

**Anritsu** Advancing beyond

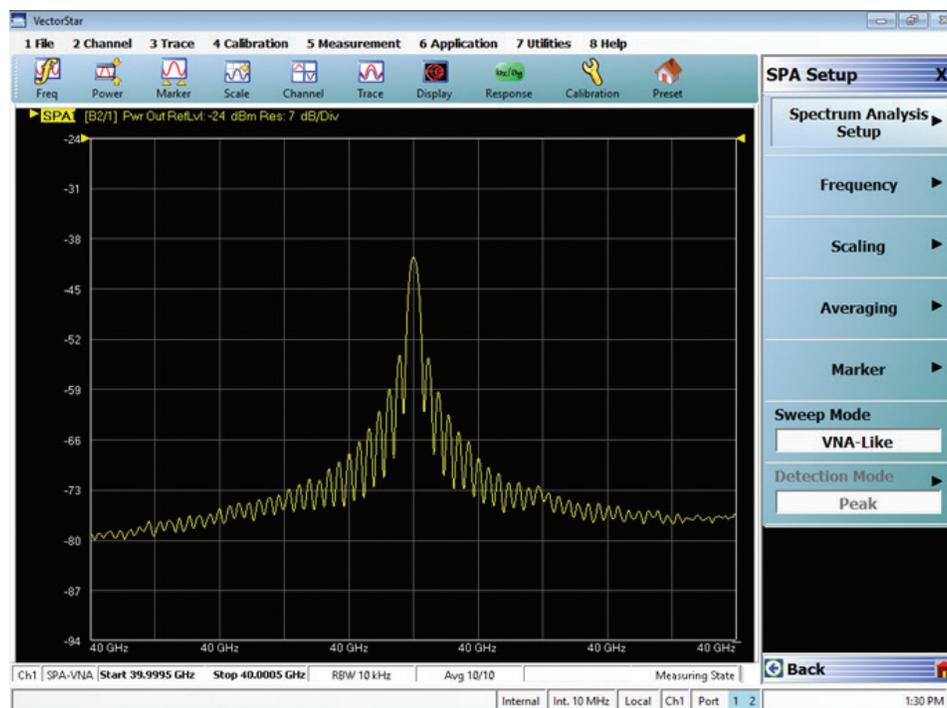
# Anritsu VectorStar™ VNA Spectrum Analysis Option 49

## Introduction

Every electronic device or component that is characterized using a Vector Network Analyzer, at some point also undergoes spectrum analysis to check various parameters or is used for troubleshooting, the following measurements are examples of the various parameters.

- Harmonics (3rd, 5th, 7th etc.) Measurements
- Spurious Measurements
- Distortion Measurements
- For Spectral Content of the Device

All the above measurements require the device under test (DUT) to be detached from the VNA setup and attach to a spectrum analysis. The process can become tedious, time consuming, and prone to errors. With the inclusion of a spectrum analysis option in the VectorStar VNA, users can make both VNA based S-parameter measurements and spectrum measurements in a single connection with ease and accurate results.



*VectorStar Spectrum Analysis*

# Main Highlights and Features of VectorStar Spectrum Analysis (SPA) Option 49

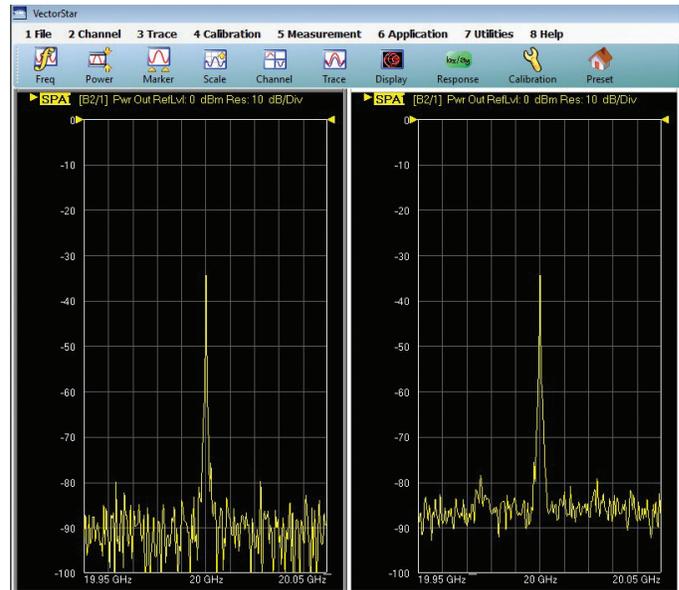
## Dual SPA Mode Available for Usage as Per Testing Requirements

