Agilent Technologies ESG Family Feature Releases

If your ESG signal generator is older than the most current release date, and it hasn't been upgraded, you are missing recently released features. Updating the firmware in your ESG lets you take advantage of feature enhancements and improvements. Hardware has also been enhanced periodically, to add capability or improve performance, based on customer requests.

New features may be as simple as a free firmware download (www.agilent.com/find/esg) or may also require upgrading ESG hardware (call Agilent Technologies).

NOTE	This is a reverse chronological sorting of firmware and hardware feature releases for the ESG family. Use this list to determine the firmware revision and minimum hardware needed to support a specific feature.

Release Date	Feature	Minimum Hardware Required	Firmware Required
4/02	• **Added External Frame Trigger** capability to EDGE Loopback BER.	ESG-D "B" with Opt. 300	≥ B.03.86
	• **W-CDMA Specification Update to 3GPP 3.5 2001-03**, Opt. 100-Volume 2. **Added SCCPCH** channel to downlink.	ESG-D "B" with Opt. 100	
	• **Added Long Code Generation Mode** data field to reverse link, Opt. 201 Real-Time cdma2000.	ESG-D "B" with Opt. 201	
9/01	• **Improves BER** transport channel coding of the DPCH channel at high data rates of 384 kbps.	ESG-D "B" with Opt. UN7	≥ B.03.84
8/01	• **Corrects** recent erroneous reporting of SERR instead of DERR when synchronization is lost.	ESG-D "B" with Opt. 300	≥ B.03.83

Release Date	Feature	Minimum Hardware Required	Firmware Required
06/01	• **GSM/EDGE BS Loopback BER**, Opt. 300 Rev. B • Enhances the revision A to enable FER, BLER, RBER, and sensitivity measurements on an EDGE BTS or transceiver module. • New firmware revision supports the EDGE fully coded uplink signal generation according to the GSM 05.03 standard, version 8.3.0. • The demodulator board and the BER board have been replaced to support the real-time demodulation and decoding of the EDGE signal in addition to the GSM signal.	ESG-D "B" with Opt. 300 and: • Opt. UN8 with Option 202 Rev D (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154) • Opt. UNA Not available in ESG-DP Not compatible with Opt. UND	≥ B.03.80
04/01	• **Updated W-CDMA 3GPP TFCI Coding to match Standard**, Opt. 100	Opt. UND Rev.A or better (Dual Arb board E4400-60069 or E4400-60187)	≥ B.03.75
	• **Enhanced the ESG with the ability to support Signal Studio software** • **Corrects recent erroneous reporting of configuration Error 617**	All ESG Series	
02/01	**Updated Revision Numbers for Fully Coded 3GPP W-CDMA personality** for user equipment (downlink) and base station (uplink) testing, Opt. 200. Based on the following 3GPP Technical Specifications: 3G TS 25.101 V3.5 (2000-12) for Reference Measurement Channels, 3G TS 25.101 V3.3 (2000-06) for user equipment receiver characteristics testing, and 3G TS 24.141 V3.4 (2000-12) for base station testing. **Added 64k UDI multiple block downlink channel**, per 3G TS 25.944 V3.3 (2000-12), Opt. 200 **Added UN3/4 time delay compatible GSM Gaussian filter**, Opt. UN8	ESG-D "B" with Opt. UN8 Rev. C or better (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	≥ B.03.72
	• **Updated Revision Numbers for W-CDMA 3GPP 3.4 12-00 for Component Test**, Opt. 100 • **Added multicarrier random phase**, Opt. UND • **Added UN3/4 time delay compatible GSM Gaussian filter**, Opt. UND	Opt. UND Rev. A or better (Dual Arb board E4400-60069 or E4400-60187)	

