



Update on MicroTCA.0 R.3 and other new products

We create first class Embedded Computer Solutions based on world leading Suppliers

Agenda



- EMCOMO Introduction
- VadaTech Introduction
- EMCOMO Project Examples
- MicroTCA.0 Revision 3
- Rev. 3 Products
- Other new products





EMCOMO Introduction

... we create Embedded Solutions



About EMCOMO



- EMCOMO Solutions AG, Neu-Ulm, Germany
- Founded 2010
- Management:



Thomas Sabisch
CEO



Karl Judex
CTO/COO

- Shareholders:
 - Management (>50%)
 - Private Investors



➤ Embedded Computer Systems

- MicroTCA, cPCI, VME, VPX and ATCA based Systems
- Various MicroTCA modules
- Box-PCs, HMI
- Various I/O components from leading vendors
- Customized Hard- and Software components

➤ Services

- Consulting and system design according to the customer requirements
- Project specific adaptations and extensions (Software, Hardware, mechanics)
- System setup and installation
- Integration tests and system tests
- Technical support

➤ Distribution of Embedded Systems/Boards/Modules



EM-AM4024



EM-SCLK



VadaTech Introduction

About VadaTech



Headquarter in Henderson, Nevada

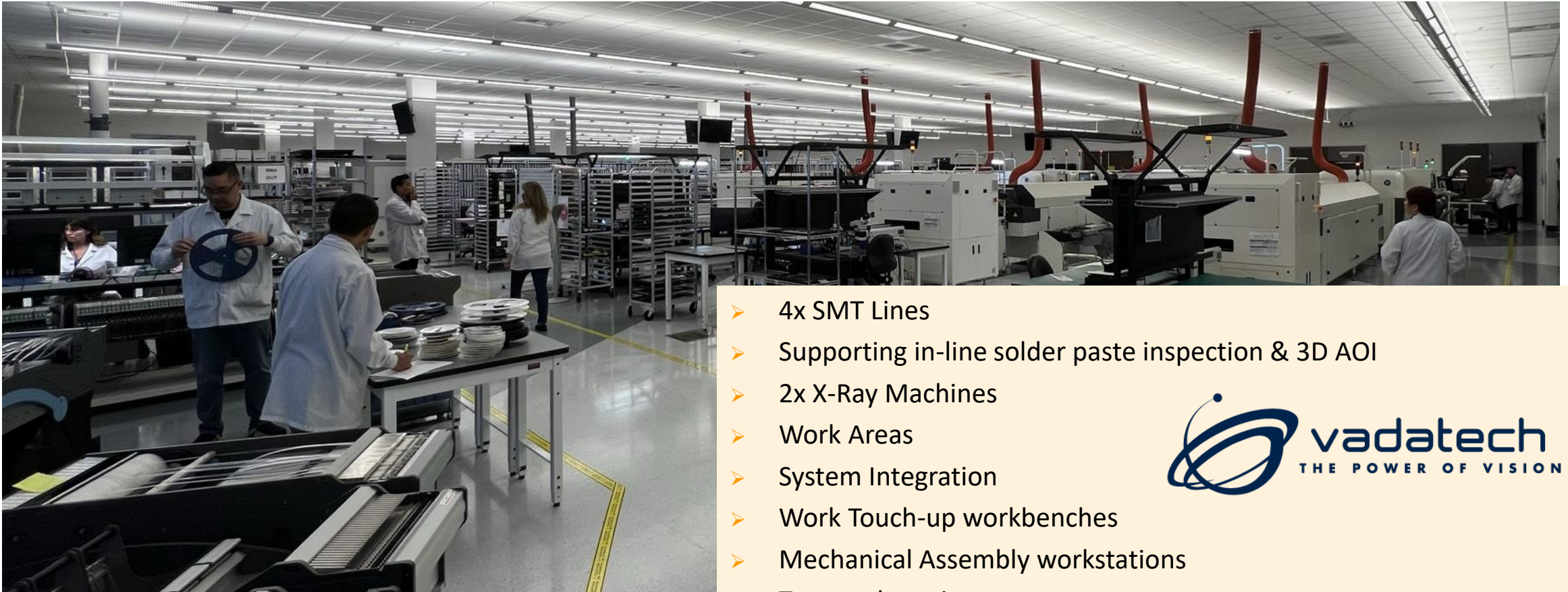
VadaTech is a world leader in the design and manufacture of embedded computing solutions with a focus in PICMG and VITA open standards.

VadaTech offers unmatched product selection and expertise in MicroTCA, VPX and AdvancedTCA.

