

File Number: **19/31703408**

## TEST REPORT

### Degrees of Protection Provided by Enclosures (IP Code)



#### Petitioner's Reference: **LIBELIUM S.L.**

Customer Address: C/ Escatrón 16, (Edificio LIBELIUM)  
50014 Zaragoza (Spain)

#### Equipment: **PARKING SPOT VEHICLE DETECTION NODE**

Brand:	LIBELIUM	Model:	SMART PARKING V2
s/n:	---	Internal identification number:	8061/1

#### Result:

The equipment described before has been tested according to the applied specifications\* and has been found in conformity# with a degree of protection:

**Degree of protection (IP): IP68#**

# Under the following conditions:

- IPX8 test performed with lowest point of the enclosure at 1,2 m below water surface, during 30 minutes, according petitioner's instructions.

\* See applied specifications in section 1.4.

#### Applied Standards:

**UNE-EN 60529:2018 +/A1:2018 +/A2:2018 (EN 60529:1991 +Erratum:1993 +/A1:2000 +/A2:2013)**

**Date of issue:** Bellaterra, July 15, 2019

Albert Marginet Morales  
Technical Manager  
Electrical and Electronics  
LGAI Technological Center S.A.

The results refer only and exclusively to the sample, product or material delivered for testing in "Equipment" section above. The equipment has been tested under conditions stipulated by standard(s) quoted in this document. This document will not be reproduced otherwise than in full. This is the first page of the document, which consists of 14 pages of which 6 are annexes.

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## 1. GENERAL TEST INFORMATION

### 1.1 General data

Tested by:	Pedro Tamayo
Verified by:	Omar Velásquez
Date of receipt:	18/06/2019
Date of performance of test (start):	28/06/2019
Date of performance of test (end):	01/07/2019
Testing Laboratory:	LGAI Technological Center, S.A.
Address:	Campus de la UAB. Ronda de la Font del Carme, s/n 08193 Bellaterra (Barcelona – España)

### 1.2 Received equipment

Equipment:	PARKING SPOT VEHICLE DETECTION NODE
Manufacturer:	LIBELIUM S.L.
Brand:	LIBELIUM
Model:	SMART PARKING V2
s/n:	---
Internal identification number:	8061/1

### 1.3 Received equipment photographs



**Sample received front side view**



**Sample received rear side view**



**Label of sample received**

#### **1.4 Information / comments**

Applied specifications:

**UNE-EN 60529:2018 +/A1:2018 +/A2:2018 (EN 60529:1991 +Erratum:1993 +/A1:2000 +/A2:2013)**

Degree of protection (IP): IP68

Under the following conditions:

- IPX8 test performed with lowest point of the enclosure at 1,2 m below water surface, during 30 minutes, according petitioner's instructions;
- In order to perform IP68 tests in one sample, IPX8 test was carried out firstly
- According to the petitioner's instructions, in order to close the enclosure after IPX8 test evaluation, 2 Nm of torque were applied to the cover screws

### **1.5 Measuring uncertainties**

Measurement uncertainties have been calculated and are available on customer request.

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### **Service Quality Assurance**

**Applus+**, guarantees that this work has been made in accordance with our Quality and Sustainability System, fulfilling the contractual conditions and legal norms.

Within our improvement program we would be grateful if you would send us any commentary that you consider opportune, to the person in charge who signs this document, or to the Quality Manager of Applus+, in the following e-mail address: [satisfaccion.cliente@applus.com](mailto:satisfaccion.cliente@applus.com)

