

## **ABSTRACT**

*The Submarine Cable Communication System (SKKL) is a communication backbone that is deployed under the sea that used to connect networks between islands and between countries. DWDM (Dense Wavelength Division Multiplexing) technology can support long distance communication. Repeater used to reduce the impact of loss, on the detector side the signal can be detected properly. EDFA (Erbium Doped Fiber Amplifier) and Semiconductor Optical Amplifier (SOA) amplifiers can minimize the impact of loss and increasing the gain of each amplifier. The EDFA (Erbium Doped Fiber Amplifier) is an optical amplifier that can work at a wavelength of 1550 nm which provides amplification for the input signal that passes through it which is doped with the element erbium (Er). SOA amplifier is an optical amplifier that utilizes cavity or room cavity to strengthen light. By using branching unit configuration and repeaterless, repeatered, and parallel in-line amplifier configuration and optical system software 7.0 with system reliability parameters such as Q-factor, Bit Error Rate, Power Receiver, and Signal to Noise Ratio with power variations (0 dBm, 2 dBm, 4 dBm, 6 dBm, 8 dBm) at a frequency of 100 GHz for 10 channels. The best result on the Q-Factor parameter is 15,928, the BER parameter is  $5.87 \times 10^{-57}$ , the receiver power parameter is -10,319 dBm, and the SNR is 42,713 dB. In this research the best value obtained in the Parallel in-line configuration. So as the best average is in the Repeatered EDFA configuration.*

*Keyword : Submarine Cable, Optical Amplifier, Repeaterless, Repeatered, Parallel in-line*