest portion is subjected to at least 1 m head of water. Luminaires shall be held in position by their normal fixing means. Luminaires for tubular fluorescent lamps shall be positioned horizontally, with the diffuser upwards, 1 m below the water surface.		N/A
	NOTE This treatment is not sufficiently severe for luminaires intended for operation under water.		N/A
9.2.9	Pressure watertight luminaires (second characteristic IP numeral 8) are heated either by switching on the lamp or by other suitable means, so that the temperature of the luminaire enclosure exceeds that of the water in the test tank by between 5 °C and 10 °C.		N/A
	The luminaire shall then be switched off and subjected to a water pressure of 1,3 times that pressure which corresponds to the rated maximum immersion depth for a period of 30 min.		N/A
9.2.10	High pressure and temperature water jet-proof luminaires (second characteristic IP numeral 9 (80 °C)) are switched off and immediately subjected to the high pressure and high temperature water jet. The test is made by spraying the luminaire with a stream of hot water from a standard test nozzle as described in IEC 60529. The water for the tests shall be at a temperature of (80 ± 5) °C. For small enclosures (largest dimension less than 250 mm), the test duration is in total 2 min. For large enclosures (largest dimension greater than or equal to 250 mm), the test duration is 1 min/m2 of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 3 min.		N/A
9.2.11	High pressure and cold water jet-proof luminaires (second characteristic IP numeral 9 (15 °C) are switched off and immediately subjected to the high pressure and cold temperature water jet. The test is made by spraying the luminaire with a stream of water from a standard test nozzle as described in IEC 60529. The water for the tests shall be at a temperature of (15 ± 10) °C. For small enclosures (largest dimension less than 250 mm), the test duration is in total 2 min. For large enclosures (largest dimension greater than or equal to 250 mm), the test duration is 1 min/m2 of the calculated surface area of the enclosure (excluding any mounting surface), with a minimum duration of 3 min.		N/A
9.3	Humidity test	-	-
	All luminaires shall be humidity-proof where humid conditions may occur in normal use.		Р
	Compliance is checked by the humidity treatment described in 9.3.1, followed immediately by the tests of Section 10.		Ρ
	Cable entries, if any, shall be left open; if knock-outs are provided, one of them shall be opened.		N/A

P-F07-08-02 A	Page 17 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildin		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

	Parts which can be removed by hand (e.g. electrical components, covers, protective glasses.), shall be removed and subjected, if necessary, to the humidity treatment with the main part.		N/A
9.3.1	The luminaire is placed in the most unfavourable position of normal use, in a humidity cabinet containing air with a relative humidity maintained between 91 % and 95 %. The temperature of the air at all places where samples can be located shall be maintained within 1 °C of any convenient value "t" between 20 °C and 30 °C.	30°C, 95 % R.H.	Р
	Before being placed in the humidity cabinet, the sample shall be brought to a temperature between "t" and $(t + 4)$ °C. The sample shall be kept in the cabinet for 48 h.		P
	NOTE In most cases, the sample may be brought to the specified temperature between "t" and (t + 4) °C by keeping it in a room at this temperature for at least 4 h before the humidity treatment.		Р
	In order to achieve the specified conditions within the cabinet, it is necessary to ensure constant circulation of the air within and in general to use a cabinet which is thermally insulated.		Р

1.15 (10)	I.15 (10) INSULATION RESISTANCE AND ELECTRIC STRENGTH			
(10.2.1)	Insulation resistance test			
	Insulation resistance R between:	Required R (MΩ)	R (MΩ)	
	-Between live parts of different polarity	1	>99.99	Р
	-Between live parts and metal parts of the luminaire	1	>99.99	Р
	-Double insulation	2	>99.9	Р
	-SELV	1	-	N/A
(10.2.2)	Electric strength test			
	Test voltage applied between:	Test voltage V (r.m.s)	Breakdown (Yes/No)	
	-Between live parts of different polarity	1480	No	Р
	-Between Live parts and Metal parts	1480	No	Р
	-Double Insulation	2960	No	Р
	-SELV	500	-	N/A
(10.3)	Leakage current (mA)	Limit (mA)	Measured (mA)	
	Class II luminaire	0.7mA	18.11µA	Р
	Class I luminaire with plug (≤16 A)	-	-	N/A
	Class I (for permanent connection)	-	-	N/A

1.13(12)	ENDURANCE TEST AND THERMAL TEST			
(12.4)	Thermal test (normal operation)			Р
	Test voltage (V)=1.06*rated voltage : 254.4V			
	Ambient (°C) :		25°C	-
	The monitored point	Result	Max. Limit	-
Sample 1	Insulation of wiring	33.1	90	Р
	Enclosure of luminaire	40.2	75	Р
	Mounting surface	40.6	90	Р
Sample 2	Insulation of wiring	30.8	90	Р
	Enclosure of luminaire	40.9	75	Р
	Mounting surface	41.7	90	Р

F07-08-02 A	Page 18 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

	SASO IEC 61347-2-13		
Clause	Requirement-Test	Result-Remarks	Verdict
7	Marking		-
7.1	Marking shall be clear and durable	One set	N/A
	Trade mark, manufacturer's name or name of the	-	N/A
	responsible vendor / supplier.		N 1/A
	Model number or type reference of the manufacturer	-	N/A
	Symbol for independent lamp control gear if applicable.	-	N/A
	Correlation between replaceable and interchangeable parts		N/A
	Rated supply voltage, , voltage range	-	N/A
	supply frequency	-	N/A
	supply current(s)	_	N/A
	Symbol of the earthing terminal (if any)	-	N/A
	Any output terminal and earth, if applicable		N/A N/A
	Wiring diagram indicating the position and purpose of		N/A
	terminals.		N/A
	Value of tc		N/A
	Symbol for tomporative declared, thermally		N/A
	protected controlgear		
	for constant voltage types: rated output power and rated		N/A
	output voltage.		
	for constant current types: rated output power and		N/A
	output current.		
	if applicable: an indication that the control gear is		N/A
	suitable for operation with LED modules only		
7.2	Information to be provided (if applicable)		N/A
	Indication that the lamp controlgear does not rely upon		
	the luminaire enclosure for protection against accidental		N/A
	contact with live parts.		
	Indication of the cross-section of conductors for which		N/A
	the terminals, if any, are suitable. Symbol: relevant		
	value(s) in square millimetres (mm ²) followed by a small		
	square. The lamp type and rated wattage or wattage range for		N/A
	which the lamp control gear is suitable, or		
	the designation as indicated on the lamp data sheet of		
	the type(s) of lamp(s) for which the lamp control gear is designed.		N/A
	mention whether the control gear has mains-connected windings		N/A
	mention that they are SELV-equivalent control gear, if applicable.		N/A

P-F07-08-02 A	Page 19 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir		

٦	Fest Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
	Clause	Requ	irement -Test	Result - Remark	Verdict

	SASO2902		
Clause	Requirement-Test	Result-Remarks	Verdict
4	Requirements for Non-directional / directional lamp	s, control gears and lum	inaires
4.1	Energy efficiency requirements		
	Lamps listed in Annex A of this Standard shall		
	comply with the energy efficiency requirements	Annex E	Р
	specified in Annex C for non-directional lamps and	Annex E	P
	Annex E for directional lamps.		
	For Incandescent, Halogen, and CFLi with luminous		
	flux above or equal to 12,000 lumens the tests and		N/A
	criteria described in SASO 2870 apply		
	For LED lamps, tests and criteria described in SASO		N/A
	2870 apply.		
	Energy efficiency classes and the methods of		
	calculating the EEI for lamps are also detailed in		Р
	Annex C for non-directional lamps and Annex E for		
	directional lamps.		
	Ballasts and control gears shall comply with the		N/A
	Energy Efficiency Requirements specified in Annex H.		
	Luminaires in the scope of this standard (integrated		_
	luminaires) shall comply with energy efficiency		P
	requirements expressed in Annex M of this standard.		
	Annex A – Regulated products in the scope of		Р
	this standard		
	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		Р
	lamps, even when they are integrated into other energy-using products		F
	This Standard is applicable to lamps and luminaires		
	with a luminous flux above 60 lumens.		
	A.2 Luminaires		
	This standard establishes requirements for the		
	placing on the market of the below list of with		
	integrated luminaires		Р
	(provided with non-replaceable lamps) which are		
	designated under the categories:		
	Directional integrated luminaires		Р
	Non-directional luminaires		N\A
	Annex M – Energy efficiency for (integrated)		
	luminaires		
	M.1 Types of luminaires		

F07-08-02 A	Page 20 of 52	Issued By: QGM	Approved By- CM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildin	ig No.2433 , Riyadh 11427, PO 27711 , Tel : +96	6 11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