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**RESULTS:**

**UNE-EN 60529:2018 +/A1:2018 +/A2:2018 (EN 60529:1991 +Erratum:1993 +/A1:2000 +/A2:2013)**

<b>Protection against solid foreign objects - First characteristic numeral (Cl. 5.2, 13)</b>	
Tested sample/s (Internal id. number):	<b>8061/1</b>
First characteristic numeral applied:	IP1X sphere of 50 mm Ø, test force 50 N..... <input type="checkbox"/> IP2X sphere of 12,5 mm Ø, test force 30 N..... <input type="checkbox"/> IP3X object probe/sphere 2,5 mm Ø, test force 3 N..... <input type="checkbox"/> IP4X object probe/sphere 1,0 mm Ø, test force 1 N..... <input type="checkbox"/> IP5X dust chamber, figure 2, talcum powder 2 kg/m <sup>3</sup> ..... <input type="checkbox"/> IP6X dust chamber, figure 2, talcum powder 2 kg/m <sup>3</sup> ..... <input checked="" type="checkbox"/>
Supplementary letters (Cl. 8):	none    H    M    S    W    other <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> , description: ---
Test atmospheric conditions (cl. 11.1)	Temperature (°C)..... : 27,2-28,4°C                    (15 °C to 35 °C) <sup>1</sup> Relative humidity (% RH)..... : 44-45%                    (25 % to 75 %) <sup>1</sup> Air pressure (hPa) ..... : 1003hPa                    (860 hPa to 1060 hPa) <sup>1</sup>
Conditioning before test (cl. 11.2):	no <input checked="" type="checkbox"/> yes <input type="checkbox"/> , description: ---
Mounting conditions:	desk-top    ceiling    floor    wall    other <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> , description: See Photograph in Annex
Positioning of sample:	See Photograph in Annex
Sample energized during test:	no <input checked="" type="checkbox"/> yes <input type="checkbox"/> , supply voltage: --- V
Sample tested with its parts in motion:	no <input checked="" type="checkbox"/> yes <input type="checkbox"/>
Empty enclosures (cl. 11.5)	no <input checked="" type="checkbox"/> yes <input type="checkbox"/> , protected parts according to manufacturer instructions: ---
Enclosure category (cl. 13):	Category 1 <input checked="" type="checkbox"/> Applied depression: 20 mbar Test duration: 8 h Category 2 <input type="checkbox"/> Test duration: 8 h
Acceptance conditions (cl. 13)	IP1X, IP2X, IP3X, IP4X Probe full diameter pass through any opening: no <input type="checkbox"/> yes <input type="checkbox"/> not applies <input checked="" type="checkbox"/> IP5X Talcum powder accumulated could interfere correct operation or impair safety: no <input type="checkbox"/> yes <input type="checkbox"/> not applies <input checked="" type="checkbox"/> IP6X Dust deposit is observable inside the enclosure: no <input checked="" type="checkbox"/> yes <input type="checkbox"/> not applies <input type="checkbox"/>
Observations / comments	According to the petitioner's instructions, in order to close the enclosure after IPX8 test evaluation, 2 Nm of torque were applied to the cover screws. No traces of dust were found inside the enclosure. See photographs in the annex.
<b>VERDICT</b>	<b>PASS</b>

<sup>1</sup>Standard recommended atmospheric conditions during the test (cl. 11.1).



