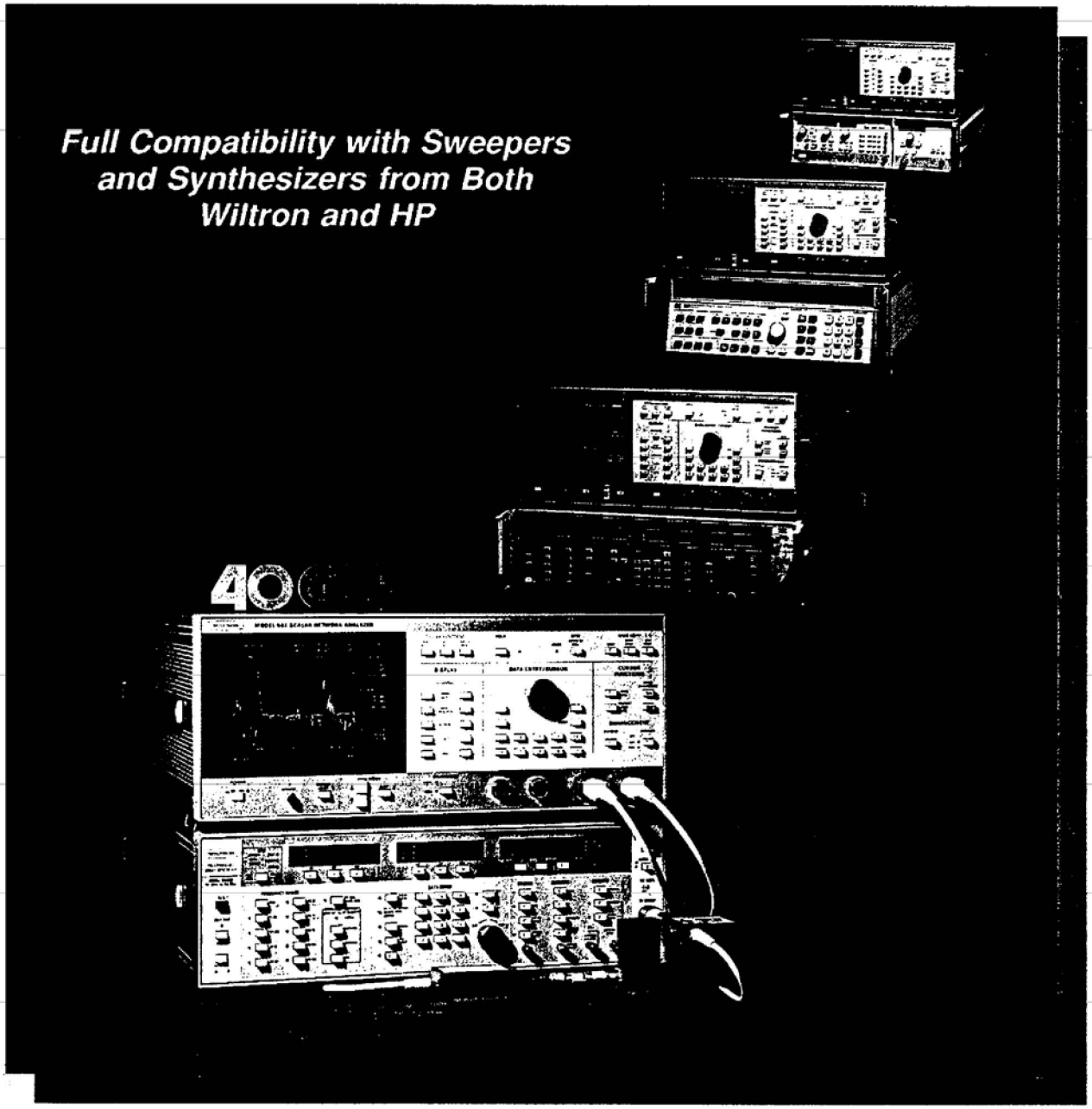
WILTRON

Model 562
Scalar Network Analyzer
10 MHz to 40 GHz



Superior Performance at Lower Cost

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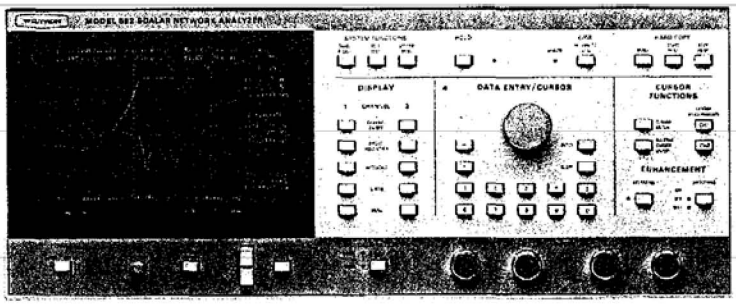


- **Crisp Clear High Resolution Display**
- **76 dB Dynamic Range, –60 dBm Sensitivity**
- **10 MHz to 40 GHz Coverage**
- **Full Compatibility with Wiltron and HP Sources**
- **Accurate DC Detection**
- **Direct Plotter and Printer Output**
- **Synthesized Step Sweep with Wiltron 6700A**
- **Available with Distance-to-Fault-Location System**

High Performance Scalar Measurements

The Wiltron 562 Scalar Network Analyzer combined with a Wiltron sweeper or synthesizer forms a powerful swept frequency measurement system for both production and design applications. Measure insertion loss, insertion gain, or RF power with 76 dB dynamic range over the 10 MHz to 40 GHz frequency range—the widest frequency range available in coax. Measure device match as return loss in dB or as SWR. Separate detectors can be used on all four inputs for multiple transmission measurements on duplexers or matched amplifiers. Direct detection allows simultaneous RF power measurement at different frequencies, for example, at the RF, IF, and LO frequencies of mixers and converters. Wiltron offers a complete line of precision accessories including detectors and directional bridges to support your measurement requirements.

Superior Accuracy

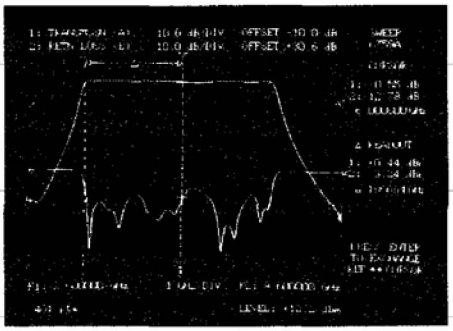
