

# Agilent 89600B Vector Signal Analysis Software



## *See through the complexity*

- Gain greater troubleshooting clarity with the 20:20 graphical user interface; view up to 20 traces, 20 markers each
- Evaluate more than 70 signal standards and modulation types
- See the “why?” with advanced troubleshooting tools including high-resolution FFT-based spectrum measurements, time-domain tools, and bit-level modulation analysis
- Apply vector signal analysis virtually anywhere in your block diagram with over 30 supported measurement platforms



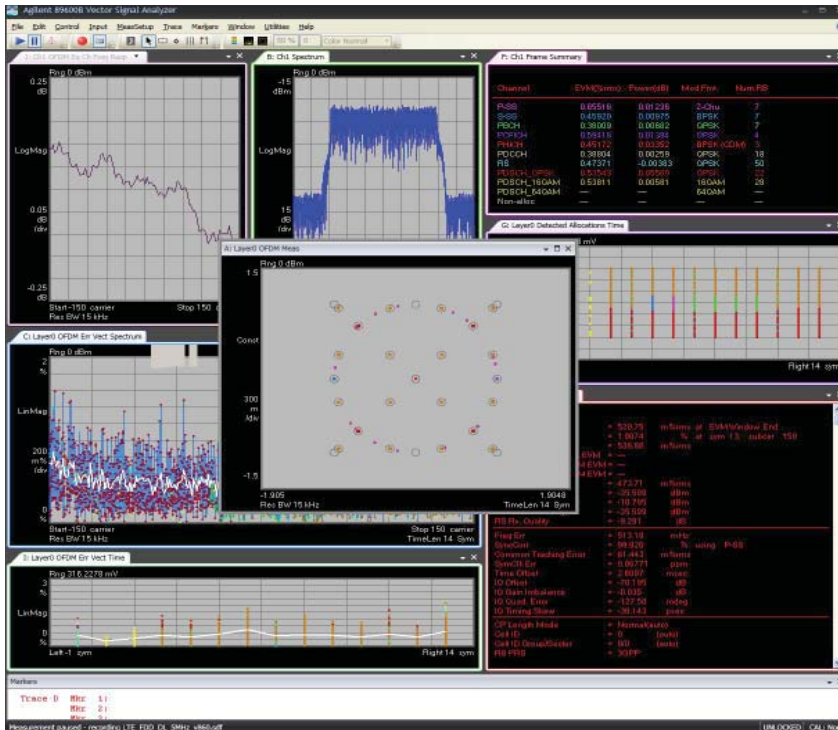
**Agilent Technologies**

# A Window Into Your Most Complex Wireless Signals

On the leading edge of wireless design, signal interactions can cause the unexpected. Knowing there's a problem is relatively easy. Achieving the clarity to find the root cause is the real challenge.

Look to the Agilent 89600B vector signal analysis (VSA) software: It's your window into what's happening inside complex wireless devices. With views of virtually every facet of a problem, our VSA tools let you find the "why?" behind unexpected interactions.

Whether you're working with emerging or established standards, Agilent's industry-leading VSA software helps you see through the complexity.



Characterize the complex modulation of evolving cellular communications standards such as LTE FDD and TDD.

## Free 14-Day Trial

Download the 89600B software and use it free for 14 days to make measurements with your analysis hardware, or use our recorded demo signals which are available by selecting **File > Recall > Recall Demo > signal type** on the software toolbar. Request your free trial license today:

[www.agilent.com/find/89600B\\_trial](http://www.agilent.com/find/89600B_trial)

