Product Review and Short Takes from QST Magazine

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Product Reviews:

mini Radio Solutions miniVNA Network and Antenna Analyzer
Two More Antenna System Measurement Devices

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Antenna system measurement devices are one of the most popular categories of auxiliary amateur station equipment. This should not be a surprise, since antenna systems are one of the major areas of amateur construction, experimentation and repair. Having a device that can characterize an antenna in one step is a great help in all of these pursuits. Amateurs have a wide range of choices, many of which have been reviewed or described in QST or QEX in recent years.1-8

This time we have two different types of units. One is a computer controlled device that can perform both antenna and network analyzer tasks, as well as serve as an accurate signal source. The other can be used as a handheld meter, but also can provide computer displayed data and serve as a signal source. You may want to look over the earlier reviews and articles as part of your assessment of these units to decide which type best fits your requirements. We describe each below — in alphabetical order.

Mini Radio Solutions MiniVNA Network and Antenna Analyzer

This capable device can fit into a shirt pocket. It can measure the usual antenna parameters across frequencies ranging from 0.1 to 180 MHz in whatever size slice you want. It can also do much more, as we will discuss. To do anything, however, it needs to be connected to a computer, so we’re talking about a shirt pocket and a backpack, or perhaps another pocket, for the PC. Bluetooth operation is also possible for remote measurement.

What’s it Do?

The unit has three connectors — a data connector to hook to a PC USB port, a DUT (device under test) BNC connector and a DET (detector) BNC connector. There is no power connector because the unit derives power from the computer’s USB port, although you will have to rig a dc source if you use it with a Bluetooth device. Specifications are provided in Table 1.

Antenna Analyzer Mode

In antenna analyzer mode, the left tab on top of the PC display screen, the DET port is left unused and the antenna system is connected to the DUT port. Figure 1 shows the resulting output, and it looks a bit overwhelming until you decide to select only the parameters of interest. Once you deselect the parameters you don’t want to look at, it becomes very manageable. For example, for antenna tuning you may wish to just view SWR. In addition to the plotted data, a click to move either “marker” to any frequency will provide you with the tabular data for the two marker frequencies shown below the plot.

The frequency sweep range can be set manually, or you can select either the HF BANDS or VHF BANDS box and it will give a choice of a frequency range that includes each amateur band, with considerable overlap. The outputs are pretty straightforward, once you decide what they mean (they aren’t described in the docu-

<table>
<thead>
<tr>
<th>Table 1 MiniVNA Antenna Impedance Meter</th>
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<tr>
<td><strong>Manufacturer’s Specifications</strong></td>
</tr>
<tr>
<td>Frequency range: 0.1 to 180 MHz.</td>
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<tr>
<td>Frequency accuracy: Not specified.</td>
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<tr>
<td>Impedance range: Not specified.</td>
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<tr>
<td>Impedance accuracy: Not specified</td>
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<tr>
<td>Drift: 30 ppm.</td>
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<tr>
<td>Output power: 1.0 mW max, load not specified.</td>
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<tr>
<td>Power requirements: USB connection.</td>
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<tr>
<td>Size (height, width, depth): 1 x 2.25 x 5 inches.</td>
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<td>Price: $399.</td>
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</table>

Bottom Line

A very useful device for both antenna and lab measurements — if you can figure out for yourself how to use it and what all the buttons mean. A promised effort by the manufacturer and distributor should resolve this fairly quickly.

References:
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It did finally set up using the autodetect function, although it first detected other ports connected to my PC and keyed up my transceiver! Its operational instructions just said “press RUN to start measuring.” Some may like a bit more guidance on what and how to measure!

I went to the mRS Web site and was pleased to find an eight-page Reference Manual. This was better, but still didn’t quite help me find the files they wanted me to modify to set the COM port. This manual includes a hardware description, with indication of where to connect dc if you use a different kind of device, such as the Bluetooth transceiver. Each mode is described in about half a page with a screen shot, but they seem to assume that the screen, and operation, are self-explanatory.

I found a glimmer of hope on the Web page of their US distributor, W4RT. Here was a link to a different seven-page document called the Software Manual. This started with a description of the CALIBRATE function, not mentioned elsewhere and then provided a thoughtful description of how to use the device in some representative applications. A thoroughly revised set of documentation, along with expanded software is promised around the time you read this.