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 on 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
4/00	• **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)	

Printed in USA April 3, 2000

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

Release Date	Feature	Minimum Hardware Required	Firmware Required
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.