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**TOP 12
OF 2012**

TOP 12 OF 2012: ARTICLES

INTRODUCTION

Newly published articles competed for attention with the bookshelf-worthy reference papers that never go out of date in this year's lineup of the most-read EMC articles on interferencetechnology.com. Here they are, in order of most-often read:

ARTICLES

1

The HF Current Probe Theory and Application

By Kenneth Wyatt (2012)

This article describes one of the most valuable tools in the EMC engineer's "bag of tricks"—the high-frequency current probe. Current probes are invaluable for measuring high-frequency common-mode (CM) currents flowing on wires or cables. Experience has proven that poorly terminated (bonded or filtered) cables are the number one cause for radiated emissions failures at a test facility. By measuring the CM currents on these cables, it is possible to troubleshoot and apply solutions to a product in the development lab.

2

A Change in International EMC Legislation: Do Industrial Premises Become Outlawed?

By Mart Coenen (2010)

During the last few years, many new EMC standards have been adopted; however, more and more standards are outside the scope of formal EMC legislation. The recent change in scope of IEC, ACEC, CISPR and the new European EMC Directive has created new challenges for industry, as their focus will be aimed at the protection of general broadcasting and communication services and at serving the main public interest.

3

Electromagnetic Interference Sources and Their Most Significant Effects

By Anthony A. DiBiase (2011)

As the density of the electromagnetic environment continues to increase, the concern about its effects from sources producing EMI also increases. Advances in technology and the number of products produced are having a significant effect on the efforts aimed at maintaining the required operation and interoperability of products and systems used in our society. These events had added challenges for those who are responsible for keeping pace with the effort needed to maintain the required level of electromagnetic compatibility (EMC) in these products and systems.

4

Simple Method for Predicting a Cable Shielding Factor, Based on Transfer Impedance

By Michel Mardiguian (2012)

Expressing the effectiveness of a cable shield has been an ongoing concern in the EMC community and the electronic industry. This concern comes from a legitimate need to predict, measure, compare and improve the efficiency of a wide variety of shielded cables, such as coaxial cables or shielded pairs and bundles. Several methods — Shielding Effectiveness (SE,dB), Surface Transfer (Zt, Ohm/m) or Screen Reduction Factor (Kr, dB) — are in competition when it comes to decide what would be a convenient trustworthy characteristic for a cable shield. This article discusses formulas that directly express the cable shielding factor Kr, given its Zt and frequency.

5

CISPR 32: New International Standard on Electromagnetic Emissions from Multimedia Equipment

By Daniel Hoolihan (2012)

In late 2011, the International Standards Commission's (IEC's) Special Committee on Electromagnetic Interference (CISPR) passed a Final Draft International Standard (FDIS), titled "CISPR 32: Electromagnetic Compatibility of Multimedia Equipment," that had been under development for a number of years. CISPR 32 applies to multimedia equipment (MME) with a rated alternating current or direct current supply voltage not exceeding 600 V, and aims to establish requirements that provide an adequate level of protection for the radio spectrum. The standard also aims to specify procedures that ensure the reproducibility of measurements and the repeatability of results from one testing laboratory to another.

6

Fundamentals of EMC Design: Our Products Are Trying to Help Us

By Keith Armstrong (2012)

Understanding the laws of physics and employing good EMC design techniques from the start of a new project can ensure excellent signal integrity and power integrity, and reduce time-to-market and the overall cost of manufacturing by eliminating the number of design iterations.

7

Antenna-to-Antenna Coupling On An Aircraft: Mitigation Techniques

By David A. Weston (2012)

The number of RF systems available for use in mission-specific aircraft has grown dramatically over the last few decades, with numerous systems operating across very wide bandwidths. Compatibility issues have become almost a certainty on all but the simplest of aircraft installations, and numerous mitigation techniques have been developed to address these issues.

