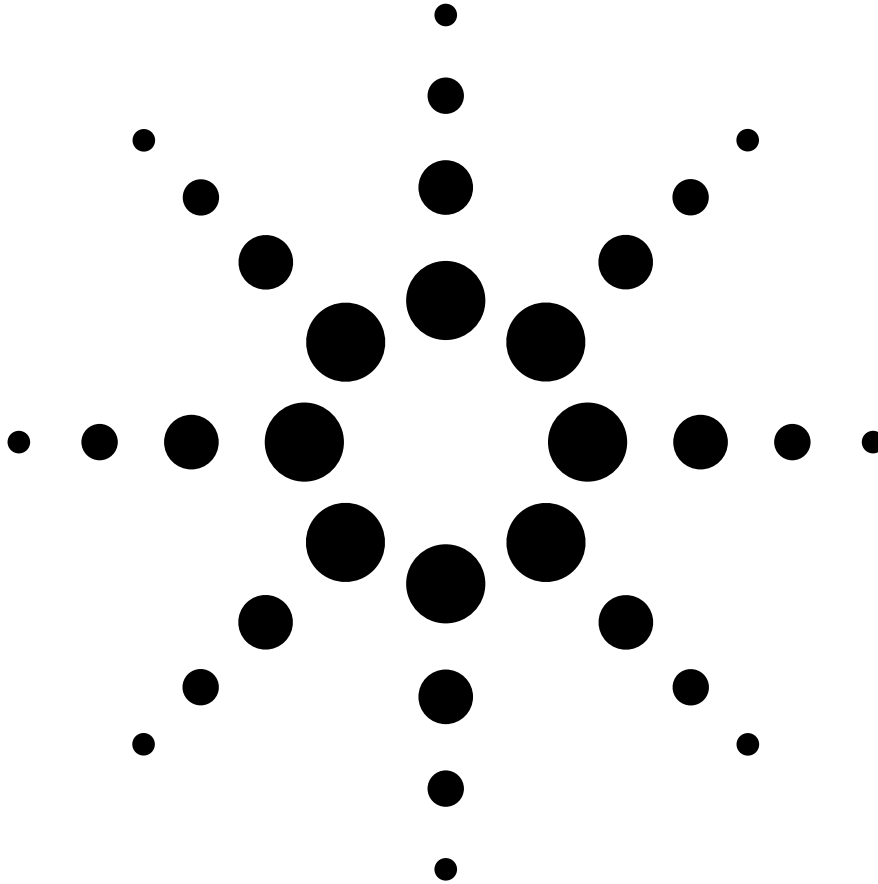


# Agilent E4438C ESG Vector Signal Generator

Configuration Guide



Agilent Technologies

# E4438C ESG Vector Signal Generator

To add options to a Model, use the following ordering scheme:

	Example
Model #	E4438C
Model #-option #	E4438C-601
Model #-option #	E4438C-400

## Step 1 Choose a frequency range (Mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-501	250 kHz to 1 GHz frequency range			
E4438C-502	250 kHz to 2 GHz frequency range			
E4438C-503	250 kHz to 3 GHz frequency range			
E4438C-504	250 kHz to 4 GHz frequency range			
E4438C-506	250 kHz to 6 GHz frequency range <b>*(Mechanical attenuator only– Do not need to order Option UNB)</b>	UNJ	UNB*, 300	

## Step 2 Choose phase noise performance (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
<i>Standard</i>	Standard phase noise performance			Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-UNJ	Enhanced phase noise performance: Up to 20 dB single sideband (SSB) improvement over standard performance. (Option 1E5 performance is included)		300, 1E5	Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

## Step 3 Choose a frequency reference (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
<i>Standard</i>	Standard stability time base			Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-1E5	High-stability time base: Provides improved frequency accuracy over time and with temperature variation. (Option 1E5 performance is included with Option UNJ)		UNJ	Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

## E4438C ESG Vector Signal Generator (continued)

### Step 4 Choose an attenuator (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
Standard with Options 501,502,503,504	State-of-the-art electronic attenuator: Includes excellent adjacent channel performance (ACP) for CDMA application (previously Option H99). Also provides alternate timeslot power control ideal for GSM receiver and transmitter designs (previously Option UNA).		506	Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-UNB	High output power with mechanical attenuator: Increase the output power up to 6 dB for higher power applications. (Option UNB performance is included with Option 506)		300, 506	Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

### Step 5 Choose baseband generator with memory (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-601	Internal baseband generator, 8 MSa memory with digital bus capability; used to produce arbitrary and real-time I/Q waveforms. A variety of standard compliant firmware and software personalities are available.			Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-602	Internal baseband generator, 64 MSa memory with digital bus capability; extra memory for when longer waveform playback is desired. Used to produce arbitrary and real-time I/Q waveforms. A variety of standard compliant firmware and software personalities are available. Option 001 is NOT required.			Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-005	6G Byte hard drive for non-volatile waveform storage	601 or 602		Data Sheet: 5988-4039EN or <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

