Bandwidth Tests Of Installed Optical Fibers At Customer Lab
May 19, 2005

A prototype bandwidth tester (BWT) from Advanced Fiber Solutions was used at a customer lab to test two fibers. The two fibers, one 50/125, one 62.5/125, were about 1 km long and had been used in the lab for years for experiments. They are representative of the 10-20 year old fibers typical in the customer's cable plants.

The BWT used a 850 nm VCSEL and a 1310 nm F-P laser. The BWT uses a fast pulse (~300 ps FWHM) as a test pulse. Calibration uses a loopback with a short length of cable. The measurement pulse from the length of fiber is digitized and compared to the test pulse using FFT analysis. Data is graphically shown on a PC display in both time and frequency domains.

The data from the two fibers analyzed are shown below. The 50/125 fiber looks very good, useful for any high speed network at either wavelength, while the 62.5/125 fiber shows significant BW problems likely due to the fiber structure. Not only are the pulses in the 62.5/125 fiber spread out, but they are separated into multiple pulses by flaws in the graded index structure of the fiber.

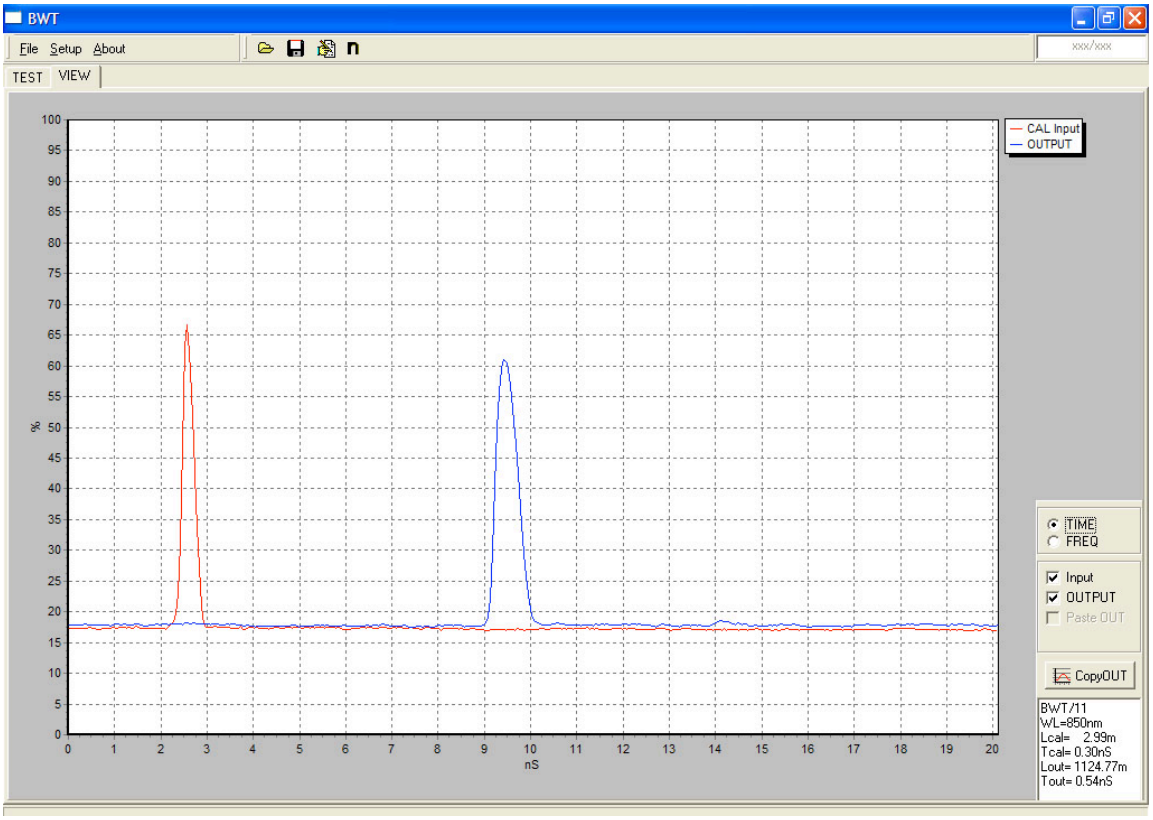
Jim Hayes

June 16, 2005

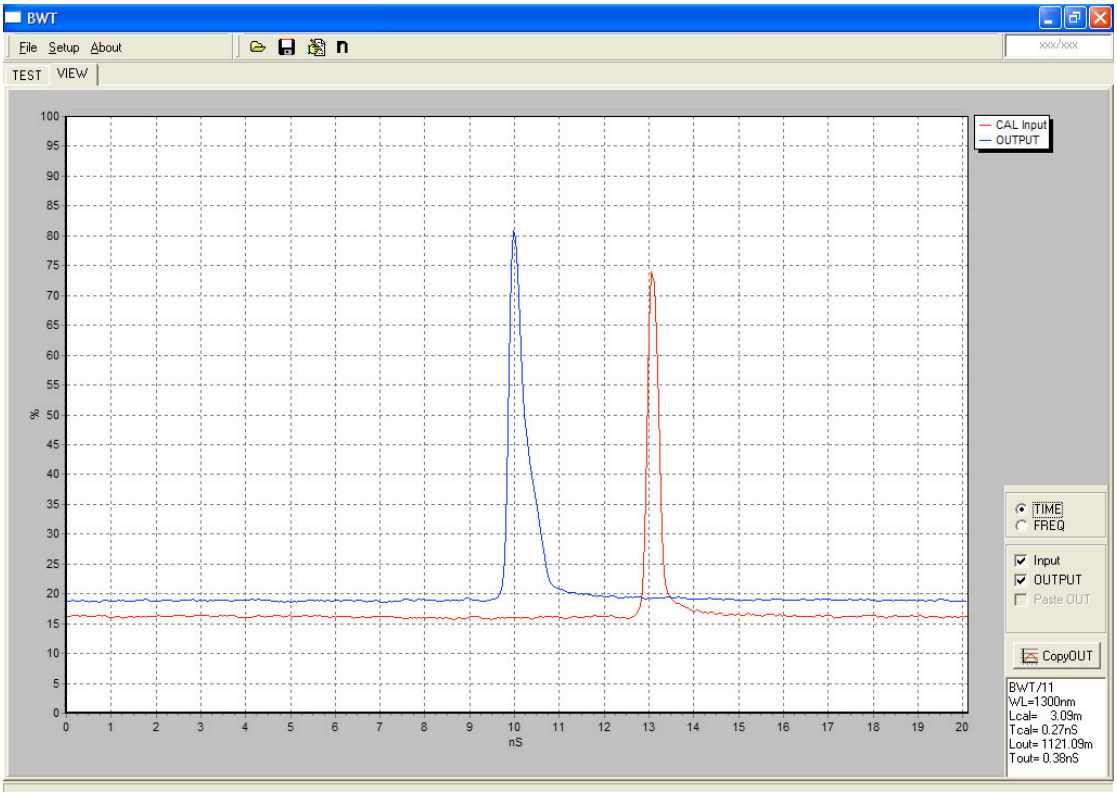
Note: The Fiber Optic Association, Inc. has one of these BWTs on order to use for experiments and as part of a program to develop a database of the performance of installed fibers at customer sites. Anyone interested in participating in our program should contact me (Jim Hayes, 1-760-451-3655 or jeh@jimhayes.com).

FAA Tech Center, fibers from lab, representative of installed cable plant, May 19, 2005

