

NanoVNA Network Analyzer

- ▶ Overview of new NanoVNA Network Analyzer for about \$50.00
- ▶ 3d printed case – where to get one.
- ▶ Basic How to measure HT antennas for VHF & UHF. Not all antennas are equal (not in range as suggested on antenna packaging)
- ▶ Menu structure

NanoVNA 50KHz-900MHz Network Analyzer - About \$50



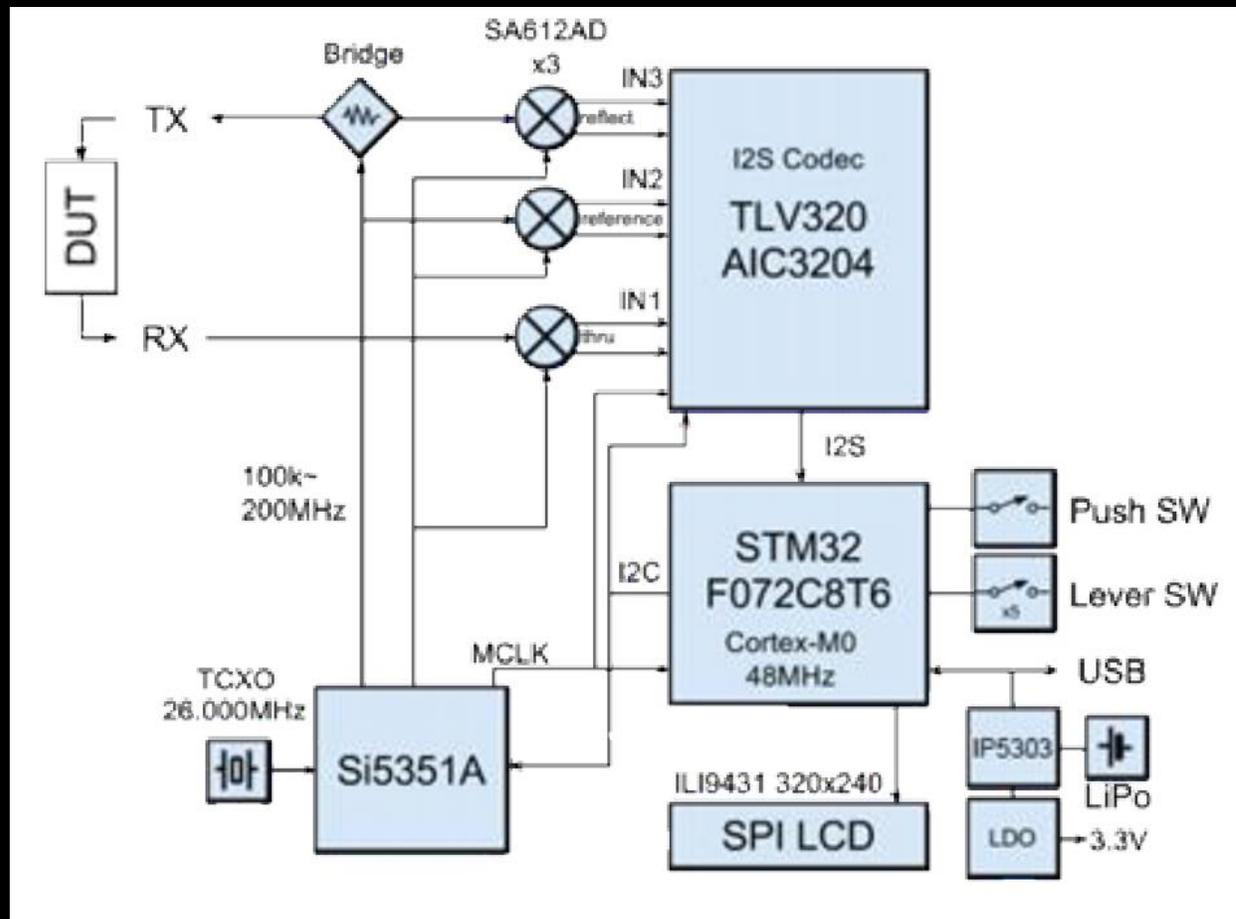
Technical data:

Display: 2.8 inch TFT (320 x240) - Power supply: built-in lithium battery - Measurement range: 50KHz-900MHz (default firmware) - RF output: -13dbm (maximum -9dbm) - Port SWR: < 1.1 - Display: 2.8 inch TFT (320 x240) - Size: 54mm x 85.5mm x 11mm - Weight: 63 grams - Full set of accessories: main unit / 1 set, 3 SMA male calibration parts Set the frequency range (STIMULUS>START/STOP or CENTER/SPAN

