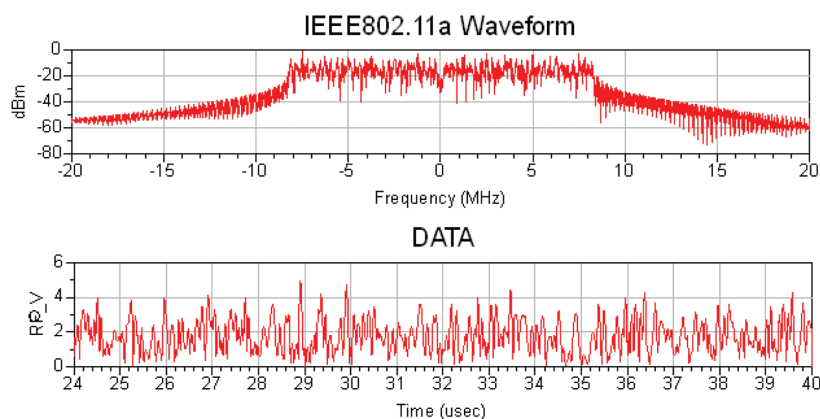
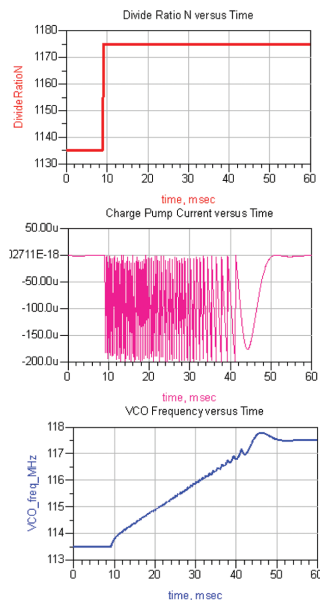


# Keysight Technologies

## Keysight EEsof EDA

### W2301 Circuit Envelope Element



Use the Circuit Envelope simulator in Advanced Design System to analyze transient RF response such as PLL frequency versus time. You can also simulate digitally modulated RF signals in circuits to analyze digital wireless specifications such as ACPR and EVM.

The Circuit Envelope Element W2301 provides modulated and transient RF simulation capabilities to the Advanced Design System (ADS), the technology and innovation leader in high-frequency mixed-signal electronic design automation (EDA). It is integrated with Advanced Design System (ADS), the only design simulation platform that enables the co-design of IC, package, and board in high-frequency and high-speed applications. ADS seamlessly integrates system, circuit, and full 3D electromagnetic simulation with Keysight Technologies, Inc. test instrumentation, resulting in repeatable, first-pass electronic design success.

Circuit Envelope efficiently simulates circuits and systems driven under modulated and transient RF excitation. A patented simulation technology that overcomes the memory limits of harmonic balance and the time penalty of transient simulators, Circuit Envelope is especially useful for creating non-linear designs to satisfy the latest 3G and 4G wireless standards such as LTE and WiMAX™. Rather than use steady state excitation such as with harmonic balance simulation, Circuit Envelope uses realistic signals containing modulated and transient RF carriers to accurately simulate wireless specifications such as error vector magnitude (EVM), adjacent channel power ratio (ACPR) and bit error rate (BER).

The Circuit Envelope Element capabilities include:

- Circuit Envelope simulation, for efficient analysis of digitally modulated and transient RF excitation in circuits and systems.
- Accurate circuit simulation of error-vector magnitude (EVM), adjacent channel power ratio (ACPR), adjacent channel leakage ratio (ACLR), and bit-error-rate (BER) with specification-compliant 2G, 3G, and 4G modulated RF wireless signals.
- X-parameter non-linear model simulation under modulated RF excitation.
- Linearizer design guide, providing popular topologies and simulation templates for designing power amplifier linearizer circuits.
- Phase locked loop (PLL) design guide, providing popular topologies and simulation templates for phase locked loop circuits.
- RF system design guide, providing system architecture design and analysis utilities and simulation templates for setting up digitally modulated RF sources and for verification of wireless specifications.
- Circuit-system co-simulation when used with the Ptolemy system simulator.

Unlike other envelope simulators, which can only use system behavioral models to simulate just the envelope of the RF carrier without taking into account impedance mismatches, Circuit Envelope allows any combination of circuit, system, and measured X-parameter blocks to be accurately simulated with modulated RF signals and accounts for signal reflections and frequency mixing throughout the network.

Circuit Envelope takes full advantage of X-parameters, the latest Keysight innovation that captures full non-linear characteristics from a non-linear vector network analyzer (NVNA) measurement. It lets you to create accurate non-linear designs, such as power amplifier linearization and power-added efficiency (PAE) optimization, under digitally modulated RF excitation with measured X-parameters of off-the-shelf components. You can't do this with any other envelope simulator!

[www.keysight.com/find/eesof-ads](http://www.keysight.com/find/eesof-ads)

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For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

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