Chapter Chatter

Todd Robinson, Associate Editor

Don't Be Silly . . . It Can't Be That!

We'll open Chatter this issue with a little story from Patrick André, of André Consulting, Inc. He found out what is was like to face a group of engineers who thought the Earth was flat or at least that power supplies couldn't possibly radiate at 230 MHz. As usual, the story is told from the teller's perspective . .

"One day I was called in by a Washington State medical instrumentation company to assist in finding the source of emissions. When I arrived I was informed that if in the next week or so, I could find the problem they were having during radiated emissions, it would save them a great deal of money. The radiated emissions were out of specification by at least 10 dB at 230 MHz, and about 5 dB at 180 MHz. They were already into a production hold, a schedule slide, and looking at circuit board turns and software changes.

I was led into a room where I met about 10 people who were involved with the problem. They included engineers flown in from the east coast, various consultants and contractors, staff engineers, and technicians. I was presented with enormous stacks of test data, schematics, drawings, and the like. The whole thing was overwhelming. After listening to a barrage of confusing and conflicting data, I asked them if we could just go down to their EMI laboratory to see what might be going on.

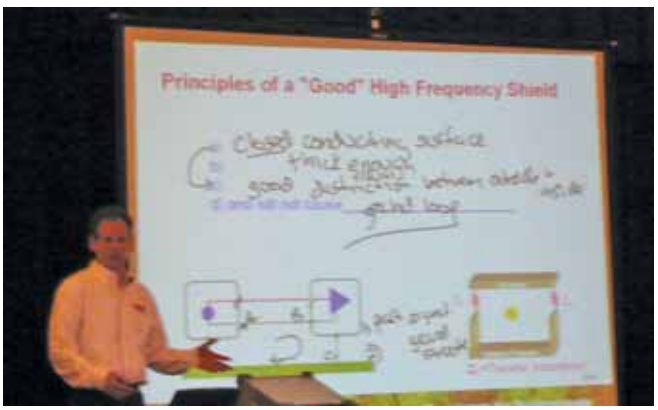
I found the unit to be a roll around rack, six feet high, four feet wide, four feet deep, made up of stainless steel racks, each with filtered connectors, properly terminated coax, and high quality EMI gaskets on the lid. The lid was held down with thousands of screws, maybe more. After the lid was finally removed, the inside contained a well-designed circuit board, carefully routed cabling, and the addition of several pounds of clip on ferrites. The thing was bullet proof.

It was about this time I found out one key piece of information. The emissions only occurred when the "incubation heater" was energized. I asked where the power to the incubation circuit came from; I was shown the place on the circuit board where it was routed, and how it came from this connector on this back corner. So I asked, "The power for the incubation circuit comes from off the board?" "Oh yes", I was told, "It comes from this power supply mounted up here." And there sat a power supply on the top of the rack of equipment.

I asked if we could change that power supply for a linear power supply. The room fell silent. I got stares from the small crowd watching me as if I had two noses. I heard someone question my general value to the project for thinking a power supply could generate 230 MHz. I said, "Humor me. Get a linear power supply and let us eliminate it as a possibility." The technician brought back a nice HP power supply, placed it in circuit and we turned on the unit. From 150 MHz and higher, emissions dropped 50 dB – to the noise floor of the spectrum analyzer. I spent the next hour slowly removing the several pounds of added ferrite before calling it a day."

Central New England

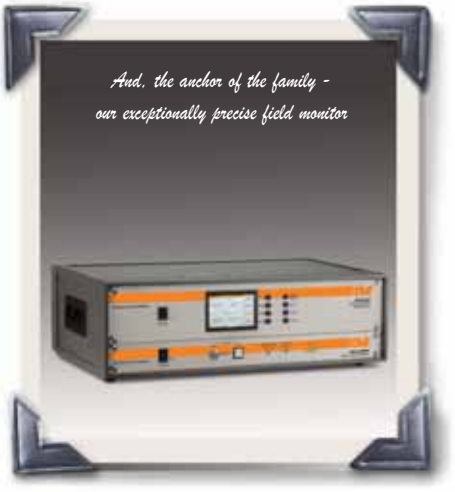
The Central New England (CNE) Chapter held a meeting on Thursday, April 24. This was a return of the popular Tech Tour held at the Westford Hotel. Local Chapter member Lee Hill of SILENT Solutions was one of three speakers; the others being Vince Rodriguez of ETS-Lindgren who provided a review on the basics of antennas for EMC and automotive engineers, and Vic Hudson of Rohde & Schwarz who discussed optimizing MIL-STD and DO-160 testing using test receivers and FFT detectors. Mr. Hill presented a number of demonstrations of electromagnetic shielding applications for electronic product design. Each demonstration was accompanied by a discussion of the underlying math and physics, as well as some commonly-held engineering assumptions. Chapter Chair Boris Shusterman of EMC Corp. was pleased to welcome the



Lee Hill of SILENT started the half-day Tech Tour for the Central New England Chapter with a lively presentation that included many demonstrations.

