**Back to Basics Radio Frequencies (RF) One Day Seminar**

**Westford Regency, Westford, MA, USA**

**Given by Agilent (Keysight) Technologies**

**March 19th, 2014**

**One day Seminar Description :** Today's engineers working in communications, consumer electronics and aerospace-defense are faced with increasingly complex design and measurement challenges and rapidly changing technology. A strong foundation in basic measurement and simulation techniques is essential for success. This seminar will improve your understanding of basic RF measurement, design and simulation techniques.  
  
**In this one day seminar, we learned:**  
  
**Network Analysis:** RF/Microwave engineers need to accurately and efficiently characterize and validate components such as amplifiers, filters, cables, and antennas or circuits that consist of these components. The Network Analyzers are invaluable for these measurements. This presentation will cover the principles of measurements with Network Analyzers and walk through a few RF fundamentals such as transmission lines and smith charts, leading to the concepts of reflection, transmission, S-parameters, time domain, measurement calibrations and the basic architecture of Network Analyzers.  
  
**Modular PXI and AXIe Instruments:** This session describes the importance of maintaining measurement integrity across multiple instrument form factors from your product design through production so that you are confident in your measurement integrity. We'll describe how you can accomplish that with minimal effort. We will also show you how to take the measurement software programs you created for your box instruments and use those programs to make the same measurements with Agilent's modular PXI and AXIe instruments. Additionally, we will cover how you can leverage the test software programs you already have from your typical box instruments. In doing so, we will examine how software agnostic modular instrument architectures work and how this instrument form factor can be used in your measurement processes.

**Signal Generation and Analysis :** Spectrum analysis is important for a variety of applications and understanding the theory of operation is key to getting the most from your analyzer. During this session, we will examine the major components of a modern spectrum analyzer and their significance in making the best measurement possible. We discuss real-life measurements such as, EVM, ACP, phase noise, and noise figure. We will also discuss the basics of signal generation and explore simple general purpose use cases as well as advanced applications such as simulating complex signals with impairments and interference.  
  
**Fundamentals of RF Simulation:** During this presentation the RF Basics discussions in previous sessions will be reinforced in the virtual or simulation environment. Attendees will learn how to simulate important measurements to predict linear and non-linear device behavior prior to fabrication and measurement of the device in the lab, and basic simulation setups will be shown along with the importance of measurement environment considerations, such as housings and connectors. The breadth of simulation capabilities and the understanding of what types of electrical characteristics can be obtained through the use of S-parameters and X-parameters and AC, Harmonic Balance, Transient, and Circuit Envelope simulation techniques will be reviewed. Manipulation and further analysis of the simulation results will be shown with Agilent EEsof EDA's Data Display environment to customize and create specific graphs and tables needed for design reviews and documentation.

**Agilent (Keysight) Technologies One Half-Day Seminar**

**Andover,MA,USA at Agilent**

**May 14th, 2014**

**In this one day seminar we learned and did labs in the following areas:**  
  
**Introduction to RF Simulation**  
- Hands-on creation of schematic  
- Tuning the schematic  
**Impedance Matching**  
- Why do impedance matching  
- Impedance matching with synthesis  
- Lumped component matching  
- Distributed component matching  
**RF System Block Diagram Analysis**  
- Drawing an RF System block diagram  
- Analyzing the block diagram  
- See the results  
- Troubleshooting before implementation  
**Filter Design**  
- Automatic Synthesis of RF BPF  
- Layout the PCB  
**Electromagnetic Simulation Introduction**  
- Simulate the filter  
- View the EM results in motion

**Agilent (Keysight) Technologies One Day Seminar and Labs on Test Instruments**

**Labs / Presentations: Function Generators, Oscilloscopes, Power Analyzers, BenchVue Software**

**Four Points Sheraton Hotel, Norwood, MA, USA**

**May 20th, 2014**

**One day Seminar Description:** Solve your most pressing test challenges. Spend time with Agilent engineers and get your hands on the latest test instruments at this year's complimentary A+ Seminar Series. It's a full day of hands-on labs, best practices and skills development designed to help you solve current and emerging test challenges.   
  
**Hands-on curriculum:** Three two-hour labs - try useful tips and techniques for yourself and receive a Certificate of completion for participants   
**Hands on Seminar is for:** Design engineers, test engineers and engineering managers  
  
**Lab 1: Function generators: Accurate, flexible waveform generation**  
Use Agilent's all-new Trueform technology to address common waveform generation challenges, including: Synchronizing multi-channel or differential waveforms, Creating long and/or complex waveforms, Generating high-integrity signals, Sequencing waveform segments   
  
**Lab 2: Power: Test modern DUTs faster and better**  
Learn how performance power sources combine sourcing, measurement and advanced features to solve test challenges such as: Characterizing dynamic current profiles, Creating power waveforms   
Analyzing device battery drain, Precision characterization, sourcing, and measurement for materials and devices   
  
**Lab 3: Scopes:** Solve common measurement challenges with the 4000 X-Series  
Learn how Agilent's InfiniiVision 4000 X-Series oscilloscopes solve common measurement challenges faster and more easily than ever before.  
Get insight on how to: Isolate and troubleshoot rare glitches, Apply advanced triggering methods   
Debug serial buses, Maximize acquisition memory with cutting-edge techniques   
  
**Also a presentation and demonstration of: Agilent BenchVue software**  
This new software accelerates testing by providing multiple-instrument measurement visibility and data capture with no programming. Derive answers faster than ever by easily viewing, capturing, and exporting data. Click. Capture. Done.