TEST EQUIPMENT FOR THE BOATING AMATEUR RADIO OPERATOR

What test equipment should we consider to have available on our boat in conjunction with our actual radio equipment? Immediately we are faced with the question of what is essential and what else might we like to have available.

Most of us are interested in getting the best performance reasonably possible with our equipment. We must consider what needs to be measured and what accuracy is required. In addition the selection of test equipment to have available on the boat may be critical for troubleshooting later problems.

<u>My number 1 and 2 priority</u> selections are multimeters. Naturally we need to have a multimeter capable of reading voltage and resistance. A simple little cheapie analogue type will suffice for most purposes, but a more refined digital type meter is desireable to expand the usage. Actually, I recommend that we have both types so as to have one for backup and to permit using the less expensive one for most routine applications.

There are advantages and disadvantages with both types. The analogue meter offers the ability to observe fluctuations and trends much more readily when adjusting circuits. On the other hand the high input resistance of the digital type and the accuracy are definite advantages.

Simpson 260

Fluke 116

<u>My number 3 priority</u> is an antenna analyzer. I found the reviews on the eHam Net webpages to be very interesting and discouraging as far as the MFJ – 269 is concerned. I have had an MFJ -259 for several years and have had no problems with it and found it satisfactory for my use except it will not cover UHF. I have been considering purchase of an MFJ-269 to provide the 440 MHz/ 70 cm coverage that I need for my repeater and mobile equipment. I am not a fan of many MFJ items and the eHam reviews don't look very good for the unit. However, for the price and especially for the UHF coverage I continue to follow its track record. A unit acquiring a good reputation is the Palstar ZM30. However it does not cover the VHF and UHF frequencies.

An analyzer that is developing a very good reputation is the Aerial Analyser developed in Australia and sold as a kit for $95 plus shipping. However again, it is limited to 1.3 to 31 Mhz. HF frequencies.

There is an interesting 22 page article by W8WWV, Greg Ordy comparing the MFJ -269 with the Autef RF-1 and CIA-HF types. (http://www.seed-solutions.com/gregordy/Amateur%20Radio/Experimentation/EvalAnalyzers.htm)

MFJ – 269

Palstar ZM30

Aerial Analyser

<u>My number 4 priority</u> is a wattmeter reading forward and reflected power and usually SWR is included either as crossing of meter needles or as a separate reading. There are numerous units available. For HF, the transceivers themselves usually offer power out and SWR. I like the needle type to observe what happens as I tune equipment and the speed with which they react compared to digital readouts.

I have looked at units offered by Diamond, Daiwa, and Palstar. At present, I am considering purchase of a Diamond SX600 which offers 2 frequency ranges, 1.8 – 160 Mhz, and 140 – 525 Mhz on the same unit.

The standard for many years was the "Bird" wattmeter which is extremely accurate and rugged. However it is expensive and the accuracy offered by Diamond, Daiwa, and Palstar units with their lower prices and steadily improving accuracy is rapidly winning acceptance.

Bird 43 Wattmeter **Diamond SX-1000 wattmeter**

I would tend to draw the line with these 4 selections of unit type to have on or readily available to the boat.

For home and onshore use, I would next select my priority #5 to be an oscilloscope.

Following the oxcilloscope, other test instruments of interest are:

Frequency Counter
Dipmeter (formerly grid dip meter)
RF Oscillator
Audio Oscillator
Signal Generator
Capacity Meter
Inductance Meter

And the ultimate would be a spectrum analyzer.

Chapter 25 of the ARRL Handbook For Radio Communications (Recent issues) has interesting explanations of test instruments and how they function.

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