Central New England Chapter members came out in force for the April 24 Tech Tour event held at the Westford Hotel.

The Bigger Picture!



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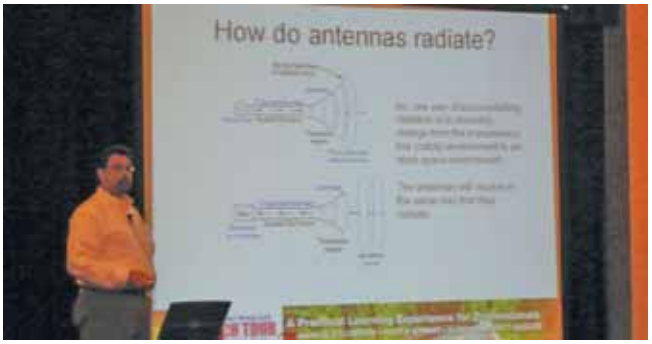


Vince Rodriguez of ETS-Lindgren gave a primer on antennas for the Central New England Chapter members and guests.

A highlight of the Central New England Tech Tour was the reception with the speakers following the presentations. Good food, good drink, and great conversation!

Central New England Chapter member Randal Vaughn of locally based SILENT enjoyed the Chapter's April meeting.

Vic Hudson (left) of Rohde & Schwarz, one of the Tech Tour sponsors and presenters, shared some Q&A time with Central New England Chapter member, Rick Rudman from Bose.

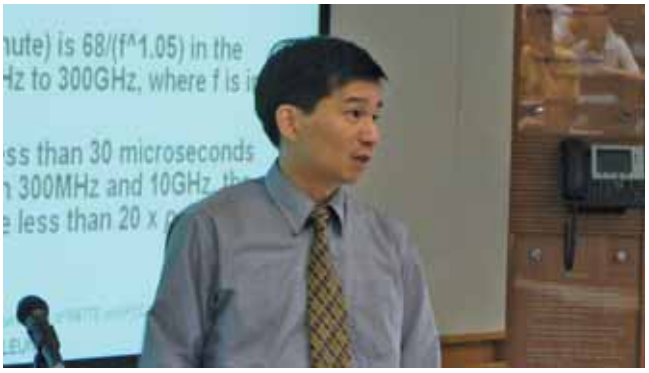
Tech Tour team to Westford and acknowledged the support of locally based sponsors Conformity magazine and SILENT as well as ETS-Lindgren and Rohde & Schwarz. On Wednesday, May 21, the Chapter held a meeting with speaker Colin E. Brench of the Southwest Research Institute in San Antonio, Texas. The topic covered was: "Unintended Antenna Behavior of Devices and Systems." Mr. Brench's presentation covered product emission control, considering the numerous antenna effects that are present. A device may be shielded or suppressed at the source, but any radiated emissions that do occur are from an 'antenna' of some sort. A great deal of frustration can result from ignoring this simple fact, as fixes that seem reasonable and that should work, simply don't. With the high data rates in use today, even small structures can be effective antennas. The impact of how a device is mounted into a chassis or how a chassis is mounted into a rack can be unexpected. In this presentation, very small device considerations were discussed up though full sized racks of systems. The presentation also included product measurements that show these effects directly, computer simulations that were used to first identify and then begin to bind the problem for designers. Animations of field propagation were used to help visualize how the RF energy travels and radiates. Important details, such as the addition of a ferrite core filter on a cable and cable shield bonding, were also shown. To show that these effects are pervasive, a concluding section described some very common antennas and how they do not always operate as intended. Fourteen IEEE members and six guests attended the meeting.

Hong Kong

On June 21, the Hong Kong EMC Chapter successfully hosted an EMC technical seminar on "Safety of Human Exposure to RF Radiations." The outstanding half-day event drew 61 attendees. The seminar was

More than 60 participants enjoyed Hong Kong's half-day EMC seminar.

Dr. Patrick Wong provided an "Introduction of RF Exposure" at the Hong Kong Chapter's EMC seminar.