NanoVNA Basic Performance

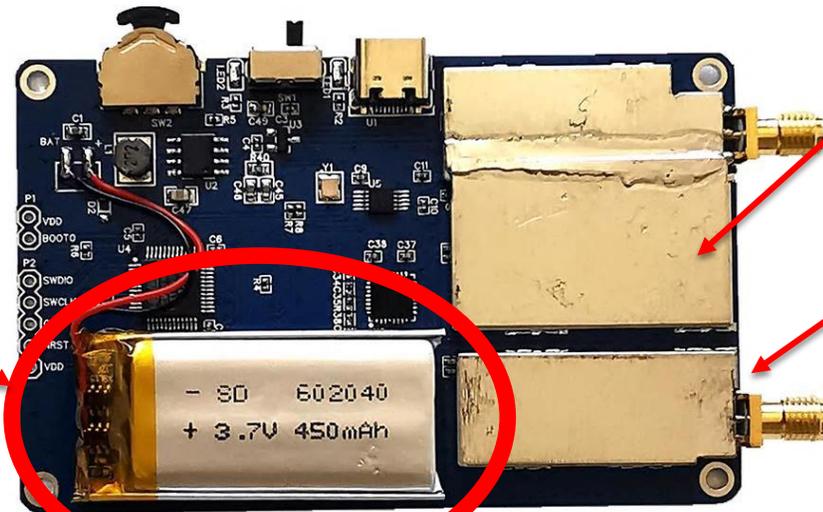
- ▶ ● Measurement frequency: 50KHz -900MHz
- ▶ ● RF output: -13dbm (maximum -9dbm)
- ▶ ● Measurement range: 70dB (50kHz-300MHz), 50dB (300M-600MHz), 40dB (600M - 900MHz));
 - ▶ The 50k-300MHz frequency range of the si5351 direct output provides better than 70dB dynamic. The extended 300M-600MHz band provides better than 50dB of dynamics, and the 600M-900M band is better than 40dB of dynamics.
- ▶ ● Port SWR: < 1.1
- ▶ ● USB interface: USB type-C communication mode: CDC (serial)
- ▶ ● Power: USB 5V 120mA, built-in 400mAh battery, maximum charging current 0.8A
- ▶ ● Number of scanning points: 101 (fixed)
- ▶ ● Display Tracking: 4, Marking: 4, Setting Save: 5
- ▶ ● Frequency Tolerance:<2.5ppm
- ▶ ● Frequency Stability:<0.5ppm

NanoVNA Block Diagram



NanoVNA Top Side PCB Battery

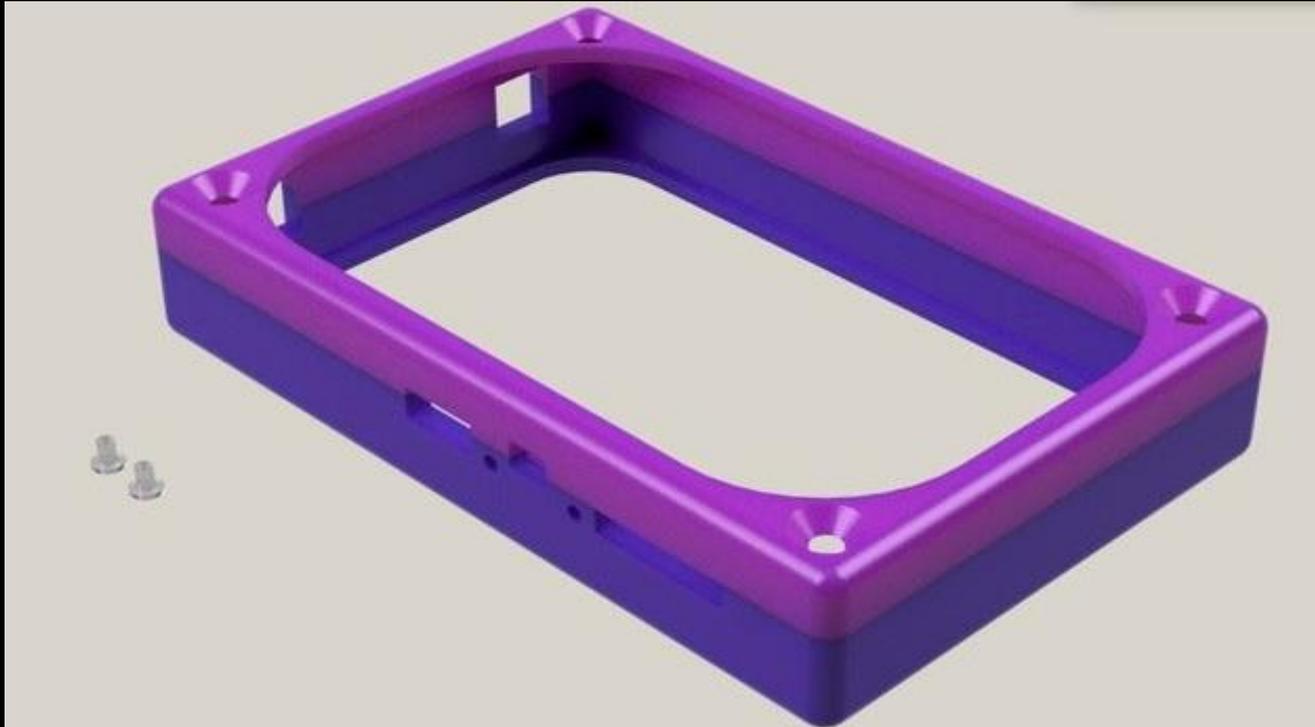
Battery 450mah 3.7V –
typically charge lasts
about two hours



Input Shielding

The metal shield is designed to
reduce the external
interference and improve the
measurement accuracy

