Agilent ESA-L Series Spectrum Analyzer

Configuration Guide

This ESA-L configuration guide will help you determine which options, measurement personalities, accessories, and services to include in your new ESA-L or to add as upgrades to an existing ESA-L. Options for the low-cost CXA signal analyzer (N9000A) are shown alongside the ESA-L to show how to migrate to the latest technology. If you are looking for increased speed, more application options, or modern connectivity consider migrating to the new CXA signal analyzer.

Low-cost spectrum analysis up to 26.5 GHz

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Introduction

This step-by-step guide will help you configure your ESA-L. Capabilities that are listed as standard come with the instrument at no additional charge. Tailor the performance, exterior, and service packages to meet your requirements.

The ESA-L spectrum analyzer is available in one of two express configurations: BAS or BTG. The express analyzers offer faster delivery by limiting the number of options that can be ordered together. The custom configuration allows for maximum flexibility in ordering the analyzer that best meets your needs by offering all of the ESA-L options; however, it increases the delivery timeframe.

Also included in this document is a side-by-side comparison of the ESA-L and the CXA.

With the Agilent N9000A CXA signal analyzer, a flexible, dependable, versatile, and low cost tool for essential signal characterization, you're ready for your next challenge. The CXA can help you accelerate product testing and development on multiple levels: cost reduction, throughput, design enhancement, and beyond. Get the capabilities you need with X-Series expandability in the CXA.

Do you love your ESA-L, but need a more modern, faster analyzer?

The N9000A CXA is the ideal low-cost replacement for the ESA-L basic analyzer.

www.agilent.com/find/CXA

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ESA-L Basic Express Spectrum Analyzer (BAS/BTG)

Step 1. Select your frequency range

Description	ESA-L model number	CXA option number
Frequency range, 9 kHz to 1.5 GHz	**E4411B** E4411B-BAS or E4411B-BTG	CXA Option 503 maximum frequency is 3.0 GHz
Frequency range, 9 kHz to 3.0 GHz	**E4403B** E4403B-BAS or E4403B-BTG	CXA Option 503 maximum frequency is 3.0 GHz
Frequency range, 9 kHz to 26.5 GHz	**E4408B** E4408B-BAS or E4408B-BTG	CXA Option 507 maximum frequency is 7.5 GHz CXA Option 513 maximum frequency is 13.6 GHz CXA Option 526 maximum frequency is 26.5 GHz

Step 1a. Included options at no additional charge

Description	ESA-L spectrum analyzer	CXA signal analyzer
IF sweep and video output ports	Option A4J[1]	Not available
GPIB connection	Option A4H[1]	Standard on all CXA signal analyzers. In addition, the CXA offers 7 USB ports and LAN connectivity as standard.
IntuiLink PC connectivity software	Connects to Microsoft® Word and Excel	The CXA signal analyzer functions as a PC and allows connection to Microsoft products with no additional software.

Step 2. Add additional options[2]

Description	ESA-L spectrum analyzer	CXA signal analyzer
Narrow resolution bandwidths (recommended option)	Options 1DR	Standard
Replace GPIB with serial port	Option 1AX[1,3]	Serial port unavailable. Digital bus is standard.
8590 series programming code compatibility	Option 290[4]	Not available
50 Ω tracking generator	Option BTG 9 kHz to 3 GHz	N9000A-T03 In addition, the CXA offers Option T06, tracking generator 9 kHz to 6 GHz

1. Requires one expansion slot.
2. If more than two or three ESA-L options are ordered, memory size limitations may limit the number that may be loaded at any one time.
   For detailed information about memory size limitations, please see the web site: **http://sa.tm.agilent.com/ESA/memory.**
3. Not compatible with Option A4H.
4. Free download on the Web, no license required: **www.agilent.com/find/esa.**

ESA-L Custom Configuration

Step 1. Select your frequency range

Description	ESA-L model number	CXA option number
Frequency range, 9 kHz to 1.5 GHz	E4411B	N9000A-503 CXA Option 503 maximum frequency range is 3.0 GHz

Step 1a. Included options at no additional charge

Description	ESA-L spectrum analyzer	CXA signal analyzer
75 Ω impedance	Option 1DP [1]	N9000A-C75
GPIB Connection	Option A4H [2]	Standard on all CXA signal analyzers. In addition, the CXA offers 7 USB ports and LAN connectivity as standard.
IntuiLink PC connectivity software	Connects to Microsoft Word and Excel	The CXA signal analyzer functions as a PC and allows connection to Microsoft products with no additional software.