Mr. Derek Leung presented a technical presentation on human exposure requirements for R&TTE, FCC and ICNIRP at the Hong Kong Chapter seminar.

The Hong Kong Chapter seminar also featured a technical presentation on "Human Exposure Requirement for Household Appliances" by Mr. Wilson Loke.

divided into three separate technical talks that included "Introduction of RF Exposure" by Dr. Patrick Wong; "Human Exposure Requirement for R&TTE, FCC and ICNIRP," by Derek Leung; and "Human Exposure Requirement for Household Appliance," by Wilson Loke.

Melbourne

The Melbourne Chapter hosted a "Tech Tour" for its May 20 meeting at the Hilton Rialto Place hotel. The half-day event began with a welcome from Bruce Crain of Northrop Grumman. The first speaker was ETS-Lindgren's Vince Rodriguez who provided an introduction to antennas. He reviewed the basic antenna parameter definitions and provided an in-depth look at the principal antennas used in EMC testing and antenna measurement testing. Dr. Rodriguez showed how to select the best antenna for the different standards. Next, Lee Hill of SILENT presented a number of demonstrations of electromagnetic shielding applications for electronic product design. Each demonstration was accompanied by a discussion of the underlying math and physics, as well as some commonly-held engineering assumptions. The demonstrations included cavity resonances in simple product enclosures, imperfect cable shield terminations, pitfalls of common retrofit techniques, and the characterization of the intrinsic shielding performance of materials. The third and final speaker of the day was Vic Hudson of Rohde & Schwarz. Vic discussed optimizing MIL-STD and DO-160 testing using test receivers and FFT detectors. The topics presented included

Pictured with the submersible are IEEE student members (from left) Nicole Gagne, Sonja Golembiewski, and UWM Student Chair Josh Zagorski, along with Jim Blaha, Milwaukee EMC Chapter Chair.

Jim Blaha of Ingenium Testing and the 2008 EMC Seminar Chairperson offers greetings and welcome to the Milwaukee Chapter's 2008 EMC Seminar.

Ladies and Gentlemen – Start Your Engines for EMC 2008!

The 2008 EMC Seminar Committee consisted of (from left) Mark Steffka, MC (Master of Cheese), Jim Blaha, Milwaukee EMC Chapter Chair, and Teresa White, Organizer Extraordinaire.

Also a part of the EMC Seminar Committee was Don Koller of Rockwell Automation, shown with Teresa White of LS Research handing out IEEE stadium blankets to all attendees.

Tom Eichelberger (left) of Amplifier Research and Jerry Itzenheiser of GE Healthcare Systems shining some light on the subject of EMC.

Leo Makowski of HV Technologies lends a hand in prepping the IEEE Stadium Blankets.

Clark Atwater (right) of Fair-Rite Products enjoying the company of a record-breaking crowd.

Bob Ydens of EMI Solutions with his "Sample Kit of Solutions."

Joseph Majeski of LeCroy points out the "Ambient Noise" from all of the attendees.

improving accuracy, measurement time and documentation in performing MIL-STD 461 radiated and conducted emissions testing. He reviewed true comparisons of test times using spectrum analyzers, test receivers and FFT analyzers. The presentation included a step by step description of test tools to automate and document system checks and normalized site attenuation and provided real life examples and displays of actual setups encountered while doing MIL-STD and DO-160 testing. Following the interesting presentations, Chapter members and guests enjoyed refreshments and a chance to network with the speakers and their colleagues. The Melbourne Chapter thanks the Tech Tour hosts including ETS-Lindgren, SILENT, Rohde & Schwarz and Conformity magazine for an educational and enjoyable afternoon!

Milwaukee

The Milwaukee Chapter started the winter season by hosting an IEEE Student Chapter meeting at the University of Wisconsin-Milwaukee (UWM). The presentation by Jim Blaha, Ingenium Testing, was titled: "Overview of EMC – A Branch of Electrical Engineering that is Critical to Product Development." The evening's activities included a discussion on the UWM Electrical Engineering Department's contribution to the development of a one person submersible for Fresh Water Research. UW-Milwaukee is home to the Great Lakes Water Institute. Located on and off campus, the Water Institute is the largest academic research center on the Great Lakes and a national leader for understanding fresh-

A more than capacity crowd at Milwaukee's EMC 2008 seminar – the seating capacity of 160 was exceeded!

Nissan welcomes the Philly EMC Society Chapter.