## Choosing Between 89600B VSA and X-Series Measurement Applications

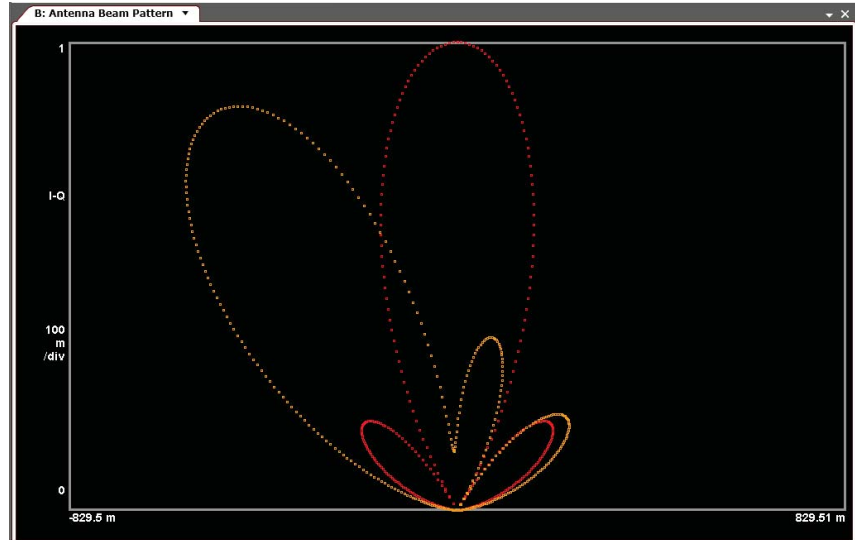
The 89600B VSA is ideal for evaluating and troubleshooting wireless signals in R&D. PC-based, supporting numerous measurement platforms, the 89600B provides the flexibility and sophisticated measurement tools essential to find and fix signal problems.

The X-Series measurement applications provide embedded format-specific, one-button measurements for the X-Series analyzers. With fast measurements, pass/fail testing and simplicity of operation, these applications are ideally suited for automated design verification and manufacturing test.

[www.agilent.com/find/X-Series\\_apps](http://www.agilent.com/find/X-Series_apps)

## Test today's signals and be ready for tomorrow's standards and modulations

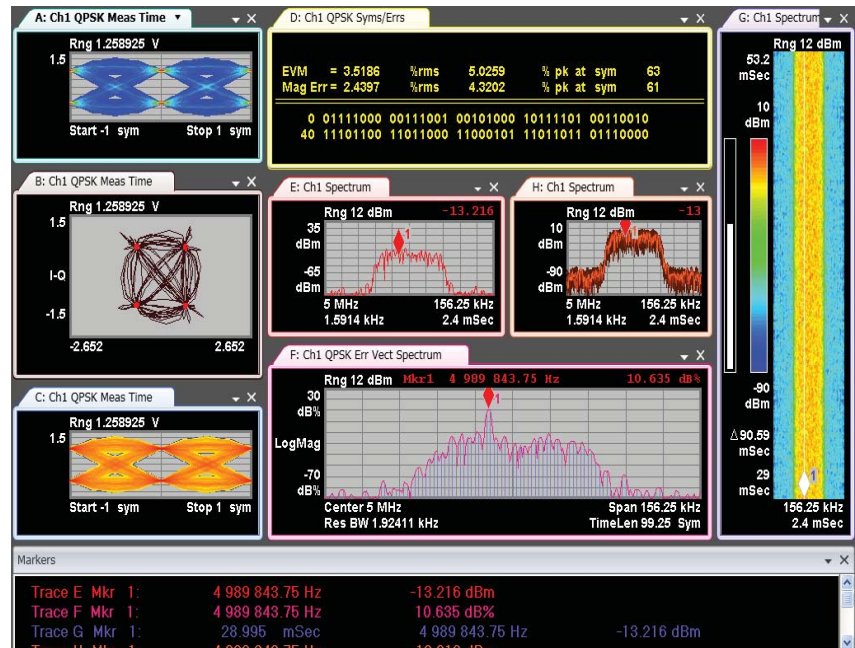
With the 89600B VSA software, you can measure more than 70 signal standards and modulation types for cellular communications, wireless connectivity, MILCOM, satellite communications and more. The 89600B also lets you leverage Agilent's consistent track record of being first to market with support for emerging standards, even before they are fully ratified.



Verify LTE beam-forming signal peaks and nulls with new antenna pattern traces.

## Over 70 signal standards and modulation types, including

- Cellular communications: LTE, W-CDMA HSPA+, GSM/EDGE Evolution, cdma2000®, TD-SCDMA
- Wireless connectivity: 802.11a/b/g, 802.11n, 802.16 OFDMA, WiMAX™, Bluetooth®, Zigbee, UWB, RFID
- Aerospace, defense and satellite applications: FSK, BPSK, QPSK, QAM, StarQAM, APSK, VSB
- Custom OFDM: configure the 89600B OFDM tools to evaluate your custom or specialized OFDM signal
- Also supports MIMO and multi-channel test



Analyze modulation types ranging from AM/FM/PM to QPSK (shown), 1024QAM and 18APSK.



