PRELIMINARY DEVELOPMENT OF MINI ANECHOIC CHAMBER

Thesis is presented in partial fulfillment for the award of the
Bachelor of Engineering (Honors) in Electrical
UNIVERSITI TEKNOLOGI MARA

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DECLARATION

This is hereby declared that all materials in this project report are the result of my own work and all the materials, which are not the result of my own work, have been clearly acknowledged in this project report

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ABSTRACT

Anechoic chamber is a room that is use to test telecommunication equipment especially microwave antennas. The chamber walls absorb the microwave energy thus preventing any internal reflection. It also prevents external wave from entering the chamber due to its shielding properties and this removes the interference. The advancement of world telecommunication, which has begun to concentrate of waves at frequencies of 2GHz and above, has made testing in open air impractical, in order to verify the actual performance of the equipment under the test. Thus Anechoic Chamber is required. In this project, a preliminary development of mini anechoic chamber was built. The chamber that was built is made from zinc. The purpose of using this material is to avoid the microwave signal from outside. This project focuses on the development and designs the absorber which is the most important element in anechoic chamber. The absorber consists of three major elements; the absorbing cone, which is made of polystyrene, carbon that coats the cone and special paint that joints the carbon and the cone together. This is because the absorber must be able to absorb as much microwave energy as well as not affected by environment. In other words, the environment should not affect the readings inside the chamber and also the absorber itself. The study also focuses on the pyramid shape absorber, which is theoretically easier to comprehend compared to other shape. This is because, the operation of absorber is depending on the design and the material that being use. In theory, this type of absorber is expected to operate at frequencies ranging from 3GHz to 15GHz. Since there is equipment limitation, the frequency that being used for the measurement is only 10GHz. The result is compared and verified with those of commercially available absorber.