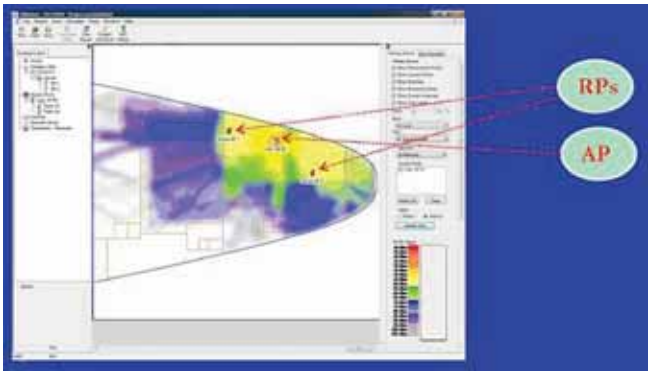
water systems and informing policy. Interesting Fact: The Great Lakes contain roughly 22% of the world's fresh surface water or 6.0×10^{15} U.S. gallons. This is enough water to cover the 48 contiguous U.S. states to a uniform depth of 9.5 feet. The Milwaukee Chapter also hosted its 8th Annual EMC Seminar. There was a record attendance of 210 participants! The guest lecturer was Mr. Mark Steffka of General Motors Corporation. Mark's presentation was titled: "Back to the Basics of EMC and How the Basics Applied to Today's Leading Edge Technologies." The seminar received a 96% return on its post seminar survey. One attendee ranked Mark a 6 out of a possible 5!!! Congratulations Mark. Of the returned surveys, 97% indicated they would return to another EMC Seminar next year in Spring 2009. Following the practice of the 4 P's, the 2009 EMC Seminar Committee has been formed. Enjoy the photos of this annual event.

Philadelphia

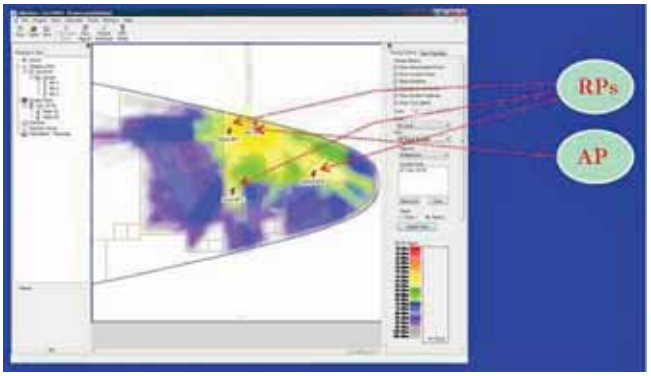
Mike Violette reports with literary deftness on the recent activities of the rejuvenated Philadelphia, PA Chapter. "It really was a dark and stormy night when we gathered at the LCR Electronics facility on June 10 in Norristown, PA, which, according to the town website is both the "Heart of Montgomery County" and the "Seat of Montgomery County"—but no matter. The event of the evening was the reconstituted and revived Philadelphia Chapter of the EMC Society. Mr. Nissan Isakov provided the generous hosting, which included huge sub sandwiches and tasty salads. The meeting drew about 30 local EMC folks to the LCR facility. As the guests made the pre-meeting tour of the manufacturing facility, the temperature bumped up against 100 degrees. It wasn't to last: a strong front rocked and raked the place with thunder and rain during the presentations. By the meeting's conclusion around 9 p.m., it had settled into a typical mid-summer East Coast muggy evening—splendid, if you're amphibian. It was a pleasure to see none other than Len Levine, Sales Emeritus and Robb Allison, Sales Pro Tempore representing the R&B, ITEM and the Interference Technology DNA that is EMC-Philadelphia. (Graham Kilshaw, who fostered and facilitated the gathering was tending sniffles and juggling fatherly duties of his young brood. See you next time, Graham). The evening began with a welcome greeting from Nissan. LCR manufactures filters, circuit boards, custom chassis and supports the Mil-Aerospace industry with wire wrap (yes, wire wrap—still good after all these years) repair and upgrades for mil-qualified systems. He's also got some good stuff going on in China and is a seasoned Chinese food epicure, but more on that at another time. There were speeches and a couple of giveaways: some cool construction toys, perfect for the gathering of the gadget crowd, but I get ahead of myself. After nosh, Nissan opened the meeting and called the faithful to attention. He

Len Levin (left) and Robb Allison obviously enjoying the recent Philadelphia EMC Chapter meeting.

