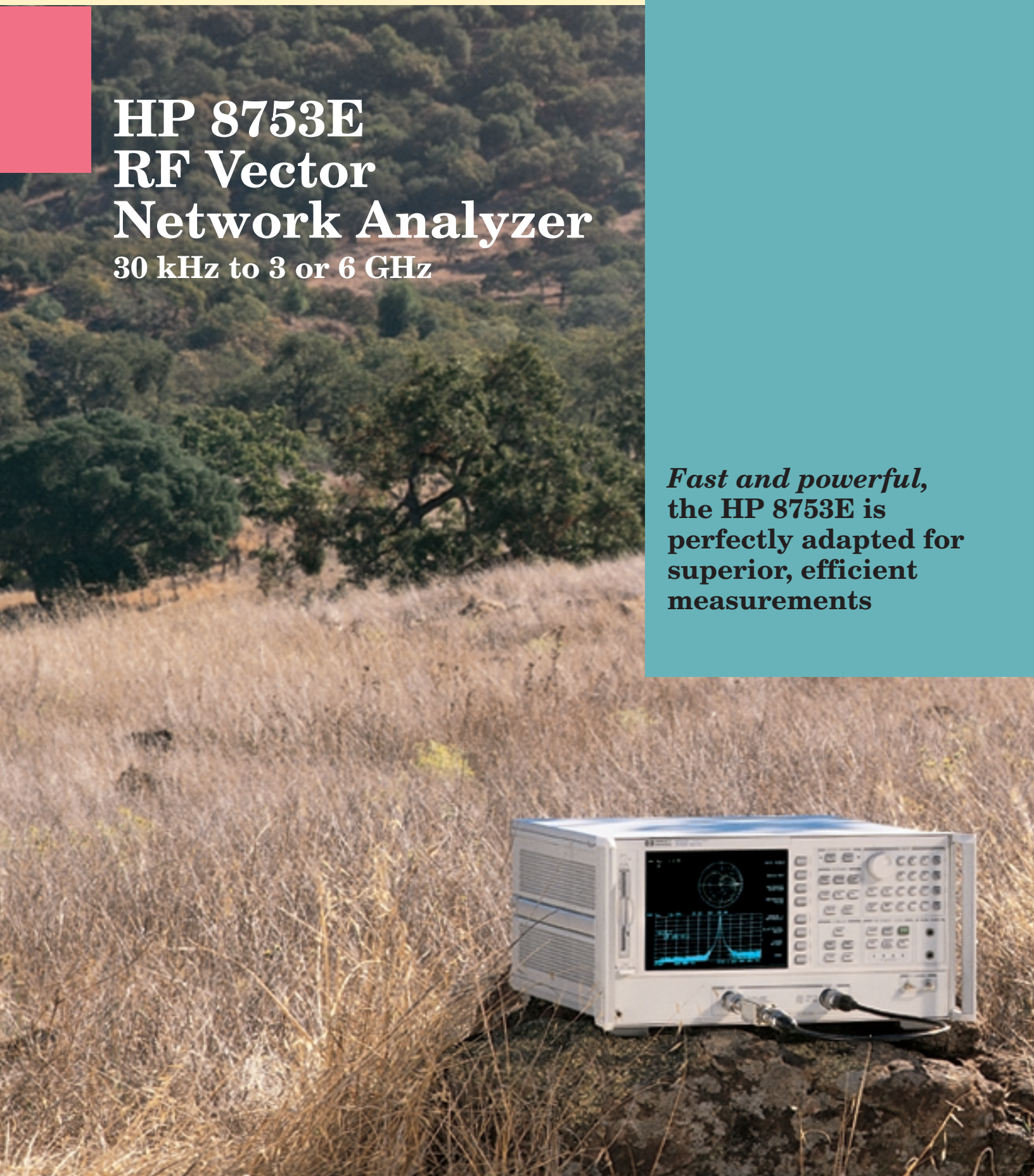
HEWLETT® PACKARD

HP 8753E RF Vector Network Analyzer

30 kHz to 3 or 6 GHz

Fast and powerful, **the HP 8753E is perfectly adapted for superior, efficient measurements**



Impressive 300% speed improvement in measurement sweep, data transfer, instrument-state recall and time-domain analysis.

An unbeatable solution

The high-performance HP 8753E RF network analyzer brings together an unbeatable combination of speed, performance and ease-of-use features to solve your measurement needs, whether on the production floor or in R&D. With an integrated S-parameter test set that covers 30 kHz to 3 or 6 GHz, up to 110 dB of dynamic range, and both frequency and power sweeps, the HP 8753E accurately and quickly characterizes the linear and nonlinear behavior of active and passive components.

