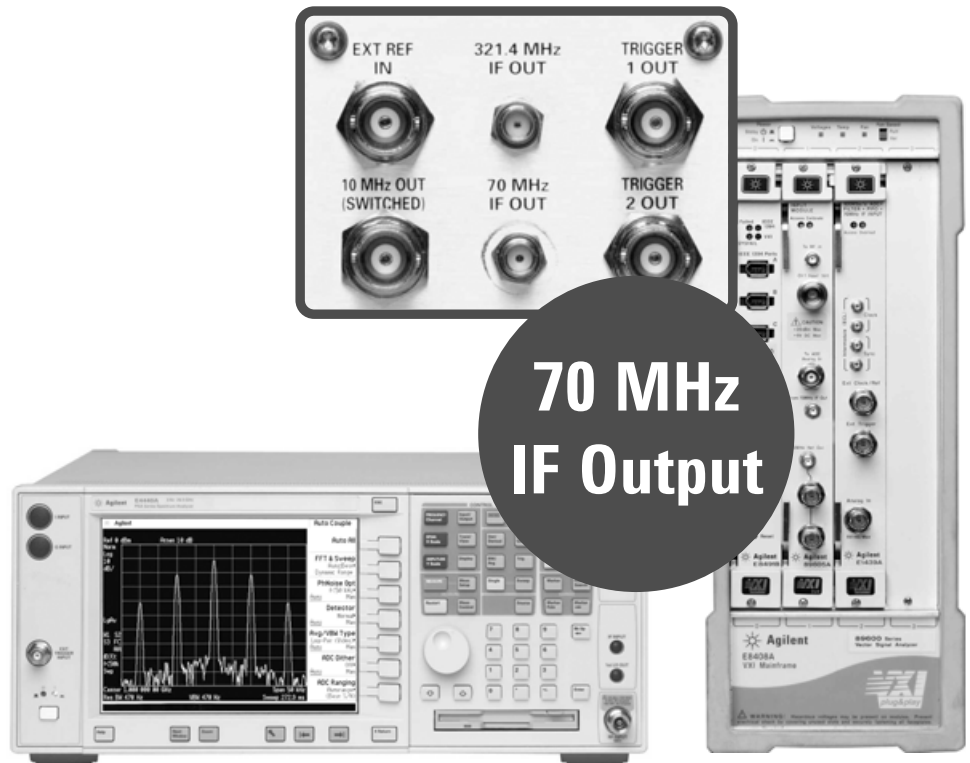


Agilent PSA Series Spectrum Analyzers Option H70, 70 MHz IF Output Technical Overview

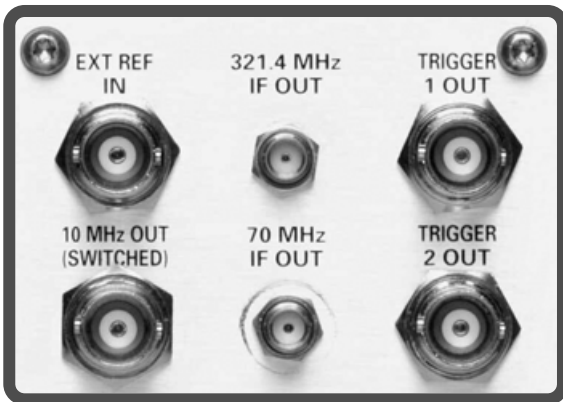
For use with external signal analyzers
that have 70 MHz IF input



PSA Spectrum Analyzers with Option H70

The PSA series of high performance spectrum analyzers from Agilent Technologies provides a superior combination of speed, accuracy, high dynamic range, low phase noise, fine resolution, and flexible digital demodulation. Configured with Option H70, a PSA series spectrum analyzer provides its 70 MHz IF output to other signal analyzers. This down converter option will extend the flexibility of the PSA to meet measurement requirements of broadband applications.

