Power and Wavelength Stability of the FOS-79800 DFB Source Module

TECH NOTE

This technical note illustrates the exceptional power and wavelength stability of the FOS-79800 DFB Source Module in the FOM-7900B System. The following study utilized a 1550 nm DFB laser diode to measure short-term power stability and long-term power and wavelength stability.

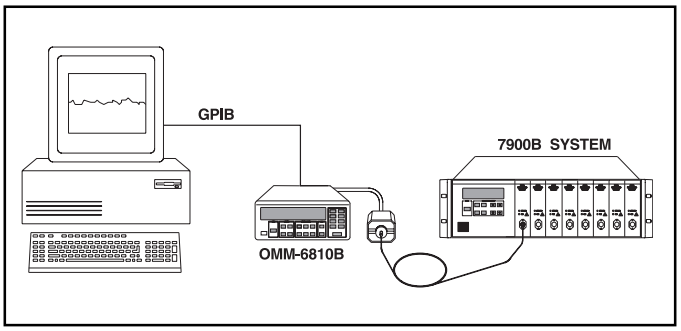

Figure 1. Power Measurement Setup.

POWER MEASUREMENT SETUP

The setup for measuring power stability is shown in Figure 1 above. The output of the FOS-79800 DFB Source Module was connected to an OMM-6810B Optical Multimeter and OMH-6727B Power Head with a fiber optic patch cord. The OMM-6810B monitored the output power of the source while the computer logged the data using GPIB.

For both short- and long-term stability measurements, the system was allowed to stabilize for one hour. Short-term stability data was taken every 5 seconds for 15 minutes. Long-term stability data was taken every 60 seconds for 24 hours. The results are shown in Figures 3 and 4.

WAVELENGTH MEASUREMENT SETUP

The wavelength stability was measured by capturing the output of the FOS-79800 DFB Source Module with a Hewlett-Packard® HP86120 Multi-Wavelength Meter. The setup is shown in Figure 2. The wavelength meter monitored the wavelength of the source and the data was logged in a computer using GPIB.

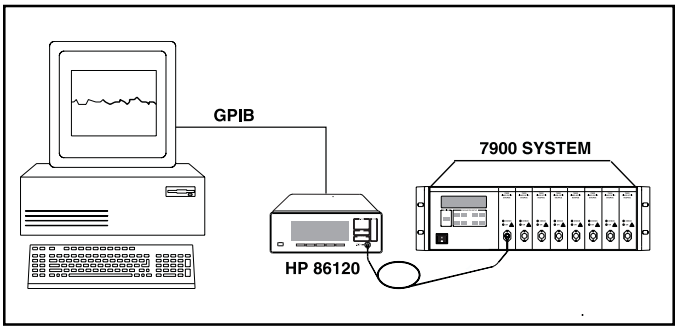

Figure 2. Wavelength Measurement Setup.

Like the power stability test, the system was allowed to stabilize for one hour. Wavelength measurements were acquired every 60 seconds for 24 hours. The results are shown in Figure 5.

RESULTS

The power and wavelength stability test results are summarized in the following graphs. The data presented here represents the power and wavelength stability of a 1550 nm DFB laser diode in the FOS-79800 DFB Source Module. Results may vary slightly with different sources.

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As shown in Figure 3, the short-term (15 minute) power stability of the FOS-79800 was less than ±0.003 dB following a one hour warm-up period. The FOS-79800 DFB Source Module maintained a stability better than ±0.01 dB over 24 hours as shown in Figure 4. Figure 5 demonstrates the long-term wavelength stability of the FOS-79800 DFB Source Module. Over a period of 24 hours the wavelength changed ±0.001 nm.

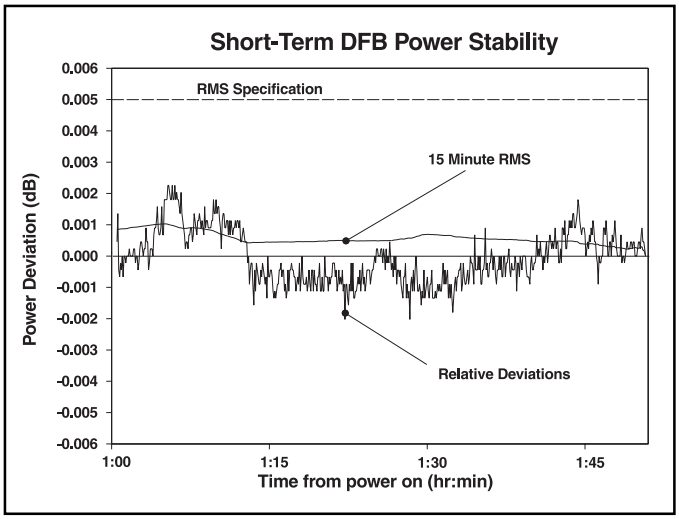

Figure 3. FOS-79800 DFB Source Module Short-Term Power Stability.

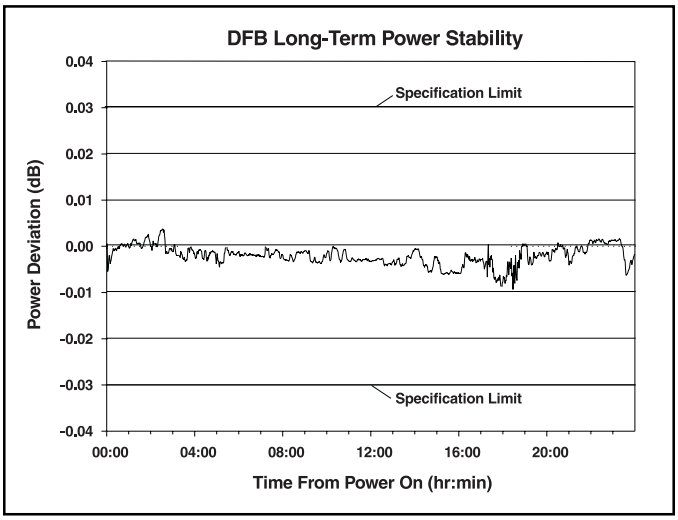

Figure 4. FOS-79800 DFB Source Module Long-Term Power Stability.

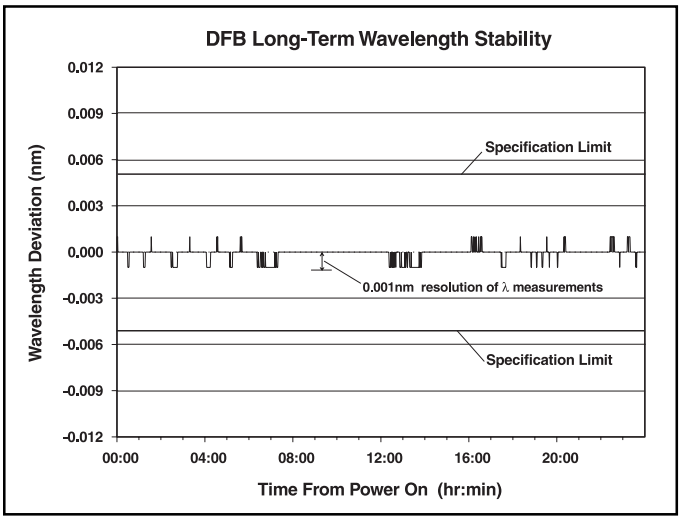

Figure 5. FOS-79800 DFB Source Module Long-Term Wavelength Stability.