- VNA like (point based sweep)
  - Suitable, accurate, and fast spectrum measurements when frequencies of interest are already known
  - Ten times faster than the classical spectrum analysis mode
- Classical mode (traditional spectrum analysis)
  - Suitable for viewing entire spectral content of a device or when the frequencies of interest are not known
- Simultaneous, sequential S-parameter and spectrum analysis for viewing VNA-like and spectrum analysis-like responses of the DUT
- All VNA related benefits are also available in SPA mode: embedding, de-embedding, power calibration (source and receive), reference plane extension, etc.
- Make SPA measurements at the DUT reference input or output plane, just like VNA measurements
- Zero Span mode available
- Support for making modulated measurements\*

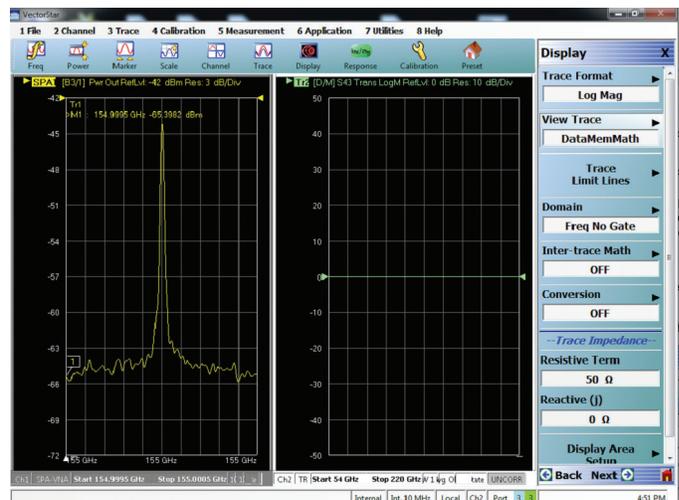
\* Refer to 10410-00318 MS4640B VectorStar guide for more information

## Key Features and Highlights

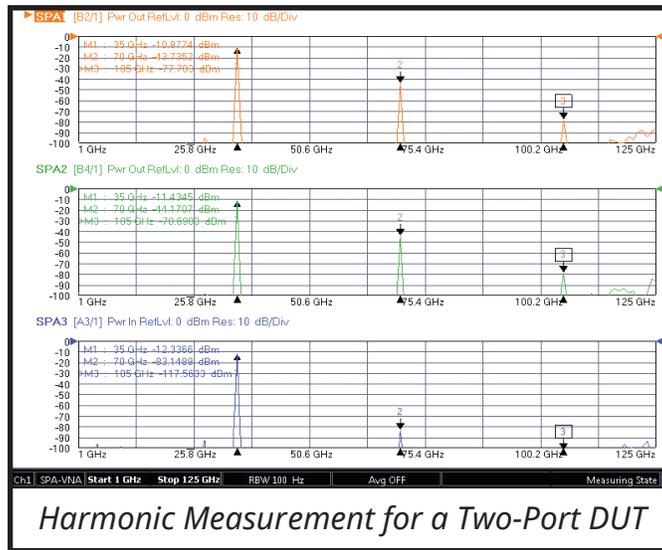
- SPA available from 70 kHz to 20/40/70/110/125/145, and 220 GHz. Also available for banded configuration to 1.1 THz
- Dual SPA mode available: suitable for mixers, amplifiers, harmonics, and spurious testing
- SPA available on all ports and the user can define which port to use as the designated SPA port
- Several detection types are available in Classical mode: peak, minimum, RMS, and mean
- Various math functions can be applied on SPA mode like min hold, max hold, user defined equations
- Sources and receivers can be independently configured and setup can be used as a tracking generator
- For units that have a dual source, a dual drive option is available. Support for external source control is also possible
- Phase synchronization for units with dual source is available. This feature allows users to control and configure the phase between the two sources
- Source and receiver attenuator are available with VNA and can be activated in SPA mode. Recommendation: use Option 62 (with attenuator on receiver side) for measuring the spectrum content of high-power devices
- Software option: easy to install and upgrade existing user equipment



