Test Report issued under the responsibility of:

TEST REPORT
IEC 60598-2-1
Luminaires
Part 2: Particular requirements
Section 1: Fixed general purpose luminaires

Report Number. ..... :	SAFEAIRFA220201
Date of issue ..... :	2022-06-17
Total number of pages..... :	16 (including attachments)
Name of Testing Laboratory preparing the Report..... :	IMQ Tecnocrea, S.L. C/ Sèquia de Benàger, 23. Pol. Ind. Alquería de Moret 46210 Picanya (Valencia) - Spain
Applicant's name ..... :	AIRFAL INTERNATIONAL, S.L.
Address ..... :	C/ Río Ésera, 5 Pol. Ind. San Miguel 50830 Villanueva de Gállego (Zaragoza) - Spain
Test specification:	
Standard..... :	IEC 60598-2-1:1979, AMD1:1987 used in conjunction with IEC 60598-1:2014, AMD1:2017
Test procedure ..... :	CE SAFE
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC60598_2_1F
Test Report Form(s) Originator .... :	Intertek Semko AB
Master TRF..... :	Dated 2017-10

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
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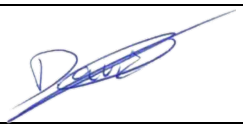
The tests marked with * are not covered by the accreditation of ENAC

ENSAYO
ISO 17025
Nº1076 / LE2135

Test item description ..... :	Fixed general purpose luminaire
Trade Mark ..... :	AIRFAL
Manufacturer ..... :	AIRFAL INTERNATIONAL, S.L.
Model/Type reference ..... :	FARM LED A.T. (Sample ID: EBP_SAFEAIRFA220201)
Ratings ..... :	230V. 50/60Hz. Class I. 34W. LED. ta 80ºC.

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**Testing Laboratory:**	**IMQ Tecnocrea, S.L.**	
Testing location/ address ..... :		C/ Sèquia de Benàger, 23. Pol. Ind. Alquería de Moret 46210 Picanya (Valencia) - Spain	
Tested by (name, function, signature) ..... :		**David Martínez** [Laboratory Technician]	
Approved by (name, function, signature) ... :		**David Latorre** [Technical Manager]	

List of Attachments (including a total number of pages in each attachment):

Attachment No. 1: Photo document, total 4 pages.
Attachment No. 2: European Group Differences and National Differences of EN 60598-1 and EN 60598-2-1, total 2 pages.

Summary of testing:

This Test Report covers the evaluation on reference: FARM LED A.T.

Following technical evaluation partial tests have been carried out on the model of the series as follows:

- FARM LED A.T. (Clauses: 12)

Tests performed (name of test and test clause):	**Testing location:**
Test Report No. SAFEAIRFA220201 §1.2 (0)- General test requirements §1.4 (2)- Classification of luminaires §1.12 (12)- Endurance test and thermal test	IMQ TECNOCREA, S.L. C/ Sèquia de Benàger, 23 Pol. Ind. Alquería de Moret 46210 Picanya (Valencia) – Spain)

Summary of compliance with National Differences:

List of countries addressed

N/A

☒ **The product fulfils the requirements of:**

-EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015 + A1:2018

Copy of marking plate:

Test item particulars.....:	Fixed general purpose luminaire
Classification of installation and use.....:	Suitable for direct mounting on normally flammable surfaces, indoor use
Supply Connection.....:	Terminal block
.....:	--
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item .....:	2022-05-11
Date (s) of performance of tests.....:	2022-05-11 to 2022-06-16

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

Statement concerning the uncertainty of the measurement systems used for the tests

☒ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

-PTG_TECNO_05 (Technical procedure for the estimation of uncertainty in the laboratories of the advanced tests area), in order to ensure compliance with the IEC Guide 115 “Application of uncertainty of measurement to conformity assessment activities in the electrotechnical sector” and IECEE OD-5014.

-PTG_TECNO_02 (General technical procedure for control, identification, calibration, maintenance and verification of the measurement equipment) which ensures that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met.

Internal Procedures are to be assumed in the current version at the time of the TR issue.

Uncertainties of measurements are calculated and available to the customer.