Release Date	Feature	Minimum Hardware Required	Firmware Required
10/00	• **Fully Coded (3GPP 3.2 3-00) W-CDMA personality** for user equipment (downlink) and base station (uplink) testing, Opt. 200 (initial release). Based on the following 3GPP Technical Specifications: 3G TS 25.101 V3.2.2 (2000-04) for user equipment testing and 3G TS 24.141 V3.1.0 (2000-03) for base station testing. • **Added reverse link capability to the Real-Time cdma2000 personality** for fully coded base station testing, Opt. 201 • **Added signal-selection capability for certain BNC output connectors to the Real-Time cdma2000 personality**, Opt. 201	ESG-D "B" with Opt. UN8 Rev. C or better (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	≥ B.03.60
	• **Enhanced Bluetooth capability**, Opt UND. Added sine frequency drift impairment, AWGN, continuous PN9 sequence, and clock/gate signal for BER testing.	Opt. UND Rev. A or better (Dual Arb board E4400-60069 or E4400-60187)	
9/00	• **Changed Walsh code assignments for reverse link channels to match specifications**, Opt. 101 • **Changed reverse link Q long code from 1 chip advance (relative to I long code) to 1 chip delay**, Opt. 101 • **Correctly display the power when PSCH and SSCH channels are on at the same time**, Opt. 100 • **Removed 307200 rate for RC3 suppl 1 and suppl 2 traffic channels**, Opt. 101 • **Replaced a suppl 1 traffic channel in reverse link 5 setup with a suppl 2 traffic channel**, Opt. 101 • **Changed cdma2000 spread rate default to SR1**, Opt. 101	Opt. UND Rev. A or better (Dual Arb board E4400-60069 or E4400-60187)	≥ B.03.51
7/00	• **Improved ACP**, Opt. H99 (Revision B)	ESG-D/DP "B" with Opt. H99 (Revision B) or better (A9 Output Board, E4400-60188)	≥ B.03.50

Release Date	Feature	Minimum Hardware Required	Firmware Required
6/00	• **Quick Paging Channel**, Opt. 201 • **F-FCH/F-SCH Frame Offsets 0 to 15**, Opt. 201 • **F-FCH/F-SCH Quasi Orthogonal Functions 0 to 3**, Opt. 201 • **2-ESG Power Setting UI**, Opt. 201 • **EDGE Specification Update to Revision 8.3.0-1999**, Opt. 202	ESG-D "B" with Opt. UN8 Rev. C or better (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	≥ B.03.50
	• **W-CDMA Specification Update to 3GPP 3.2 3-00**, Opt. 100. Added Test Model 4, default offset for PICH to 120, added Paging Indicator Sequence to PICH data selection, unused bits of PICH to DTX (power off), changed PN9 padding to 1s. • **Added Table Sorting Feature**, Opt. 100, 101, and UN5. • **Added Code Domain Power Display**, Opt. 100 and 101. • **Changed 3GPP Scramble Code Default to 0**, Opt. 100	Opt. UND Rev. A or better (Dual Arb board E4400-60069 or E4400-60187)	
	• **Remote operation improved with faster firmware operating system**	Hardware independent (firmware runs on LDS 3.11)	
4/00	• **Real-Time cdma2000** for fully coded IS-2000 receiver testing, Opt. 201 (initial release) • **Burst Shape Rise and Fall Editor**, Opt. UN8	ESG-D "B" with Opt. UN8 Rev. C or better (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	≥ B.03.40
	• **iDEN Waveforms for MS BER Test**, Opt. H60 Rev. D. Additional features are equivalent to Opt. UND Rev D.	ESG-D "B" with Opt. H60 Rev. D Dual Arb board (E4400-60186) with 50 kHz reconstruction filter instead of 250 kHz filter	
2/00	• **W-CDMA (3GPP 3.1 12-99) Component Test**, Opt. 100 Rev. D. This update to Option 100 implements the 3GPP specification for W-CDMA as defined in December 1999. (Most notably, the chip rate was changed to 3.84 Mcps.) This release also includes W-CDMA (Rev. 1.0-1.2), Opt. 100 Rev. C, as a separate menu selection.	Opt. UND Rev. A or better (Dual Arb board E4400-60069 or E4400-60187)	≥ B.03.30
	• **Opt. UND Phase Noise Enhancement**, Improves Arb clock phase noise between 1 kHz and 10 kHz.	Opt. UND Rev. D or better (Dual Arb board E4400-60187)	

