- 300 kHz to 3 GHz (1.3 GHz in HP 8711C and HP 8712C)
- TCP/IP-compliant Ethertwist LAN interface
- Internal 3.5-inch disk drive (LIF/DOS formats)
- Narrowband and broadband detection
- "Real-time" sweep speed (50 ms/sweep)
- Integrated transmission/reflection test set

- Synthesized 1 Hz resolution source
- 2, 6, 12 port switching test sets available
- Internal HP Instrument BASIC (IBASIC)
- 100 dB of system dynamic range
- AM delay, fault location and SRL measurements

HP 8711C
HP 8712C
HP 8713C
HP 8714C
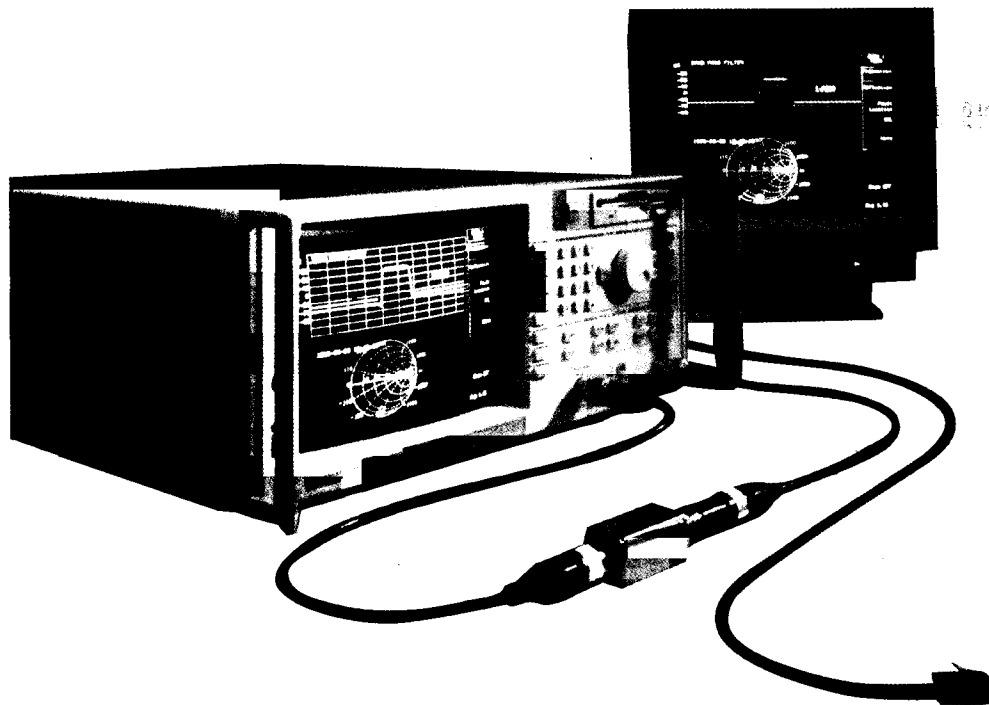
RF Economy Network Analyzers

The HP 8711C family of RF economy network analyzers provide speed, accuracy, and measurement versatility in a compact, integrated instrument for high-volume RF component manufacturing, inspection, and maintenance. An integrated synthesized source and transmission/reflection test set enable complete swept frequency characterization of RF components with a single connection. For testing narrowband devices, the internal synthesized source provides a fast (50 ms/sweep), stable (1 Hz resolution) stimulus. Calculate and display specified device characteristics in real time. Eight markers per channel, marker search, tracking, bandwidth, and a variety of math functions speed component testing.

The optional TCP/IP-compliant Ethertwist LAN interface provides fast, simultaneous distribution of new test parameters, test line limits, and custom interfaces to all test instruments on your production line. LAN capability helps gather test data from every station for trends analysis and quality improvements.

The instrument has a large, 9-inch instrument display, or use a VGA-compatible color monitor for enhanced visibility. Display formats include linear and log magnitude, group delay, phase (models HP 8712C and 8714C), SWR, polar, Smith chart, and real and imaginary. For 75 ohm measurements, dBV/dBmV/dBμV formats also available.

