Extend Your Analysis into the Frequency Domain

Upgrade your InfiniiVision HD3 Series Oscilloscope with Vector Signal Analysis software today!

The Power of Vector Signal Analysis

The integration of Vector Signal Analysis (VSA) with the InfiniiVision HD3 Series Oscilloscope marks a significant advancement in VSA's oscilloscope connectivity, offering seamless hardware integration. While VSA has long supported InfiniiVision scopes, the HD3's exceptional digital performance creates a uniquely powerful combination. With the HD3's native 14-bit ADC, 10x lower noise floor, and deep 100 Mpts memory, users can achieve unprecedented EVM measurement performance for baseband IQ applications. Beyond raw performance, this pairing transforms the HD3 into a comprehensive signal analysis platform - adding advanced DSP capabilities like analog demodulation, distortion analysis, and specialized measurements for communications standards from cellular to satellite.

The HD3 and VSA software work together as an integrated system through a three-stage process: signal acquisition, data transfer, and analysis and visualization. The HD3 serves as the measurement front-end, providing precise signal capture and digitization. Its high-speed USB or ethernet interface transfers data to the VSA software running on a PC, where advanced vector and modulation analysis algorithms process the captured signals. This architecture allows for both real-time analysis of streaming data and detailed post-processing of captured signal records.

Unlocking the HD3's Signal Analysis Capabilities

The HD3 Series Oscilloscope provides powerful built-in analysis capabilities, including FFT-based frequency analysis, protocol decoding, and basic measurements. Seamless integration with the VSA software significantly extends these capabilities in several key areas:

Enhanced Multi-Domain Analysis: While the HD3's native FFT provides basic frequency analysis, VSA enables simultaneous multi-domain visualization of signals through configurable trace displays. It also allows dynamic correlation between time, frequency, and modulation domains in a single user interface and provides advanced spectral analysis tools including spectrograms and frequency vs. time heatmaps.

Advanced Signal Processing: VSA's capabilities extent beyond basic FFT with sophisticated DSP capabilities, including flexible time-gated spectrum analysis with dynamic gate positioning, adaptive resampling for optimized spectral resolution, advanced filtering and windowing options, and comprehensive power spectrum measurements.

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Automated Component Characterization: VSA introduces automated stimulus-response measurements including AM/AM and AM/PM distortion analysis, gain compression characterization channel frequency response measurements, and features integrated markers and traces for automated measurement extraction.

Extensible Measurement Platform: VSA supports optional measurement personalities for specialized analysis, including digital demodulation (89601AYAC) for constellation analysis, IoT and cellular communications standards within HD3's bandwidth, pulse analysis for radar applications, and custom OFDM analysis.

Enhanced Data Management: VSA provides flexible data export formats (CSV, MATLAB, binary), supports advanced triggering and complex capture scenarios, and enables automated measurement sequences through SCPI/.NET programming

This combination of HD3 hardware and VSA software creates a comprehensive signal characterization system that extends well beyond the oscilloscope's native capabilities while maintaining the intuitive user interface of a modern oscilloscope.

Building Your HD3 Signal Analysis Platform

Within the 89600 VSA software, the 89601203C Essential Tier option is the recommended starting point for seamless hardware connectivity with the HD3 Series Oscilloscope. Starting with VSA 2025 U1 release, the 89600 VSA software introduces three tiers designed to balance cost and capability for a wide range of measurement needs. Whether you're managing a large lab, designing cutting-edge RF circuits, validating mobile devices, or developing advanced radar systems, these tiers provide scalable solutions for your specific requirements.

This integration unlocks all the measurement extensions supported by the VSA across numerous industries. A subset of the optional measurement extensions are presented as follows:

1. General Purpose Digital Demod Analysis: 89601AYAC – Digital demodulation with Custom IQ and FlexFrame analysis
2. Spectrum Analysis: 89601PSMC – PowerSuite measurement extension
3. Flexible OFDM Signal Analysis: 89601BHFC – Custom OFDM measurement extension:
4. IoT and Short-Range Communications: 89601BHTC – Narrowband IoT and UWB measurement extension

Additional Information

- PathWave Vector Signal Analysis (89600 VSA) Technical Overview
- Pathwave Vector Signal Analysis (VSA) Software, Configuration Gude
- Pathwave Vector Signal Analysis (VSA) Software, Configuration Gude
- Keysight Vector Signal Analysis Basics, Application Note

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