Details

- Founded 2004
- 300 Employees worldwide
- 5 locations (USA, Europe, Asia)
- AS9100 certified
- RoHS, REACH and WEEE compliant

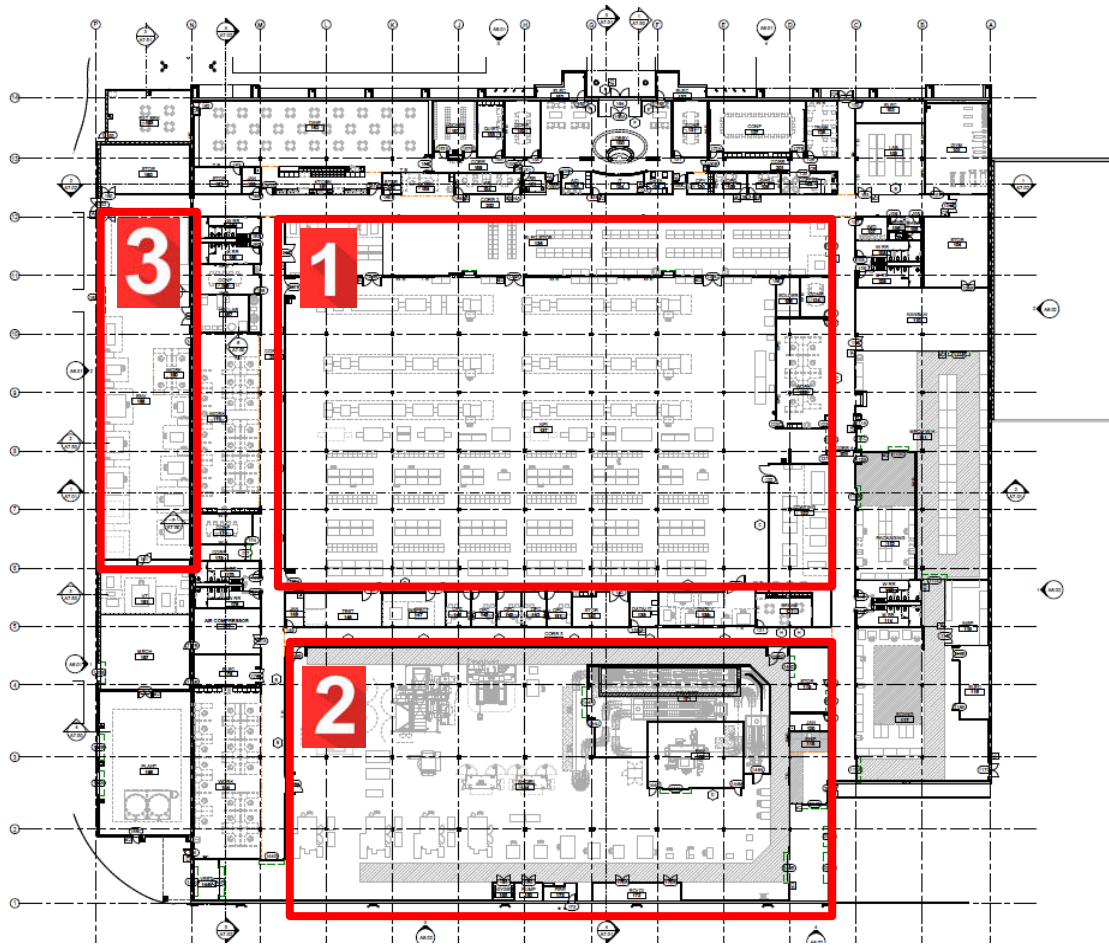
Vadatech HQ - 92,500 SQFT



- 4x SMT Lines
- Supporting in-line solder paste inspection & 3D AOI
- 2x X-Ray Machines
- Work Areas
- System Integration
- Work Touch-up workbenches
- Mechanical Assembly workstations
- Test work stations
- Inspection points at Receiving, SMT, Touchup, Mechanical and Final



Production Facility - 140,000 SQFT



3 primary work centers:

1. Electronic board production with 6x SMT Lines
2. Metalwork manufacturing – **building all crates internally now**
3. Full environmental test laboratory

Located close to HQ

Facility fully operational now!

EMCOMO Project Examples

Project Example 1 - LLRF Platform



EMCOMO services

- System design, integration and test

Features

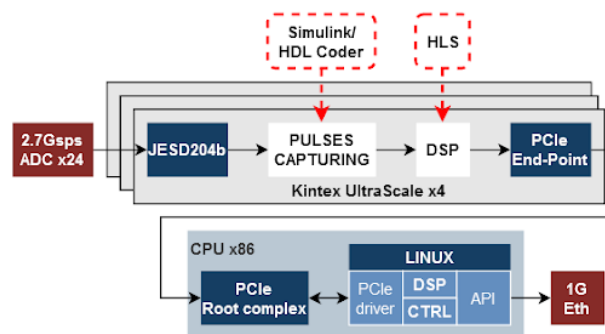
- 2U 19" MTCA.4 system with 6 mid-size double-width AMC slots and 6 RTM slots
- dual redundant universal 85-265V AC power modules with 500W each
- MCH with PCIe Gen.3 fabric switch, high precision temperature controlled oscillator and JTAG virtual probe
- Up to 6 Zynq Ultrascale+ dual FMC carrier boards loaded with various FMC modules:
 - 4x ADC 1 GSPS @ 16-bit and 4x DAC 2.8 GSPS @ 16-bit
 - quad SFP+ transceivers (e.g. for 10 GbE)
 - 16x RS-422/RS-485, 16x M-LVDS and 16x GPIO