Superb speed, accuracy, and productivity features

The HP 8753E extends the performance of the industry-standard HP 8753D with an impressive 300% speed improvement in measurement sweep, data transfer, instrument-state recall and time-domain analysis. Interface and code compatability with the HP 8753D makes the transition to the HP 8753E fast and easy. Superb measurement accuracy as well as numerous calibration techniques for coaxial, on-wafer and in-fixture measurements enhance product yields. In addition, the world's most popular RF network analyzer now offers four-parameter display, VGA output, numerous productivity enhancements, and a smaller size.

Highly evolved for test success

The HP 8753E vector network analyzer provides both magnitude and phase information, as well as, gain compression, group delay and time domain measurements — all with vector error correction to minimize measurement uncertainty.

Enhancements for manufacturing include more calibration techniques, four-parameter display, VGA output for enhanced visability, and smaller size.

A winning combination of performance and productivity features

Feature highlights

Faster measurement speed
Exceptional sweep speed, register recall and data-transfer rate.

Faster tuning/testing
Simultaneously display all four S-parameters while tuning devices. Quickly record or print all four S-parameters for record keeping.

Enhance your product throughput
Improved measurement accuracy for noninsertable devices with adapter-removal calibration. Maximize measurement speed with fast sweep list mode.

Flexible fit to your environment
VGA output for enhanced viewing. Compact size to maximize space and ease transport.

Reduced support effort
Make firmware upgrades quickly using built-in disk drive.

Backward compatibility
Backward compatibility with HP 8753D makes leveraging your investment in software fast and easy.

Built-in data storage
Convenient storage of instrument states, calibrations, data, and test sequences via floppy disk and nonvolatile memory.

Test sequencing
Internally configure and automate measurements easily and quickly with keystroke recording.

Measurement speed improvements for the HP 8753E			
Function	8753D	8753E	% increase in speed
201 points, two-port calibration	.510	.145	352
Recall 201 points	.740	.138	536
Time domain 201 points	.350	.046	760
Trace dump 201 points	.061	.021	290
List frequency 201 points	.795	.104	764

Powerful analysis of RF components

Fast, accurate measurements are essential in today's fast paced, competitive environment whether you are in manufacturing or R&D. When you have an HP 8753E vector network analyzer, you have the best measurement tool available for characterizing the performance of high-frequency components and devices. The HP 8753E provides a host of capabilities including magnitude, phase, and group-delay measurements. It also performs power sweeps, providing gain compression and AM-to-PM conversion measurements, shows impedances on a Smith chart, and with the time-domain option, shows the distance from the test port to an impedance mismatch or cable fault. So whether your application is manufacturing components for the wireless market or designing a state-of-the-art RF filter or amplifier, the HP 8753E helps you maximize your measurement throughput and designs.

Enhance performance

Faster measurement speed
• New CPU provides exceptional sweep speed, register recall and data transfer rate.
•10 Hz to 6 KHz IF filters optimize speed versus accuracy trade-offs.

Four-parameter display
• Increase your tuning speed with simultaneous display of all four S-parameters. Now it's easy and convenient to record and print all four S-parameters.

VGA output
• Add an external monitor to enhance the visibility of displayed data.

Smaller size
• More compact and lighter, the HP 8753E maximizes test-station space and is easier to move.

Backwards compatable with 8753D
• Easy transition from previous model with compatible HP-IB and front-panel features.

Greater productivity
• Improve the measurement accuracy of noninsertable devices using the new adapter-removal calibration technique.
• Reduce measurement time by selecting swept list mode. Choose frequency ranges with independent IF bandwidths and power levels.
• Touchstone©-compatible S2P data format.

Flash memory
• Use the built-in disk drive to quickly and easily upgrade firmware, and reduce support efforts.

Standard features provide solid value

Built-in disk drive
• Allows convenient storage of instrument states, data, and test sequences.

Nonvolatile memory
• Allows internal storage of calibration data, as well as up to 31 instrument states.

Wide dynamic range
• 110 dB dynamic range (30 kHz to 3 GHz) and 105 dB dynamic range (3 GHz to 6 GHz).

TRL*/LRM* calibration
• Allows convenient calibration for in-fixture environments such as microstrip.

Serial, parallel and HP-IB interfaces
• Supports modern printers and plotters. Make direct color or black-and-white hardcopies of data.

Test sequencing
• Internally configure and automate measurements with an enhanced form of keystroke recording.

Real-time clock
• Convenient time-stamping of data printouts and files.