	M.1 - Types of	fluminaires			
	Luminaires with	he different types of luminaires hin the scope of this standard (ir sources depending of the bear	ntegrated luminaires) are characterized as direct or		
	For information	only, luminaires can be identifi	ed per type of use as expressed in Table 34		
		Table 34: Use types f	or luminaires (informative)		
	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_1	Р
	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		
			· · · · · · · · · · · · · · · · · · ·		
I	1.2 – M ir	nimum efficacy	for luminaires		
	M.2 - Minimu	ım Efficacy for luminaires			
	The minimum of the luminair		are reported in Table 35, depending on the total power		
			y efficacy for (MEPS) Luminaires	See table	Р
		Table 33. Millinum energ		See lable	F
		Power of the l	enicacy		
		P _{rated} < 15 W P _{rated} ≥ 15 W	≥ 65 Lumen/Watt ≥ 70 Lumen/Watt		
		Prated 2 10 VV	270 Lumen/Wall		
Π	4.3 – Ene	ergy efficiency	Index for luminaires (EEI)		
			luminaires is calculated as		
f	or the EE	I for lamps of th	e same category (directional		
			ing respectively to Annex C	_	Р
			ires and E for directional		
			ninance (Lumen) and Power		
		from the Energy			
			nergy efficiency index (EEI) electric) power Pcor for		
			compared with its reference		N/A
			luminous flux emitted).		
			ollows and rounded to three		_
	decimal p				Р
	EEI = Pcc			0.162	Р
)= rated power (Prated)	13	P
F	or mode	Is with external of	control gear Pcor is the		
			cted in accordance with the		N/A
0	correction	is factors listed b	below:		
			f the lamps/luminaires is		Р
		at their nomina			
			ted in Table 36 apply to		Р
			wer of the luminaires		P
	JULIECTIO	r lactor cumulati	ve with those expressed in		

P-F07-08-02 A	Page 21 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	Issue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 609 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

	annex C for indirect la	mos and Anne	x E for direct			
	lamps.	and Anne				
	Pref is the reference p	ower obtained	d from the usef	ful		
	luminous flux of the m					P
	Φuse<1300 lumen: Pr			lse	79.96	Р
	Φuse ≥ 1300 lumen: F	Pref = 0.07341	х Фuse			N/A
	For non-directional lar	mps, the usefu	I luminous flux	(N1/A
	(Фuse) is the total rate					N/A
	M.4 - Classification of	of Energy Effi	ciency Index	for		
	(integrated luminaire		•			
	This clause only for th	ne measured v	alue no need t	0		
	verdict (P,F or N) exce	ept if it exceed	allowable limi	t at		Р
	this case F	-				
	The energy efficiency	rating of lumin	aires shall be			
	determined on the bas					P
	index (EEI) as outlined	d in Table 37.				
	Table 37: Energy e	fficiency classes f	or luminaires			
		2000 C	Equivalent energy	7		
		Energy efficiency	efficiency class			
	index (EEI)	class (Arabic)	(English)			
	EEI ≤ 0.11		A	4		
	0.11 < EEI ≤ 0.13 0.13 < EEI ≤ 0.18	ب	B C	4		Р
	0.13 < EEI ≤ 0.18 0.18 < EEI ≤ 0.24	ع د	D	-		
	0.24 < EEI ≤ 0.50	د	E	-		
	0.50 < EEI ≤ 0.95	و	F	1		
	0.95 < EEI ≤ 1.75	j	G			
	Note: For labelling purposes, the	e Arabic letters shall be u	and The acumulant			
	English version is only provided					
.2	English version is only provided	for informational purpos]		
.2	English version is only provided Functionality require	i for informational purpos ements	ses			
.2	English version is only provided Functionality require Integrated luminaires	ements listed in Anne	ses	 ply	_	P
2	English version is only provided Functionality require Integrated luminaires with requirements spe	tor informational purpose ements listed in Anne ecified in	x A shall comp	J bly		P
2	English version is only provided Functionality required Integrated luminaires with requirements spe Annex D, F and M, w	torinformational purpose ements listed in Anne ecified in when applicab	x A shall comp		non-directional I	
2	English version is only provided Functionality require Integrated luminaires with requirements spe	torinformational purpose ements listed in Anne ecified in when applicab	x A shall comp		non-directional I	
2	English version is only provided Functionality requires Integrated luminaires with requirements spe Annex D, F and M, w Annex D – Functiona luminaires	i for informational purpos ements listed in Anne. ecified in when applicab ality and endu	x A shall comp le. irance require	ements for	non-directional I	amps and
2	English version is only provided Functionality requires Integrated luminaires with requirements spe Annex D, F and M, w Annex D – Functional luminaires D.3 – Functionality a	i for informational purpos ements listed in Anne ecified in when applicab ality and endu	x A shall comp le. irance require e requiremen	ements for	non-directional I	
2	English version is only provided Functionality requires Integrated luminaires with requirements spe Annex D, F and M, w Annex D – Functiona luminaires	i for informational purpos ements listed in Anne ecified in when applicab ality and endu	x A shall comp le. irance require e requiremen	ements for	non-directional I	amps and
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2	English version is only provided Functionality required Integrated luminaires with requirements spee Annex D, F and M, w Annex D – Functional luminaires D.3 – Functionality and for non-directional LE D.3 – Functionality and endurance req luminaires Table 13: Functionality and endurance req luminaires Table 13: Functionality and endurance and Parameter Lamp survival factor at 6,000 h Lumen Mantenance at 6,000 h Lumen	If or informational purpose ements listed in Anne. pecified in when applicab ality and endu and Endurance D lamps and line performance required ≥ 0.80 ≥ 15,000 if rated lamp life editorities < 2 s	x A shall comp le. Irance require e requiremen uminaires tional LED lamps and n-directional LED lamps a ≥ 30,000 h expressed in hours d for outdoor or coordinates within a or less. a late of enforcement mps with 5 W < P ≤	ements for	non-directional I	amps and

P-F07-08-02 A	Page 22 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,Ri	iyadh Station area beside dry customs St.4,5,6,7 Buildir		

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902)598-1
Clause	Requ	irement -Test	Result - Remark	Verdict
				·
	The lamp functionality	requirements are outlined in		

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.	Р
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.	Ρ
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.	Ρ
Table 19: Functionality and endurance requirements for directional LFD lamps and	
integrated luminaires	
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	Р
Color rendering (Ra) ≥ 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.	
$ \begin{array}{lll} \mbox{Lamp displacement factor (Df) for lamps} & \mbox{P} \leq 2 \ W; \ no requirement} \\ \mbox{with integrated control gear and} & \mbox{2} \ W < P \leq 5 \ W; \ Df > 0.4 \\ \mbox{5} \ W < P \geq 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.5 (1) \\ \mbox{a constraint of } M \ W < P \leq 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.7 (1) \\ \mbox{P} > 25 \ W; \ Df > 0.5 (1) \\ \mbox{a constraint of } M \ W \ W; \ Df > 0.5 (1) \\ \mbox{with } S \ W < P \leq 25 \ W \ W; \ Df > 0.7 (1) \\ \mbox{min set of } M \ W; \ W;$	
4.3 Marking requirements	
Instruction manuals supplied with products and available on website shall be:	Ρ
Cautionary and/or any safety warnings for the direct user or consumer shall be in the Arabic and English	Ρ
language.	
Ianguage. International accepted pictograms are permitted	Р
International accepted pictograms are permitted instead of verbally expressed language.	Р
Ianguage. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted).	P P
Ianguage. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). Lamps, ballasts and luminaires listed in Annex A of	-
Ianguage. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). 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	-
language. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). 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
language. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). 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). 2902 (2021) "Special purpose" products (Annex B.1) do not need to comply with the marking requirements specified in	P
language. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). 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). 2902 (2021) "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	P
Ianguage. International accepted pictograms are permitted instead of verbally expressed language. Available on a Website (English only is permitted). 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). 2902 (2021) "Special purpose" products (Annex B.1) do not need to comply with the marking requirements specified in	P

F07-08-02 A	Page 23 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict

the lamp when it is placed on the market:	
Brand Name	N/A
Model number	N/A
□ Rated power(Watt)	N/A
□ Rated Voltage (Voltage)	N/A
Rated Lumen(Lumen)	N/A
Rated color temperature (Kelvin)	N/A
□ Country of origin	N/A
Their intended purpose	N/A
Products listed in Annex B.1.2 shall fulfill the	
documentation and information requirements	N/A
specified for them in the same Annex.	

ANNEX G	Marking requirements for non-directional and direct	tional lamps	
2902(2021)	ANNEX Title correction:		
-	Marking requirements for non-directional and directiona	I 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:		Р
	Brand name	OPPLE	Р
	Input voltage *	220-240V	Р
	Rated power (Watt)	13W	Р
	Country of origin	China	Р
G.2	Information to be visibly displayed to end-users, pri the packaging and on free access websites	or to their purchase, on	-
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	-	Р
	a. Brand name;	OPPLE	Р
-	b. Model number;	LED HC260 13W White	Р
_	c. Country of origin;	China	Р
_	d. Rated voltage and rated frequency;	220-240V 50/60Hz	Р
	e. Rated luminous flux (Lumen);	1050	Р
	f. Rated Efficacy (Lumen/Watt);	81	Р
	g. Rated power (Watt);	13W	Р
	h. Rated beam angle in degrees (only for directional lamps);	100	Р
	 Lamp displacement factor (only for LED lamps with integrated control gear); 	0.9	Р
	j. Rated life time of the lamp in hours;	15000	Р
	k. Rated Color temperature, as a value in Kelvins, expressed graphically or in words;	5700K	Р
	I. Number of switching cycles before premature failure (only for LED lamps or if claimed by the manufacturer for other type of lamps);	50000	Р
	m. Rated Color rendering index (Ra);	> 90	Р
	n. Stating all hazardous material contained in the	marked	Р