Project Example 2 – HSDAQ System



Features

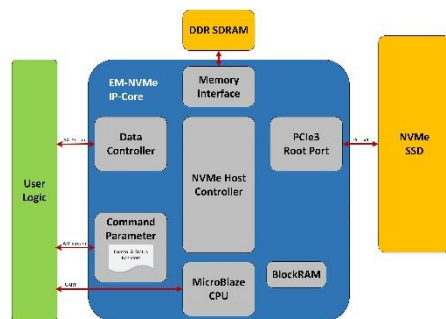
- VadaTech components:
 - 5U 19" MicroTCA system with MCH
 - 24 x ADC with 2.7 GSPS @ 14-bit with Kintex UltraScale processing FPGA
- Clock module for phase synchronous ADC clocks
- X86 application CPU with Linux



EMCOMO services

- System design, integration and test
- IP-Core and software development
- Hardware development of components and production
- Cable/Frontend development and production

Project Example 3 – EGSE System



Features

- VadaTech components:
 - 9U 19" MTCA.4 system VT815 with 2 MCH
 - 3 x FPGA dual FMC carrier for high speed serial connections
 - 3 x NVMe carrier for M.2 SSD modules
- Separate PCIe domains for maximum data transfer performance
- X86 application CPU with Linux

EMCOMO services

- System design, integration and test
- NVMe IP-Core and software development

MicroTCA.0 Revision 3

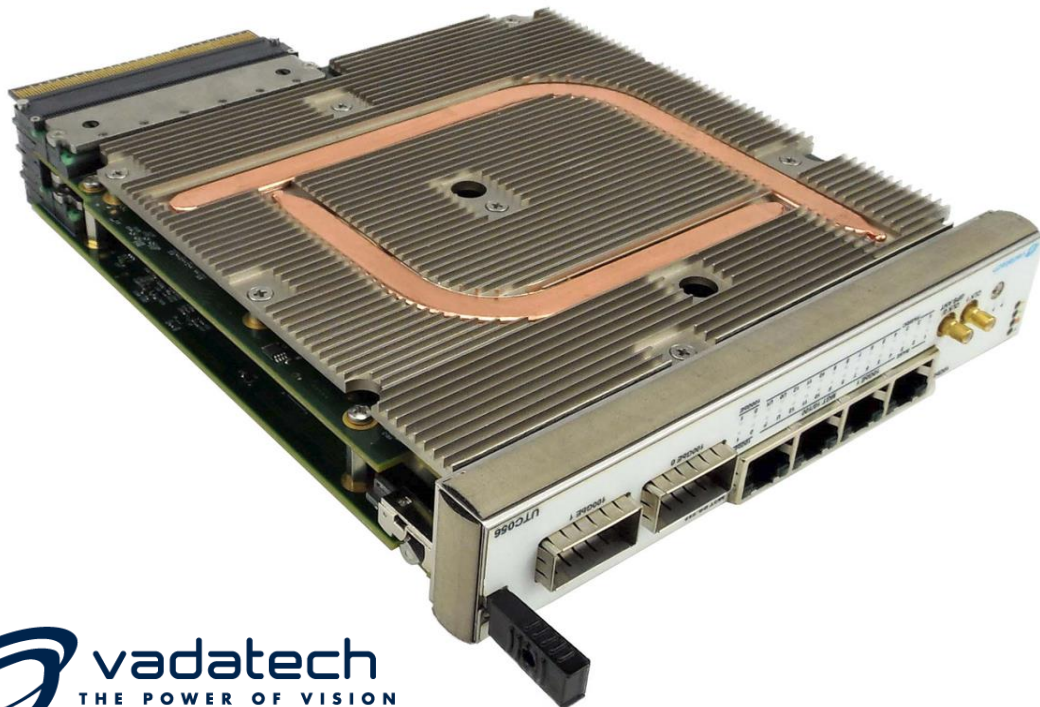
(Recapitulation)

