

PCN# 20260923000

U-Boot Bootloader Update and DHCP Command Fix on:

MityDSP-L138(F)

Date: September 23, 2026

To: Purchasing Agents & Design Engineers

Dear Customer,

This is an announcement of a change to a product that is currently offered by Critical Link. The details of this change are on the following pages.

For questions regarding this notice, contact info@criticallink.com

Sincerely,

Critical Link, LLC

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PCN Number: 20260923000

PCN Date: September 23, 2026

Title: U-Boot Bootloader Update – February 2026 Release and October 2026 DHCP Command Fix

Effective Date: November 1, 2026.

Overview:

Changes to the U-Boot bootloader programmed into the MityDSP-L138(F) System on Modules are identified in the following sections.

The U-Boot bootloader programmed into the MityDSP-L138(F) System on Modules has been updated twice since the 2022 release. This notice documents both updates, including the February 2026 release, for which a Process Change Notification was not previously issued.

U-Boot Release	Version Banner	Status
2022 releases	U-Boot 2009.11-00023-gfca022b96949 (Jun 29 2022 - 17:21:16)	Not affected. The “dhcp” and “bootp” commands operate normally.
February 2026	U-Boot 2009.11-00031-gec35565db6 (Feb 13 2026 - 16:31:56)	Affected. The “dhcp” and “bootp” commands hang after “BOOTP broadcast 1”.
October 2026	U-Boot 2009.11-00032-g897c32a0c1 (Aug 17 2026 - 13:47:52)	Corrected. The “dhcp” and “bootp” commands operate normally.

Table 1: U-Boot Release Summary

1 U-Boot Update – February 2026 Release

1.1 Description of Change

In February 2026, U-Boot was updated to allow the Ethernet PHY reset GPIO pin to be customized, and to optionally disable the GRP7 pull-up/pull-down configuration used for Ethernet. As part of that release, U-Boot was also rebuilt using a newer GCC 7 toolchain. The two environment variables introduced by this release are described in detail in the Appendix.

1.2 Reason for Change

The February 2026 update was made to support newer Ethernet PHY devices that have different bootstrapping requirements than the PHY used in the original reference design. Devices such as the Texas Instruments DP83822IRHBR sample bootstrap configuration values on their data lines as they come out of reset, and may require both an alternate PHY reset GPIO and the ability to disable the group 7 pull-up and pull-down resistors so that those bootstrap values are latched correctly. The update makes both configurable, satisfying a customer requirement for a configurable Ethernet PHY reset GPIO and additional Ethernet configuration flexibility.

1.3 Anticipated Impact on Form, Fit, Function (positive / negative)

There is no impact on the Form or Fit of the MityDSP-L138(F). This notice describes a software change only; there is no change to the hardware design, to any component, or to the manufacturing process.

Function is extended by the addition of two optional U-Boot environment variables, PHY_RESET_MUX and eth_pupd_gp7. Both are unset by default; when neither is set, U-Boot behaves as it did in earlier releases, so existing carrier board designs are unaffected by this release. See Appendix 4.1 for details.

As part of this release U-Boot was also rebuilt with a newer GCC 7 toolchain, which introduced the defect described in the following section.

1.4 Anticipated Impact on Quality or Reliability (positive / negative)

There is no impact to Quality or Reliability. The February 2026 release adds optional configuration capability and does not alter the default behavior of the bootloader; no hardware, component, or manufacturing process is affected.

2 U-Boot Update – October 2026 DHCP Command Fix

2.1 Description of Change

The February 2026 release introduced a defect in which the U-Boot “dhcp” and “bootp” commands hang the module. Either command prints a single “BOOTP broadcast 1” message, after which the console becomes unresponsive and the module must be power cycled.

In October 2026, U-Boot was rebuilt with a corrected build configuration. The only change is a build configuration flag, -fno-store-merging, added to config.mk; no functional U-Boot code was changed. The affected and corrected releases are summarized in Table 1.

