Analysis of Field Uniformity and Isotropicity inside a Reverberation Chamber

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ABSTRACT

In recent years, reverberation chambers（RC）enjoy growing popularity as a complement or replacement to OATS or semi-anechoic chambers. A reverberation chamber has become acceptable world-wide not only because of its lower cost but most importantly is that it can generate a statistically equivalent isotropic, uniform, randomly polarized electromagnetic test environment for EMS testing. RC tests are expected to yield more accurate and rigorous measurement results than the anechoic chamber test, especially with regard to electronic devices with complex radiation patterns. In this thesis, we investigate and discuss the effect on field uniformity and isotropicity inside the testing volume of a reverberation chamber by increasing the number of sampling points of the rotating paddle, that is, to reduce the sampling angle. The different cases of two paddles rotating simultaneously with the same angle and different ratio of angles were undertaken. A comparison between electromagnetic numerical analysis and measurements were being made and can be utilized to change the location of the excited antenna which produced the results of not meeting the limitation of field uniformity. The corrections yield the expected improvement of field uniformity.

Keywords : Reverberation Chamber ; Field Strength Uniformity ; Isotropicity ; Random Polarization ; Rotating Paddle

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