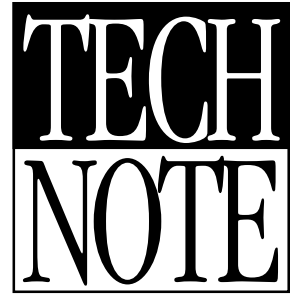


# Measuring the Wavelength of Noisy Sources using the OMM-6810B Optical Multimeter



This Technical Note presents the experimental results showing the effect of source noise on wavelength measurements using the new and improved OMM-6810B Optical Multimeter.

## MEASUREMENT SETUP

The measurement setup is shown in Figure 1. A GPIB controlled function generator was coupled to an Electrical WaveHead Emulator to emulate a noisy light source. This emulator, which is coupled to the GPIB controlled OMM-6810B, performs similarly the optical heads which measure wavelength.

The function generator was set up to provide a DC signal that is modulated with a sine wave. The depth of modulation was set at 50%, 25% and 10%. For each of these settings, the computer took 100 wavelength readings over a 20 second period. The maximum change in the wavelength reading was determined and recorded for this period.

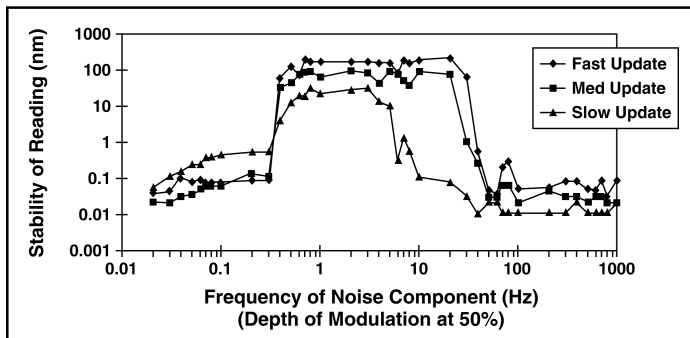
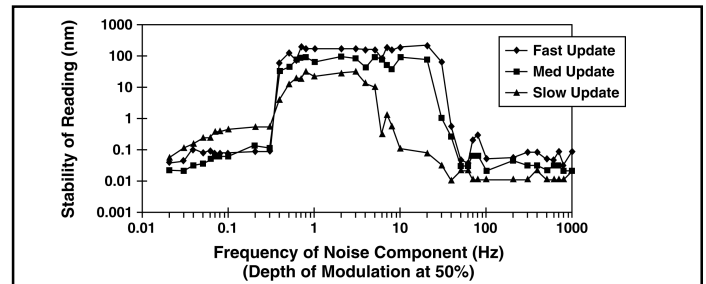


Figure 1. Measurement Setup.

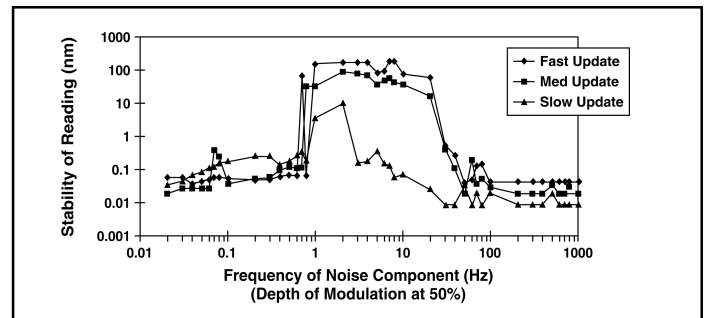
## RESULTS

As shown in Graphs 1, 2 and 3, the OMM-6810B reading may be adversely affected by low frequency noise components in the source being measured. The

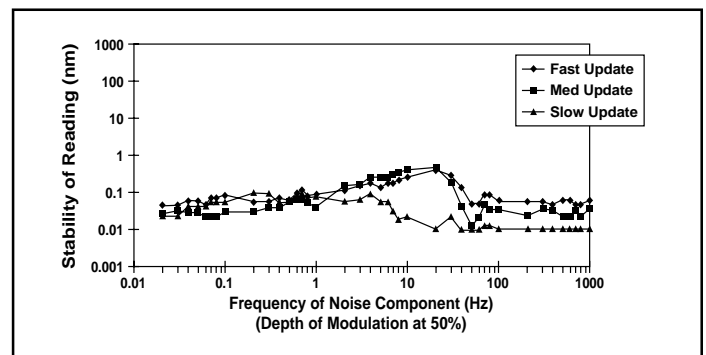
stability of the OMM-6810B reading is determined by the amplitude and frequency of the source noise components as well as the 6810B update rate.



Graph 1. Stability of OMM-6810B reading with depth of modulation at 50%.



Graph 2. Stability of 6810B reading with depth of modulation at 25%.



Graph 3. Stability of 6810B reading with depth of modulation at 10%.