

## Equinor's qualification tests:

These qualification tests shall be performed and documented by approved 3rd party

Test no	Test type	Test description	Test parameters	Test criteria
1	Degradation test	Device to be exposed for seawater deluge / spray. In accordance with IEC 60068-2-52 Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)	<ul style="list-style-type: none"> <li>• Test method 2</li> <li>• One cycle</li> </ul> <p>Observe the temperature on surface of the equipment before and after the tests.</p>	No temperature increases on surface of the equipment after tests.
2	Vibration test	Device to be exposed to vibrations  In accordance with IEC 60068-2-6 Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)	<ul style="list-style-type: none"> <li>• Setup according to clause 12 in IEC 60068 2-6.</li> <li>• Continuous sweeping and exponentially change of frequency in time applied. The sweep rate is one octave per minute.</li> <li>• Following parameters are adopted: <ul style="list-style-type: none"> <li>• Lower frequency: 5 Hz</li> <li>• Upper frequency: 500 Hz</li> <li>• Vibration amplitude: 1mm / 0.7g</li> </ul> </li> <li>• Duration of endurance: 2h</li> <li>• The duration time of 2h per axis is specified.</li> <li>• Endurance by sweeping: The duration of endurance for each axis is set to 10 cycles.</li> </ul> <p>Test observations as setup in clause 13.</p>	No temperature increases on surface of the equipment after tests.
3	Drop tests – lower elevation	Devices to be dropped from 2m height.	<ul style="list-style-type: none"> <li>• Dropped from 2m height.</li> <li>• Min 1, Max 3 repetitions per device</li> </ul> <p>Observe the temperature on surface of the equipment before and after the tests.</p> <p>Describe result per repetition per device</p>	No temperature increases on surface of the equipment after tests.

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4	Bending test	Device to be placed on a support frame and a load to be applied at the centre.	<ul style="list-style-type: none"> <li>Both back and front to be tested.</li> <li>Mass increased stepwise (5-10-15kgs)</li> <li>Min 1, Max 3 repetitions per device (one per step 5-10-15kg)</li> </ul> <p>Observe the temperature on surface of the equipment before and after the tests. Describe result per repetition per device</p>	No temperature increases on surface of the equipment after tests.
5	Drop test – higher elevation	Devices to be dropped from 5-7m	<ul style="list-style-type: none"> <li>Dropped from 5-7m height.</li> <li>Min 1, Max 2 repetitions per device</li> </ul> <p>Observe the temperature on surface of the equipment before and after the tests. Describe result per repetition per device</p>	No temperature increases on surface of the equipment after tests.

Tests to be executed with min. two devices per product type.

Test orders:

1. Degradation test, ref Test Type 1
2. Vibration test, Test Type 2
3. Degradation test, Test Type 1
4. Drop-test low elevation, Test Type 3
5. Bend-test, Test Type 5
6. Drop-test high elevation, Test Type 5

Battery to be 100% charged at start of each test.

It is important to follow the supplier's recommendation if the devices have been subjected to stress or are visibly damaged.

Additional risk factors like gas ingress are managed by ensuring that the original IP grade is maintained. The devices tested towards the above specified criteria are only Equinor qualified for HC gas and should therefore not be brought into areas with more flammable gases (e.g., acetylene or hydrogen gas) without AT.

Guidelines for the use of qualified equipment also apply to units used by external personnel.