

REPORT No 11988

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IEC 60598-1 LUMINAIRES GENERAL REQUIREMENTS AND TESTS Program: SQ-6547.V17

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1. FOREWORD

This report summarizes the results of the **SQ-6547.V17** proficiency testing program on the verification of the general requirements and tests of luminaires. This program is conducted in a bilateral format, following the “split-sample” design described in clause A.4.2 of ISO/IEC 17043: 2023 (Alternative interlaboratory comparisons).

South Quality conducted the testing program in July 2026 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator: Eng. Esteban Di Marco
Assistant Technician: Valentyn Kravchenko
Statistics: Lic. Manuel Tozaki
Supervision: Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to verify the following test methods:

- Electric strength
- Thermal test

These test methods were verified in accordance with the following standard:

Standard
IEC 60598-1: 2024

To verify this, luminaire samples were selected.

Participants in this program have not been previously informed of the expected behavior and values, or value ranges, of the samples they receive.

4. PARTICIPANT

Company: **First Group SAS**
Laboratory: **First Group**
Country: Italy
Client ID: E559
Contact person: Giorgio Lovisetto
Laboratory Manager
giorgio@firstgroup.it

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **40 units**

Tested samples from each batch: **10 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LL3996	BATCH: LL3997	BATCH: LL3998
Electric strength (CL 12.2.3)	YES	YES	YES
Thermal test (CL 14.4)	NO	YES	YES

Samples for this program are taken from selected batch identified as **LL3998**.

For the batch indicated, the values determined in the homogeneity study are used as assigned values.

Analysis of this test data indicated that the selected samples were sufficiently homogeneous for the program and therefore the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following sample was sent for testing:

Batch:	LL3998
Sample ID:	04
Characteristics:	Halogen floodlight - 500W Trademark: TBCin Model: TS-500S

7. IMAGES

SAMPLES



8. ASSIGNED VALUES

BATCH: LL3998	
TEST METHOD	DIELECTRIC BREAKDOWN (PASS/FAIL)
ELECTRIC STRENGTH (CL. 12.2.3)	PASS

BATCH: LL3998			
TEST METHOD	THERMOCUPLE POSITION	MEASUREMENT (°C)	
		MAX	SD
THERMAL TEST (CL. 14.4)	Mounting surface	41.1	2.8
	Cable clamp	73.4	3.6
	Terminal block	106.6	4.4
	Lampholder wire	299.0	9.9
	Gasket	247.1	8.9
	Rotation block	46.5	3.0
	Foam handler	58.3	3.3
	Metal handler	51.2	3.1
	Illuminated mounting	64.2	4.3
	Illuminated surface 1m	29.9	2.5

9. PARTICIPANT RESULTS (SEE APPENDIX B)

CODE: LL3998-04	
TEST METHOD	DIELECTRIC BREAKDOWN (PASS/FAIL)
ELECTRIC STRENGTH (CL. 12.2.3)	PASS

CODE: LL3998-04		
TEST METHOD	THERMOCUPLE POSITION	MEASUREMENT MAX (°C)
THERMAL TEST (CL. 14.4)	Mounting surface	44.7
	Cable clamp	70.7
	Terminal block	101.4
	Lampholder wire	304.6
	Gasket	244.3
	Rotation block	44.4
	Foam handler	61.5
	Metal handler	48.3
	Illuminated mounting	67.8
	Surface illuminated surface 1m	34.6

10. STATISTICS

The results must be treated as qualitative and quantitative.

For qualitative results (**Electric strength**), the comparison will be made directly against the assigned values, so any difference will be evaluated as **Unsatisfactory**.

For quantitative results (**Thermal test**), the comparison is made according to B.4.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values. The results can be compared using percent difference **z score**.

