Thermo regulated Power Measurement Platform

NXP   **Baylibre**

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What is demonstrated

Why: Silicon performance is affected by PVT

How: Full control over Process Voltage & Temperature

Temp: 24.636°C
Voltage: -0.18U

TPMP Aggregates:
- Automated test framework
- Temperature Regulation
- Power Measurement
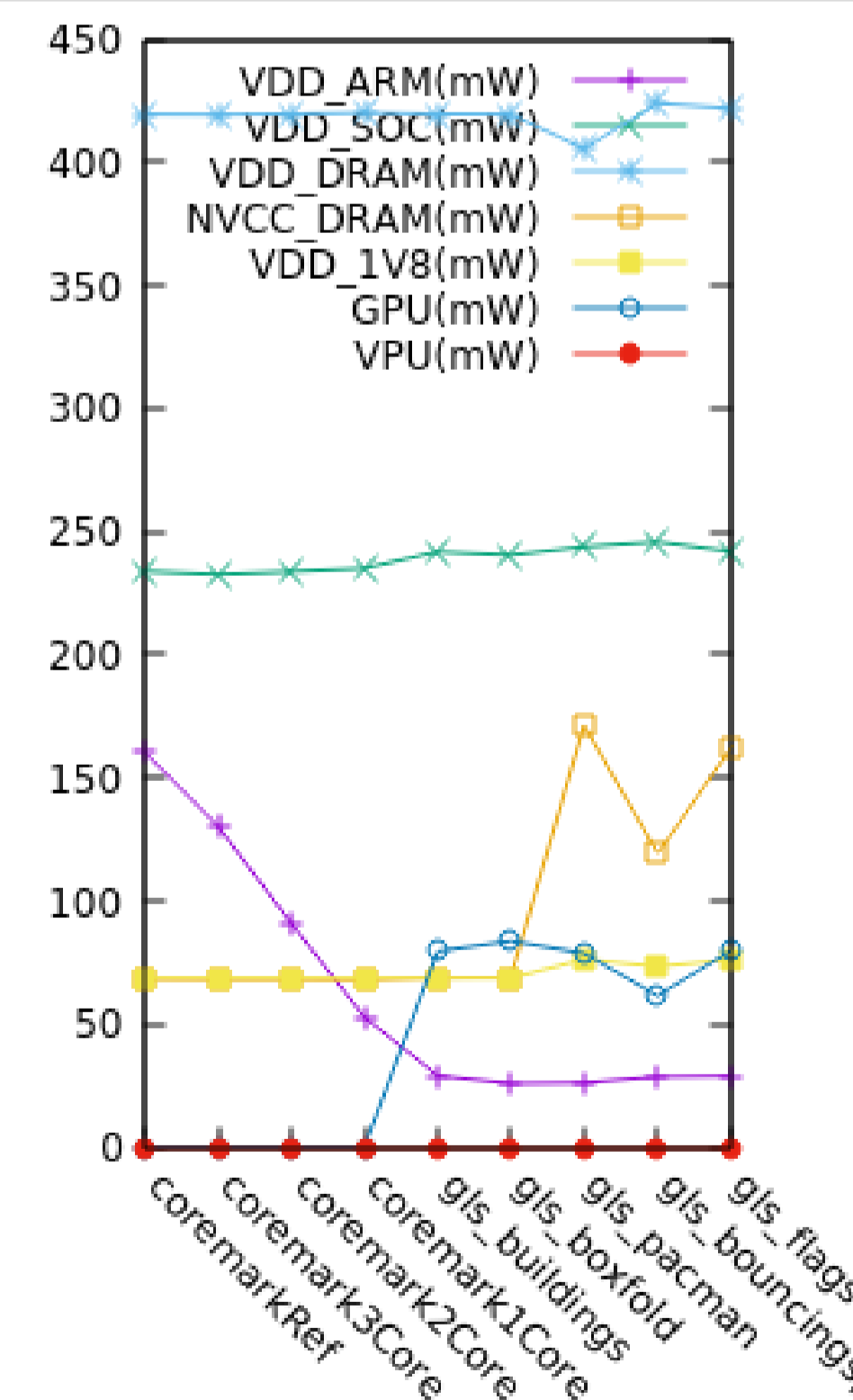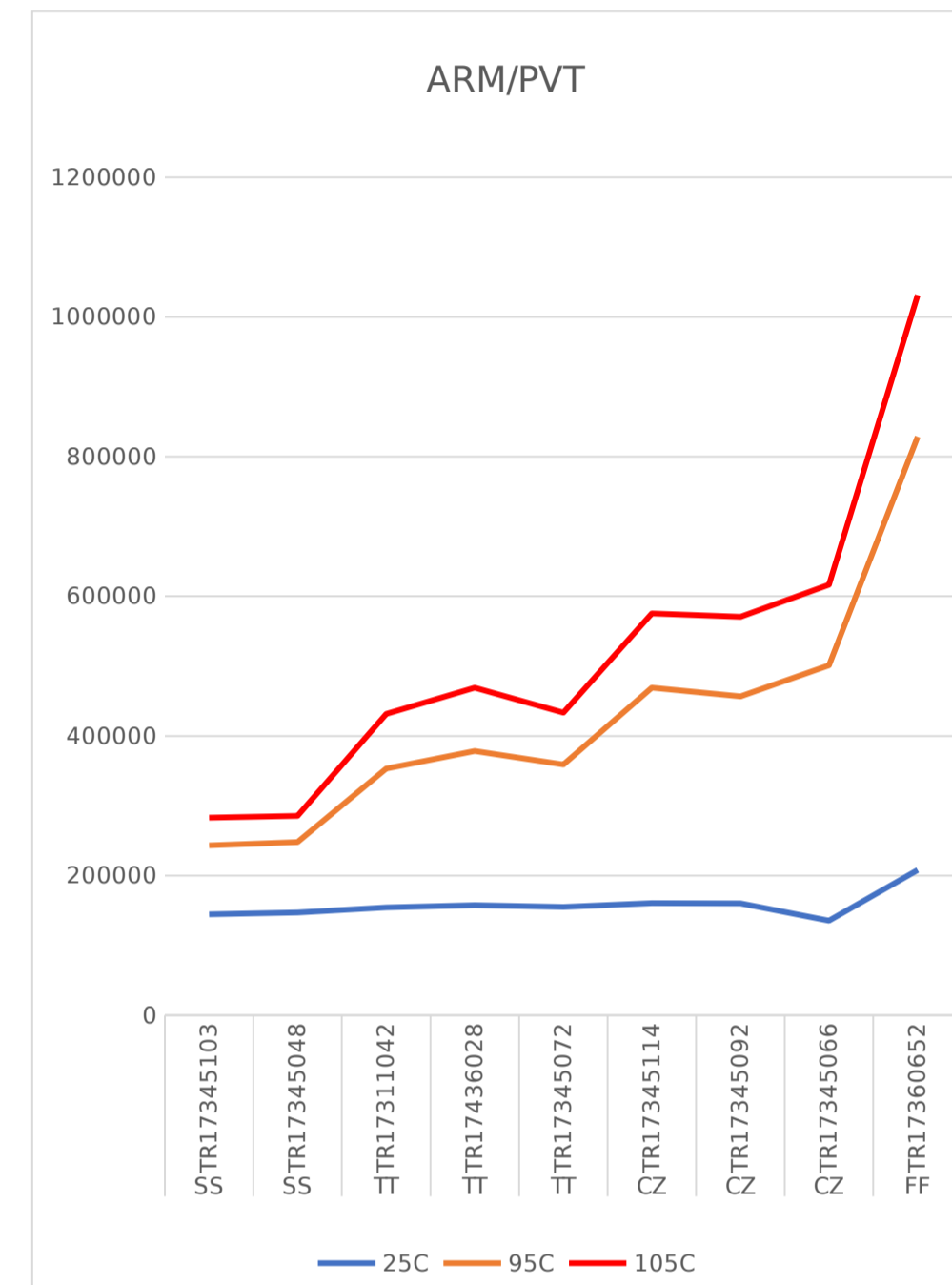- Data Post processing