For testing linear and nonlinear components of RF systems, sensitive receivers have both narrowband and broadband detection. Broadband detection allows characterization of frequency-translation devices, while narrowband detection provides more than 100 dB of dynamic range for testing high-rejection, narrowband devices. Calibrated external scalar detectors measure external DUTs and amplitude modulation delay. Power sweep enables testing of amplifier gain compression. A built-in, LIF/DOS format, 3.5-inch disk drive allows unlimited storage of instrument states, data calibration and measurement, and data transfer from your LAN.

Designed for Manufacturing

The HP RF economy network analyzers are designed for high-volume manufacturing and have the speed, and automation features, to reduce test times—and cost—per test. The LAN capability, large VGA, easy-to-understand interface, and internal store and recall of complete instrument states all save time and reduce operator errors.

With LAN capability, R&D and manufacturing departments can readily share and analyze data. Identify pass/fail trends by material and lot number and stations that require calibration. Investigate productivity by variables you select. Create and distribute new test definitions reliably and instantly, plus gain an overview of production, inventory turns, and cost per test. Literally hundreds of instrument states can be programmed for a variety of uses. Up to seven instrument states can be quickly recalled with a single softkey or optional footswitch for hands-free switching. HP's "Fast-Recall" switching can be accomplished in milliseconds so you don't have to change measurement parameters manually.

Powerful marker-search functions speed final test of components by calculating and displaying in real-time-specified device characteristics (maximum/mininum and a 3-dB bandwidth gain slope and flatness), along with measurement data.

Bar-coding capability lets you efficiently track and document individual device performance. With the IBASIC option, correlate test station and operator data with the performance data of every device, before it leaves your facility.

Network Analyzers

RF Economy Network Analyzers, 300 kHz to 3 GHz

HP 8711C
HP 8712C
HP 8713C
HP 8714C
HP 87075C
HP 8730A
HP 87030A

HP 8711C and HP 8713C

These two members of the family offer economical magnitude measurements. They are low-cost RF component test systems with an excellent price for performance to lower your production costs and increase your competitiveness. The HP 8711C has a frequency range of 300 kHz to 1.3 GHz, while the HP 8713C has a frequency range of 300 kHz to 3 GHz.

Optional AM delay allows measurement of delay through frequency-translating devices. Two independent display channels can measure and display two measurements, such as reflection and transmission, in a variety of useful formats.

AM Delay

Delay is an important measure of the nonlinearity of a device's phase response versus frequency. Amplitude modulation delay can measure delay in frequency-translating devices where phase differential will not work. The analyzer measures delay using two calibrated external scalar detectors, the HP 86200B or 86201B.
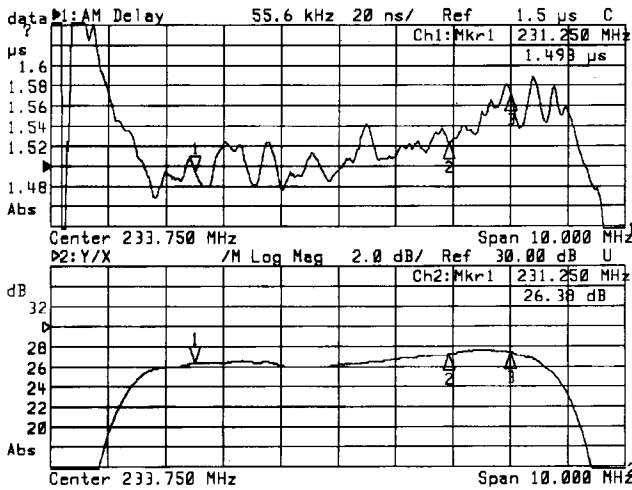
HP 8712C and HP 8714C

These two members of the RF economy network analyzer family offer higher-performance RF vector measurement capabilities, including phase, complex impedance, and linear group delay. When combined with optional amplitude modulation (AM) delay, these products satisfy your most demanding RF measurement needs. The HP 8712C has a frequency range of 300 kHz to 1.3 GHz, while the HP 8714C has a frequency range of 300 kHz to 3 GHz.

Two independent display channels can simultaneously measure and display two measurements, such as reflection and delay, in a variety of useful formats including complex impedance and SWR, on rectangular, polar, or Smith charts.

