

Effect of Radiation Source Location on Field Uniformity and Isotropy Inside Reverberation Chamber

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ABSTRACT

With the rapid advent of modern science, our living environment has been crammed with electromagnetic radiation interferences. This in turn causes a severe degradation of the instrument and equipment. Therefore, countries all over the world have passed strict requirement for EMC specification for all general electronic products. This work studied the utilization of Reverberation Chamber as a newly developed EMC test site. A Reverberation Chamber is basically a metal shielded room with metal stirrers whose function is to control the field distribution inside a working volume inside the chamber by changing the boundary conditions of the electromagnetic field inside the chamber. Comparing with the anechoic chamber, the reverberation chamber does not require expensive absorber material and medium high power amplifier for operation. More importantly is the chamber ability to generate a statistical uniform and isotropic field which can meet the stringent requirement when performing the EMS test. Because of the low cost and enhanced efficiency, the reverberation chamber has become the preferred test facility. In this thesis, we investigate and discuss the effect on field uniformity and isotropy inside the work volume of a reverberation chamber by changing the location and direction of transmitting antenna. A comparison between electromagnetic numerical analysis and measurements were being made.

Keywords : Reverberation chamber ; radiated immunity testing ; excited antenna ; field uniformity

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