The 562 is designed to provide superior accuracy over the 10 MHz to 40 GHz frequency range. The 562 uses DC detection, which eliminates uncertainty from RF modulation. A detector low level calibration is made on every retrace giving sensitivity of –60 dBm. When used with the 6700A Swept Frequency Synthesizer, in Step Sweep Mode, all measurement frequencies, including markers and cursors, have synthesizer accuracy.

Versatile

Transmission and reflection measurements can be viewed simultaneously. Both traces can be scaled independently in dB, dBm or SWR. Measurement of the ratio of two detector inputs may be applied to either channel for enhancing accuracy or for viewing differences. Built-in calibration allows subtraction of the unwanted transmission frequency response or the average of open/short reflections from either trace. A Volt Mode is available for displaying voltage (with Volt Mode Adaptor Cable). A 0 to 10 Volt Sweep Ramp Output Mode is also available. These modes, combined with a versatile Trace Memory Mode, allow easy testing of VCOs, PIN diodes, and detectors.

Easy to Use

Great care was placed on the 562 front panel operation to make it straight forward and easy to use; the extra crisp high resolution display allows easy viewing over long hours of use. At each step, the instrument provides a comprehensive display of all pertinent parameters. Ten display cursor functions are available to locate important frequencies, amplitudes, deltas, or bandwidths. Step- by-step guidance is provided for measurement calibration. Straight or complex limit lines are available with Pass/Fail indication for high speed production testing. Nine complete system setups (including source settings) may be saved for later recall; four may include calibration data. All can be previewed on the CRT prior to selection.