Expand the flexibility of your test solution to meet requirements for emerging communication and broadband wireless applications



70 MHz IF output

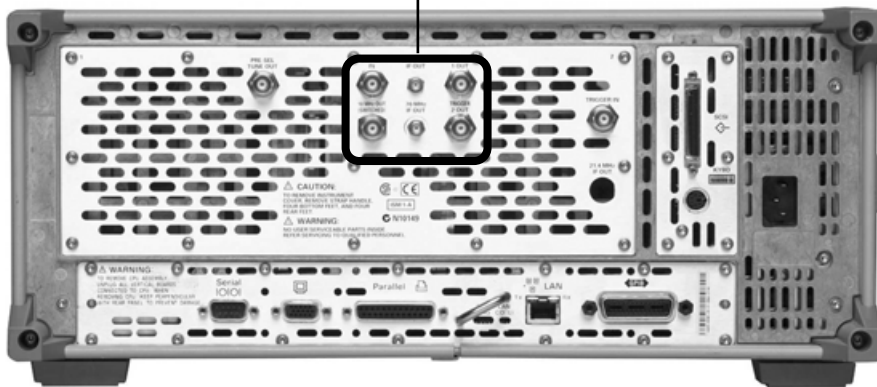


Figure 1. Rear panel of PSA with 70 MHz IF output

Emerging Communication

The change and growth in emerging communication and broadband wireless access are demanding flexibility from test solutions. Engineers keep using wider bandwidths, higher frequencies, and more complex modulation formats to satisfy the demand for more data and more reliable delivery at a lower cost. Design teams must keep in touch with rapidly evolving standards to ensure that your design and testing is current and that your solutions can operate with others.

In these highly competitive markets, Option H70 for 70 MHz IF output of the PSA spectrum analyzer provides design engineers with flexible test configurations for multiple standards and efficiency of asset management.

The Option H70 provides an analog 70 MHz IF signal to the rear panel the E4440A PSA by down converting the 321.4 MHz IF signal. The 70 MHz IF output, which is always “on” while the PSA is powered up, can be measured by a separate signal analyzer that is capable of measuring the broadband signals. The input frequency range can be defined by a PSA series spectrum analyzer, which provides an input frequency range of 3 Hz to 6.7 GHz, 13.2 GHz, and 26.5 GHz.

Test configuration for 802.11a WLAN

The test solution for 802.11a WLAN illustrates the use of Option H70. Using the PSA with Option H70 provides a 70 MHz IF output signal that the VSA digitizes and stores. This stored value is available for analysis by the 89601A VSA software running on a user-supplied PC.

The 89601A vector signal analyzer software is the heart of the 89600 series vector signal analyzers. This software provides flexible tools that can demodulate and analyze the most advanced digitally modulated signals, including those not defined by an established standard. For more details of configuration and specification, see the *Agilent 89611A 70 MHz IF Vector Signal Analyzer Product Overview* (literature number 5988-4093EN).