8

Designing Electronic Systems for EMC: Grounding for the Control of EMI

By William G. Duff (2011)

Historically, grounding requirements arose from the need to provide protection from electrical faults, lightning and industrially-generated static electricity. Because most power-fault and lightning control relies on a low-impedance path to earth, all major components of an electrical power generation and transmission system were earth-grounded to provide the required low-impedance path without regard to problems, such as EMI, that may be created by this approach. When electronic equipment was introduced, grounding problems became more evident and the creation of new, more effective and complex grounding systems was required.

9

The Urgent Need to Integrate EMC and Product Safety into Engineering Curriculum of Technical Universities

By Anthony A. DiBiase (2012)

As EMC engineering continues to evolve from an engineering art to an engineering science, the need for the understanding of the theoretical and practical application of EMC principles becomes more essential. At the present time, EMC and product safety design is not a standard requirement in the engineering programs of universities, and the lack of adequate EMC and product safety design and development education at the university level is contributing to an erosion of the U.S. technical and export capabilities.

10

EMC Antenna Parameters and Their Relationships

By John D. M. Osburn (1997)

The antenna factor (AF), the fundamental parameter of the most common of technical tools, the EMC antenna, is used over and over without thought to its actual meaning. This article provides a review of the basics behind this parameter, a related parameter and the transmit antenna factor (TAF), a basis for the use of the numerical values; and a more fundamental understanding of radiated EMC measurements.

11

Why Are There So Many EMC Standards?

By Steve Hayes, Jack McFadden, Steve O'Steen, Kenneth Wyatt and David Zimmerman (2011)

October 2011 saw the end of the transitional period from previous versions of EN55022 to the latest version, which requires testing above 1 GHz for the first time. However, while EN55022 is now in effect, generic standards will not be made mandatory until January 2014. Is the transitional period between standards, in which a manufacturer can choose to use either standard to demonstrate compliance to the EMC Directive, too long?

12

Christmas Music in the Chamber: How a Sprinkler System Brought Radio Noise to a Chamber and the Techniques Used to Find and Remove It

By John Suriano (2012)

Anechoic and semi-anechoic chambers are supposed to prevent radio signals and other radiated noise in the environment from being detected inside the chamber. A chamber that allows ambient radiation in is not useful for emissions testing. This article covers how a sprinkler system brought Christmas radio noise to a chamber and the techniques that were used to find and remove the noise.

TOP 12 OF 2012: HEADLINES

- 1 — **Scientist Builds Tesla Gun That Fires Sparks** (May 2012)
- 2 — **Russia's Electromagnetic Gun Attacks Central Nervous System** (April 2012)
- 3 — **Army Investigates Development of EMP Grenades for Disabling IEDs**
(November 2012)
- 4 — **New Study Determines No Correlation Between Cancer and Cell Phone Use** (September 2012)
- 5 — **Researchers Create Wi-Fi-Blocking Wallpaper** (May 2012)
- 6 — **Solar Storm Headed Toward Earth May Disrupt Power** (March 2012)
- 7 — **Nokia Patents Vibrating Tattoos** (March 2012)
- 8 — **Terahertz Transmitter Generates Highest Frequency Attained by Microelectronic Device**(January 2012)
- 9 — **Non-Lethal Weapon Projects Wave Beams** (March 2012)
- 10 — **Study Links Electromagnetic Exposure to Childhood Obesity** (July 2012)
- 11 — **Self-Guided Bullet Hits Target a Mile Away** (February 2012)
- 12 — **Team Finds New Cell Phone Possibilities in Untapped Terahertz Range** (April 2012)

ABOUT US

Published by ITEM Media, Interference Technology is dedicated to Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) with a unique focus on solving EMI problems in today's electronic equipment.

At Interference Technology, you will find in-depth information on the latest product development, standards, and news for the following technologies: amplifiers, antennas, cables and connectors, conductive coating, ferrites, filters, lightning and surge, shielding, software, test instrumentation, and testing.

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