Procedure to Load/Update Bbr/Boot Code on the MCE Board

February 28, 2000

There are two methods that can be used to re-program the Bbr/Boot code on the MCE Board. The first method is to use the BMM programming card with two 32 pin Flash chips programmed with the correct version of MCE Bbr/Boot code. The second method only allows programming of the Boot code, but can be accomplished without the BMM programming card. Either method requires a serial port connection between the MCE's diagnostic serial port and a computer running a terminal emulator type of program.

Method #1 - Using the BMM Programming Card

The file **Mcebmm.bin** is used to program two ATMEL AT29C040A flash 32-pin dip chips using a flash programmer, for use on the BMM programming card. The mcebmm.bin binary image file is loaded into the PILOT-146 programmer and the even/odd bytes are split and programmed into separate flash chips. The even bytes (programmed from buffer 0) are loaded in the flash chip residing in the BMM U100 32 pin dip socket, and the odd bytes (programmed from buffer 1) are loaded into the flash chip residing in the BMM U101 32 pin dip socket. You then use the BMM programming card on the mce board to update both the BBR and BOOT code.

1.) Power down the machine (or mce board).
2.) Remove the metal shield (if present) on the MCE board.
3.) Install the BMM programming card onto the 100-pin J18 BMM connector, taking care to align it to the correct pin 1 orientation. Proper pin 1 alignment will have the flash chips on the BMM card facing the large Xilinx chip.
4.) Install a serial cable between the mce board's diagnostic serial port (J40 - 9-pin DB connector), and your computer's serial port.
5.) Run a terminal emulation program on the computer (like the **Term.exe** program) and set it to the correct COM port using a baud rate of 57600.
6.) Power up the machine (or the mce board), and watch that the diagnostic leds on the mce board to indicate that the boot code running. This will be indicated by the *heartbeat* led flashing on and off at .5 second intervals.
7.) The boot code (running from the BMM programming card) should now have displayed its sign-on message to the PC's terminal screen.
8.) Type **update bbr** and wait for the BBR code to be re-programmed (no errors should occur).
9.) Type **update boot** and wait for the BOOT code to be re-programmed (no errors should occur).
10.) Power down the machine (or mce board).
11.) Remove the BMM card.
12.) Power up the machine (or mce board).
13.) If the mce board has its main firmware loaded, after about 15 seconds the main firmware should print its sign-on message. The diagnostic leds on the mce board should now indicate that the main firmware is running. This is indicated by the heartbeat led flashing On/Off at a 1 second rate, and the Idle led being lit with an occasional flicker in it.
14.) Type **fw dir** to display the firmware versions. They should be the new upgraded versions for the BBR and BOOT code.
15.) Power down the machine, remove serial diagnostic cable, replace metal shield (if present).

Method #2 - Using the MCE Diagnostic Serial Port

The file **Mceboot.bin** is used to update the mce boot code by downloading this file over the mce's diagnostic serial port. You must be running MCE main firmware v1.02 or newer, and using the **bload.exe** utility v1.07 or newer. Note that this method only allows upgrading the mce boot code. If you need to update the mce bbr code, you MUST use a BMM programming card as described in the previous method #1.

1.) Power down the machine (or mce board).
2.) Install a serial cable between the mce board's diagnostic serial port (J40 - 9-pin DB connector), and your PC's serial port.
3.) Run a terminal emulation program on the computer (like the **Term.exe** program) and set it to the correct COM port using a baud rate of 57600.
4.) Power up the machine (or the mce board), and after about 15 seconds, the main code should have displayed its sign-on message to the PC's terminal screen. The mce board's diagnostic leds should have the heartbeat led flashing On/Off at a 1 second rate, and the Idle led being lit with an occasional flicker in it.
5.) Type **mce baud 9600** to change the mce diagnostic serial port baud rate to 9600. Exit the PC's terminal emulator program (use ^C if using the **Term.exe** program).
6.) Open up a DOS session on the PC, and change to a directory that contains the **mceboot.bin** and the **bload.exe** files. Now type the following on the DOS command line to start the boot code download: **bload f=mceboot.bin I=boot p=1 b=9600**. This example assumes that you are using the COM1 serial port. Change the **p=1** parameter to **p=2** for com2, **p=3** for com3, or **p=4** for com4. The boot code download should complete without errors. If the download will not complete (errors occurred), or if the download is interrupted because of a power outage, you will have to obtain a BMM programming card and use method #1 to re-load the boot code.
7.) Once the boot code download has completed, restart the PC's terminal emulation program for the correct COM port and set it for a baud rate of 9600.
8.) Type **fw dir** to display the firmware modules versions. The mce boot code version should be the updated version.
9.) Power down the machine (or mce board), remove the diagnostic serial cable.