

Transducer Impedance Measurement Service



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Transducer Health Assessment

For EM712, EM304 MKI, EM304 MKII and EM124.

The Built-In System Test (BIST), included with every EM system, provides several automatic tests to check the operation of the echo sounder system. The available tests determine the software versions, communication status, noise characteristics and TX/RX functionality which can indicate issues with the *topside* electronics. To gain insight into the health of the *transducers*, however, we must measure at the transducer level.

This service can be performed during regular annual maintenance visits or upon request if there is a problem with the system. This test does not require any specialized equipment and is done through the K-Controller software. Data can be collected by a Kongsberg Discovery (KD) Field Service Engineer or by the customer with remote guidance from Customer Support.

After the data is gathered, KD Customer Support will review and analyze it, providing a report detailing their findings. This report will indicate whether any system components need close monitoring or replacement. Maintaining a history of these analyses allows for easier identification of potential issues and can assist in planning future upgrades proactively and reducing downtime.

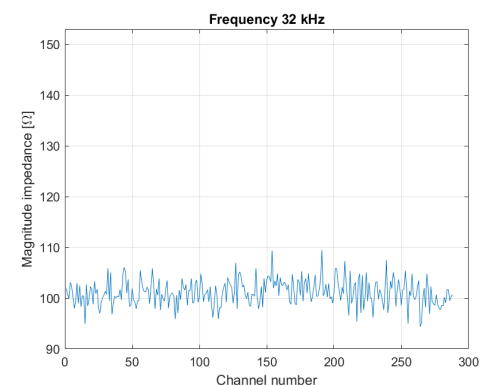
Proactive life cycle management

- Detect a problem before it impacts your mission
- Identify issues after unplanned physical damage occurs such as mishandling, maintenance or grounding events
- Plan for upgrades or replacements

KD accepts 10% of the TX array to be defective before proper action should be taken, i.e. 86 elements in a full 1-degree array of 864 elements.

Key Benefits

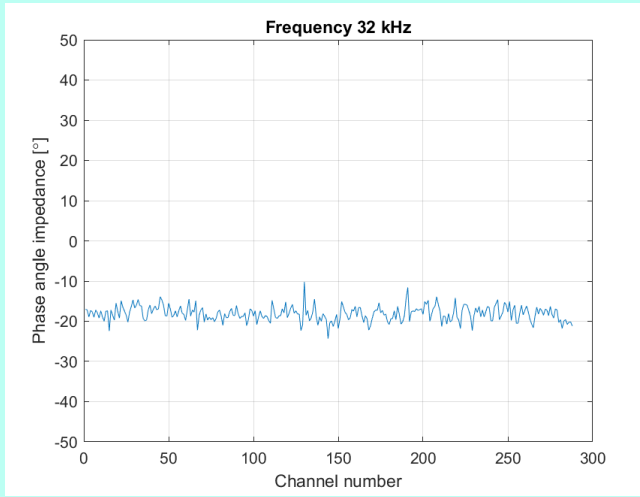
- Creates a record of system health throughout the life of your hardware
- Indicates **element-level** degradation
- Supplements data quality analysis
- Available by request
- Data collection can be done by the customer
- **No service trip required**



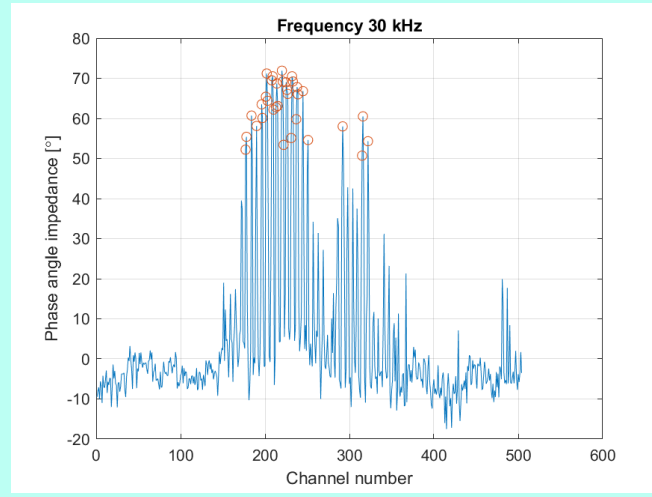
Top image: Sairdrone/NOAA OECI/CCOM.

Above: Example of healthy test results.