P F07-08-02 A	Page 24 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

	lamp/luminaire, as relevant;		
	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	marked	Р
	the manufacturer's website or any other form the		
	manufacturer deems appropriate		
	p. Following information are optional:		N/A
	- 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		N/A
	second), when relevant;		
	- If designed for optimum use in non-standard		
	conditions (such as ambient temperature Ta ≠ 25 °C		
	or specific thermal management is necessary),		N/A
	provide information on those conditions;		
	- 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 ($\Phi \square \square$ °) is not lower than the		
	corresponding reference luminous flux in Part 1 -		
	Table 13 The reference luminous flux shall be		N/A
	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		
	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		N/A
	manufacturer deems appropriate:		
	- how to clean lamp debris in case of accidental lamp		
	breakage and disposal of lamp at the end of life, when		N/A
	relevant;		
	- About actual values of the hazardous content, when		
	relevant		N/A
G.3 (new			
clause)2902	Information on control gear and ballast		-
2021			
-021	For control gear and ballast, the following shall be		
	printed on the product and packaging:		-
			N1/A
	- Brand name;		N/A
	- Model number;		N/A
	- Country of origin;		N/A
	- Rated voltage and rated frequency;		N/A
			l
	- Rated efficiency %		N/A

P F07-08-02 A	Page 25 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
		ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

- 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		N1/A
	standard shall have label printed directly on the individual packaging of the product.		N/A
4.5	Hazardous chemicals: Substance restrictions for		
	lamps and control gears		
	 The following products are exempted from requirements on hazardous substances (Clause 4.5) Luminaires Control gears 		N/A

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 parar 				
Parameter	Procedure			
Energy efficiency index1	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 when the required number of hours is met, or 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			

Pote02-08-02 A	Page 26 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	Issue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	0598-1
Clause	Requi	irement -Test	Result - Remark	Verdict
1 The tolerances authorities and s documentation t	s for variation indicated ab shall not be used by the su o achieve a more efficient in the values reported in the cotherwise The test shall end when the required num When more than one I Compliance: a maximum required number of hours Non-compliance: otherw Compliance: the average below the required value points below the required Non-compliance: otherw	oove relate only to the verification upplier as an allowed tolerance e energy class. The declared value te technical documentation. nber of hours is met, or lamp fails, whichever occurs first n of one out of every 20 lamps in s ise e Ra of the lamps in the test batch d, and no lamp in the test batch	on of the measured parameter on the values in the technica lues shall not be more favora st in the test batch fails before the tch is not lower than three por has a Ra value that is more	he bints than 3,9
Lumen maintenance at end of life and rated lifetime (for LED lamps only)	projected to survive or w below 70 %, whichever is Compliance: the lumen r extrapolation from the la lamps in the test batch a	then the average lumen mainten s projected to occur first maintenance at end of life and t mp survival factor and from the t 6000 h are not lower than res declared in the product informa	nance of the batch is projecte he lifetime values obtained b average lumen maintenance pectively the lumen maintena	ed to fall by e of the
Equivalence claims for retrofit lamps according to Annex G	possible obtained approx sources		m four randomly selected	
Beam angle	beam angle by more tha batch does not deviate b Non-compliance: otherw		ue of each individual lamp in value	the test
Peak intensity	of the rated intensity of the Non-compliance: otherw	ise		
Other parameters	Compliance: the average threshold or declared va Non-compliance: otherw		t batch do not vary from the I	imit,

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	79.55	Р	
Prated ≥ 15 W	≥ 70 Lumen/Watt		N/A	

P-F07-08-02 A	Page 27 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	Issue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

M.4 - Classification of Energy Efficiency Index for (integrated luminaires (EEI)				
Number of sample	Measured EEI	Measured EEI class		
1	0.16	С		
2	0.16	С		
3	0.17	С		
4	0.16	С		
5	0.17	С		

	Energy efficiency classes for luminaire				
	EEI ≤ 0.11	Í	A		
	0.11< EEI ≤ 0.13	ب	В		
	0.13< EEI ≤ 0.18	چ	С		
	0.18< EEI ≤ 0.24	د	D		
Table	0.24 < EEI ≤0.50	٥	E		
37	0.50 <eei td="" ≤0.95<=""><td>و</td><td>F</td></eei>	و	F		
	0.95 <eei td="" ≤1.75<=""><td>j</td><td>G</td></eei>	j	G		
	Note: For labelling purpe	oses, the Arabic letters should be us	sed. 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
	accordance with IEC 62722 or IES LM 84.

Table 13: Functionality and endurance requirements for non-directional LED lamps and luminaires				
Functionality parameter	Requirement	Result(s)	-	
Lamp survival factor at 6000h	≥0.90		N/A	
Lumen Maintenance at 6 000h	≥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		N/A	
Starting time	< 0.5s		N/A	
Lamp warm-up time to 95 % Φ	< 2 s		N/A	
Premature failure rate	≤5.0% at 1 000h		N/A	
Color rendering (Ra)	≥80 / ≥65 if the lamp is intended for outdoor or industrial applications		N/A	
Color consistency	Variation of chromaticity coordinates within a six-step Mac Adam ellipse or less.		N/A	
	P ≤ 2W : no requirement		N/A	
Lamp displacement factor (Df)	2W < P ≤5W : DF ≥ 0.4		N/A	
with integrated control gear	5 W < P ≤ 25W : DF ≥ 0.7		N/A	
	P > 25W : DF ≥ 0.9		N/A	

P ====================================	Page 28 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

Annex F Functionality requirements for directional lamps and integrated Luminaires

Table 18: Functionality and endur	ance requirements for directional LED lamps an	nd integrated luminaires	5
Functionality parameter	Requirement	Result(s)	-
Lamp survival factor at 6 000h	≥0.90	≥0.90	Р
Lumen Maintenance at 6 000h	≥0.80	≥0.80	Р
Number of switching cycles before failure	≥15 000 if rated lamp life ≥30000h otherwise:	15000	Р
	≥half the rated lamp life expressed in hours		N/A
Starting time	< 0.5s	0.276	N/A
Premature failure rate	≤5.0% at 1 000h		Р
Color rendering (Ra)	≥80 ≥65 if the lamp is intended for outdoor or industrial applications	-	Р
Color consistency	Variation of chromaticity coordinates within a six-step Mac Adam ellipse or less.		N/A
Lown diants com out to stor (Df)	P ≤ 2W : no requirement		N/A
Lamp displacement factor (Df) for lamps with integrated	2W < P ≤5W : DF > 0.4		N/A
control gear	5W < P ≤ 25W : DF > 0.7		Р
	P > 25W : DF > 0.9		N/A

	Parameter (Measured value)							
No. of sample	Power (W)	Luminous Flux (Im)	CCT (Color temperature)	CRI (Ra)	Beam Angle	EEI	EEL	Power Factor
1	12.13	965.0	5736	91.3	112.2	0.16	С	0.50
2	12.14	975.8	5754	91.9	112.2	0.16	С	0.497
3	12.55	973.6	5722	92.0	112.3	0.17	С	0.505
4	12.11	967.5	5712	92.0	112.3	0.16	С	0.491
5	12.28	953.2	5756	91.7	112.4	0.17	С	0.503
Average	12.20	967.0	5736	91.8	112.3	0.16	С	0.499

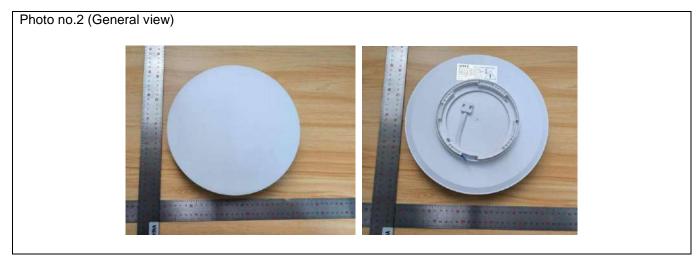
Annex N Criteria for market surveillance (table 38)					
Parameter	Rated	Measured (average)	Limit	Verdict	
Energy Efficacy	81	79.26lm/w	Min. 10% rated efficacy	Р	
Color rendering (Ra)	> 90	91.8	Min3, Max. +3.9	Р	
Beam angle	100	112.3	±25% rated beam angle	Р	
Peak intensity			Min. 75% rated intensity	-	
Lamp displacement factor	0.91	0.89	±10% rated	Р	
Color temperature	5700K	5736	±10% rated 5130-6270	Р	
Color consistency	-	-	±10% rated	-	
Power	13	12.2	+10% rated	Р	
Luminous Flux	1050	967.0	-10% rated	Р	
Calculated Rated EEI	0.16	0.16	±10% rated	Р	

Table 13: Fund	Table 13: Functionality and endurance requirements for non-directional LED lamps and luminaires								
No. of sample	Test Voltage	Luminous	s Flux (lm)	Lumen Maintenance (%)	Premature failure rate	Lamp survival Factor	Ra	DF	
	(V)	Initial	6000H	6000H	At 1000H	6000H	6000H	6000H	
1	230	965.0	919.9	95.3	Pass	Pass	91.3	0.72	
2	230	975.8	844.7	86.5	Pass	Pass	91.9	0.73	
3	230	973.6	914.0	93.87	Pass	Pass	92.0	0.71	
4	230	967.5	839.0	86.7	Pass	Pass	92.0	0.71	
5	230	953.2	862.7	90.5	Pass	Pass	91.7	0.71	
Average	230	967.02	876.06	90.574	-	-	91.7	0.796	

P-F07-08-02 A	Page 29 of 52	Issued By: QGM	Approved By: GMJ	
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023	
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 6 SASO 2902	0598-1		
Clause	Requ	Requirement -Test		Verdict		
Remarks:						

