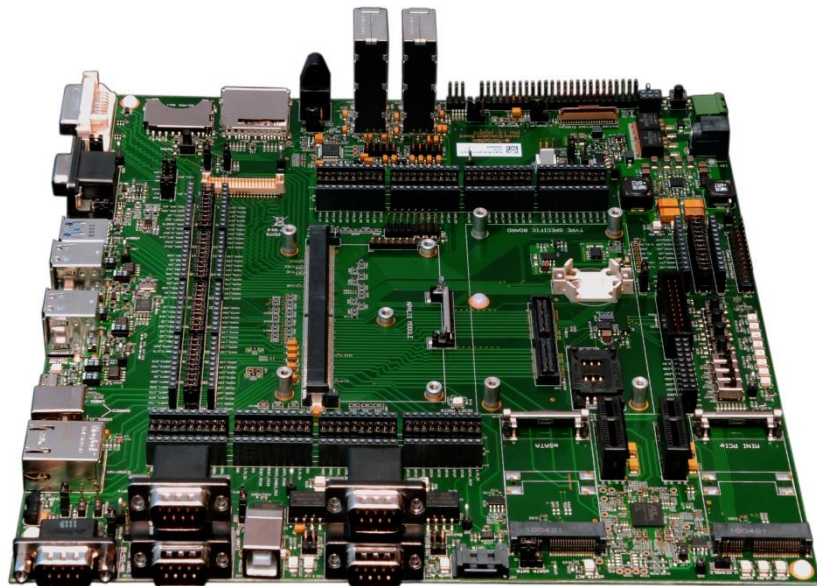




Apalis Evaluation Board Errata Document



Document Revision History

Date	Doc. Rev.	Notes
2018-04-16	Rev. 1.0	Errata #1: Added
2018-05-11	Rev. 1.1	Errata #1: Modified title; Updated description and workaround
2018-12-17	Rev. 1.2	Errata #2: Added

Overview

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Errata #1: Apalis evaluation board power supply is not capable of delivering peak power required by Apalis iMX8QM and Apalis TK1 V1.0 under stress

Affected Version: **Apalis Evaluation Board V1.0**
Apalis Evaluation Board V1.1

Fixed in: **Apalis Evaluation Board V1.2**

1.1 Description

Apalis Evaluation Board (V1.1 and V1.0) power supply is designed to supply a maximum output current of **5A at 3.3V rail (Evaluation Board V1.1)** and **3.3A at 3.3V rail (Evaluation Board V1.0)**. The buck converter on the Apalis Evaluation Board features Output Over-Current Protection (OCP), which shuts down the power supply immediately if the output current exceeds the maximum output current limit.

The peak current consumption of the Apalis iMX8QM or Apalis TK1 V1.0 module can be higher than 5A under stress conditions like processor / GPU intensive tasks. Under such conditions, Apalis Evaluation Board power supply might shut down due to OCP limits.

A higher continuous current also results in rise in temperature of the carrier board near the power supply region, which affects the current sense resistor value and lead/solder-joint resistance.

Customer who are evaluating / testing Apalis iMX8QM or Apalis TK1 (V1.0) module with Apalis Evaluation Board carrier board can use the below mentioned workaround.

We will develop a new power supply for Apalis Evaluation Board which addresses this issue.