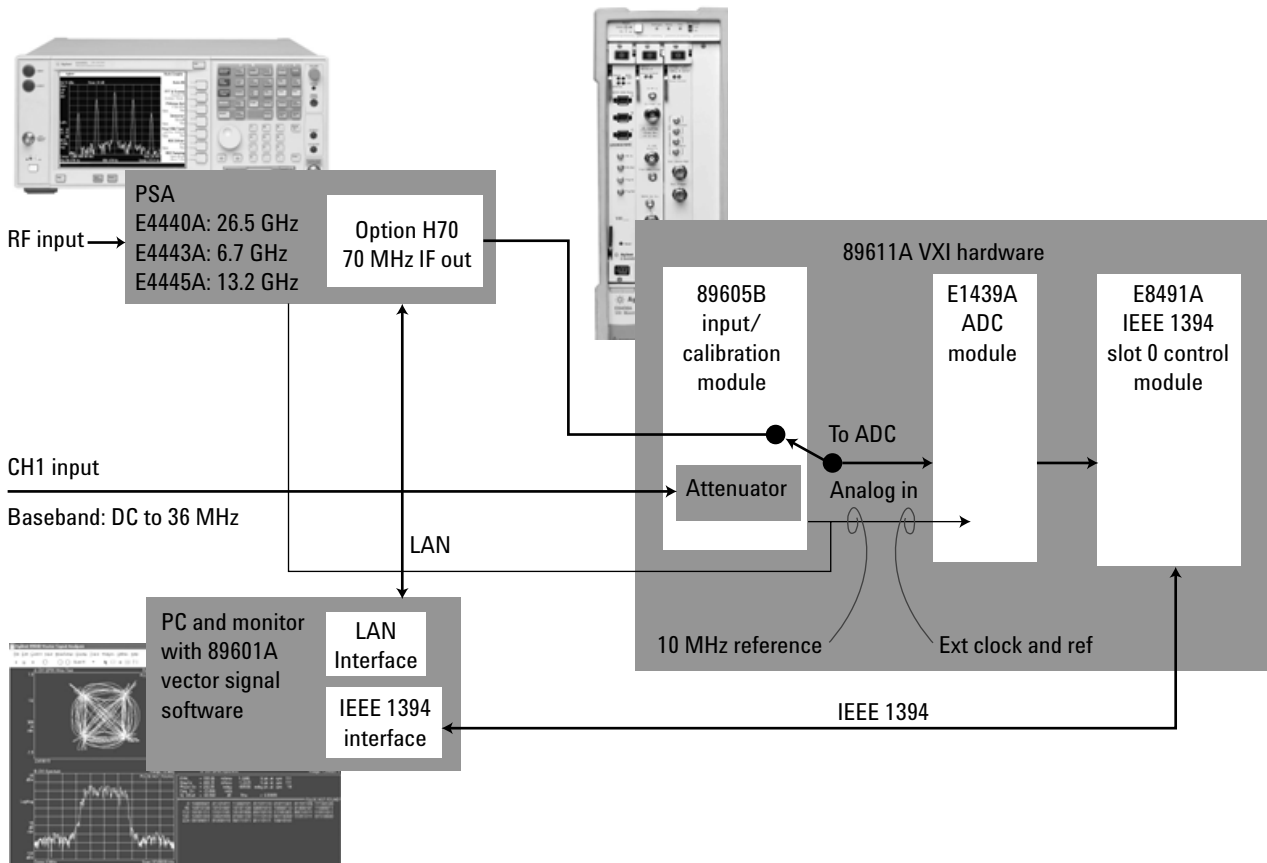


Figure 2. Test configuration for 802.11a WLAN using the PSA series analyzers with Option H70 and the 89611A IF vector signal analyzer

Technical Specification

Key specifications for the E4440A PSA

Frequency coverage	3 Hz to 26.5 GHz
DANL	-153 dBm (10 MHz to 3 GHz)
Overall amplitude accuracy	±0.65 dB (3 Hz to 3 GHz)
Frequency response	±0.38 dB (3 Hz to 3 GHz)
Display scale fidelity	±0.07 dB total (= -20 dBm)
TOI (mixer level -30 dBm)	+16 dBm (400 MHz to 1.7 GHz) +17 dBm (1.7 GHz to 2.7 GHz) +16 dBm (2.7 GHz to 3 GHz)
Noise sideband (CF =1 GHz)	
10 kHz offset	-114 dBc/Hz
10 MHz offset	-157.5 dBc/Hz nominal
1 dB gain compression at 200 MHz to 3 GHz	+3 dBm,+7 dBm nominal
Attenuator	0 to 70 dB in 2 dB steps

Option H70 nominal characteristics

Amplitude

Conversion loss	-6 dB ±2 dB (PSA attenuation 0 dB) ¹
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Flatness

