Scanning New Products At IMS 2013

The IMS exhibition floor usually resembles an international marketplace, with many of the industry’s leading manufacturers showing off new hardware and software.

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Seattle, WA has long been a center of international trading, with its bustling seaport and large, multilingual city. In 2013, it is also home to the International Microwave Symposium (IMS), to be held June 2-7 in the Washington State Convention Center. The event is sure to be a launching pad for many new RF/microwave products, as RF/microwave manufacturers try to time the introduction of major new hardware, software, and test-equipment lines with the large expected crowds on the IMS 2013 exhibition floor.

More than 500 companies are expected to participate in the 2013 IMS exhibition, showing their wares to what should amount to more than 10,000 attendees on the exhibition floor. Of course, many visitors are first attracted to the test-and-measurement equipment suppliers to see what is available in the way of new gear, and how it might help their own research or production facilities.

For example, at Booth No. 1230 Agilent Technologies will show both signal-generation and analysis equipment for measurements at RF through millimeter-wave frequencies, along with some software tools for performing electromagnetic (EM) circuit simulations. In addition to its many products being displayed on the show floor, Agilent will be involved in numerous workshops, short courses, and better than a dozen MicroApp presentations on different RF/microwave test techniques.

In fact, the large section of Agilent product booths will be surrounded by a section of the exhibit floor marked as “Agilent Avenue,” featuring a large number of partner companies—including ATE Systems, Inc., ETS-Lindgren, In-Phase Technologies, Inc., Modelithics,
and Maury Microwave. The latter company, appearing at Booth No. 1139, will display some of its many calibration and load-pull measurement subsystems for improved measurements with Agilent’s vector network analyzers (VNAs), as well as for use with VNAs from other major suppliers.

Anritsu Co. (Booth No. 938) will also show examples of its wide range of RF/microwave test instruments, including power meters, frequency sources, spectrum analyzers, and broadband RF/microwave VNA systems that are available for measurements well into the millimeter-wave frequency range. One example is the firm’s model MT8820C RF Tester (Fig. 1), now available with Long-Term-Evolution (LTE) Advanced Carrier Aggregation (CA) measurement software. The tester and software equip LTE device designers and manufacturers with a tester capable of wireless device calibration for a wide range of cellular formats, from second-generation (2G) through fourth-generation (4G) cellular devices.

1. The model MT8820C RF Tester is suitable for testing wireless components and systems through the fourth generation (4G). (Photo courtesy of Anritsu Co.)

Among the variety of test equipment at its booth (No. 820), Tektronix will be showing its recently introduced AWG70000 Series of arbitrary waveform generators (AWGs; see the April 2013 edition of our Defense Electronics supplement for more information). Capable of generating complex waveforms through 20 GHz, these AWGs feature sample rates to 50 GSamples/s—including the single-channel model AWG700001A and the dual-channel model AWG700002A (Fig. 2). Both provide 16 GSamples memory, with the sampling speed divided across the two channels in the model AWG700002A.

2. The dual-channel model AWG700002A AWG can deliver complex waveforms to 20 GHz. (Photo courtesy of Tektronix, Inc.)

Among its variety of test instruments, Rohde & Schwarz (Booth No. 440) will display its particular, reliability. In this webcast roundtable, a panel of expert speakers will assess the current state of GaN reliability, along with offering predictions for its future.

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new model R&S SMW200A vector signal generator in versions covering 100 kHz to 3 GHz and 100 kHz to 6 GHz. The vector signal generators, which combine a baseband generator, RF generator, and MIMO fading simulator in one box, offers an I/Q modulation bandwidth of 160 MHz for testing wideband digitally modulated communications components and systems such as LTE-Advanced wireless systems. The R&S SMW200A can be equipped with an optional second RF path for frequencies to 6 GHz and with a maximum of two baseband and four fading simulator modules; this provides the equivalent of two vector signal generators in one box.

Representatives from Rogers Corp. will be present at Booth No. 1459 to discuss their materials for printed circuit boards (PCBs) for high-frequency analog and high-speed digital applications. Among their many circuit materials, Rogers’ exhibitors will offer advice on their next-generation RO4000 materials, including their RO4835™ high-frequency laminates with oxidation resistance. RO4835 laminates offer a dielectric constant of 3.48 at 10 GHz; a low loss tangent of 0.0037 at 10 GHz; and a low z-axis coefficient of thermal expansion (CTE) for excellent plated-through-hole (PTH) reliability, under a variety of processing and operating conditions.

In addition to the many lines of RF/microwave filters for which they are known, representatives from K&L Microwave will have examples of their high-frequency switches at Booth No. 705. For systems requiring broadband signal control, model SPST-1/18-O is a single-pole, single-throw (SPST) switch with 3-dB maximum insertion loss and 2.0:1 maximum VSWR from 1 to 18 GHz. The switch, which is controlled by transistor-transistor-logic (TTL) signals, draws only 50 mA from a +5, -0.5 VDC supply. It provides at least 65-dB isolation with 100-ns or better switching speed. The coaxial switch can handle power levels to 0.5 W (+27 dBm).