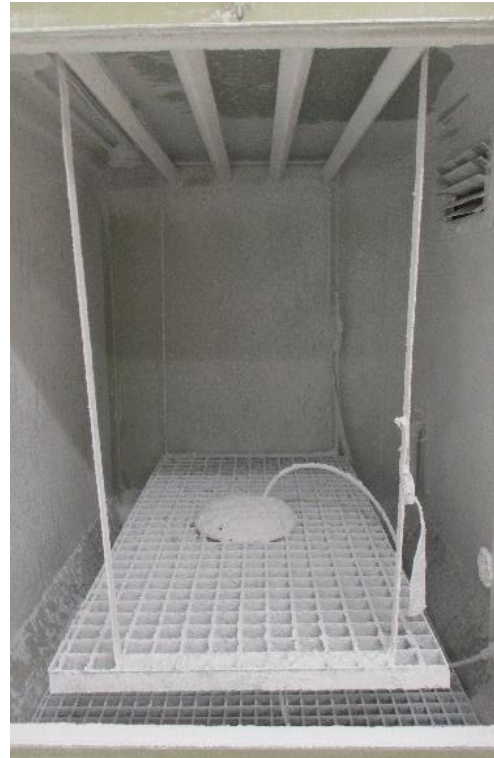
**ANNEX**

**3. ANNEXES**

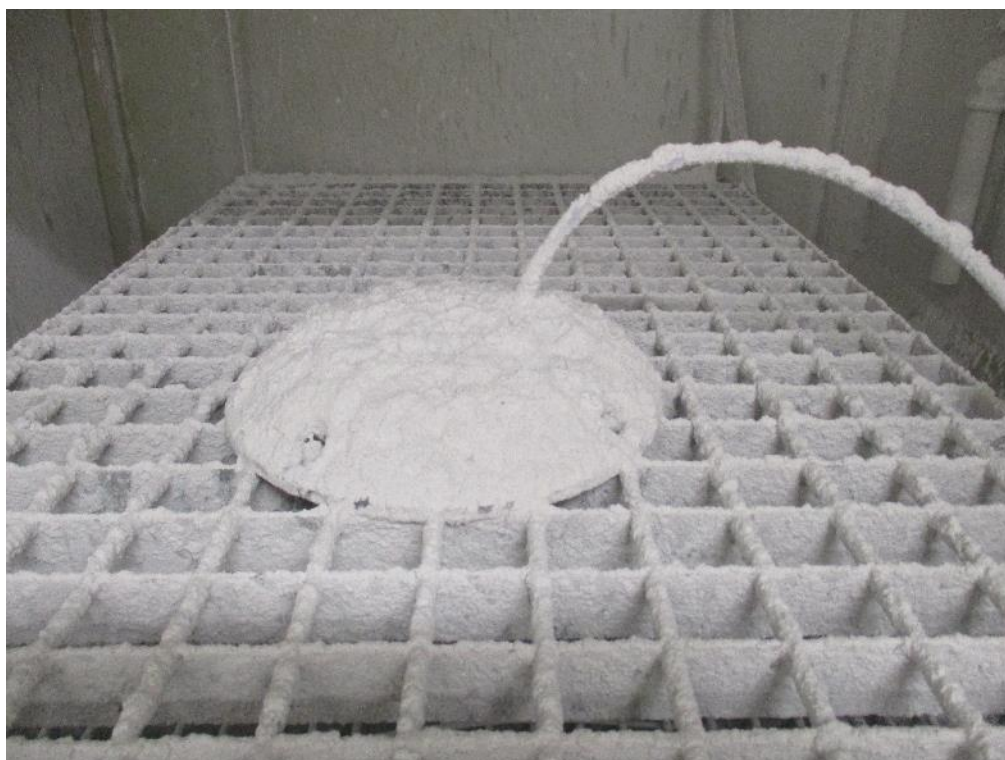
**3.1 PHOTOGRAPHS**



**Sample 8061/1 before IP6X test.**

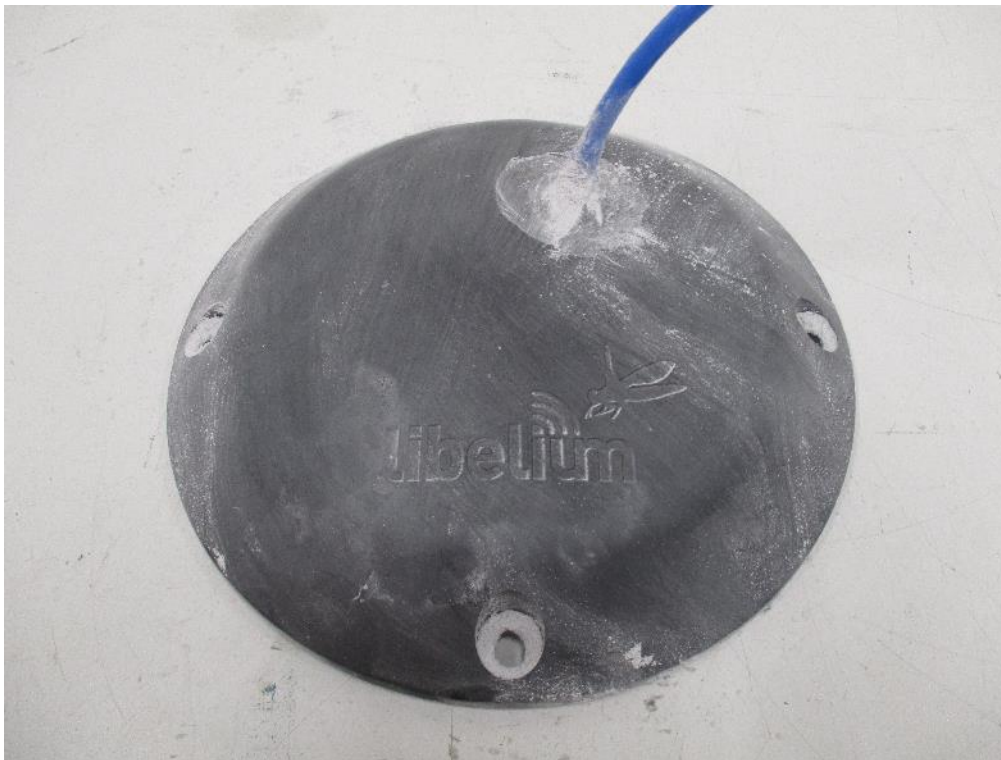