MicroTCA.0 Revision 3 - Recapitulation

- Specification ratified September 9, 2023
- Performance Improvement for next-generation MicroTCA Systems
 - 100 GBASE-KR4 and PCIe Gen. 4/5 support
 - Platform TDP expanded (110W per module)
 - Surprise Extraction feature clarified
- Implementation details
 - New backplane connectors are currently for 25 Gbit/s vs. 10 Gbit/s per differential pair to support implementation of 100 GbE and PCIe Gen. 4
 - PCIe Gen. 5 will need 32 Gbit/s per differential pair
 - Added an Extra Power Pin so each module can dissipate more power
- New products conforming to MTCA.0 Rev. 3 will become available in 2025

Rev. 3 Products in 2025

5th Generation MCH



Features

- Supported Fabrics
 - 100G Ethernet (40G and/or quad 10G supported per slot) with dual 100G uplink on the front panel
 - PCIe Gen.4 with dual uplink via OCuLink on the front panel
- Available double-width and single-width

Planned availability Q2/25

VT815 Chassis Upgrade to R3.0



Features

- MTCA4.0 with RTM
- Front to back cooling with dual tongue on each slot
- Up to 3600W with full redundancy across the power modules
- Dual MCH
- 12 slots full-height double-width
- Support of 100 GbE and PCIe Gen.4 on the Backplane
- Single Tongue with 110W, dual Tongue with 120W per slot

Planned availability Q2/25

VT888 - new R3.0 3U Chassis



Features

- MTCA4.0 with RTM
- Front to back cooling with dual tongue on each slot
- Up to 2400W with full redundancy across the 2 hot-swappable power modules (1200W each)
- Single MCH
- 4 slots MTCA.4 double-width with RTM
- 2 slots double-width
- Support of 100 GbE and PCIe Gen.4 on the Backplane
- dual Tongue with 160W per slot

Planned availability Q2/25

Other R3.0 products planned for 2025

➤ CPU

- Intel Ice Lake-D LCC (Low Core Count) – **planned availability Q1/25**
 - dual 100 GbE or PCIe Gen.4 to the backplane
 - AMC770 / AMC771 with new layout (new finger definition)

