Tek’s dynamic new digital spectrum analyzer (internally code-named Shiva) makes its official debut Monday on the cover of Microwave Systems News. The 3052 is considerably faster than earlier products, with better accuracy, and has been lauded by engineers for its versatility.

The product comes from a strategic program unit in the Microwave Group. Its core analysis and processing technology originated in Tek Labs.

It’s “a clear, state-of-the-art product,” says Group VP Wim Velsink, “the kind that has historically done well for Tek.” He said that the 3052 arrives “well connected with its customer base,” and that based on their reactions “we should exceed our expectations and generate new embryonic markets.”

Customers “get excited when they see it,” Wim said, and have been discovering their own new applications. “The team did a fine job in getting this product from the idea stage to a living reality. It's a good example of what we mean by clean execution.”

Spectrum analyzers are frequency-domain instruments used to analyze communication channel characteristics, acoustical phenomena, mechanical vibration, radar and laser pulses, and waveforms from myriad other applications. (Oscilloscopes analyze time-domain, the other half of the waveform.)

The entire 3052 system, including high-resolution color monitor and disk drives, is designed for rackmounting. But it can be used on a benchtop as well. Complete system operation is from the detachable front panel/keyboard, which resembles a conventional spectrum analyzer front panel, but includes an LCD display for viewing control menus and commands.

**Technically speaking:** The 3052 features signal processing innovations that provide nearly a 100-fold speedup in real-time analysis, and 800-element span resolutions to 1.25 Hz.

The core technology, essentially a bank of 1024 complex parallel digital filters, is central to the instrument. It uses that technology for a maximum 200-microsecond spectral output rates on signal bands to 10-MHz, with continuous real-time spectral displays on bands to 2-MHz.

With the special Block Capture Mode, sequential spectral frames can be stored and recalled, or scrolled through for examination. The spectra before and after a synthesizer’s frequency hop can be examined in detail for band splatter, carrier attenuation between hops, and synthesizer lock-in time.

Sophisticated time triggers and spectral event detection offer further power for triggering captures of elusive transient occurrences. Spectral Event Detect is an especially powerful tool when used in conjunction with the Block Capture Mode’s sequential storage of successive spectral frames.

Spectrum analyzer setup and control is through a detachable front panel designed for easy use from a variety of positions. Menu-driven operation from the panel’s LCD display, keystroke ma-

---

**Cover story**

from page 1

cro capability, recallable setups, single-knob zoom control and dual-window display and processing are just a few of its convenience features.

Frequency display spans are selectable in a 1-2-5 sequence with 13 spans ranging from 1 kHz to 10 MHz. The center frequency of any span can be quickly tuned for coverage anywhere in the DC to 10-MHz range of the analyzer. Resolution around the center frequency is determined by the selected span, with the narrowest resolution of 1.25 Hz in the 1-kHz span.

The 3052 uses a high-resolution color monitor for quicker interpretation of spectral displays. Because the volume of available spectral data far exceeds the human capacity to assimilate in real time, a variety of display format and summary selections is also provided.

Formats include amplitude-frequency, amplitude-time, phase-frequency, spectagram and waterfall.

The 3052 uses a high-speed digital processing unit implemented in CMOS VLSI and multilayer ceramic technology. A bit-serial architecture manages a parallel block of VLSI processors to provide several billion operations per second.

Spectral conversion is done with Tek-designed linear-phase, finite-impulse-response (FIR) filters. Overall system control is based on the VME architecture, which uses modular cards for the various functions. Card functions also include GPIB, RS-232, and hardcopy interfacing for a Tek 4696 color copier.