

# Lab Report 2 Template – Fiber Attenuation

## **Abstract(1pt)**

A description of the objective of the lab.

## **Introduction(2pts)**

A brief discussion on different launch conditions. What's overfilled launch? What's underfilled launch? Why does overfilled launch have more modes than underfilled launch?

There are two new parts in this lab, lens and mode scrambler. What are they used for?

## **Experiment(7pts)**

Briefly describe the experimental process. Try to explain how the mode scrambler works in theory and how do you determine if the mode scrambler works in the experiment.

Calculate the attenuation in your experiment. Show all your steps!

According to the technical specs of the fiber, the maximum attenuation for the fiber we are using is 4db/km @ 850nm and 1.5 dB/km at 1300nm. Assuming the experiment was performed perfectly (i.e. all of the attenuation occurred solely due to the fiber so that there were no fiber coupling or other experimental losses) why might our attenuation value be different? Describe the microscopic reason for this difference.

Describe some sources of experimental error (affecting the powers). What given value could cause error in calculating the attenuation? (look at the attenuation equation)

## **Conclusion(1pt)**

Conclude and summarize the findings.