

Hard Disk Drive Vibration Test with Agilent USB Data Acquisition Device

Application Note



Introduction

Portable entertainment devices have been gaining popularity in the past few years. This increasing demand, particularly as it involves hard-disk-based portable storage devices, presents a huge market for providing a fast and inexpensive manufacturing test.

Vibration Test Setup

Vibration testing is required for the hard disk. Humidity and temperature-measurement tests can also be carried out. As these measurements are different in nature, you may need three different transducers. Hence, it is recommended that the Agilent USB Data Acquisition (DAQ) device be used for this application.

By using the Agilent USB DAQ device, you can measure the voltage directly and, at the same time, use a current transducer to measure the current. The current transducer will convert the current to voltage signal and send this to the DAQ device. After that, the data is displayed and analyzed on the PC.

Figure 1 shows a basic block diagram of a hard-disk vibration test setup using the Agilent USB DAQ device.

In Figure 1, the hard disk is the electronic under test (EUT). The EUT is set up in a closed-loop system, where the speed of the hard disk can be controlled by changing the digital output of the DAQ device. This is performed in order to make low- and high-frequency vibration measurements.

The vibration sensors will measure the vibration in both low- and high-frequency modes. It converts the signal to a charge signal and sends it to the signal conditioner. The signal conditioner will filter the noise and convert the charge signal to a voltage signal before sending it to the Agilent USB DAQ device. The Agilent USB DAQ device will acquire this data and send it to the PC for display and analysis.

Reference

- Hang Caruso G's & Degrees, California, MarylandRevision Highlights of the New MIL-STD-810F, *Test Method Standard for Environmental Engineering Considerations and Laboratory Tests*

Related Agilent Literature

- System Developer Guide-Using USB in the Test and Measurement Environment Application Note, literature number 1465-12

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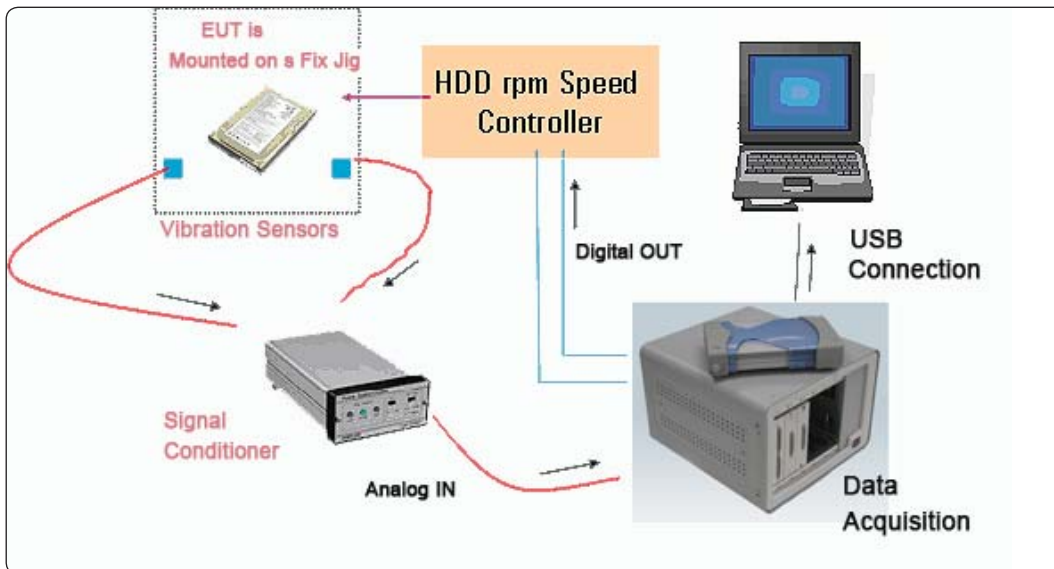


Figure 1. Block diagram of hard disk vibration test



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