VNA Point Based and Classical Modes

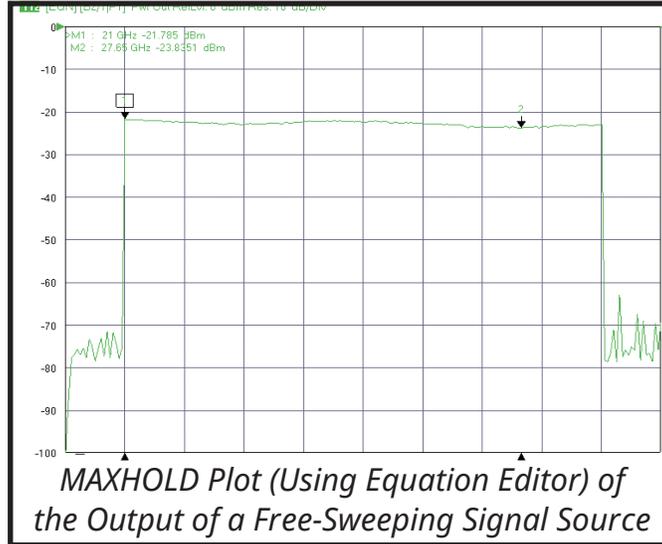


SPA/VNA View on a Single Screen



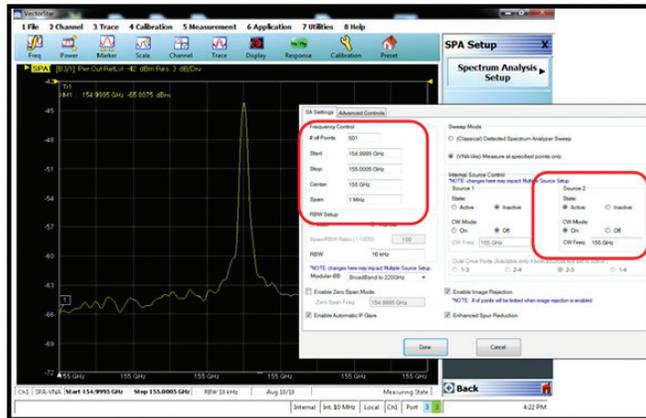
## Harmonic Measurement for a Two-Port DUT

Harmonic Measurement Example



## MAXHOLD Plot (Using Equation Editor) of the Output of a Free-Sweeping Signal Source

Equation Editor (Max Hold) Example



Independent Tracking Control of Sources and Receivers  
- Showing a 155 GHz Tracking Mode

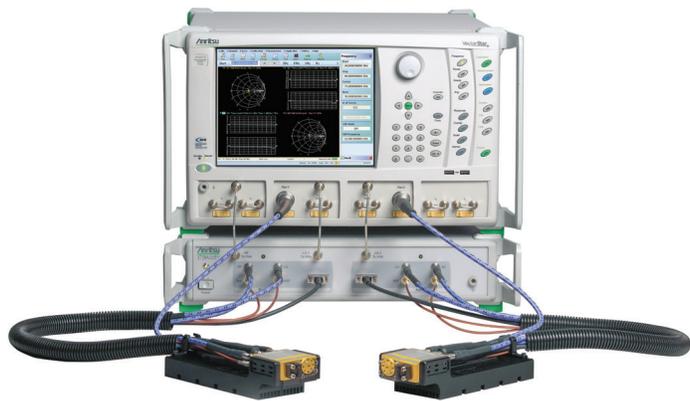
## Specifications Overview

- Resolution bandwidth (RBW) range: 1 Hz to 1 MHz
- Displayed measurement points up to 25000 (100000 in a single channel configuration)
- DANL at test port: -123 dBm/Hz to 70 GHz (MS4647B, no loop options, above 10 MHz)
- Third Order Intercept (TOI)
  - >33 dBm for 1 to 70 GHz (typical) MS4647B
  - >33 to 40 GHz (typical) for MS4644B and to 20 GHz for MS4642B
- Sweep time (201 display points, 1 MHz RBW, single trace)
  - < 40 ms, 10 MHz to 20 GHz (typical), VNA-like mode
  - < 60 ms, 10 MHz to 70 GHz, VNA-like mode (MS4647B)
  - < 0.7 s, 10 GHz span, Classical mode
  - < 1.4 s, 10 MHz to 20 GHz, Classical mode

Please Note: VectorStar software is free to download from the Anritsu website ([www.anritsu.com](http://www.anritsu.com)) and can run on a standalone PC in simulation mode. Users interested in evaluating the spectrum analysis option in simulation mode are encouraged to download the software from the website. Please install the software in admin mode.



*VectorStar MS464xB*



*ME7838 Series of Broadband VNAs*