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AB 665

TEST REPORT No. 190/BT/2024

Subject:	Testing the IP68 and IK08 ingress protection rating of "QuSpot series" enclosures
Orderer:	Wireless Instruments Sp. z o.o. Kościuszki 27, 52-116 Iwiny
Project No:	UP/BT-33346/OR4
Release date of the Report:	05.12.2024
Date and place of tests:	29.11-02.12.2024 at the KOMAG Institute of Mining Technology at Pszczynska 37 in Gliwice, Poland

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Copies:
Wireless Instruments Sp. z o.o. – 2 copies (EN) + 2 copies (PL)
KOMAG Laboratory of Applied Tests – 1 copy (EN) + 1 copy (PL)

1. Subject of testing

The enclosures, delivered by the Orderer, were the objects of testing. The objects were marked by the Laboratory with the following sample numbers:

- 166/24/1 – IK08 and IP6X tests (S/N: 45773)
- 166/24/2 – IK08 and IPX8 tests (S/N: 45774)

The tested objects are presented in Fig. 1 and 2.

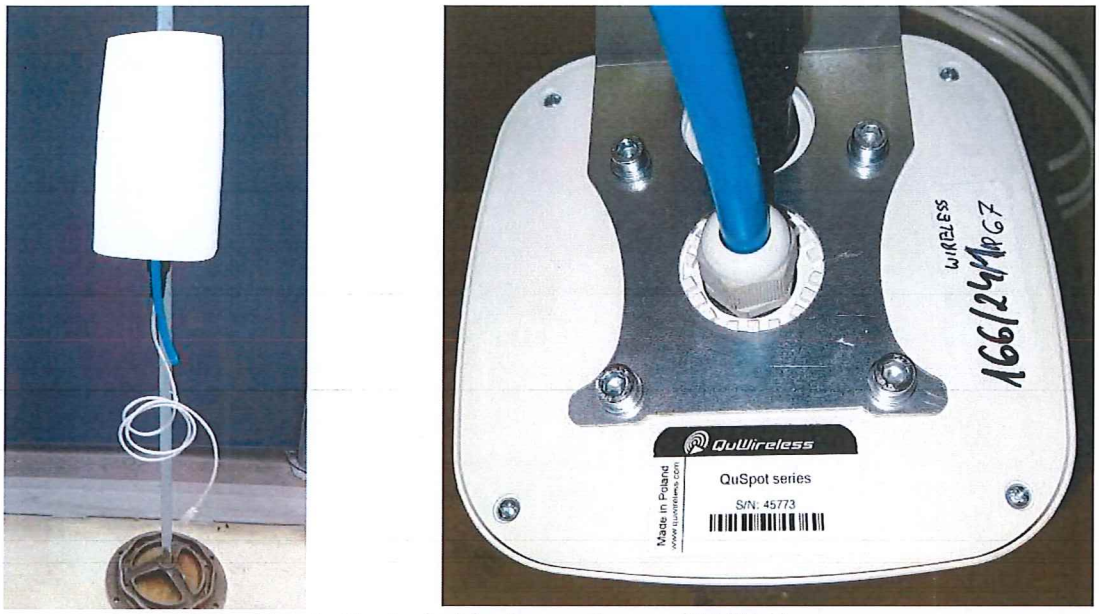

Fig. 1. Tested object sample no. 166/24/1

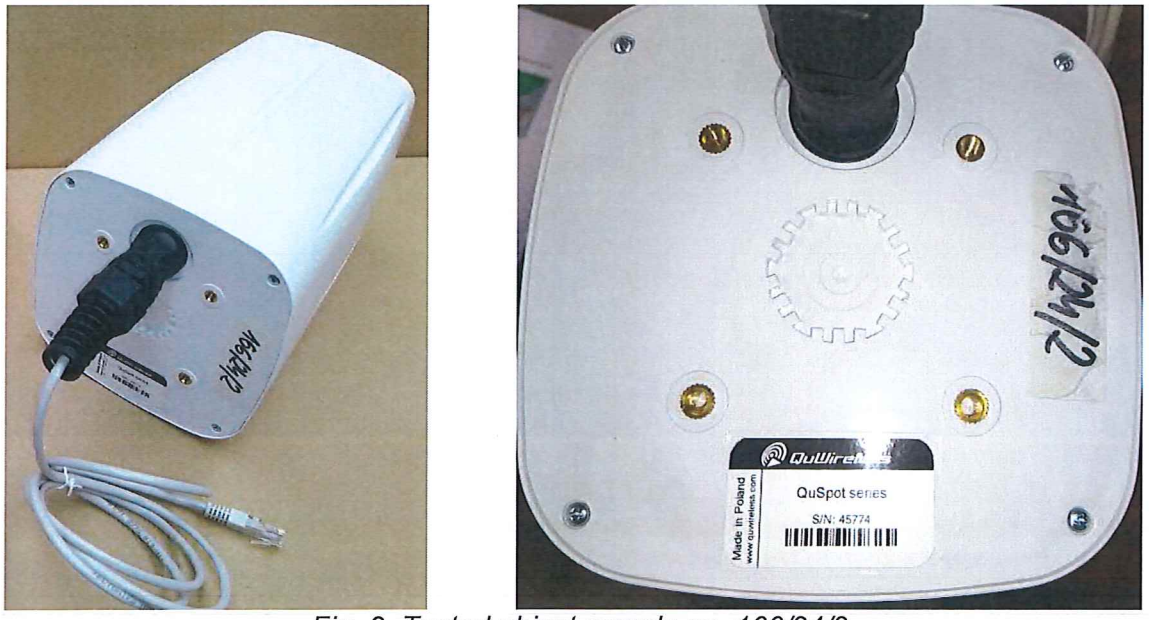

Fig. 2. Tested object sample no. 166/24/2

2. Scope of tests

The scope of tests included testing:

- the exposure to mechanical impacts IK08 protection rating according to the requirements of the *PN-EN 60068-2-75:2015* standard. *Environmental testing-Part 2-75: Tests – Test Eh: Hammer tests,*
- the IP68 ingress protection rating, according to the requirements of the PN-EN 60529:2003+A2:2014-07 *Degrees of protection provided by enclosures (IP Code)* Standard.

3. List of instruments used for tests

The following instruments were used for tests:

Name of the instrument	*Id number*
Dust chamber with vacuum pomp	KiŚ5
Test stand for water ingress protection testing	KiŚ6
Test station and hammer set for IK testing	R28

4. Test results

4.1. Testing the IP6X ingress protection rating

The test consisted in verification of protection level against ingress of dust (the first characteristic numeral IP6X). The test was carried out according to the requirements of item 13.4 and 13.6 of the PN-EN 60529:2003+A2:2014-07 Standard.

After the test for the first characteristic numeral IP6X, no dust was found inside the tested enclosure.

Test result for the first characteristic numeral IP6X of the tested enclosure is positive.

4.2. Testing the IPX8 ingress protection rating

The test consisted in verification of water ingress protection (second characteristic numeral IPX8). The test was carried out according to the requirements of item 14.2.8 of PN-EN 60529:2003+A2:2014-07 Standard and following conditions agreed with the Orderer:

- immersion: 2 m below water surface (immersion simulated by placing the tested sample in a pressure enclosure under the water pressure of 0.2 bar),
- exposure time: 1 day (24 h),