Statement of conformity

The statement of compliance with specification (or requirements) is based on a 95% coverage probability for the expanded uncertainty of the measurements results on which the decision of compliance is based.
The statement of compliance relates only to the test sample as tested and no to the simples/items which the test sample was drawn.
This Test Report is the result of testing a sample of the product submitted, in accordance with the provisions of the specified Technical Specification(s)/Standard(s). It does not imply any judgment on the production and it does not permit the use of a mark of conformity.

Decision Rule applied

The *accuracy method* (decision rule) defined in IEC GUIDE 115 edition 2.0 “Application of uncertainty of measurement to conformity assessment activities in the electrotechnical sector” is applied for tests related with the scope of the mentioned document. In any other case the binary statement for simple acceptance

(or reject) rule is applied (w=0). In this case, the risk of false acceptance (or false reject) is up to 50%.

Uncertainties of measurements are calculated and available to the client. Uncertainties of tests out of the scope of the IEC GUIDE 115, if any, are indicated in the test report.

The ability or reliability of this product to perform its intended function in a particular application has not been investigated.

Unless otherwise specified, warnings, installation instructions and/or user manual provided with the sample have been checked in Spanish or English version only.

Testing laboratory accepts no responsibility for the information provided by the applicant.

Clause numbers between brackets refer to clauses in IEC 60598-1

General product information:

1.2 (0)	GENERAL TEST REQUIREMENTS		P
1.2 (0.3)	More sections applicable ..... :	Yes ☐ No ☒ Section/s:	—
1.2 (0.5)	Components	(see Annex 1)	—
1.2 (0.7)	**Information for luminaire design in light sources standards**		—
1.2 (0.7.2)	Light source safety standard ..... :	IEC/EN 62031	—
	Luminaire design in the light source safety standard		P

1.4 (2)	CLASSIFICATION OF LUMINAIRES		P
1.4 (2.2)	Type of protection ..... :	Class I	P
1.4 (2.3)	Degree of protection ..... :	--	—
1.4 (2.4)	Luminaire suitable for direct mounting on normally flammable surfaces ..... :	Yes ☒ No ☐	—
1.4 (2.5)	Luminaire for normal use ..... :	Yes ☒ No ☐	—
	Luminaire for rough service ..... :	Yes ☐ No ☒	—

1.12 (12)	ENDURANCE TEST AND THERMAL TEST		P
1.12 (-)	If IP > IP 20 relevant test of (12.4), (12.5) and (12.6) after (9.2) before (9.3) specified in 1.13		—
1.12 (12.2)	**Selection of lamps and ballasts**		**—**
	Lamp used according Annex B	AC LED module ParagonLED Ref. G2L560045-xxxVxxWD-V02 840	—
	Controlgear if separate and not supplied	--	—
1.12 (12.3)	**Endurance test**		**P**
	a) mounting-position ..... :	(according to instructions)	—
	b) test temperature (°C) ..... :	90 = 80 + 10	—
	c) total duration (h) ..... :	240	—
	d) supply voltage (V) ..... :	253 = 230 x 1,1	—
	d) if not equipped with controlgear, constant voltage/current (V) or (A) ..... :	--	—
	e) luminaire ceases to operate	Luminaire works	—
1.12 (12.3.2)	After endurance test:		P
	- no part unserviceable		P
	- luminaire not unsafe		P
	- no damage to track system		N/A
	- marking legible		P
	- no cracks, deformation etc.		P

1.12 (12.4)	**Thermal test (normal operation)**	(see Annex 2)	**P**
1.12 (12.5)	**Thermal test (abnormal operation)**	(see Annex 2)	**N/A**
1.12 (12.6)	**Thermal test (failed lamp control gear condition):**		**N/A**
1.12 (12.6.1)	Through wiring or looping-in wiring loaded by a current of (A) ..... :		—
	- case of abnormal conditions ..... :		—
	- electronic lamp control gear		N/A
	- measured winding temperature (°C): at 1,1 Un .... :		—
	- measured mounting surface temperature (°C) at 1,1 Un ..... :		N/A
	- calculated mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
1.12 (12.6.2)	Temperature sensing control		N/A
	- case of abnormal conditions ..... :		—
	- thermal link		N/A
	- manual reset cut-out		N/A
	- auto reset cut-out		N/A
	- measured mounting surface temperature (°C) ..... :		N/A
	- track-mounted luminaires		N/A
1.12 (12.7)	**Thermal test (failed lamp control gear in plastic luminaires):**		**N/A**
1.12 (12.7.1)	Luminaire without temperature sensing control		N/A
1.12 (12.7.1.1)	Luminaire with fluorescent lamp ≤ 70W		N/A
	Test method 12.7.1.1 or Annex W ..... :		—
	Test according to 12.7.1.1:		N/A
	- case of abnormal conditions ..... :		—
	- Ballast failure at supply voltage (V) ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
	Test according to Annex W:		N/A
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test .....:	See Test Table 1.15 (13.2.1)	N/A