2.2 Reason for Change

The October 2026 update corrects a regression introduced by the February 2026 release. The newer GCC 7 toolchain used for that build enables a store merging optimization that is not present in the older toolchains, and this optimization produces an unaligned 32-bit memory access in the BOOTP request path that halts the processor. The corrected build disables the optimization. The root cause is described in detail in the Appendix 4.2.

2.3 Anticipated Impact on Form, Fit, Function (positive / negative)

There is no impact on the Form or Fit of the MityDSP-L138(F). This notice describes a software change only; there is no change to the hardware design, to any component, or to the manufacturing process.

Function is impacted with respect to the U-Boot “dhcp” and “bootp” commands. On modules programmed with the February 2026 U-Boot release, either command hangs the module, which must then be power cycled. Both commands fail in the same way because both use the BOOTP request path in which the defect occurs. Critical Link has verified that the “tftp” and “ping” commands operate normally on the affected release when a static IP address is configured. DHCP operation under Linux, once the operating system has booted, is also unaffected.

The impact for each category of code is summarized in Table 2. The U-Boot bootloader is the only affected component; it is described in the section that follows.

Software Category	Impact	Recommendation
First Stage / ROM Bootloader	None	No action.
Second Stage Bootloader (UBL)	None	No action.
Third Stage Bootloader (U-Boot)	Yes – the “dhcp” and “bootp” commands hang on the February 2026 release.	Reprogram U-Boot with the October 2026 release from the Critical Link support site or use static addressing within U-Boot.
Operating System (Linux)	None	No action. DHCP under Linux is unaffected.
Operating System (other)	None	No action. The defect is confined to the U-Boot bootloader.
Applications	None	No action.

Table 2: SW Impact Summary

2.3.1 Third Stage Bootloader (U-Boot)

The U-Boot application is the only software affected by this notice. On modules programmed with the February 2026 release, entering either the “dhcp” or the “bootp” command at the U-Boot prompt prints a single “BOOTP broadcast 1” message and then halts the processor. The condition is not recoverable by keyboard interrupt; the module must be power cycled. Customers who do not require DHCP or BOOTP within U-Boot may continue to use the February 2026 release and configure a static IP address instead. Customers who require either command should reprogram U-Boot with the October 2026 release, which is available on the Critical Link support site.

https://support.criticallink.com/redmine/projects/arm9-platforms/wiki/Das_U-Boot_Port#Reflashing-U-Boot

2.4 Anticipated Impact on Quality or Reliability (positive / negative)

There is no impact to Quality or Reliability. The change is limited to a build configuration flag used to compile the U-Boot bootloader; no hardware, component, or manufacturing process is affected.

3 Products Affected

Details regarding the full revision history can be located in the MityDSP-L138 Revision History section on the Critical Link support site.

https://support.criticallink.com/redmine/projects/arm9-platforms/wiki/Module_Product_Change_Notifications

The MityDSP-L138 model numbers affected by this notice are listed in Table 3. All units of these models programmed with the February 2026 U-Boot release are affected. The U-Boot release programmed into a module can be identified from the version banner printed on the serial console at boot, or by entering the “version” command at the U-Boot prompt. The corrected release reports:

U-Boot 2009.11-00032-g897c32a0c1 (Aug 17, 2026 - 13:47:52)

Modules in the field may be updated by reprogramming U-Boot using the images published on the Critical Link support site.

Model Number	Product Family
L138-FX-325-RC	MityDSP-L138
L138-DX-325-RI	MityDSP-L138
L138-FG-325-RC	MityDSP-L138F (Spartan-6)
L138-FG-326-RC	MityDSP-L138F (Spartan-6)
L138-FI-325-RC	MityDSP-L138F (Spartan-6)
L138-FI-336-RL	MityDSP-L138F (Spartan-6)
L138-DG-225-RI	MityDSP-L138F (Spartan-6)
L138-DG-325-RI	MityDSP-L138F (Spartan-6)
L138-DI-225-RI	MityDSP-L138F (Spartan-6)
L138-DI-325-RI	MityDSP-L138F (Spartan-6)
80-001112RI-6	Custom orderable PN for L138-DI-325-RI
L138-FJ-326-RC	MityDSP-L138F-A7 (Artix-7)
L138-FM-336-RL	MityDSP-L138F-A7 (Artix-7)
L138-DJ-325-RI	MityDSP-L138F-A7 (Artix-7)
L138-DM-336-RI	MityDSP-L138F-A7 (Artix-7)

Table 3: Products Affected

4 Appendix:

4.1 February 2026 Ethernet Configuration Changes

The February 2026 release added two U-Boot environment variables that allow the Ethernet interface to be adapted to carrier board designs that differ from the Critical Link reference design. Both variables are optional. When neither is set, U-Boot behaves exactly as it did in earlier releases, so existing designs require no change.