Release Date	Feature	Minimum Hardware Required	Firmware Required
11/99	• **Bluetooth Personality**, Opt. UND	Opt. UND Rev. A, or better (Dual Arb board E4400-60069)	≥ B.03.20
	• **Multicarrier NADC, PDC, PHS, GSM, DECT, EDGE, TETRA, PWT, CDPD, APCO25**, Opt. UND	Opt. UND Rev. B or better (Dual Arb board E4400-60187). Rev B board (E4400-60187) will give flatter baseband signals than Rev A board (E4400-60069).	
	• **Enhanced Clipping**, Opts. UND, 100 Rev. C, 101 Rev. B, and UN5 Rev. C	Opt. UND Rev. A or better (Dual Arb board (E4400-60069)	
	• **Multicarrier cdma2000**, Opt. 101 Rev. B	Opt. UND Rev. B or better (Dual Arb board E4400-60187). Rev B board (E4400-60187) will give flatter baseband signals than Rev A board (E4400-60069).	
	• **Multiframe GSM**, Opt. UN8	Opt. UN8 Rev. C or better (Flex DG board E4400-60154)	
	• **Bit Editor**, Opt. UN8	Opt. UN8 Rev. A or better (Baseband Fuzzy board E4400-60070)	
	• **Bluetooth, CDPD, APCO25**, Opt. UN8	Opt. UN8 Rev. A or better (Baseband Fuzzy board E4400-60070)	
	• **Inverted Data Remedy**, Opt. UND. Corrects previously reversed I and Q signals for frequencies below 250 MHz.	Opt. UND Rev. C or better (Dual Arb board E4400-60187)	
10/99	• **GSM BS Loopback BER**, Opt. 300 Rev. A (initial release)	ESG-D "B" with Opt. 300 Rev. A and: • Opt. UN8 Rev D (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154) • Opt. UN7 Rev. A (board E4400-60072) • Opt. UNA Not available in ESG-DP Not compatible with Opt. UND	≥ B.03.10

Release Date	Feature	Minimum Hardware Required	Firmware Required
8/99	• **ESG-AP Models** • **ESG-DP Models**	• E4424B - E4427B • E4434B - E4437B	≥ B.03.00
	• **Fast Pulse**, Opt. 1E6 (initial release)	ESG-A or ESG-AP (analog) Not available in ESG-D or ESG-DP (digital)	
	• **Trigger then Continuous Run**, external frame trigger enhancement	Opt. UN8 Rev. D (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	
	• **EDGE Personality**, Opt. 202 Rev. A • **DECT/PWT Personality Enhancements**	Opt. UN8 Rev. C, or better (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154)	
	• **User File Bit Editor**	Any ESG-D or ESG-DP Series	
	• **Firmware Utility to Installed Options Revision** (e.g. Option UND Hardware Version B)	ESG-D with Opt. UN3/4, UN8 (Rev. A or higher)	
	• **Multi-Carrier W-CDMA**, Opt. 100 Rev. B enhancement	Opt. UND Rev. B or greater. Rev. B Dual Arb board (E4400-60187) will give flatter baseband signals than Rev. A (E4400-60069). Rev. B also allows trigger inputs and marker outputs. Arbitrary waveform generator triggers became available in Opt. UND with serial number prefix US3844 or GB3845.	
	• **I/Q Blanking Off Ratio Improvement for TDMA Bursts**, Opt. UN8 enhancement • **Changeable DATA and DATA CLOCK Input Signal Polarity**, Opt. UN8 enhancement	ESG-D "B" with Opt. UN8 Rev. B (Baseband Fuzzy board E4400-60070 and Data Generator II board E4400-60182) or Rev. D (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154).	
6/99	• **EDGE Personality**, Opt. H65 (initial release) No longer available - See Opt. 202 8/99.	Opt. UN8 Rev. C (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154) or Opt. UN8 Rev. D (Baseband Fuzzy board E4400-60070 and Flex DG board E4400-60154).	≥ B.02.50
5/99	• **W-CDMA (ARIB 1.0 - 1.2) Component Test**, Opt. 100 Rev. A (initial release based on 3/99 ARIB 1.0 - 1.2 specification). • **cdma2000 Component Test**, Opt. 101 Rev. A (initial release based on 3/99 cdma2000 Rev. 8 specification)	ESG "B" with Opt. UND Rev. B or greater. Rev. B board (E4400-60187) will give flatter baseband signals than Rev. A board (E4400-60069). Rev. B board also allows trigger inputs and marker outputs. Arbitrary waveform generator triggers became available in Opt. UND with serial number prefix US3844 or GB3845.	≥ B.02.40
	• **ESG Board Number and Revision Identifier**, firmware utility	Any ESG series	