1.12 (12.7.1.2)	Luminaire with discharge lamp, fluorescent lamp > 70W, transformer > 10 VA		N/A
	- case of abnormal conditions ..... :		—
	- measured winding temperature (°C): at 1,1 Un ..... :		—
	- measured temperature of fixing point/exposed part (°C): at 1,1 Un ..... :		—
	- calculated temperature of fixing point/exposed part (°C) ..... :		—
	Ball-pressure test ..... :	See Test Table 1.15 (13.2.1)	N/A
1.12 (12.7.1.3)	Luminaire with short circuit proof transformers ≤ 10 VA		N/A
	- case of abnormal conditions ..... :		—
	- Components retained in place after the test		N/A
	- Test with standard test finger after the test		N/A
1.12 (12.7.2)	Luminaire with temperature sensing control		N/A
	- thermal link..... :	Yes ☐ No ☐	—
	- manual reset cut-out ..... :	Yes ☐ No ☐	—
	- auto reset cut-out ..... :	Yes ☐ No ☐	—
	- case of abnormal conditions ..... :		—
	- highest measured temperature of fixing point/ exposed part (°C): ..... :		—
	Ball-pressure test: ..... :	See Test Table 1.15 (13.2.1)	N/A

ANNEX 2	TABLE: Thermal tests of Section 12		P
	Type reference ..... :	FARM LED A.T.	—
	Lamp used..... :	AC LED module ParagonLED Ref. G2L560045-xxxVxxWD-V02 840	—
	Lamp control gear used..... :	--	—
	Mounting position of luminaire ..... :	(according Instructions)	—
	Supply wattage (W) ..... :	39,2	—
	Supply current (A) ..... :	0,23	—
	Temperatures in test 1 - 4 below are corrected for ta (°C) ..... :	80	—
	- abnormal operating mode ..... :	N/A	—
1.12 (12.4)	- test 1: rated voltage ..... :	230V = 230V x 1,0	—
	- test 2: 1,06 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	243,8V = 230 x 1,06	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	N/A	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	N/A	—
1.12 (12.5)	- test 4: 1,1 times rated voltage or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	N/A	—

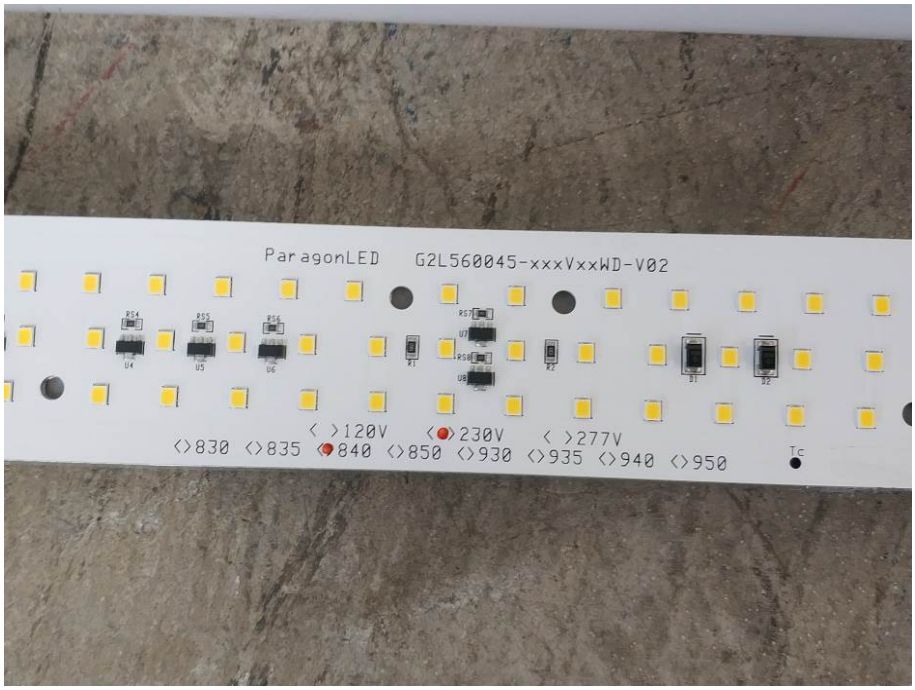
Temperature measurements (°C)

