Overview

This PD example is a simple demonstration based on the MCUXpresso SDK PD stack.
The application use the shield host board (om13790host) to implement the DisplayPort alternate mode. It recognize attached video adapters (like "Type-C to DisplayPort" or "Type-C to HDMI"), and drive the adapter to work.

System Requirement

Hardware requirements

- One Type-C shield host board

- One 9V DC power supply

- Type-C Cable

- One hardware for a specific device, for example: one lpcxpresso54114 board

- Personal Computer

Software requirements

- The project files are in:

  <MCUXpresso_SDK_Install>/boards/<board>/usb_examples/usb_pd_alt_mode_dp_host/<rtos>/<toolchain>.

  Note

  > The <rtos> is Bare Metal or FreeRTOS OS.

- Terminal tool.

Getting Started

Hardware Settings

- Remove 0ohm resistor R167, R784 and remap J19-1 to GPIO_EMC_35.

- There is a known limitation that MIMXRT1015 will fail to boot after pressing SW3 button to do power on reset when the shield board is connected and powered. So you must follow these steps below to ensure MIMXRT1015 boot successfully.

  1. Power on the MIMXRT1015 board, then power on the shield board.
  2. Press SW9 button to reset MIMXRT1015 instead of using SW3 button to reset MIMXRT1015.
  3. If you press SW3 button accidentally or want to do power on reset, you need repeat the above steps to bring MIMXRT1015 back to work.

For detailed instructions, see the appropriate board User's Guide.

Note

> Please reference to the re-worked document for hardware settings.

Prepare the example

1. For MCUXpresso, please reference to the MCUXpresso SDK USB Type-C PD Stack User's Guide to make sure the SDK_DEBUGCONSOLE = 1 in project settings.

2. Download the program to the target board.

3. Power on shield host board then power on development board.

Run the example

1. Download this program to the board.

2. Connect the video source (like: PC) to the MinDP port (J2).

3. Connect one video adapter (like: "Type-C to DisplayPort" or "Type-C to HDMI") to the Type-C port (J1).

4. Connect one displayer to the adapter. For example: if the adapter is one "Type-C to DisplayPort" adapter, connect displayer to the adapter with one DisplayPort cable.

5. The video source (PC) will recognize the displayer and the displayer works.

6. The follow UGREEN USB-C to HDMI/VGA device has one issue. If keeping the device connected with shield host board, then reset mcu board, the UGREEN device doesn't work.

Figure 1: UGREEN USB-C to HDMI/VGA