John F. Lichtig, NCE

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OBJECTIVE

Provide exceptional EMC\EMI consulting services with attention to quality and technical completeness.

EDUCATION

CORNELL UNIVERSITY, Ithaca, NY, Master of Engineering in Electrical Engineering,

NORTHEASTERN UNIVERSITY, Boston, MA, Bachelors of Science in Electrical Engineering.

CAPABILITIES

- **Design and construction of EMI/EMC Testing facilities**
- **National and International Standards Expertise**
- **EMI Shielding and Mitigation**
- **Product EMI Technical Analysis (Test Plans, Witnessing, Risk Assessment)**
- **Recognized EMI Expert Witness**
- **Consultation and Training**

PROFESSIONAL EXPERIENCE

Lichtig EMC Consulting, LLC 1999 - Present
Bridgewater, New Jersey

Principal
Deliver electromagnetic interference\compatibility (EMI\EMC) consulting services with strong concentration in telecommunications and aerospace industries. Consulting services include: EMC test plan development, EMC test witnessing for domestic and international standards (i.e., GR-1089, ANSI Accredited Standards Committee C63, and MIL-STD-461), product test report review and deployment risk assessment, EMI site surveys, EMI shielding and mitigation plans, EMC standards comparison, and EMC training.

- Supported NASA EMC design and test campaigns include: LADEE (Lunar Atmosphere and Dust Environment Explorer), MAVEN (Mars Atmosphere and Volatile EvolutioN Mission), GOES-R (Geostationary Operational Environmental Satellite R-Series Program), DASS (Distress Alerting Satellite System), JPSS (Joint Polar Satellite System), EcoSAR (Eco Synthetic Aperture Radar), MMS (Magnetospheric Multiscale Mission), LCRD (Laser Communications Relay Demonstration), TIRS-2 (Thermal Infrared Sensor), and JWST (James Webb Space Telescope). In particular, supported the radiated and conducted tests of the JWST Integrated Science Instrument Module (ISIM) (4Q2015).
- Developed a Lessons Learned document for NASA, based on EMC tests performed on the NASA Glory mission spacecraft. NASA's Jet Propulsion Laboratory utilized the information in preparation of the EMC test program of the NuSTAR (Nuclear Spectroscopic Telescope Array) mission spacecraft.
- Oversaw successful EMI test program, on behalf of NASA, performed by Orbital Sciences Corporation on the NASA Glory mission spacecraft. Implemented electric field-limiting safeties to the EMI test setup to reduce/limit possible overstress to the spacecraft. Received

a NASA Flight Projects Directorate Peer Award for significant contributions to the Glory EMC test program.(3Q2010).

- Oversaw successful EMI test program, on behalf of NASA, performed by Raytheon on the NASA Glory mission aerosol polarimetry sensor (APS) instrument. Responded to short notice assignment and was able to quickly and seamlessly integrate with Raytheon subject matter experts and NASA project team. Able to avert potentially adverse impacts to the instrument, therefore protecting the instrument from overstress; also, ensured no under-testing during the EMI test program. (4Q2008)
- Mentored EMC Testing Facilities Manager of a major international EMC testing company to quickly assume responsibilities in new position.
- Trained Equipment Vendor staff on EMI testing to support launch of new China test facility to test products to criteria of GR-1089 destined for US market.
- Performed root cause analysis on products throughout lifecycle to reduce time to market, mitigate current/future problems within telecommunications, aerospace, and automotive markets.
- Mitigated source of radio interference impacting local government public safety organizations' radio communications. Coordinated analysis with US federal government agency to corroborate public broadcasting source.
- Expert witness for various EMI projects including EMI testing of large telecommunications product to prepare for US market and installation of new telecom system to address public concerns of radio signals.

Telcordia Technologies, Inc. (formerly Bellcore, now Ericsson) 1984 - 1999
Morristown, New Jersey

Sr. Consultant - Electromagnetic Interference Engineer
Responsible for EMI systems designs, particularly EMI suppression, and establishment of EMI immunity and emission criteria for US telecommunication facilities. Provide technical standards interpretation and consulting to the Regional Bell Operating Companies (RBOCs), general industry and Telcordia, on EMI matters.

