

TP04/SP · PD (2008Ed.1)

Technical paper of investigation of high-power reliability for passive optical components for optical communication application

Summary

This technical paper describes the investigation result of high power test for three commercial passive optical components of plug style optical attenuators, in-line optical isolators and planar waveguide circuit (PLC) optical splitters. As a result, plug style optical attenuators failed with return loss decreasing over 1 W. For in-line isolators and PLC optical splitters, no failure has been observed. Additionally, thermal distribution simulation was carried out. The main failure mode by high input power was studied. The estimated failure mechanism was considered as the thermal stress caused by thermal distribution made by optical power absorption. Moreover, long-term reliability test for 500 hours, 70 degree C was carried out for these three types of passive optical components.