Photo no.1 (Marking)		
	OPPLE Fixed L Model:LED HC260 13W Wh Rated Voltage: 220-240V- Rated Power: 13W CCT: 57 Rated Current: 105mA Power Factor: 0.5 SH 2024-01-12 Made in China Opple Li	ite 50/60Hz 700К
	Model Number	LED HC260 13W White
	Luminous Flux (Im)	1050
	Rated Power (W)	13
	Efficacy (Im/W)	81
	Df	0.9
	Life Time(H)	15000
	Color Temperature (K)	5700
	Switching Cycle (X)	50000
	Color Rendering (Ra)	90
	Beam Angle (°)	100
	Туре	direct



F07-08-02 A	Page 30 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict



P F07-08-02 A	Page 31 of 52	Issued By: QGM	Approved By: GMJ		
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023		
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Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	Requirement -Test		Verdict

Photo no.4 (Photometric results)



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Report No.: EC240005-1

Page 1 of 19 Pages

Test Time: 1/19/2024 11:16

Luminaire Property

Luminaire Manufacturer: Luminaire Category: Fixed luminaire Luminaire Description: LED HC260 13W White Lamp Catalog: OPPLE Lamp Description: 220-240V 50/60Hz 13W 5700K Number of Lamps: 1 Luminous Length (mm): -Luminous Height (mm): -Current: 0.105 A Power Factor: 0.501

Lumens per Lamp: -Luminous Width (mm): -Voltage: 230.2 V Power: 12.13 W

Photometric Results

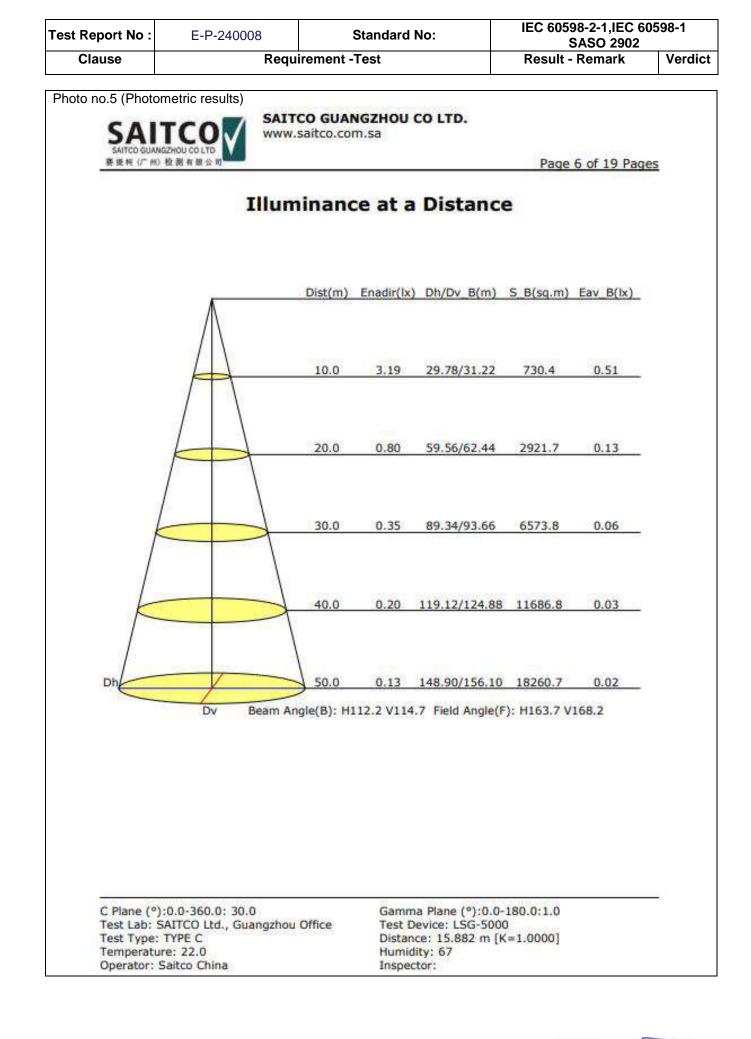
Operator: Saitco China

CIE Class: Direct Total Rated Lamp Lumens: 965.0 Im Measurement Flux: 965 Im Efficiency: 100% Upward Ratio: 3% Downward Ratio: 97% Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 163.7, 168.2, 166.6, 166.6 Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 112.2, 114.7, 113.3, 113.5 Luminaire Efficacy Rating (LER): 79.60 Central Intensity: 319.3 cd Max. Intensity: 319.36 cd Pos of Max. Intensity: H0 V1 S/MH(C0/C180): 1.25 S/MH(C90/C270): 1.26

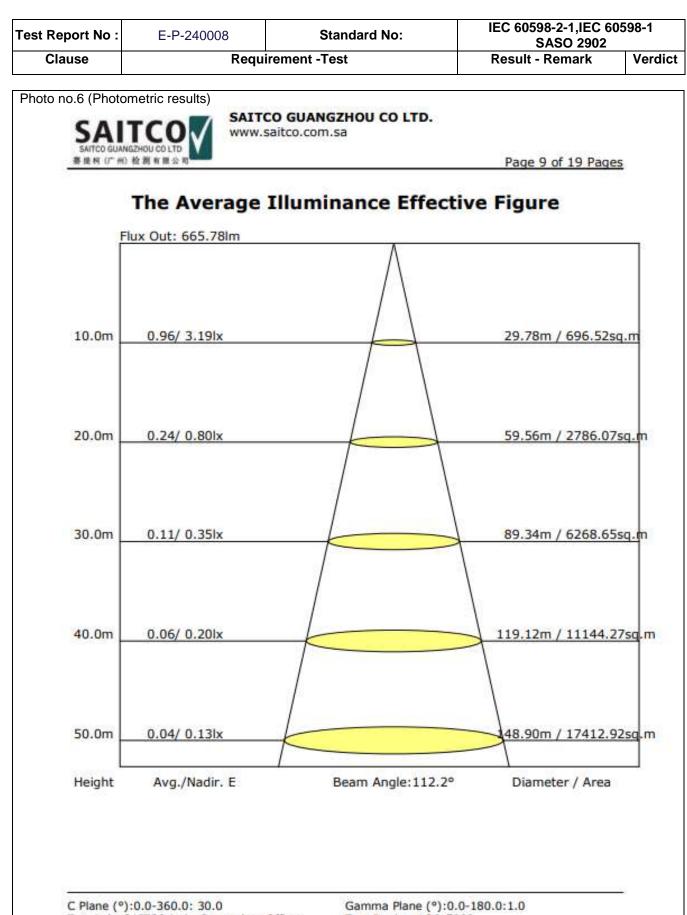
Picture Of Luminaire Luminous Intensity Distribution Curve 150 140 160¹⁷⁰ 180 170₁₆₀ 150 140 130 130 120 120 110 110 100 100 90 90 80 80 59 70 70 239 60 60 50 50 0 40 40 30 399 30 10 20 20 10 0 Unit: cd Gamma Plane (°):0.0-180.0:1.0C270 C Plane (°):0.0-360.0: 30.0 Test Lab: SAITCO Ltd., Guangzhou Office Test Device: LSG-5000 Distance: 15.882 m [K=1.0000] Test Type: TYPE C Temperature: 22.0 Humidity: 67

P-F0Z-08-02 A	Page 32 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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Inspector:



P-F07-08-02 A	Page 33 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	5	1 2043000,Fax +966 1 2042888, www saitco com.sa



Test Lab: SAITCO Ltd., Guangzhou Office Test Type: TYPE C Temperature: 22.0 Operator: Saitco China Gamma Plane (°):0.0-180.0:1.0 Test Device: LSG-5000 Distance: 15.882 m [K=1.0000] Humidity: 67 Inspector:

PotF07-08-02 A	Page 34 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa

	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902)598-1
Clause	Requ	uirement -Test	Result - Remark	Verdic
ete e e Z (Dh eter				
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SAI		TCO GUANGZHOU CO LTD. A.saitco.com.sa		
SAITCO GUA 賽提柯 (/* #	NGZHOU CO LTD N 检测有限公司		Page 11 of 19 Pages	
		Color Properties		
		0.3274 y=0.3316 u(u')=0.20 e: Tc=5736K (duv=-0.00262)	171 v=0.3146 v'=0.4719	
Measu	rement Flux: 965.0lm,	PAR: 3.186W, PPF: 14.497u	mol/s	
Peak W	Vavelength: 455nm	Half Bandwidth:	27.9nm	
Domin EEI: 0	ant Wavelength: 497.8		21 / Class: C (SASO 2902:2018)	
	Ratio: R=0.164 G=0.7			
1975-1777-1777-1777 1975-1777-1777-1777	가슴 가 다 아이가 다 이 것을 다 다 가지 않는다. 이 아이는 것 같아요. 아이가 아이가 가지 않는다.	70 D=0.000		
TM30:	Rf=85, Rg=96			
	Render Index: Ra= 91.	.3 5.7 R4 =89.4 R5 =92.0 R6 =9	97.7 R7 = 88.7 R8 = 81.6	
		1.1 R12=69.8 R13=97.1 R14=		
Color (Quality Scale: Qa= 88.	2 Qf= 88.1 Qp= 88.4 Qg= 95.6	5	
Q1 =8	5.7 Q2 =97.1 Q3 =86	6.5 Q4 =80.3 Q5 =83.7 Q6 =	86.7 Q7 =92.8 Q8 =94.2	
Q9 =9	9.0 Q10=95.3 Q11=9	1.0 Q12=89.2 Q13=88.8 Q14=	85.2 Q15=85.9	
CIE	1931 CHROMATICITY DIAGRA	AM 1.2		
y Class				
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	0.3 0.5		580 630 680 730 780	
		0.6 0.4 0.2 0.0 380 430 480 530		
C Plane (* Test Lab:	°):0.0-360.0: 30.0 SAITCO Ltd., Guangzhou	0.6 0.4 0.2 0.0 380 430 480 530 Gamma Plane (°): Test Device: LSG-3	0.0-180.0:1.0	
C Plane (°):0.0-360.0: 30.0 SAITCO Ltd., Guangzhou :: TYPE C	0.6 0.4 0.2 0.0 380 430 480 530 Gamma Plane (*):4	0.0-180.0:1.0	