Powerful options customize your measurements

Extended frequency coverage
• Option 006 for characterizing components to 6 GHz.

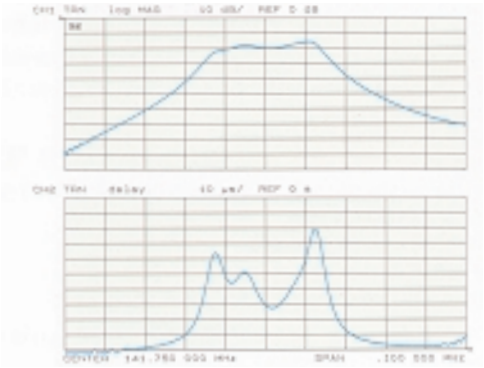
Time-domain analysis
• Locate and resolve discontinuities in your test device or fixture versus distance. Gain more insight into the behavior of your device by displaying the step response or by gating to remove unwanted responses such as connector mismatch. Quickly and accurately locate cable faults or resolve multiple discontinuities.

Harmonic measurement capability
• Swept second and third harmonic levels can be displayed directly or relative to the fundamental carrier (dBc) by using the harmonic-measurement capability. Measure amplifier harmonics as low as –40 dBc with a simple press of a button.

Configuration flexibility
• Use a dedicated HP test set or delete the built-in test set with Option 011.

Superb speed and performance

The HP 8753E provides quick, high-performance measurements for a broad range of integrated and discrete devices such as filters, duplexers, amplifiers, mixers, modulators, cables and antennas. These measurement capabilities are ideally suited for today's R&D and high volume manufacturers in the RF communication, aerospace/defence and consumer electronics industries.

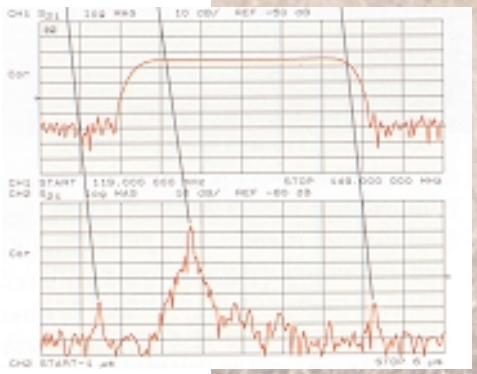


1-Hz frequency resolution allows accurate crystal filter measurements of both passband transmission response and group delay.

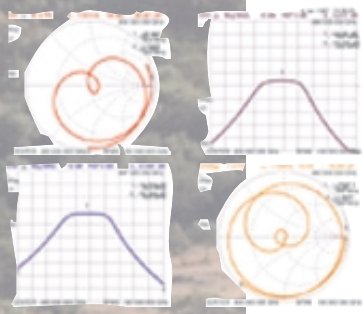
Filter measurements
High resolution, a stable source and wide-dynamic-range recievers are essential for transmission and reflection measurements of narrowband devices such as resonators, filters and duplexers. The HP 8753E synthesized source provides 1-Hz resolution with uncompromising measurement speed, while the sensitive tuned receivers provide up to 110 dB of dynamic range. Optimize the measurement dynamic range with the 10-Hz bandwith IF filter or choose the new 6-KHz IF filter for maximum measurement speed.

Minimize adjustment time with marker functions that provide multiple marker values simultaneously and give on-screen information about your device's 3-dB point, passband ripple, and maximum or minimum value. The marker-tracking function provides fast, updated magnitude and frequency information during tuning of your device.

SAW device measurements
Completely characterize surface acoustic wave (SAW) devices with high-resolution return loss, insertion loss, and group-delay measurements. Measure passband ripple with 0.001-dB magnitude resolution and 0.01-picosecond delay resolution. Gain additional insight about your device's unwanted time responses, such as RF leakage and triple transit, with optional time-domain capabilty. Apply gating (a time-domain selective filter) to the main lobe response, and view your device's response independently of matching networks and connectors.



Simultaneously view both the frequency response and the time response of your SAW device.



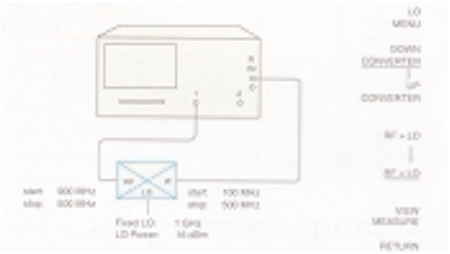
Simultaneously view all four S-parameters for faster tuning/testing

Four parameter display
Designed for speed, the HP 8753E measures and displays all four S-parameters simultaneously[1]. Real-time tuning of your RF communication duplexers and isolators couldn't be easier. Display any combination of reflection and transmission parameters with magnitude, phase, group delay, Smith chart, polar, SWR, or time-domain formats. Easy-to-use softkeys let you access mesurement functions quickly and view results in overlay or split-screen format on a crisp, LCD color display with one, two or four graticules. For enhanced visability, use theVGA-compatible output to drive larger external monitors.

