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*
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 compatibility 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.
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.
<table>
<thead>
<tr>
<th>Function</th>
<th>8753D</th>
<th>8753E</th>
<th>% Increase in speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>201 points, two-port calibration</td>
<td>.510</td>
<td>.145</td>
<td>352</td>
</tr>
<tr>
<td>Recall 201 points</td>
<td>.740</td>
<td>.138</td>
<td>536</td>
</tr>
<tr>
<td>Time domain 201 points</td>
<td>.350</td>
<td>.046</td>
<td>760</td>
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<tr>
<td>Trace dump 201 points</td>
<td>.061</td>
<td>.021</td>
<td>290</td>
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<tr>
<td>List frequency 201 points</td>
<td>.795</td>
<td>.104</td>
<td>764</td>
</tr>
</tbody>
</table>
**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 compatible 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 sweep 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.

**Filter measurements**
High resolution, a stable source and wide-dynamic-range receivers 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 bandwidth 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 capability. Apply gating (a time-domain selective filter) to the main lobe response, and view your device’s response independently of matching networks and connectors.

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

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

Four parameter display
Designed for speed, the HP 8753E measures and displays all four S-parameters simultaneously1. 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 measurement 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 visibility, use the VGA-compatible output to drive larger external monitors.

1. Available Q298
HP 8753E productivity features
speed and simplify your measurements

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 pro-
gramming 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.

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.

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 pro-
grams can also access data
directly via HP-IB.

Example of "fast swept list"
output.

Test sequence
flowchart
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.

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 yields. 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.

<table>
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<tr>
<td>HP 8753E</td>
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<tr>
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<td>HP 8753E</td>
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