ABSTRACT

Although optical fibers can transmit data with a large capacity in a very fast time, fiber optic communication systems still have constraints such as dispersion. Various methods are used in the design to reduce dispersion to obtain transmission optimization, one of the designs is Dispersion Flattened Fiber (DFF). The DFF design is applied by creating multilayered cladding especially the three layers of cladding (Triple – Clad) such as cladding are varying the refractive index values on each layer, modeling core and cladding diameters, and adding dopant materials and performed on optical fibers Single Mode Step – Index (SM/SM). The dispersion resulting from the design of optical fiber dispersion flattened fiber is 0.007015 ps/nm.km at 1310 nm with a dispersion slope 0.07425 ps/nm².km and at a wavelength of 1550 nm, the dispersion which generated is 0.1161 ps/nm.km with a dispersion slope of -0.0927 ps/nm².km. These results are still within tolerable limits of a single model optical fiber standard value based on ITU-T G.652 which has standard maximum dispersion slope value of .092 ps/nm².km for 1310 nm, and for the chromatic dispersion at 1550 nm is 17 ps/nm.km with dispersion slope of 0.056 ps/nm².km. Based on the analysis, the design of dispersion flattened fiber with triple – cladding has met the standard of ITU-T 652.

Keywords: Dispersion Flattened Fiber, Single Mode, Triple Cladding, Dispersion.