

Enhance the Performance of Free Space Optical (FSO) Communication due to Atmospheric Turbulence via the Dual Diffuser Modulation (DDM)

Abstract

This paper focus on mitigating the atmospheric turbulence effect in free space optical communication using dual diffuser modulation (DDM) technique. Phase screen diffuser located on transmitter create 'new' beam wave to propagate through turbulence more efficiently. This technique uses two transmitter and differential mode detection at the receiver. The numerical result show that the DDM produce better performance compare to conventional FSO that using intensity modulation/direct detection (IM/DD) for On-Off Keying Modulation (OOK). The reduction in the scintillation level also improve in DDM compare to conventional technique that using a perfectly coherence beam.

Keywords; Differential Mode Detection, Free Space Optic, Phase Screen Diffuser