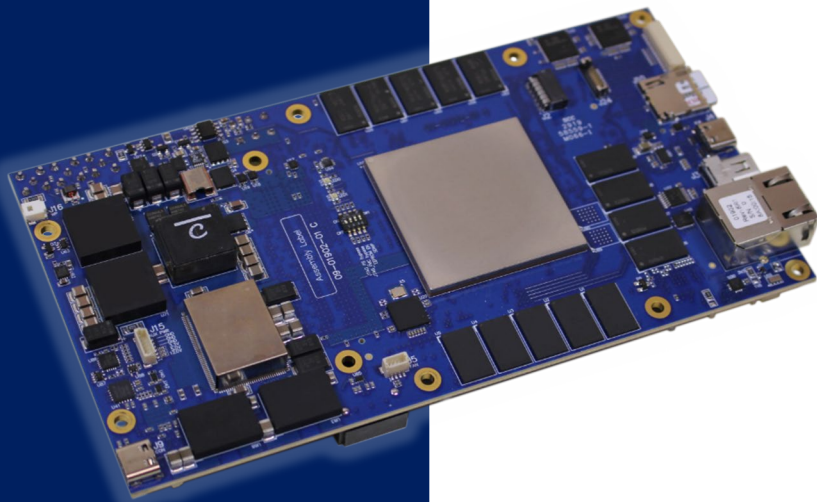# RINCON RESEARCH
EMPLOYEE OWNED
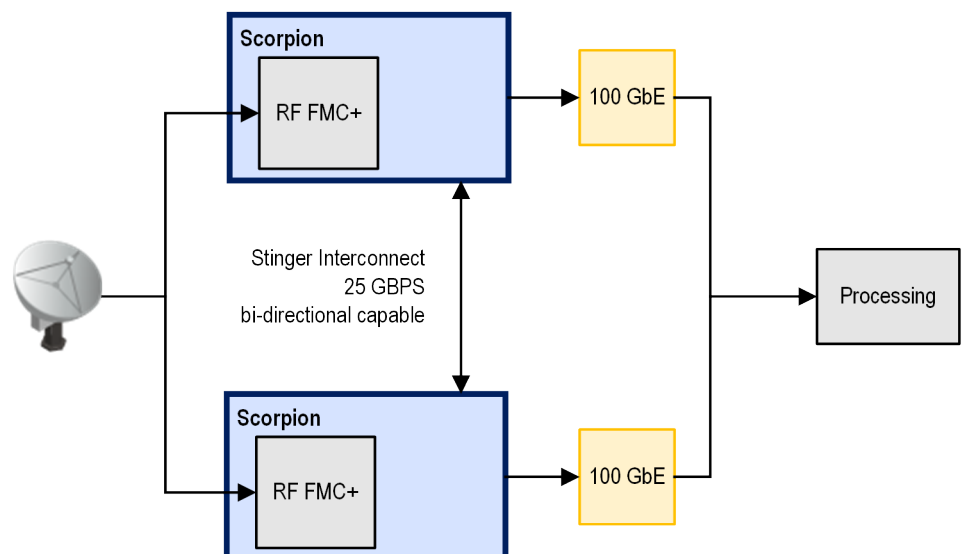

SCORPION
DYNAMIC RF PROCESSING PLATFORM

- FMC+ connector for next-generation RF front ends
- 100-Gb Ethernet for high-speed network integration
- 4x4 lane peripheral component interconnect express (PCIe) custom interface for attaching nonvolatile memory express (NVMe) SSDs or other high-speed devices
- AMD Zynq Ultrascale+ MPSoC: enables Linux-managed display port, USB 3.0, SATA, and 1 GbE
- 10-GB FPGA-attached double-data rate 4 (DDR4) for signal processing and data buffering

