

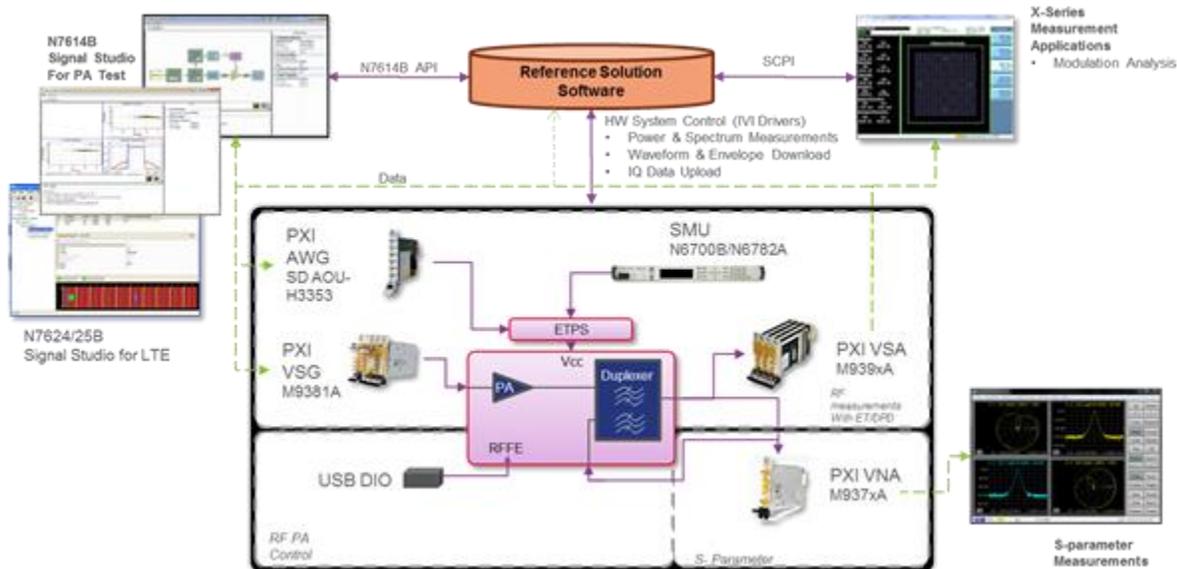
## Next Generation RF Power Amplifier DVT Test Systems Must be Optimized for Throughput, Performance and Complete MMPA Characterization

Submitted by [Keysight Technologies](#)

In the drive to provide robust and efficient user equipment, chip manufacturers are integrating more functionality into single chips and assemblies, specifically to provide compact and efficient front-end electronics. The “front end” of the user equipment is everything between the transceiver and the antenna(s), including the PA, along with low noise amplifiers (LNA), filters, duplexers, switches, and antenna tuner. Design verification test (DVT) of these multimode multiband power amplifier (MMPA) devices is complex and challenging. The huge number of permutations in operational modes of devices, along with the ongoing increases in performance requirements, has led to a dramatic increase in the number and complexity of tests required to validate device design in final testing, which is at odds with the need to reduce test size, cost, and time, as well as time to market.

Exacting operational device performance test requirements, demand test instrumentation that exceeds device performance. Performance requirements, along with limitations on test footprint and test time, are driving the adoption of the smaller modular instrumentation components often used in production test environments to DVT. Taking advantage of the speed of PXI in DVT enables copious amounts of data to be collected quickly, shortening the validation period, bringing new products to market faster.

### Typical test PXI architecture



DVT test systems for next generation RF PAs must be optimized for throughput and performance and provide full scalar and vector measurements which enable complete characterization of MMPAs. Keysight’s approach is an RF PA/FEM Characterization and Test Reference Solution which combines hardware and software specifically designed to address these test challenges. Key components of the test solution include a signal source and arbitrary waveform generator with tight synchronization for optimal alignment between the input signal and envelope, a vector signal analyzer for power and spectrum measurements, and a vector network analyser for s-parameter measurements, as well as additional instruments for DUT control. Digital pre-distortion (DPD) and envelope tracking (ET) signal generation and analysis are enabled by Keysight’s N7614B Signal Studio for Power Amplifier Test software, which

provides automated DPD & ET for fast design and characterization. Real-time signal processing enables fast power measurements and the high performance PXI VSA with wide dynamic range and frequency coverage is ideal for harmonic distortion testing. Keysight's single-slot, full 2-port PXI VNAs can be combined to create a true multiport analyzer, up to 32 ports, with N-port correction which assures the highest measurement performance while reducing the cost of test and increasing throughput.

To learn more, please visit [www.keysight.com/](http://www.keysight.com/)