ABSTRACT

The Lembang Fault as one of the active faults in Lembang Regency along 22 km from Cisarua to Mount Palasari has the potential for earthquakes. As a result, as one of the areas adjacent to the Lembang Fault, the City of Bandung is an affected area and can be damaged. So that post-disaster telecommunication recovery is needed so that telecommunication services can be used again in the affected area.

Free Space Optic uses the medium of free space or the atmosphere as its propagation medium and is a type of unguided propagation. The climatic conditions of Bandung City when it rains in the afternoon until the evening will appear fog in the morning. So that it can become an obstacle in the transmission media and can reduce the performance of Free Space Optic.

This study designs communication using FSO technology for disaster mitigation of the Lembang fault in Bandung City. Weather that occurs at the design location includes light rain, moderate rain, heavy rain, and foggy. Under these conditions a data rate of 1 Gbps has been successfully designed with the parameters used are 2 bits per symbol on DPIM modulation, 30 dBm on LASER power, responsiveness and gain on 9 A/W and 900 APD photodetectors. For light rain attenuation parameters 11.145 dB⁄ Km, medium rain attenuation 16.702 dB⁄km, 33.405 dB⁄km, heavy rain attenuation, and foggy attenuation on Kim & Kruse channel 7.82 dB⁄km and 0.464 dB⁄km. The BER value obtained is 1.

Keywords: FSO, DPIM.