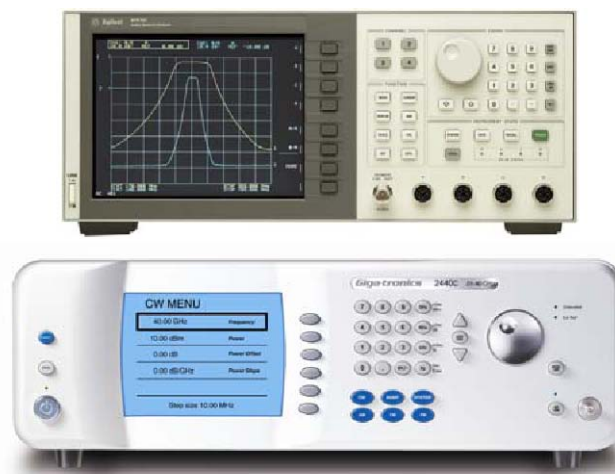


## Using the Giga-tronics 2500B & 2400C Series Microwave Signal Generators with the HP/Agilent 8757D Scalar Network Analyzer

### Scalar Network Analyzers

Scalar analysis of microwave devices such as filters, attenuators, switches and amplifiers is a popular cost effective measurement method for device characterization. As a result, a significant number of scalar network analyzers are still being used extensively throughout the world. Many of these scalar network analyzers dating back to the 1980's, such as the HP/Agilent 8757D Scalar Network Analyzer, are still in use today.



### Swept Frequency Synthesizer

Two common frequency synthesizers that were designed to work with the 8757D are the HP 8340 and HP 8350 Series Synthesizers. The 8757D would automatically communicate with these two synthesizers via its private IEEE 488 bus. However, these frequency synthesizers are obsolete and are no longer supported.

Because of the unique IEEE 488 communications protocol used by the 8757D, replacement microwave synthesizers must be designed to communicate like the HP 8340 or HP 8350 synthesizers, which requires that the swept source to remain in "Local mode". This enables the user to set sweep parameters of the scalar analyzer/frequency sweeper system locally by manually using sweeper's front panel controls and not by sending remote commands from a computer. When parameters such as start frequency or power level are changed, the sweeper notifies the scalar analyzer that a change has been made. The scalar analyzer queries the sweeper for changes and updates its display to the new instrument settings.

## Giga-tronics 2500B and 2400C Series Microwave Signal Generators

The Giga-tronics 2500B & 2400C Series Microwave Signal Generators have an optional HP 8340 emulation mode, which is Option 55B and causes it to behave like an HP 8340 synthesizer. This allows it to automatically communicate with the 8757D over its private GPIB bus.

The 2500B and 2500C comes standard with a ramp sweep mode. This feature also includes a power sweep function, which can be used with the 8757D to perform gain compression measurements or swept power responses. The 2400C and 2500B signal generator's control signals include Ramp Out and Blanking. The connections for these control signals can be found on the rear panel under the Network Analyzer connector group, see Figure 1.

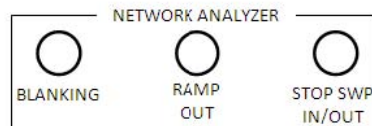


Figure 1

## AC Detection Mode

The 8757D has an AC detection mode that is used when low power measurements are required. In some cases the broadband thermal noise present in the system is greater than the test signal magnitude. This method pulse modulates the swept signal that is filtered and detected by the scalar analyzer. The 8757D Modulator Drive BNC port connects to the signal generator's Pulse In BNC port and provides the drive signal to modulate the output. To use the 8757D AC detection mode with the 2500B and 2400C signal generators, order option 17B, which is the external modulation suite, which includes pulse modulation capability.

## Summary Tables

The tables below list how the instruments are connected together, option requirements for the signal generator, and unsupported functions.

Connections (BNC)		
	Giga-tronics 2500C and 2400C	HP/Agilent 8757D
Ramp Control	Ramp Out	Sweep In
Blanking	Blanking	Pos Z Blank
AC Detection Mode	Pulse In	Modulator Drive

2500B and 2400C Option Requirements	
Option 55B	Add HP 8340 Emulation Mode.
Option 17B	Add external modulation suite. Needed for AC Detection

Unsupported Functions on the 2500B and 2400C Series Signal Generators	
Marker Sweep	Unsupported
Alternate Sweep	Unsupported

## Summary

The Giga-tronics 2500B and 2400C, along with option 55B, can emulate an HP 8340 signal generator and communicate with the HP/Agilent 8757D Scalar Network Analyzer over its private GPIB bus. If the AC detection mode is needed, option 17B (external modulation) for the signal generator should be ordered.

More information about the 2400C Series Microwave Signal Generator may be obtained from the data sheet, which is posted on the Giga-tronics web site at:

<http://www.gigatronics.com/downloads/datasheets/2400C-ds.pdf>

Information about our newest high-performance line of signal generators, the 2500B Series Microwave Signal Generators, may be obtained from the data sheet, which is posted at the Giga-tronics web site at:

<http://www.gigatronics.com/downloads/datasheets/2500B-ds.pdf>