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ indicates “satisfactory” performance and generates no signal;

$2.0 < |z| < 3.0$ indicates “questionable” performance and generates a warning signal;

$|z| \geq 3.0$ indicates “unsatisfactory” performance and generates an action signal;

11. EVALUATION OF PERFORMANCE

QUALITATIVE RESULTS				
BATCH	TEST METHOD	DIELECTRIC BREAKDOWN (PASS/FAIL)		PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE	
LL3998	ELECTRIC STRENGTH (Cl. 12.2.3)	PASS	PASS	SATISFACTORY

QUANTITATIVE RESULTS						
BATCH	TEST METHOD	THERMOCUPLE POSITION	MEASUREMENT MAX (°C)		z score	PERFORMANCE RESULT
			PARTICIPANT RESULT	ASSIGNED VALUE		
LL3998	THERMAL TEST (Cl. 14.4)	Mounting surface	44.7	41.1	1.29	SATISFACTORY
		Cable clamp	70.7	73.4	0.75	SATISFACTORY
		Terminal block	101.4	106.6	1.18	SATISFACTORY
		Lampholder wire	304.6	299.0	0.57	SATISFACTORY
		Gasket	244.3	247.1	0.31	SATISFACTORY
		Rotation block	44.4	46.5	0.70	SATISFACTORY
		Foam handler	61.5	58.3	0.97	SATISFACTORY
		Metal handler	48.3	51.2	0.94	SATISFACTORY
		Illuminated mounting	67.8	64.2	0.84	SATISFACTORY
		Illuminated surface 1m	34.6	29.9	1.88	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-6547.V17** program from the participant laboratory **First Group SAS**, is **SUFFICIENT** based on expected results.

The criteria used for the evaluation of the overall performance are the following:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory results were obtained, but one questionable result was found.
- **INSUFFICIENT** performance: An unsatisfactory result or two questionable results were obtained.

APPENDIX A

INSTRUCTIONS



INSTRUCTIONS

PROGRAM:	Luminaires General requirements and tests
CODE:	SQ-6547
VERSION:	17
STANDARD:	IEC 60598-1
COORDINATOR:	Eng. Esteban Di Marco (edimarco@ptsouthquality.com)

1 - General

This document serves as a guide for managing the results of the **SQ-6547.V17** program.

2 - Standard

IEC 60598-1: 2024

3 - Tests involved

TEST
Thermal test (Cl. 14.4) Electric strength (Cl. 12.2.3)

4 - Samples

CODE	SAMPLE	QUANTITY
LL3998-04	Halogen floodlight - 500W Trademark: TBCin Model: TS-500S	1

5 - Notes

- a) Being a bilateral program, there is no deadline for submitting results.
- b) The participant must submit the results using the usual report employed by their laboratory.
- c) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **IEC 60598-1**.
- d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
- e) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TR #02607160LN-00)



First Group Lab

PROFICIENCY TEST

Thermal Test and Electric Strength

Issued by: First Group sas
 via Raffaello, 29
 31021 Mogliano V.to, Treviso, Italy
 tel.: +39 041 5951122
 mail: segreteria@firstgrouplab.it

Provider PT South Quality SAS
 Pareja 3981 - Villa Devoto
 Ciudad Autónoma de Buenos Aires, Argentina

Report number: 02607160LN-00

Issued Date: 28/07/2026

Sample receipt: 09/07/2026

Start of tests: 20/07/2026

End of tests: 27/07/2026

Program code: SQ-6547.V17

Item Description: Flood floor luminaire, model TS-500S

Item Ratings: 230V 50Hz, 1 x Max 500W Halo R7s

Class of equipment: CL I

Protection: IP44



ELECTRIC STRENGTH

Date of test: 27/07/2026

Conditioning according to 11.3.2 of IEC EN 60598-1, the luminaire is bought at t 25°C for 12h and subsequently is placed for 48h in the most unfavourable position of normal use, in a humidity cabinet containing air with a relative humidity maintained between 91% and 95% and with constant temperature at 25±1°C

Equipments LAB010 + LAB102 thermoigrometer
LAB008 electrical safety tester

Test method IEC 60598-1 part 12.2.3 and PDD.12.2.3
Ambient (°C) 25,1 Relative humidity (%) 92,3

