

Infineon Power for Xilinx Versal™ SoCs

Quick Power Map Reference Guide

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About this document

Scope and purpose

Infineon has several DC-DC controllers and power stages to build proven designs and system solutions for core voltages of next generation SoCs, FPGAs, and multi-core ARM processors.

This **reference guide provides Infineon power power maps for Xilinx Versal™ AI SoCs.** It is intended to provide quick power solution summary reference.

Important Notes:

- The Infineon power solutions are early estimates for rail-by-rail analysis of typical requirements for Xilinx Versal™. Hence subject to change based upon up to date information.
- For more detailed Xilinx Versal™ power estimates it is highly recommended that the customer consult Xilinx XPE power estimator tool for proper use case vs. power requirements, especially over temperature ratings and board ambients.
- Infineon's proposed power solutions are scalable on a rail-by-rail basis to allow for voltage and current range implementation. Intended focus on rail consolidation where possible for best power partitioning to minimum power IC components but still maintain variation of range across voltage/current selection.
- In addition, where possible, Infineon implements use of PMBus™ devices to allow for scalable power sequencing implementation with each power macro.
- Details of available Infineon power macros for Xilinx Versal™ available at :
 - www.infineon.com/power-versal
- Xilinx Versal™ is a registered trademark of Xilinx.

Intended audience

- Power supply designers and system designers seeking Xilinx Versal™ DC-DC power designs using Infineon's DC-DC products
- Customers seeking baseline power designs for ready to go power solutions for Xilinx Versal™



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Table of Infineon power products for Versal™ SoCs

1 Table of Infineon power products for Versal™ SoCs

Part number	Highlight features	Application benefits
IR35215 (Controlled Document)	2-phase to 8-phase Multi-phase Controller	High efficiency > 90%. Proven power solution for FPGA/SoC and multi-core processors. Scalable from 40A to 300A+. PMBus/I2C. Ability to store multiple power designs.
TDA21472 (Controlled Document)	Infineon’s latest generation SFET6 Output current capability of 70A 5x6x0.9mm, 0.45mm Pin Pitch (PQFN) Current Reporting: 2% accuracy	High Efficiency >90%. Proven power stage for sustainable performance over high dynamic transient content
IRPS5401MTRPBF	5 output PMIC: 4 DC-DC + 1 LDO, 5 W to 50 W, Integrated power sequencer, fault management, telemetry, use with external power stage, digital compensation	Proven power solution for FPGA/SoC such as Xilinx UltraScale+, NXP processors, Marvell Armada, Cavium, Broadcom solutions. High integration power delivery solution for small board space.
TDA21240/21242	4 mm x 4 mm 25 A and 40 A OptiMOS™ 5; High efficiency performance	Proven power solution for FPGA/SoC Vcore voltages to vary from 5 W to 50 W+; best solution in the market for efficiency and smallest size
IR3883	1A to 3A COT DC-DC Regulators	Proven solution for VCCIO rails. Standard designs for various output voltages in the datasheet.
Other companion products		
IR3889 and IR3887 Coming Soon	30A COT DC-DC Regulators	High efficiency.
IR38060/38062/38063/38064	6 A to 35 A integrated FET PMBus regulator; integrated power sequencer, fault management, telemetry	Proven solution for Vcore voltages of FPGA/SoC; and low noise Xilinx SERDES support up to 4 to 24 lanes for FPGAs. Excellent thermal handling.
IR3897	4 A analog DC-DC regulators	Proven DDR3/DDR4 tracking solution up to 4 A
IFX1763	Low noise LDO	Proven 2.5 V low noise for Xilinx Zynq UltraScale+ RFSoc
IFX54441	Low noise LDO	Proven 1.8 V low noise SERDES voltage for Xilinx Zynq UltraScale+ MPSoC
IR3823	Low noise 3 A analog DC-DC regulator	Proven 1.2 V low noise SERDES voltage for Xilinx Zynq UltraScale+ FPGAs
IR38164	30 A integrated FET PMBus regulator with Optimos 5/SFET6; integrated power sequencer, fault management, telemetry	Proven solution for Vcore voltages of FPGA/SoC; and low noise Xilinx SERDES support up to 4 to 24 lanes for FPGAs. Excellent thermal handling. VID capability.

Infinion power for Versal™ AI Core VC1902, VC1802 use case 1 and 3

2 Infineon power for Versal™ AI Core VC1902, VC1802 use case 1 and 3

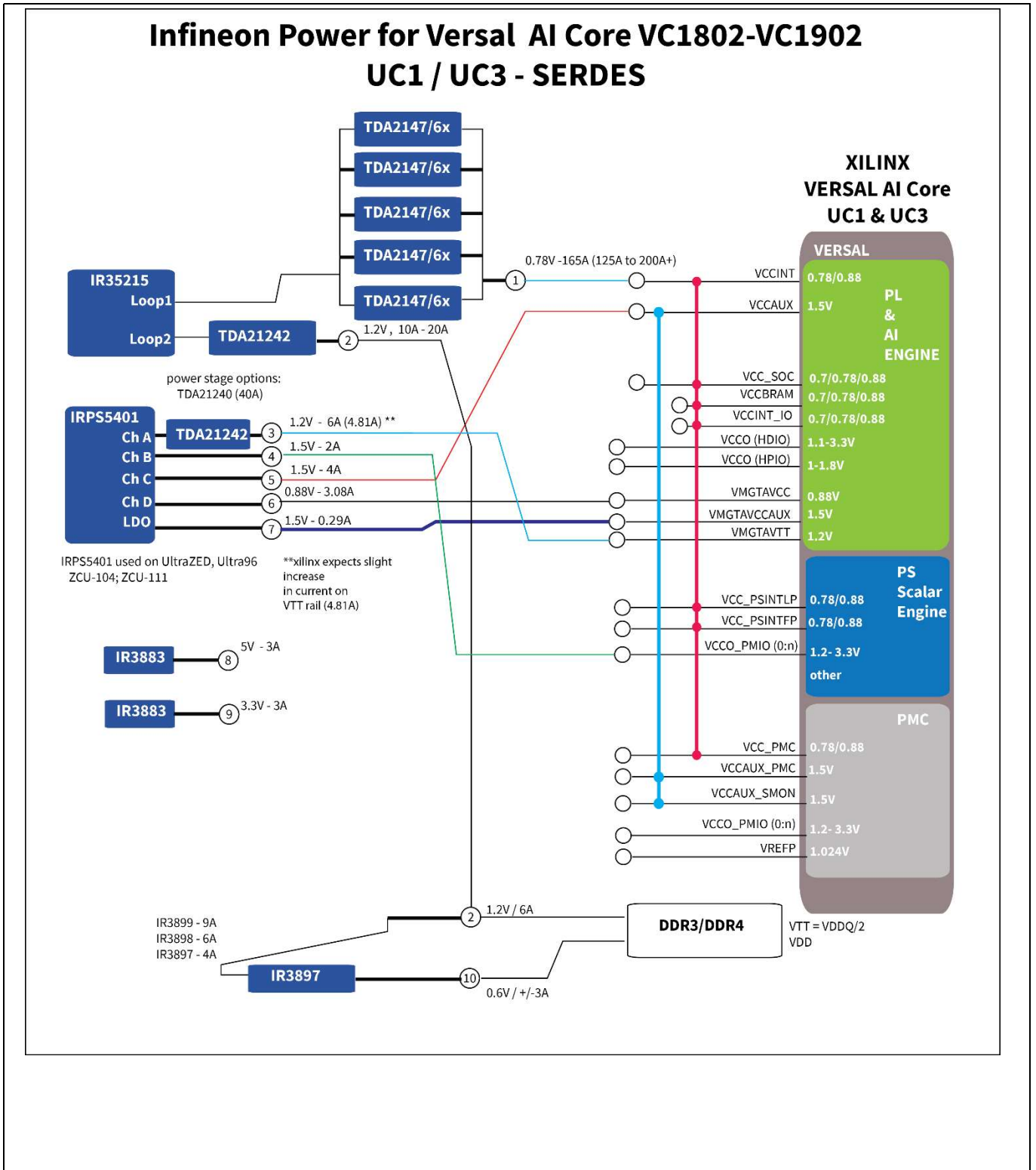


Figure 1 Infineon power macro – Versal AI Core VC1902 and VC1802 use case 1 and 3

