

## ABSTRACT

The needs of communication amongst User are very high and rapid which is now barely covered up to level of triple play coverage. To provide all those demands, a high transmission that has high level of capacity and technology should be offered. A Fiber Optic as one of solutions can answer all those demands due to having variations of superior technology and instrument. Meanwhile this device has to be balanced with high tech and optimally methodology of transmission to accommodate amongst the User.

To get an optimal methodology is needed stable carrier signal, an intensifier to compensate some weaknesses on the supporting instruments of fiber optic and a modulation format which can be cooperated with non linear effect to get a good quality of BER low result.

On this thesis, described ways of working a modulation format, NRZ (Non Return to Zero) and RZ (Return to Zero) in fiber communication system. Each format of modulation will be analyzed and formulated with application of best and steady carrier signal solution toward some weaknesses (dispersion and loss), Modulator March Zehnder (Mz) and an intensifier on optic of Erbium Dopped Fiber Amplifier (EDFA). The result of those analysis will be compared with ways of working of BER. Form result of analysis, the format of RZ have energy level of pulsa highest 3 times fold to be compared to NRZ that is 228,3 nW, owning energy level accept biggest that is - 13,9 dBm and have beet of probability of error smallest  $10^{-8}$  compared to format of NRZ that is  $10^{-5}$ .

*Keywords :NRZ, RZ,MZ, EDFA, Soliton*