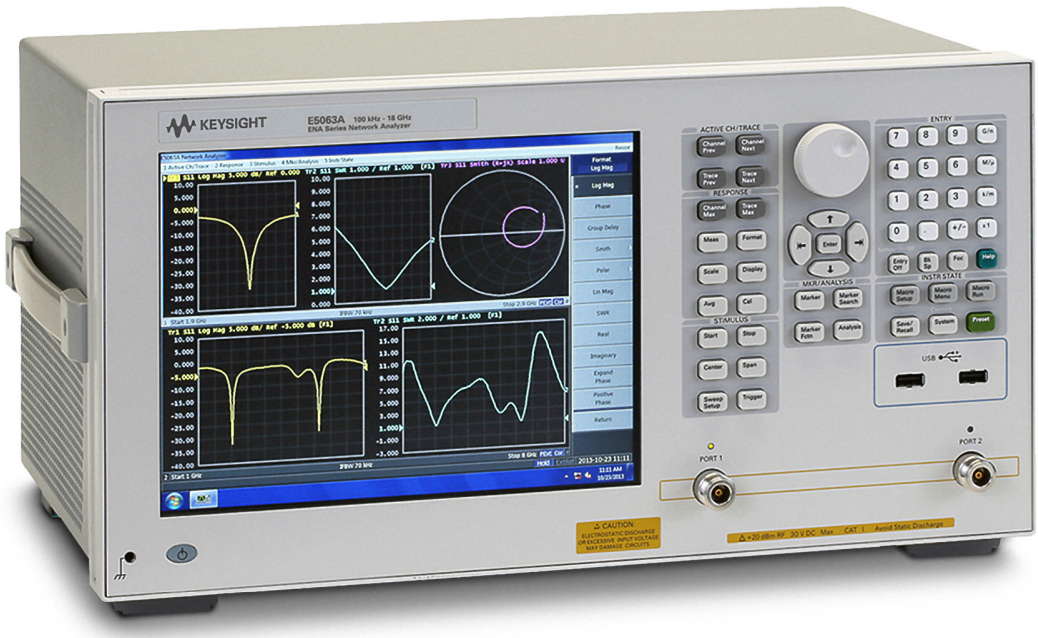
Keysight E5063A

ENA Series Network Analyzer

100 kHz to 500 M/1.5 G/3 G/4.5 G/6.5 G/8.5 G/14 G/18 GHz

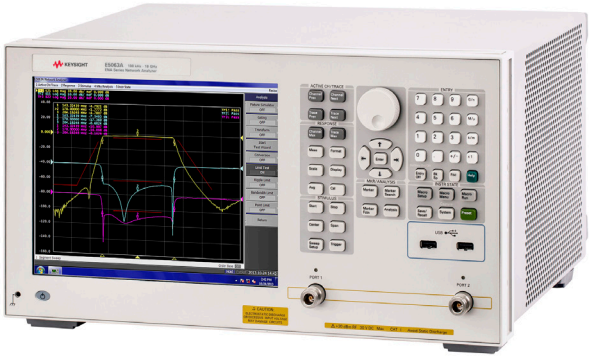


KEYSIGHT TECHNOLOGIES

Unlocking Measurement Insights

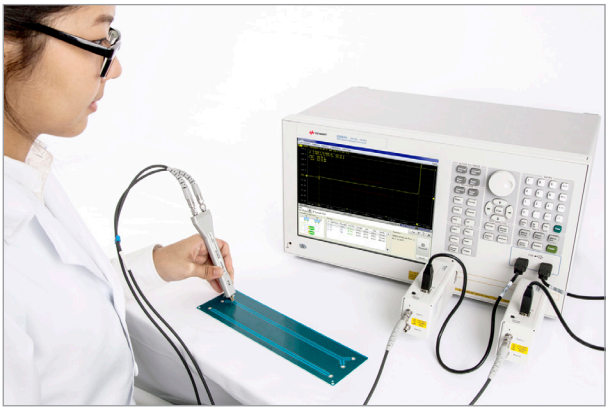
The Best Balance Between Price and Performance

The Keysight Technologies' E5063A is a low cost network analyzer for simple passive component testing up to 18 GHz. The E5063A provides the best balance between price and performance to satisfy your business and technical requirements. It leverages the consistent measurement framework of the industry standard ENA Series to boost efficiency and productivity, and is future proof and ready to evolve as the technologies change.