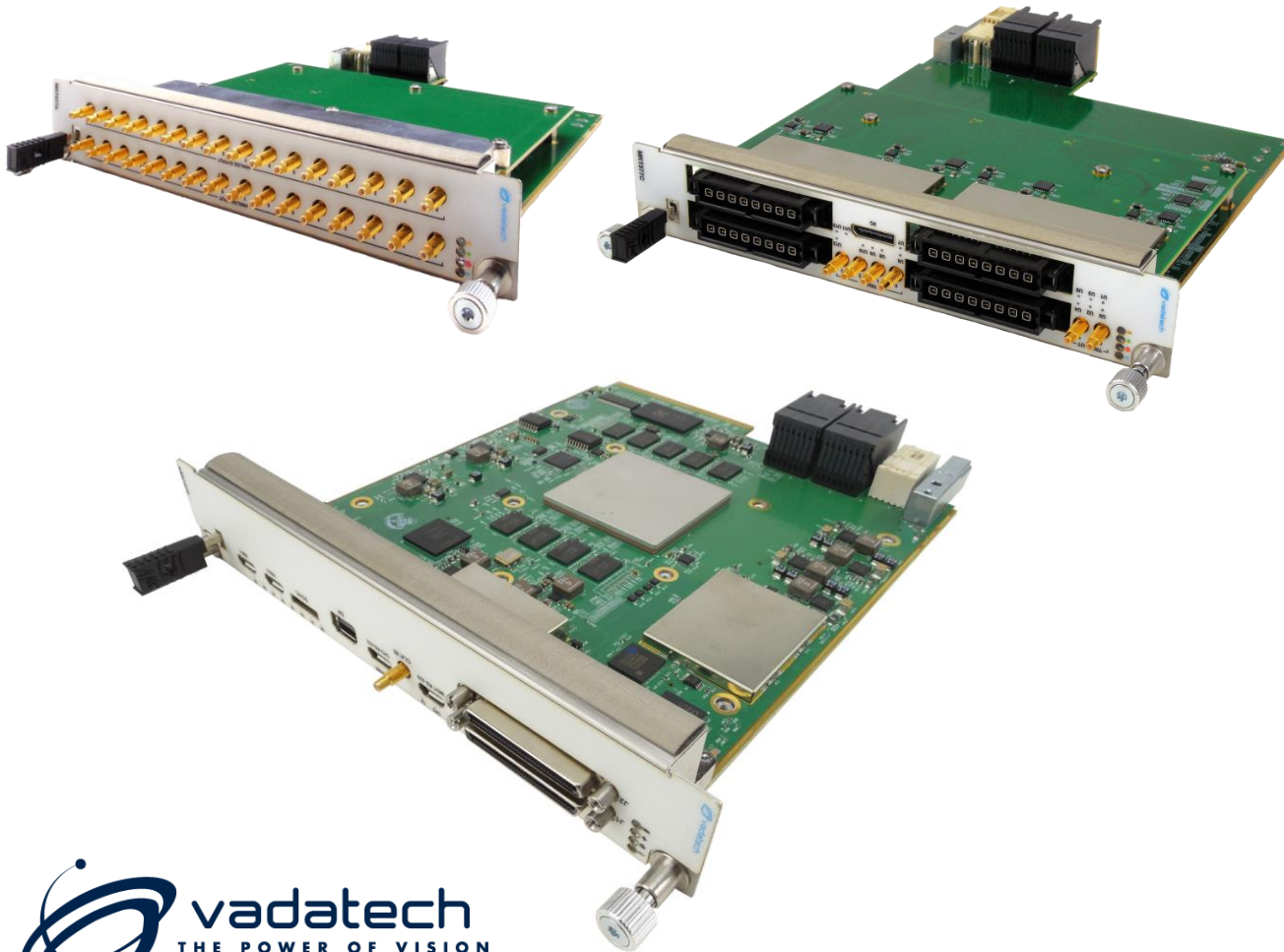
➤ FPGA

- AMD Versal FPGA with high speed ADC/DAC – **planned availability Q3/25**
 - AD9084 with 4 channels 12-Bit 20 GSPS ADCs / 4 channels 16-Bit 28 GSPS DACs
 - RF analog bandwidth up to 18 GHz
 - dual 100 GbE or PCIe Gen. 4 to the backplane
- Intel Agilex 9 Direct RF SoC – **planned availability Q3/25** (based on VPX board)
