4.15.3: Procedure

1. First, make sure there are no loose items on shelves in the laboratory. The low frequency vibrations may shake them from their positions. Also, be advised that this demonstration may be bothersome to those in nearby laboratories or classrooms.

2. Place the loudspeaker/subwoofer on the floor with its back along a wall. Connect it to the power amplifier making sure the volume is set to minimum.

3. Set the generator to 100 Hz. Mute the output and connect it to the power amplifier. Turn the level up to a sufficiently high value that will not overdrive the power amplifier (typically several hundred millivolts).

4. Turn up the amplifier's volume to a fairly loud level. An SPL meter in the middle of the room should indicate around 90 dB-SPL, unweighted. If the loudspeaker can't reach this level without distortion, lower the level until it can (the results will simply not be as dramatic).

5. Move around the room freely, listening for volume changes. Go everywhere it is practical to do so. This includes moving vertically (getting as close to the floor and ceiling as is possible). Pinpoint a few areas of particularly high loudness. Mark these locations on the floor with a plus sign made from one of the colors of tape. Record the associated SPLs for two or three of the loudest locations.

6. In similar fashion, pinpoint a few areas of minimal loudness. Mark these locations on the floor with a minus sign made from the same color tape as used in the prior step. Record the associated SPLs.

7. Repeat the proceeding two steps using different frequencies, preferably not at octaves or other simple ratios. For example, consider using 70 Hz, 55 Hz and 40 Hz. Be aware that the maximum SPLs found may change from frequency to frequency due to the capabilities of the loudspeaker/subwoofer. What is important here is the locations of the peaks and valleys along with the difference between their SPLs.

8. Compare the locations of where the peaks and valleys occur as well as the decibel differences between them. If time allows, repeat the demonstration using a different location for the loudspeaker/subwoofer (e.g., a room corner vs. along a wall).