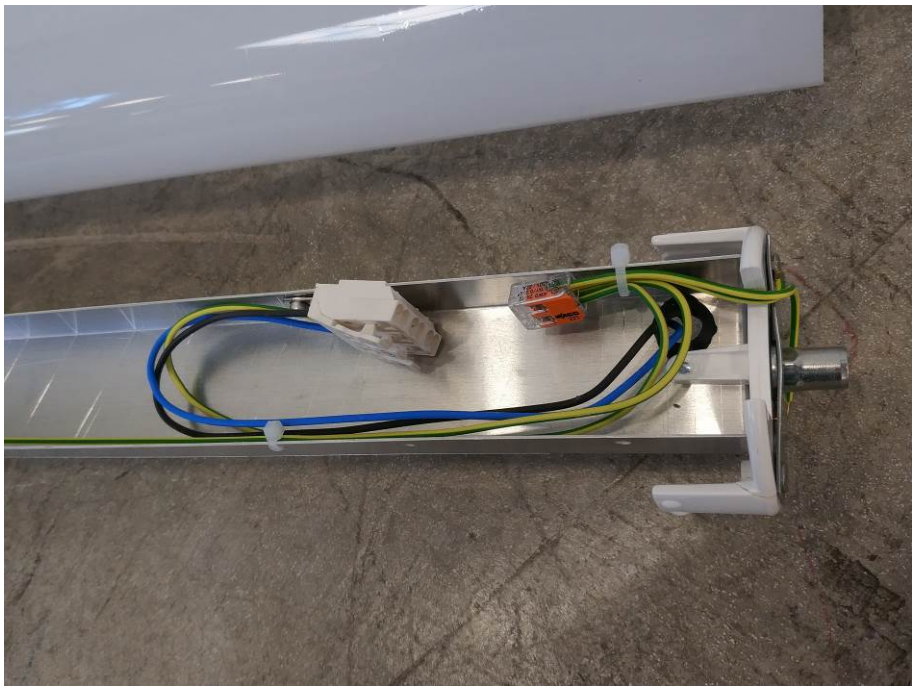
Part	Ambient	Cl. 12.4 – normal				Cl. 12.5 – abnormal	
		test 1	test 2	test 3	Limit	test 4	limit
LED module 1 (tc)	80,0	102,6	-	-	105	-	-
LED module 2 (tc)	80,0	106,7[1)]	-	-	105	-	-
Supply cable	80,0	-	84,0	-	90	-	-
Wire	80,0	-	95,9	-	180	-	-
Terminal block Wago	80,0	-	89,9[1)]	-	85	-	-
Terminal block Tekox	80,0	-	90,4	-	110	-	-
Diffuser	80,0	-	81,7	-	108	-	-