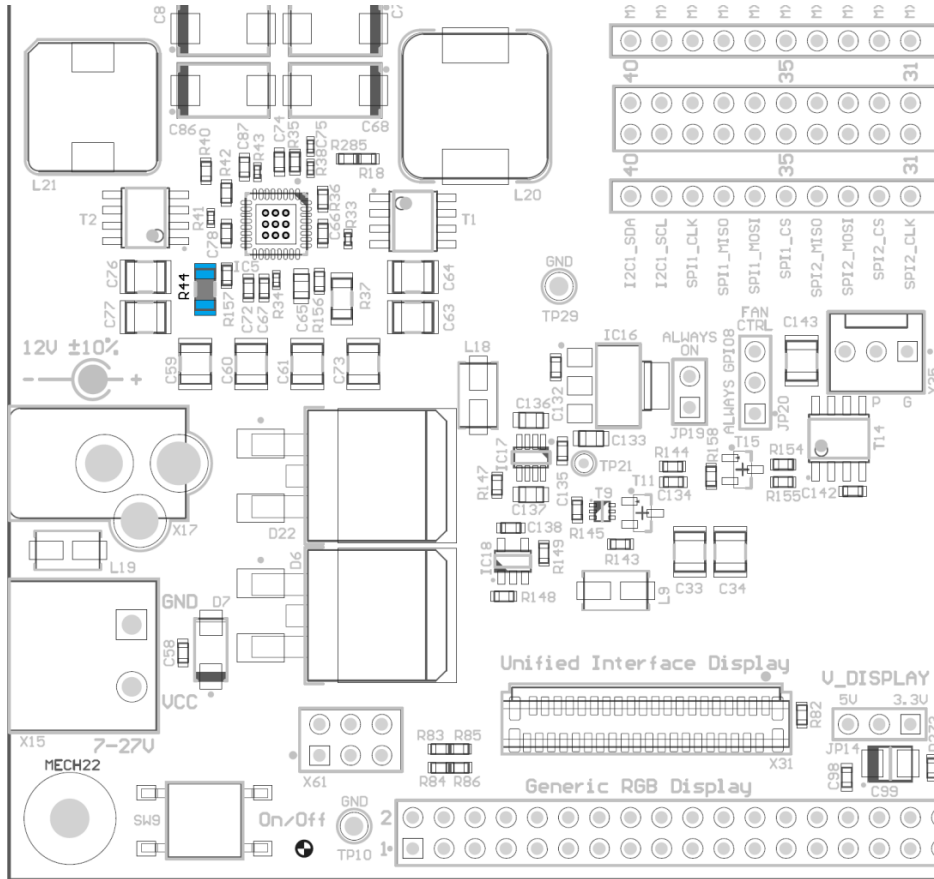
1.2 Workaround

In order to run the Apalis iMX8QM or Apalis TK1 (V1.0) module on the Apalis Evaluation Board, the module performance need to be reduced by making sure that the CPU is not fully loaded while the GPU is extensively used.

As a temporary workaround for evaluation/testing purposes, it is possible to increase the output current of the power supply by changing the current sense resistor (R44) on the Apalis Evaluation Board (V1.1 and V1.0). A 0Ω (zero ohm) sense resistor can be used to set the output current to maximum, only under lab/evaluation conditions. Please check the current rating of the inductor (L21) and ensure that the output current of the power supply doesn't exceed the rating of the inductor.

With the proposed workaround, the buck converter could be thermally overloaded due to higher continuous (average) current, which may result in overheating or failure of some components on the Evaluation Board.

If required it is OK to change the current sense resistor in the lab. However, we don't recommend such changes in the field.



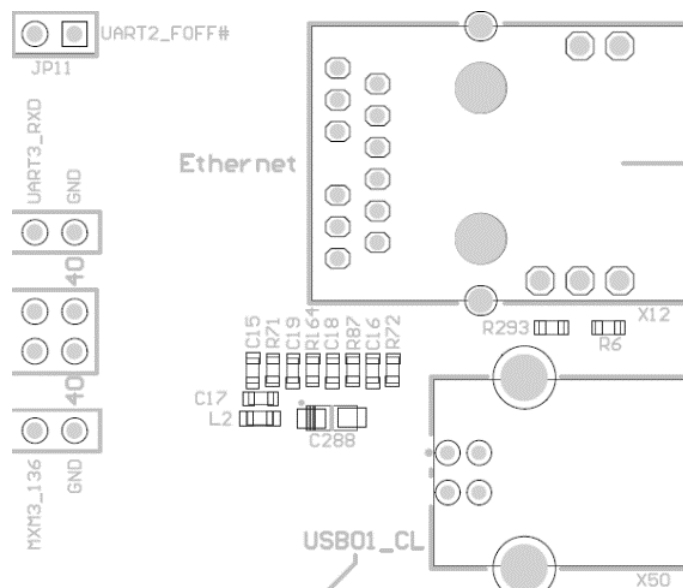
Errata #2: Ethernet center tap circuit wrongly assembled

Affected Version: **Apalis Evaluation Board V1.0**
Apalis Evaluation Board V1.1

Fixed in: **Apalis Evaluation Board V1.2**

2.1 Description

All currently available Toradex Apalis modules do not require a center tap voltage. Only 100nF capacitors are required on the center tap pins of the magnetics. Connecting the center tap signals together can degrade the signal quality and is therefore not recommended. Currently the center tap circuit is assembled trough R71, R72, R87, R164, C17, C288 and L2. This assembly has a measurable negative influence on the quality of the 10Mbps Ethernet signals on modules with Microchip’s KSZ9031 Ethernet PHY. We haven’t seen any impact to other PHY’s or to 100Base-T1 and 1000Base-T.



2.2 Patch

We recommend to removing R71, R72, R87, R164, C17, C288 and L2 on the bottom of the Ixora Carrier Board. The center tap circuit is not assembled in the newer Ixora Carrier Board versions.

2.2.1 Custom Carrier Board Design

We recommend not to assemble the center tap circuit. In order to have a compatible Carrier Board for any future module which requires a center tap voltage, we still recommend having an assembly option of the center tap circuit. For more details please see the section about Ethernet in our Apalis Carrier Board Design Guide.

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