

Opto-Electronics Review, 2016, volume 24, issue 4, pp. 191-195

All optical measurement of an unknown wideband microwave frequency

Kumar, A.; Priye, V.; Singh, R. Raj

DOI: <https://doi.org/10.1515/oere-2016-0021>

Abstract:

A novel all optical measurement scheme is proposed to measure wideband microwave frequencies up to 30 GHz. The proposed method is based on a four-wave mixing (FWM) approach in a semiconductor optical amplifier (SOA) of both even order side-bands generated by an unknown microwave frequency modulating an optical carrier. The optical power of a generated FWM signal depends on frequency spacing between extracted side-bands. A mathematical relation is established between FWM power and frequency of an unknown signal. A calibration curve is drawn based on the mathematical relation which predicts the unknown frequency from power withdrawn after FWM.