Insulation of parts	nominal supply (V)	applied supply (V)	time (min)	flashover	breakdown
SELV/PELV					
Between current-carrying parts of different polarity	-	-	-	-	-
Between current-carrying parts and the mounting surface	-	-	-	-	-
Between current-carrying parts and metal parts of the luminaire	-	-	-	-	-
Between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible letal parts	-	-	-	-	-
Insulation bushings	-	-	-	-	-
other than SELV/PELV					
Between current-carrying parts of different polarity L-N	1460	1473	1	no	no
Between current-carrying parts of different polarity L-PE	1460	1477	1	no	no
Between current-carrying parts of different polarity N-PE	1460	1472	1	no	no
Between current-carrying parts and the mounting surface	-	-	-	-	-
Between current-carrying parts and metal parts of the luminaire	1460	1475	1	no	no
Between live parts of different polarity through action of a switch	-	-	-	-	-
Between the outer surface of a flexible cord or cable where it is clamped in a cord anchorage and accessible letal parts*	1460	1465	1	no	no
Insulation bushings	-	-	-	-	-

* for the scope of this test, cord was covered with metal foil



THERMAL TEST (NORMAL OPERATION)

Date of test: 23/07/2026

Equipments: LAB001 datalogger
 LAB004 multimeter
 LAB059 anemometer

Test method IEC 60598-1 part 14.4 and PDD.14.4

Test conditions: the temperature measured in accordance with the following conditions

Ambient temperature (°C):	25,2	
Draught (m/s):	0,21	
Mounting position:	floor	
Light source:	R7s halo 500W	
Control gear:	N/A	
Test voltage (V):	242,5	filament lamp other than ELV, 1,05 times rated
Test power (W):	525,3	wattage
PF:	1,0	

thermocouple position	measurement (°C)	uncertainty (°C)
mounting surface	44,7	±4,4
cable clamp	70,7	
terminal block	101,4	
lampholder wire	304,6	
gasket	244,3	
rotation block	44,4	
foam handler	61,5	
metal handler	48,3	
illuminated mounting	67,8	
illuminated surface 1m	34,6	

Note: lampholder rim has not been measured according to Annex I.2 of IEC 60598-1:2024 paragraph a) "lampholder rim (not on metal or ceramic lampholders)".

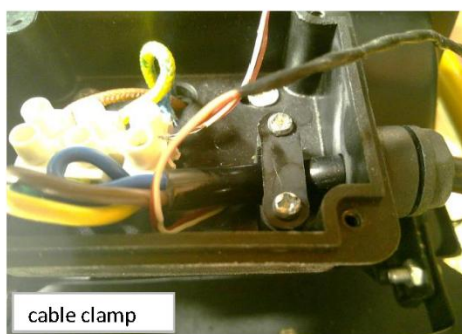
The measurement uncertainty stated in this document have been determined according to the ISO/IEC Guide 98 and to EA-4/02. Usually, they have been estimated as expended uncertainty obtained multiplying the standard uncertainty by the cover factor k corresponding to a confidence level of about 95%. Normally, this factor k is 2.