- water temperature: (18 ± 3) °C.

After the test for the second characteristic numeral IPX8, no water was found inside the tested enclosure.

Test result for the second characteristic numeral IPX8 of the tested enclosure is positive.

4.3. Testing the IK08 protection rating

The test consisted in checking the degree of protection against external mechanical impacts IK08 by exposing the tested enclosure to impacts of energy 5 J. The test was performed in the following conditions:

- using a pendulum hammer weighing 1.7 kg (in accordance with the *PN-EN 60068-2-75:2015* standard) with a drop height of 295 mm,
- the tested enclosure was installed on a rigid surface by the method provided by the manufacturer,
- ambient temperature was 18 °C,
- the atmospheric pressure was 1017 hPa.

Test acceptance criteria:

- no visible crack,
- after testing, the enclosure should maintain the declared IP protection level (IP68).

Points on the surfaces of the enclosure subjected to blows are presented in Fig. 3, Fig. 4.

Fig. 3. Points on the surfaces of the enclosure no. 166/24/1 after exposure to mechanical impacts IK08

Fig. 4. Points on the surfaces of the enclosure no. 166/24/2 after exposure to mechanical impacts IK08

After mechanical impact testing, no visible crack was found. The test of IP ingress protection rating is presented in section 4.4 and 4.5.

4.4. Testing the IP 6X ingress protection rating after exposure to mechanical impacts IK08

The test consisted in verification of protection level against ingress of dust (the first characteristic numeral IP6X). The test was carried out according to the requirements of item 13.4 and 13.6 of the PN-EN 60529:2003+A2:2014-07 Standard.

After the test for the first characteristic numeral IP6X, no dust was found inside the tested enclosure.

Test result for the first characteristic numeral IP6X of the tested enclosure is positive.

4.5. Testing the IPX8 ingress protection rating after exposure to mechanical impacts IK08

The test consisted in verification of water ingress protection (second characteristic numeral IPX8). The test was carried out according to the requirements of item 14.2.8 of PN-EN 60529:2003+A2:2014-07 Standard and following conditions agreed with the Orderer:

- immersion: 2 m below water surface (immersion simulated by placing the tested sample in a pressure enclosure under the water pressure of 0.2 bar),
- exposure time: 1 day (24 h),
- water temperature: (18 ± 3) °C.

After the test for the second characteristic numeral IPX8, no water was found inside the tested enclosure.

Test result for the second characteristic numeral IPX8 of the tested enclosure is positive.

On the basis of tests, protection level IP68 and IK08 is confirmed.

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