

## ABSTRACT

*The technology of Radio over Fiber (RoF) is a technology in the field of transmission that combines the transmission of radio signals and fiber optics. By using fiber-optic cables will be retrieved a large transmission speed compared with the transmission directly and integrate wireless access networks because it can transmit a wave microwave through optical fibers for distance. Inside there is an engineering RoF multiplexing technology reliable technology on (orthogonal frequency division multiplexing). On the techniques of data use of technology wireless system experienced many loss-loss (losses) in the pentransmission of the signal as well as the weakening of the atmosphere and often non-linear effects occur basially happens in optical fibers is becaused by interaction that occurs between the refractive index in the fibers with ligh transmission to reduce the effects of non-linear techniques use dithering. Dithering technique is injection of external signals to the system of linear or non-linear to get some goals include the improvement of linearity of the open or closed loop systems, durability and stability, asymptotic reduction quantization noise in the data converter and improvement of adaptive closed-loop linearity. In this case using the modulation used is 4 QAM and QPSK with CW laser power 0 dBm 10 dBm and the laser linewidth 0.1 MHz with a length of 10 km 50 km 100 km fibers does by using the technique of dithering would have an effect non-linear effects on optical receiver. The simulated system provides a shape spectrum analyzer and an EVM value result in a good CW power laser 0 dBm, After a large input power form the signal spectrum Analyzer and the EVM value is less good CW laser input power 0 dBm with a value of 6.36% on the QPSK port and on the QAM port 6.80% with a fiber length of 10 km, using dithering EVM input power 0 dBm 6.27% on the QPSK output port with a fiber length of 100 km, for QAM ports with 6.35% value, 10 dBm input power with 6.72% QPSK value and 6.51% QAM.*

**Keywords :** RoF, OFDM, Dithering, OptiSystem, EVM.