PICTURES

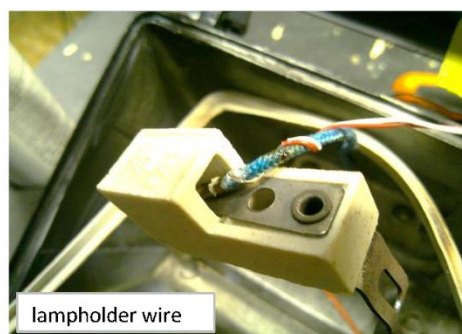
General view



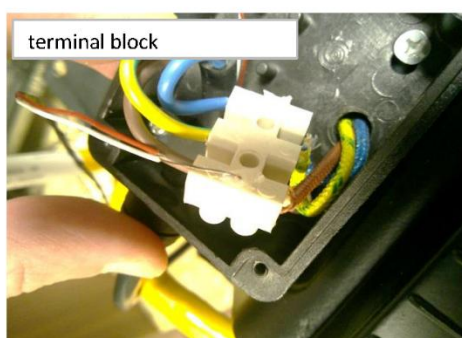
Thermocouples position



cable clamp



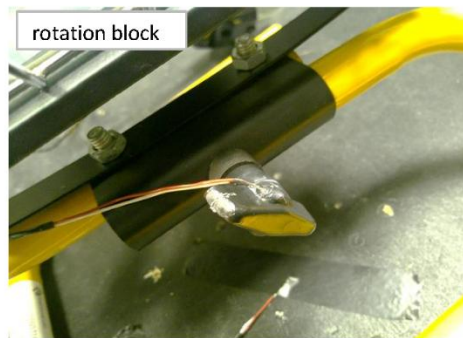
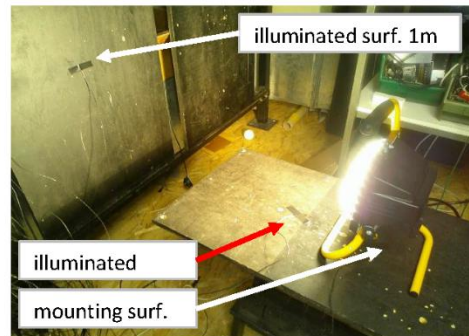
lampholder wire



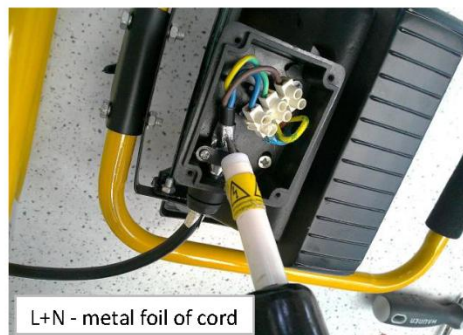
terminal block

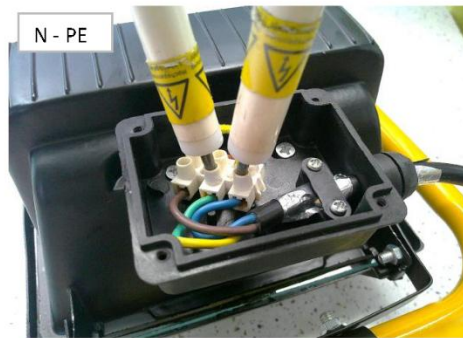
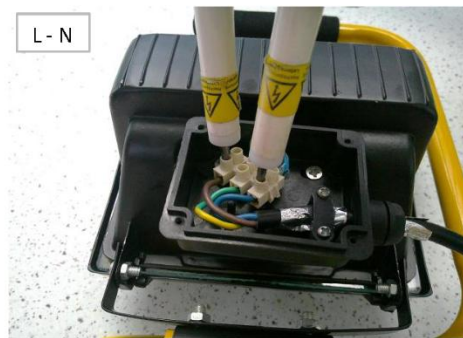


handler foam and metallic



Electric Strength







LABORATORY EQUIPMENTS						
code	type	manufacturer	model	serial	certificate of calibration	calibration due date
LAB001	datalogger	HP	34970A	US37027411	LAT 135 S.16022.T LAT 135 E3676-72382	10/10/26
LAB010+ LAB102	thermoigrometer	Delta Ohm	HD2101.1R + HP472AC R	15036059 + 25037634	01037LAT 2289-25	06/11/26
LAB004	multimeter	HP	34401A	US36099959	00210 LAT E-3676-73345	17/10/26
LAB008	electrical safety tester	Schleich	GLP2-i	2347	01037LAT 3128CT-25	17/10/26
LAB021	torque screwdriver	Fervi	0806/020	Q70600255	T2i 4219/25 - 4283/25 - 4284/25	19/12/26
LAB022	dynamometer	Sauter	FH2K	5B15L01144	T2i 4218/25	23/12/26
LAB025	vernier caliper	Metrica	vernier caliper	SC 2927	00154LAT S1819/25	19/12/26
LAB012	analyzer	Everfine	PF9800	YG100661N11120215	00297LAT 08259-25	23/10/26
LAB057	stopwatch	Decathlon	ON START 310	004738285538	00049LAT 26-0072	19/01/28
LAB058	ambient datalogger	Testo	Saveris 2 H1	0054737942	01037LAT 0247-26	09/02/28
LAB059	anemometer	Testo	440+06351051	83625005+63237316	00171LAT 26002267	11/05/28
LAB064+ LAB065	dynamometer	AEP	TCE-TM25kN + DFI2	164162 + 6962	03214 23 I + 03216 23 I	16/01/28
	Petroleum spirit (n-Hexane)	Merck	1.04374.1000	K54108474	coa K54108474	2027

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