Release Date	Feature	Minimum Hardware Required	Firmware Required
12/98	• **Multi-Carrier IS-95 CDMA for Component Test**, Opt. UN5 Rev. B enhancement • **W-CDMA Trial System Multi-Channel Table Editor**, Opt H97 enhancement for increased flexibility • **Multitone Generation Capability**, Opt. UND firmware enhancement • **AWGN Generation Capability**, Opt. UND firmware enhancement	ESG 'B" with Opt. UND Rev. B or greater. Rev B board (E4400-60187) will give flatter baseband signals than Rev A board (E4400-60069). Rev. B board also allows trigger inputs and marker outputs. Arbitrary waveform generator triggers became available in Opt. UND with serial number prefix US3844 or GB3845.	≥ B.02.24
	• **Trigger Inputs and Marker Outputs**, Opt. UND Rev. B enhancement (initial release)	Opt. UND Rev. B	
	• **W-CDMA Trial System Basestation Receiver Test**, Opt. H98 enhancement	ESG-D "B" with Opt. H98	B.02.30 (H98-specific firmware)
8/98	• **Real-Time Baseband Generator**, Opt. UN8 Rev. A (initial release, replaces Opt. UN3 baseband generator). Highly flexible custom modulation for any modulation type/filter/symbol rate.	ESG-D "B" with Opt. UN8 (Rev. A or higher)	≥ B.02.02
	• **Opt. UN9** Rev. A (initial release, together with Opt. UN8 replaces Opt. UN4 baseband generator). Adds 7 MBytes RAM to Opt. UN8 for a total of 8 MBytes. Can be added to any configuration with Opt. UN8.	Opt. UN9	
	• **Alternate Timeslot Power**, Opt. UNA (fast electronic attenuator), for GSM alternate timeslot amplitude switching.	Opt. UNA	
	• **iDEN Waveforms for MS BER Test**, with Opt. H60 (initial release)	ESG-D "B" with Opt. H60 Rev. B Dual Arb board (E4400-60186) with 50 kHz reconstruction filter instead of 250 kHz filter	
6/98	• **W-CDMA Trial System Fully Coded Mobile Receiver Test**, Opt. H98 (initial release)	ESG-D "B" with H98	B.01.10 (H98-specific)

