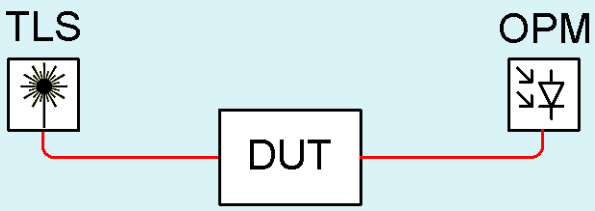
POLARITON TECHNOLOGIES

How to Characterize Insertion Loss

Description

Insertion loss (IL) is the ratio between optical input power and optical output power of a device under test (DUT). For a modulator it is of interest to measure the IL for different wavelengths to characterize its optical broadband behavior.

Schematic Setup

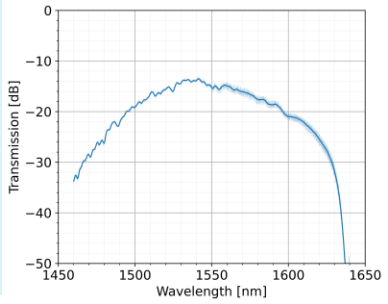


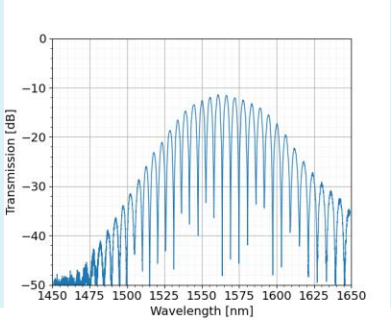
DUT:	Device Under Test
OPM:	Optical Power Meter
TLS:	Tunable Laser Source

Performance Data

The device under test (DUT) is measured in its on-state. The optical transmission power is measured and plotted over different wavelengths. The maximum of the curve represents the minimum IL at a specific wavelength. The shape of the spectra characterizes the optical broadband behavior and shows if design parameters match with the measured DUT.

When the optical input power of the DUT is set to 0 dBm, the transmission already represents the IL and does not require any further analysis. To know the set-up losses, a reference measurement without the DUT can be conducted. If one measures an imbalanced MZM, the spectra will show an interference pattern.





References

J.C. Campbell, "Chapter 7 - Optoelectronics in Silicon Germanium Silicon", Semiconductors and Semimetals, Elsevier, Volume 56, 1998, Pages 347-386, doi: 10.1016/S0080-8784(08)62585-5

To cite: Polariton Technologies AG, MZM Parameter Testing: How to Characterize IL [leaflet], Version POL-000157TSTPRC_revA_One-side-IL