MFJ-44 Scope **Tuning Adapter**

Thank you for purchasing the new MFJ-44 Mark and Space filter. The MFJ-44 is designed to provide Mark and Space filtering for the MFJ1278B Multi-Mode Data Controller. The filtered output from the MFJ-44 is used to drive a regular test equipment oscilloscope or monitor scope. The result is an accurate elliptical cross-hair type tuning display for a more precise method of tuning in various amateur radio signals. Some of these signals include ASCII, RTTY and PACTOR to name just a few. By using a monitor scope as a tuning aid the user can tell whether the Mark and Space frequencies of the incoming signal are high or low. The user can also tell the frequency shift of the incoming signal.

Installation

Please follow the installation procedure carefully. This will ensure a good installation and a better chance of no failure.

1. Remove all power connections and other cables from the MFJ-1278B. 2.

Remove the top chassis cover from the MFJ-1278B.

3. Locate the PC board mounting screw behind U16 on the MFJ-1278B motherboard and remove it.

NOTE: DO NOT discard the screw in step #4. Set this screw aside as it will be used later.

4. Install the 1/2" aluminum hex spacer provided into the hole where the screw in step #4 was removed. Be sure not to cross-thread it. DO NOT over-tighten this screw as it could strip the aluminum threads.

5. Locate header J15, which is just to the left of U20, XR2211

6. Align the 6-pin header plug P1 on the MFJ-44 PC with the header J15 on the MFJ-1278B motherboard. Align PI and J15 so SP pin on the MFJ-44 PC and the SP pin of J15 line up.

Installation (Cont.)

7. Plug the MFJ-44 PC onto J15 on the MFJ-1278B motherboard. The MFJ-44 PC will not seat fully onto J15. Be careful as to not bending any pins on J15.

8. Locate the screw which was removed from the MFJ-1278B motherboard in step #4.

9. Locate the mounting hole near the right rear corner of the MFJ-44 PC.

10. Secure the MFJ-44 PC with the screw removed from the MFJ-1278B in step #4. DO NOT over-tighten the screw as you could strip the aluminum spacer threads.

This completes the installation of the MFJ-44 PC into the MFJ-1278B. You are now ready to align the MFJ-44 to your monitor scope.

   NOTE: Before performing the MFJ-44 to Monitor Scope alignment it is a good idea to check the calibration of the MFJ-1278B.

MFJ-44 to Monitor Scope Alignment

In this section we will align the MFJ-44 to your monitor scope. This requires that you make the appropriate cable to connect your monitor scope to the TTL Port connector J5. This cable is not supplied with the MFJ-44 or the MFJ-1278B. The TTL Port connector J5 is located on the back panel MFJ-1278B. Connect the 10-pin molex IDC plug supplied with MFJ-1278B to one end of the cable. The MARK output is J5 pin 9 and the SPACE output in J5 pin 10. Connect the proper connectors that will mate with your scope inputs to the other end of the cable. Once the cable is complete connect it between your scope and J5 of the MFJ-1278B. Connect the MARK to the output from J5 to the **HORIZONTAL** input on your scope.

MFJ-44 to Monitor Scope Alignment (Cont.)

Connect the SPACE output from J5 to the **VERTICAL** input of your scope. You now ready to move on to the alignment of the MFJ-44 PC to your scope. As mentioned earlier, the MFJ-1278B calibration should be
checked before performing the alignment. This is essential for accurate alignment between the MFJ-44 PC and the monitor scope. The alignment procedure is given below:

MFJ-44 to Monitor scope Alignment

1. Plug your monitor scope in to an AC wall outlet and set the power switch to ON. You may want to turn the trace **INTENSITY** to minimum.

2. Place a jumper on JMP4 in the MFJ-1278B.

3. Short pins 1 and 4 of Radio Port 1 in the MFJ-1278B.

4. Ensure that the power switch SW 1 on the MFJ-1278B is set to OFF. 5.

Connect the computer and apply power to the MFJ-1278B. 6. Load and

execute the computer terminal program

7. Set the power switch SW1 to ON, and sign-on the MFJ-1278B to the computer.

8. Set the MFJ-1278B into HF RTTY mode by typing **MODE HB** followed by a <CR>.

9. Set the MFJ-1278B into Calibration mode by typing: 10.

Calibrate <CR>

followed by pressing the K key.

MFJ-44 to Monitor Scope Alignment (Cont.)

11. Set the **AUDIO INPUT LEVEL** control R5 on the MFJ-44 PC to the 3 o'clock position.

12. Check the voltage on pin 9 of U16. If the voltage is -5 Vdc then set R7 on the MFJ-44 PC so the elliptical shaped trace on the scope is horizontal. Try to get this trace as horizontal as possible.

13. Adjust the **HORIZONTAL** and **VERTICAL** gain controls on your scope, to obtain the best elliptical shape possible. **MFJ-44 to Monitor scope Alignment** (Cont.)

14. Press the SPACE BAR one time. The voltage on pin 9 of U16 should +5 Vdc. If not, then press the SPACE BAR until it is +5 Vdc.

15. Set R6 on the MFJ-44 PC so the elliptical trace on the scope is vertical. Try to get this trace as vertical as possible. You may need to fine adjust the **HORIZONTAL** and **VERTICAL** gain controls on your scope to obtain the best trace.

16. Perform steps 12 through 15 again. This is necessary due to the interaction between the filters stages.

17. Replace the top chassis cover of the MFJ-1278B and secure it with screws removed earlier in the installation section.

This is the completion of the alignment section of this instruction, as the MFJ-44 Mark and Space filter is now ready to use.