DUT examples

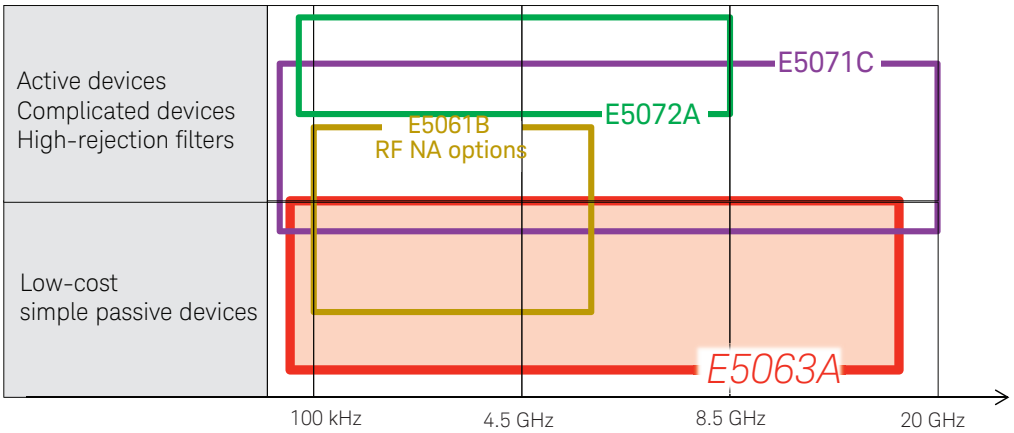
- Antennas for smartphones, cellular base stations, WLAN, and other wireless communication devices
- Other simple RF passive components such as RF cables/connectors, couplers, isolators and filters
- PCBs
- Wireless power transfer coils/resonators
- Dielectric materials



E5063A highlights	
Frequency[1]	100 kHz to 500 MHz (Option 205) 100 kHz to 1.5 GHz (Option 215) 100 kHz to 3 GHz (Option 235) 100 kHz to 4.5 GHz (Option 245) 100 kHz to 6.5 GHz (Option 265) 100 kHz to 8.5 GHz (Option 285) 100 kHz to 14 GHz (Option 2D5) 100 kHz to 18 GHz (Option 2H5)
Test port	2-port 50 Ω S-parameter test set
Dynamic range	117 dB (spec), 122 dB (typical)
Trace noise	0.005 dBrms (spec), 0.002 dBrms (typ.)
Stability	0.01 dB/°C
Source power	–20 to 0 dBm
Sweep type	Linear & Log frequency, Segment
NOP	10,001 points (Max.)
Channel	32 channels (Max.)
Key software capability	Fixture simulator, Time domain analysis/Test Wizard option[2], Wireless power transfer analysis
Interface	LAN, USB (front 2, rear 4), USBTMC, GPIB, Handler I/O

1. The E5063A starting frequency can be set down to 50 kHz.
2. Consists of conventional time domain analysis capabilities and GUI for PCB test.

E5063A in ENA Series lineup

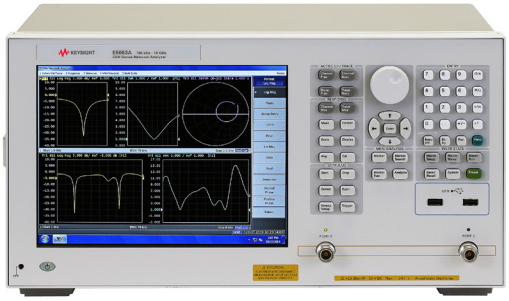


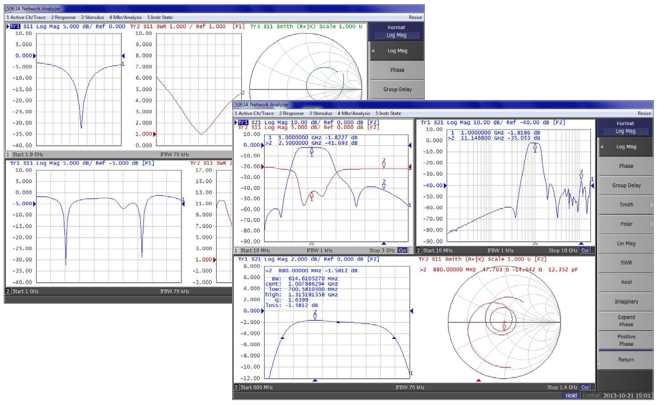
Drive Down The Cost of Test for RF Passive Components