NanoVNA 3D Case

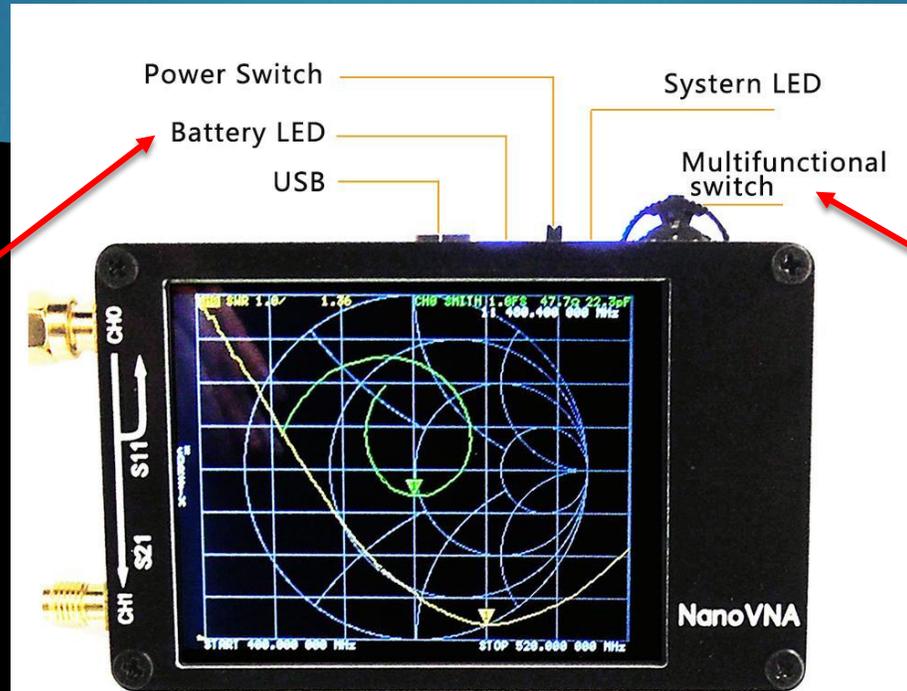


3D printed case contact

Ron WA6TQH or Marty W5MF

NanoVNA Controls

During charge the led will blink. When full charge reached led will be solid.



Menu Selections can be made using Multifunctional switch or touch screen. *A Stylus is recommended.*

Touchstone Files Export

The upgraded PC control software can export Touchstone (snp) files for a variety of wireless design and simulation software, making it very convenient and fast.

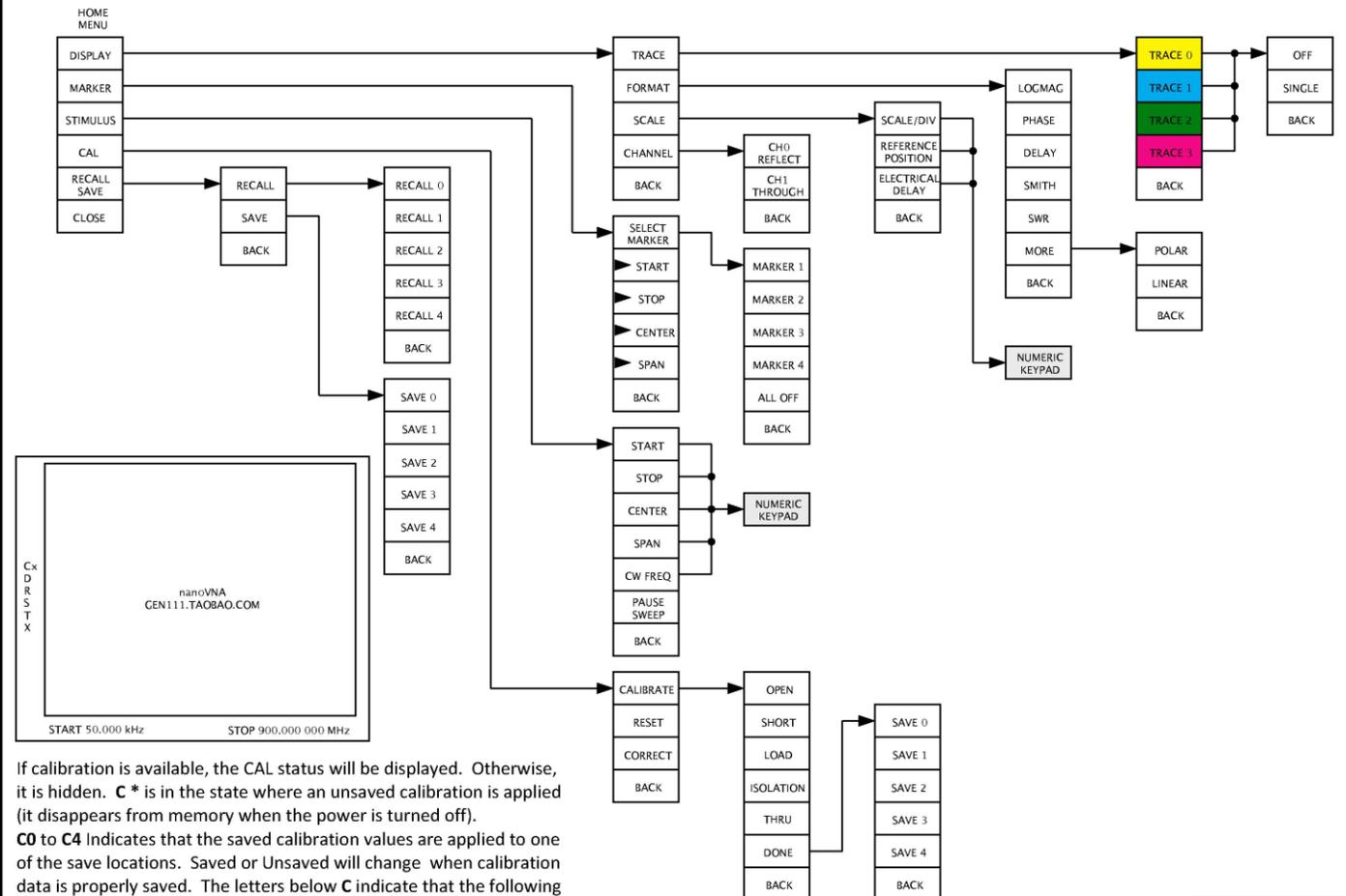
NanoVNA Menu Structure

Menu can be accessed by using the Touch Screen or the Multifunctional switch. A stylus is recommended.

