

The Most Effective and Lowest Cost MEMS Test Solution

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The Challenge

The inertial MEMS market is growing rapidly and has its own unique requirements when it comes to testing of these devices.

Traditional ATE with its size limitation is difficult to integrate into the handler for rotating. The pattern-based ATEs become less efficient and more expensive in testing the I2C/SPI interface with multi-sites (16 sites in parallel).

The Solution

A PXI-based test system using QSPI (Quad-Serial Port Interface) modular instruments and a PXI Chassis is the best solution for MEMS testing. The QSPI card exhibits not only superior performance but also excellent capability for digital instrumentation. It combines high-performance pin electronics, four I2C/SPI masters, four 32-bit counters, and supports four PMUs per board in a compact 3U PXI form factor.

Currently, MEMS products for consumer electronics come with the I2C/SPI interface. In order to optimize production efficiency, MEMS companies are looking for a new, low-cost ATE generation with a I2C/SPI interface and parallel-testing capability.

MEMS Test Challenge

The motion sensor needs to accelerate while seating into a DUT board during the sensitivity test. Therefore, the handler and rotator become a key investment for MEMS testing. Mechanical movement and rotation definitely require extra test time. In order to solve this issue, OpenATE has designed and manufactured a powerful QSPI test module, which not only preserves all test functions of a traditional IC tester but also provides the I2C/SPI interface, parallel-testing capability. Each QSPI card can test four sites simultaneously with the best performance and lowest cost.



OpenATE's 16-site system for a complete, lowest-cost motion sensor (gyroscope/accelerometer) test solution includes:

- IC Testing Software Platform :
OpenATE MTS2
- PXI Instruments:
OpenATE QSPI x 4 for I2C
OpenATE PEMU32 for DPS
- Chassis :
NI PXI-1033
- Handler Interface :
NI GPIB

In short, a PXI-based ATE system with QSPI can provide users with the following benefits:

1. Smallest Size, Lowest Cost

- Only one five-slot chassis can provide complete 16-site DC/Function testing.
- Adding one more chassis, users can expand as many test sites as needed.

2. Simplest ATE Test Software Platform

- MTS2 software platform is easy to connect and integrate with other handlers and rotators.
- MTS2 C/C++ development environments are very common and popular for users.
- MTS2 supports multi-site test functions. Only one test program can test any number of devices-under-test.

3. Most Flexible Test Platform

- To adjust test instruments to apply to others MEMS productions.
- One PXI-based standard platform can reduce investment and save cost.

4. Easy integration for handlers / rotators

- The size and weight of the smallest chassis can be considered for direct connection to handlers without additional cost or floor space for the Test Head Manipulator normally required for ATE.

OpenATE, an expert in IC tester instruments, can provide complete lowest-cost test solutions for the semiconductor test market. A single test platform can be used in the development laboratory or production testing, to help users simplify their design and testing process.

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