### Step 6 Choose a firmware personality for your internal baseband generator (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-400	3GPP W-CDMA (FDD) personalities	601 or 602		Product Overview: 5988-4449EN <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-401	cdma2000 and IS-95-A personalities	601 or 602		Product Overview: 5988-4430EN <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-402	TDMA personalities Includes GSM, EDGE, NADC, PDC, PHS, DECT, TETRA.	601 or 602		Product Overview: 5988-4431EN <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-403	Calibrated noise personality: Provides settable $E_b/N_0$ used for sensitivity testing in cdma2000 and W-CDMA applications	601 or 602		
E4438C-409	GPS personality	601 or 602		Product Overview: 5988-6256EN <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

## E4438C ESG Vector Signal Generator (continued)

### Step 7 Choose a Signal Studio software with your internal baseband generator (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-404	Signal Studio for 1xEV-DO	601 or 602		Product Note: 5988-5416EN Product Overview: 5988-5459EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-406	Signal Studio for <i>Bluetooth</i> <sup>™</sup>	601 or 602		Product Note: 5988-5417EN Product Overview: 5988-5458EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-408	Signal Studio for enhanced multitone	601 or 602		Technical Overview: 5988-5639EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-411	Signal Studio for TD-SCDMA (TSM)	601 or 602		Technical Overview: 5988-6552EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-414	Signal Studio for 1xEV-DV and cdma2000	601 or 602		Technical Overview: 5988-9123EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-417	Signal Studio for 802.11 WLAN	601 or 602		Technical Overview: 5988-8618EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>
E4438C-421	Signal Studio for noise power ratio (NPR)	601 or 602		Technical Overview: 5988-9161EN <a href="http://www.agilent.com/find/signalstudio">www.agilent.com/find/signalstudio</a>

### Step 8 Choose a bit-error-rate(BER) analyzer (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-UN7	Internal bit-error-rate analyzer			
E4438C-300	GSM/EDGE basestation loopback BER test capability	601 or 602, 402, UN7	UNJ, UNB, 506	

### Step 9 Choose accessories or instrument connector configuration (Not mandatory)

Ordering #	Description	Requires	Not Compatible	For more information
E4438C-003	Enables ESG digital output connectivity with N5102A	601 or 602		Technical Overview 5988-9495EN <a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-1EM	Moves all front panel connectors to rear panel			
E4438C-1CP	Rack mount kit with handles			Catalog: 5980-0450E
E4438C-1CN	Handle kit			Catalog: 5980-0450E

### Step 10 Choose a warranty plan (Not mandatory)

Ordering #	Description	For more information
Standard	3-year return-to-Agilent warranty and service	<a href="http://www.agilent.com/find/services_upfront_options">www.agilent.com/find/services_upfront_options</a>
5 years	Extended return-to-Agilent warranty and service	<a href="http://www.agilent.com/find/services_upfront_options">www.agilent.com/find/services_upfront_options</a>

### Step 11 Choose a calibration plan (Not mandatory)

There is no calibration plan standard with the E4438C.

For a calibration plan, specify 3 or 5 years for one of the appropriate plans below when ordering.

Plan	For more information
Agilent Calibration Upfront Plan	<a href="http://www.agilent.com/find/services_upfront_options">www.agilent.com/find/services_upfront_options</a>
Agilent Calibration Plus Upfront Plan	<a href="http://www.agilent.com/find/services_upfront_options">www.agilent.com/find/services_upfront_options</a>
Z540 Calibration Upfront Plan	<a href="http://www.agilent.com/find/services_upfront_options">www.agilent.com/find/services_upfront_options</a>

## E4438C ESG Vector Signal Generator (continued)

### Step 12 Choose any documentation (Not mandatory)

Ordering #	Description	For more information
E4438C-CD1 (Standard)	CD-ROM - English Documentation Set	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-0BW	Service documentation, assembly level (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-0BV	Service documentation, component level (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-UK6	Commercial calibration certificate with test data (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-ABA	United States - English documentation set (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-AB0	Taiwan - Chinese localization (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-AB1	Korean - Korean localization (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-AB2	China - Chinese localization (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-ABF	French - French localization (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>
E4438C-ABJ	Japanese - Japanese localization (Hardcopy)	<a href="http://www.agilent.com/find/esg">www.agilent.com/find/esg</a>