Step 2. Add additional options [3]

Description	ESA-L spectrum analyzer	CXA signal analyzer
Narrow resolution bandwidths (recommended option)	Option 1DR	Standard
Replace GPIB with serial port	Option 1AX [2,4]	Serial port unavailable. Digital bus is standard.
8590 series programming code compatibility	Option 290	Not available
IF sweep and video output ports	Option A4J [2]	Not available
75 Ω tracking generator	Option 1DQ [5]	Not available

1. Not compatible with Option 1DN.
2. Requires one expansion slot.
3. If two or more ESA-L options are ordered, memory size may limit the number of options that can be loaded at any one time; for detailed information about memory size limitations, please see the Web site: **http://sa.tm.agilent.com/ESA/memory.**
4. Not compatible with Option A4H.
5. Requires Option 1DP; not compatible with Option 1DN/BTG.

Express Analyzer and Bundle Equivalent Options

The ESA-L express analyzers offer configurations that are typically ordered together and help speed instrument delivery. If you choose a custom ESA-L, following are the equivalent custom configuration options. Available through Agilent's distribution partners, the N9000AEP CXA signal analyzer express configuration provides excellent value and the fastest delivery of the most popular CXA configurations.

Express option or bundle	ESA-L Equivalent option(s)	CXA express configuration
BAS- Basic analyzer	A4J	N9000AEP-001 CXA express - 3.0 GHz frequency, 3.0 GHz preamplifier N9000AEP-002 CXA express - 7.5 GHz frequency, 7.5 GHz preamplifier N9000AEP-005 CXA express - 13.6 GHz frequency, 7.5 GHz preamplifier N9000AEP-006 CXA express - 26.5 GHz frequency, 7.5 GHz preamplifier
BTG- Basic analyzer with tracking generator	A4J, 1DN	N9000AEP-003 CXA express - 3.0 GHz frequency, 3.0 GHz preamplifier, 3.0 GHz tracking generator N9000AEP-004 CXA express - 7.5 GHz frequency, 7.5 GHz preamplifier, 6.0 GHz tracking generator

ESA-L Accessory, Calibration, and Warranty Options

Step 3. Select accessories and calibration options

Description	ESA-L spectrum analyzer option	ESA-L notes	ESA-L part number	CXA signal analyzer option
Accessories				
12 VDC power cable	A5D	DC power connection available on every ESA	E4401-60066	Not available
Hard transit case	AXT		E4401-60101	N9000A-HTC
Gray soft carrying/operation case	AYT		E4401-60117	Not available
Yellow soft carrying/operation case	AYU		E4401-60118	Not available
Cable fault measurement kit (50 Ω)	B7K	Requires Option 1DN or STG and Option 225 or BAH		Not available
Gray backpack carrying case	042		9300-2465	Not available
Yellow backpack carrying case	044		9300-2470	Not available
Rack mount kit with handles	1CP	This kit is designed to fit into Agilent racks only; for non-Agilent racks, additional end brackets are required and are available by ordering part number 1494-0061	E4401-60057	N9000A-1CP
50 to 75 Ω minimum loss pad	1D7		0955-1020	N9000A-MLP
Rechargeable snap-on battery and charger	E1779B	Order as separate model number, not option number		Not available
Front panel cover	UK9		E4401-60193	Standard
Benchlink spectrum analyzer, PC software	B70	Also orderable as E4444A; requires Option A4H or 1AX		Remote desktop is a standard feature on CXA
Benchlink Web remote control software	230	Requires Option A4H		Remote desktop is a standard feature on CXA
IntuiLink software (shipped with every instrument)	***	Available on Web site for download		Remote desktop is a standard feature on CXA
Low noise amplifier to 1 GHz	11909A			
Firmware upgrade	UE2	Firmware updates also available on Web site for free download **http://www.agilent.com/find/esa_firmware**		See **http://www.agilent.com/find/cxa**
Add extra manual set	0B1	Available for Web download		Available for Web download
Commercial calibration certificate with test data	UK6			N9000A-UK6
Agilent Calibration + Uncertainties + Guardbanding (accredited cal)	AMG			
Calibration Assurance Plan, Return to Agilent, 3 years	R-50C-011-3			
Calibration Assurance Plan, Return to Agilent, 5 years	R-50C-011-5			
Agilent Calibration + Uncertainties + Guardbanding, 3 years	R-50C-016-3			
Agilent Calibration + Uncertainties + Guardbanding, 5 years	R-50C-016-5			
ANSI Z540-1-1994 Calibration	A6J			
ANSI Z540-1-1994 Calibration, 3 years	R-50C-021-3			
ANSI Z540-1-1994 Calibration, 5 years	R-50C-021-5			
Delete manual set (retains CD-ROM version)	0B0			
Service documentation, component level CLIP	0BV	Component level information package		
Service documentation, assembly level	0BW	Performance verification and adjustment software included		N9000A-0BW

