

## Abstract

The purpose of this project is to reduce electromagnetic radiation (ER) from a microwave oven by building a shield. This is because people tend to stand very close to microwave ovens and radiation could cause different health hazards, which may not be noticeable from day-to-day use. Sometimes, a microwave oven can be leaky or damaged, so an effective shield would be helpful to reduce the exposure even if people are not aware of the problem. The ambient radiation reading was taken first using an EMF meter. The ER level was measured in RF power density ( $\text{mW}/\text{m}^2$ ). After taking surrounding data, radiation readings were collected around the microwave oven while it was operating. The ER level was tested up to 152.4 cm from the front side of the microwave oven since it showed the highest readings. The ER level decreased as the distance increased and became quite low at 152.4 cm or beyond. A rectangular wooden frame was built to hold the shield made from an aluminum tray or mesh. After making the shield, it was placed in front of the microwave oven for testing the effectiveness. The ER levels became lower like normal ambient readings so it would be safe to stand near the microwave oven if the shield were in place while using it. Therefore, the shield worked effectively, and could protect people from invisible ER exposure every day.