Infinion power for Versal™ AI Core VC1702 and Prime VM2902, VM2502 use case 1 and 3

3 Infineon power for Versal™ AI Core VC1702 and Prime VM2902, VM2502 use case 1 and 3

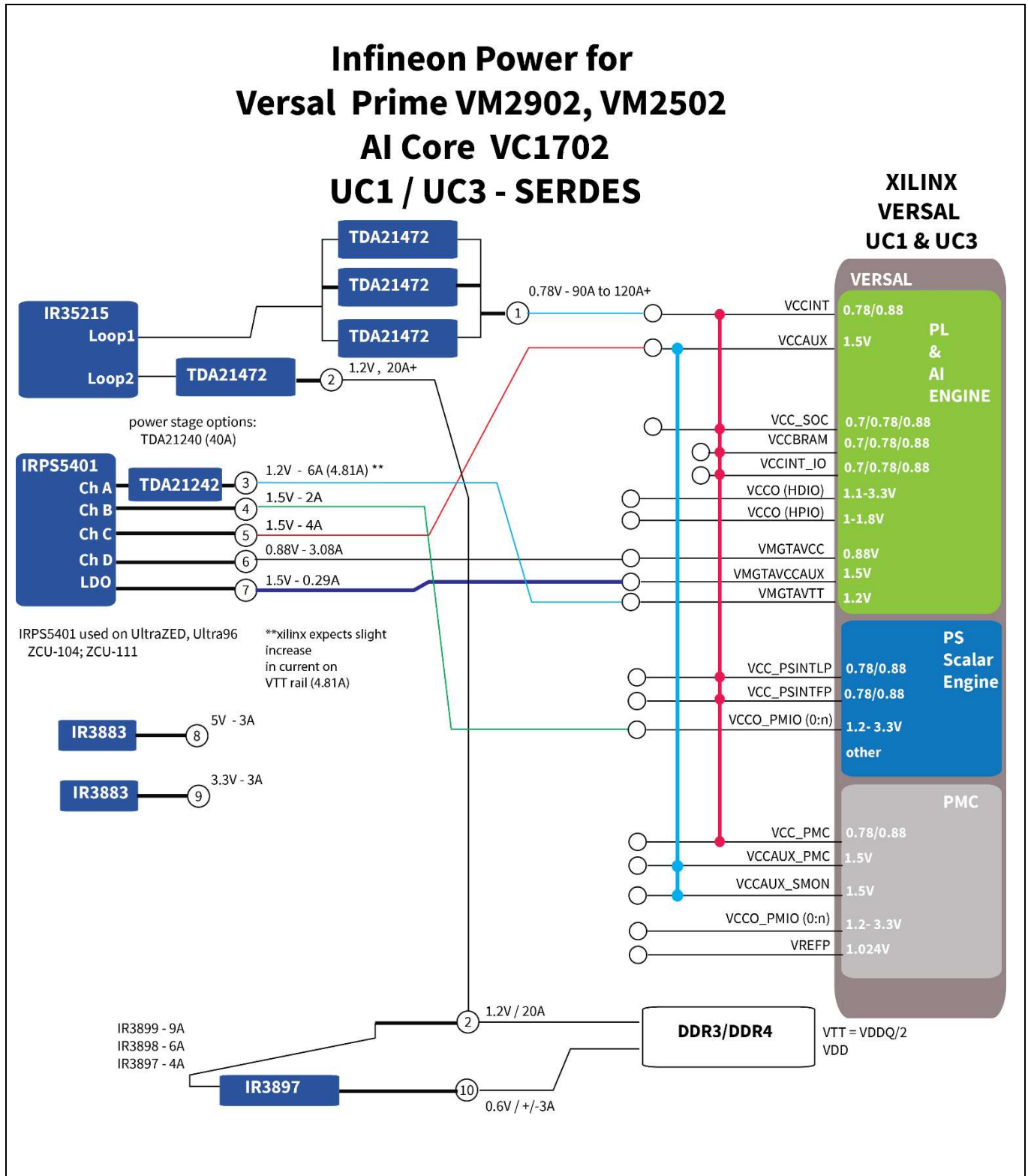


Figure 2 Infineon power macro – Versal AI Core VC1702 and Versal Prime VM2902, VM2502 use case 1 and 3

Infinion power for Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 1 and 3

4 Infineon power for Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 1 and 3

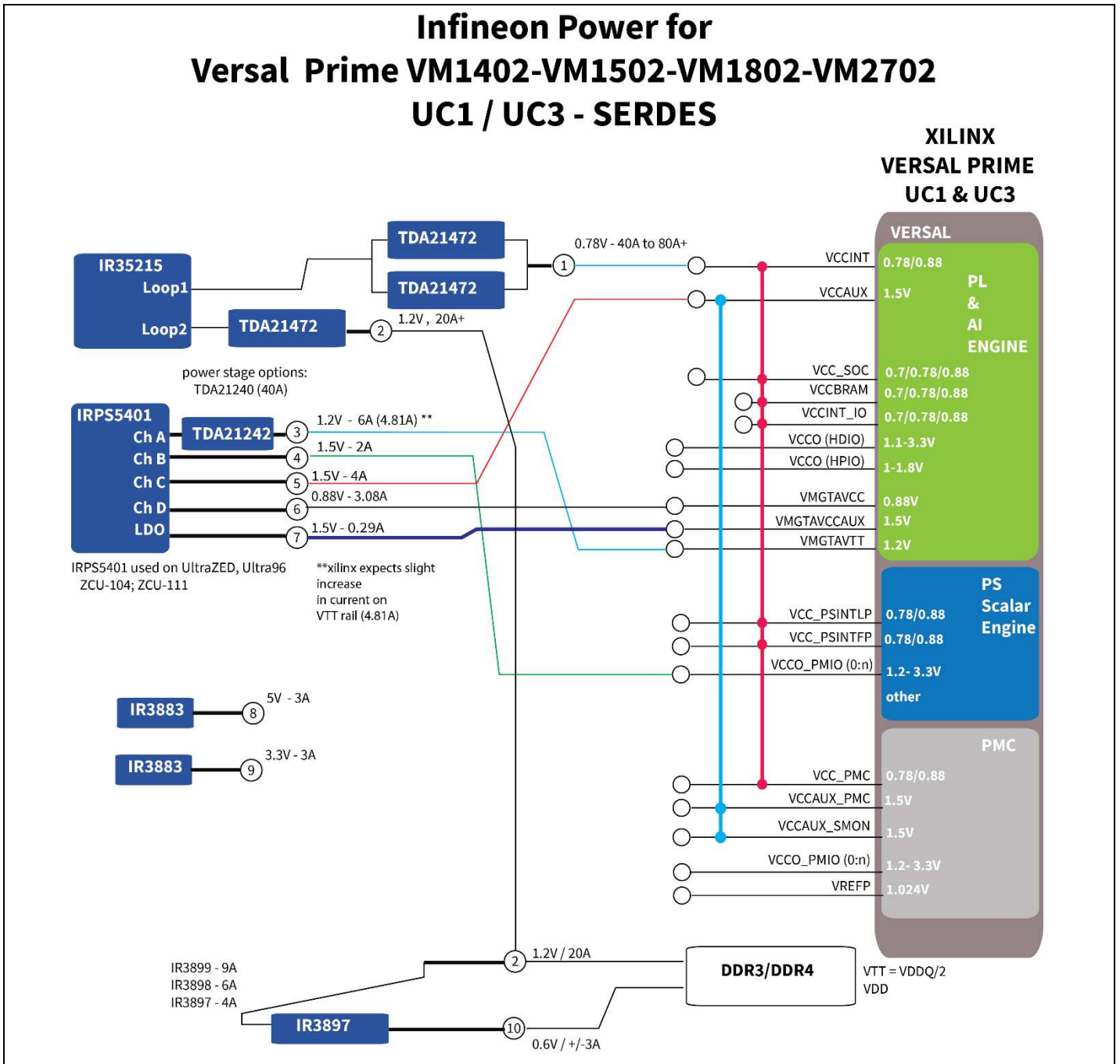


Figure 3 Infineon power macro - Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 1 and 3