Solid performance at an affordable price

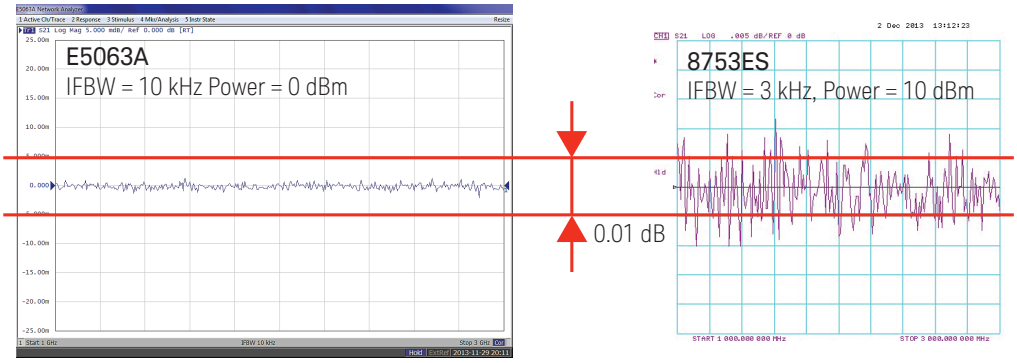
The E5063A provides solid measurement performance for testing simple RF passive components at lower prices. This enables you to reduce your test equipment cost
without sacrificing test quality.

- Trace noise (0.002 dBrms[1]) and stability (0.01 dB/°C[2])
  - The best-in-class performance comparable to higher-end ENA models
  - Enables accurate measurements of low-loss devices
- Dynamic range (maximum 122 dB[3])
  - Satisfies test requirements of simple RF passive components.

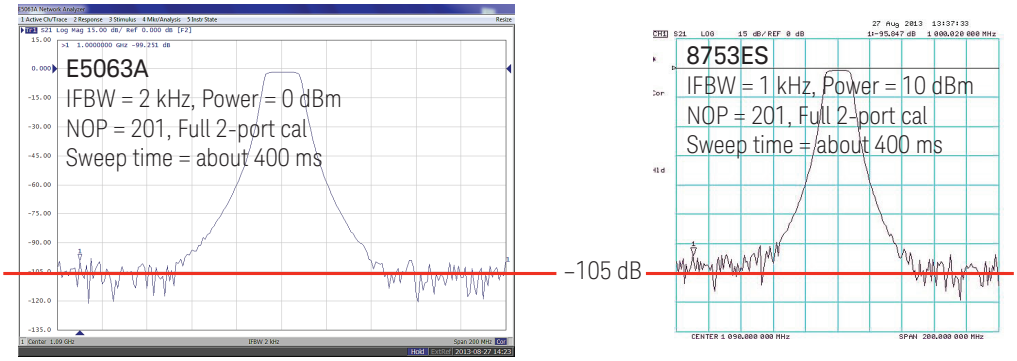




You can choose the best suited frequency range from 8 different frequency options (500M/1.5G/3G/4.5G/6.5G/8.5G/14G/18GHz) depending on your test needs and budgets. In addition, the frequency upgradability allows you to start your investment with the lower-priced 500 MHz option and later upgrade it to higher frequency options up to 18 GHz options when necessary. Optimize your investment for your current and future needs with the E5063A.



Trace noise (S21 measurement of thru, at 1 to 3 GHz)



Dynamic range (S21 measurement of 1 GHz band-pass filter)

1. Typical, transmission measurement, at 8 M to 4.35 GHz, IFBW=70 kHz
2. Typical, at 300 k to 6 GHz
3. Typical, at 100 M to 4.35 GHz, IFBW=10 Hz