1. Available Q298

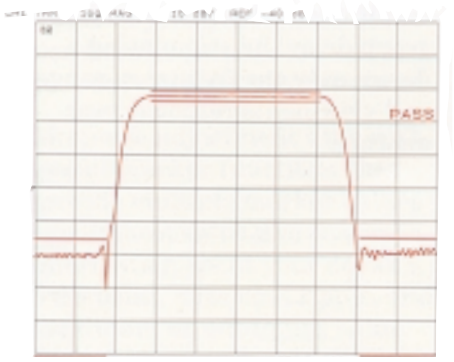
Amplifier measurements
Measuring an amplifier that has a high gain and high reverse isolation with a low input signal requires a test system with wide dynamic range and high sensitivity. The HP 8753E is ideal for these measurements with up to –100 dBm sensitivity, 110 dB of dynamic range, 0.05 dB dynamic accuracy, and the ability to set the test-port power level exactly over a 95 dB range. In addition, the use of swept power to simplify gain-compression measurements and power-meter calibration for improving source power level as well as receiver-measurement accuracy, make the HP 8753E one of the most productive tools available.

Mixer measurements
Traditionally, vector network analyzers have operated over a single stimulus-and-response frequency range, and therefore, could not test the transmission characteristics of mixers. The HP 8753E has the ability to offset its receiver frequency from that of its own internally synthesized source. This enables you to test the transmission characteristics of mixers (conversion loss, amplitude, phase tracking and group delay) by stimulating a device over one frequency range and viewing its response over another.



HP 8753E mixer measurement menu

HP 8753E productivity features speed and simplify your measurements



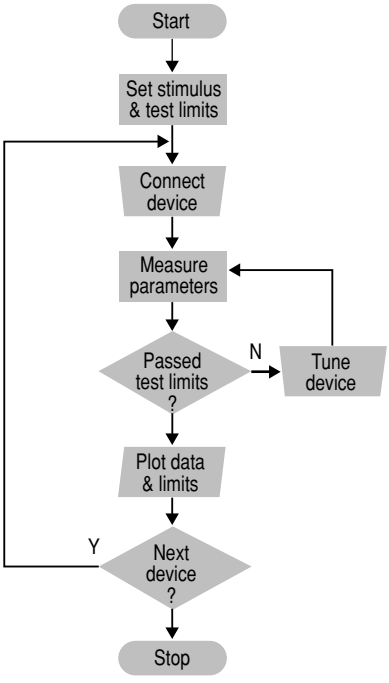
Increase throughput using automated pass/fail.

Pass/fail testing

Reduce test times by letting the network analyzer determine if measurement results are within user-defined limits. You can easily choose any combination of single-point, horizontal or sloping line limits from the front-panel. Pass/fail is indicated visually from the display, audibly with a beep, over HP-IB, or from a BNC rear-panel TTL output. Use rear-panel TTL output as an input for automated part handlers.

Automate repetitive tasks, without a computer

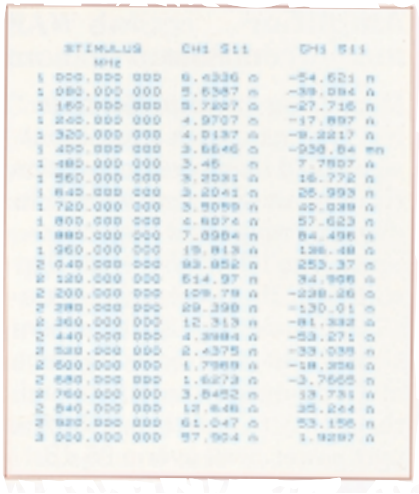
In test-sequencing mode, you make the measurement once and the network analyzer records the keystrokes. Complex measurements can be stored in a sequence and recalled rapidly and consistently with the touch of a button. Since a sequence is created by the same front-panel keystrokes used during manual operation, no additional programming expertise is required. Display user prompts for tuning and other manual adjustments or make go/no-go decisions during sequence execution. You can even control other HP-IB instruments, or use the parallel port to control part handlers.