Infinion power for Versal™ Prime VM1302, AI Core VC1502 use case 1 and 3

5 Infineon power for Versal™ Prime VM1302, AI Core VC1502 use case 1 and 3

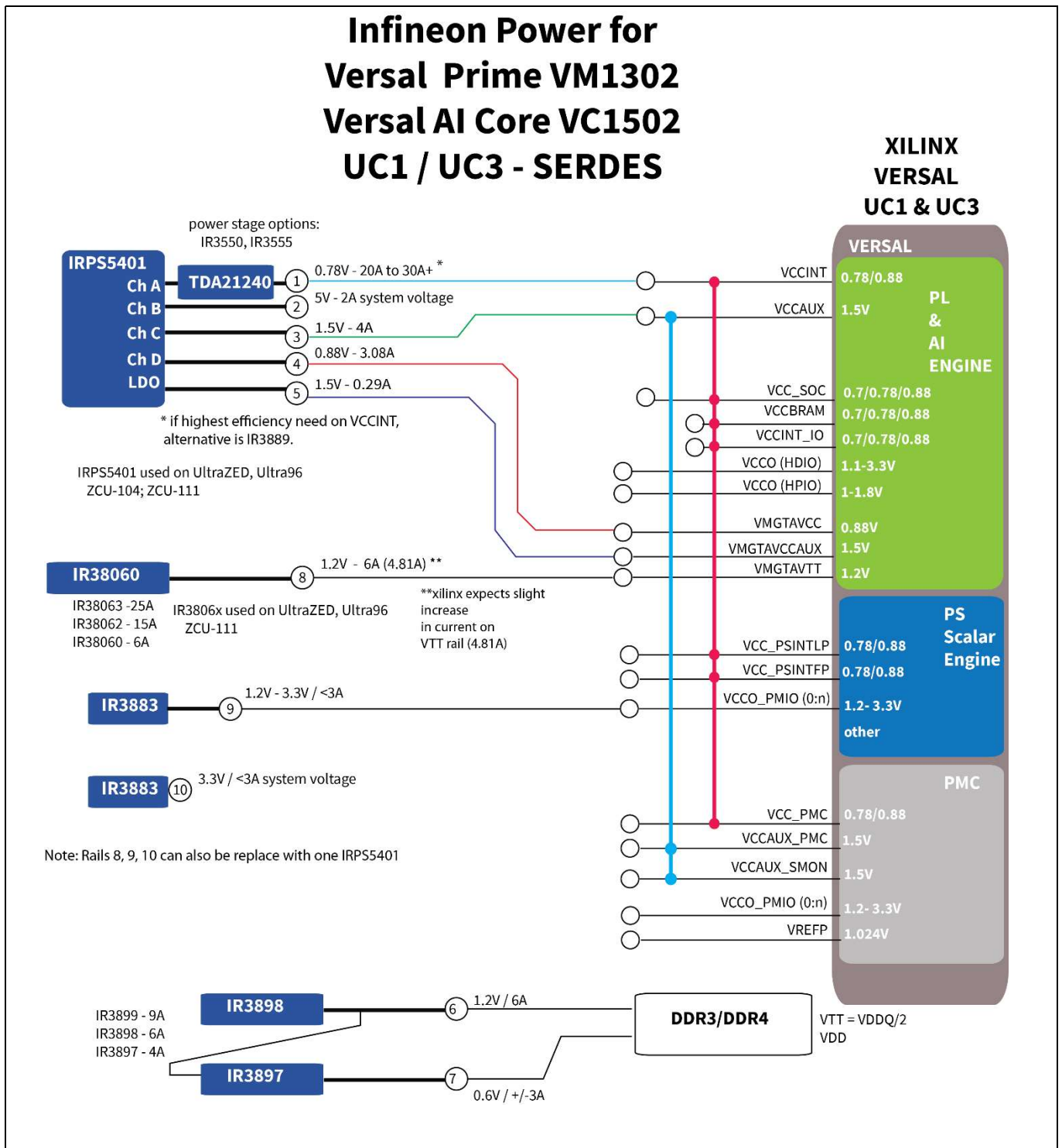


Figure 4 Infineon power macro - Versal™ Prime VM1302 and AI Core VC1502

Infinion power for Versal™ Prime VM1102, VM2602 and AI Core VC1352 use case 1 and 3

