MX800 Important Firmware Update

Tuesday, 7 May 2013.

Spectra Engineering and OEM MX800 transceivers are shipped with the latest copy of the firmware. Spectra Engineering periodically releases updated firmware to add new features or to correct software problems in the transceiver.

In a recent test of the firmware, Spectra Engineering has identified some conditions that affect the performance of the transceiver. This bulletin provides a brief description of the potential issues found and strongly recommends a firmware upgrade on affected the models for correct operation of the transceiver.

Important Issues Identified

The identified issues have been linked to the firmware versions 3.7.4 and below.

There is an error in the TX VSWR Protection with 100W UHF PA modules (>174MHz). This error prevents the MX800 from reducing the RF power when a VSWR is greater 3:1. Thus operation of the MX800 Transmitter output into an open or short circuit or an incorrectly terminated load may cause PA failure.
VSWR fold back is used so that the RF output stage of the PA is not subjected to excessive voltage or current when connected to a mismatched load.

Solution

The only way to correct the identified issues is to upgrade the firmware to version 3.7.5 or later.

Firmware version 3.7.5

Firmware version 3.7.5 corrects the above issues.

The MX800 VSWR Fold Back Protection will automatically "fold back" or reduces its RF output level, which in turn reduces RF power reflections to a level that will prevent damage to the RF amplifier stage. This fold back will only occur when the forward RF power is greater than approx 35W (100W Model), 15W (50W Model) and the VSWR ratio is approximately greater than 3:1.

The MX800 programming software allows the user to set alarm points of 1.5:1, 2:1, 3:1. However the RF fold back protection is always firmware controlled at 3:1.

Although this level of VSWR protection is included, greater protection is provided by the addition of a TX RF isolator.

Please visit http://www.spectraeng.com.au/mx800-docs.shtml for the latest updates.

Upgrade Notes

To upgrade the transceiver firmware you will need to be able to program EPROMs, especially the 27C512 type. Please contact support@spectraeng.com.au to request access to the website downloads for the binary file of the latest firmware or if you are unable to program EPROMs.

Before upgrading the radio, we recommend that you save your channel information and configuration settings using MXTOOLS. It may be advantageous to have MXTOOLS running during the entire firmware upgrade process. The upgrade procedure is listed below:

1. Turn off the power to the radio.

2. Remove the lid of the MX800 transceiver and locate the EPROM (IC3). The EPROM will be labelled with the firmware version number as shipped from Spectra Engineering.

3. Carefully remove the EPROM taking care not to damage the pins or the IC socket. The window type EPROM can be erased and re-programmed if you have access to a suitable UV light source and an EPROM programmer.

4. Carefully insert the replacement EPROM, ensuring the locating indent on the EPROM match outline on the PCB and the IC socket. Ensure that the EPROM window is covered with an opaque label to prevent erasure due to ambient UV light. Check that all the EPROM pins are inserted in the IC socket and none are damaged or bent.

5. Apply power to the radio before replacing the lid. Check that the Power LED is lit. Remove power and replace cover.

After installing the new firmware, write both the channel file and the configuration files to the radio using MXTOOLS. Ensure that the radio is now operational.

When upgrading from older version of firmware, it is possible that you may need to recalibrate the radio. The easiest way to verify if a recalibration is necessary is to run MXTOOLS diagnostic screen and PTT the MX800. The diagnostic forward power reading should be within 2 Watts when compared to an external power meter reading. Also the check the temperature and RSSI level.

Please refer to sections 5.1.5 through 5.1.7 of the 'MX800 Technical Manual' if recalibration is necessary, otherwise the radio should be suitable to be returned into service.

Additional Notes

If you require further information on or assistance with this matter, please contact support@spectraeng.com.au or visit the Spectra Engineering website at www.spectraeng.com.au.