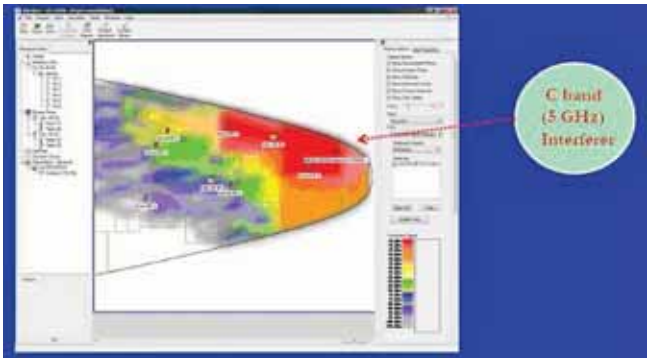
Nissan Isakov (left) of the Philadelphia EMC Chapter and presenter Henry Silcock of Mikros Systems Corporation.



The coverage map from Mikros' AIRchitect-EMC software demonstrates two Requirement Points (RP) being covered by the Access Point (AP): Yellow indicates good coverage.

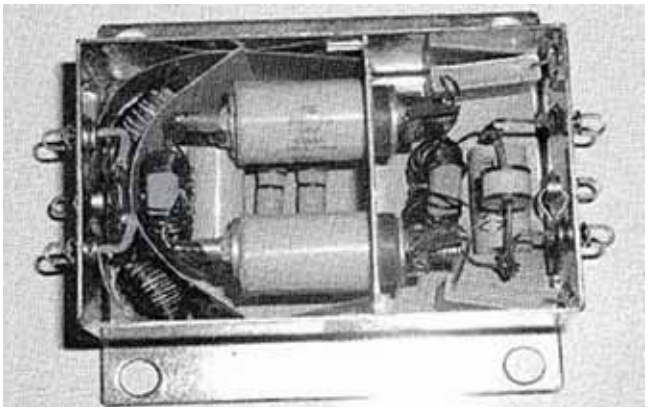


The coverage map from Mikros' AIRchitect-EMC Software shows three RPs being covered using the same AP.

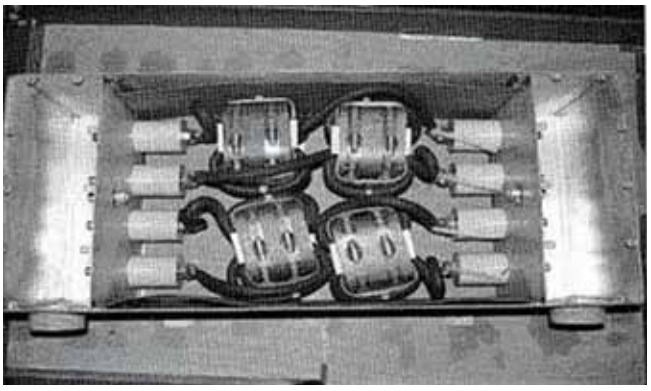


The interference zones as indicated by Mikros' AIRchitect-EMC software. The red area indicates areas of high interference, i.e. red means a bad coverage area.

Nissan Isakov (left) and Rafik Stepanian at the recent Philadelphia EMC Chapter meeting.



A photo from Rafik Stepanian's Philadelphia Chapter presentation shows the inside of an equipment filter: Ls, Cs & Rs.



And another photo from Rafik Stepanian's Philadelphia Chapter presentation showing the inside of a facility filter: Ls, Cs & Rs.

(From left) Mike Oliver of MAJR products, hailing from Pittsburgh, mugs with David Freeman of LCR and Mike Violette (Mike needed to have evidence to justify his expense report—see, Joann: he really did attend – he has not been inserted with Photoshop™).

At the end of the Philadelphia Chapter meeting, Ron and Tom bid adieu.

Speaker Vince Rodriguez of ETS-Lindgren visits with San Diego Chapter members during a break in the Tech Tour program. Shown (clockwise from left) are Lee Wengronowitz of Advanced Test Equipment Rentals, Tom Mullineaux of Milmega, Dr. Rodriguez, and Dale Reynolds of Lockheed Martin.

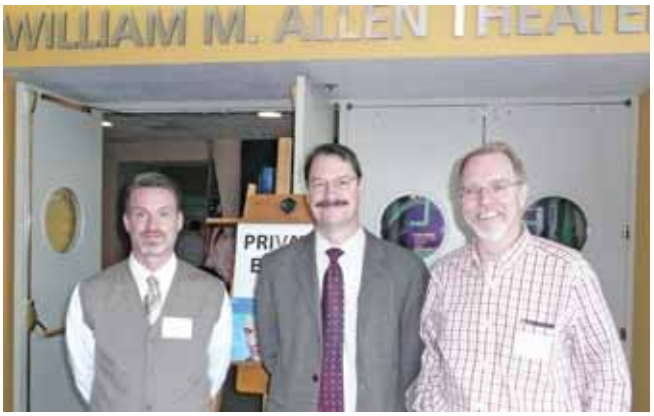
Following the Tech Tour in sunny San Diego, Chapter members and guests enjoyed an outdoor reception – a great venue that encouraged lots of networking!