6 Infineon power for Versal™ Prime VM1102, VM2602 and AI Core VC1352 use case 1 and 3

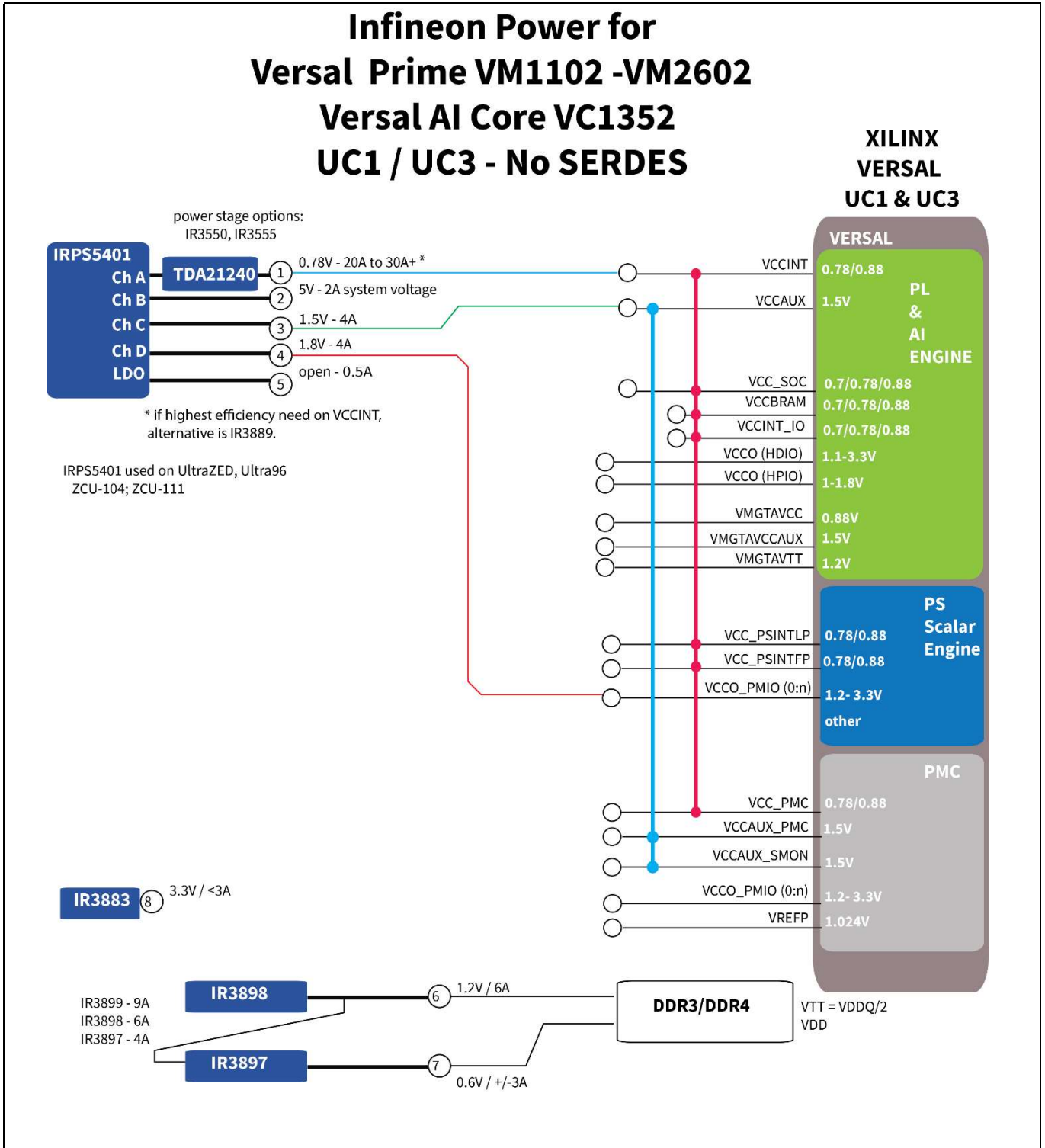


Figure 5 Infineon power macros - Versal™ Prime VM1102, VM2602 and AI Core VC1352 use case 1 and 3

Infinion power for Versal™ AI Core VC1802 and VC1902 use case 2

7 Infineon power for Versal™ AI Core VC1802 and VC1902 use case 2

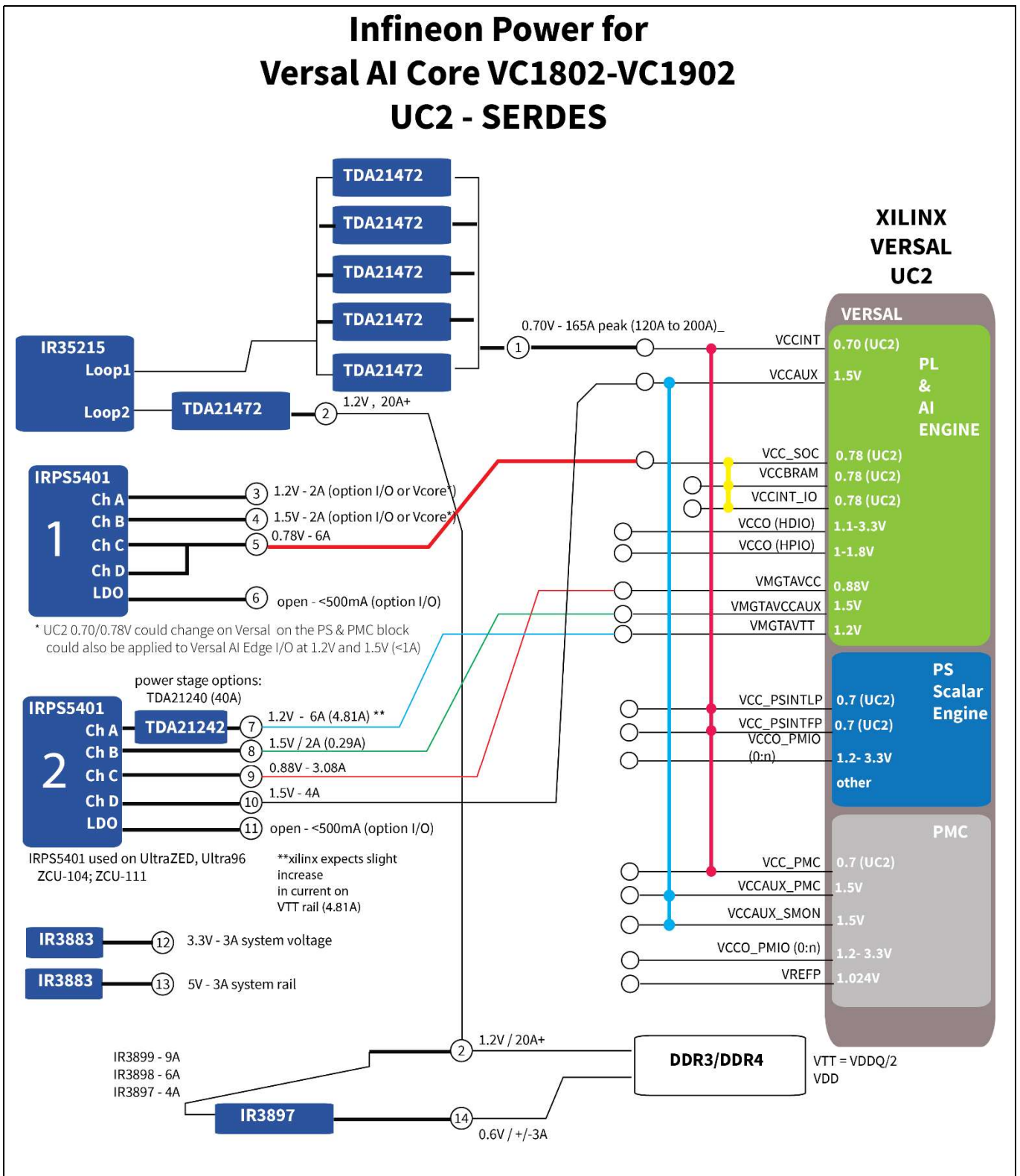


Figure 6 Infineon power macro - Versal™ AI Core VC1802 and VC1902 use case 2

Infinion power for Versal™ AI Core VC1702 and Versal™ Prime VM2502 VM2902 use case 2