Hardware Information
DUT: NXP iMX8MQ EVK
Temperature control: Peltier LAIRD High Temp Series
Thermo-regulation: Meerstetter TEC 1091
Power acquisition: Baylibre ACME

ARM/PVT

— 25C — 95C — 105C

VDD_ARM(mW)
VDD_SOC(mW)
VDD_DRAM(mW)
NVCC_DRAM(mW)
VDD_1V8(mW)
GPU(mW)
VPU(mW)

What was improved

One rig to rule them all:
- Automated test sequencing with test launcher.
- Temperature regulation based on processor embedded die sensor.
- Power measurement synchronized with test.
- Power measurement Data and logs stored for analysis / post-processing
- Open Source Open Hardware

Suitable for CI application
- Compact form factor (20x20x30cm)
- Lightweight (<3Kg)
- Low power (24V-6A supply)
- Low noise (<15dBA)
- Affordable

Thermo-stream alternative: 61x72x108cm, 236Kg, <65dBA, ~15 000$

Source code or detail technical information availability

https://baylibre.com/tpmp-power-measurement-platform/
https://hackaday.com/2019/09/02/process-characterization-on-the-cheap-with-a-custom-test-rig/
https://www.cnx-software.com/2019/07/08/baylibre-tpmp-lowers-the-cost-and-time-of-pvt-characterization/

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