

Wireless Communications Test Solutions

Applications

Cellular phone testing
 Cell site testing
 Wireless modem testing
 Wireless video teleconferencing
 Broadband network product testing
 Bluetooth products
 Wireless internet



Overview

The wireless communications industry is one of the fastest growing markets worldwide, and the emphasis on reliability continues to drive new and innovative test techniques. The heart of any automatic test system is signal routing, and the wireless market is no exception.

Typically, most traditional microwave switch systems have been configured as a single integrated unit, intended for a single unique use with little or no consideration for reusability. Systems can now be configured in reusable "slices" that can be mixed and matched with other devices and subsystems. The VXI platform is ideal for this transition primarily due to several inherent advantages in the VXI specification:

- **Open instrumentation standard**
- **Superior inter-module shielding**
- **Power supply capabilities**
- **Interoperability with thousands of other instruments and switches**

Several slices can be seen in Figure 1 and 2.



Figure 1 Standard Microwave Switch Slices



Figure 2 Custom Microwave Switch

Clearly, if expansion is required a completely new proprietary switch system is not necessary, because you can simply install a new slice that performs the function that is required. This approach not only provides the end user with a tremendous amount of flexibility when initially configuring the system, but it also permits the ability to modify the system at a later date without being faced with non-recurring engineering and design costs common throughout the industry.

VXI Technology also incorporates dedicated state-of-the-art 3-D design and assembly tools, such as SolidWorks™, to ensure that component layout and critical interconnect cable routing is performed consistently every time (See Figure 3). This approach ultimately results in reduced cable paths, guaranteed phase matching, improved signal integrity, and high density compact system solutions. Overall system and engineering costs are also reduced using these techniques because extensive microwave component libraries can be compiled and reused in subsequent designs. Additionally, time to market is also reduced because processes are not reinvented with each design.

Our unique miniature microwave relays have been designed for long repeatable life cycles and optimized for bandwidths up to 50GHz. Additionally, these switch subsystems can be easily integrated with other RF test instrumentation, ensuring that critical test sequence timing is achieved.

A sample of such instrumentation includes:

- **Signal Source**
- **Spectrum Analyzer**
- **Power Meter**
- **Specialized Communication Equipment**
- **Power Supplies**
- **Digital**