F07-08-02 A	Page 35 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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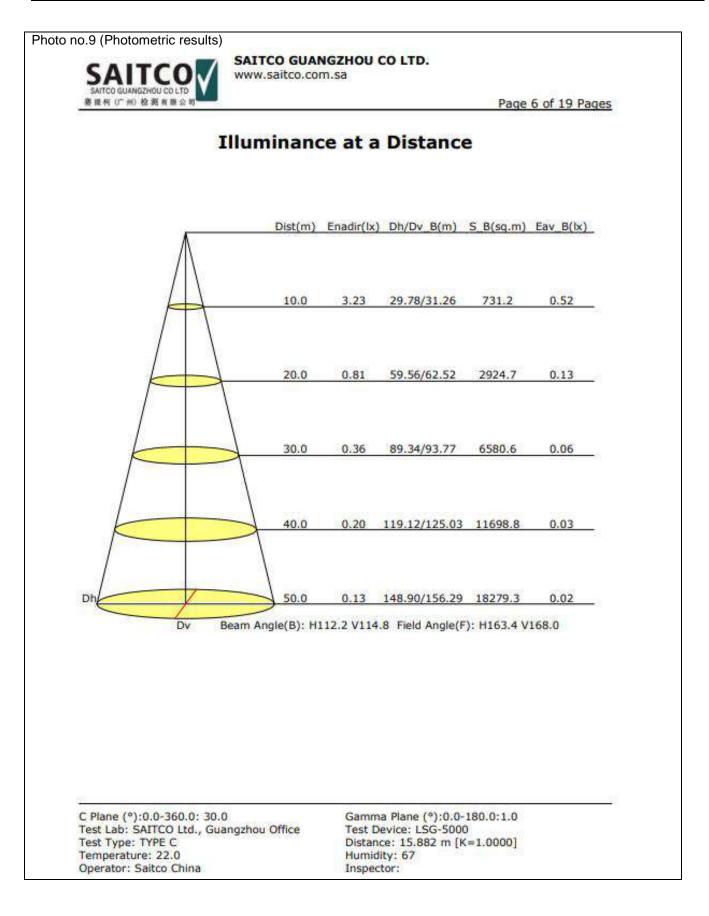
Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict

Photo no.8 (Photometric results) SAITCO GUANGZHOU CO LTD. www.saitco.com.sa 赛提柯 (广州) 检测有限公司 Page 1 of 19 Pages Report No.: EC240005-2 Test Time: 1/19/2024 11:57 Luminaire Property Luminaire Manufacturer: Luminaire Category: Fixed luminaire Luminaire Description: LED HC260 13W White Lamp Catalog: OPPLE Lamp Description: 220-240V 50/60Hz 13W 5700K Lumens per Lamp: -Number of Lamps: 1 Luminous Length (mm): -Luminous Width (mm): -Luminous Height (mm): -Voltage: 229.9 V Current: 0.106 A Power: 12.14 W Power Factor: 0.497 Photometric Results CIE Class: Direct Total Rated Lamp Lumens: 975.8 Im Measurement Flux: 975.8 Im Efficiency: 100% Downward Ratio: 97% Upward Ratio: 3% Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 163.4, 168.0, 166.5, 166.6 Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 112.2, 114.8, 113.3, 113.6 Luminaire Efficacy Rating (LER): 80.43 Central Intensity: 323 cd Max. Intensity: 323 cd Pos of Max. Intensity: H0 V0 S/MH(C0/C180): 1.25 S/MH(C90/C270): 1.27 Picture Of Luminaire Luminous Intensity Distribution Curve 160¹⁷⁰ 180 170₁₆₀ 150 140 130 130 120 120 110 110 100 100 90 90 80 80 70 70 60 60 50 50 40 40 30 20 10 30 403 10 20 0 Unit: cd Gamma Plane (*):0.0-180.0:1.0C270 C Plane (°):0.0-360.0: 30.0 Test Lab: SAITCO Ltd., Guangzhou Office Test Device: LSG-5000 Test Type: TYPE C Distance: 15.882 m [K=1.0000]

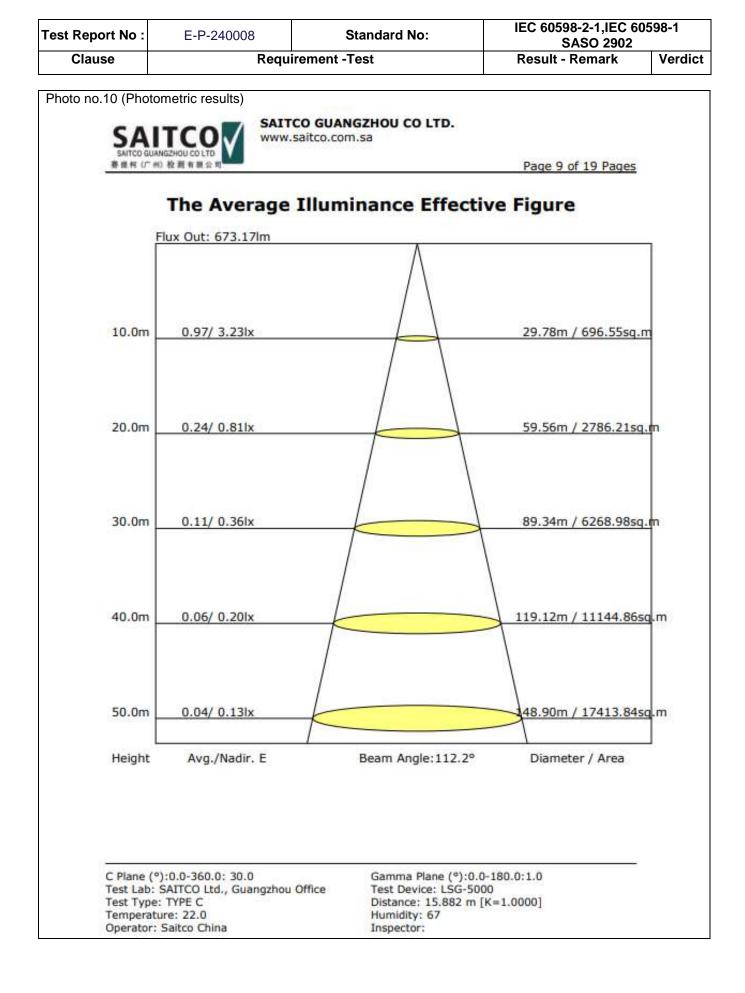
Temperature: 22.0 Operator: Saitco China Humidity: 67 Inspector:

F07-08-02 A	Page 36 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requirement -Test		Result - Remark	Verdict



P-1602-08-02 A	Page 37 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa



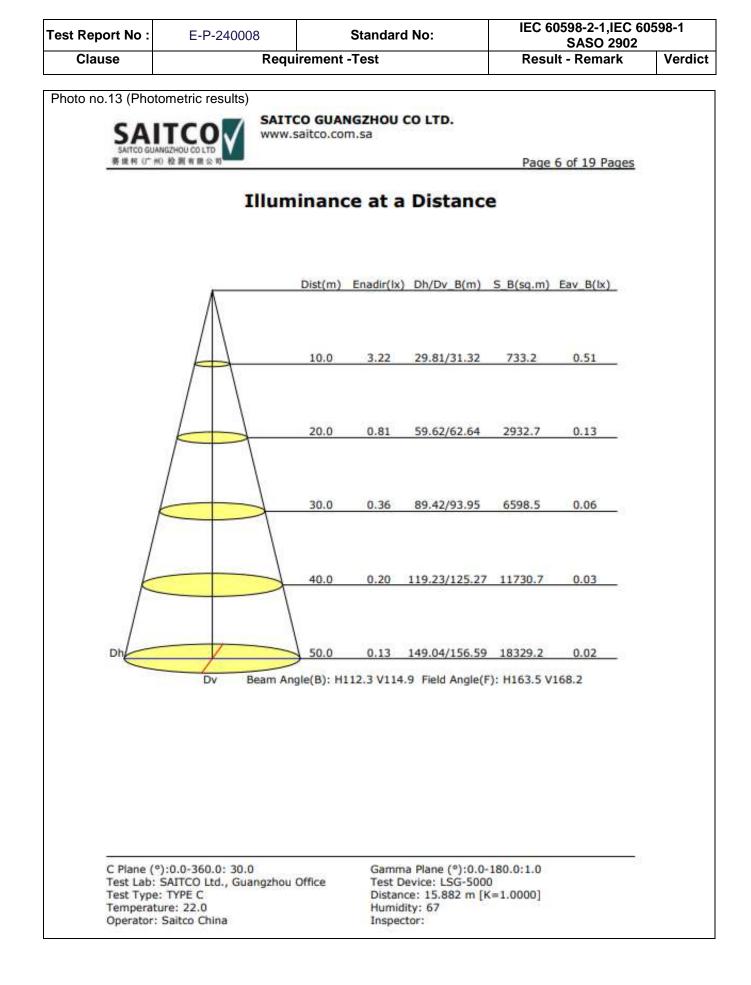
P-F07-08-02 A	Page 38 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

est Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 6 SASO 2902	0598-1
Clause	Requ	uirement -Test	Result - Remark	Verdic
Photo no.11 (Photo SAI SAITCO GUA	SAI	TCO GUANGZHOU CO LTD. v.saitco.com.sa	Page 11 of 19 Pages	5
		Color Properties		
		0.3272 y=0.3283 u(u')=0.2 re: Tc=5754K (duv=-0.00426)		
Measur	rement Flux: 975.8lm,	, PAR: 3.293W, PPF: 15.021	umol/s	
	Vavelength: 455nm ant Wavelength: 480. .16			
Color P	latio: R=0.167 G=0.7	767 B=0.067		
TM30:	Rf=86, Rg=96			
R1 =94		.9 5.8 R4 =90.6 R5 =92.8 R6 = 92.1 R12=71.1 R13=97.2 R14		
Q9 =9		6.5 Q4 =80.5 Q5 =84.1 Q6 = 90.8 Q12=89.0 Q13=88.7 Q14		
.8		0.8		
.6		0.6		
	×	0.4		
2	/	0.2		
0 0.1	0.3 0.5	0.0	580 630 680 730 780	
C Plane (Test Lab:	0.3 0.5 0.3 0.5 0:0.0-360.0: 30.0 SAITCO Ltd., Guangzho : TYPE C	0.0 430 480 530	:0.0-180.0:1.0	

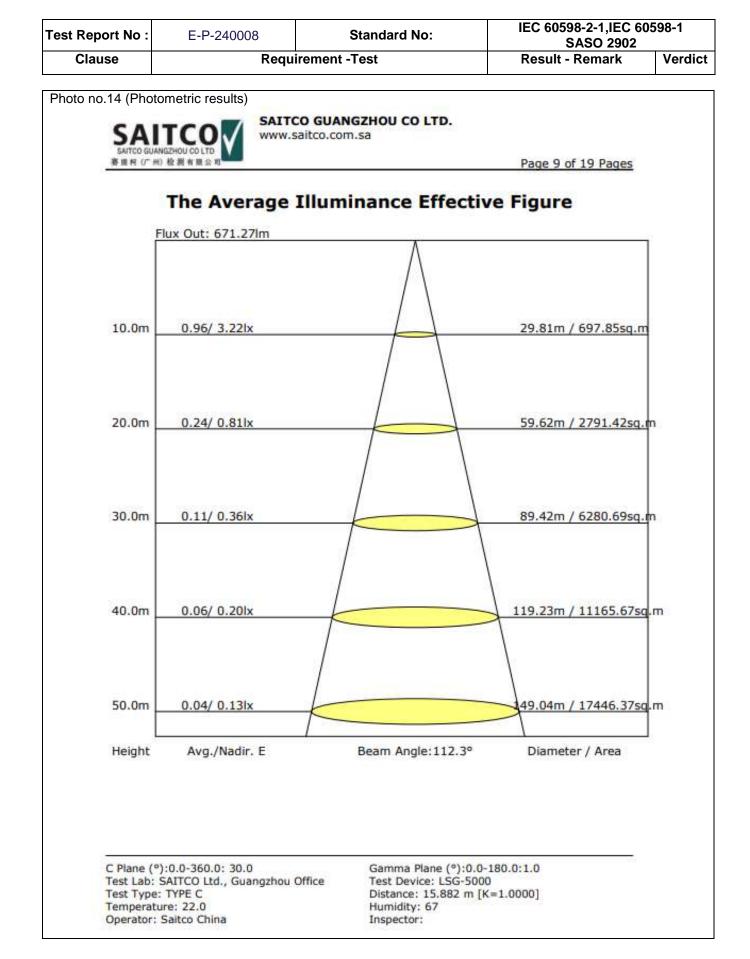
P-F07-08-02 A	Page 39 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 6 SASO 2902	0598-1
Clause	Requ	irement -Test	Result - Remark	Verdic
Photo no.12 (Photo SAITCO GUANG	SAITO	CO GUANGZHOU CO LTD. saitco.com.sa		
要要将 (F m) Report No	松興有景公司 .: EC240005-3	Test Time: 1/19/2	Page 1 of 19 Pages	
	aire Property			
Luminaire Luminaire Lamp Cata Lamp Des Number of Luminous Luminous Current: 0	Manufacturer: Category: Fixed lumin Description: LED HC2 alog: OPPLE cription: 220-240V 50, f Lamps: 1 Length (mm): - Height (mm): -	aire 60 13W White		
Photo	metric Result	s		
Downward Field Angle Beam Ang Luminaire Max. Inter	ent Flux: 973.6 lm l Ratio: 97% e(C0/C180,C90/C270,	Efficiency: 100% Upward Ratio: 3% C45/C225,C135/315): 163.5, 1 ,C45/C225,C135/315): 112.3,	168.2, 166.5, 166.7 114.9, 113.4, 113.7 322.1 cd sity: H0 V1	
	Picture Of Luminaire	Luminous In	tensity Distribution Curve	
		150 ¹⁶⁰ 140 120 110 100 90 80 70 60 50 40 30 20	170 180 170160 140 130 120 100 90 80 161 241 60 50 40 241 50 40 Unit: cd	
	:0.0-360.0: 30.0 AITCO Ltd., Guangzhou TYPE C	Gamma Plane (°):0. Office Test Device: LSG-50 Distance: 15.882 m	000	

P-F07-08-02 A	Page 40 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966	5 11 2043000,Fax +966 1 2042888, www saitco com.sa



P-162-08-02 A	Page 41 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

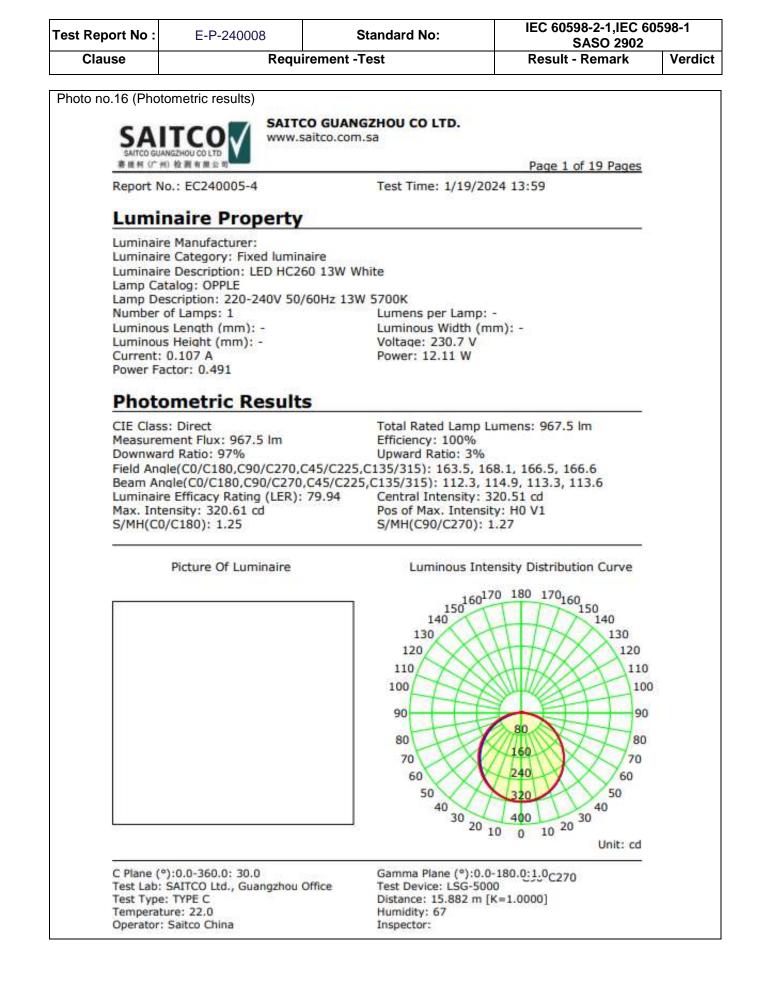


P 5 F07-08-02 A	Page 42 of 52	Issued By: QGM	Approved By: CM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966	11 2043000,Fax +966 1 2042888, www saitco com.sa

