

How Much Do Vector Network Analyzers cost - and why are they so expensive?



A **Vector Network Analyzer (VNA)** is a piece of electronic test equipment used to characterize radio frequency (RF) and microwave devices. It measures the magnitude and phase of transmitted and reflected signals to determine characteristics such as [impedance](#), [gain/loss](#), and [S-parameters](#) of a [device under test \(DUT\)](#). Essentially, it helps engineers understand how RF signals behave when interacting with a circuit or component. Vector network analyzers (VNAs) can range in price from a few thousand dollars to hundreds of thousands, making them quite expensive pieces of test equipment. The high cost is due to several factors, including the complexity of the technology, the precision required for accurate measurements, and the low production volume.

Factors Contributing to the High Cost:

Precision and Complexity: VNAs require highly accurate and stable components, often using exotic materials and manufacturing techniques to achieve the necessary performance. This precision translates to higher production costs.

Low Production Volume: Unlike mass-produced devices like multimeters, VNAs are specialized instruments with a much smaller market.

Software and Features: Advanced features like time-domain analysis, gating, and fixture simulation sometimes require expensive software licenses, further increasing the overall cost. The number of ports and maximum frequency affect pricing greatly.

Test Port Cables and Accessories: High-quality test port cables and calibration kits, essential for accurate measurements, are also expensive due to the materials and manufacturing processes involved.

Calibration and Maintenance: VNAs require regular calibration and maintenance to ensure accuracy, which can add to the long-term cost of ownership.

High-End Models: For applications requiring higher frequencies, wider bandwidths, or greater dynamic range, the cost of VNAs can increase dramatically. The higher the frequency the higher the equipment cost. Our most expensive model is the [Siglent SNA6134A 26.5GHz 4-port VNA](#) at around \$83,000

Saelig VNAs: Most VNAs from Saelig are quite affordable (<https://www.saelig.com/category/vector-network-analyzers.htm>) Our PC-based [MegiQ VNAs](#) start at under \$4,000, while our [PicoVNAs](#) run from \$8,000 - \$11,000. Benchtop [Rigol Spectrum and Vector Signal Analyzers](#) start at \$2300, while [Siglent VNAs](#) are available from just under \$10,000.