 - double tongue to provide more power (>150W)
 - 4 channels ADC / DAC with up to 64 GSPS @ 10 bits
 - RF analog bandwidth up to 36 GHz
 - dual 100 GbE or PCIe Gen. 4 to the backplane



Other new Products

AMC577 - RFSoc AMC

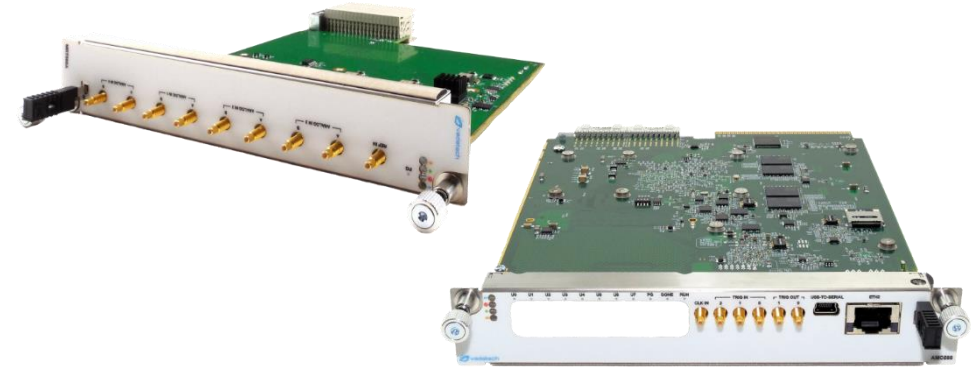
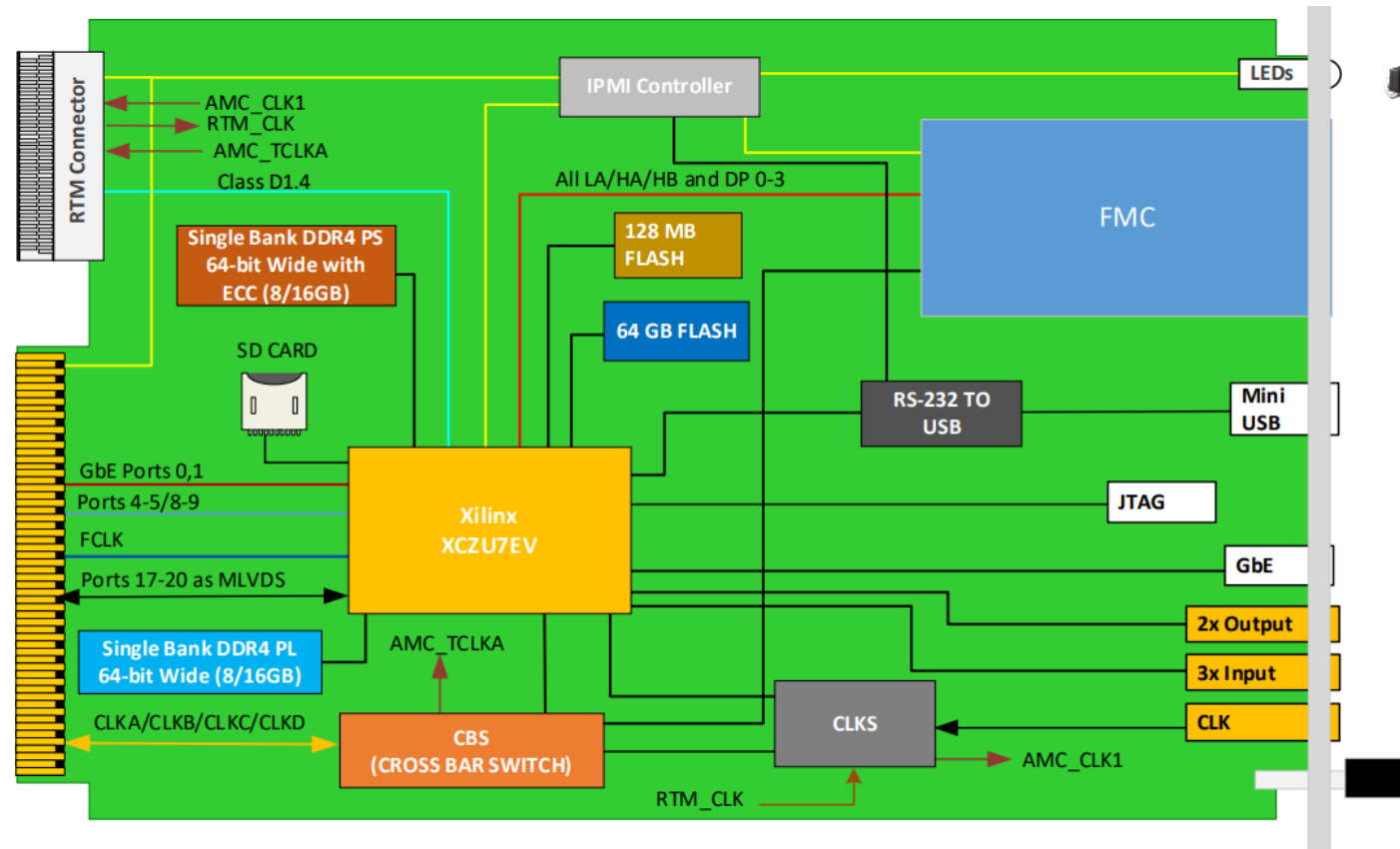