Release Date	Feature	Minimum Hardware Required	Firmware Required
4/98	• **ESG "B" Revision Platform Roll,** includes more firmware memory, bigger power supply to allow for more options in one instrument. Includes the following:	• E4400B/20B/21B/22B (ESG "B") • E4430B/31B/32B/33B (ESG-D "B")	≥ B.01.03
	• **Arbitrary Waveform Generator**, Opt. UND Rev. A (initial release) • **Multichannel IS-95 CDMA Personality**, Opt. UN5 Rev. A (initial release) • **W-CDMA Trial System Partially Coded Component Test**, Opt. H97 (initial release)	Opt. UND Rev. A board (E4400-60069)	
	• **Bit Error Rate Test**, Opt. UN7 (initial release)	Opt. UN7 Rev. A board (E4400-60072)	
	• **Improved ACP**, Opt. H99 (initial release)	Opt. H99 Rev. A board (E4400-60155)	
	• **High Power with Mechanical Attenuator**, Opt. UNB (initial release)	Opt. UNB	
	• **I/Q Quadrature Impairments**, firmware enhancement • **Frequency Channels for TDMA Standards**, firmware enhancement • **Secondary TDMA Framing**, firmware enhancement	ESG-D "A" or "B"	≥ B.01.03 for "B" version, B.01.03 only for "A" version
11/97	• **Hardware PN Generator**, Opt. UN3/4 firmware enhancement • **Frame Trigger for PHS and PDC**, Opt. UN3/4 firmware enhancement	ESG-D "A" with Opt. UN3/4	A.01.20 to B.02.03
5/97	• **Opt. H03 Enhancements**	None	A.01.20 through A.02.44
	• **Single-Channel Partially Coded CDMA**, Opt. H03	ESG-D "A" with Opt. H03	Included

3/97	• **New Baseband Generator**, Opt. UN3/4 (initial release, replaces Opt. 1EH). Adds:
	
	   • **DECT and TETRA Personalities**
	   • **Modulation Filter Choice in All TDMA Personalities**
	   • **Symbol Rate Choice in All TDMA Personalities**
		ESG-D "A" with Opt. UN3/4	A.01.10 through B.01.03

10/96	• **Firmware Enhancements**	ESG-D "A" with Opt. 1EH	≥ A.01.10
8/96	• **ESG-A Models**, (initial release) • **ESG-D Models**, (initial release)	• E4400A/20A/21A/22A (ESG "A") • E4430A/31A/32A/33A (ESG-D "A")	≥ A.01.00
	• **Baseband Generator with GSM, NADC, PDC, and PHS TDMA Personalities**, Opt. 1EH (initial release)	Opt. 1EH	

ESG-D Baseband Generator Evolution (Oldest to Newest)

TDMA Baseband Generators

1EH - Original, single-board baseband generator. Provided NADC, GSM, PDC, and PHS personalities. Limited flexibility to change data rates and filters.

UN3/4 - Two-board enhanced baseband generator. Provided NADC, GSM, PDC, PHS, and new DECT and TETRA personalities. More flexibility to change data rates and filters over a limited range.

UN8/9 Real-Time Baseband Generator

Rev. A - New baseband board (first Fuzzy board) with custom ASIC. With UN3/4 data generator board allows any I/Q modulation type, data rates to 12.5 Msps, and create-your-own FIR filter.

Rev. B - Enhanced baseband board (second Fuzzy board). Provides polarity change to DATA and DATA CLOCK inputs.

Rev. C - New data generator board. With first Fuzzy board provides DSP, FPGA, and RAM for dramatic increase in channel coding complexity.

Rev. D - New data generator board. With second Fuzzy board provides combined enhancements from previous revisions B and C.

		Data Generator Board	
		Original	**New**
Baseband Fuzzy Board	**Original**	Rev. A	Rev. C
	New	Rev. B	Rev. D

Option UND Dual Arbitrary Waveform Generator Evolution

Rev. A - Initial release of dual arbitrary waveform generator board.

Rev. B - Added triggers, marker hardware, and flattened the reconstruction filter frequency response.

Rev. C - Hardware modified to remedy reversed I and Q signals for frequencies below 250 MHz.

Rev. D - Hardware modified to improve Arb clock phase noise between 1 kHz and 10 kHz.