8 Infineon power for Versal™ AI Core VC1702 and Versal™ Prime VM2502 VM2902 use case 2

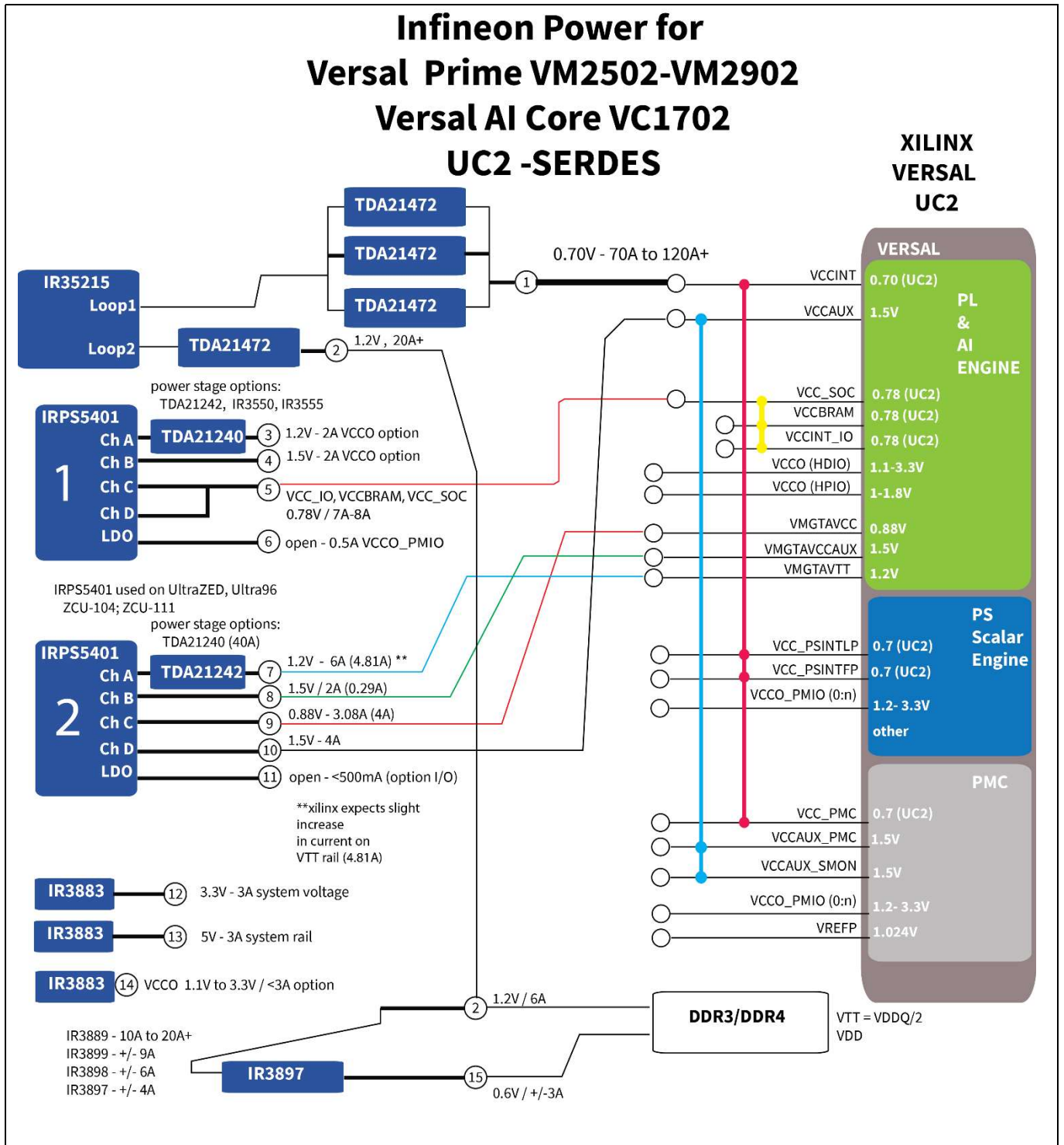


Figure 7 Infineon power macro - Versal™ AI Core VC1702 and Versal™ Prime VM2502 and VM2902 use case 2

Infinion power for Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 2

9 Infineon power for Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 2

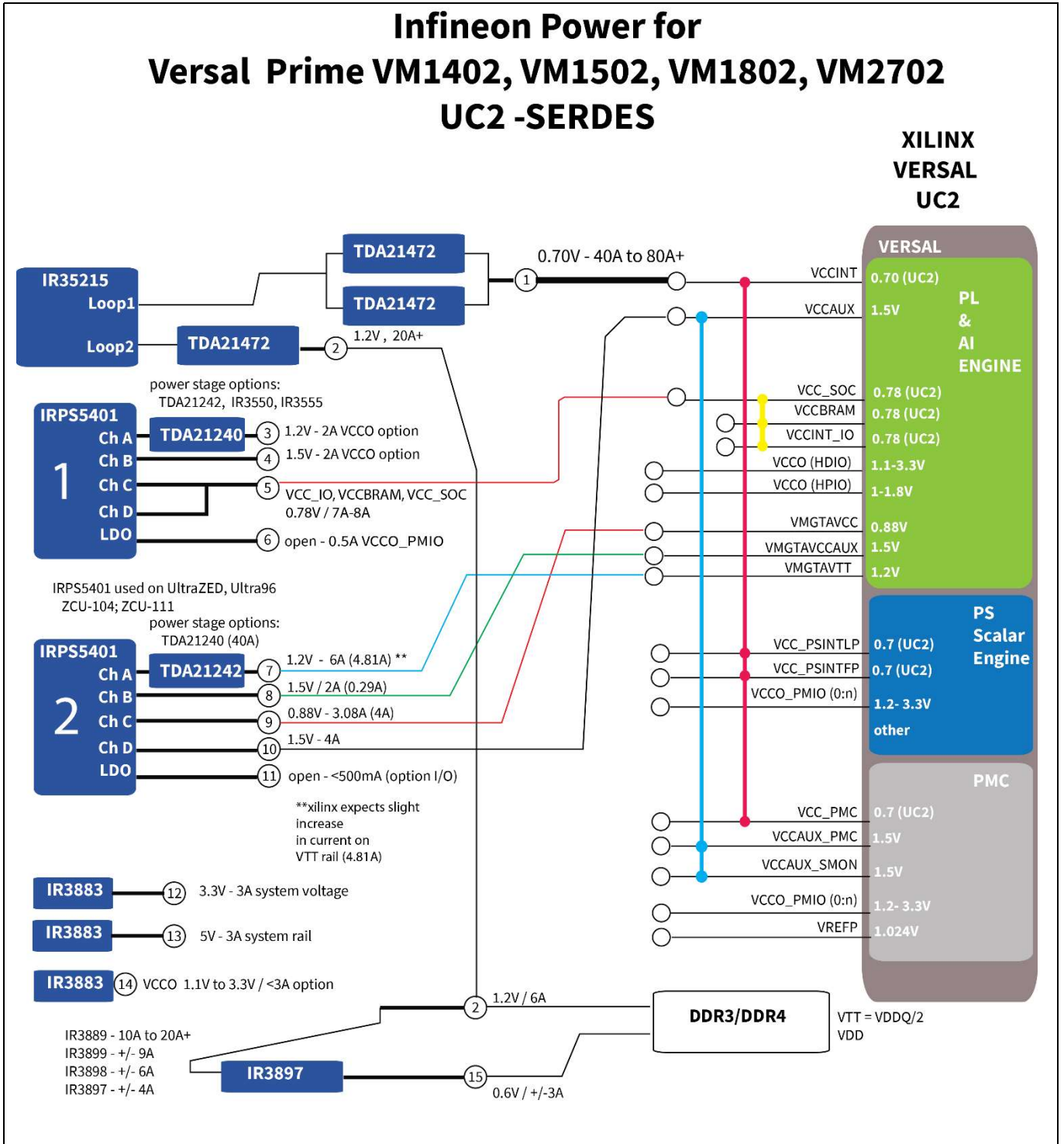


Figure 8 Infineon power macro - Versal™ Prime VM1402, VM1502, VM1802, VM2702 use case 2

