

Measurement of an optical resonator (Fiber simulation) with OTDR

With short averaging time (e.g. 20sec.) Events are correctly displayed in the OTDR trace.

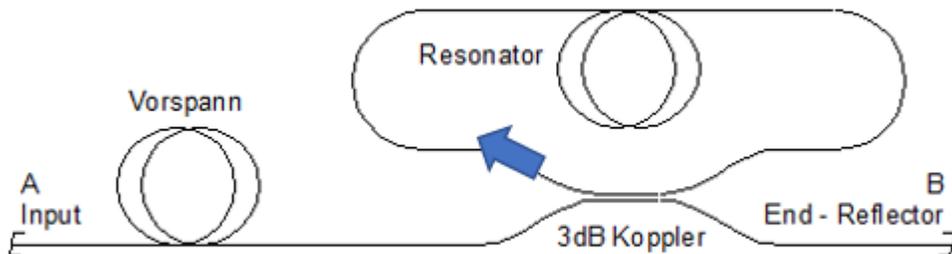
With longer averaging time (e.g. 2 min.) Events not displayed in the OTDR trace.

optical resonator - why do I see no OTDR Events with longer averaging time

This setup does not represent a standard fiber link, and therefore the automatic measurement is not working well, mostly because the noise level is much higher than expected, and therefore the OTDR would display too many events. The MTS does not show events in this case. With e.g. 20sec., the overall noise level is considered as manageable, and therefore there are event-results with distance values on the trace.

Noise is generated by the fiber (resonator) itself. After the first (simulated) fiber the pulse is multiple reflected, while the OTDR generates already the next pulse(s) and therefore additional noise is added. The repetition rate between two acquisitions is not long enough and the resonator still sends back reflected pulses on the following acquisition.

A better test setup with resonator could be performed by adding an isolator, as shown below with the blue arrow. By doing this, the noise would be much smaller.



Summary: For the distance accuracy with this setup, longer averaging time does not bring any value, and a short acquisition time should be OK.