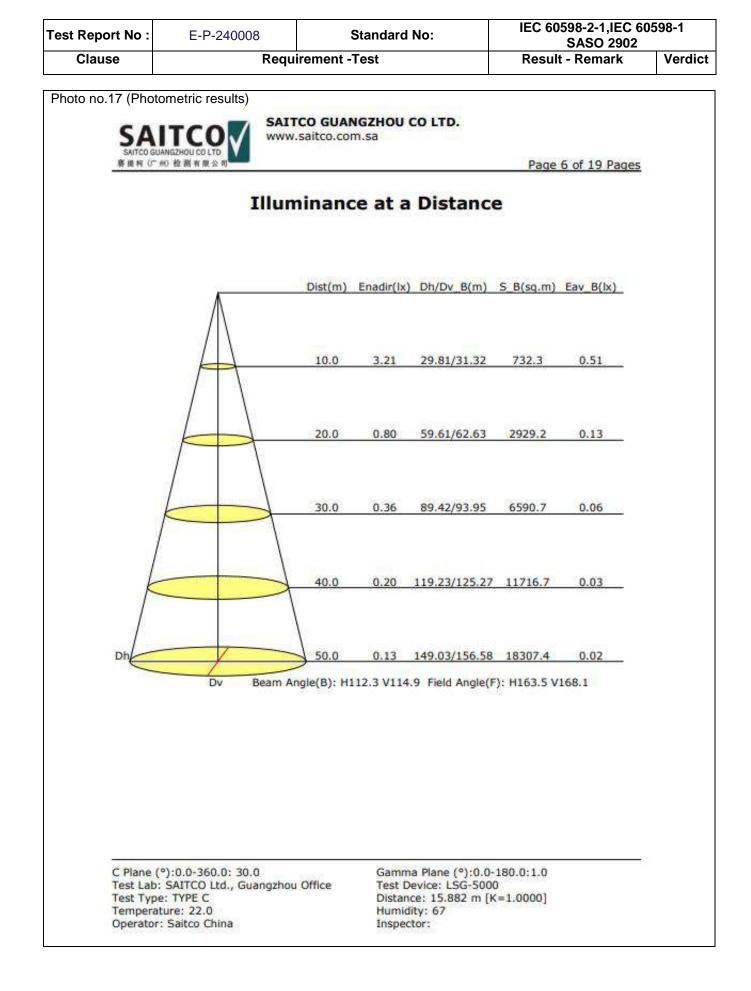
est Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	0598-1
Clause	Requi	rement -Test	Result - Remark	Verdic
Photo no.15 (Photo	metric results)			
CAL		O GUANGZHOU CO LTD. aitco.com.sa		
SAITCO GUAN	ZHOU CO LTD	anco.com.sa	D	
- 発展科 0 州0	程 週 有 哄 空 印		Page 11 of 19 Pages	
	c	Color Properties		
		3279 y=0.3267 u(u')=0.20 Tc=5722K (duv=-0.00544)	93 v=0.3129 v'=0.4693	
Measure	ment Flux: 973.6lm,	PAR: 3.301W, PPF: 15.064ur	nol/s	
	avelength: 455nm ht Wavelength: 472.6n 17			
Color Ra	tio: R=0.168 G=0.76	5 B=0.067		
	f=86, Rg=97			
	nder Index: Ra= 92.0			
R1 =94.	6 R2 =96.3 R3 =95.8	R4 =91.3 R5 =93.0 R6 =9 R12=71.5 R13=96.8 R14=9		
		Qf= 88.5 Qp= 89.7 Qg= 97.1 1 Q4 =80.3 Q5 =84.3 Q6 =8		
		5 Q12=88.5 Q13=88.3 Q14=		
yCIE19	31 CHROMATICITY DIAGRAM	1.2		
8		1.0		
		0.8		
.6		0.6		
	\neq	0.4		
2	· /	0.2		
		0.0	Philippine	
0 0.1	0.3 0.5 0.7	300 400 400 200	580 630 680 730 780	
		Gamma Plane (°):0		
	:0.0-360.0: 30.0	Million West Parties & Pro. P		
Test Lab: S Test Type:	AITCO Ltd., Guangzhou (TYPE C	Distance: 15.882 m		
Test Lab: S Test Type: Temperatur	AITCO Ltd., Guangzhou (TYPE C	Office Test Device: LSG-5 Distance: 15.882 m Humidity: 67 Inspector:		

F07-08-02 A	Page 43 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	yadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa

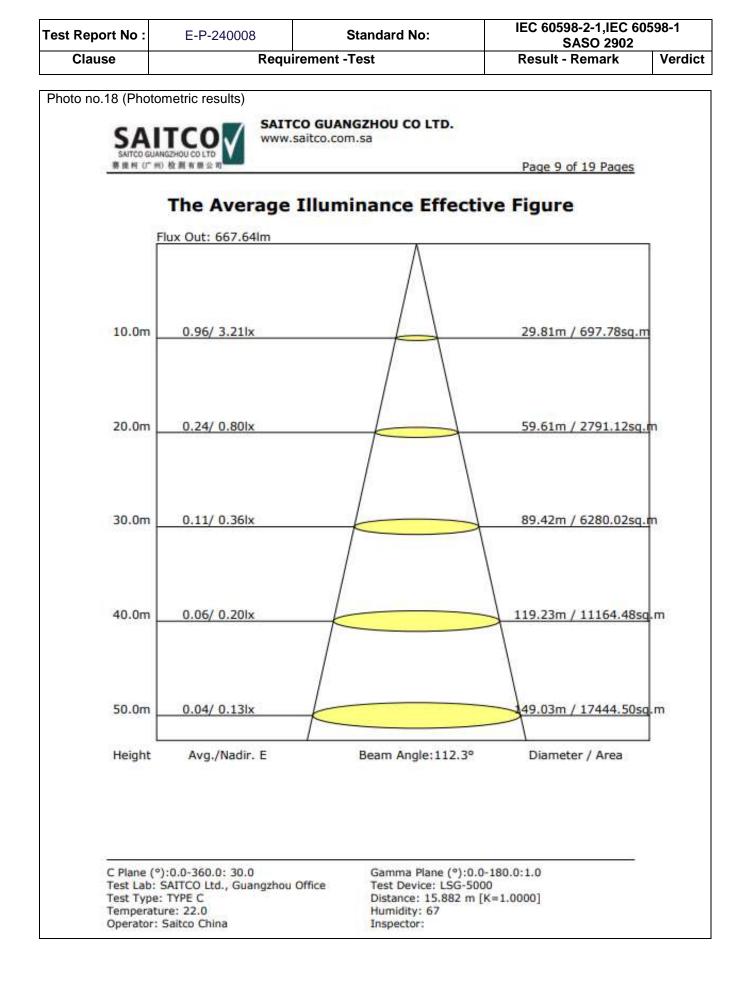
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P-F07-08-02 A	Page 44 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966	5 11 2043000,Fax +966 1 2042888, www saitco com.sa



PotE02-08-02 A	Page 45 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966	5 11 2043000,Fax +966 1 2042888, www saitco com.sa



Page 46 of 52		Issued By: QGM	Approved By: GM	
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023	
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa	

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60598-1 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

SAITCO GUA www.saitco.co	NGZHOU CO LTD. om.sa
SAITCO GUANGZHOU CO LTD 賽提柯 (广州) 检测有能公司	Page 11 of 19 Pages
Color	Properties
	=0.3287 u(u')=0.2087 v=0.3136 v'=0.4704
Correlated Color Temperature: Tc=57	
Measurement Flux: 967.5lm, PAR: 3	.264W, PPF: 14.899umol/s
Peak Wavelength: 455nm Dominant Wavelength: 479.1nm	Half Bandwidth: 28.3nm
EEI: 0.16	Color Purity: 0.022 Energy Efficiency Class: C (SASO 2902:2018)
Color Ratio: R=0.167 G=0.766 B=0.	066
TM30: Rf=86, Rg=97	
Color Render Index: Ra= 92.0	
R9 =66.0 R10=96.4 R11=92.4 R12=	90.8 R5 =92.9 R6 =91.7 R7 =89.0 R8 =84.3 71.4 R13=97.2 R14=99.2 R15=95.0
Color Quality Scale: Qa= 88.9 Qf= 88. Q1 =87.4 Q2 =97.6 Q3 =86.5 Q4 =8 Q9 =99.1 Q10=95.2 Q11=90.9 Q12=	80.7 Q5 =84.4 Q6 =87.7 Q7 =94.1 Q8 =94.9
CIE1931 CHROMATICITY DIAGRAM	1.2
8	1.0
	0.8
	0.6
	0.4
	0.2
0 0.1 0.3 0.5 0.7 x	0.0
C Plane (°):0.0-360.0: 30.0	Gamma Plane (°):0.0-180.0:1.0
Test Lab: SAITCO Ltd., Guangzhou Office	Test Device: LSG-5000 Distance: 15.882 m [K=1.0000]
Fest Type: TYPE C Femperature: 22.0	Humidity: 67

F07-08-02 A	Page 47 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60 SASO 2902	0598-1	
Clause	Requ	Requirement -Test		Verdict	

Photo no.20 (Photometric results)



SAITCO GUANGZHOU CO LTD. www.saitco.com.sa

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Page 1 of 19 Pages

Report No.: EC240005-5

Test Time: 1/19/2024 14:47

Luminaire Property

Luminaire Manufacturer: Luminaire Category: Fixed luminaire Luminaire Description: LED HC260 13W White Lamp Catalog: OPPLE Lamp Description: 220-240V 50/60Hz 13W 5700K Number of Lamps: 1 Luminous Length (mm): -Luminous Height (mm): -Current: 0.106 A Power: Power Factor: 0.503

Lumens per Lamp: -Luminous Width (mm): -Voltage: 230.0 V Power: 12.28 W

Photometric Results

 CIE Class: Direct
 Total Rated Lamp Lumens: 953.2 lm

 Measurement Flux: 953.2 lm
 Efficiency: 100%

 Downward Ratio: 97%
 Upward Ratio: 3%

 Field Angle(C0/C180,C90/C270,C45/C225,C135/315): 163.7, 168.2, 166.6, 166.6
 Beam Angle(C0/C180,C90/C270,C45/C225,C135/315): 112.4, 115.0, 113.5, 113.7