4.1.1 Customizable PHY Reset GPIO (PHY_RESET_MUX)

In releases prior to February 2026, the GPIO used to reset the Ethernet PHY was fixed in the U-Boot board support code. Carrier board designs that routed the PHY reset to a different pin could not reset the PHY from U-Boot without rebuilding U-Boot. The February 2026 release adds the PHY_RESET_MUX environment variable, which allows an alternate GPIO and its associated pin multiplexer setting to be specified at run time.

The variable is a hexadecimal value of the form 0xBI000XFV, where each digit selects one element of the pin configuration:

Table 4 PHY_RESET_MUX Field Encoding

Digit	Meaning
B	GPIO bank [0-9]
I	GPIO index within the bank [0-15]
X	Pinmux table offset [0-15]
F	4-bit field offset within the pinmux register [0-7]
V	Mux value (8 selects GPIO)

When PHY_RESET_MUX is not set, or when the supplied value fails validation, U-Boot falls back to the default reset pin for the configured interface: GPIO5[15] for an MII PHY, and GPIO6[10] for an RMII PHY. These are the pins used by all previous releases and by the Critical Link reference design.

U-Boot commit [eae0fd1f9cdf](#): MityDSP-L138: Support customizing PHY_RESET GPIO Pin

4.1.2 Optional Group 7 Pull-up / Pull-down Disable (eth_pupd_gp7)

Some Ethernet PHY devices, including the Texas Instruments DP83822IRHBR, sample bootstrap configuration values on their data lines as they come out of reset. The pull-up and pull-down resistors applied by pin group 7 can override those bootstrap values and prevent the PHY from starting in the intended mode.

The February 2026 release adds the eth_pupd_gp7 environment variable. Setting it to "0" disables the group 7 pull-up and pull-down configuration, allowing the PHY bootstrap lines to be driven by the carrier board. Leaving the variable unset, or setting it to any other value, retains the group 7 pull-ups and pull-downs, which is the behavior of all previous releases.

U-Boot commit [1ef9c982a5a6](#): MityDSP-L138: Optionally disable grp7 pupd for eth

4.2 GCC 7 Store Merging and Unaligned Access

U-Boot for the MityDSP-L138 family is built from a 2009 U-Boot code base. Prior to the February 2026 release this code base was compiled with older toolchains. The February 2026 release was compiled with GCC 7, which introduced a new optimization pass, store merging, that is enabled by default at the optimization levels used for this build.

In the BOOTP request routine, four adjacent single byte fields are written in sequence. Store merging combines these four byte writes into a single 32-bit store. The BOOTP structure is overlaid on the transmit packet buffer following the 14 byte Ethernet header and the 28 byte IP and UDP headers, so it begins 42 bytes into a 32-byte aligned buffer and is therefore only 2-byte aligned. The ARM926EJ-S core used by the OMAP-L138 cannot perform an unaligned 32-bit access, and the merged store halts the processor at that instruction.

The older toolchains used for the 2018 and 2022 releases predate the store merging optimization and emit four individual byte stores, which is why those releases are unaffected. The behavior is specific to the “dhcp” and “bootp” commands because the BOOTP request path, which both share, is the only network routine that writes four consecutive bytes at a misaligned structure offset.

The October 2026 release disables store merging for the U-Boot build. The option is applied conditionally so that the older toolchains, which do not recognize it, continue to build. This was verified at the object level and on hardware.

5 Document Revision History

Date	Version	Change Description
23-September-2026	1.0	Initial Version