Infinion power for Versal™ AI Core VC1502 and Prime VC1302 use case 2

10 Infineon power for Versal™ AI Core VC1502 and Prime VC1302 use case 2

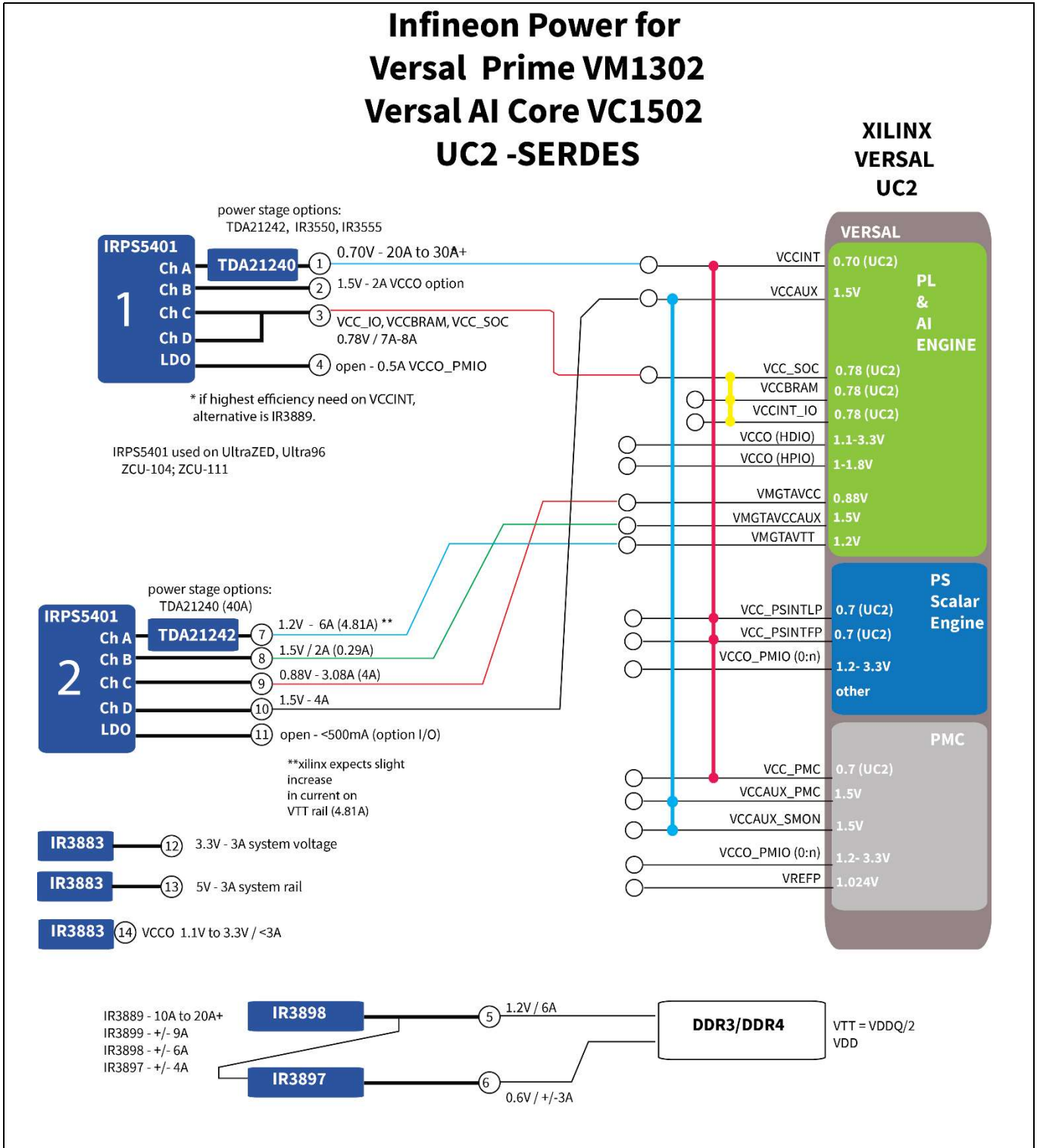


Figure 9 Infineon power macro - Versal™ AI Core VC1502 and Prime VC1302 use case 2

Infinion power for Versal™ AI Core VC1352 and Prime VM1102, VM2602 use case 2

11 Infineon power for Versal™ AI Core VC1352 and Prime VM1102, VM2602 use case 2

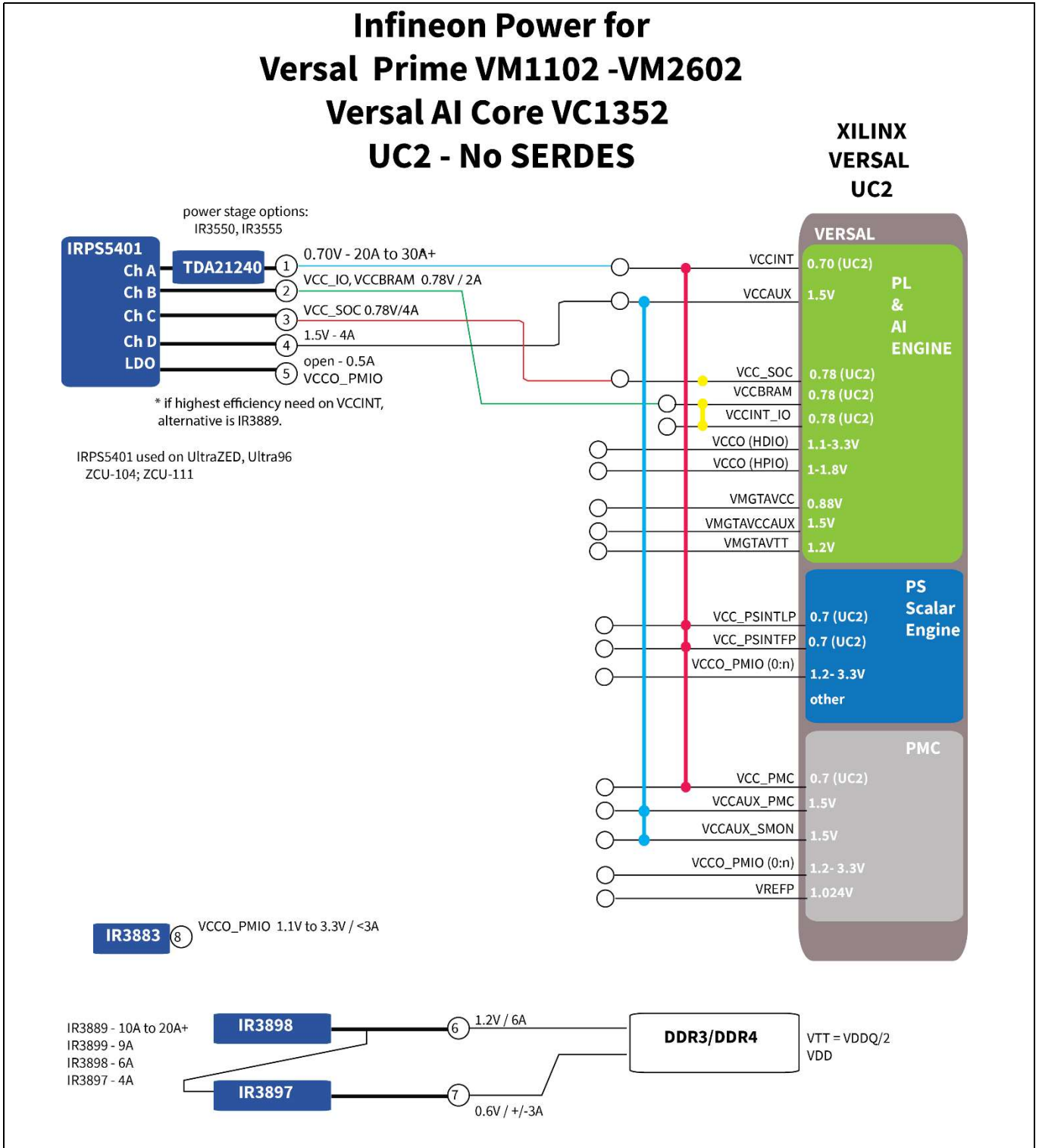


Figure 10 Infineon power macro - Versal™ AI Core VC1352 and Prime VM1102, VM2602 use case 2