**Sample 8061/1 after IP6X test.**

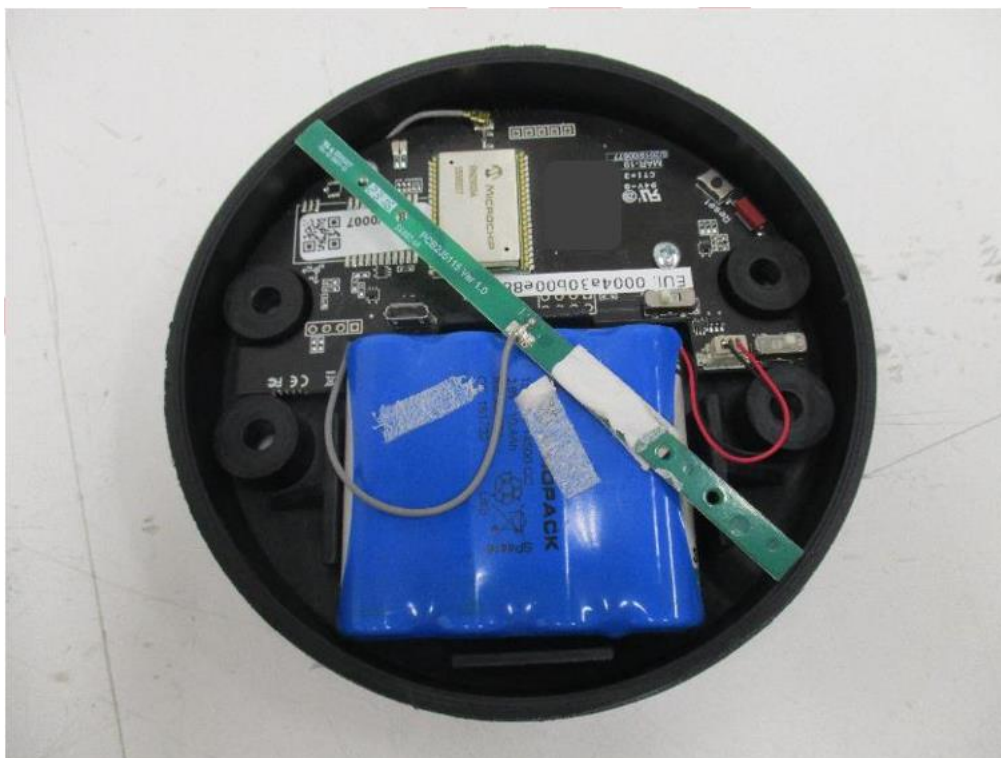


**Sample 8061/1 after IP6X test**

**ANNEX**

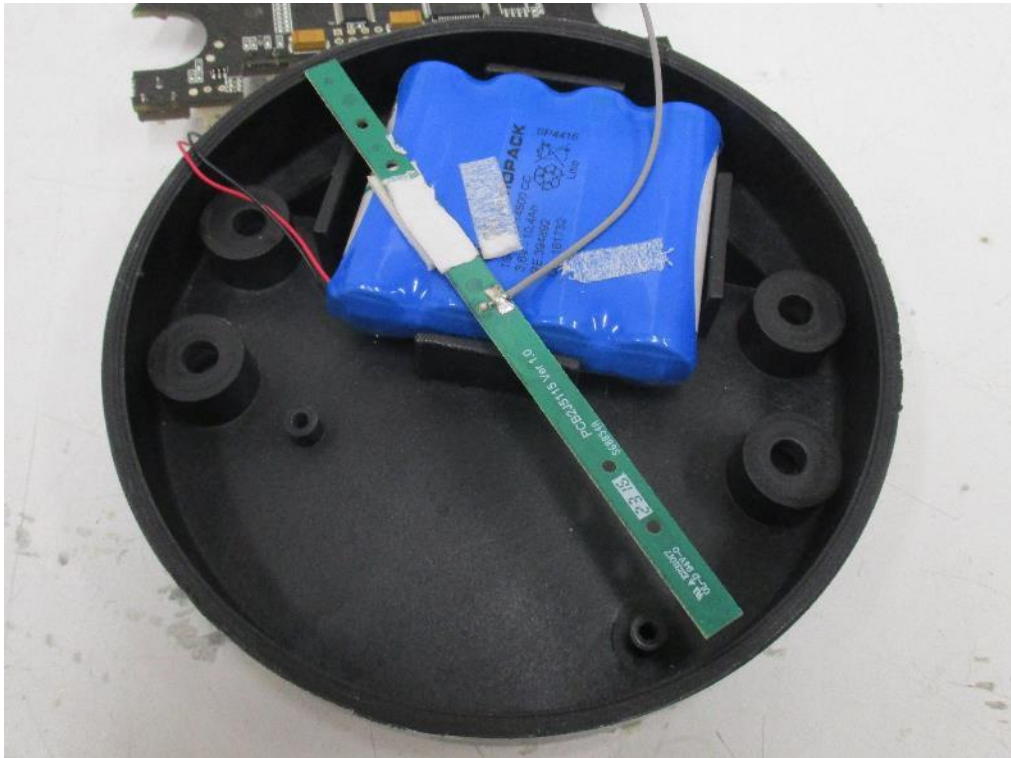


**Sample 8061/1 after IP6X test**



**Detail of sample 8061/1 after IP6X test**

**ANNEX**



**Detail