The 562 has an extra crisp high resolution display.

Multi-Vendor Source Compatibility

The Wiltron 562 is the first scalar analyzer to offer full compatibility with both Wiltron and HP sweepers and synthesizers. The 562 has a dedicated port for source and plotter interface. It interfaces with any of the sources shown below to provide complete interaction during measurements. Full band, start-stop, and CW ΔF sweep ranges are displayed. All marker functions from the source may be viewed. Save/Recall also saves and recalls the source settings. The dedicated interface may be turned off to allow control of the source by another instrument such as a noise figure meter.

Wiltron 6600B	All frequency models
Wiltron 6700A	All frequency models
HP 8350B	All frequency models
HP 8340, 8341	

Sources compatible with the 562 dedicated interface.

Full GPIB

All capability of the 562 can be controlled via the IEEE–488 GPIB port. Mnemonics are logical and easy to use. A high speed data transfer mode is included for sophisticated ATE applications.

ATE System For Transmission Line Fault Location

Wiltron has configured the 562 into a completely self-contained, portable, ATE system for transmission line fault testing. The system contains a Wiltron 562 Scalar Network Analyzer, a 6700A Swept Frequency Synthesizer, a computer/controller, and software. A ruggedized enclosure is available. See 5600 Distance-to-Fault-Location data sheet for details.

Specifications

Measurements

Function: The 562 has four detector inputs and two independent channels for measurement and display of detected RF power from Wiltron 560 Series Detectors and Autotesters. Two independent traces may be viewed as the logarithm of RF power (in dB, dBm) or linear reflected power (in SWR). Voltage may also be displayed (with Volt Mode Adaptor Cable).
Measurement Modes: Transmission, Power, Return Loss, SWR, Volts
Frequency Range: 10 MHz to 40 GHz with Wiltron 560 Series Detectors and Autotesters. Waveguide adaptor cables are available for higher frequencies.
Inputs: Four; A, B, R1, R2. All are identical.
Dynamic Range: 76 dB (–60 to +16 dBm) All channels.
Data Correction: System residuals, including the average of open and short measurements, are stored and subtracted from measurements. Horizontal resolution is up to 2001 points, vertical resolution is 0.002 dB. Stored data is automatically interpolated for frequency ranges less than the original stored range.
Trace Memory: For both channels, any trace, measurement, or limit line may be subtracted from any subsequent measurement.
Save/Recall: Nine sets of front panel setups may be stored and recalled. The first four may include calibration data.

Display

Channels: Two channels may be used to simultaneously display any of the following: A, B, R1, R2, A/R1, A/R2, B/R1 or B/R2.
Graticule: May be set on or off. When on; ten vertical divisions. Horizontal divisions are set automatically depending on frequency span.
Display Resolution:
Horizontal: 101, 201 or 401 points
Vertical: 0.005 dB
Limit Lines: Two lines, either straight or complex, for each trace. Complex lines may be made from up to 10 segments. Measurement data may be compared with limit lines for Pass/Fail testing.
Scaling:
Resolution: 0.1 to 10 dB per division, independently adjustable for each channel.
Offset Range: –99 to +99 dB in 0.1 dB steps
Autoscale: Selects offset and resolution for optimum display.
Smoothing: Minimum and Maximum settings reduce bandwidth to reduce noise on low-level traces. Trace update time is adjusted accordingly.
Averaging: 4, 8, 16, 32, 64, 128, or 256 successive traces may be averaged to reduce noise at low levels.
CRT Intensity: Continuously adjustable from off to bright.

