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May 2004 Issue

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## IEEE/EMC/SCV Society Meeting Tuesday May 11, 2004

Time: 5:30 p.m. Social; 7:00 p.m. Presentation

Place: Applied Materials Bowers Cafeteria  
3090 Bowers Ave., Santa Clara, CA 95051-0804

Subject: "EMI Considerations in Selection of Ethernet Magnetics"

Speaker: Neven Pischl

Abstract:

Ethernet devices use magnetics between the transceiver and Ethernet cable. Magnetics include center-tapped transformers, autotransformers, and common-mode chokes. Newer Ethernet devices use magnetics to provide 48V power. Integrated connectors, with built-in magnetics, are gaining popularity. The characteristics of these components are critical for EMI suppression.

It is completely impossible to judge the EMI characteristics from information currently available in the magnetics data sheets. Magnetics EMI properties can be measured with a network analyzer on a 50  $\Omega$  test jig, but it should be kept in mind that the system-level performance may differ. Magnetics cannot be completely characterized without knowing the system characteristics. Also, test results depend on the test methods that are not yet standardized.

The presentation explains the main factors that define EMI properties of Ethernet magnetics, in commonly used configurations. A bench-level test method for magnetics characterization is described, and a demonstration will be given. The focus will be on Ethernet magnetics, but the concepts apply generally to WAN and LAN magnetics.

About the presenter:

Neven Pischl has 19 years of EMC and related experience in R&D, Aerospace, Consumer Electronics, and ITE, covering many areas of EMC compliance and high-speed design. He holds an MSEE degree, specialized in microwave measurements, NARTE EMC-Engineer certification, and two US patents related to differential signaling. Currently his main focus is design for high immunity, low noise and low emission ITE containing high-speed digital and sensitive analog circuitry. He is a Principal Engineer at Broadcom Communications in San Jose, CA.

Contact: [npischl@broadcom.com](mailto:npischl@broadcom.com).

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$$\nabla \times \vec{H} = \frac{\partial \vec{D}}{\partial t} + \vec{J}$$

$$\nabla \cdot \vec{D} = \rho$$

$$\nabla \cdot \vec{B} = 0$$

## IEEE/EMC/SCV CHAPTER Meeting Tuesday May 11, 2004

LOCATION: Applied Materials Bowers Café  
3090 Bowers Ave., Santa Clara, CA 95051-0804

5:30 PM Social

7:00 PM Presentation and Discussions



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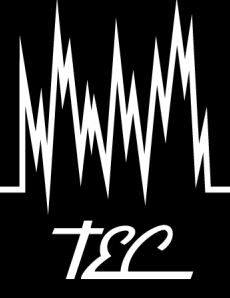
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Space is available to any paid sponsor of the EMC SCV Chapter to present technical articles. For details or to submit articles, please contact: Dale James Gutierrez, P.O. Box 16296, San Francisco, CA 94116-0296; E-mail: [Dalegut@ieee.org](mailto:Dalegut@ieee.org)

**2004 IEEE International Symposium on Electromagnetic Compatibility**

The 2004 IEEE EMC Symposium will be held at the Santa Clara Convention Center, Santa Clara, California, August 9-13. Register now at <http://www.emc2004.org>. Early Registration is through July 9, 2004.

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