SAN DIEGO PHOTOS BY RHONDA ERICKSON

Jim Nettles (right) of ARO Corporation was the lucky winner of an iPod, the raffle prize awarded at the end of the San Diego Chapter Tech Tour. Danny Odum of ETS-Lindgren presented the prize.

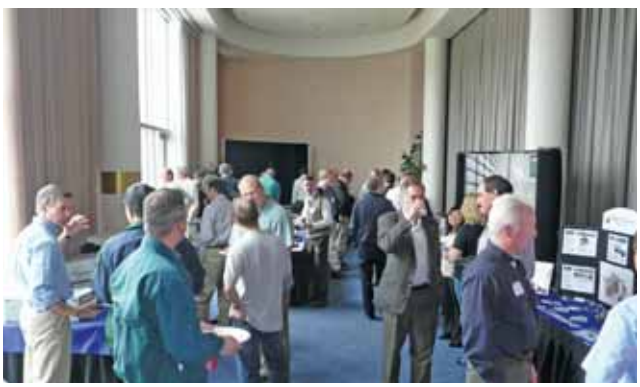
Seattle EMC Chapter Vice-Chair, Janet O'Neil of ETS-Lindgren, shows speaker Todd Hubing of Clemson University some of the Seattle sights during his visit to the Pacific Northwest – can you spot the Space Needle?

Northwest EMC's Alee Langford (left) and Rosalyn Santerre were all smiles at the June 11 Seattle EMC Chapter event. Emilio Fonzo (center) of Micro Plant stopped by to visit.



Seattle Chapter Officers (from left) Dennis Lewis of Boeing (Chair), Pat André of André Consulting (Secretary) and Leo Smale of Lionheart Northwest (Treasurer) are ready to greet chapter members and guests at the half-day seminar.

SAETTLE PHOTOS BY JANET O'NEIL



The Seattle Chapter's half-day event on June 11 was held at the Museum of Flight on Boeing Field. Attendees enjoyed a complimentary lunch buffet before the start of the seminar.

Professor Paul Bladek (left) of Edmonds Community College enjoyed a visit with John O'Brien of WEMS Electronics, one of the tabletop exhibitors present to support the Seattle Chapter.

then welcomed Mr. Henry Silcock of Mikros Systems Corporation. Henry's presentation was on the workings of their AIRchitect-EMC service and simulation program that Mikros has developed for the US Navy. The AIRchitect system is based around the Radar Wireless Spectral Efficiency (RWSE) initiative, and aimed at minimizing interference to and from radar systems as WLANs (COTS and other) get deployed in the tight confines of Navy ships. I imagine that something similar would be useful as things get more confined and confusing in the wireless/radar space. Space planners in urban areas might find that these tools would cut down on the guesswork when doing layouts of all manner of WiFi services. Here's a quick overview of how it works (with pardons for the author's misuse or mangling). The Mikros solution, AIRchitect-EMC, is based on RF propagation modeling of the interior between-decks of Navy ships. The idea is to predict coverage areas and maximize zones of service. Simply put: I have a wireless laptop and it's gotta work. The User-Designated areas of coverage/service or Requirement Points (RPs) are defined by the space planner. The simulation allows the designer to decide the best location for an Access Point to service one or multiple RPs. For example, the following shows the RF "heat map" with the RF emanating from the AP the colors of the model indicating network coverage. The tool allows the designer to optimize the AP location by simulation without needing an RF survey or other time consuming physical testing (or guessing). After a short break, Mr. Rafik Stepanian gave the evening's second presentation. Rafik provided the group with an overview of best practices for EMC design. He focused on the pragmatic details, the nuts and bolts, ferrites and capacitors of the EMC design process. Mr. Stepanian also provided some very cool pictures of the inside of filters. Every time I've had one apart it was filled with black goo, so peering inside examples of equipment filters and mongo facility filters was interesting. You can take the boy out of engineering, but you can't take the engineering out of the boy (…regrets for gender-specific references). There were representatives of EMC interests from all over the Keystone State and beyond. See photos for details.

