

Agilent's 1xEV-DO test and measurement solutions can help you get your products to market first!

Technical Overview



Agilent Technologies is committed to providing solutions across the product lifecycle to speed design, development, and manufacturing of 1xEV-DO products. This convergence of solutions creates measurement consistency and streamlines the transition from R&D to manufacturing.

Agilent's 1xEV-DO solutions: products that work together

- ADS connected solutions
- PSA spectrum analyzers
- X-series signal analyzers
- E4406A vector signal analyzer
- ESG vector signal generator & Signal Studio
- EPM-P power meters
- E6706B lab application
- E1966A terminal test application
- E6567C wireless test manager
- N5884A enhanced wireless test manager
- E7495B base station test set
- E6474A wireless network optimization platform

ADS

The Agilent E8897 advanced design system (ADS) 2G/3G Cellular Wireless library is a collection of models and verification setups for a variety of wireless standards and includes 1xEV-D0 physical layer design and verification. The library provides test capabilities early in the design phase, dramatically reducing the time necessary for developing physical test setups. The library addresses the needs of communication, RF system and component designers who are involved with 1xEV-D0 product generation.

Using an ADS link to the Agilent ESG vector signal generator, one can enable "real-world" 1xEV signals, with impairments, to be modeled in ADS and downloaded into the ESG, PSG or MXG signal generator. This powerful integrated capability creates a bench for prototype testing and early design verification.

Key features of the 1xEV-DO library

Complete end-to-end forward link simulation including:

- EVM, rho, CCDF, ACPR, code domain power, peak to average power, and BER measurements
- Coders/decoder, RF channel, and receiver models

Application projects

- Forward link Tx and Rx
- PA test
- Signal source
- Reverse link Tx

Additional information is available at: http://eesof.tm.agilent.com/products/ wireless_libraries.html

www.agilent.com/find/ads



Agilent Technologies

PSA and E4406A VSA/1xEV-D0 personality option 204

The Agilent PSA Series offers high performance spectrum analysis up to 50 GHz with powerful one-button measurements, a versatile feature set, and a leading-edge combination of flexibility, speed, accuracy, and dynamic range. Expand the PSA to include 1xEV-D0 digital signal analysis capability with the 1xEV-D0 measurement personality (Option 204). The PSA 1xEV-D0 measurement personality is suitable for both R&D and manufacturing applications. The E4406A VSA, a vector signal analyzer, with Option 204 is an especially affordable analyzer for manufacturing.

The 1xEV-D0 measurement personality provides key transmitter measurements for analyzing systems based on 3GPP2 Technical Specifications Group cdma2000 (TSG-C) specification (C.S0032-A and C.S0033-A). Measurements may be performed on the forward and reverse link signals.

Additional information is available at: www.agilent.com/find/psa www.agilent.com/find/vsa

X-Series Signal Analyzer/N9076A 1xEV-DO measurement application

The industry's fastest signal analyzers, the Agilent X-Series signal analyzers (MXA and EXA) have up to 300% faster measurement speed than other analyzers. They provide development and manufacturing engineers with the capabilities to cost-effectively troubleshoot new design, increase manufacturing throughput, and analyze complex CDMA signals. The Agilent N9076A 1xEV-D0 measurement application adds measurement functions that support 3GPP2 Technical Specifications Group cdma2000 (TSG-C) specifications. It provides additional capabilities to support modulation analysis on both forward link and reverse link signals for current commercial 1xEV-D0 Rel 0 and Rev A, as well as industry-leading support for Rev B.



Modulation accuracy for Rev. B signal with 640AM

Additional information is available at: www.agilent.com/find/mxa www.agilent.com/find/exa www.agilent.com/find/N9076A

MXA





PSA



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ESG & Signal Studio

Use the Agilent E4438C ESG vector signal generator and Agilent Signal Studio for 1xEV-D0 software (Option 404) to create single- and multi-carrier test signals. Using Signal Studio's intuitive graphical user interface, you can select a pre-defined waveform setup or configure a customized 1xEV-D0 waveform in forward link, forward link factory test mode (FTM), or reverse link. Quickly download the waveform to the ESG for component and receiver test.

ESG features for 1xEV-DO

- 64 Msa waveform playback memory
- Flexible waveform sequencing
- 6 GB (1.2 Gsa) non-volatile waveform storage
- Fast waveform downloads via 10B/T LAN and GPIB
- Differential and single-ended analog I/Q outputs
- Digital I/Q inputs and outputs, and channel simulation when used with Baseband Studio products

Signal Studio for 1xEV-DO software features

- Create up to 20 carriers over a 60 MHz bandwidth to test MCPAs
- Evaluate receiver PER with the fully coded FTM test signals in 1xEV-DO Rev 0
- Evaluate receiver PER with the fully coded FL/RL test signals in 1xEV-DO Rev A
- Support IS95, cdma2000®, 1xEV-DO Rev0, RevA multi carrier and mixed carrier configuration in one same GUI
- Customize waveforms by adjusting various signal parameters
- Compare power statistics of signal configurations by plotting up to five CCDF curves on one graph
- Reduce the crest factors of individual carriers with pre- or post-FIR filter clipping
- Simulate realistic frame traffic by using the built-in sequencing capability
- Support several type of license; perpetual, time based, transportable

Additional information is available at: www.agilent.com/find/E4438C www.agilent.com/find/signalstudio

E4406A VSA







E5515C Wireless Communications Test Set



E6706C lab application

Lay the foundation for seamlessly transitioning 1xEV-D0 devices from design to production by using the E6706C lab application. In development, the E6706C lab application, paired with the E5515C (8960) test set, provides true dynamic network performance using default packet application support for real-world throughput analysis and network emulation. Used with Baseband Studio for fading, the E6706C simulates fading network conditions for thorough device performance evalution.