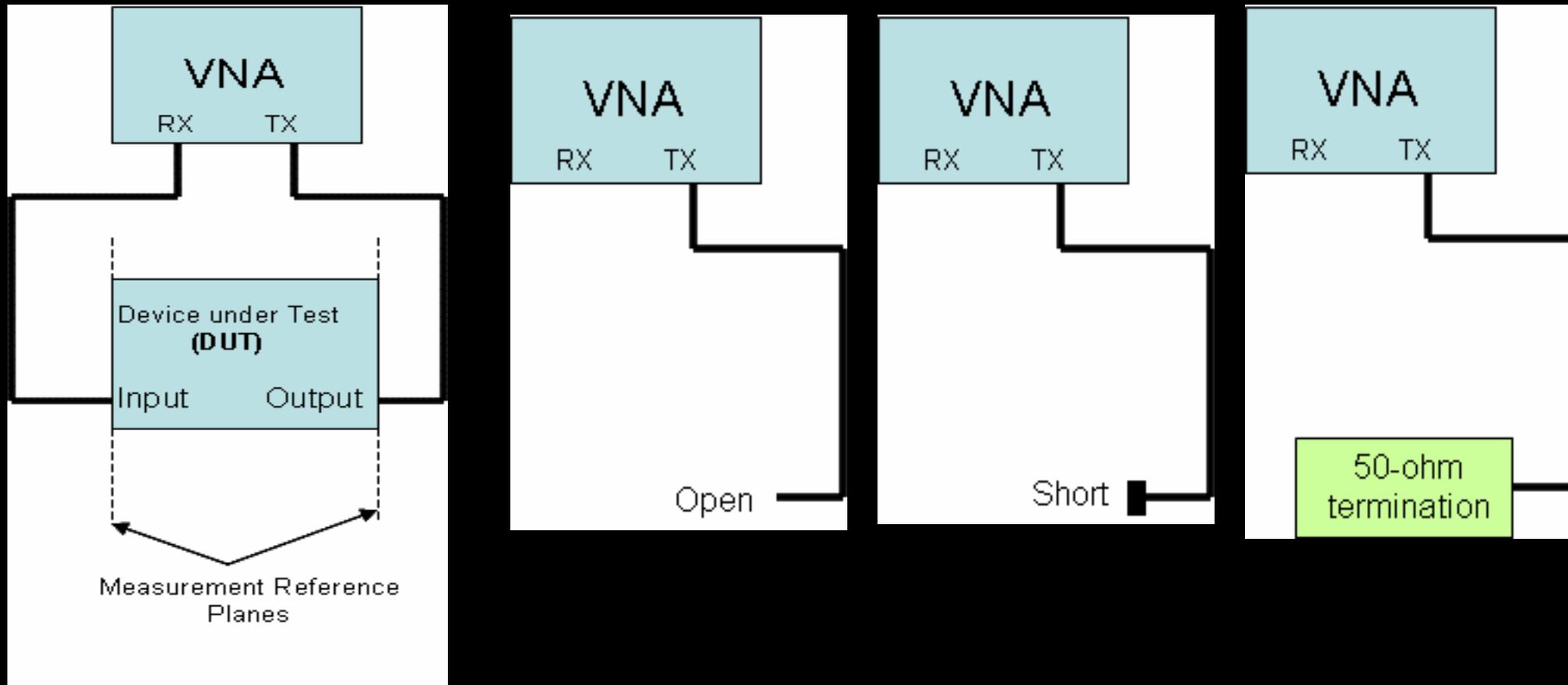
Stylus is available on Amazon



NanoVNA Menu Structure Map



NanoVNA Calibration



NanoVNA Calibration Connectors

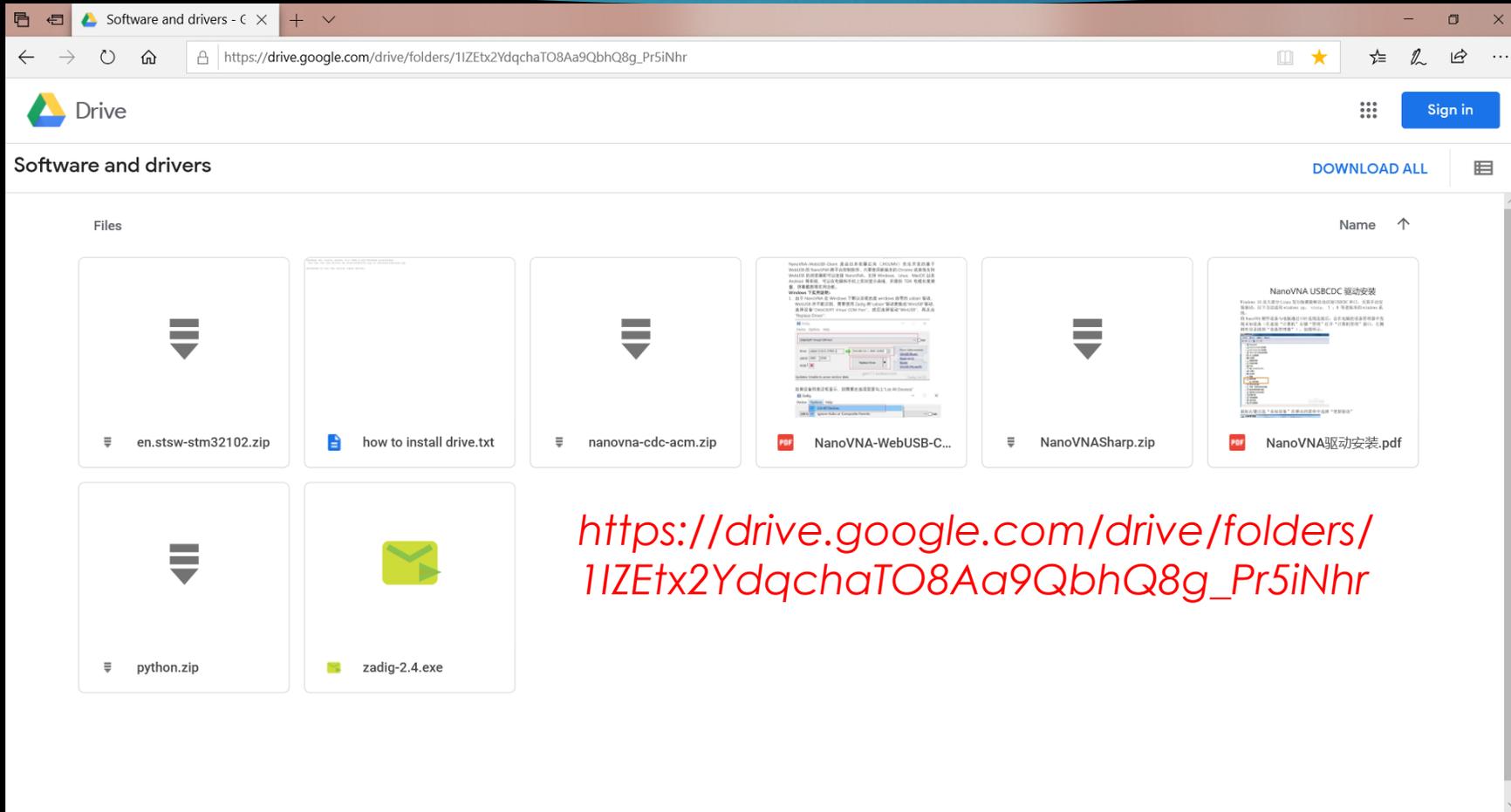


Calibration Tool



If you would like one of these contact Ron WA6TQH

NanoVNA Documentation



The screenshot shows a Google Drive interface for a folder named "Software and drivers". The URL in the address bar is https://drive.google.com/drive/folders/11ZEtx2YdqchaTO8Aa9QbhQ8g_Pr5iNhr. The folder contains the following files:

- en.stsw-stm32102.zip
- how to install drive.txt
- nanovna-cdc-acm.zip
- NanoVNA-WebUSB-C...
- NanoVNASharp.zip
- NanoVNA USB CDC 驱动安装.pdf
- python.zip
- zadig-2.4.exe

The file "NanoVNA-WebUSB-C..." is a PDF document with Chinese text and a screenshot of a software interface. The file "NanoVNA USB CDC 驱动安装.pdf" is a PDF document with Chinese text and a screenshot of a software interface.

https://drive.google.com/drive/folders/11ZEtx2YdqchaTO8Aa9QbhQ8g_Pr5iNhr

NanoVNA Firmware Update Files

There are 5 firmware files on the network hard drive.

The differences are as follows:

nanoVNA_300_ch : 50K-300MHz, 5*7 Bitmap font, 4 tracks

nanoVNA_900_ch : 50K-900MHz, 5*7 Bitmap font, 4 tracks(**Default**)

nanoVNA_900_aa : 50K-900MHz, 7*13 Bitmap font, 2 tracks (Antenna Analyzer)

The 800MHz firmware works better at higher temperatures.

nanoVNA_800_ch : 50K-900MHz, 5*7 Bitmap font, 4 tracks(Recommended)

nanoVNA_800_aa : 50K-900MHz, 7*13 Bitmap font, 2 tracks (Antenna Analyzer)