San Diego

Mark Frankfurth, Chair of the San Diego EMC Chapter, reports that the Chapter held a Tech Tour on June 26 at the Hilton Hotel San Diego/Del Mar. Over 50 Chapter members and guests attended the half-day event, which featured three speakers, Vince Rodriguez of ETS-Lindgren, Lee Hill of SILENT Solutions, and Vic Hudson of Rohde & Schwarz. Mr. Hill presented a number of demonstrations of electromagnetic shielding applications for electronic product design. Dr. Rodriguez presented "Radio-Frequency Identification Devices (RFID): Active Air Interface Communication Testing, An Introduction." The presentation introduced the audience to testing procedures for RFIDs, including an introduction of the technology and the current status followed by a description of the equipment and facility necessary to perform testing. The presentation primarily addressed the 910 MHz band. Completing the technical program was a presentation by Vic Hudson titled, "Optimizing MIL-STD 461 and CISPR Testing Using Test Receivers and FFT Detectors." The topics presented a description and demonstration of the new CISPR-Average detector and how it will affect future commercial emissions testing. Measurement uncertainty and sensitivity of an entire emissions test system were also discussed. The presentation concluded with real life examples and displays of actual setups encountered while performing emissions testing. The Tech Tour program included a reception with the speakers and demonstrations of the material presented. Refreshments were served and a raffle was held at the end of a lively day of technical education and exchange.

Seattle

The Seattle EMC Chapter held its second quarterly meeting of the year on June 11 at the Museum of Flight in Seattle, near Boeing Field. The speaker for this half-day event was Professor Todd Hubing of Clemson University. Professor Hubing spoke on the topic "Essential Circuit Board Design and Layout for EMC." He explained how most electromagnetic compatibility problems are the result of less-than-optimal circuit board designs. Well-designed boards are relatively immune to electromagnetic interference and do not readily couple noise to other parts of the system. Well-designed boards often cost less than poorly designed boards and they reduce the need for expensive external shielding and filtering. Professor Hubing reviewed, in a very entertaining and thought-provoking way, the fundamental concepts that all engineers need to be familiar with in order to design and layout boards for systems that must meet stringent EMC requirements. Todd Hubing has been actively involved in the design and troubleshooting of electronic systems for over 26 years. He began his career in EMC working for IBM in Research Triangle Park, NC. In 1989, he became a faculty member at the Universi-

Todd Hubing is ready to "take flight" appropriately enough at the Museum of Flight in Seattle. Good thing he stayed on stage as everyone enjoyed his excellent presentation!

Exhibitors Toni Gurga (left) and Jon Borchardt of 3M were kept busy during the Seattle event that was attended by over 100 people.

Tom Revesz of HV Technologies joined the Seattle EMC seminar attendees for a private tour of the Museum of Flight.

Former Seattle Chapter Chair and pilot Ghery Pettit of Intel (left) enjoyed showing speaker Todd Hubing some of his favorite planes on display at the museum.

The entire museum was open to the Seattle Chapter including fascinating exhibits related to the history of aviation in Seattle, including the famous "Red Barn" where Boeing started.

Leo Smale of Lionheart Northwest, Treasurer for the Seattle EMC Chapter, is shown with his girlfriend Cindy Catlin, at a dinner party in Thame, England (near Oxford) celebrating the 25th Anniversary of the Thame Runners Club.

ty of Missouri-Rolla and founded the UMR EMC Laboratory, a research facility focused on the analysis of EMC problems affecting the electronics industry. In 2006, he joined Clemson University as the Michelin Professor of Vehicular Electronic Systems Integration. At Clemson, he is continuing his work in electromagnetic compatibility and computational electromagnetic modeling, particularly as it is applied to automotive and aerospace designs. The Chapter appreciated Professor Hubing's time spent in Seattle giving this important presentation. Seattle EMC Chapter Chair, Dennis Lewis of Boeing, organized the meeting, along with Vice-Chair Janet O'Neil of ETS-Lindgren, Treasurer Leo Smale of Lionheart Northwest and Secretary Pat André of André Consulting. Over 120 Chapter members and guests attended the meeting, which included a complimentary lunch and refreshments. Supporting sponsors included Agilent Technologies, Andre Consulting, 3M, ETS-Lindgren, Fair-Rite Products Corp., HV Technologies, Lionheart NW, Northwest EMC, Panashield, Thermo Scientific, and WEMS Electronics. Following the excellent presentation, meeting attendees were treated to a private viewing of the Museum's exhibits, home to many historic airplanes and the famous Boeing "Red Barn." The Chapter also wishes to acknowledge its Treasurer, Leo Smale, who visited England recently to be honored with an award for founding a running club there 25 years ago, which is still going strong today!