Features

- based on AMD XCZU49DR or XCZU29DR (AMC576)
- 16 Channels ADC 14-bit @ 2.5 GSPS
- 16 Channels DAC 14-bit @ 9.7 GSPS
- OCXO for stability
- All RF to the RTM
 - MRT577A with 16 ADCs and 16 DACs AC coupled via baluns
 - MRT577C with 16 ADCs and 16 DACs DC coupled via programmable LNAs, 8 LVDS User I/Os and Trig in/out

Announced last year, already available

AMC566 - Zynq Ultrascale+ AMC (1)

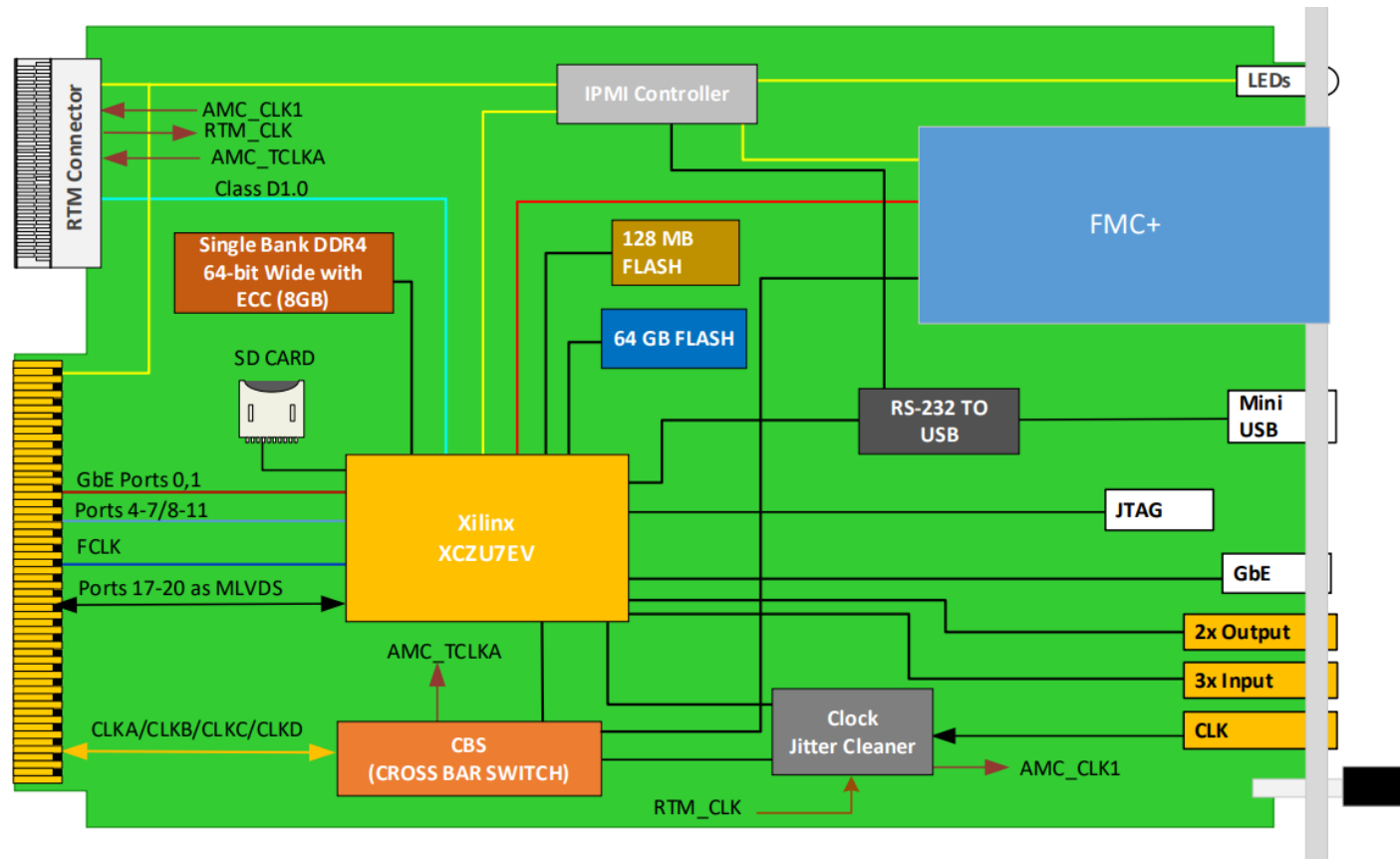


Features

- based on AMD XCZU7EV
- RTM pinout based on the Class D1.4 from DESY
- FMC to allow optical interfaces and other FMC modules
- MRT with 8 ADCs 16-bit @ 250MSPS

Announced last year, already available

AMC562 - Zynq Ultrascale+ AMC (2)