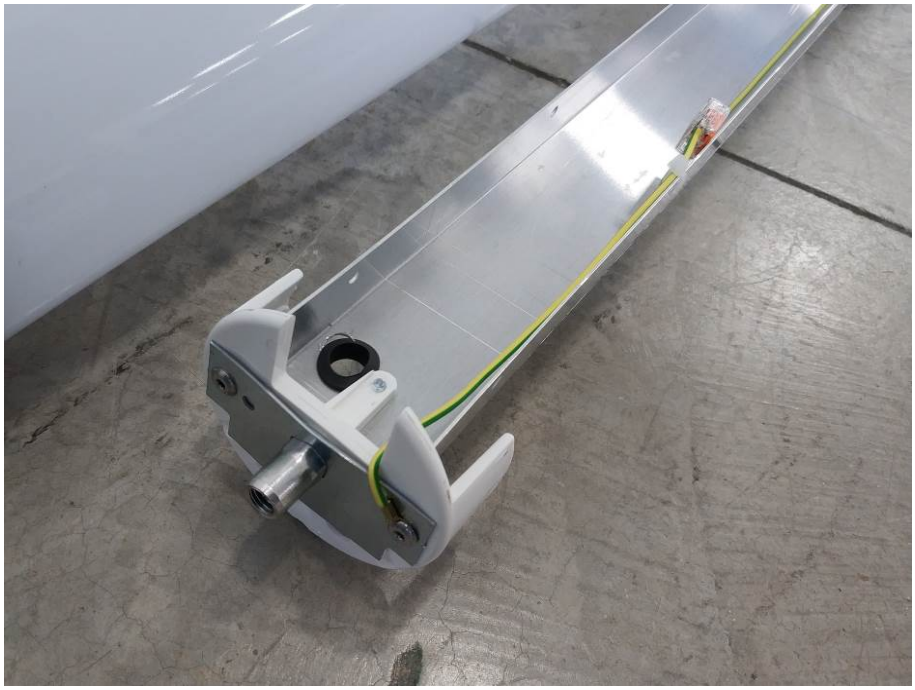
Supplementary information: [1)] Allowed 5ºC of tolerance by standard, according to clause 12.4.2 a.

Attachment No. 1	Photo document	—


N


ParagonLED G2L560045-xxxVxxWD-V02
〈 〉120V 〈●〉230V 〈 〉277V
〈〉830 〈〉835 〈●〉840 〈〉850 〈〉930 〈〉935 〈〉940 〈〉950





IEC60598_2_1F ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT IEC 60598-2-1 **EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES** Luminaires Part 2: Particular requirements Section 1: Fixed general purpose luminaires			
Differences according to..... EN 60598-2-1:1989 used in conjunction with EN 60598-1:2015 + A1:2018			
Annex Form No...... EU_GD_IEC60598_2_1F **Annex Form Originator**..... IMQ S.p.A. **Master Annex Form**..... 2018-08-28			

	CENELEC COMMON MODIFICATIONS (EN)		—
1.5 (3)	**MARKING**		—
1.5 (3.3.101)	For luminaires not supplied with terminal block: Adequate warning on the package		—
1.6 (4)	**CONSTRUCTION**		—
1.6 (4.11.6)	Electro-mechanical contact systems		—
1.10 (5)	**EXTERNAL AND INTERNAL WIRING**		—
1.10 (5.2.1)	Connecting leads		—
	- without a means for connection to the supply		—
	- terminal block specified		—
	- relevant information provided		—
	- compliance with 4.6, 4.7.1, 4.7.2, 4.10.1, 11.2, 12 and 13.2 of Part 1		—
1.10 (5.2.2)	Cables equal to EN 50525		—
	Replace table 5.1 – Supply cord		—
1.12 (12)	**ENDURANCE TESTS AND THERMAL TESTS**		—
1.12 (12.4.2c)	Thermal test (normal operation) see footnote c to table 12.2 relating to unsleeved fixed wiring		—

ZB	**ANNEX ZB, SPECIAL NATIONAL CONDITIONS (EN)**		**—**
(3.3)	DK: power supply cords of class I luminaires with label		—
(4.5.1)	DK: socket-outlets		—
(5.2.1)	CY, DK, FI, GB: type of plug		—

ZC	**ANNEX ZC, NATIONAL DEVIATIONS (EN)**		**—**
(4 & 5)	FR: Shuttered socket-outlets 10/16A		—
	FR: Safety requirements for high buildings (Arrêté du 30 décembre 2011 portant règlement de sécurité pour la construction des immeubles de grande hauteur et leur protection contre les risques d'incendie et de panique; Section VIII; Article GH 48, Eclairage) Glow-wire test for outer parts of luminaires:		—
	- 850°C for luminaires in stairways and horizontal travel paths		—
	- 650°C for indoor luminaires		—
(13.3)	GB: Requirements according to United Kingdom Building Regulation		—