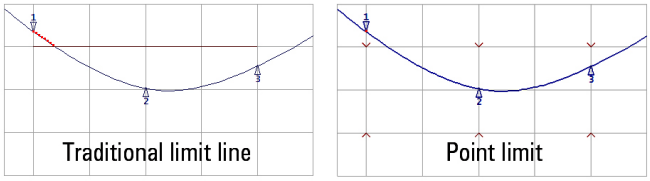
Ready for Production Testing

Proven calibration and analysis capabilities

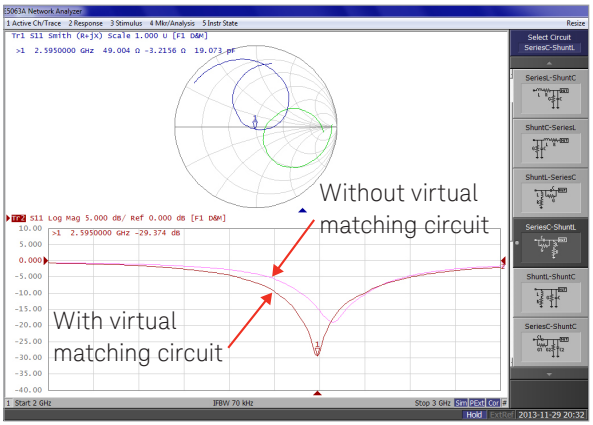
The E5063A fully supports major calibration and data analysis capabilities that are compatible with the E5071C and required for testing RF passive components. With these proven capabilities, the E5063A provides measurements consistent with the industry standard E5071C.

- Calibration capabilities
  - SOLT cal (with known thru, or unknown thru)
  - Adapter removal/insertion
  - ECal (Electronic Calibration)
  - TRL cal
- Fixture simulator
  - Virtual matching circuit embedding
  - De-embedding
  - Port-Z conversion
  - 1-port mixed-mode S-parameters
- Limit test functions
  - Conventional limit line
  - Point limit (for antennas)
  - Ripple & Bandwidth limit (for filters)
- Marker search functions
  - Single search for max, min, peak, or target value
  - Multiple marker search for peaks or target values

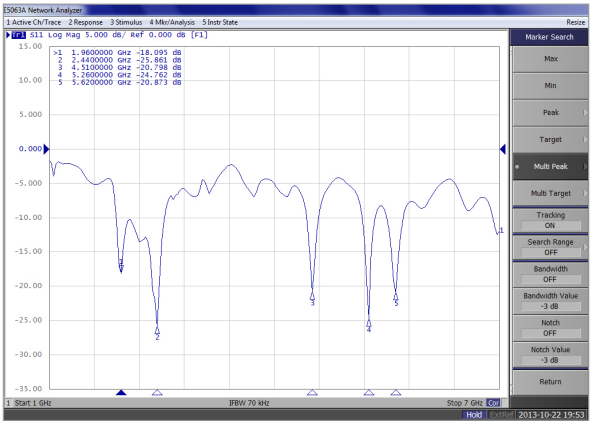
In addition, Chinese language support via softkey and the embedded help manual further improves usability for Chinese users.



Limit test functions



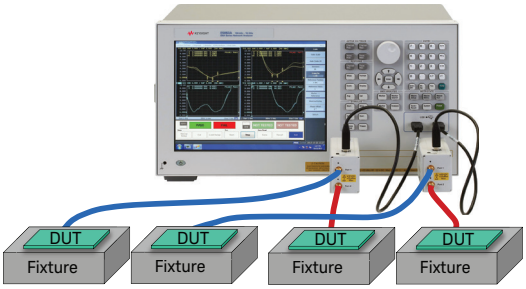
Embedding matching circuit in antenna measurement



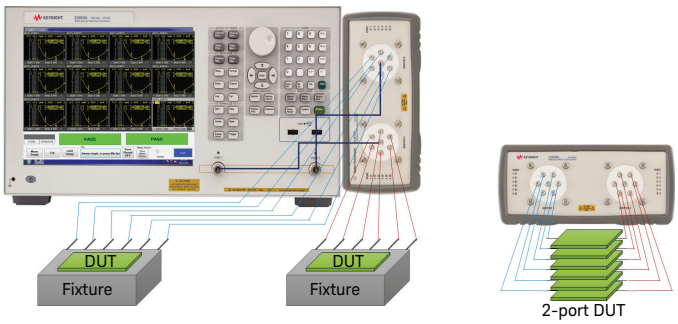
Searching multiple peaks with markers

Multi-DUT testing

The U1810B USB coaxial SPDT switch and U1816A/C USB coaxial SP6T switch can be controlled with the E5063A's SCPI command. By programming the U1810B/U1816A/U1816C and the E5063A's measurement sequence, you can build an economy multi-DUT test solution for testing VSWR of four antennas with a single instrument. This will further reduce your cost of test.