Comprehensive, Fast Cable Test

When cable does not meet specifications, it is an expensive problem for manufacturers, installers, and maintainers. Option 100 fully tests cables that may have been invisibly damaged through shipment and verifies manufacturer's data.

Option 100 is easy to use and lowers your cost per test with faster, less error-prone measurements of loss, impedance, structural return loss (SRL), and fault location.

SRL is the ratio of incident to the reflected signal, giving the reflection coefficient referenced to the cable's impedance. Periodic disturbances that can cause SRL are usually created by manufacturing or reel-handling incidents. Too small by themselves to cause problems, reflections from each incident can sum coherently. This causes significant reflections at a frequency with a wavelength corresponding to the

disturbance spacing, times two. Option 100 also gives you the capability to utilize a known short cable length and determine velocity factor and cable loss per 100 feet. Option 100's multibump correction automatically compensates for multiple reflections from cable faults or connectors that cause inaccurate measurement of subsequent faults.

HP offers optional 50- and 75-ohm 10-, 15- and 30-foot low-loss, phase-stable cables, and a complete selection of calibration kits.

HP 87075C Multiport Test Set

The HP 87075C multiport test set allows the complete characterization of multiport devices with a two-port network analyzer. The HP 87075C has a frequency range of 300 kHz to 1.3 GHz and operates with 75-ohm HP 8711C, 8712C, 8713C, and 8714C network analyzers. Three options allow you to choose the number of ports that best fit your needs—either 2, 6, or 12 ports.

The test set provides switching capability for the measurement ports, and tests all desired signal paths, with only one connection to the device-under-test. Now multiport device manufacturers can decrease tune and test time, reduce operator fatigue, misconnection rates, and reduce the wear on cables, fixtures and connectors.

In addition to basic switching capability, the HP 87075C gives you specified performance at the test port. The test set is shipped with a factory-complete installation (default) calibration, which includes calibration of all measurement ports. You can use this default calibration, or complete your own installation calibration.

In between "installation" calibrations, the instrument can quickly "on-line" calibrate (SelfCal) the measurement ports using internal transfer standards. The network analyzer's firmware automatically controls the SelfCal process. SelfCal quickly brings the system to the same accuracy level as the installation calibration. The SelfCal capability reduces calibration times by a factor of 20.
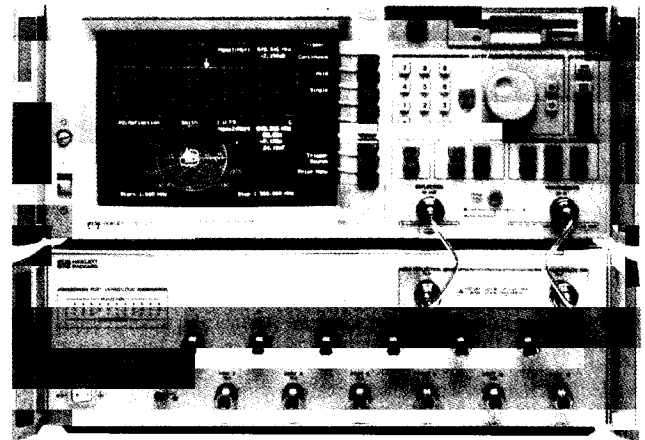
HP 8730A/87030A Tuner Analyzer

The HP 8730A is an economical tuner-test solution from Hewlett-Packard that brings unprecedented levels of throughput, accuracy, and reliability to your tuner manufacturing line. The HP 8730A tuner test system includes a fast and accurate analyzer with an integrated RF source, along with all of the necessary bias supplies and control signals for complete tuner alignment and verification. The analyzer is capable of testing both analog and digitally-controlled tuners and the synthesized source provides precise frequencies—within 1 Hz. The HP 8730's accuracy gives you new confidence that you are making high-quality, repeatable measurements which will improve your product yields.

HP 8711C
HP 8712C
HP 8713C
HP 8714C

Calibration Kits

Accuracy enhancement removes systematic errors by measuring known devices (standards) over the frequency range of interest. Kits for the RF economy network analyzer family contain standards to characterize these errors.