 Luminaire Efficacy Rating (LER): 77.67
 Central Intensity: 315.16 cd

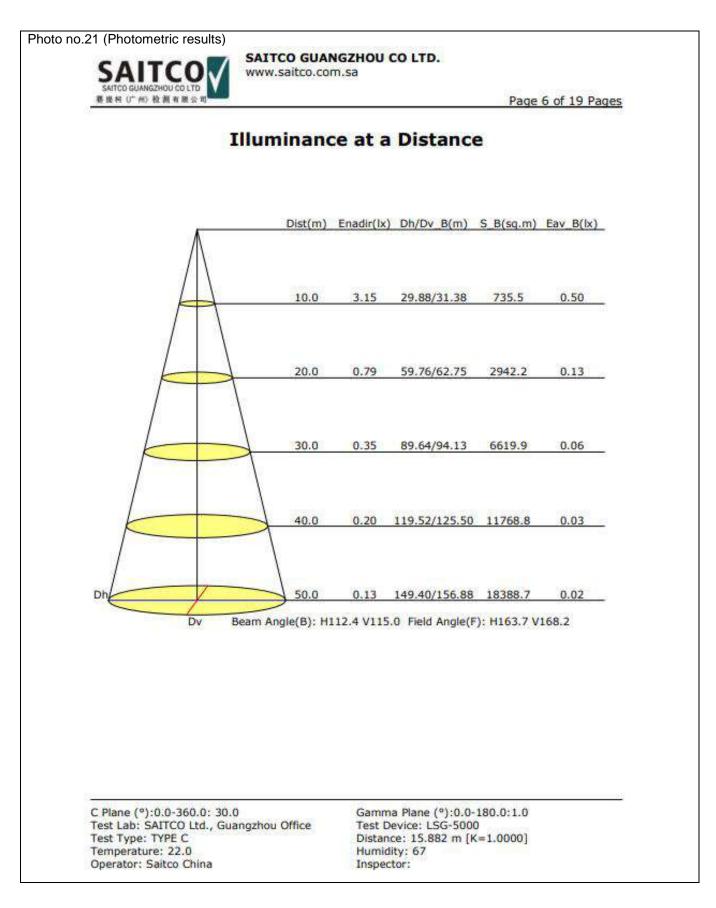
 Max. Intensity: 315.3 cd
 Pos of Max. Intensity: H0 V1

 S/MH(C0/C180): 1.26
 S/MH(C90/C270): 1.27

Picture Of Luminaire Luminous Intensity Distribution Curve 160¹⁷⁰ 180 170₁₆₀ 150 140 130 130 120 120 110 110 100 100 90 90 80 80 70 70 236 60 60 50 50 40 40 30 20 10 10 20 30 394 0 Unit: cd Gamma Plane (*):0.0-180.0:1.0C270 C Plane (°):0.0-360.0: 30.0 Test Lab: SAITCO Ltd., Guangzhou Office Test Device: LSG-5000 Distance: 15.882 m [K=1.0000] Test Type: TYPE C Temperature: 22.0 Humidity: 67 Operator: Saitco China Inspector:

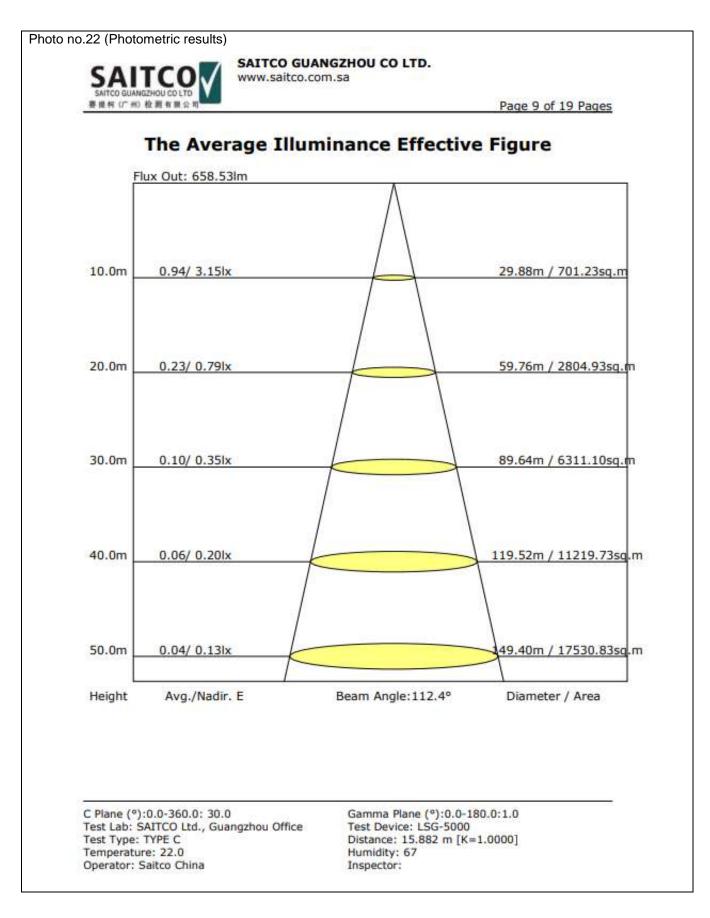
F07-08-02 A	Page 48 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	Issue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +966 1	1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	i98-1
Clause	Requ	ement -Test Result - Remark Vo		Verdict



P-F07-08-02 A	Page 49 of 52		Approved By: GMJ	
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023	
	iyadh Station area beside dry customs St.4,5,6,7 Buildir		11 2043000,Fax +966 1 2042888, www saitco com.sa	

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 605 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict



P-1602-08-02 A	Page 50 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
SAITCO ,First Industrial City area ,R	iyadh Station area beside dry customs St.4,5,6,7 Buildir		1 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60598-1 SASO 2902	598-1
Clause	Requ	irement -Test	Result - Remark	Verdict

Photo no.23 (Photometric results) SAITCO GUANGZHOU CO LTD. 0 www.saitco.com.sa DU COLTD 審理相 (广州) 检测有量公司 Page 11 of 19 Pages **Color Properties** Chromaticity Coordinate: x=0.3271 y=0.3316 u(u')=0.2068 v=0.3146 v'=0.4718 Correlated Color Temperature: Tc=5756K (duv=-0.00246) Measurement Flux: 953.2lm, PAR: 3.192W, PPF: 14.561umol/s Peak Wavelength: 455nm Half Bandwidth: 28.0nm Dominant Wavelength: 488.2nm Color Purity: 0.022 EEI: 0.17 Energy Efficiency Class: C (SASO 2902:2018) Color Ratio: R=0.164 G=0.770 B=0.067 TM30: Rf=86, Rg=96 Color Render Index: Ra= 91.7 R1 =94.0 R2 =97.7 R3 =95.7 R4 =89.5 R5 =92.2 R6 =92.4 R7 =88.7 R8 =82.8 R9 =61.2 R10=97.0 R11=91.1 R12=70.5 R13=97.3 R14=99.0 R15=93.1 Color Quality Scale: Qa= 88.7 Qf= 88.6 Qp= 88.8 Qg= 95.8 Q1 =86.4 Q2 =97.1 Q3 =87.1 Q4 =80.9 Q5 =84.0 Q6 =86.8 Q7 =92.9 Q8 =94.4 Q9 =99.1 Q10=95.6 Q11=91.4 Q12=89.6 Q13=89.2 Q14=86.3 Q15=86.9 CIE1931 CHROMATICITY DIAGRAM 1.2 1.0 0.8 0.6 0.4 0.2 0.0 380 430 480 530 580 630 680 730 780 0.3 0.5 0.7 C Plane (°):0.0-360.0: 30.0 Gamma Plane (°):0.0-180.0:1.0 Test Lab: SAITCO Ltd., Guangzhou Office Test Device: LSG-5000 Test Type: TYPE C Distance: 15.882 m [K=1.0000] Temperature: 22.0 Humidity: 67 Operator: Saitco China Inspector:

P-1-08-02 A	Page 51 of 52	Issued By: QGM	Approved By: GMJ
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
	iyadh Station area beside dry customs St.4,5,6,7 Buildir	ng No.2433 , Riyadh 11427, PO 27711 , Tel : +9	56 11 2043000,Fax +966 1 2042888, www saitco com.sa

Test Report No :	E-P-240008	Standard No:	IEC 60598-2-1,IEC 60598-1 SASO 2902	
Clause	Requ	irement -Test	Result - Remark	Verdict

Conformity Decision is usually included in the report, unless the agreement states otherwise by the client.					
Results Notes: The acceptance criterion based on :	n is	A-The relevant TR Requirements		B-The relevant standard specifications	
	technical data sheet)□	C- Manufacturer's manual (product technical data sheet)□		D- Customer requirements	
Acceptance Rule is based on:	Special Case	Reject	Rejection Rule (Failing) is based o		
A- The measured value (+) measurement uncertainty value is less than the maximum required to criteria of acceptance. B- The measured value (-) measurement uncertainty value is greater than the minimum required to criteria of acceptance.		Rejectwhen confidence level than 95% is acce r	a of less		
	- <u>+</u> -			<u> </u>	
= measurement result w	I = uncertair	nty interv	al of agreed method		

☑ The sample passed all the above-mentioned tests in accordance with the requirements of the product

□ 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 :

All tests are accredit except:

REMARK :			
SOFT COPY OF THE CC	NTROL TEST RESULT SHEET	IS AUDITED BY THE LAB	SUPERVISOR
	Inspected by	Lab supervisor/	Technical Manager
		Reviewer	-
Name	(B+)		
Sign	all erea		Thegh
Date	20/01/2024	(// 20/01/2024	20/01/2024
	"End of F	Report"	

End of Report



P-F07-08-02 A	Page 52 of 52	Issued By: QGM	Approved By: GM
Issue No : 2	lssue Date : 01/10/2020	Revision No: 2	Revision Date : 12/06/2023
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			