Agilent
802.11a WLAN Signal Studio Software
for the E4438C ESG Vector Signal Generator

Option 410
Product Overview
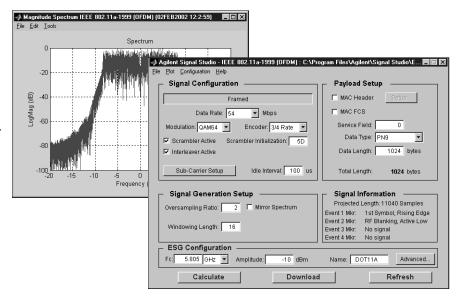
IEEE 802.11a test signals

802.11a Signal Studio software is a powerful tool for creating IEEE 802.11a baseband I/Q waveforms for use with the Agilent E4438C ESG vector signal generator.

Main features:

- Quickly create 802.11a waveforms from the intuitive user interface
- Configure fully-coded 802.11a frames and 802.11a modulated data streams
- Add a user file as the payload data type
- Turn off individual or groups of sub-carriers
- Configure MAC header and enable MAC FCS
- Apply raised cosine windowing
- Activate scrambling, interleaving, and encoding
- Plot I/Q signals, spectrum, and CCDF curve
- Remote control of basic ESG functions from the software
- Connect to the ESG with 10B/T LAN or GPIB

Try before you buy!

Go to **www.agilent.com/find/signalstudio** and download 802.11a Signal Studio to your PC to evaluate the signal configuration and plotting capabilities of the software. A license key is required to load the waveforms created by the software into the ESG. The license key can be ordered through your sales engineer or the nearest sales office, which can be found at **www.agilent.com/find/assist**.

Benefits

Component test

- Determine performance characteristics of 802.11a components
- Modify signal parameters to meet customized test needs
- Generate statistically correct signals to properly stress components

Receiver test

- Fully-coded frames enables PER and BER testing for receiver sensitivity tests
- Verify demodulation capability of WLAN receivers

I/Q waveform generation

802.11a Signal Studio software is a Windows®-based utility that simplifies the creation of 802.11a I/Q waveforms. It is intended for use with the E4438C ESG vector signal generator's baseband generator operating in arbitrary waveform mode.

Configuring and building 802.11a I/Q waveforms is quick and easy with Signal Studio's graphical interface. The configured I/Q waveform is downloaded to the ESG and the signal generator automatically begins generating the modulated RF signal.

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Recommended configuration

E4438C ESG with the following options:

E4438C-002[1]	32 Msample baseband generator
E4438C-410[1]	802.11a WLAN Signal Studio software
E4438C-506	6 GHz frequency range
E4438C-UNJ	Enhanced phase noise performance
E4438C-005	6 GB internal hard drive

1. Indicates required options. The baseband generator may be either option 001 or
   option 002; Option 001 contains 8 Msamples of memory.

Upgrade kits

If you currently own an E4438C ESG vector signal generator and are interested in obtaining an upgrade kit only (license key), order: E4438CK and E4438CK-410

802.11a Signal Studio software specifications

EVM	≤ 1.2% (38.42 dB), typical performance. See E4438C ESG Vector Signal Generator Data Sheet, 5988-4039EN, for more details.
Framing	• Framed: bursted fully-coded 802.11a frames • Non-framed: non-bursted 802.11a modulated data streams
Raised cosine windowing	Range: 0-16 samples
Encoding	1/2, 2/3, and 3/4 rate
Modulation formats	BPSK, QPSK, 16-QAM, 64-QAM
Data source	1s, 0s, 01s, 10s, PN9, PN15, user file
Data rates	6, 9, 12, 18, 24, 36, 48, 54 Mbps, and custom data rate

Custom data rate	Modulation	Encoder	Data rate
	BPSK	Inactive	12 Mbps
	QPSK	Inactive	24 Mbps
	16-QAM	Inactive	48 Mbps
	64-QAM	Inactive	72 Mbps
	BPSK	2/3	8 Mbps
	QPSK	2/3	16 Mbps
	16-QAM	2/3	32 Mbps
	64-QAM	1/2	36 Mbps

Data length	Maximum
	  • Without MAC header and FCS: 4095 bytes
	  • With MAC header and FCS: 4061 bytes
	Minimum
	  • 1 byte

Idle interval between frames	Range: 0-1000 microseconds
Sub-carrier setup	Range: -1 to -26, and 1 to 26. Turn-off individual or groups of sub-carriers.
Service field	16-bit Hex (First 7 LSB are masked to zero).
Scrambler seed initialization value	7 bits Hex
Oversample ratio	2-5
Frame length	Range: 24 microseconds to 5.484 milliseconds

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