Markers and Cursors

Markers: Eight are numerically identified with the 6600B Sweeper; nine are numerically identified with the 6700A Synthesizer.
Cursor: Position is selectable via tuning knob. Amplitude, at the cursor frequency, is displayed for both traces.
Relative Cursor: Displays the frequency and amplitude difference between the main Cursor and Relative Cursor for both traces. A menu selection reverses the position of the two cursors.
Cursor Min/Max: Moves the cursor to Min or Max as selected.
Cursor "X" dB: Moves cursor to "X" value on either trace.
Relative Cursor "X" dB: Moves the main Cursor to "X" value relative to Relative Cursor.
Cursor "X" dB Bandwidth: Moves both the Cursor and the Relative Cursor to "X" dB down value from the initial reference position.
Cursor Next or Active Marker: Moves the Cursor to the frequency of the appropriate marker.

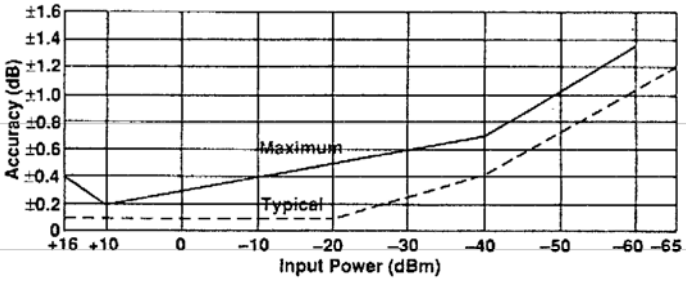
General

Temperature Range:
Operation: 0°C to +50°C
Storage: -40°C to +70°C
Power: 100V/120V/220V/240V ±10%, 48-66 Hz, 130VA Max
Dimensions: 177Hx432Wx476D mm+10 mm for feet.
(7Hx17Wx18-3/4 D in. + 3/8 in. for feet)
Weight: 16kg (35 lb)

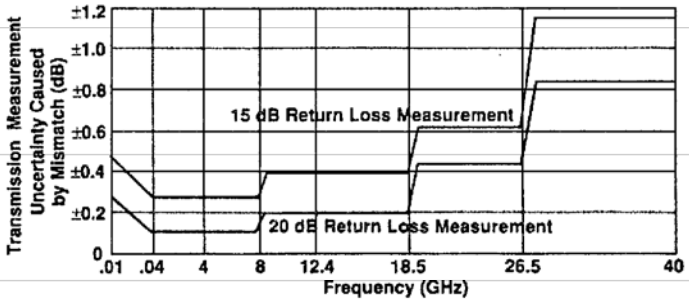
Accuracy

Transmission Gain/Loss Accuracy: Combination of Channel Accuracy and Mismatch Uncertainty.

Channel Accuracy (25°C):



Mismatch Uncertainty (Typical):



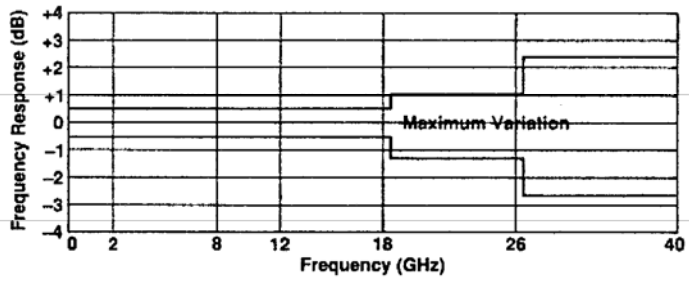
Return Loss/SWR Measurement Accuracy: Combination of Channel Accuracy and SWR Autotester Accuracy.