HP 85032E 50 Ω Type-N Economy Calibration Kit

The HP 85032E contains 50 Ω type-N standards to calibrate network analyzers to measure devices with 50 Ω type-N connectors. Standards include a fixed termination, open circuit, and short circuit.

HP 85033D 3.5-mm Calibration Kit

The HP 85033D contains 50 Ω 3.5-mm standards to calibrate network analyzers to measure devices with 50 Ω 3.5-mm connectors. Standards include a fixed termination, open circuit, and short circuit.

HP 85036E 75 Ω Type-N Economy Calibration Kit

The HP 85036E contains 75 Ω type-N standards to calibrate network analyzers to measure devices with 75 Ω type-N connectors. Standards include a fixed termination, open circuit, and short circuit.

HP 85039B 75 Ω Type-F Calibration Kit 🔵

The HP 85039B contains 75 Ω type-F standards, both male and female, to calibrate network analyzers for measurements of common broadband and CATV components with 75 Ω type-F connectors. Standards include a fixed load, open circuit, and short circuit. The following adapters are also included: type-F (f-f), type-F (m-m), type-N (f) to type-F (m) and type-N (m) to type-F (f). A complete male set of standards (fixed-load, open, short) and (m-m) adapter can be ordered as HP 85039B Option 00M, and a complete female set as HP 85039B Option 00F.

Additional type-F adapters available: type-F (m) to type-N (m) (85039-60010), type-F (m) to type-F (f) (85039-60012), and type-F (f) to type-N (f) (85039-60014).

Specifications Summary

	HP 8711/12	HP 8713/14
Source Characteristics		
Frequency Range		
Min. frequency	300 kHz	300 kHz
Max. frequency	1.3 GHz	3.0 GHz
Resolution	1 Hz	1 Hz
Accuracy	<5 ppm	<5 ppm
Output Characteristics		
Power Range (standard)		
<1000 MHz	0 to 16 dBm	−5 to 10 dBm
>1000 MHz	0 to 13 dBm	−5 to 10 dBm
With Attenuator		
<1000 MHz	−60 to 13 dBm	−60 to 7 dBm
>1000 MHz	−60 to 10 dBm	−60 to 7 dBm
With 75 Ω	reduces output by 3 dB	
With Group Delay	reduces output by 3 dB	
Test Port Accuracy and Flatness		
Standard	±1.0 dB	±1.0 dB
Option 1 EC	±1.5 dB	±1.5 dB
Option 1 E1	±2.0 dB	±2.0 dB
Option 1 EC and 1E1	±3.0 dB	±3.0 dB
Signal Purity		
Harmonics	(at +7 dBm)	
<1 MHz	<−20 dBc	<−30 dBc
>1 MHz	<−30 dBc	<−30 dBc

	HP 8711/12	HP 8713/14
Receiver Characteristics		
Frequency Range		
Narrowband	300 kHz to 1.3 GHz	300 kHz to 3.0 GHz
Broadband	10 MHz to 1.3 GHz	10 MHz to 3.0 GHz
Dynamic Range		
Narrowband		
<5 MHz	>60 dB	>80 dB
>5 MHz	>100 dB	>100 dB
Broadband		
Internal	>66 dB	>60 dB
External	>66 dB	>66 dB
Maximum Input		
Narrowband	10 dBm	10 dBm
(at 0.8 dBm compression)		
Broadband	16 dBm	16 dBm
(at 0.5 dBm compression)		
Input Damage Level	20 dBm	20 dBm

AM Delay Characteristics
Apertures: 55.56 kHz
Input Amplifier Range: −10 to +13 dBm
Resolution: 0.5 ns
Range: 30 µs (9000 m)
Accuracy: ±4 ns

Test Set Characteristics
Reflection Port Match: 30 dB
Transmission Port Match: 18 dB typical
System Directivity: 40 dB

RF Connectors
Test Ports: All models are available in 50 Ω or 75 Ω type-N (f)

Physical Characteristics
Size: 179 mm H x 425 mm W x 514 mm D (7.0 in x 16.75 in x 20.25 in)
Weight: Net, 20.5 kg (45 lb); shipping, 25 kg (55 lb)