

How do I?

An occasional series

This week: Antenna Analyzers. What are they? What do they do?

**Antenna analyzers: An introduction to antenna analyzers.
Just scratching the surface with the Rig Expert AA-54 and 230 Stick.**

As always, no endorsement implied and all opinions are solely the author's.

When I was a new Technician class licensee and just starting to read *QST* magazine, many of the articles said that the writer used an antenna analyzer to check the standing wave ratio (SWR), or other parts of the antenna system. An antenna analyzer looked useful. Then I looked at the price and said "I don't need an antenna analyzer that badly".

A couple years later I upgraded to General and the thought crossed my mind that since I was more serious about radio, I'd get an analyzer. Then I thought about how many times I had to ask someone to use one for me and decided since the answer was **not greater than zero**, I still didn't need an antenna analyzer.

Then I upgraded to Extra Class, and thought "Extra Class hams should have an analyzer". Then I looked at the price and thought about the number of times I wished I had one... (greater than zero) and number of times I actually used one... (not greater than zero) and said "I can wait".



Comet CAA-500



MFJ analyzer

When I was newly licensed, the most commonly advertised analyzers came from Comet and MFJ. The Comet units were very good, very expensive and had analog dials. The MFJ units were slightly cheaper. I have never used either, but my plan was to get a Comet when I could afford one.



RigExpert AA-54

Sometime around 2010, RigExpert, a Ukrainian company founded in 2003, entered the US market with a revolutionary new analyzer. Their AA-30 not only had a digital LCD display but you could plug into a computer via a USB cable and use the proprietary software to draw Smith Charts and derive other interesting data. As I recall, the price was similar to the Comet, but the AA-30 could do so much more. RigExpert expanded their offerings. Finally a couple years ago I felt I could justify buying a used AA-54 Zoom.

What does an Antenna Analyzer do?

From the RigExpert website:

How to match your antenna and/or filters, detect cable faults or checks its loss? When it comes to the installation or maintenance of an antenna, antenna analyzers simplify your work, saving time for anything else.

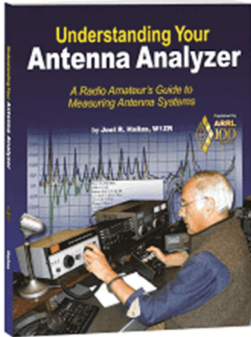
RigExpert™ antenna and cable analyzers are ready for use in the field immediately after powering on and do not need pre- or recalibration, as many other similar products, in any season.

Our instruments have a simple and convenient user interface, as well as a built-in help assistant. All these advantages and high accuracy of measurements make RigExpert™ antenna and cable analyzers indispensable tools for HAM operators and radio engineers.

RigExpert antenna and cable analyzers are indispensable for:

- Rapid check-out of an antenna
- Tuning an antenna to resonance
- Antenna SWR and impedance measurement and comparison before and after specific event (rain, hurricane, etc.)
- Making coaxial lines or measuring their parameters
- Cable testing and fault location
- Measuring capacitance or inductance of reactive load

To be honest, I use my antenna analyzer almost 100% of the time to check SWR. To do this, I do not need the computer software. I simply connect the antenna feed line to the analyzer, press a couple buttons and wait for the magic to happen.



Understanding Your Antenna Analyzer by Joel R. Hallas W1ZR published by ARRL, 2013 contains far more information about your Antenna Analyzer than we can put in one article.

The book is available from ARRL as Item Number 2289 with a price tag of \$22.95 at the time this article was written (August 2021).

You may also find this title at other booksellers. Refer to ISBN: 978-0-87259-288-9

The RigExpert AA-54 has been superseded by the similar AA-55. They both support measurements to just above the amateur 6 meter band. Fortunately 2 meter and 70 centimeter (440 MHz) antennas do not seem to worry about SWR so much. That is good, as the AA-230 Zoom (that is rated up to 230 MHz) is priced about \$150 more than the AA-55 Zoom (that is rated up to 55 MHz).

In 2019, RigExpert introduced a new line of antenna analyzers. The first is the Stick 230.



The Stick 230, for the first time, brings 2 Meters and 220 MHz capability to an economy analyzer. The Stick 230 needs a computer to display most of the data, but for simple SWR readings, simply connect, push a few buttons, and read the LCD display. The odd thing is, there is no OFF switch. The device simply sleeps until you wake it up. In two years I have charged it twice. Amazing. For simple analysis, it is my ultra-light weight, no muss, no fuss, go to. When I want to know more about an HF antenna, I break out the AA-54 Zoom.

Links

ARRL <http://www.arrl.org>

Comet <https://cometantenna.com>

MFJ <https://mfjenterprises.com/>

RigExpert <https://rigexpert.com>

In conclusion:

Antenna analyzers are expensive and they can be fragile. You may want to obtain a small Pelican case (or something similar) to protect yours.

Hopefully you have enjoyed this brief and simple look at antenna analyzers.

Catch 'ya on the air!