# See the “why” with advanced troubleshooting tools

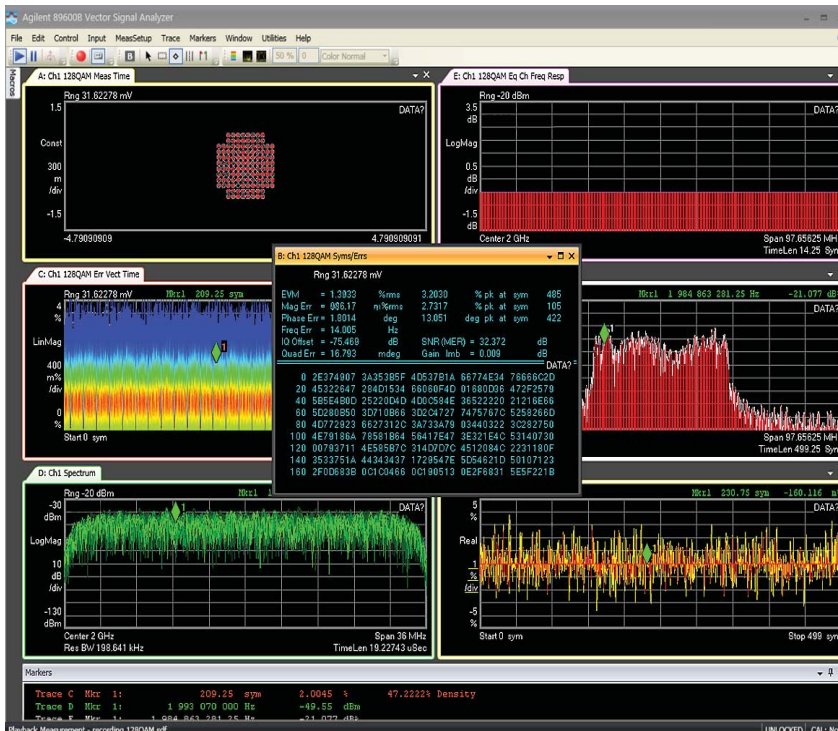
You can reach deeper into signals to find the root cause of problems with measurements in the time, frequency and modulation domains. A 400,000 line FFT provides exceptional frequency resolution even on very wide signals. And, advanced time domain analysis tools ranging from volts and power vs. time, to time gating for selective analysis, to auto-correlation and CCDF are complemented by a full marker set for detailed analysis.

In addition to standard tools like constellations, IQ parameters and overall EVM, the 89600B VSA provides:

- Compound, color-coded constellations for signals with multiple modulations, zone, or control channel signals
- Pilot EVM, resource signal EVM, preamble EVM, EVM by symbol time or carrier, all color-coded to highlight carrier or modulation types, or control channel signals
- Tables showing the contents of the frame control header, training fields, and similar information
- MIMO condition number by carrier, I/Q parameters by stream, and more

## Signal Capture and Playback

Capture and playback signals for detailed gap-free analysis. The full function playback facilitates analysis with loop-on-signal tools, user-defined file segment storage, and graphical/numeric displays showing the progression of the signal file. The flexible overlap processing built into the 89600B VSA slows down the playback for detailed analysis of the captured file.



Reach deeper into signals with advanced troubleshooting tools

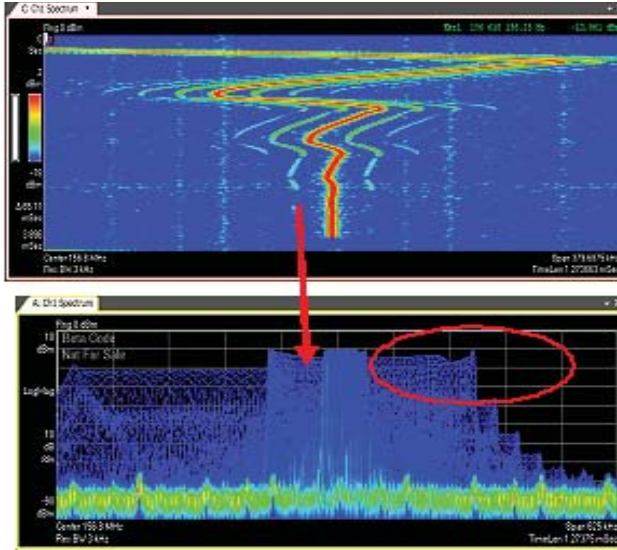
## View multiple facets of complex signals—simultaneously

The 89600B's 20:20 graphical user interface (GUI) helps you see more and with greater clarity. It enables you to pinpoint problems with arbitrary arrangement and flexible sizing of up to 20 measurement traces at once, each with up to 20 markers.