Southeast Michigan

Rob Kado reports the Southeast Michigan Chapter held their annual

Leo Smale ran the very first London Marathon in 1981 having trained entirely on his own. Over the next couple years he hooked up with other runners in the area and decided to form the club to formalize it. Subsequently, he ran the London Marathon five times! He is shown with fellow club organizers Dave Flower and Ron Lavers (from left) at the club's anniversary banquet. No wonder Leo is an asset to the Seattle EMC Chapter in organizing events!

Craig Lytle (left – Dad is SE Michigan Chapter Chair Scott Lytle) enjoys visiting with EMC Fest 2008 speaker Doug Smith the night before Mr. Smith's presentation at the SE Michigan EMC Chapter event.

Steve Barnes (left) of Cuming Lehman Chambers and Sam Newman of Micro-Sales attended the SE Michigan Chapter's pre-event dinner party.

Nick Grilliot (left) of Delta Technology Solutions enjoyed a lighter moment at the dinner with fellow SE Michigan Chapter member Rob Kado of Chrysler.

Dr. Shridhar from the University of Michigan – Dearborn, is a big supporter of the SE Michigan Chapter activities, including EMC Fest 2008.

Doug Smith of DC Smith Consultants brought plenty of items for "show and tell" during his presentation on May 8 in Canton, Michigan.

The Canton Summit on the Park was a great location for this year's EMC Fest 2008. Seating was packed as usual for the SE Michigan Chapter's annual "tabletop" show.

Doug Smith points out a key EMC troubleshooting tip during his presentation in SE Michigan.

The audience paid rapt attention during the presentation by Doug Smith, but became quite lively for the question and answer sessions.

PHOTOS BY SCOTT LYTLE

PHOTOS BY DAN HOOLIHAN

Carol Jensen of Onyx Holdings, Ltd and Justin Heyl of Intertek Testing Services, standing in front of the screen where the Twin Cities Chapter members were remembering the great 2002 IEEE Symposium on EMC in Minneapolis.

Curt Sponberg of Medtronic, holding the latest EMC Society Newsletter, David Strietz, Nonin Medical, holding the Advance Program for the 2008 IEEE International Symposium on EMC (Detroit) and our meeting host Brodie Pedersen (from left) of Nonin, holding a copy of the CD that was shown to the group on the History of the EMC Society.

EMC Fest on May 8th, 2008. The event was held at the Canton Summit on the Park in Canton, Michigan. The speaker was the renowned Doug Smith speaking on "Practical EMC Measurements." The specifics included learning simple ways to analyze complex EMC problems, laboratory troubleshooting, understanding EMI currents and when they are a problem, and finally using relative phase of EMI currents to solve problems. Doug also had many Question & Answer sessions with lively discussion throughout the day along with a lengthy discussion at the conclusion. The day included refreshments, lunch, constant conversation amongst all including vendors displaying their equipment at the event, and finally an Ice Cream Social to conclude the day. To conclude the event, the EMC Society vendors and Southeast Michigan Chapter provided several prizes to be raffled off for those who stayed for the entire event and left business cards. There were over 15 different prizes raffled to many lucky people including Doug Smith himself! Mr. Rick Zuppan of Eaton was the fortunate winner of the grand prize; a free pass to the IEEE EMC Symposium to be held here in Detroit, Michigan this coming August. The event was a success as every year and the Chapter looks forward to EMC Fest 2009.

Twin Cities

Dan Hoolihan reports that they had 11 people attend a noon meeting at Nonin Medical, Inc. The pizza was great (thanks to Brodie for ordering the pizza and pop) and the company was even better. The CD on the history of the EMC Society was played in the automatic mode and it was informative, educational, and entertaining. Free copies of the CD were distributed to all who were interested. Harold Rudnick spoke about his student papers project and he asked for volunteers to help him review the papers for the 2008 symposium contest. Dan Hoolihan asked for meeting ideas and there was a general interest in Intentional EMI so the chapter will see what they can do for a speaker on that topic. Also, Dan announced that a Minnesota EMC Event would be held on September 26th at the Thunderbird (Ramada -Mallof America). There will be a "Technical Download" session immediately following the Minnesota EMC Event in the large libation living room of the Ramada. A short business meeting was held where they discussed the 2008 IEEE International Symposium in Detroit and the IEEE Xplore program where EMC Society members can download Transactions on EMC and SYMPOSIUM papers for FREE! EMC

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