

10 Northern Blvd, Suite 1, Amherst, NH 03031-2328 USA

T: +1 (603) 578-1842 www.silent-solutions.com

Mastering the Spectrum Analyzer

The only class of its kind offered in the U.S., *Mastering the Spectrum Analyzer* will train you in the techniques that SILENT has distilled over fifty years of combined troubleshooting experience. This course teaches techniques useful for specific EMC measurements including conducted, radiated, near-field, and conducted RF power. The course content emphasizes theory of operation, instrument settings, pitfalls, and tips rather than "button-pushing to run a test". Course attendees are encouraged to bring their own spectrum analyzer or test receiver to class.

Course Instructor



Lee Hill is Founding Partner of SILENT, an independent EMC and RF design firm established in 1992 that specializes in EMC and RF design, troubleshooting, and training. Lee received his MSEE from the Missouri University of Science & Technology EMC Laboratory, emclab.mst.edu. He teaches a graduate course in EMC as a member of adjunct faculty at Worcester Polytechnic Institute (WPI), and is also an EMC course instructor for Texas Instruments, the University of Oxford (England) and the IEEE EMC Society's Global University. He is a past EMC instructor for UC Berkeley, Agilent, and Hewlett Packard.

With over 25 years of EMC design and troubleshooting experience, Lee consults and teaches worldwide, and has presented courses in China Taiwan, Singapore, Mexico, Norway, Canada, South Korea, France, Germany and United Kingdom. Lee is a past member of the IEEE EMC Society's Board of Directors (2004-2007).

After Attending This Course, You Will Be Able To:

- Prepare a spectrum analyzer for use for regulatory or functional electrical noise analysis
- Use a spectrum analyzer like an expert to solve any radio frequency noise problem
- Use demodulation to distinguish among multiple noise signals and identify their sources
- Identify and remedy incorrect measurement results reported by a spectrum analyzer
- Understand the different characteristics of EMI test receivers versus spectrum analyzers
- Apply methods to avoid damage during PCB-level troubleshooting
- Obtain maximum frequency accuracy, even over wide frequency ranges
- Understand and obtain best results from real-time spectral analysis

SILENT

Solutions for your noisy world.

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Mastering the Spectrum Analyzer

Day 1

Section 1: Jump Start

- 1) Preparing the instrument
- 2) Recalling and creating saved set-ups
- 3) "Oops" keys
- 4) Controlling vertical and horizontal & common mistakes
- 5) How to create excellent screen shots
- 6) Quick radiated and conducted emissions measurements
- 7) How to (not) damage the instrument

Section 2: Mastering Measurements

- 1) Amplitude settings & how to get maximum dynamic range
- 2) Optimizing the vertical and horizontal axis
- 3) Detectors
- 4) Demodulators
- 5) Bargraph displays
- 6) Lines, markers, and factors
- 7) Receiver versus spectrum analyzer mode. scan tables
- 8) Real-time quasi peak for troubleshooting and source identification

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Day 1 (cont'd)

Section 3: Advanced Techniques 1

- 1) Screen A and Screen B, min/max, A to C
- 2) Impact of Bandwidth. Distinguishing signals
- 3) Limit lines
- 4) Preselection
- 5) Input protection
- 6) Probing accessories
- 7) Broadband and narrowband measurements
- 8) Interpreting units
 - a) current measurements
 - b) field measurements
 - c) conducted emissions measurements
- 9) Must-have accessories

Section 4: Advanced Techniques 2

- 1) Scalar Network Analysis
 - a) theory and applications
 - b) instrument-specific routines
 - c) required external RF devices