Assign any measurement to any trace and build the test view you need to optimize your signal evaluation and troubleshooting. For example, you can set-up multiple instances of the same measurement to evaluate and compare the performance of all channels in multi-channel and MIMO systems at the same time.

With up to 20 markers per trace, you can isolate the sources of unexpected interactions using trace-to-trace coupling. And, the trace "hot spot" feature lets you easily control center frequency, range, span, input range, vertical scale and measurement selection.

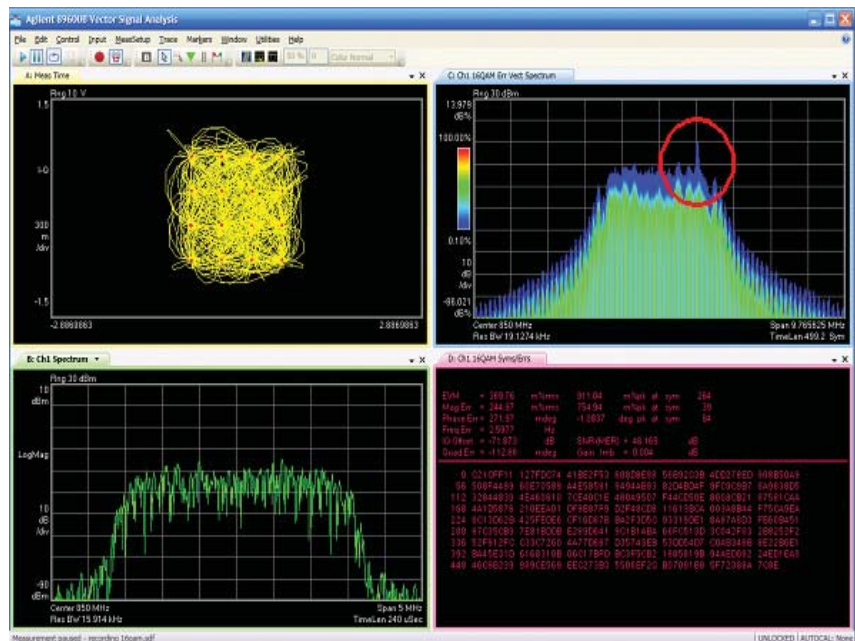
Perform detailed analysis of dynamic signal behaviors by combining the multi-domain spectrogram, digital-persistence and cumulative-history displays. Use spectrogram to view dynamic frequency events over time; use digital persistence for detailed views of the amplitude dynamics of periodic signal events; and use cumulative history and its extended time buffer to view intermittent or random signal events. Together, they provide unprecedented analysis detail of short lived signal events in the time, spectrum and modulation domains.



*Spectrogram with overlap processing*

*Cumulative History with overlap processing. Note details of the amplitude dynamics*

*The multi-domain spectrogram shows the frequency characteristics of this turn-on transient, the multi-domain cumulative history display shows the dynamics of the signal amplitude. Teamed with 89600B VSA signal capture/playback and overlap processing features, they provide detailed analysis of short-lived signal events.*



*Trace C shows a spur occurring with this 16QAM signal. This low-power, intermittent in-band spur is masked by the signal and cannot be seen using a standard spectrum measurement (Trace B). Demodulating the signal and viewing it using EVM spectrum with the cumulative history display enabled reveals this difficult-to-isolate signal.*