### Related Products

Product	Description	For more information
N5102A	Baseband Studio digital interface module. Enables digital I/Q and digital IF outputs from the E4438C ESG and E8267C PSG vector signal generators.	<a href="http://www.agilent.com/find/basebandstudio">www.agilent.com/find/basebandstudio</a>
N5115A	Baseband Studio for fading. Provides single and dual channel fading for the E4438C ESG Vector signal generators.	<a href="http://www.agilent.com/find/basebandstudio">www.agilent.com/find/basebandstudio</a>
N5110A	Baseband Studio for waveform streaming. Allows streaming of I/Q waveform data directly from PC hard drive to ESG or PSG signal generators.	<a href="http://www.agilent.com/find/basebandstudio">www.agilent.com/find/basebandstudio</a>
N5101A	Baseband Studio PCI Card. Requires N5115A Baseband Studio for fading or N5110A Baseband Studio waveform streaming.	<a href="http://www.agilent.com/find/basebandstudio">www.agilent.com/find/basebandstudio</a>

### Upgradeable Options 1,2

Ordering #	Upgrade description	Information required with order
E4438CK-601	Complete upgrade kit with installation guide	Serial # and host ID of instrument. Customer's email address.
E4438CK-602	Complete upgrade kit with installation guide	Serial # and host ID of instrument. Customer's email address.
E4438CK-005	Complete upgrade kit with installation guide	Serial # and host ID of instrument. Customer's email address.
E4438CK-1E5	Complete upgrade kit with installation guide	Serial # and host ID of instrument. Customer's email address.
E4438CK-UN7	Complete upgrade kit with installation guide	Serial # and host ID of instrument. Customer's email address.
E4438CK-003	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-400	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-401	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-402	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-403	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-404	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-406	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-408	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-409	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-411	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-414	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-417	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.
E4438CK-421	License key (alphanumeric code)	Serial # and host ID of instrument. Customer's email address.

1. Option UNB, 1EM, and 300 must be returned to the Agilent U.S. factory for an upgrade. These can not be upgraded by the customer.

2. Latest firmware is recommended for upgrades. Firmware can be found at [www.agilent.com/find/esg](http://www.agilent.com/find/esg).

## Additional Agilent Literature

### Application notes

*RF Source Basics, a self-based tutorial (CD-ROM),*  
literature number 5980-2060E.

*Digital Modulation in Communications Systems –  
An Introduction,*  
Application Note 1298, literature number 5965-7160E.

*Using Vector Modulation Analysis in  
the Integration, Troubleshooting and Design  
of Digital RF Communications Systems,*  
Application Note 89400-8, literature number 5091-8687E.

*Testing CDMA Base Station Amplifiers,*  
Application Note 1307, literature number 5967-5486E.

*Understanding GSM/EDGE Transmitter and Receiver  
Measurements for Base Transceiver Stations and  
Their Components,*  
Application Note 1312, literature number 5968-2320E.

*Understanding CDMA Measurements for  
Base Stations and their Components,*  
Application Note 1311, literature number 5968-0953E.

*Testing and Troubleshooting Digital RF  
Communications Receiver Designs,*  
Application Note 1314, literature number 5968-3579E.

*Bluetooth™ RF Measurements Fundamentals,*  
Application Note 1333-1, literature number 5988-3760EN.

*Designing and Testing 3GPP W-CDMA Base Stations,*  
Application Note 1355, literature number 5980-1239E.

*Designing and Testing 3GPP W-CDMA  
User Equipment,*  
Application Note 1356, literature number 5980-1238E.

*Designing and Testing cdma2000 Base Stations,*  
Application Note 1357, literature number 5980-1303E.

*Designing and Testing cdma2000 Mobile Stations,*  
Application Note 1358, literature number 5980-1237E.

## **Additional Agilent Literature (continued)**

### **Product literature**

*E4438C ESG Vector Signal Generator,*  
Brochure, literature number 5988-3935EN.

*E4438C ESG Vector Signal Generator,*  
Data Sheet, literature number 5988-4039EN.

*Signal Generators, Vector, Analog, and CW Models*  
Selection Guide, literature number 5965-3094E.

*IntuiLink Software,*  
Data Sheet, literature number 5980-3115EN.

## **Additional Resources**

### **See the ESG Web page**

Get the latest news, product and support information, application literature and more. The Agilent Technologies Internet address for the ESG family is: <http://www.agilent.com/find/esg>

### **New trade-up program**

Ask your local sales representative about instrument trade-up opportunities for all ESG models.

### **IntuiLink PC software**

Transfer screen data and images easily into Microsoft® Excel and Microsoft® Word. Save and restore instrument states. Download arbitrary waveform files. For more information visit our website at: <http://www.agilent.com/find/IntuiLink>



## Agilent Email Updates

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

#### Phone or Fax

United States:

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(fax) 905 282 6495

China:

(tel) 800 810 0189

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Europe:

(tel) (31 20) 547 2323

(fax) (31 20) 547 2390

Japan:

(tel) (81) 426 56 7832

(fax) (81) 426 56 7840

Korea:

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