

Test report

3413458.70

Client: Exelonix GmbH
Leipziger Str. 118
01127 Dresden
Germany

Product: NB-IoT Stick

Type/Model: VODEXL-01

Task: Testing degree of protection IP40 according to the stated test specification:

Test specification: EN 60529:1991 + A1:2000 + A2:2013

IP-Code	Short description	
IP1X	Protected against ingress of solid objects, ≥ 50 mm diameter	<input type="checkbox"/>
IP2X	Protected against ingress of solid objects, $\geq 12,5$ mm diameter	<input type="checkbox"/>
IP3X	Protected against ingress of solid objects, $\geq 2,5$ mm diameter	<input type="checkbox"/>
IP4X	Protected against ingress of solid objects, $\geq 1,0$ mm diameter	<input checked="" type="checkbox"/>
IP5X	Dust-protected	<input type="checkbox"/>
IP6X	Dust-tight	<input type="checkbox"/>
IPX1	Protected against ingress of water vertically dripping	<input type="checkbox"/>
IPX2	Protected against ingress of dripping water (15° tilted)	<input type="checkbox"/>
IPX3	Protected against ingress of spraying water	<input type="checkbox"/>
IPX4	Protected against ingress of splashing water	<input type="checkbox"/>
IPX5	Protected against ingress of jetting water	<input type="checkbox"/>
IPX6	Protected against ingress of water powerful jetting	<input type="checkbox"/>
IPX7	Protected against ingress of water temporary immersion	<input type="checkbox"/>
IPX8	Protected against ingress of water continuous immersion	<input type="checkbox"/>
IPX9	Protected against ingress of water high pressure and temperature	<input type="checkbox"/>

Date: 30.09.2019

Test result: The presented product **meets** the requirements of the given test specification, when used as intended and with closed TS9-male cover.

Remark: If TS9-male cover is not closed, the presented product full fills the requirements to degree of protection against solid foreign objects not higher than IP20.
The presented product has no hazardous parts according to EN 62368-1:2014.

1 Product description

1.1 Description, Function, Technical data

Article: NB-IoT Stick

Type/Model: VODEXL-01

Brand: ---

Technical data: ---

Description of test sample condition: new, and assembled by manufacturer

1.2 Product information and specification of intended use

- NB-IoT Stick with plastic enclosure, with USB male and TS9 male with rubber cover

1.3 Pictures of test sample







2 Test and test results

The test results relate only to the checked test sample(s).

2.1 Test sample: location + receiving date

Location: DEKRA Testing and Certification GmbH
Enderstraße 92b, 01277 Dresden

Date: 26.08.2019

2.2 Client's documents

- none

2.3 Testing location and date

DEKRA Testing and Certification GmbH
Enderstraße 92b, 01277 Dresden

Date: 29.08.2019, 30.08.2019

2.4 Test results

Legend „Verdict“

P = passed;

F = failed;

N/A = not applicable ;

N/T = not tested

2.5 Deviations or exceptions

The presented product was tested as intended use and with closed TS9 male cover.
The USB male connector was not considered as part of the enclosure.

The product was not tested of protection against access to hazardous parts indicated by the first characteristic numeral.

Note: According to EN 62368-1:2014 the product has no hazardous parts.

If not mentioned otherwise the tests were performed at conditions:

temperature range: 15 °C to 35 °C

relative humidity: 25 % to 75 %

air pressure: 86 kPa to 106 kPa

Standard EN 60529:1991 + A1:2000 + A2:2013

Testing of protection against solid foreign objects indicated by the first characteristic numeral

First number of IP Code	Description	Definition	Verdict
Degrees of protection against solid foreign objects indicated by the first characteristic numeral			---
1	Protected against ingress of solid objects, ≥ 50 mm diameter	The object probe, sphere of 50 mm \emptyset , shall not fully penetrate ¹⁾ ¹⁾ The full diameter of the object probe shall not pass through an opening of the enclosure	P
2	Protected against ingress of solid objects, $\geq 12,5$ mm diameter	The object probe, sphere of 12,5 mm \emptyset , shall not fully penetrate ¹⁾ ¹⁾ The full diameter of the object probe shall not pass through an opening of the enclosure	P
3	Protected against ingress of solid objects, $\geq 2,5$ mm diameter	The object probe, sphere of 2,5 mm \emptyset , shall not penetrate at all ¹⁾⁾ ¹⁾ The full diameter of the object probe shall not pass through an opening of the enclosure	P
4	Protected against ingress of solid objects, $\geq 1,0$ mm diameter	The object probe, sphere of 1,0 mm \emptyset , shall not penetrate at all ¹⁾⁾ ¹⁾ The full diameter of the object probe shall not pass through an opening of the enclosure	P
5	Dust-protected	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety	N/A
6	Dust-tight	No ingress of dust	N/A

Clause	Test	Result	Verdict
13.2	Test conditions for first characteristic numeral 1		---
	The object probe is pushed against any openings of the enclosure with the force of 50 N ± 10 %	Object probe: Rigid sphere without handle or guard 50 ^{+0,05} mm diameter	P
13.3	Acceptance conditions for first characteristic numeral 1		---
	The protection is satisfactory if the full diameter of the probe does not pass through any opening.		P
13.2	Test conditions for first characteristic numeral 2		---
	The object probe is pushed against any openings of the enclosure with the force of 30 N ± 10 %	Object probe: Rigid sphere without handle or guard 12,5 ^{+0,2} mm diameter	P
13.3	Acceptance conditions for first characteristic numeral 2		---
	The protection is satisfactory if the full diameter of the probe does not pass through any opening.		P
13.2	Test conditions for first characteristic numeral 3		---
	The object probe is pushed against any openings of the enclosure with the force of 3 N ± 10 %	Object probe: Rigid steel rod 2,5 ^{+0,05} mm diameter with edges free from burrs	P
13.3	Acceptance conditions for first characteristic numeral 3		---
	The protection is satisfactory if the full diameter of the probe does not pass through any opening.		P
13.2	Test conditions for first characteristic numeral 4		---
	The object probe is pushed against any openings of the enclosure with the force of 1 N ± 10 %	Object probe: Rigid steel rod 1,0 ^{+0,05} mm diameter with edges free from burrs	P
13.3	Acceptance conditions for first characteristic numeral 4		---
	The protection is satisfactory if the full diameter of the probe does not pass through any opening.		P

Degrees of protection against water indicated by the second characteristic numeral

Second number of IP Code	Description	Definition	Verdict
Degrees of protection against water indicated by the second characteristic numeral			---
0	Non-protected	---	---
1	Protected against vertically falling water drops	Vertically falling drops shall have no harmful effects	N/A

Second number of IP Code	Description	Definition	Verdict
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical	N/A
3	Protected against spraying water	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects	N/A
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects	N/A
5	Protected against water jets	Water projected in jets against the enclosure from any direction shall have no harmful effects	N/A
6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects	N/A
7	Protected against the effects of temporary immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time	N/A
8	Protected against the effects of continuous immersion in water	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 for numeral 7	N/A
9	Protected against high pressure and temperature water jets	Water projected at high pressure and high temperature against the enclosure from any direction shall not have harmful effects	N/A

Tested:



André Fischer

Accepted:



Jens Marggraf

-- End of test report --