Visitors to Mini-Circuits (Booth No. 2311) will see many examples of its component lines, including its RUDAT-6000 lines of surface-mount fixed attenuators (see p. 134). The attenuators, which can be programmed by Universal serial Bus (USB) or RS-232 interface, are available with maximum attenuation values of 30, 60, and 90 dB in 0.5-dB steps for applications from DC to 6 GHz. In addition, the company will show some of its “higher-level” products, such as its programmable signal generators. Model SSG-6000 is one of these compact signal generators, supplied with a +12-V AC/DC adapter and graphical-user-interface (GUI) control software. It can generate output signals from 25 to 6000 MHz at output power levels from -60 to +10 dBm.

Crystek will be on hand at IMS 2013 (Booth No. 1016) with its new model CVCO55CXT-4812-4812 coaxial resonator oscillator (CRO) for applications in satellite-communications (satcom) receivers and digital radios. As the model number might indicate, it operates at 4812 MHz with tuning voltages of +0.3 to +4.7 VDC. It delivers +3 dBm typical output power with typical phase noise of -102 dBc/Hz offset 10 kHz from the carrier. Pushing and pulling are both minimized to 1.5 MHz/V and 0.5 MHz, respectively. Second harmonic suppression is typically -30 dBc. The CRO may require a closer look at the booth, since it measures just 0.5 x 0.5 in.
3. The model CVCO55CXT-4812-4812 coaxial resonator oscillator (CRO) is suitable for use in satcom receivers and digital radios. (Photo courtesy of Crystek.)

Micro Lambda Wireless, at Booth No. 941, will show its various free-running and frequency-synthesized signal sources based on YIG oscillator technology, including its MLSP Series wideband frequency synthesizers. Available with frequency coverage as wide as 2 to 20 GHz, with 1-kHz tuning resolution, these rugged frequency synthesizers can be controlled by a USB connection to a personal computer (PC). Model MLSP-2020 tunes from 2 to 20 MHz with tuning speed of 1 ms for a 100-MHz step. It exhibits harmonic levels of typically -12 dBc and spurious levels of typically -60 dBc, with typical phase noise of -93 dBc/Hz offset 10 kHz from 2 to 8 GHz, -85 dBc/Hz offset 10 kHz from 8 to 16 GHz, and -72 dBc/Hz offset 10 kHz from 16 to 20 GHz. The synthesizer includes an internal 100-MHz reference with ±1 PPM stability.

Z-Communications (Booth No. 816) will be unveiling its model SFS0924C-LF surface-mount frequency synthesizer (Fig. 4) at IMS 2013. The compact source is suitable for mobile radios and cellular base stations, the synthesizer fires at 924 MHz with phase noise of only -118 dBc/Hz offset 10 kHz from the carrier. Second harmonics are held to typically -15 dBc while spurious content is controlled to typically -70 dBc. The typical output power is 0 dBm into a 50-Ω load. The fixed-frequency synthesizer is designed for use with a 10-MHz reference source and with +3, +5 VDC typically voltage supplies at typically 14 and 25 mA, respectively. The source is supplied in a compact surface-mount package measuring 0.60 x 0.60 x 0.22 in.
4. Model SFS0924C-LF is a surface-mount frequency synthesizer with low phase noise at 924 MHz. (Photo courtesy of Z-Communications.)

For visitors seeking advanced source technology, representatives from Synergy Microwave Corp. (Booths No. 404-405) will present examples of the firm’s reconfigurable concurrent oscillator (RCO) source technology for multiband wireless applications, as featured in this month’s Cover Feature (see p. 122). For applications such as cellular telephones with wireless-local-area-network (WLAN) circuits, these unique RCOs operate like separate tunable oscillators within a single package.

Representatives from RF Techniques (RFT) will be on hand at Booth No. 130 to share the benefits of the company’s high-power resistor products, especially for use in the design of high-power RF/microwave power amplifiers and power combiners/dividers. The firm offers a wide range of package styles and resistor values (Fig. 5) based on aluminum-nitride (AlN) and beryllium-oxide (BeO) substrate materials for DC and RF/microwave applications. Resistor products are fabricated by means of a high-temperature brazing process that forms low-thermal-resistance paths and high-power-handling capabilities, allowing for high-reliability operation at temperatures to +250°C.

5. These resistor components are designed for high power levels in power combiner/dividers and power amplifiers. (Photo courtesy of RF Techniques.)

Among its many high-power products, Response Microwave (Booth No. 128) will display its new model RMCO5.32-1200Nf coupler for radar and telecommunications applications from 20 to 1200 MHz. Measuring only 15 x 8 x 1 in. with Type-N female coaxial connectors on the mainline and coupling ports, the coupler can handle average power levels as high as 200 W across operating temperatures from -35 to +85°C. The coupler achieves minimum directivity of 20 dB while minimizing insertion loss of 0.6 dB and VSWR to 1.25:1 across its operating frequency range. It is available with other connector types upon request.

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