Multi-DUT test solution with U1810B USB switch (application program running on analyzer)



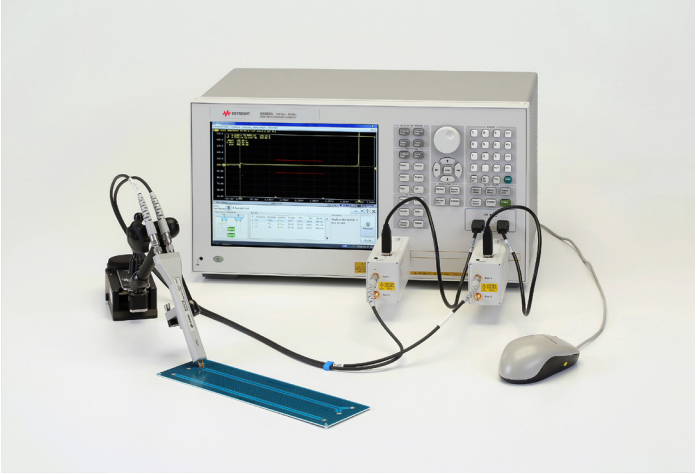
Multiport DUT (left) and Multiple DUT (right) test solution with U1816A/C USB switch (application program running on analyzer)

E5063A ENA Series PCB Analyzer

The best solution for PCB manufacturing test

As the operating speed of electronic circuits increase, signal integrity of printed circuit boards (PCBs) drastically affects performance and there is an increasing requirement for controlled impedance PCBs. In addition, with the proliferation of wireless devices, such as smartphones and tablets, there is a trend to integrate antennas onto PCBs. Therefore, in addition to the traditional time domain impedance measurement, there is a growing need to measure the frequency domain response of PCB integrated antennas.

The E5063A PCB Analyzer consists of an E5063A ENA Series Network Analyzer with Option 011 (Time domain analysis/Test Wizard). The E5063A provides frequency domain measurement capability and Option 011 adds time domain analysis capability, as well as a dedicated graphical user interface for PCB manufacturing test. The number of available ports can be expanded up to four with the addition of U1810B USB coaxial switches, to allow for simultaneous connection to both single-ended and differential probes.



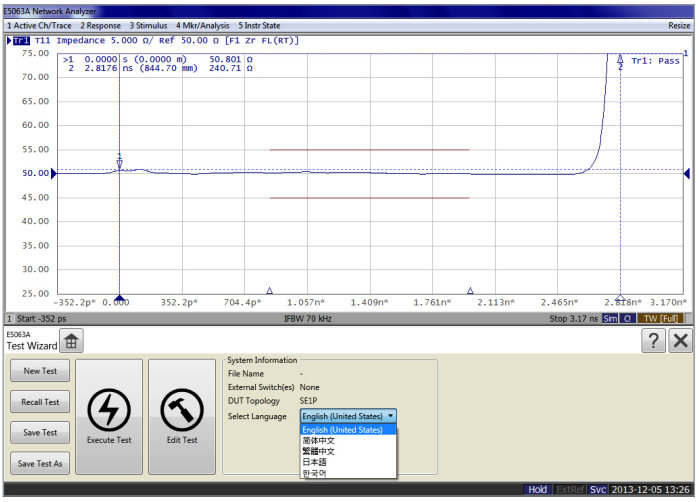
Compared to traditional solutions based on sampling oscilloscopes, the E5063A PCB Analyzer provides three breakthroughs for PCB manufacturing test:

- More Accuracy and R&R (Repeatability & Reproducibility)
- More Languages Supported
- More ESD Robustness

More accuracy and R&R

Delivers new standards in speed and accuracy

- Low noise floor for accurate and repeatable measurements
- State of the art error correction techniques enables you to measure
  your device, not your measurement system
- Fast measurement speed for improved throughput



More languages supported

An analyzer that speaks the user's language

- Since there are many cases where tasks are solved more efficiently in one's native language, a multi-lingual interface is provided with the graphical user interface.
- Currently available languages include English, Simplified and Traditional Chinese, Japanese, and Korean

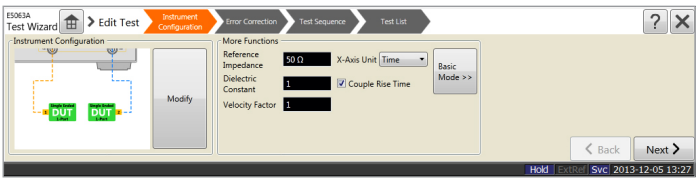
More ESD robustness

Protection circuits implemented inside the instrument

- Proprietary electrostatic discharge (ESD) protection chip significantly increases ESD robustness, while at the same time maintaining excellent RF performance
- Highly robust architecture can minimize instrument failure from ESD and free you from worrying about instrument repair fees and downtime

