

# TEST REPORT

Number: C/240369I1

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## SORT OF TESTS

DEGREES OF PROTECTION PROVIDES BY ENCLOSURES according to IP Code and UNE-EN 60529:2018 (IEC 60529:1989) and UNE-EN 60529:2018/A1:2018

**IPX8**

## APPLICANT

**LIBELIUM COMUNICACIONES INALAMBRICAS DISTRIBUIDAS, S.L.**

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## SAMPLE IDENTIFICATION

Libelium One - One main node

## DATE/S OF TEST

21/02/2024 to 23/02/2024

## DATE OF RECEPTION

21/02/2024

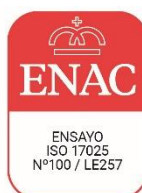
## OBSERVATIONS

Authorized signatory/ies

Date of issue

26/02/2024

Technician



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The results of the present report refer to the moment, conditions and samples in which the measurements were taken.

**ITEM DESCRIPTION (\*\*\*)**

<b>Sample description</b> .....	Data logger with 4G connectivity
<b>Trade Mark</b> .....	LIBELIUM
<b>Manufacturer</b> .....	LIBELIUM COMUNICACIONES DISTRIBUIDAS S.L.
<b>Model/Type reference</b> .....	Libelium One - One main node
<b>Ratings</b> .....	Power : 5 – 24 V DC , 800mA Rechargeable battery: 3.6 V 10.2 Ah
<b>Samples code</b> .....	C/240369/1
- Serial number.....	1122-011075
- HW version.....	1.0
<b>Summary of testing:</b> The product <b>FULFILS</b> the requirements tested. The product provides a degree of water protection <b>IPX8</b> for a water column of 1m for 30 days in water, according to IP Code and UNE-EN 60529:2018 and UNE-EN 60529:2018/A1:2018 standards.	
<b>Tests performed:</b> IPX8 degree of protection test is carried out according to UNE-EN 60529:2018 and UNE-EN 60529:2018/A1:2018 standards. IPX8 degree of protection test is carried out on the sample as has been supplied by the customer in operating normal position. (***) Information provided by the customer.	

**Photos:**



Sample type under test

<b>Test item particulars</b> .....: Information technology equipment
<p><b>General product information: (***)</b></p> <p>Installation and use: Installation on walls or poles. Outdoor used.  Supply Connection: By means of detachable power supply cord with female connector.  Mass of equipment: 0.490 kg  Material: PC</p>
<p><b>Environmental test conditions:</b></p> <p>The test was performed at an ambient temperature of 15 ° C to 35 ° C, relative humidity of 25% RH to 75% RH, and an air pressure of 860 mbar to 1060 mbar.</p> <p>During the test the water temperature should not differ by more than 5 K.  Water temperature: 21.2°C  Sample temperature: 22.6°C</p>

**Possible test results:**

- 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)

**Abbreviations used in the report:**

**Uncertainty of the test measurement:**

The expanded uncertainty is obtained by multiplying the combined standard uncertainty by a coverage factor  $k=2$ . For a normal distribution this corresponds to a level of confidence of approximately 95%. The uncertainty has been estimated and derived from the uncertainty of the measurement equipments, of the measurement procedure, of the magnitude to be measured and of the environmental conditions. Detailed information regarding measurement uncertainty is available in the test laboratory and could be shown on customer request.

**Observations:**

Throughout this report a point is used as the decimal separator.

**List of test equipment used:**

<b>Test equipment</b>	<b>Code</b>
Digital Thermohigrometer (logger)	3PG20052.C40
Atmospheric pressure meter	3PG00052.400
Water tank	3PG20052.B80
Meter	3PG20052-D03
Chronometer	3PG00052.437
Digital thermometer	3PG20052.370
Immersion temperature probe	3PG20052.371
Surface temperature probe	3PG20052.372
Water	-----

Clause	Requirement + Test	Result - Remark	Verdict
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<b>14</b>	<b>DEGREES OF PROTECTION AGAINST WATER INDICATED BY THE SECOND CODE ELEMENT</b>		<b>P</b>
14.2 & 14.2.8	Protected against the effects of continuous immersion in water, degree of protection IPX8		P
	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than numeral 7. Water-level: 1 m Exposure time: 30days	Water not ingress	P
14.3	After testing in accordance with the appropriate requirements of 14.2.1 to 14.2.4 the enclosure shall be inspected for ingress of water.		P
	In general, if any water has entered, it shall not:		P
	- be sufficient to interfere with the correct operation of the equipment or impair safety.		P
	- be deposited on insulation parts where it could lead to tracking along the creepage distances.		P
	- be reached live parts or windings not designed to operate when wet.		P
	- be accumulated near the cable end or enter the cable if any.		P
	Dielectric strength test, if applicable. Application parts: Test voltage. (V):	No applicable	N/A
	Enclosure provided with drain holes		N/A
Supplementary information: After the test, the non-penetration of water inside the electrical or electronic sub-assemblies of the sample is verified by inspection (see attached photos of the disassembling of the sample).			

Clause	Requirement + Test	Result - Remark	Verdict
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**SET UP FOR IPX8 TEST:**



*Sample during IPX8 test*

**CHECKING AFTER IPX8 TEST:**



*Detail after test*