of sample 8061/1 after IP6X test**

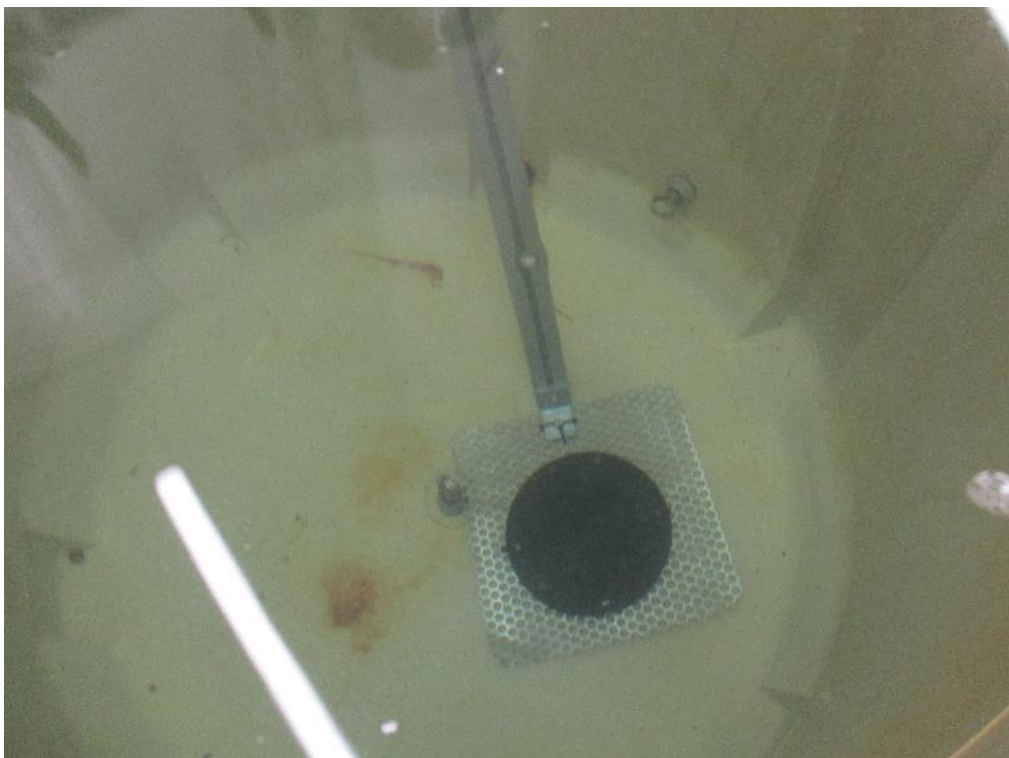


**Detail of sample 8061/1 after IP6X test**

**ANNEX**

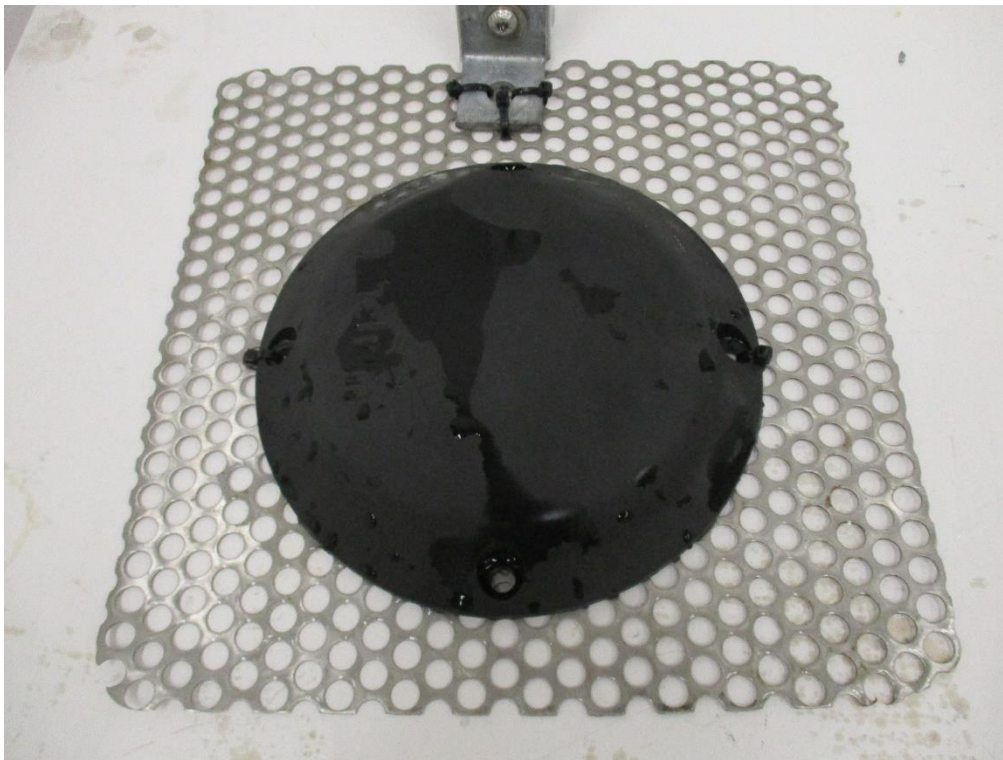


**Sample 8061/1 before IPX8 test.**



**Sample 8061/1 during IPX8 test.