Edit test mode

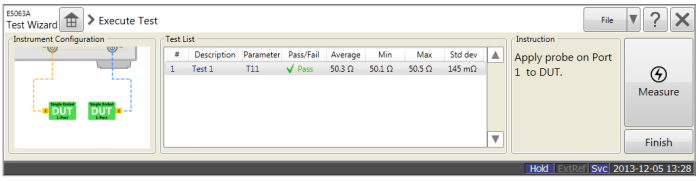
Setup and Error Correction Wizards allows for intuitive and error free setup, error correction, and measurements.



Edit test mode

Execute test mode

Simple and intuitive user interface for non-technical operators.

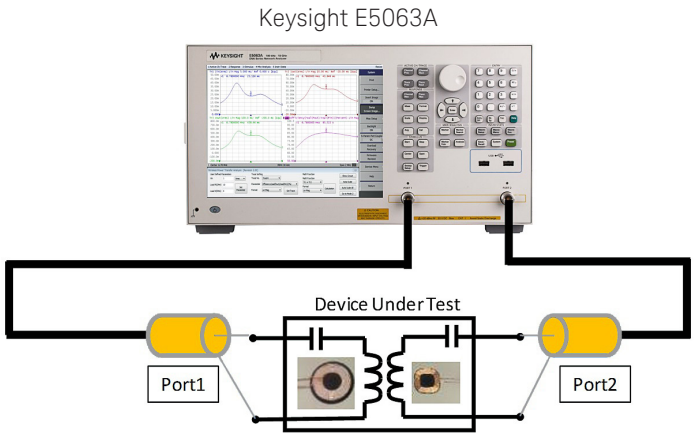


Execute test mode

Wireless Power Transfer Analysis

With the evolution of cloud computing systems and highly integrated mobile terminals, various types of digital contents and applications can be enjoyed in the palm of your hand today. As a result, power consumption in mobile terminals rapidly increases, raising demands for more convenient and versatile ways of battery charging. Wireless Power Transfer (WPT) technology has drawn much attention recently as one of the realistic solutions and is widely discussed and researched.

Power transfer efficiency between coils or resonators is one of the key factors to improve the performance of wireless power transfer systems. The Keysight E5063A option 006 wireless power transfer analysis provides three benefits for wireless power transfer efficiency measurements between coils or resonators.



Measurement setup for wireless power transfer analysis

Real-time wireless power transfer efficiency measurements

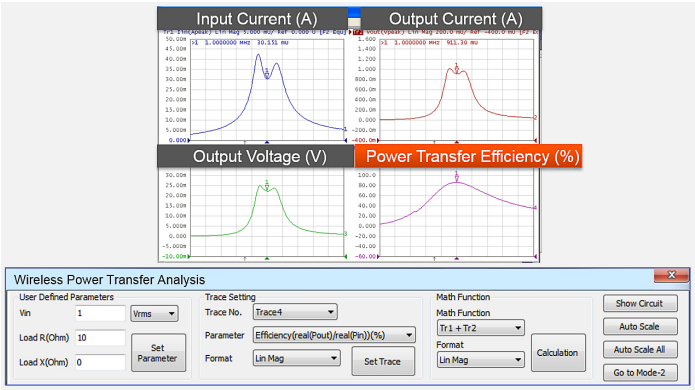
- Display wireless power transfer efficiency between coils or resonators in real-time
- Capable of setting arbitrary load impedance

Advanced simulation

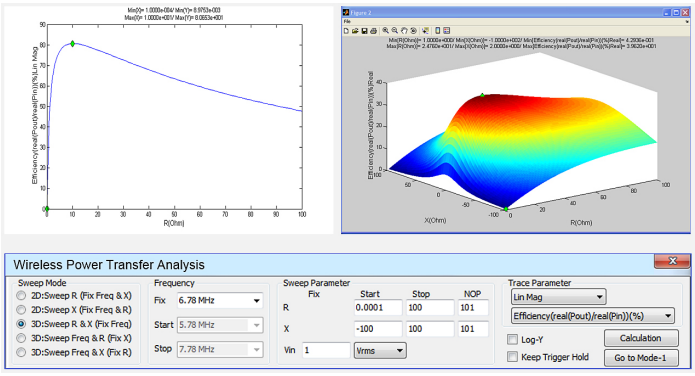
- 2D/3D simulation to visualize dependency of load impedance
- Network analysis data output for further circuit modeling and simulation in Keysight ADS simulator