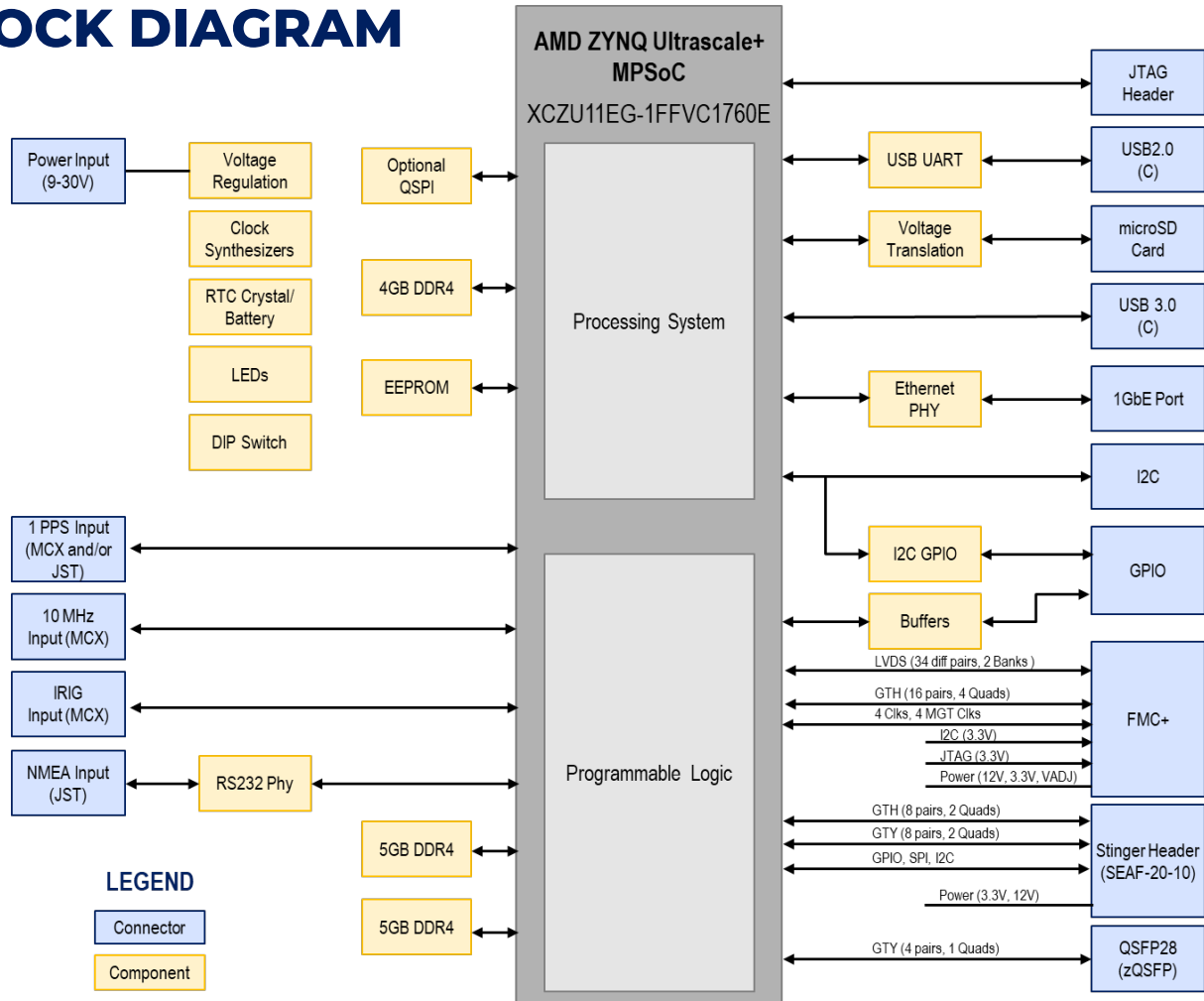## DIGITIZATION AND PROCESSING WITH MORE CHANNELS, MORE BANDWIDTH, AND MORE SAMPLES PER SECOND

- Flexible digital signal processing (DSP) system designed to operate in multiple configurations and environments, including rack-mounted chassis, portable systems, and bench-top enclosures
- Built around the Zynq Ultrascale+ MPSoC with an embedded quad-core Cortex-A53 ARM processor
- Can record 4.8 GBPS (analogous to recording the content of a classic DVD every second)

WIDEBAND CROSS-POLE COMBINER

SCORPION

BLOCK DIAGRAM

AMD ZYNQ Ultrascale+ MPSoC
XCZU11EG-1FFVC1760E

- Power Input (9-30V)
- Voltage Regulation
- Clock Synthesizers
- RTC Crystal/ Battery
- LEDs
- DIP Switch
- Optional QSPI
- 4GB DDR4
- EEPROM
- Processing System
- 1 PPS Input (MCX and/or JST)
- 10 MHz Input (MCX)
- IRIG Input (MCX)
- NMEA Input (JST)
- RS232 Phy
- 5GB DDR4
- 5GB DDR4
- Programmable Logic

LEGEND

- Connector
- Component

Right side:
- JTAG Header
- USB UART
- USB2.0 (C)
- Voltage Translation
- microSD Card
- USB 3.0 (C)
- Ethernet PHY
- 1GbE Port
- I2C
- I2C GPIO
- GPIO
- Buffers
- LVDS (34 diff pairs, 2 Banks)
- GTH (16 pairs, 4 Quads)
- 4 Clks, 4 MGT Clks
- I2C (3.3V)
- JTAG (3.3V)
- Power (12V, 3.3V, VADJ)
- FMC+
- GTH (8 pairs, 2 Quads)
- GTY (8 pairs, 2 Quads)
- GPIO, SPI, I2C
- Power (3.3V, 12V)
- Stinger Header (SEAF-20-10)
- GTY (4 pairs, 1 Quads)
- QSFP28 (zQSFP)

SPECIFICATIONS

GENERAL

- RRC part number: SCORP-ZU11EG-1E-01
- AMD Zynq Ultrascale+ MPSoC: XCZU11EG-1F1517E
- 4-GB DDR4 attached to ARM Core processors
- Two 5-GB DDR4 banks attached to the FPGA fabric
- MicroSD
- QSPI NAND Flash

I/O

- NMEA, IRIG, and 10-MHz timing inputs
- USB 3.0/2.0 (USB-C)
- Display port
- 1 GbE
- 10 GbE/40 GbE/100 GbE (QSFPz)
- SATA (PS attached)
- 16 GPIO
- Input voltage: 9V–30V

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