SWR Autotester Accuracy:

Model	Accuracy of Measured Reflection Coefficient (ρ)			
	10 MHz-8 GHz	8-18 GHz	18-26.5 GHz	26.5-40 GHz
560-97A50	$0.016 \pm 0.06\rho^2$	$0.016 \pm 0.1\rho^2$	N/A	N/A
560-97A50–1	$0.010 \pm 0.06\rho^2$	$0.010 \pm 0.1\rho^2$		
560-97N50	$0.018 \pm 0.08\rho^2$	$0.018 \pm 0.12\rho^2$	N/A	N/A
560-97N50–1	$0.013 \pm 0.08\rho^2$	$0.013 \pm 0.12\rho^2$		
560-97NF50	$0.018 \pm 0.08\rho^2$	$0.018 \pm 0.12\rho^2$	N/A	N/A
560-97NF50–1	$0.013 \pm 0.08\rho^2$	$0.013 \pm 0.12\rho^2$		
560-98S50	$0.018 \pm 0.10\rho^2$	$0.018 \pm 0.10\rho^2$	$0.025 \pm 0.12\rho^2$	N/A
560-98S50–1	$0.013 \pm 0.10\rho^2$	$0.013 \pm 0.10\rho^2$	$0.018 \pm 0.12\rho^2$	
560-98SF50	$0.018 \pm 0.10\rho^2$	$0.018 \pm 0.10\rho^2$	$0.025 \pm 0.12\rho^2$	N/A
560-98SF50–1	$0.013 \pm 0.10\rho^2$	$0.013 \pm 0.10\rho^2$	$0.018 \pm 0.12\rho^2$	
560-98K50	$0.018 \pm 0.15\rho^2$	$0.018 \pm 0.15\rho^2$	$0.025 \pm 0.15\rho^2$	$0.032 \pm 0.18\rho^2$
560-98KF50				

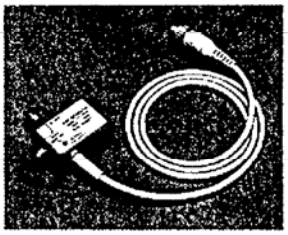
Power Measurement Accuracy: Combination of Channel Accuracy and Detector Frequency Response.

Detector Frequency Response:



Accessories

SWR Autotesters



560 Autotesters: The 560 Series SWR Autotesters integrate, in one small package, a broadband high-directivity bridge, a detector, a low reflection test port, a precision reference termination, and a connection cable. The output is a detected signal proportional to the reflections from the test port. Optional extender cables can be used without degradation in performance. A mating Open/Short is shipped with each 560 Autotester.

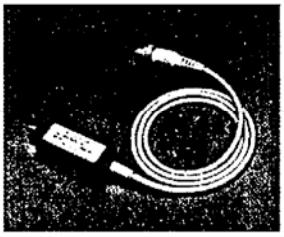
560 Autotester Models:

Model	Frequency Range (GHz)	Directivity (dB)	Frequency Sensitivity (dB)	Test Port Connector	Input Connector
560–97A50	0.01–18	36	±1.2	GPC–7	N Female
560–97A50–1		40			
560–97N50	0.01–18	35	±1.5	N Male	N Female
560–97N50–1		38			
560–97NF50	0.01–18	35	±1.5	N Female	N Female
560–97NF50–1		38			
560–98S50	0.01–26.5	32	±2.0	WSMA Male	Ruggedized WSMA Female
560–98S50–1		35			
560–98SF50	0.01–26.5	32	±2.0	WSMA Female	Ruggedized WSMA Female
560–98SF50–1		35			
560–98K50	0.01–40	30	±3.0	K Male	Ruggedized K Female
560–98KF50				K Female	

Dimensions and Weight:

Model	Dimensions	Weight
560–97A50, –1 560–97N50, –97NF50, –1	7.6 x 5 x 2.8 cm (3 x 2 x 1-1/8 in.)	340 g (12 oz)
560–98K50, –98KF50 560–98S50, –98SF50, –1	5.3 x 3.8 x 1.9 cm (2-1/8 x 1-1/2 x 3/4 in.)	198 g (7 oz)

