

Rationale for Reverberation Chamber Testing

Vignesh Rajamani*⁽¹⁾, Charles F. Bunting⁽¹⁾, and Gustav J. Freyer⁽²⁾

(1) Oklahoma State University, Stillwater, OK, USA. <http://ece.okstate.edu>

(2) GJF Consulting, Monument, CO, USA

Several test facility options for conducting electromagnetic compatibility testing including immunity, emissions, and shielding effectiveness are available. Generally each facility provides a different test electromagnetic environment. A reverberation chamber is a cavity enclosed by conducting surfaces with a method of exciting modal structure changes within the cavity. The test electromagnetic environment, a superposition of plane waves with random phase, results from repeated reflections from the conducting surfaces. The statistical isotropy, random polarization, and uniform electromagnetic environment of a reverberation chamber permit a robust, all aspect angle test without the requirement for rotation or translation of the equipment-under-test. The reverberation chamber electromagnetic environment provides the correct emulation of the equipment-under-test performance when it operates in a cavity. Many standards permit the use of reverberation chambers as an alternate method for certification. As with every electromagnetic compatibility test technique, reverberation chambers are not a panacea and have disadvantages as well as advantages.