Radio
THE RADIO TECHNOLOGY LEADER

Potomac FIM-4100

By James Yelton

The Potomac FIM-4100 is a computerized instrument to take RF field strength measurements for medium-wave radio stations. It replaces the Potomac FIM-41, a bulky box with a lot of setup per measurement. There are so many improvements over the 4100's predecessor, but the greatest is that there are no knobs to twist. Calibration is automatic, which makes the FIM-4100 a point-and-shoot device. With a hold and save function there is no need to write the readings on paper. There are 29 parameters measured and stored in memory. Measuring points are easy to locate in radial degree and GPS location.

We received our FIM-4100 late in January 2010 at Beasley South Florida, and my first step was to check with Guy Berry at Potomac to be sure we had the latest software. The setup was intuitive. Settings for UTC offset (-5 hours in my case), GPS Datum (in my case NAD 27), units of strength measurements and the harmonic of the selected frequency were finished in less than five minutes. Next I programmed the frequencies I was to check in the field, which was easy as well. I put all four of our AM stations (listed by call sign and frequency) of this cluster into memory. Up to 20 stations can be entered into memory.

To enter the call, frequency, location of the station and variation from true north, select Tx add and enter the information from the station license. I chose an alternate method by going to the center of the array, placing the unit input to RF input (to reduce level in), taking a reading that included the GPS location and storied this in memory. By pressing the delete key the unit displayed the GPS information of that reading, which I then entered into the Tx data. Now I was ready to take field readings for WSBR. I repeated this for the other three stations. Switching between the four stations is three keystrokes away and almost instantaneous.

I should note that this is a thumb-operated device. Hold it in two hands and operate the push buttons with your thumbs. It's a nice layout and comfortable to operate.

Taking a reading

Remember how you had to hold the FIM-41 sideways to the station, twist three knobs, set the scale switch or tune it to be less than 10mV? No more. Face the station watch the bar graph for the highest reading, press either hold or save. Hold keeps the readings on the screen. The word hold is written over the GPS data (I hope Potomac changes that). Save goes immediately to a second screen where entries can be made for pattern and other information. These entries are not too important and are difficult to change in the field. Pressing save again stores a complete reading and returns the unit back to the field strength screen. Up to 100 readings can be saved in the unit.

Because most of my monitor points are in the marsh land levees, there are no markers to be placed (or allowed) and obviously no address locations. The unit's display shows the radial in degrees (to the tenth of a degree) and GPS location. I can much more accurately and repeatedly find a monitor point position than ever before.

Potomac provides software to access the unit. Data is transferred via a USB cable. When the transfer to the PC is complete the file must be named. I created a folder in my documents called Potomac. I usually name them with the date, station call and the word unedited. If several stations were measured the data can be divided in Excel.

The display clearly shows instrument status and signal information.

Added functions

The unit includes a spectrum analyzer, which is accessed by pressing the mode switch. I have yet to really use this function except to check for second and third harmonic intensity graphically.

I can now take readings in less than half the time, and more importantly, they are more accurate. I am able to come back to the shop and edit the readings to a presentable form. One shortcoming is that I still must know the typical and maximum reading established in the license of any particular point or null. Having these stored with the station preset would help save some time.

I had a small problem with the two rubber covers on the back of the meter that cover the external antenna and USB, headphone and external power connectors. They do not stay in place.

The rechargeable battery lasts all day, and Potomac supplies a car power cord for backup power if needed. The unit will also mount on a tripod. All in all, this is a sweet dream instrument.

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Editor's note: Field Reports are an exclusive *Radio* magazine feature for radio broadcasters. Each report is prepared by well-qualified staff at a radio station, production facility or consulting company.

These reports are performed by the industry, for the industry. Manufacturer support is limited to providing loan equipment and to aiding the author if requested.

It is the responsibility of *Radio* magazine to publish the results of any device tested, positive or negative. No report should be considered an endorsement or disapproval by *Radio* magazine.

Performance at a glance

Self calibrating

Digital tuning, digital field strength display and spectrum display

Digital data capture and storage

SBAS augmented GPS positioning

Harmonics measured to 5.2MHz

Antenna orientation compass

Hand-held or tripod use

Shielded modular construction

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