DAR ES SALAAM INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

PRACTICAL REPORT:	**OPTICAL FIBER AS MEDIA OF COMMUNICATION**
CLASS:	**BENG-20 ETE 2**
MODULE:	**FIBER OPTICS COMMUNICATION AND SENSING**
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Aim

To determine power and attenuation of optical fiber.

Objectives

- To measure the amount of power being transmitted through the fiber and
- To determine the level of attenuation in an optic fiber
- To experience working with optical fiber and optical communication system.

Introduction

Power and Attenuation are two important parameters for optical fibers as they affect the transmission of signals through the fiber.

1. Power: The power of the optical signal (often measured in dBm) determines the strength of the signal and must be within a certain range to ensure proper transmission. If the power is too low, the signal may not reach its destination, and if the power is too high, it may cause damage to the optical components.

2. Attenuation: Attenuation refers to the reduction in power of an optical signal as it travels through the fiber. Attenuation is measured in decibels per kilometer (dB/km) and is a function of the fiber type, wavelength, and other factors. It is important to know the attenuation of a fiber to estimate the signal loss and ensure that the signal remains strong enough to be properly received at the other end of the fiber.

Equipment:

- Power meter
- Optical light source
- Visual Fault Locator

Procedures

The following were the steps followed during measuring power and attenuation of optical fiber.

I. The optical light source was connected to the transmitting end of the test cable.
II. The power meter was connected to the receiving end of the test cable.
III. The optical light source was turn on and wavelength was selected for the loss test)
IV. Power meter was turn on, where by “dBm” or “dB” range was selected and the wavelength was selected for the loss test
V. The power and loss were measured at the power meter.

RESULTS OBTAINED.

I. Power and attenuation using light source measurements

Power in dBm using a light source wave length 1550nm and attenuation in dB.

Results obtain

- Power -12.02dBm
- Attenuation -0.02db

II. Power measurement using VFL

Power in dBm using VFL wave length 830nm and attenuation in dB

Results obtain

- Power 3.12dBm
- Attenuation -0.50db

Table 1 Comparison of the results obtained

Parameters	VFL	Light source
Wave length	650nm	1550nm
Power	-12.02dBm	3.12dBm
Attenuation	-0.50dB	0.02dB

CONCLUSION

Knowing the power and attenuation of an optical fiber is important for designing, deploying, and maintaining fiber optic networks, as it helps to ensure that the signals are transmitted reliably and with minimal loss.