Infinion power for Versal™ AI Core VC1902 use case 4

12 Infineon power for Versal™ AI Core VC1902 use case 4

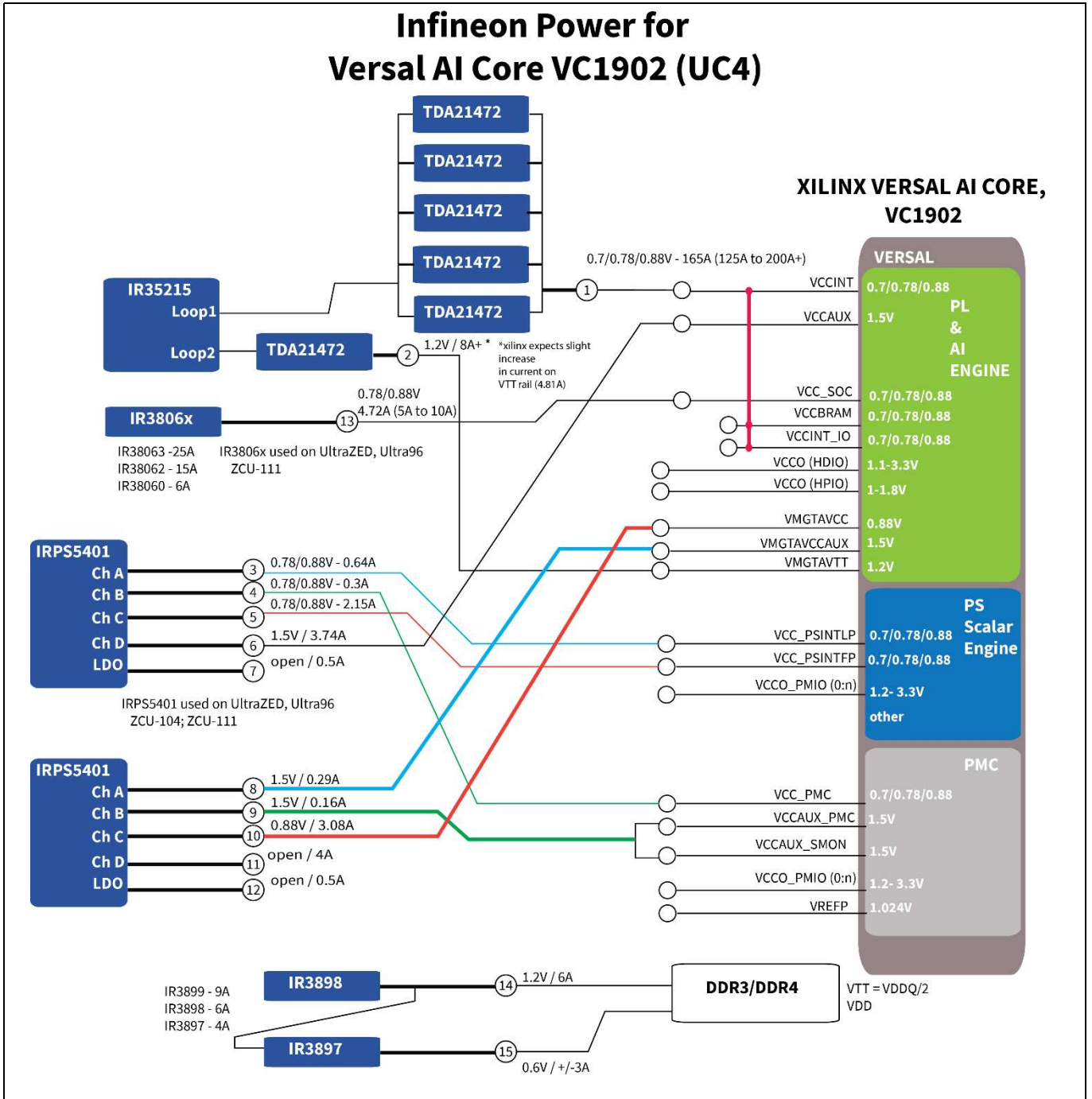


Figure 11 Infineon power macro - Versal™ AI Core VC1902 use case 4

Infinion power for Versal™ AI Core VC1902 + System Voltages use case 4

13 Infineon power for Versal™ AI Core VC1902 + System Voltages use case 4

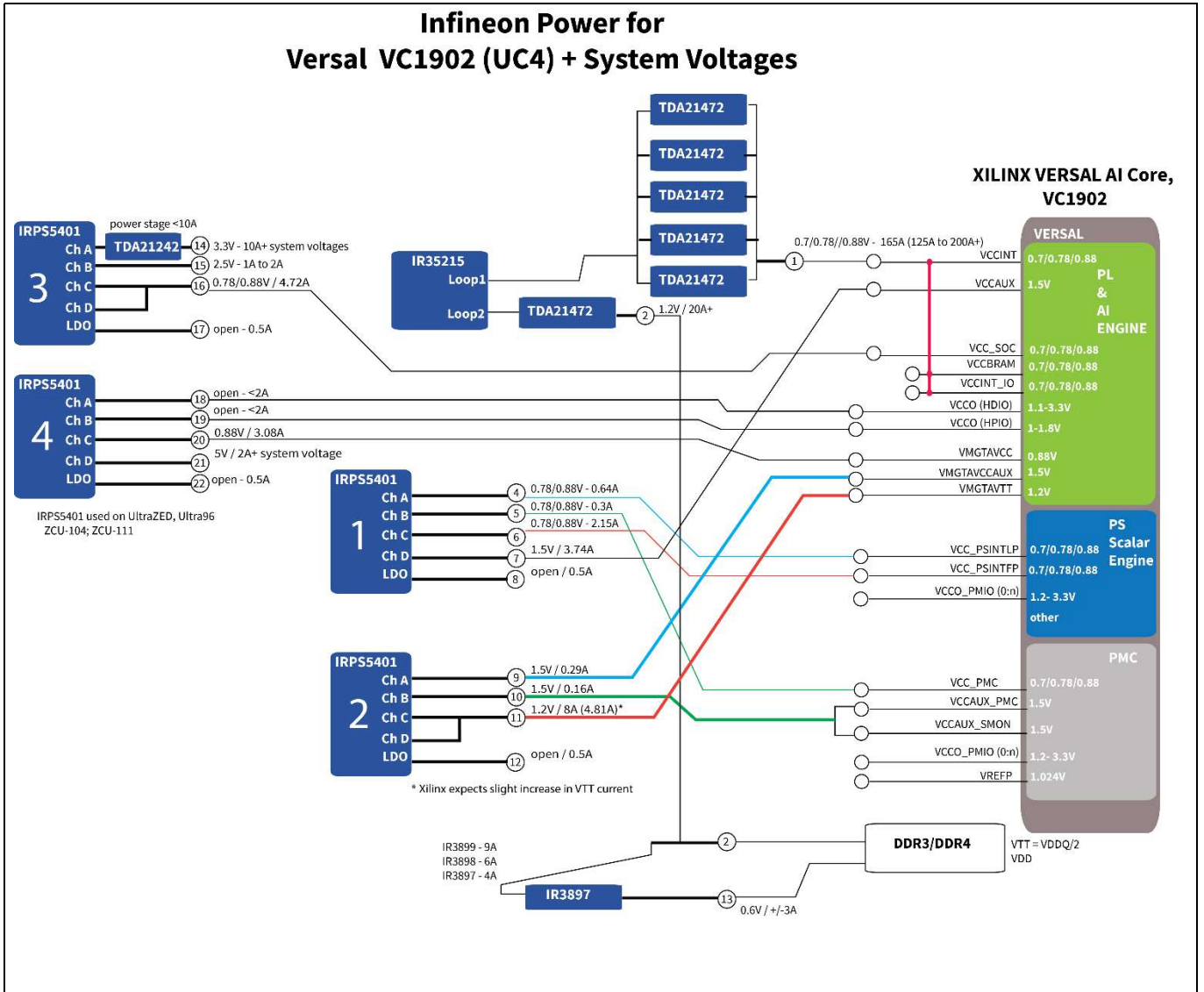


Figure 12 Infineon power macro - Versal™ AI Core VC1902 + System Voltages use case 4