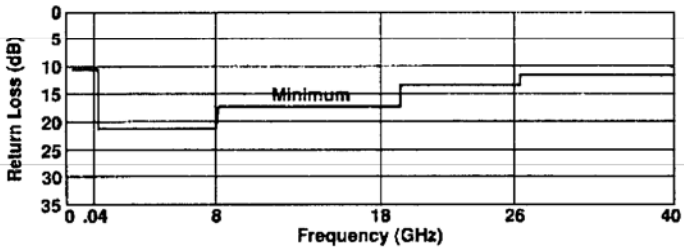
Detectors



560 Detectors: The 560 Series Detectors are used for absolute power and relative transmission measurements. The 560 Series Detectors use zero-biased, field-replaceable Schottky diodes. Measurement range is –60 dBm (typically usable to –65 dBm with 562) to +16 dBm. Optional extender cables can be used without degradation in performance.

Model	Frequency Range	Input Connector
560–7A50	10 MHz to 18 GHz	GPC–7
560–7N50	10 MHz to 18.5 GHz	N Male
560–7S50	10 MHz to 18.5 GHz	WSMA Male
560–7S50–2	10 MHz to 26.5 GHz	WSMA Male
560–7K50	10 MHz to 40 GHz	K Male

Detector Return Loss:



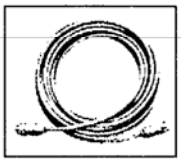
Accessories

Replaceable Diode Modules:

Detector Model	Diode Module Model
560–7A50	560–A–7219–A
560–7K50	Factory Repair Only
560–7N50	560–A–7219–A
560–7S50	560–A–7219–A
560–7S50–2	560–A–7219–B

Extender Cables: Extender cables can be installed between the SWR Autotester or detectors and the 562, permitting measurements from a distance of 61 m (200 ft).

Model	Cable Length
800–109	7.6 m (25 ft)
800–110	15.2 m (50 ft)
800–111	30.5 m (100 ft)
800–112	61 m (200 ft)

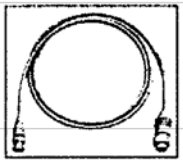


Interface Cables: Allows the 562 to operate with the following sources.

Model	Source
806-7	Wiltron 6600B
806-7	Wiltron 6700A
806-13	HP 8350B, 8340/1
806-14	HP 8620C

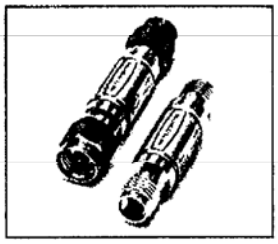
Adapter Cables: Adapter cables allow the 562 to be used with waveguide or other detectors having a BNC or SMA female output connector. Cable length is 122 cm (4 ft).

Model	Connectors
560–10BX	BNC Male
560–10BX–1	SMA Male



Open/Shorts: An Open/Short is used to establish a 0 dB return loss reference during the normalization procedure.

Model	Connectors
22A50	GPC–7
22K50	K Male
22KF50	K Female
22N50	N Male
22NF50	N Female
22S50	WSMA Male
22SF50	WSMA Female



Volt Mode Adapter Cable: Allows the 562 to be used in Volt Mode.

Model	Connectors
562-15BX	BNC Male

Recommended Systems

5647B Scalar Network Analyzer System:
10 MHz to 18 GHz (GPC-7 Connectors)
Includes:
(1) 562 SNA
(1) 560-97A50-1 Detector
(1) 22A50 Open/Short
(1) 34NN50A Adapter
(1) 6647B Sweep Generator
(1) 560-97A50-1 SWR Autotester
(1) 806-7 Interconnect Cable
(1) 2100-1 GPIB Cable

5769A Synthesized Scalar Network Analyzer System:
10 MHz to 40 GHz (K Connector™)
Includes:
(1) 562 SNA
(1) 560-97K50 Detector
(1) 22KF50 Open/Short
(1) 34KRK50A Adapter,
(1) 2100-1 GPIB Cable
(1) 6769A Swept Frequency Synthesizer
(1) 560-97K50 SWR Autotester
(1) 34KFK50 Adapter
(1) 806-7 Interconnect Cable

WILTRON

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