Test sequence flowchart

User-defined frequency testing

Speed up your testing by measuring your device at only selected frequencies. You can specify up to 30 arbitrary CW frequencies or frequency sweep segments at which to test your device. Set test-port power levels and IF bandwidth independently for each segment. Reduce test time and increase measurement throughput by optimizing each segment to your specific test requirements.



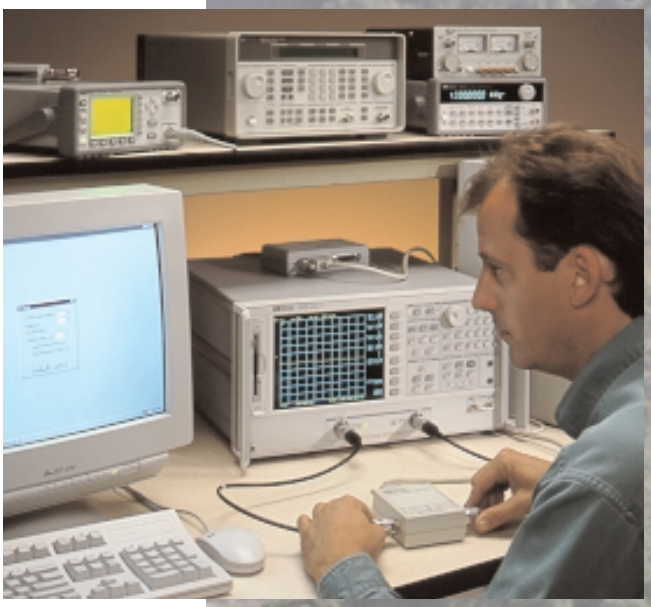
Example of "fast swept list" output.

Transfer data to your CAE program

Store ASCII disk files in conformance to the CITIFILE standard with the HP 8753E. Touchstone©-compatible (S2P) format provides component data files describing frequency-dependent two-port S-parameters. Measured data can then be read by electronic design automation applications, including HP EEsof design software, and used for circuit simulation. These programs can also access data directly via HP-IB.

Change frequencies and remain calibrated
Save time and avoid recalibration when changing frequencies by using the interpolative error-correction mode. Perform a broadband calibration with up to 1,601 points and then adjust your frequency span or number of measurement points for the particular device under test. The HP 8753E will automatically recalculate the error terms based on the new values of either parameter. This allows you the flexibility of investigating your device's performance over any portion of the calibrated frequency range while maintaining full display resolution.

RF limiter
Achieve solid, reliable network analyzer protection for high power applications. The HP 11930 RF limiter externally attaches to one or both ports of the analyzer, in essence creating an external fuse. This optional accessory provides an inexpensive, quick method of ensuring against potential high-power transients from external devices that can cause hardware failures.



Reduce measurement calibration time with HP's RF ECal.

RF electronic calibration
Achieve fast, consistent, high-accuracy calibrations automatically with HP's optional RF electronic calibration (RF ECal) products. The easy-to-use PC/Windows® based solution provides 30 kHz to 6 GHz electronic calibration, which reduces user calibration errors, connector damage and maintenance. HP ECal provides accurate calibrations for non-insertable and mixed connector devices for improved product yeilds. Designed for high-volume manufacturing environments, HP RF ECal provides the means to optimize your production measurement environment.

Hewlett-Packard service and support

Applications and test expertise at your service
Our Systems and Service Division is ready to help you with test process analysis, consulting, and software development. Take advantage of HP's wide variety of technical training offered around the world, even customized to fit your specific needs.

24-hour telephone support
HP offers telephone technical and applications support 24 hours a day in most countries served by HP.

One-year warranty
Hewlett-Packard offers a standard one-year, return-to-HP warranty with the HP 8753E. At a low, fixed cost, you can order support options to extend warranty or cover periodic calibrations.

Test fixtures
For more information on test fixtures, ask for HP literature number 5091-4254E, or contact:
Inter-Continental Microwave
1515 Wyatt Drive
Santa Clara, Ca 95054, USA
Telephone: (408) 727-1596
Fax: (408 727-0105

HP on line
For more information about Hewlett-Packard test and measurement products, applications, services, and for a current sales office listing, visit our web site, http://www.hp.com/go/tmdir.

Quality and reliability by design
The HP 8753E is manufactured in ISO 9002 -registered facilities in concurrence with HP's commitment to quality.

The reliability of the HP 8753E has been proven through extensive environmental testing of shock, vibration, and extreme temperature cycling. Further improvements in reliability have been realized by applying improvements gained from careful analysis of the entire HP RF network analyzer family.

HP literature	Number
HP 8753E Technical Specifications	5966-0054E
HP 8753E Configuration Guide	5966-0055E

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