For more information visit **www.agilent.com/find/accessories.**

Step 4. Choose warranty length

Description	ESA-L spectrum analyzer	CXA signal analyzer
3-year warranty (return-to-Agilent), standard	Included	Included
Warranty Assurance Plan, Return to Agilent, 5 years	R-51B-001-5C	R51B-001-5C

ESA-L Upgrade Options

Add additional options or upgrade your existing ESA-L spectrum analyzer

Upgrades may cost more than if the same option had been purchased at the time of sale of the instrument.

Available models:

			Customer upgradable	Customer upgradable w/test	Self-maintainers with Option 0BW & N7811A software[1]	Return to service center	Return to factory
E4411BU (9 Hz to 1.5 GHz) E4403BU (9 Hz to 3.0 GHz) E4408BU (9 Hz to 26.5 GHz)		Options not listed are not available for upgrade on the ESA-L Series analyzers					
Ordering instructions							
To upgrade an existing ESA-L Series spectrum analyzer, order the corresponding model number followed by a 'U' and the desired option number (E44xxBU-xxx)		For more information see: **http://www.agilent.com/find/esa-l_upgrades**					
Hardware capabilities and performance							
Color display upgrade	049	Requires B72 plus firmware version A11.00 or higher	X				
Replace GPIB connection (A4H) with serial port	1AX	Not compatible with A4H; occupies one expansion slot		X		X	
GPIB connection	A4H	Not compatible with 1AX; occupies one expansion slot		X		X	
50 Ω tracking generator (9 kHz to 3.0 GHz)	1DN	Incompatible with 1DP; operates to 1.5 GHz on E4411B; included in Option BTG		X		X	
75 Ω tracking generator (1 MHz to 1.5 GHz)	1DQ	E411B only; requires Option 1DP		X		X	
Narrow resolution bandwidths	1DR	Requires B72 plus firmware version A11.00 or higher; 100 Hz minimum on ESA-L Series		X		X	
Memory extension to 10 MB	B72	Included on instrument prefixes ≥ US4144 or MY4144; required for firmware version A.08.00 or higher	X			X	
IF sweep, video output ports	A4J	Included in all ESA-L analyzers with Option BAS or BTG; occupies one expansion slot		X		X	
APC 3.5 mm input connector	BAB	E4408B only			X	X	
Application and firmware							
8590 Series programming code compatibility	290	Available for Web download; **www.agilent.com/find/esa**	X				

1. Self-maintainers are customers who service and calibrate their own instruments; information about the N7811A software can be found at: **http://calsw.tm.agilent.com/.**

The Agilent CXA offers license key upgrades, which minimizes the amount of downtime you will experience while waiting for the upgrades you require.

Related Literature

Agilent ESA-L Series Spectrum Analyzer, Configuration Guide, literature number 5989-9952EN

8590-E Series, Brochure, literature number 5963-6908E

8590-E Series, Technical Specifications, literature number 5963-6909E

ESA Snap-On Battery Pack, Flyer, literature number 5966-1851E

Select the Right Spectrum Analyzer for Your Needs, Selection Guide, literature number 5968-3413E

Performance Verification and Adjustment Software, (See Option OBW)

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

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