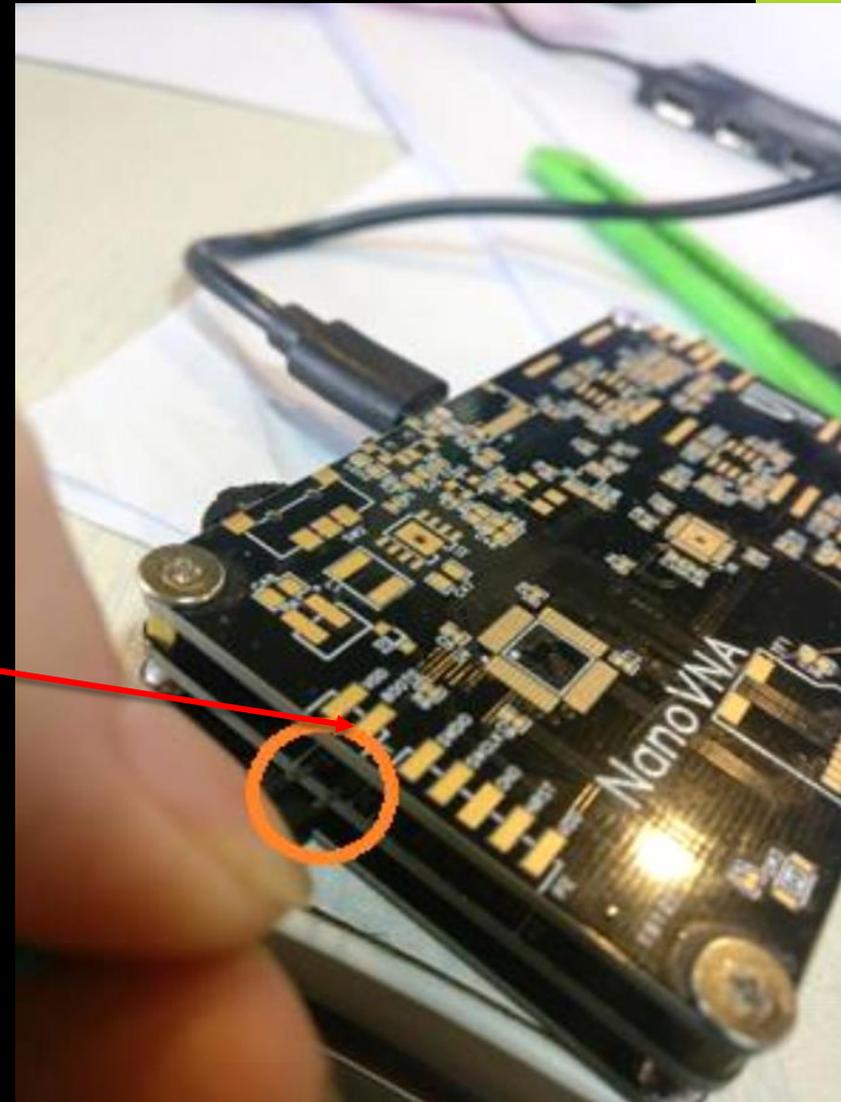
NanoVNA Firmware Update

To perform update the VNA **MUST** be removed from the case to access the pins.

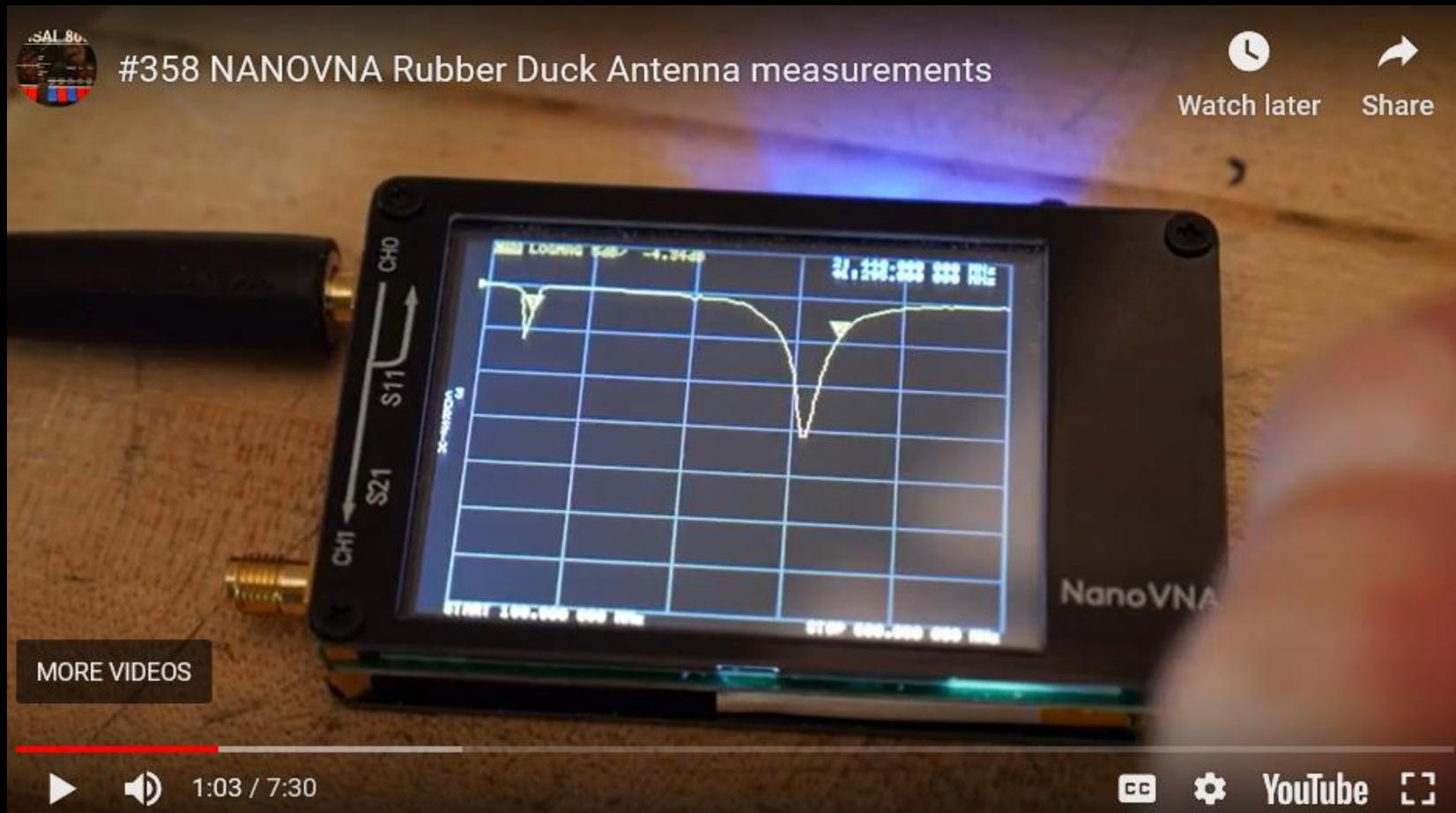
You must put in **DFU mode** your NanoVNA and is necessary connect the **BOOT pin** to **VDD pin**, see below Orange circle.

Now connect your NanoVNA to the PC and switch it on.

After completing the update remove the boot jumper and reset NanoVNA. Recalibrate the NanoVNA.



NanoVNA Network Analyzer VHF & UHF 878 Actual Antenna measurement

A YouTube video player showing a NanoVNA network analyzer measurement. The video title is "#358 NANOVNA Rubber Duck Antenna measurements". The NanoVNA screen displays a plot of the antenna's response, showing a resonance dip. The plot includes a grid and various data points. The NanoVNA device is connected to a black cable with a gold connector. The video player interface includes a play button, a volume icon, a progress bar showing 1:03 / 7:30, and a YouTube logo.