Affordable solution

- Wireless power transfer analysis available in E5063A low cost simple VNA



Real-time wireless power transfer analysis in Mode-1

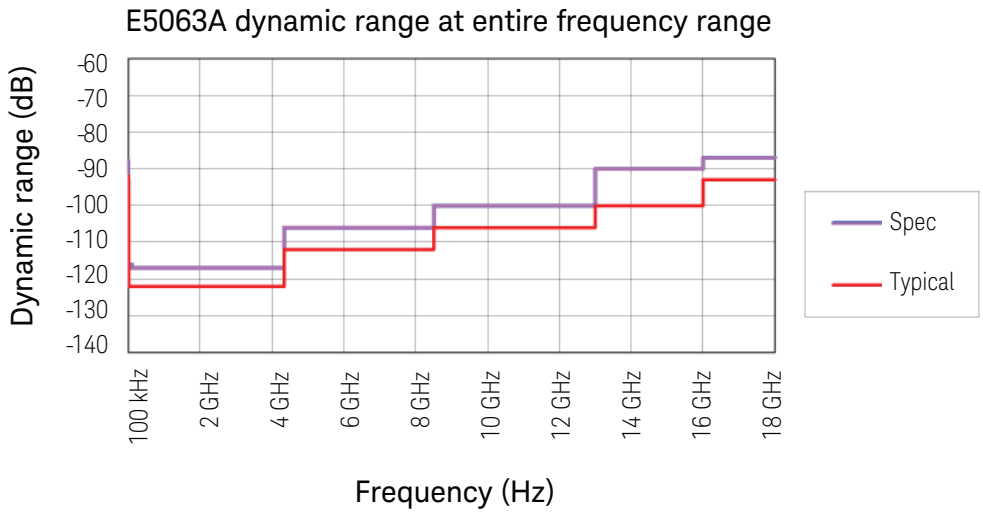


Advanced 2D/3D simulation in Mode-2

E5063A key specs & features (comparison with E5061B & E5071C)

	E5063A	E5061B (RF NA Options)	E5071C
Frequency	100 kHz to 500M/1.5 G/3 G/4.5 G/6.5 G/8.5 G/14 G/18 GHz (settable down to 50 kHz)	100 kHz to 1.5/3 GHz	9/100 kHz to 4.5/6.5/ 8.5 GHz, 300 kHz to 14/20 GHz
Test port	2-port S-parameter, 50 Ω	2-port T/R & S-parameter, 50 or 75 Ω	2 & 4-port S-parameter, 50 Ω
Dynamic range	117 dB (spec), 122 dB (typical) (at 100 MHz to 4.35 GHz)	120 dB (spec), 130 dB (SPD) at 1 MHz to 3 GHz	123 dB (spec), 130 dB (SPD) (at 10 MHz to 6 GHz)
Trace noise	0.005 dBrms (spec) 0.002 dBrms (typical) (at 8 M to 4.35 GHz, IFBW = 70 kHz, transmission measurement)	0.005 dBrms (spec) (at 1 M to 3 GHz, IFBW = 3 kHz)	0.003 dBrms (spec) 0.001 dBrms (SPD) (at 10 M to 4.38 GHz, IFBW = 70 kHz, transmission measurement)
Stability	0.01 dB/°C (at 300 kHz to 6 GHz)	0.01 dB/°C (at 3 MHz to 3 GHz)	0.005 dB/°C (at 9 kHz to 3 GHz)
Source power	–20 to 0 dBm (at 300 kHz to 8.5 GHz)	–45 to +10 dBm (at 300 kHz to 3 GHz)	–55 to +10 dBm (at 9 kHz to 5 GHz)
Sweep type	Liner & Log frequency, Segment	Liner & Log frequency, Segment, Power sweep	Liner & Log frequency, Segment, Power sweep
NOP	Max. 10,001	1,601	Max. 20,001
Channel	Max. 32	4	Max. 160
Measurement parameters	S-parameters (single-ended, mixed-mode), TDR and single-ended TDT parameters[1], Wireless power transfer efficiency[1]	S-parameters (single-ended), Absolute power, Wireless power transfer efficiency[1]	S-parameters (single-ended mixed-mode), Absolute power, TDR and TDT parameters[1]
Calibration capabilities	SOLT, Adapter removal/insertion, ECal, TRL, Unknown thru, Waveguide	SOLT, Adapter removal/insertion, ECal, ECal user characterization	SOLT, Adapter removal/insertion, ECal, ECal user characterizationTRL, Unknown thru, Waveguide, Power cal, Receiver cal, Mixer cal,
Other major capabilities	Time domain/Test Wizard[1], Wireless power transfer analysis[1], Limit test (Limit line, Ripple limit, Bandwidth limit, Point limit), Fixture simulator, Equation editor, U1810B/U1816A/C USB switch support	Time domain/SRL analysis[1], Wireless power transfer analysis[1], High-stability timebase[1], Limit test (Limit line, Ripple limit, Bandwidth limit), Equation editor, VBA	Time domain[1], TDR[1], FOM[1], High-stability timebase[1], Bias-tees[1], Limit test (Limit line, Ripple limit, Bandwidth limit, Point limit), Fixture simulator, Equation editor, VBA, E5092A mutiport test set support

