Benefits of a Flexible Test System Platform

Submitted by Keysight Technologies

As engineers, we develop test systems with various input stimulus, output measurements and different methods of control. More advanced test systems may include data processing and results presentation in addition to the data collection from the device under test. Familiar challenges include fast test completion times, building for a limited space or for limited power, and to remain within a financial budget. A solid test development plan can provide the details required for approval and development of a well thought out test system. However, what happens to this perfectly defined test system when more channels are required, or new measurement types are needed, or a different series of signals must be monitored because the device under test has changed?

We live in a dynamic world – and things change quickly. We don’t always have the luxury of thinking of the next step, or next project’s test requirements. Having built-in benefits of a flexible test system – one that can be adapted to changes - are presented in this article.

Challenges of test system modification

Retrofitting hardware and especially software in a test system can be very cumbersome and time consuming. With continual electronic and software advances that are available for new products these days, product evolution is inevitable and is occurring at an accelerated rate. More than ever, test systems need the ability to quickly change, providing additional test coverage to keep pace with the product advancements.

Applications that benefit from a flexible test system platform

Flexibility of a test system, and test system platform such as PXI, or AXIe is most helpful during the design and design validation phase when test capability outside of the normal operating parameters may be required to fully characterize a product’s performance. An example may be when it is necessary to test an RF device’s performance out-of-band. In a real-world application, harmonics generated by the device can affect the quality of the output signal. Out-of-band signals could cause interference in the wireless network and compliance issues with FCC regulations. To test product performance in this situation, a flexible test system platform allows easy integration of a signal analyzer with higher frequency ranges for measurements of out-of-band spurs and harmonics. Following design validation, when the product performance is better defined, a test system based on a flexible platform allows the additional signal analyzer to easily be removed.

Another example of an application where a flexible PXI based system can be beneficial is for newer carrier aggregation or MIMO multi-channel designs. Newer designs include analysis of
multiple data streams during design validation requiring additional signal generators and signal analyzers. A PXI platform enables easy integration of the various instruments into a compact test system that can be time-synchronized for complicated multi-channel measurements.

Developing a test system with platform flexibility such as PXI as criteria enables the test system to address the product test needs of today and tomorrow, throughout the product lifecycle.

For more information on selecting an instrument form factor please [click here](#).