**Experimental Procedure:**

The following is the procedure that our group completed by following the guidelines outlined in the document “Laser Vibrometry Lab.” We found that we did not have to deviate from the established procedure.

Before beginning the experiment, we made sure all of the equipment was working properly.  We turned on the computer opened the lens on the Laser. We aligned the Laser with the center of the speaker. We then began two experiments, all of which dealt with the computer.

In the first experiment, we opened the VibrSoft Software to measure the displacement. We followed the procedures given in the document and opened FFT, Magnitude, and Cursor. We moved the vertical line to the Frequency of 1 kHz. Then we opened Displacement and pressed F8. We opened the Setting menu and chose “Channel” on the pop up window. In order to set the vibrometer channel, we clicked the Active box, set the direction to Y+, set the Coupling to DC, clicked ICP, and set the Quantity to Displacement. We closed the window and selected “peak” on the General tab. We opened Audacity and chose “Sine” for the waveform, 1000 Hz for Frequency, 1 for Amplitude, and 30 seconds for Length.

After we had all the settings ready, we clicked “Generate Tone” and the Play button to begin. We pressed F10 to stop after 5 seconds. Then we wrote down the magnitude that we recorded. We saved the graphic and exported the file. We opened the file in Excel. We used VibrSoft and changed the graph to a Time Domain.

Next, we found the acceleration by following similar steps to finding the displacement. However, we set the Signal to Acceleration. In the vibrometer channel, we set the Quantity to Acceleration. After we had all the settings ready, we clicked “Generate Tone” and the Play button to begin. We pressed F10 to stop after 5 seconds. Then we wrote down the magnitude that we recorded. We saved the graphic and exported the file. We opened the file in Excel. We used VibrSoft and changed the graph to a Time Domain.

To get the velocity, we also followed similar steps to finding the displacement. This time we set the Signal and Quantity to Velocity. We clicked “Generate Tone” and the Play button to begin. We pressed F10 to stop after 5 seconds. Then we wrote down the magnitude that we recorded. We saved the graphic and exported the file. We opened the file in Excel. We used VibrSoft and changed the graph to a Time Domain.

In the second part of the experiment we used the same settings as we did in finding the displacement. We chose a classical music piece entitled “INSERT TITLE and musician HERE” and played it for 25 seconds. We saved the file. Next, we chose an electronic music piece entitled “Harder, Better, Faster, Stronger” by Daft Punk and played it for 25 seconds. We saved the file. We used the two files and combined them on one graph for comparison.