

MULTILAYER SHIELDING FOR ELECTROMAGNETICALLY SENSITIVE INSTRUMENTS

A Project report submitted in partial fulfillment of the requirements for the award
of degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

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VISAKHAPATNAM DISTRICT-531113

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BONAFIED CERTIFICATE

This is to certify that the project entitled “MULTILAYER SHIELDING FOR ELECTROMAGNETICALLY SENSITIVE INSTRUMENTS” in partial fulfillment for the of degree of Bachelor of Technology in **ELECTRONICS AND COMMUNICATION ENGINEERING**.at AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, MAKAVARAPALEM,VISAKHAPATNAM is an bonafied work carried out by B.LOKESH (15811A0407), A.SAIVENKAT (15811A0404), G.KARUNAKUMARI (15811A0421), M.SANDHIYARANI (15811A0447) under the guidance and supervision during 2015-2019.

PROJECT GUIDE

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ABSTRACT

The electromagnetic spectrum describes a wide range of different electromagnetic waves. Also called EM waves, these are a special type of wave that can travel without a medium. Unlike sound waves and water waves, electromagnetic waves don't need a fluid, or a solid, or even air to help them travel from one place to another. EM waves can travel across the great vacuum of space, which is why we see light from distant stars and planets.

Electromagnetic waves are named for the fact that they have both an electric and a magnetic component. They begin when charged particles, like electrons, vibrate due to the various forces acting on them. The vibration of charged particles results in an emission of energy known as electromagnetic radiation. EM waves propagate outward from the source. Just like regular transverse waves, the oscillations of EM waves are perpendicular to the direction of the wave's travel. But, EM waves are more complicated; the electric component oscillates in one plane, while the magnetic component oscillates in a different plane. In a vacuum, EM waves always travel at the same speed - the speed of light, which is roughly 300 million meters per second. We call this value the speed of light, but really, it counts as the normal speed for all of the EM waves.

As described above, these waves can lead to various hazards. In order to reduce the intensity of these electromagnetic waves, we designed a MATLAB code using which we designed a metal sheet that has specific parameters that differ from regular metals. Also, we found out the shielding effectiveness of the metal and the satisfying values for which the metal sheet acts as a good shield that guards the electronic gadgets as well as its operators from harmful EM waves.