

Application Note

Measuring DWDM Signals Using the OWS200

Introduction

The OWS200 can be used to measure the signal level of individual wavelengths in a Dense Wavelength Division Multiplexing (DWDM) or Coarse Wavelength Division (CWDM) network without the need for an expensive DWDM/CWDM Optical Power Meter (OPM).

DWDM Network

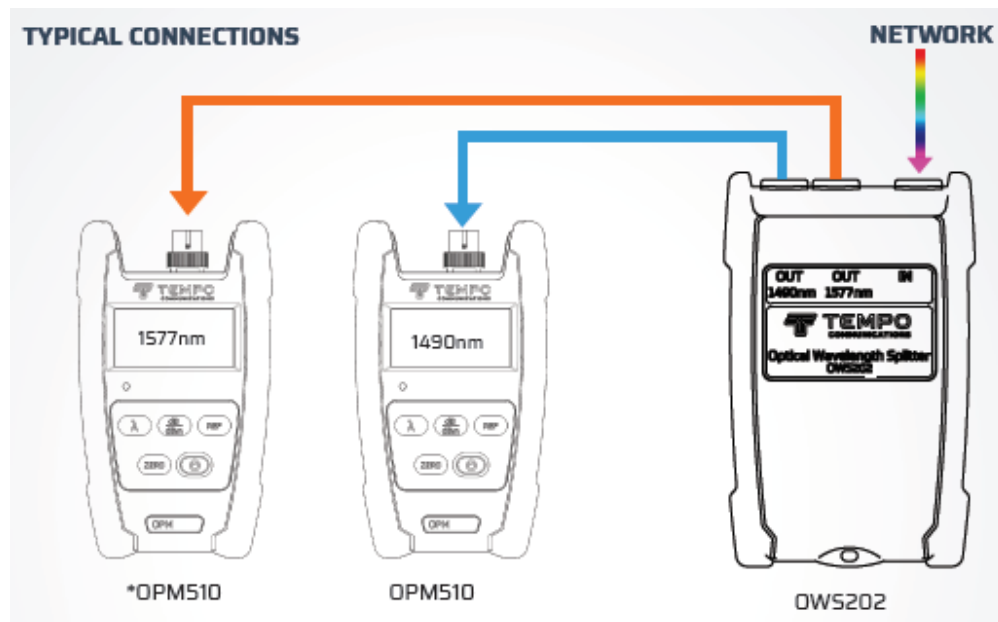
DWDM and CWDM networks are used to be able to increase the amount of data that can be transmitted over a given fiber. This is accomplished by simultaneously transmitting two or more wavelengths on one fiber. The ITU grid specifies the wavelengths over the C and L Bands at an approximate spacing of 0.8nm

Conventional Measurement Method

The conventional method is to use an expensive DWDM/CWDM OPM that are very expensive. The cost of the DWDM/CWDM OPM's prevents the provisioning of most technicians with the equipment necessary to test individual channels signal level in NGPON2 and XGPON networks.

A New Solution

The OWS200 is a cost-effective solution that allows all technicians that currently have a standard OPM to be able to measure signal levels in DWDM/CWDM networks. The OWS200 “splits” the specified wavelengths into individual ports that are then connected to a conventional OPM.



The loss of the OWS200 has negligible effect on the measurements as the OWS loss is typically less than 0.1dB. In the above example the OPM510 used to measure 1577nm is set to 1550nm. Errors due to not measuring at the exact wavelength are small since the typical responsivity of an InGaAs OPM is very flat over the 1530 – 1625nm range.

The technician may experience higher losses with inadvertent damage of the optical ports and test cables due to not cleaning or improper cleaning practices.

Make sure:

- Clean and inspect all bulkheads and connector end faces prior to connecting.
- Do not connect UPC or PC connectors to the APC bulkheads of the OWS200.

Leaving test cables connected to the OWS200 during test periods will prevent damage to the bulkheads and cable interfaces.

The user can specify the wavelengths necessary for their particular network and so the OWS can be configured to the network wavelengths. The OWS200 is available for two, four and eight wavelength applications. Please consult with your regional sales manager or Tempo Customer Service so we can specify an OWS to meet your specific network requirements.

Summary

The OWS200:

- Effectively measures individual wavelength signal levels on XGPON and NGPON2 networks.
- Avoids the need to buy expensive DWDM OPM's.
- Allows the provisioning of all front-line technicians with the equipment necessary to test and diagnose and troubleshoot multi-wavelength networks.