A Note on Changes to VIA Operating Instructions

Some may not have seen the correspondence regarding changes to the Setup and Operation of the AQRP Vector Impedance Analyzer—thus this note.

Early in 2017, the setup procedure was changed. "Buttons" for the Start and Stop Frequencies, the Frequency Step, and Dwell time were replaced with Labels (fstart, fstop, fstep and Dwell). In addition, the screens for editing each individual parameter (using up and down arrows for each digit of a parameter) were eliminated. Editing operations are now performed using the Cursor Encoder and the Frequency Encoder. The cursor encoder is used to position the cursor under the digit that you wish to edit. Once positioned, the frequency encoder is used to change the value of that digit. The cursor position "wraps" from one line to another. This allows all four setup parameters to be edited on one screen. After entry of the frequency information, it must be stored. This brings up the next topic.

Another change that was made in late March 2017 is the introduction of the ability to calibrate the VIA over a wide frequency range and then select a smaller ("Sub") range to evaluate a load, without the need to recalibrate the VIA over the sub range. This means that we needed to provide for the storage of two sets of parameters, one for the "Main" range, and one for the "Sub" range of frequencies. The consequence of this change is that scans can be performed faster by not requiring re-calibration for each selected sub range. There is a potential penalty, however, as there may be a slight degradation in accuracy. Maximum accuracy is always obtained when the VIA is calibrated over the range of the scan that is being made—i.e. Calibration data is taken at each and every frequency in the scan range. When using a "Sub" range, calibration data is taken from the nearest frequency point in the "Main" range and interpolated to obtain approximate calibration data for each frequency point in the "Sub" range.

As an example, the VIA could be calibrated of the range of 3MHz to 30MHx, using 50 or 100kHz steps, to cover all the normal HF ham bands. One could then choose a range of 7.0 to 7.3MHz and a step size of 500Hz to evaluate a 40m antenna. When complete with the evaluation of the 40m antenna, the frequency range could be changed to 14.0 to 14.35MHz to evaluate a 20m antenna, without the need for re-calibration. These steps could be repeated for any subrange of frequencies between 3 and 30MHz.

If one never uses a subrange, and always calibrates over the full frequency range selected, the VIA needs to store only one set of setup frequencies. However, if using subranges, the VIA must store setup frequencies for both the subrange and the main range.

In anticipation of using only a main range, the VIA copies the main set of frequencies into EEPROM memory whenever the "Main" range is stored. It also stores the same data in the "Sub" range memory. After the main range is entered and stored, one can enter a sub range and store that range information in EEPROM, over-writing the main range data that was previously written in the sub range memory. To store the main range parameters, depress the Frequency Encoder Push-Button. A message will be displayed, confirming that the data has been stored. To store the sub range parameters, depress the Cursor Encoder Push-Button. As before, a confirmation message will be displayed.

Note also the two buttons on the Setup screen labeled "Get Main" and "Get Sub". These buttons allow you to retrieve previously saved setup parameters. The Get Main button allows you to retrieve the last saved Main range setup parameters if you want to perform a scan over that entire range of frequencies. After retrieval of the old main range parameters, depress the Frequency Encoder push-button to inform the VIA that you want to reuse the old main range of frequencies. You can then perform a full range

scan, without recalibration.

On the other hand, if you want to rescan a device (e.g. antenna) over the last used sub range, you can use the Get Sub button to retrieve that set of setup parameters. However, the VIA does not know what you want to do with this data. If you then depress the Cursor Encoder push-button, this will inform the VIA that you want to perform another scan over the previously saved sub range of frequencies, and use the calibration data from the old main range.

Although this adds a small amount of complexity to the operation of the VIA, it substantially reduces the time to perform several scans over ranges that are all contained within a wide MAIN range of frequencies.

WARNING: Frequency data showing on the Setup Screen will be saved in the appropriate sub or main range memory when using the encoder push-buttons. However, you **cannot** save a sub range of frequencies and then follow with a different set of frequencies for a main range—saving a main range will also overwrite the sub range memory. Saving the sub range selection must **always** follow saving a main range selection unless using the default (previously saved) main range at power-on. This forces you to recalibrate when changing the "main" range.