

# NanoRFE

# Specifications

VNA6000-A and VNA6000-B



For more documentation please go to:  
<https://nanorfe.com/>

# Introduction

## Safety information

The NanoRFE VNA6000 is designed for measuring and characterizing electronic devices in industrial and laboratory environments only. Always observe the following limits when using the VNA6000 to avoid possible damage to equipment.

### Maximum input levels

DC input voltage	Both RF ports	5V
RF input power	Both RF ports	10dBm (10mW)
DC supply voltage	USB port	5.5V

## Parameter definitions

Maximum/minimum values – these are guaranteed specifications in which the device will perform.

Operating parameters – these are guaranteed range of parameters over the device will operate unless otherwise stated.

Typical values – these are characterized by random sample testing and represent a typical unit. Performance characteristics are typical values unless otherwise stated.

# Operating parameters

The following table applies to both VNA6000-A and VNA6000-B using VNA View v1.1.

Parameter	Specification
Impedance	50 $\Omega$
Test ports	SMA female
Number of test ports	2
DC supply voltage	4.8V – 5.5V
Operation ambient temperature	0°C - 45°C
Frequency range	50kHz to 6GHz
Number of sweep points	10 – 4096. More points (up to 65536) are possible depending on the performance of your PC.
Measured S parameters	Reflection (S11) and Transmission (S21). Reverse Reflection (S22) and Reverse Transmission (S12) with DUT reversal.
Test port output power	-10dBm typ.
Maximum measurable S parameter magnitude	0dB. To measure amplifiers, it is required to attach an attenuator with attenuation greater than or equal to the gain of the amplifier.
IF bandwidth	0.8kHz, 1.7kHz, 3.1kHz, 4.7kHz, 6.2kHz, 10kHz
Display resolution	320 x 480
Display size	4 inch (diagonal length) touchscreen
Weight	300g typ.
Dimensions	12cm (width) 8.6cm (height excluding SMA connectors) 10cm (height including SMA connectors) 3cm (thickness)

# Performance characteristics

Parameter	Device variant	Conditions	Value
System dynamic range, transmission <sup>(1)</sup>	VNA6000-B	5.8GHz	110dB
		3.5GHz	110dB
		2.5GHz	110dB
		200MHz	110dB
		5 MHz	90dB
	VNA6000-A	5.8GHz	95dB
		3.5GHz	95dB
		2.5GHz	95dB
		200MHz	95dB
		5 MHz	90dB
Directivity, calibrated, ideal calibration kit	All	3.5GHz	50dB
		5.8GHz	45dB
Trace noise, reflection <sup>(2)</sup>	All	-	0.01dB RMS
Trace noise, transmission <sup>(3)</sup>	All	-	0.01dB RMS
Time per full sweep <sup>(4)</sup>	All	-	0.16s

(1) Calibrated, IFBW = 0.8kHz, AVG = 10

(2) Calibrated, IFBW = 0.8kHz, No AVG, |S11| = 1.0

(3) Calibrated, IFBW = 0.8kHz, No AVG, |S21| = 1.0

(4) IFBW = 10kHz, No AVG, default sweep parameters, 101 points

# Typical performance (VNA6000-B)

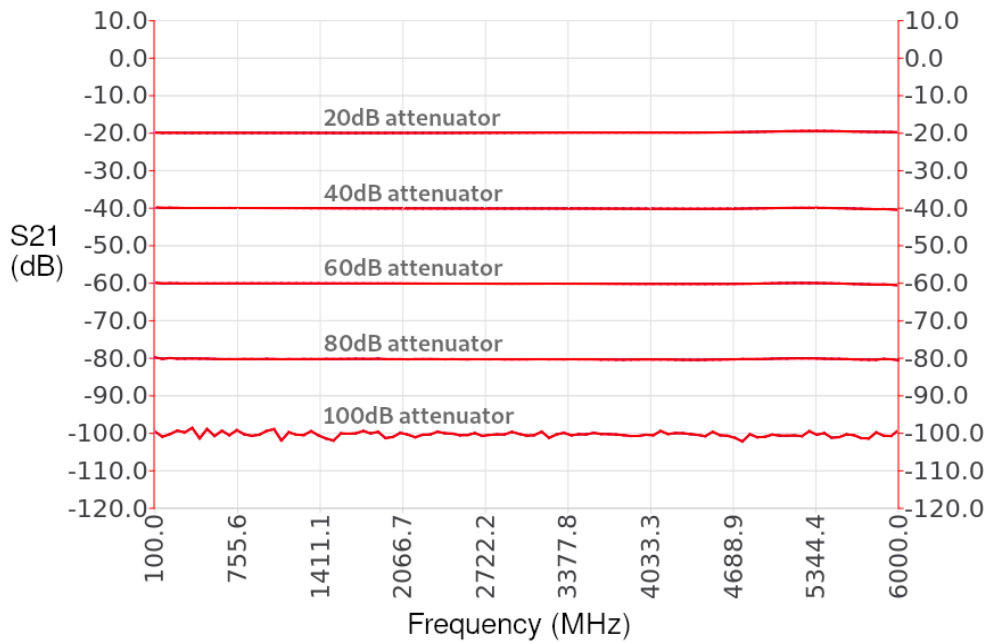


Figure 1: Attenuator measurements (Calibrated, IFBW = 0.8kHz, AVG = 10)

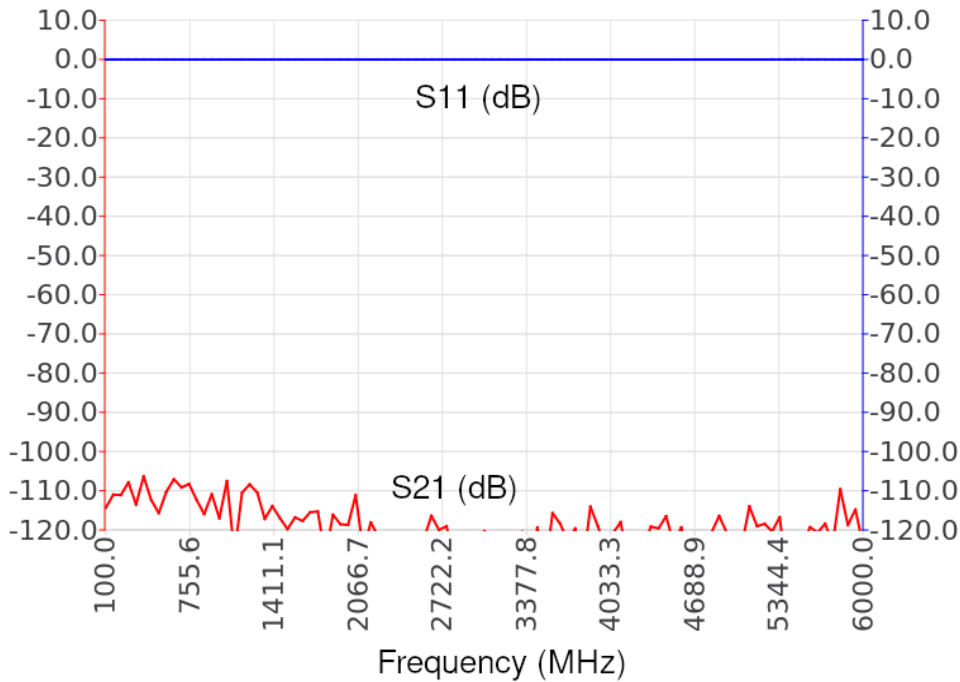


Figure 2: Noise floor (Calibrated, port 1 open, port 2 terminated with 50 ohm load, IFBW = 0.8kHz, AVG = 10)