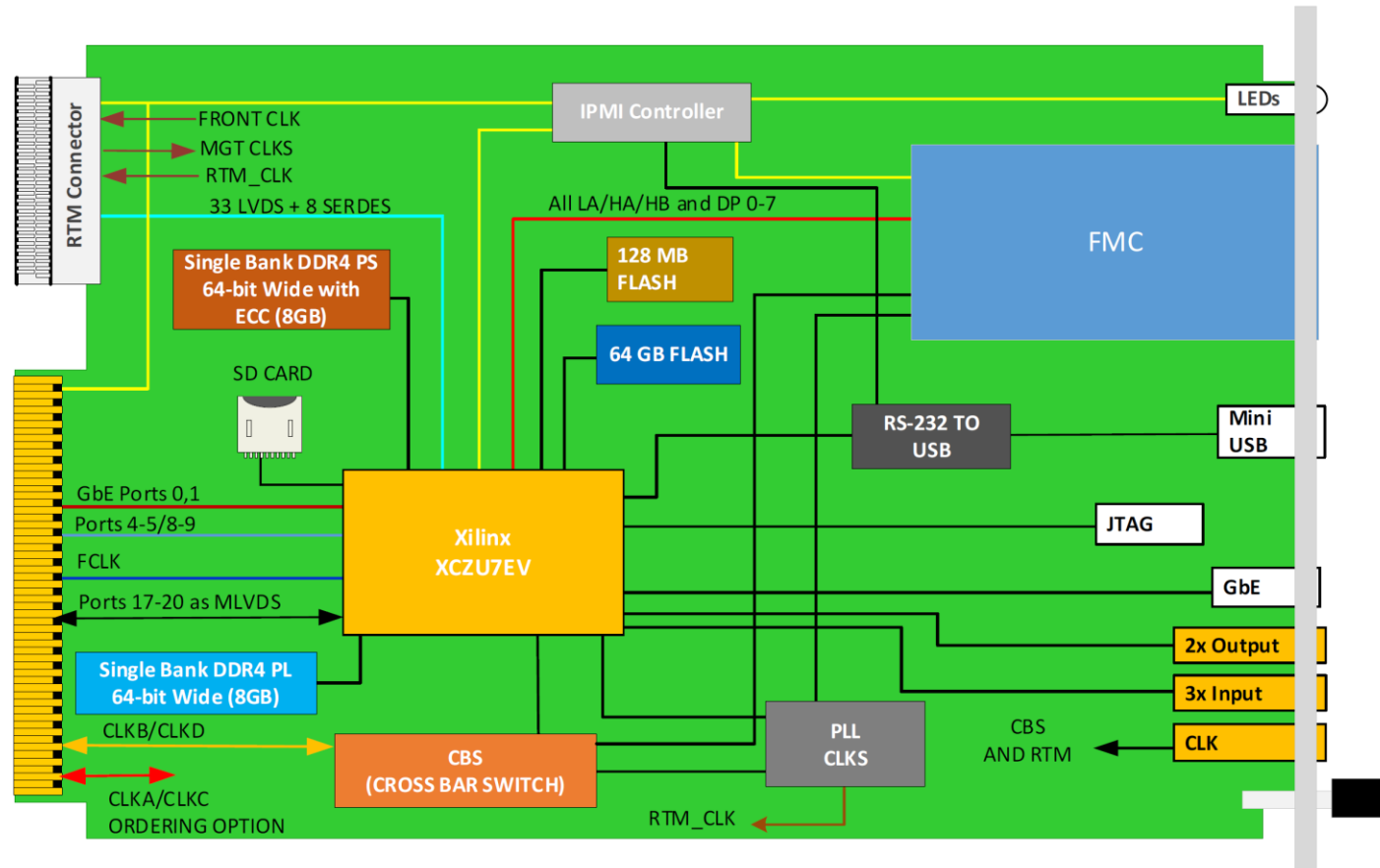


Features

- based on AMD XCZU7EV
- RTM pinout based on the Class D1.0 from DESY
- FMC to allow optical interface and other FMC modules

Announced last year, already available

AMC567 - Zynq Ultrascale+ AMC (3)

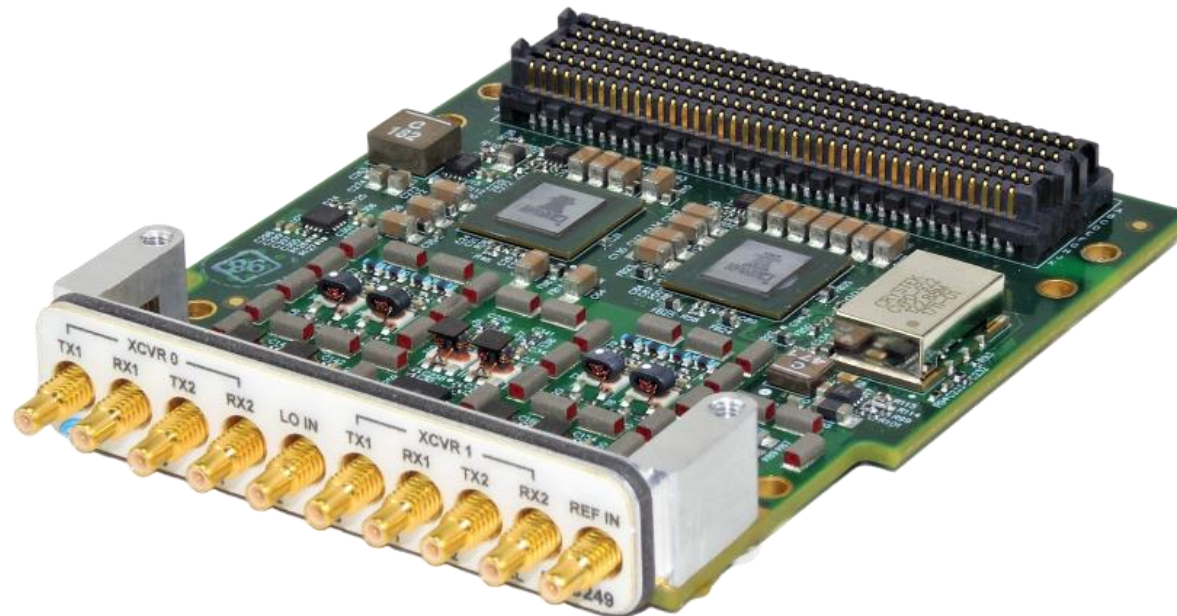


Features

- based on AMD XCZU7EV
- RTM connection 33 LVDS, 8 Serdes and clocks
- 8 GB DDR4 connected to PL
- FMC to allow optical interface and other FMC modules

Already available

Largest Portfolio of FMC/FMC+ Modules



Latest Features

- **FMC268** based on ADC12DJ5200 and AD9164 / 9162
 - ADC 12-bit @ 10.4 GSPS
 - DAC 16-bit @ 12 GSPS
 - JESD204C
- **FMC270** based on the AFE7950
 - Wide-bandwidth multi-channel transceiver
 - 4 TX, 4 RX and 2 feedback chains
 - Up to 12GHz Direct-RF sampling
 - JESD204C

Other new products planned for 2025

- FPGA AMC modules
 - FMC+ Carrier with AMD Versal FPGA
 - Single-width with 1 FMC+ slot
 - Double-width with 2 FMC+ slots
- ATCA blades with XCVP1802 and XCVP1902
 - Supporting ADC and DAC 10-bit @ 64 GSPS Direct-RF





Thank you!
Any Questions

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