Measuring 1G and 10G Signals Using the Tempo T6106 PON OPM

Broadband Optical Power Meter

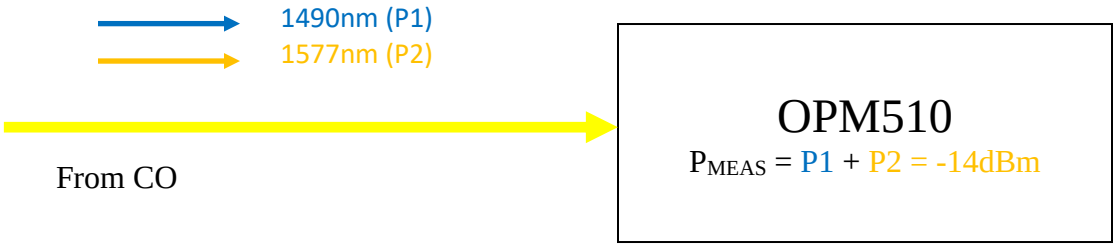
Conventional OPM's are calibrated at typically 850nm, 1300nm, 1310nm, 1490nm, 1550nm and 1625nm. An OPM that is set to 1490nm does not only measure optical power at 1490nm but rather the total of all power at all wavelengths present in the fiber. If signals of 1490nm and 1577nm are applied at the same time to the OPM, the OPM will measure the summation of both signals. So, if there is 20µW of power at 1490nm and 20µW of power at 1577nm the optical power measured will be approximately 40µW.

1G/10G Overlayed Networks

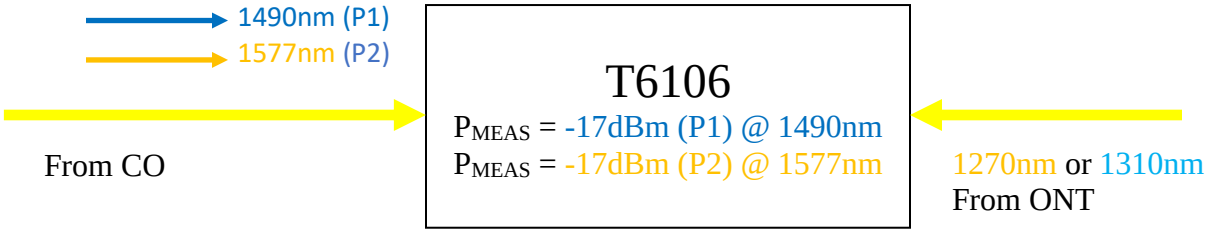
GPON networks (1G) have been deployed for many years and now 10G has been added to increase the bandwidth transmitted. So customers may have both wavelengths on their fiber. The ONT in the house will only work with one of these wavelengths and will filter out all others. If a technician wants to measure the presence of the wavelength that the ONT works with they need a PON OPM. A PON OPM filters the signal and displays the 1G and 10G signal. The technician can then validate the absolute optical power and that the correct wavelength signal is indeed presented at the ONT.

Typical power levels in an overlayed network

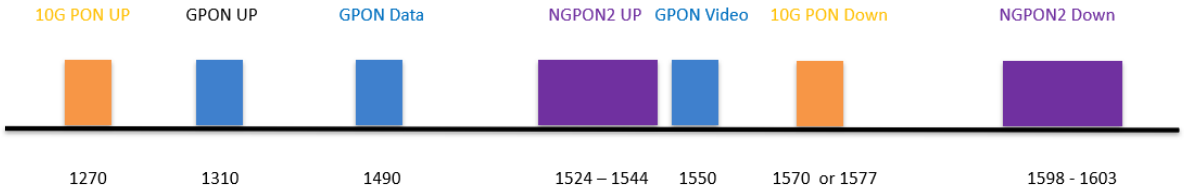
1490nm = -17dBm (20µW; 0.02mW)
1577nm = -17dBm (20µW; 0.02mW)
P_{MEAS} from CO = -14dBm (40µW) when using a **broadband** OPM.



P_{MEAS} from CO = -17dBm (20µW) measured for each wavelength when using the **filtered** T6106.



The T6106 is also capable of measuring signals from the CO in terminated mode.



NGPON2 measurements require the DWDM OPM T6503.
The T6501 is used to measure CWDM signals starting at 1271nm at 20nm increments.