Infinion power for Versal™ Prime VM1802 use case 4

14 Infineon power for Versal™ Prime VM1802 use case 4

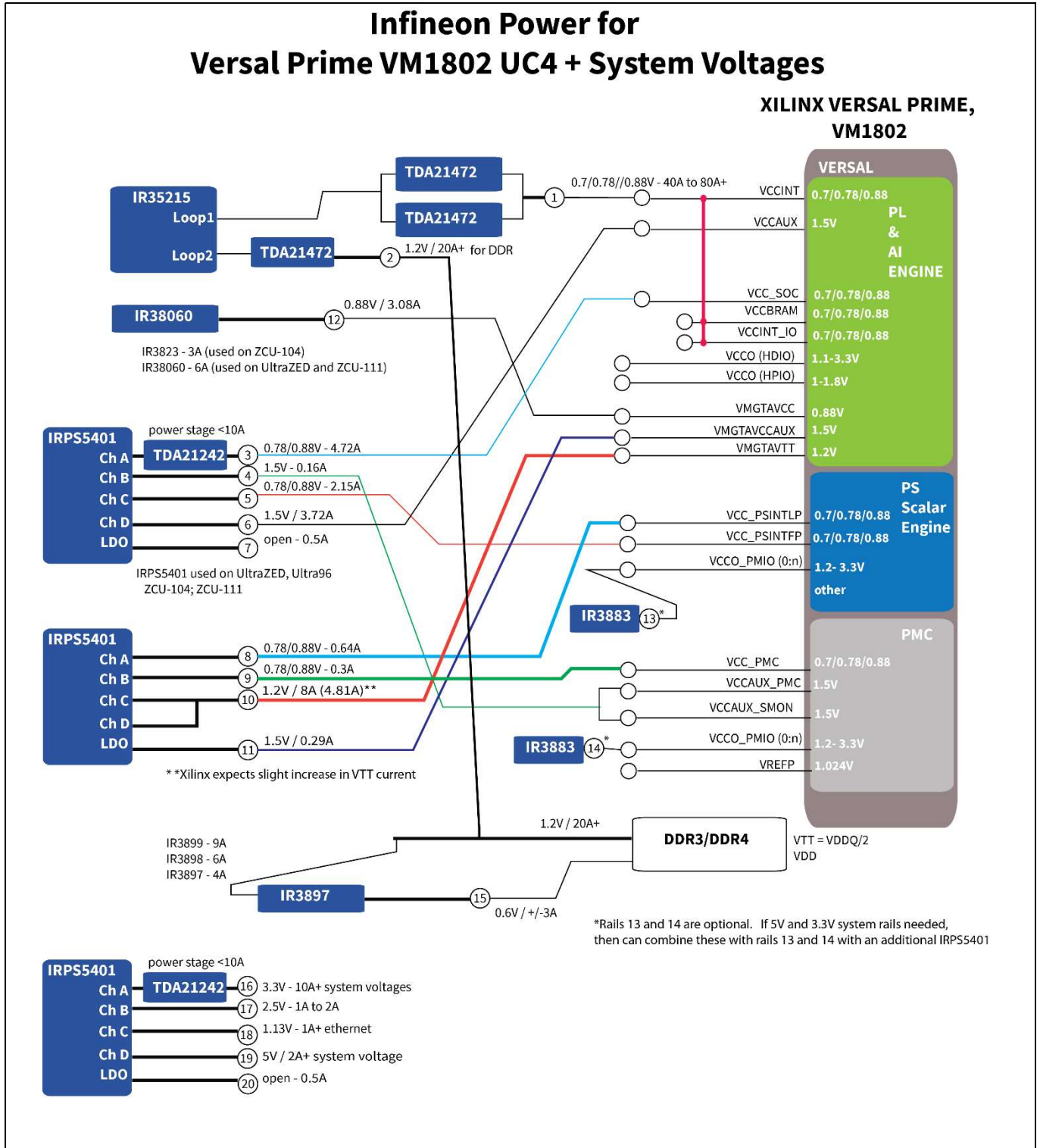


Figure 13 Infineon power macro - Versal™ Prime VM1802 use case 4

Infinion power for Versal™ Prime VM1802 + System Voltages use case 4

15 Infineon power for Versal™ Prime VM1802 + System Voltages use case 4

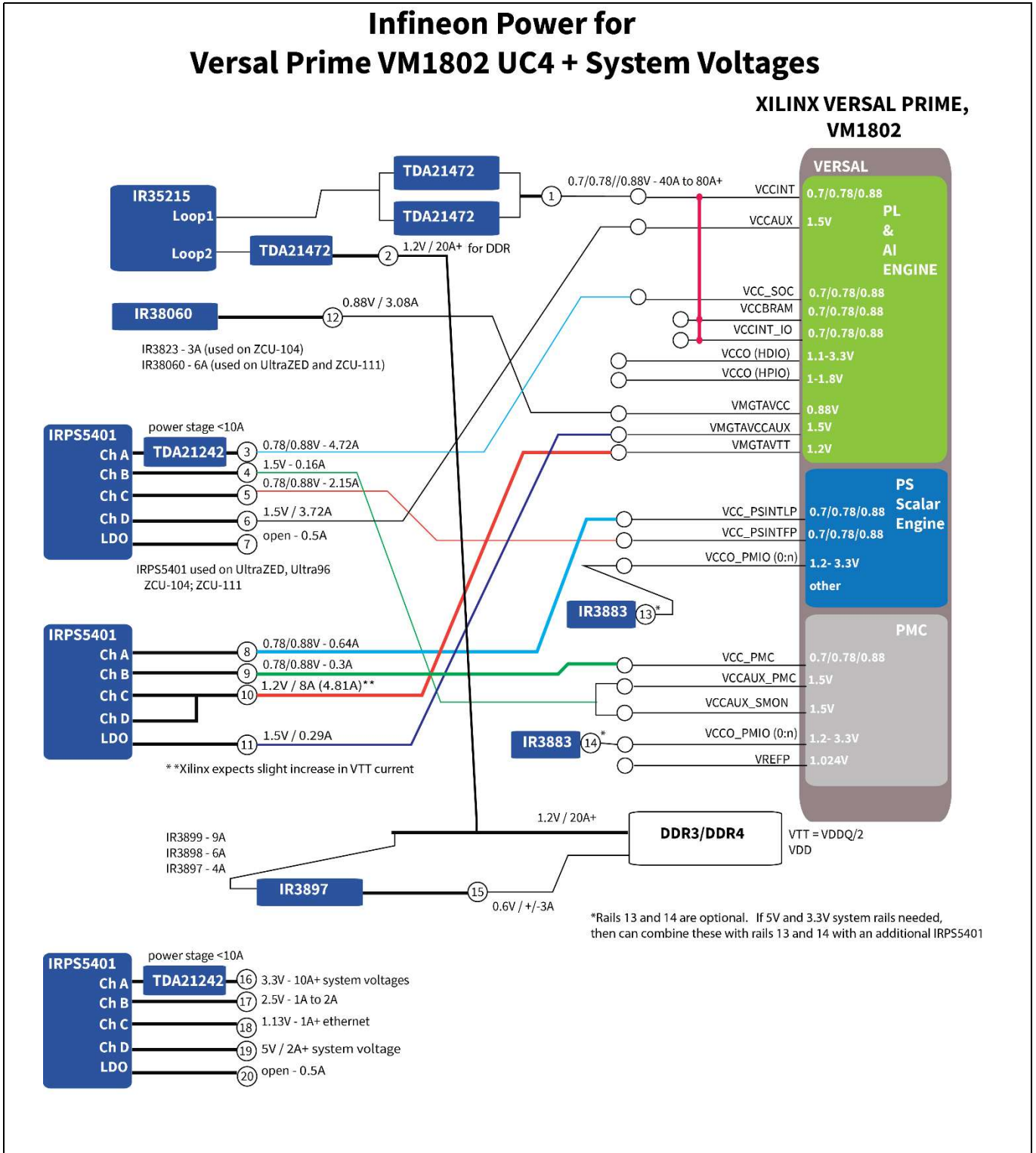


Figure 14 Infineon power macro - Versal™ Prime VM1802 + System Voltages use case 4

Infineon power for Versal™ Prime VM1802 + System Voltages use case 4
Revision history

Document version	Date of release	Description of changes
0.1	April 15, 2019	Initial draft by Infineon base on Xilinx latest Versal information, March 2019. Notes: Power solutions subject to change under advisory of Xilinx. Power solutions are based typical use case estimates. Xilinx recommends all customers to consult Versal XPE tool upon release for exact power use case.
0.2	April 18, 2019	Modifications to Use Case 1 solutions. Remove the IR3806x for SERDES and bring into the IRPS5401 (Figures 1, 2 & 3). This effectively reduces one large component from the BOM. This change will also be reflected in the EV121-D VM1802 Infineon Power Macro.
0.3	May 8, 2019	Modifications to figure titles to accentuate the Infineon font size vs. Xilinx. Changes to comply with legal recommendations e.g. “Infineon Power for”.

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