1. Optional capabilities



E5063A Ordering Information

Model/Option No.	Description
E5063A	**ENA Series network analyzer**
Test set options[1]	
Option E5063A-205	2-port test set, 100 kHz to 500 MHz
Option E5063A-215	2-port test set, 100 kHz to 1.5 GHz
Option E5063A-235	2-port test set, 100 kHz to 3 GHz
Option E5063A-245	2-port test set, 100 kHz to 4.5 GHz
Option E5063A-265	2-port test set, 100 kHz to 6.5 GHz
Option E5063A-285	2-port test, set, 100 kHz to 8.5 GHz
Option E5063A-2D5	2-port test set, 100 kHz to 14 GHz
Option E5063A-2H5	2-port test set, 100 kHz to 18 GHz
Storage option	
Option E5063A-019[2]	Standard solid state drive
Software option	
Option E5063A-010	Time domain analysis
Option E5063A-011	Time domain analysis/Test Wizard
Option E5063A-006	Wireless power transfer analysis
Other options	
Option E5063A-810	Add keyboard
Option E5063A-820	Add mouse
Option E5063A-1CM	Rack mount kit
Option E5063A-1CN	Front handle kit
Option E5063A-1CP	Rack mount and front handle kit
Option E5063A-1A7	ISO 17025 compliant calibration
Option E5063A-A6J	ANSI Z540 compliant calibration

E5063A offers full upgrade path from any low frequency option to any higher frequency option. Refer to the table below for the upgrade model number.

From To	500 MHz (E5063A-205)	1.5 GHz (E5063A-215)	3 GHz (E5063A-235)	4.5 GHz (E5063A-245)	6.5 GHz (E5063A-265)	8.5 GHz (E5063A-285)	14 GHz (E5063A-2D5)	18 GHz (E5063A-2H5)
500 MHz (E5063A-205)	–	–	–	–	–	–	–	–
1.5 GHz (E5063A-215)	E5063AU-210	–	–	–	–	–	–	–
3 GHz (E5063A-235)	E5063AU-230	E5063AU-231	–	–	–	–	–	–
4.5 GHz (E5063A-245)	E5063AU-240	E5063AU-241	E5063AU-243	–	–	–	–	–
6.5 GHz (E5063A-265)	E5063AU-260	E5063AU-261	E5063AU-263	E5063AU-265	–	–	–	–
8.5 GHz (E5063A-285)	E5063AU-280	E5063AU-281	E5063AU-283	E5063AU-285	E5063AU-286	–	–	–
14 GHz (E5063A-2D5)	E5063AU-2D0	E5063AU-2D1	E5063AU-2D3	E5063AU-2D5	E5063AU-2D6	E5063AU-2D8	–	–
18 GHz (E5063A-2H5)	E5063AU-2H0	E5063AU-2H1	E5063AU-2H3	E5063AU-2H5	E5063AU-2H7	E5063AU-2H6	E5063AU-2HD	–

Model/Option No.	Description
Software upgrade option	
Option E5063AU-010	Time domain analysis – Fixed, perpetual license
Option E5063AU-011	Time domain analysis/Test Wizard – Fixed, perpetual license
Option E5063AU-006	Wireless power transfer analysis – Fixed, perpetual license

1. Must choose one of test set options
2. Option 019 is the only storage option. Must choose this option when ordering the E5063A.

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Published in USA, September 1, 2015
5991-3614EN
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