

I Introduction

1. Introduction

The Scalar Network Analyzer **SNA-2550** is an instrument capable of measuring the impedance matching and the gain of circuits with a nominal impedance of 50 Ohm.

The measurement is performed by generating a sinusoidal signal, not modulated, with prescribed amplitude and frequency and measuring the input signal to the receiver with a wideband detector; this method has some limitations concerning dynamic range for low level signal (minimum detachable signal), but it has the fundamental advantage that it is easy to measure the conversion gain of circuits with input frequency different from output frequency (for example: frequency converters, frequency multipliers and dividers).

It is equipped with two BNC connectors for connecting to the device under test:

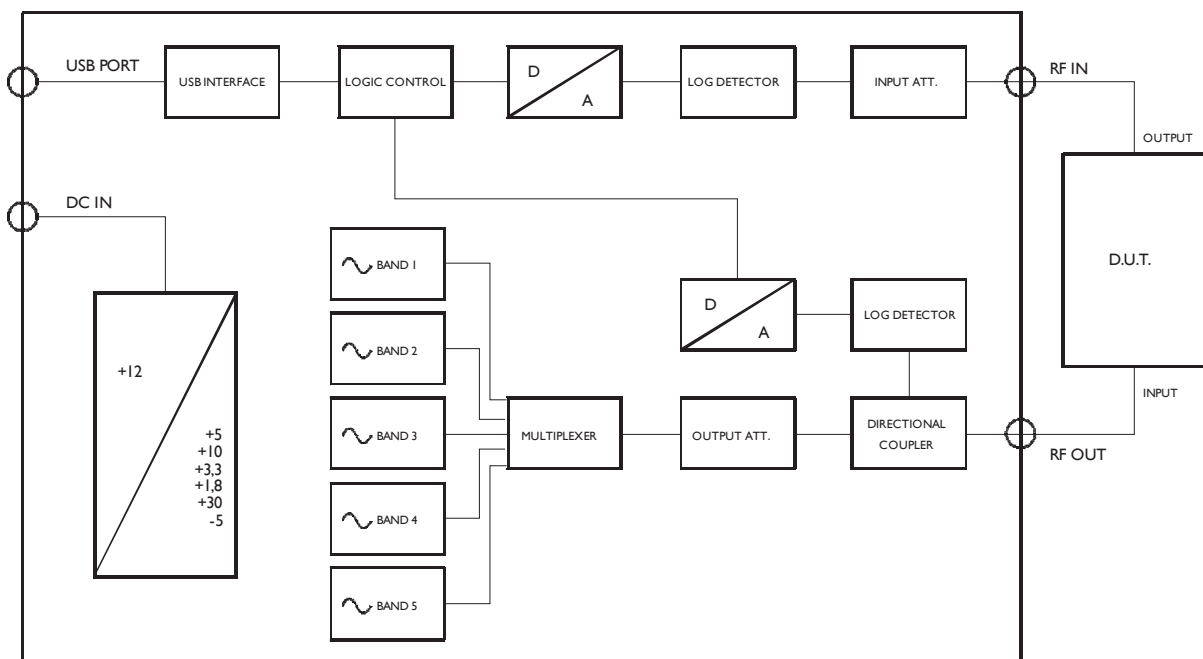
- RF OUT port (internal generator output) to be connected to the input of the device under test
- RF IN port (internal detector input) to be connected to the output of the device under test

To the RF OUT port it is also connected a bridge circuit for the measurement of the impedance matching, using a second wideband detector.

For proper operation, it needs to be controlled by a PC through a USB 2.0 port and dedicated software.

It is shipped with an external 230 VAC power supply, but it can be powered from a 12 V battery (11 – 15 VDC) at 800 mA max for mobile use.

2. Block diagram



3. Technical Specifications

Description	Values
Measurement capability	Gain – Impedance matching
Frequency range	0,4 – 2.500 MHz nominal; 0,1 – 2.600 MHz with reduced performance
Generator output level	From 0 to -50 dBm with 1 dB steps
Precision of generator output level	From 0,4 to 900 MHz: +/- 1 dB From 900 to 2500 MHz: +/- 1,5 dB (in CW mode)
Resolution of generator frequency	Less than 1 Hz (the measurement is performed on 401 equidistant points in Low Speed mode or on 101 points in High Speed mode)
Precision of generator frequency	+/- 10 ppm (+/- 0,001 %) with thermal compensation
Receiver signal full scale	From +3 to 33 dBm with 1dBm steps (signals stronger then +23 dBm only if duty cycle is less then 0,1)
Receiver signal precision	+/- 3 dB without calibration; +/- 1 dB with calibration for measurements on not frequency changing devices
Dynamic range of gain measurement	Frequencies from 0,4 to 100 MHz: from full scale to -60 dB Frequencies from 100 to 2500 MHz: from full scale to -50 dB
Dynamic range of impedance matching measurement	30 dB from 0,4 to 100 MHz; 25 db from 100 to 450 MHz 20 dB from 450 to 2000 MHz 15 dB from 2000 to 2500 MHz
Supply	11 – 15 Vdc 800 mA
Operating temperature range	5 – 35 ° C

4. Minimum PC requirements PC and operating system

- Windows 2000 o Windows XP with direct X 8.0 or later
- Personal Computer AT compatible
- Intel Pentium 4 1.8 GHz Processor or equivalent
- 128 MB RAM
- 50 MB Hard Disk free space
- 2.0 USB port
- graphic video card 1024 X 768 pixel, 65.536 (16/32 bit) colors

5. PC settings

All energy saving options should be disabled both in BIOS and operating system.

6. Installation procedure

Software installation is easy and fast. It is enough to follow the instructions founded in the “QUICK INSTALLATION GUIDE”, available in paper and also as file on the included CDROM.