**

**ANNEX**

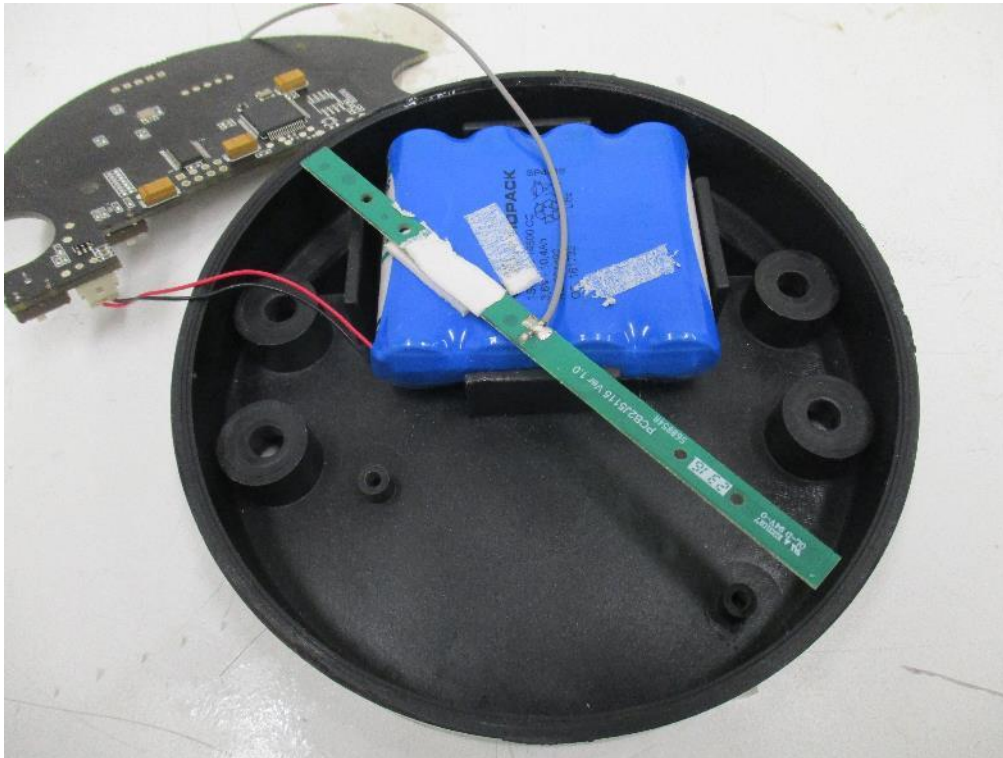


**Sample 8061/1 after the IPX8 test**



**Sample 8061/1 after the IPX8 test**

**ANNEX**



**Sample 8061/1 after the IPX8 test**



**Sample 8061/1 after the IPX8 test**