#358 NANOVNA Rubber Duck Antenna measurements

Watch later Share

NanoVNA

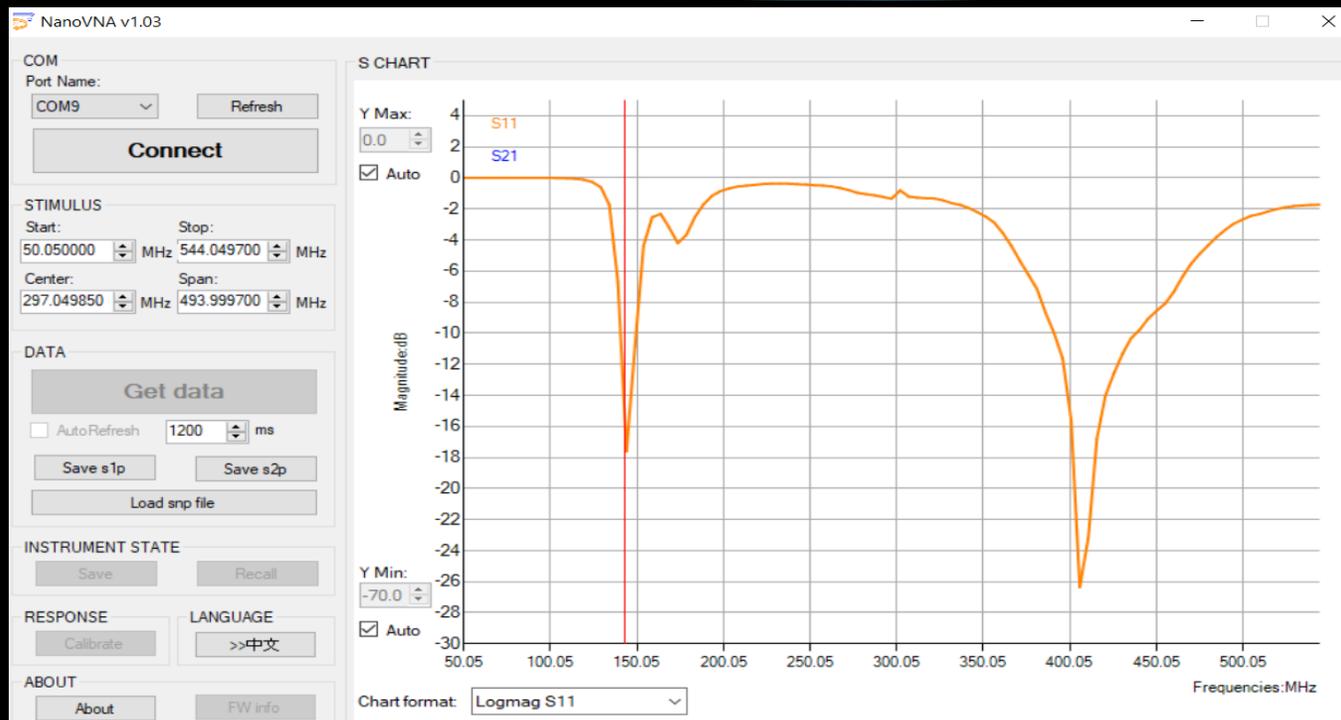
MORE VIDEOS

1:03 / 7:30

YouTube

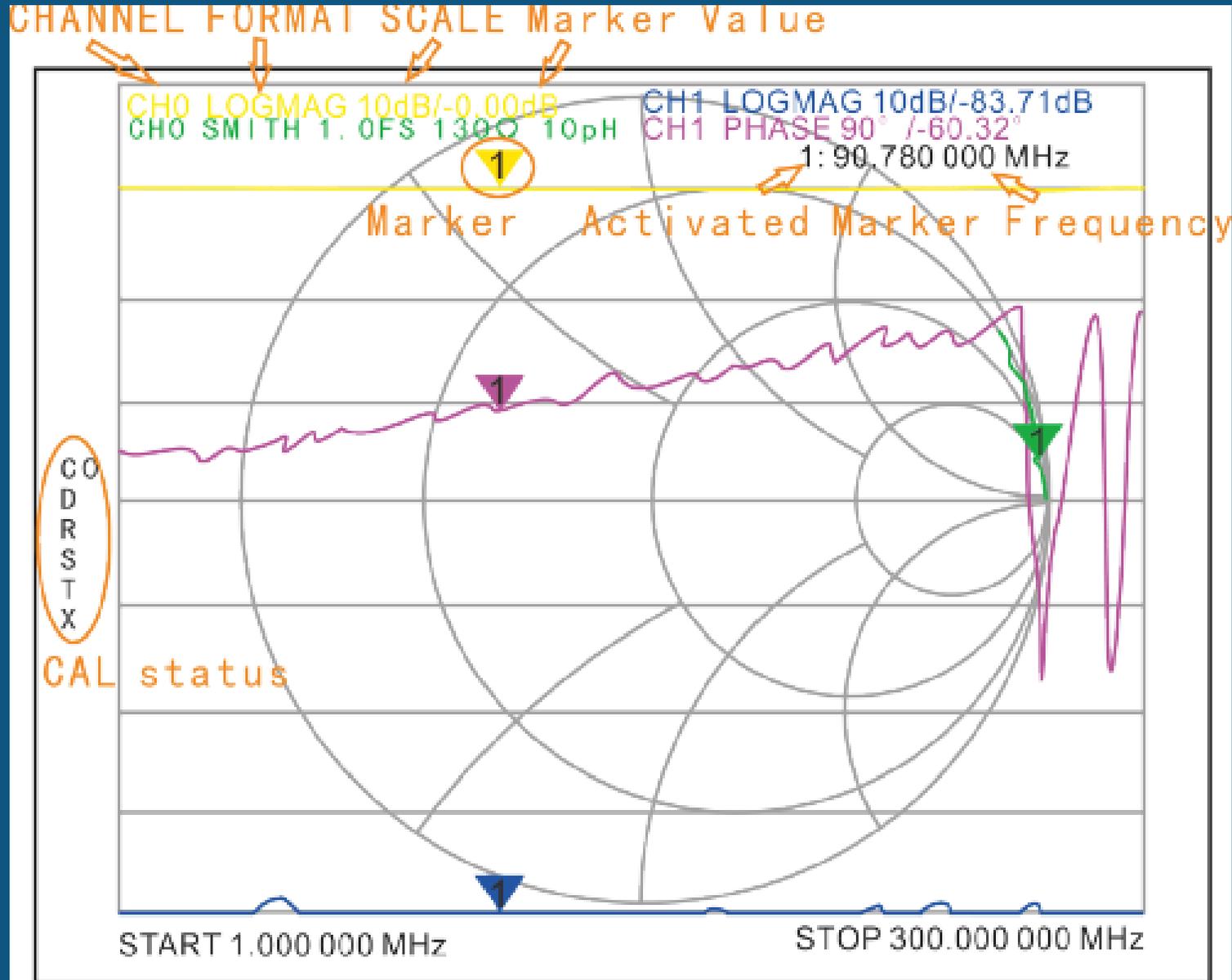
NanoVNA Network Analyzer