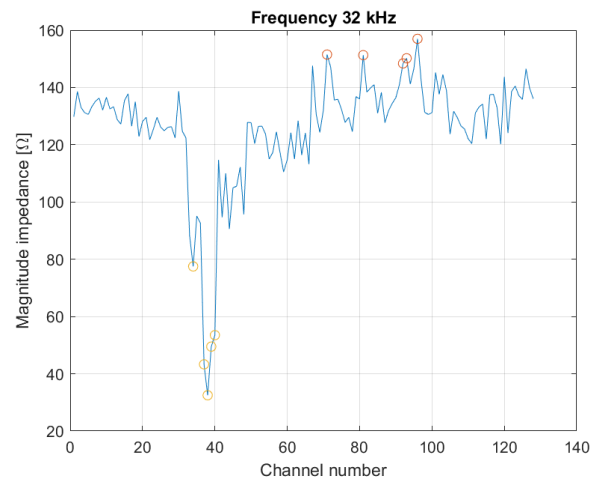
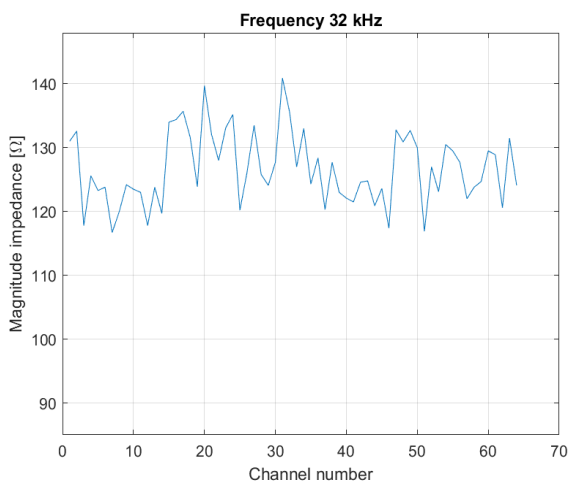
Normal results



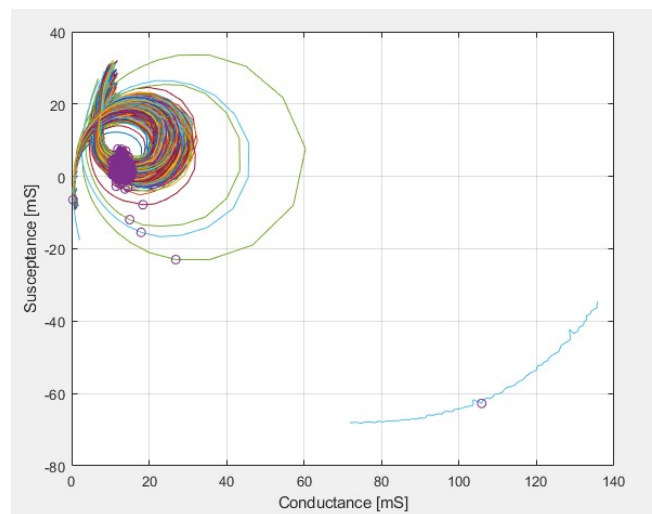
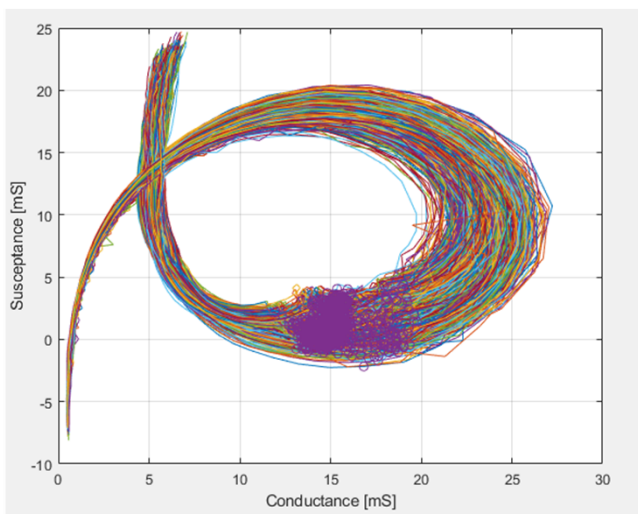
Poor results



Magnitude of the phase specification is between -40 and 0. The markers (circles) show channels outside production specification.



Magnitude of the impedance specification is between 100 and 150. The markers (circles) show channels outside production specification.



Bad channels increase sidelobes, which increase the risk of noise in the data. Each stave showing the same level of sensitivity indicates a healthy RX array. Stray staves indicate degradation of the elements.

Note: Recommended minimum water depth is 100 m, with the vessel not moving. It is not suitable to do this test alongside in the harbor since potential external noise may affect the results.