



Atlanta IEEE IM/EMC Meeting
Wednesday, December 10, 2024 12:00 PM
GTRI CCRF, Bldg 11, Room 1026

Topic: Medical Device Electromagnetic Environmental Effects Testing at GTRI

Speaker: Ralph M. Herkert, PE; Principal Research Engineer and Center Director, Medical Device Test Center, Georgia Tech Research Institute

Synopsis

Since the initial development of implantable and externally worn medical devices began, various commonly encountered electromagnetic (EM) environments have been found to have the capability to affect their performance. Examples of such devices are implantable electronic cardiac devices (IECDs), automatic external defibrillators (AEDs), ventricular assist devices (VADs), neurostimulators, drug infusion pumps, and glucose and cardiac monitoring sensors and systems. Adverse EM environmental effects (E3) include the undesired responses of these medical devices in the environments in which they must function. All users of electrical and electronic devices have experienced the impact of E3 on device performance to the extent that it is generally recognized that EM compatibility must be an important consideration during both the design and use of the devices. The growing use of security and logistical systems (SLS) in public areas requires the same attention to testing for E3. With the proliferation of the use of medical devices, there has been a corresponding rise in the occurrence of exposures of patients with these devices to the EM fields produced by SLSs. It has become necessary to determine whether SLS-generated EM fields can cause detrimental E3 in these medical devices. In this presentation, Ralph Herkert will give a brief history of the E3 testing of medical devices and how, in the GTRI Medical Device Test Center, test results help SLS and medical device manufacturers, regulatory agencies, and ultimately doctors and patients identify, manage, and/or avoid possible compatibility issues before they occur.

Biography

Ralph M. Herkert is a Principal Research Engineer and the Center Director of the Medical Device Test Center in the Electro-Optical Systems Laboratory at the Georgia Tech Research Institute (GTRI). Under Mr. Herkert's directorship since 2002, the GTRI Medical Device Test Center has become the international focal point for the electromagnetic (EM) environmental effects (E3) testing of medical devices to Security and Logistical System (SLS) emitted EM fields. Mr. Herkert's research includes the development of test protocols and procedures for the testing and evaluation of implantable and wearable medical devices to various SLS EM environments including electronic article surveillance (EAS) systems, EAS tag deactivators, walk-through and handheld metal detectors, and radio frequency identification (RFID) systems. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE) and has been a full-time research professional at GTRI for over 36 years.