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Colibri iMX8X

Errata Document

Document Revision History

Date	Doc. Rev.	Notes
2020-10-19	Rev. 1.0	Initial Release
2021-09-13	Rev. 1.1	Errata #2: added to the document

Overview

Errata #1: HAR-1034 – I/O voltage of external RGMII interface does not comply with NXP specifications

Affected Version: **Colibri iMX8QXP 2GB WB IT V1.0**
Colibri iMX8QXP 2GB IT V1.0
Colibri iMX8DX1GB WB V1.0
Colibri iMX8DX 1GB V1.0
Fixed in: **Currently not planned**

Customer Impact

If the second Ethernet port is used in the RGMII mode, the I/O voltage of 3.3V is not compliant with the specifications of NXP. Using the module pins as RMII or any other alternate function is not affected.

Description

According to the NXP datasheet for the i.MX 8X SoC, the I/O voltage of the RGMII interface is limited to 1.8V and 2.5V. The RGMII signals of the second Ethernet port is available as alternate functions of the RGB LCD interface. On the Colibri iMX8X, the I/O voltage of these signals is fixed to 3.3V. The maximum voltage of the pins itself is not violated. If the edge connector pins are used for any other function (e.g. RGB LCD or GPIO), the I/O voltage is fully compliant. Even using the pins as RMII for 100Mb/s Ethernet is fully compliant. Only when using the interface pins as RGMII, the I/O voltage is not compliant with the NXP specifications.

No physical damage is expected when using the signals as RGMII with 3.3V I/O voltage since the actual SoC pins are rated for an absolute maximum voltage of 3.6V. However, the timing might not be compliant with the RGMII specifications.

The RGMII Ethernet port is not a standard function of the Colibri module. Therefore, currently no fix is planned.

Workaround

Use the second Ethernet port as RMII instead of RGMII. However, this limits the maximum interface speed to 100Mb/s (Fast Ethernet). RGMII would allow transfer rates up to 1Gb/s (Gigabit Ethernet).

Errata #2: HAR-6903 – Triggering Recovery Mode on the Colibri iMX8X takes long or the SoM does not go into Recovery Mode

Affected Version: **All versions of Colibri iMX8X**
Fixed in: **Currently not planned**

Customer Impact

Triggering Recovery Mode on the SoM takes long, or the SoM does not go into Recovery Mode.

Description

In some cases, the recovery button of carrier boards needs to be pressed for 6-10s after powering up the SoM to get it into Recovery Mode. In other cases, the SoM does not go into recovery mode at all, even after the 6-10s period has elapsed.

The issue is caused by the combination of the NXP i.MX8X SoC's boot ROM code and the behavior of the USB interface of the host computer the USB OTG port of the carrier board is connected to. On the SoC side, at power-up, a boot monitor timer is initialized. During USB enumeration in serial download mode, the host side may enumerate multiple times until enumeration succeeds. The enumeration retries take time and result in a delayed entry into Recovery Mode.

In some other cases, the maximum number of enumeration retries may get exceeded, which results in an enumeration failure. Under corner conditions, the ROM code may not be able to refresh the boot monitor timer due to the behavior of the USB host, causing a device system reset.

Workaround

In general, changing to a different host is the most effective way to avoid the issues. NXP may potentially fix this issue in the future.