E6706C features

- Default packet application support for Rev 0 and Rev A including Multi-Flow Packet Application and Enhanced MFPA
- Test application protocol support for Rev0, RevA,,and Rev B (TAP, ETAP, MCTAP)
- Data throughput analysis with peak data rates up to 3.1/1.8 Mbps
- eHRPD upper layer protocol stack to prepare for LTE interoperation
- Simple and mobile IP
- Hybrid mode testing
- Comprehensive parametric
 measurement capabilities
- Fast switching between 1xEV-D0 and cdma2000 with the E6785F

Additional information is provided at: www.agilent.com/find/E6706C

E1966A test application

To complete the transition from development to manufacturing, the E1966A test application establishes identical test limits on the production floor, allowing you to implement test code development earlier in your process – and with less effort. The first-ever one-box manufacturing solution for testing at high data rates, the E1966A operates with the E5515C ensuring efficient test times, testing accuracy, and repeatability in your 1xEV-D0 test processes.

E1966A features

- Tests QPSK, 8PSK, 16QAM and 64QAM modulation modes
- Packet-level testing of 1xEV-DO Rev.
 0, Rev A & Rev B
- Test up to 4.9 Mbps with one test set or 14.7 Mbps with three test sets over FMCTAP/RMCTAP
- Rev B multi-carrier physical layer test with one box
- Test application protocol support (TAP/ETAP/MCTAP)
- Fast-switching between 1xEV-D0 and cdma2000 with E1987A
- Support, multi-box synchronization, Protocol logging, fading tests and SMS

Additional information is provided at: www.agilent.com/find/E1966A

Automate your 1xEV-DO test process with the E6567C and N5884A wireless test managers

Save time and resources by automating the access terminal test process using the E6567C and N5884A wireless test managers and the E5515C test set. From R&D to manufacturing and service provider test environments, the E6567C and N5884A streamline test development with technology-specific tests, an easy-to-use interface, and Visual Basic .NET[®] programming for Windows[®] PC environments.

Additional information is provided at: www.agilent.com/find/E6567C www.agilent.com/find/N5884A





EPM-P power meters

Agilent EPM-P power meters (E4416A single channel and E4417A dual channel) along with the E9320A family of peak and average sensors simplify development, verification and manufacturing of 1xEV-DO wireless systems. Using the E9322A sensor, the EPM-P power meters provide peak, average, peak-to-average ratio and time-gated power measurements. The E9322A sensor (50 MHz to 6 GHz) provides a 1.5 MHz video bandwidth for 1xEV-DO power measurements and maximizes the dynamic range. Real-time markers allow close analysis of the signal under test and 'analyzer' software, operating in a PC or laptop environment, provides complete power and timing analysis of TDMA and CDMA parameters and system performance. In addition, these markers provide complete power and timing analysis by simultaneously testing TDMA and CDMA parameters and system performance.

Key specifications of the EPM-P Series power meters with the E9322A sensor:

- Frequency range: 50 MHz to 6 GHz (to 18 GHz with the E9326A)
- Video bandwidth: 1.5 MHz (to 5 MHz with the E9323A)
- Dynamic range (normal mode): -45 to +20 dBm
- Maximum peak power dynamic range: -37 to +20 dBm

Additional information is available at: www.agilent.com/find/epm-p_E4416A

E7495B base station test set

Address the unique challenges of installing and maintaining 1xEV-D0 deployments with the E7495B base station test set. This multi-function, one-box tool, equipped with Option 205, allows wireless service providers and network equipment manufacturers to verify 1xEV-D0 Tx analyzer and source conformance and power network operation.

E7495B features

- Capable of supporting multiple wireless system testing (cdmaOne, cdma2000, W-CDMA, GSM, TDMA, and 1xEV-DO)
- Option 205 1xEV-DO measurements include rho modulation, frequency and frequency error, and channel power
- Antenna tester
- Spectrum analyzer
- Internal GPS receiver

Additional information is provided at: www.agilent.com/find/E7495B



E6474A wireless network optimization platform

The E6474A wireless network optimization platform equips RF engineering and operation teams with a wireless network test solution that can be leveraged to enable site evaluation, base-station turnon, system acceptance, and on-going optimization. The E6474A provides true cross technology scalability and allows early verification of network deployments for 2G, 2.5G, and 3G wireless networks. Use this software platform to identify interference issues and neighboring cell site configuration problems, and smooth the expansion and maintenance of 1xEV-DO wireless broadband data networks using 1xEV-D0 drive test capabilities.

E6474A features

- Obtains comprehensive call
 performance data
- Quantifies the end-user's experience for both voice and data
- Controls up to four receivers and four phones simultaneously
- Enables early verification of network deployments
- Provides true cross technology scalability on a single platform

Additional information is provided at: www.agilent.com/find/E6474A







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