## 20:20 GUI

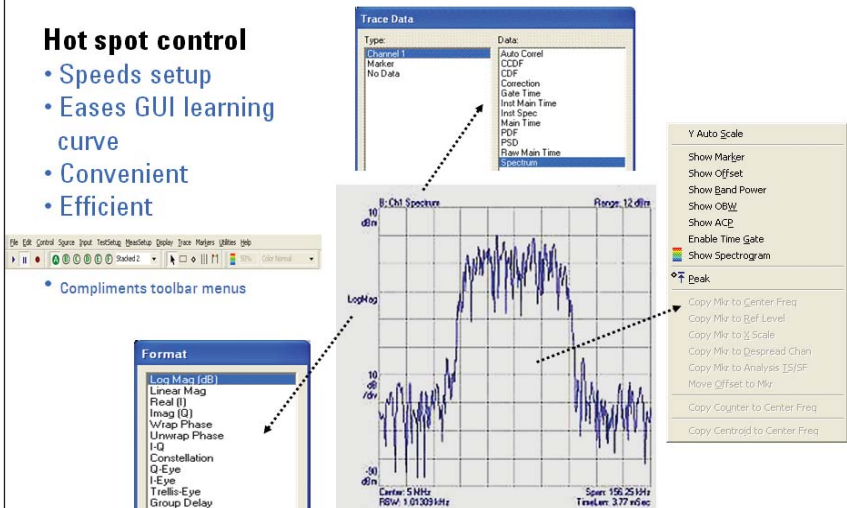
- View up to 20 traces, each with up to 20 markers
- Adjust trace shape to extend event observation time or increase viewable data
- Optimize trace arrangement to see signal patterns and study interactions
- Assign any measurement to any trace to analyze sophisticated signals, such as OFDMA and MIMO

## Tools: "Point and Shoot" GUI

### Hot spot control

- Speeds setup
- Eases GUI learning curve
- Convenient
- Efficient

- Compliments toolbar menus

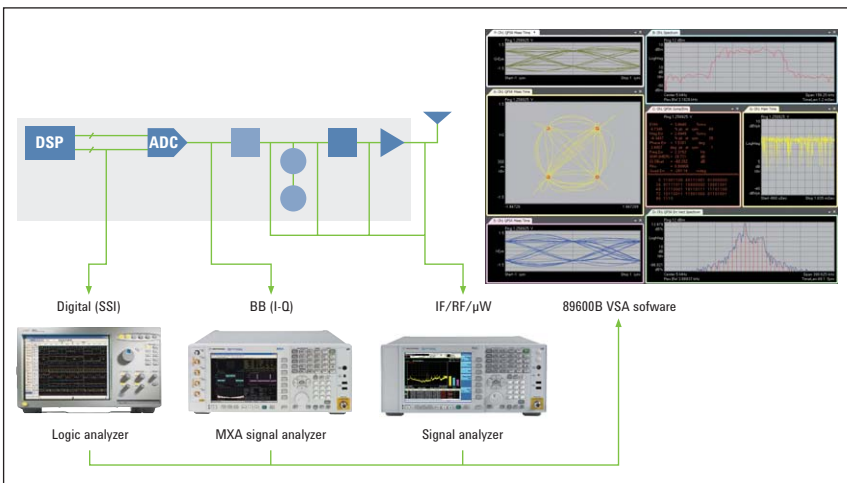


On trace 'hotspots' provide convenient, quick measurement set-up and control

## Apply vector signal analysis virtually anywhere in your block diagram

The 89600B software runs on a PC or inside PC-based instruments and supports more than 30 Agilent platforms: spectrum analyzers, signal analyzers, oscilloscopes, logic analyzers, modular instrument systems, as well as simulation software. You can use this flexibility to evaluate signals throughout your block diagram: analog and digital baseband; IF, RF and microwave; narrowband to ultra wideband; SISO and MIMO.

[www.agilent.com/find/89600bplatforms](http://www.agilent.com/find/89600bplatforms)



Use the 89600B with over 30 hardware platforms, including spectrum and signal analyzers, logic analyzers and oscilloscopes.

# Keep Your 89600B VSA Up To Date

With rapidly evolving standards and continuous advancements in signal analysis, the 89601BU/BNU software update and subscription service offers you the advantage of immediate access to the latest features and enhancements, as available, for the 89600B VSA software.

- Keeps your 89600B VSA software current with new enhancements
- Automatic notification and shipment of software revisions
- Length of subscription: 12 to 24 months, renewable

## Move up to the enhanced capabilities of the 89600B

If you are using the 89600 VSA software save money by updating your software to the 89600B with the software subscription service. Because the 89600B uses the same measurement engine as the 89600, you will achieve identical results with the same device under test. Plus, the flexible GUI is virtually identical, and setup, trace and data files – including signal-capture data files – are compatible too. Updating is simple. Learn more at

[www.agilent.com/find/VSAupdate](http://www.agilent.com/find/VSAupdate)

## Additional Resources

### Literature

*89600B Configuration Guide*, literature number 5990-6386EN

### Web

To learn more about the 89600B, visit Agilent's website at

[www.agilent.com/find/89600B](http://www.agilent.com/find/89600B)





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