

## 4. Boot Procedure

### 4.1 Bootloader

When power is applied to the SP250Ψ, the unit will search for a bootable volume in NVM and mount it to DRAM. If no bootable volume is present, or if the memory location of the boot volume doesn't match that of the last successful boot, a utility to reset the memory location of the boot volume is available on the debug menu while the device is in CDC mode.

### 4.2 Memory Table

The portion of non-volatile memory dedicated to filesystem and boot operations will have the following structure under normal conditions:

```
0x0000 RESERVED BEGIN
0x00AA RESERVED END
0x00AB BACKUP BUFFER IMAGE BEGIN
0x12CF BACKUP BUFFER IMAGE END
0x12D0 IDENTITY PRIMERS BEGIN
0x14A1 IDENTITY PRIMERS END
0x14A2 BOOT SECTOR BEGIN
0x14FF BOOT SECTOR END
0x1500 IMPRINT PRIMITIVES BEGIN
0x2000 IMPRINT PRIMITIVES END
0x2001 RESERVED BEGIN
0x████ RESERVED END
```

### 4.3 Carrier Subsystem

The carrier subsystem consists of the boot sector, imprint primitives and reserved memory blocks as well as the "Golden Sunflower" block, wFIFO block and portions of the GPIO controller. This system carries out learning functions based on initial data from the BioS and Connectomic Record. Because the Carrier Subsystem encompasses the boot sector it is possible for those addresses to be spontaneously rewritten. In the event of a boot sector rewrite the CDC debug menu can be used to set the boot location to an external table.