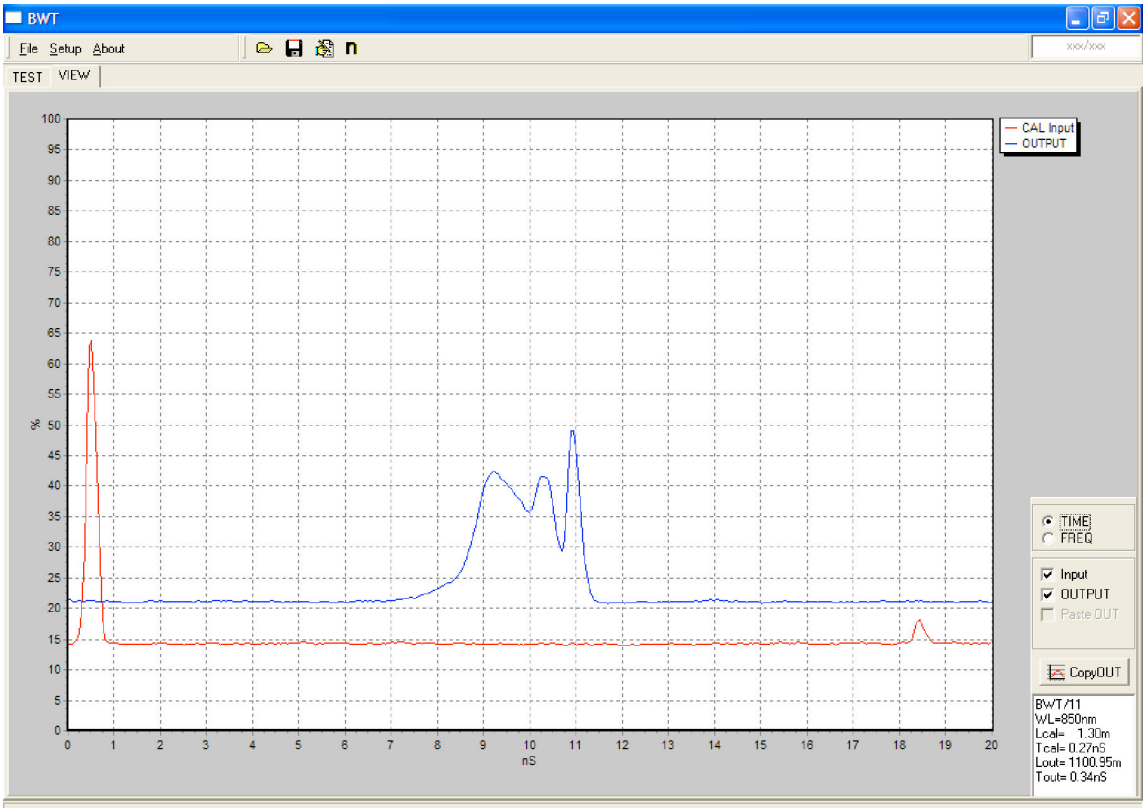
50/125 @ 850 VCSEL

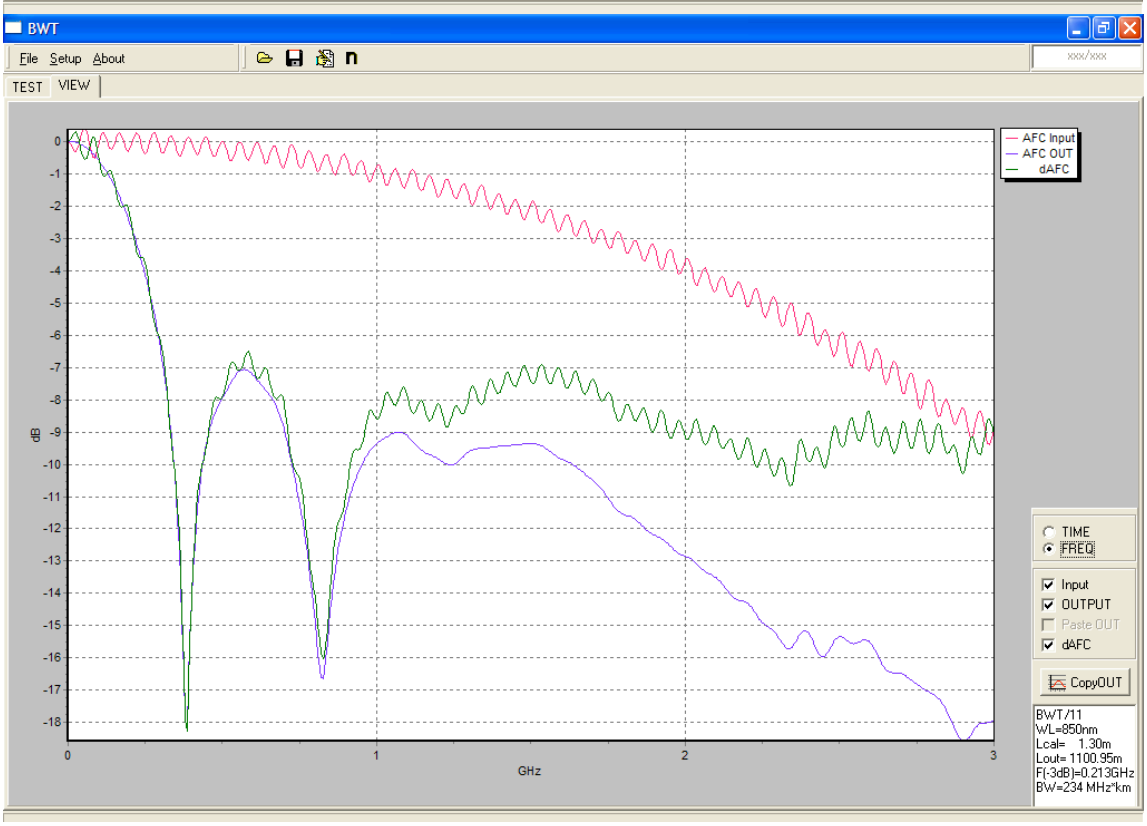


50/125 @ 1310 nm FP laser



62.5/125 @ 850 nm with VCSEL





62.5/125 @ 1310 nm (FP laser)