The Amateur in You, Part 2

What have you been pondering?

Measuring coax length with a NanoVNA

You've got several spools, coils, and runs of coaxial cable lying around your garage, with only a rough idea of how long each is. You keep telling yourself that someday you'll get around to laying them out and measuring how long they are, so you'll know just what you have, ahead of Field Day. But what a pain. You can always measure the coil diameter, multiply by pi, and by the number of coils, and come close, but that estimate might have bitten you a couple of times.

Turns out you could use your **NanoVNA** to measure those lengths, saving a little time and trouble, while getting a more accurate estimate. It does help to have an RF connector on at least one end of your coax, so you can easily connect it to your NanoVNA.

Getting set up

First, find out what model of coax you have, so you can determine its velocity factor. Here are some common ones:

Coax Model	Impedance	Velocity Factor
RG-8X	50 ohms	82
RG-58	50 ohms	66
RG-59	75 ohms	66
RG-8	50 ohms	66
RG-6	75 ohms	66
RG-213	50 ohms	66
LMR-400	50 ohms	85

Connect your coax to the *CHØ* port of your NanoVNA (labeled *S11* or *TX* on some models), leaving the *CH1* port disconnected. Turn on the NanoVNA.

The steps

Tap **DISPLAY**, then **TRACE**

Disable all but **TRACE 0**, then tap **BACK**

Tap **CHANNEL**, then **CHØ REFLECT**

Tap **FORMAT**, then **MORE**, then **LINEAR**

Tap **BACK**, then **BACK**

Tap **TRANSFORM**

Tap **LOW PASS IMPULSE**

Tap **TRANSFORM ON**

Tap **VELOCITY FACTOR** and enter the VF in whole numbers (like **66**), then **x1**

Tap **BACK**, then **BACK**, then **STIMULUS**

Tap **START** and set it to **50K**

Tap **STOP** and set it to some guess from **200M** to **240M** (start with **200M**), then **BACK**

Tap **MARKER**, then **SEARCH**, then **MAXIMUM**

The NanoVNA will display the response graph of the coax, indicating a "peak" at a certain distance from the start (left end). In this case, it shows my coax as 9.13 meters long, which is about (9.13 m x 39.37 in/m ÷ 12 in/ft ≈) 30 feet long. For extra credit, if my coax had a break in it somewhere, the first peak would be the location of the cable break.
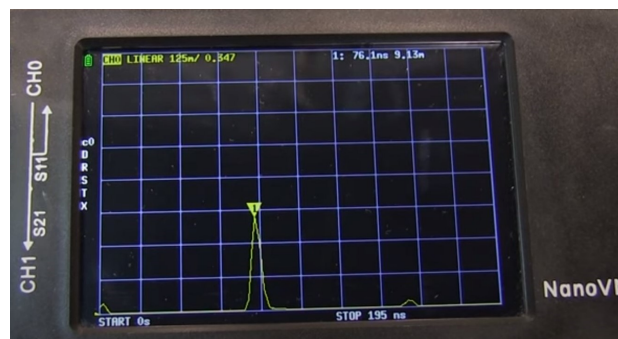
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