(with center frequency in the range of 5 – 6 GHz,
BW = measurement bandwidth)
±5 MHz BW ±0.5 dB
±9 MHz BW ±0.8 dB

Frequency

IF frequency	70 MHz
IF bandwidth	
At -1 dB BW	
Low band (< 3 GHz)	30 MHz
High band (= 3 GHz)	20 MHz – 30 MHz
At -3 dB BW	
Low band (< 3 GHz)	40 MHz
High band (= 3 GHz)	30 MHz – 60 MHz ²

While performing the “Align All” routine on the PSA, the 70 MHz IF output will be corrupted due to the system’s variable gain circuit stepping through the alignment routine. The ripple correction in the flatness routine will be non-existent in the 70 MHz IF output since the 70 MHz IF is ported to the rear panel before the IF signal is digitized and used for the flatness correction routine.

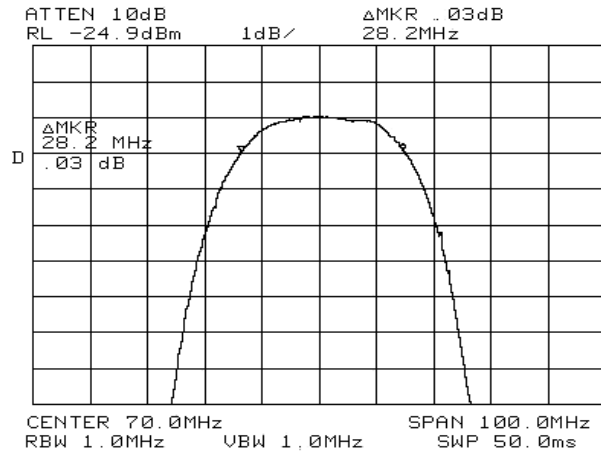


Figure 3. -1 dB BW at 5.7 GHz input signal, which shows 28.2 MHz BW

1. Attenuator setting: 0 dB. In high band, the preselector center routine must be performed to achieve the conversion loss. If applicable Option 1DS (100 kHz to 3 GHz preamp) is on, there will be a 28 dB to 30 dB of gain in the 70 MHz IF output at the rear panel of the PSA. With the preamp on, the conversion loss will be +22 dB.
2. Dependent on internal RF path. Typically, 40 MHz bandwidth increases as a function of the center frequency, up to approximately 70 MHz with a center frequency of 26 GHz.

Ordering Information

E4440A	PSA 3 Hz to 26.5 GHz
E4443A	PSA 3 Hz to 6.7 GHz
E4445A	PSA 3 Hz to 13.2 GHz
E4446A	PSA 3 Hz to 44.0 GHz
E4448A	PSA 3 Hz to 50.0 GHz
Option H70	70 MHz IF down converter (special quotation required)
Option 226	Phase noise measurement personality
Option BAF	W-CDMA measurement personality
Option 202	GSM with EDGE measurement personality
Option B78	cdma2000 measurement personality
Option BAC	cdmaOne measurement personality
Option BAE	NADC/PDC measurement personality
Option 219	Noise figure measurement personality
Option B7J	Digital demodulation hardware
Option 1DS	100 kHz to 3 GHz preamplifier
Option BAB	APC 3.5 connector (replaces type "N" input connector)
Option 1CM	Rack mount kit
Option 1CN	Front handle kit
Option 1CP	Rack mount with handles
Option 1CR	Rack slide kit
Option 0B1	Extra manual set (includes CD-ROM)
Option UK6	Commercial calibration certificate with test data
Option W50	Five-year warranty (replaces three-year warranty)

Related Literature

Agilent 89611A 70 MHz IF Vector Signal Analyzer
Product Overview, literature number 5988-4093EN

Agilent 89600 Series Vector Signal Analyzer
Product Note, literature number 5988-4094EN

Additional PSA product information is available at:
www.agilent.com/find/psa

To receive regularly scheduled e-mail updates about new products and new information, register at:
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