VHF & UHF 878 Actual Antenna measurement



NanoVNA Software
i.e. (Sharp)

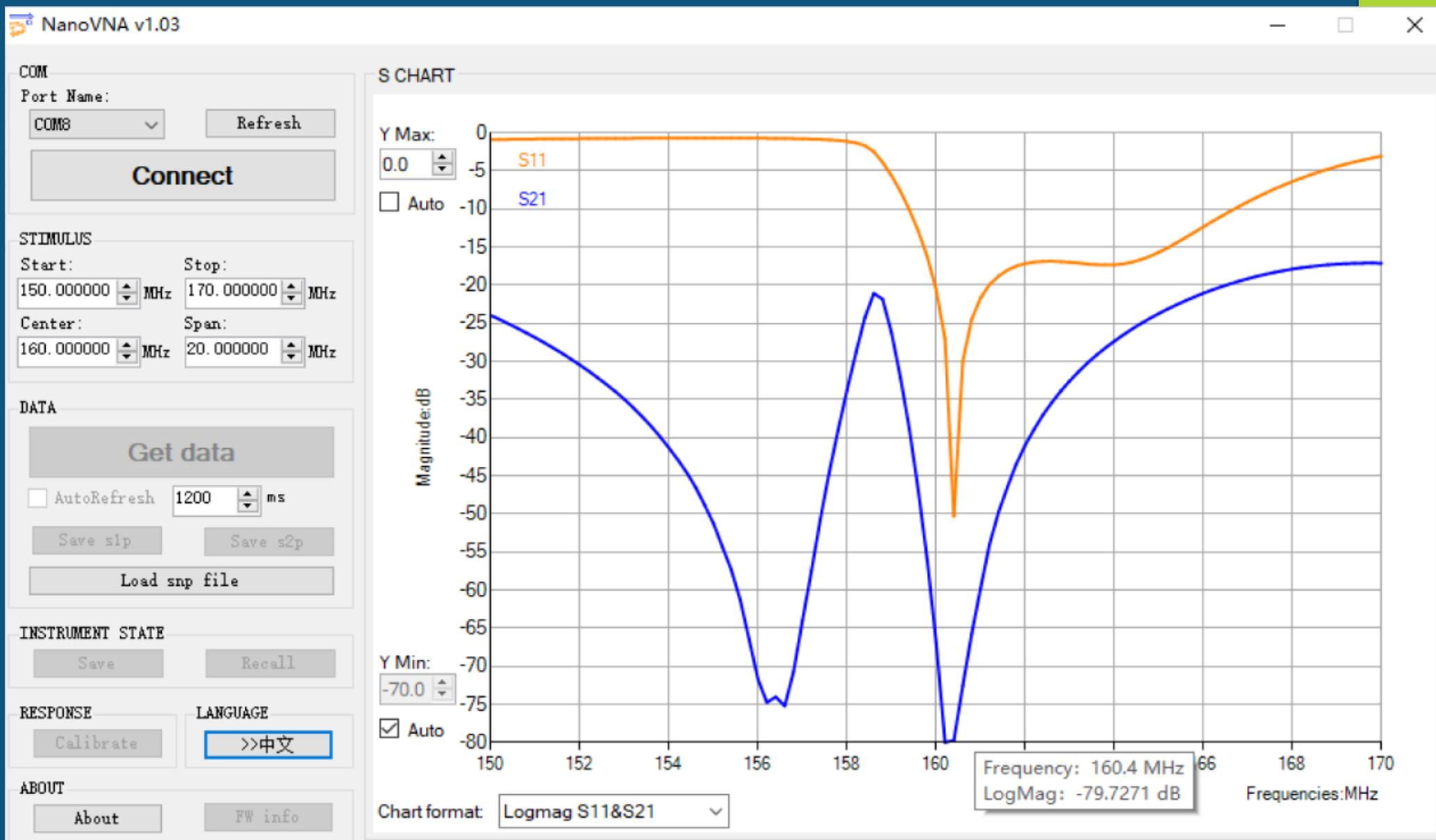
NanoVNA Sample Smith Chart



NanoVNA Sample Graph 160MHz

Application: (SHARP)

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Questions