Abstract

In this paper, the attenuation losses due to changes in curvature, temperature, and pressure in optical fiber cables are investigated. A single mode optical fiber cable was subjected to curvature of radii 5mm, 10mm, 20mm, 30mm, 40mm and 50mm. An optical signal from a CW laser emitting beams in the range of 800nm-880nm was transmitted through the cable. Transmission percentage and variation in peaks were noted using an Optical Spectrum Analyzer and graphs plotted corresponding to each curvature radius. The single mode optical fiber cable was placed on thermal chamber where temperature was regulated .The range of temperatures considered corresponded to the ones of Nakuru area with changes in the order of 13oC, 20oC, 25oC, 30oC, 35oC and 40oC. Optical signal from CW laser emitting wavelength radiation in the range 800-880nm was transmitted over the optical fiber. Various transmission graphs were plotted for each temperature change. Similarly, the single mode optical fiber cable was subjected to pressure using various masses in the range of 1kg, 2kg, 3kg, 4kg, 5kg and 6kg. The masses exerted stress on the cable. The optical signal from the CW laser was transmitted and its transmission quality analyzed. Various transmission graphs were plotted for each pressure exerted. Transmission percentage was found to be proportional to the size of the curvature. It was observed that as the curvature reduces there is a reduction in transmission percentage definitely attenuation loss. Transmission percentage and the nature of peaks were noted for each temperature. Transmission percentage and the nature of peaks changed according to the weight applied. This study showed that increased pressure resulted to increased attenuation which resulted to minimal or no signal transmission