

ABSTRACT

Anechoic Chamber is a room that is used for antenna measurements. In anechoic chamber, antenna measurement will be more accurate because there is no electromagnetic waves are reflected. In contrast, antenna measurement performed in non-anechoic chamber will produce reflected waves, which cause a distortion of the radiation pattern measurement results. Thus, the results of non-anechoic measurement are less accurate. It is necessary to improve the results of non-anechoic measurement which may include removing or compensating undesirable results of measurements.

In this final project, we proposed a study to correct the results of measurements carried out in non-anechoic chamber. This study will be conducted in two scenarios. The first scenario is taking antenna measurement data in anechoic chamber that will be used as reference data. The second scenario is taking antenna measurement data in non-anechoic chamber. The measurement data on second scenario will be processed using FFT-Based Method, transformation data from frequency domain to time domain (Inverse FFT) and transformation data from the time domain to the frequency domain (FFT). The data on second scenario contain reflected waves, which have more delay time than direct wave. We will remove or compensate the reflected wave with FFT-Based Method. Furthermore, the corrected data will be validated with reference data obtained from first scenario. This final project described a correction of the radiation pattern measurement at frequency range of 2 GHz to 3 GHz.

Specification of the AUT is a SAS-571 horn antenna which operates at frequency range of 700 MHz to 18 GHz and has directional radiation pattern. The result of this final project are error percentage between radiation pattern measurement data in non-anechoic chamber with reference data and radiation pattern data which has been reconstructed with FFT-Based Method with reference data, i.e. frequency of 2025 MHz is 3,102% and 2,372%, frequency of 2545 MHz is 4,723% and 3,866%, frequency of 2975 MHz is 7,516% and 5,987%.

Keywords: anechoic chamber, radiation pattern, reconstruction, FFT-Based Method