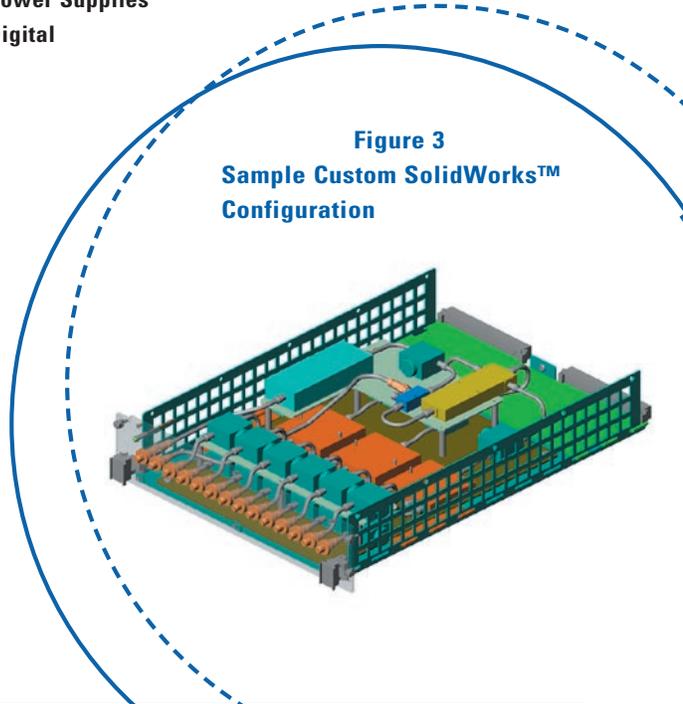


Figure 3
Sample Custom SolidWorks™
Configuration

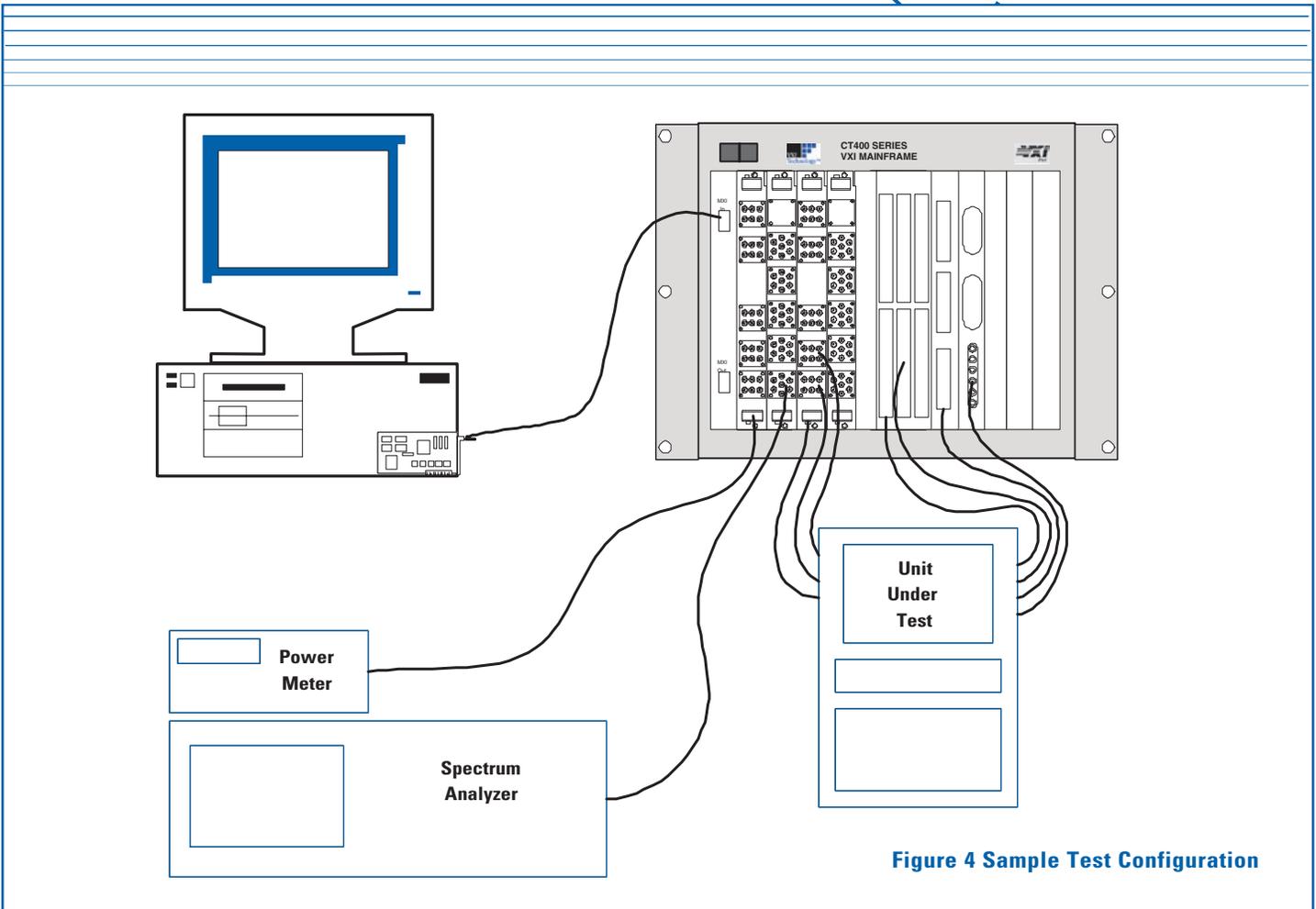
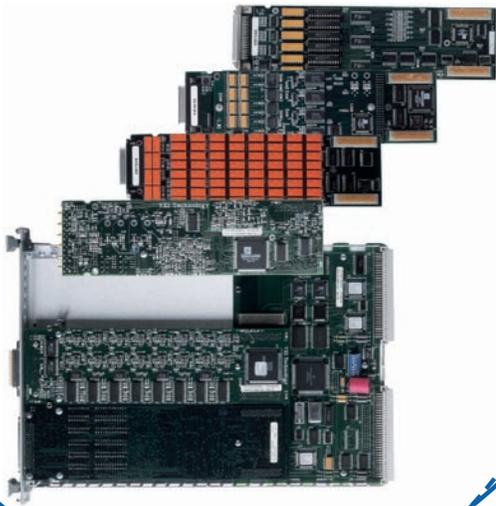


Figure 4 Sample Test Configuration

Conclusion

The evolution of technology has raised the consumer's product expectations on many levels; therefore, microwave system and test designers should be no exception. The user should demand that their suppliers incorporate modern design tools and manufacturing practices that will result in the highest quality, best performing product available. Additionally, high density products that are designed with reusability and flexibility in mind will provide a significant competitive advantage both today and into the future.



Modular Concept

The user simply selects the required microwave building blocks, which might include a variety of switches types including SP2T, SP4T, and SP6T in both terminated and unterminated versions, as well as transfer switch configurations. Other modules can also be included in the slice, thus expanding functionality, including couplers, splitters, amplifiers or attenuators. Additionally, we also offer a full product family of optical and lower frequency switch products that can be combined with the microwave building blocks to enhance the switching system.

Once the appropriate building blocks are selected for the system configuration, they are housed within a bench or rack mountable mainframe. All these building blocks plug-in directly from the front, and are easily accessed for maintenance purposes. This approach is critical for maintaining test system up time in high volume manufacturing environments. Reference the sample configuration below (Figure 4) which routes signals to external measurement devices, as well as source and measurement signals from within the VXI mainframe.

Our open architecture design using industry standards allows the switching solution to be controlled via virtually any standard interface, i.e., GPIB, FireWire, RS-232, Ethernet, PCI backplane (MXI-2). When combined with powerful industry standard software drivers and graphical user interfaces (GUIs) the task of controlling the complete system is a breeze. These features also reduce internal engineering development time and decrease time to market.