Accomplishments
- Performed EMI aspects of information technology equipment (ITE) Technical Analyses (developed test plans, directed testing, issued test results) on major telecommunication switching and transmission systems.
- Designed and engineered EMI laboratories, including the construction of an open area test site (OATS) for emission tests, state-of-the-art anechoic chamber facilities for immunity and pre-scan emission tests, and automation of the laboratories to gain efficiencies and comply with ISO 9000 requirements.
- Solely responsible for developing/maintaining EMI generic requirements used by the RBOCs for their respective telecommunications networks.
- Developed measurement procedure for national survey of conducted RF signals on balanced telecommunication cables.

- As chair of an IEC/CISPR/G Ad Hoc group, performed an expedited survey of conducted emissions from widely-deployed ITE. The findings focused international attention on widely-deployed telecommunication equipment and high-bit-rate services that violate proposed CISPR standards but did not presently cause interference to radio services.

- Developed an impedance stabilization network (ISN) to measure conducted emissions (common-mode and differential-mode simultaneously) on balanced telecommunication pairs using unbalanced measurement equipment in the frequency range 10 kHz to 30 MHz.
- Investigated electronic eavesdropping of digital services utilizing remotely located antennas to determine the security of ISDN service.

Arecibo Observatory, National Astronomy and Ionosphere Center 1982-1983
Cornell University, Arecibo, PR

Conducted study of the Intermediate Power Amplifier of a 2.5 MW 430 MHz transmitter to increase bandwidth. Designed circuitry to control two HP synthesizers via a Harris/6B computer and wrote test software for a new autocorrelator. Wrote a disassembler for a Nova computer. Investigated A/D sampling techniques for a 40 MHz autocorrelator as part of master's project.

NATIONAL AND INTERNATIONAL STANDARDS

Representative in ANSI Accredited Standards Committee C63. USA delegate (chief of the US delegation in 1999) to IEC/CISPR/G.

◊ IEC/CISPR/I/WG3 former chairman: ITE emissions and immunity

◊ ANSI ASC C63: S/C3 former chairman: International Standardization

◊ As a USA Technical Expert to ITU-T SG-V, provided technical comments on the ITU-T standard for measuring RF at ISDN interfaces and other ITE signal ports.

◊ ANSI ASC C63: S/C1 chair of ITE signal ports measurement with Impedance Stabilization Networks (ISNs) project, for inclusion in ANSI document C63.4. Addressed RBOCs' interests and maintained GR-1089 harmonization with national standards.

Chaired Ad Hoc groups in IEC/CISPR/I Working Groups to develop ITE signal ports emission criteria for CISPR Publication 22. Developed a new approach to perform non-invasive measurements of conducted emissions on cables. This work is now being further developed in national and international standards groups.

PUBLICATIONS

EMI Section of GR-1089-CORE, "Electromagnetic Compatibility and Electrical Safety Generic Criteria for Network Telecommunications Equipment."

TR-NWT-022559, "Field Survey of Radio Frequency Noise (10 kHz to 30 MHz) at the Bell Operating Company Network Interface" - Study of EMI impact on proposed Asymmetrical Digital Subscriber Line (ADSL) services.

TM-NWT-019887, "Equipment and Procedure for Measuring Radio Frequency Interference on Telecommunications Lines."

IL-90/12-055, "Use of Portable Communications Radios Near Telecommunications Equipment."

SR-3609, "European Union EMC Criteria: Impact on Telecommunication Products" - Addresses impact of developments in international standards on RBOCs.

SR-3597, “Physical and Electrical Protection Criteria for Information Technology Equipment” - Compares Bellcore’s internal criteria with industry standards and propose cost effective EMC strategy for broadband deployment.

Co-authored paper published in IEEE Transactions on EMC on “Effects of Radio-Frequency Exposure (100-kHz to 500-kHz) on Very-High-Speed Digital Data Transmission Systems Using a Copper Loop.”

Provided extensive consultation on FCC document FOB Bulletin No. 10, “Telephone Interference,” which provides a basic explanation to the general public of the mechanism for which RF energy enters the telephone and causes interference.

PROFESSIONAL MEMBERSHIPS

IEEE, International National Association for Radio, Telecommunications, Electromagnetics (iNARTE) Certified EMC Engineer.

SKILLS AND PROFICIENCIES

Fully bilingual (Spanish/English), strong communications and presentation skills, practical knowledge of computer networks.

PERSONAL INTERESTS

Martinsville Volunteer Fire Department (Firefighter/ex-Captain), past Fire Commissioner - Board of Fire Commissioners, Fire District No. 1, Bridgewater Township, past-Chairman – Joint Board of Fire Commissioners, Bridgewater Township, Amateur Radio, Sail Planes, motorcycling, photography, automobile repair, and scuba diving.