Wideband, High-Performance / High-Power 5G NR gNB (Epiq Sidekiq X4 Radio)

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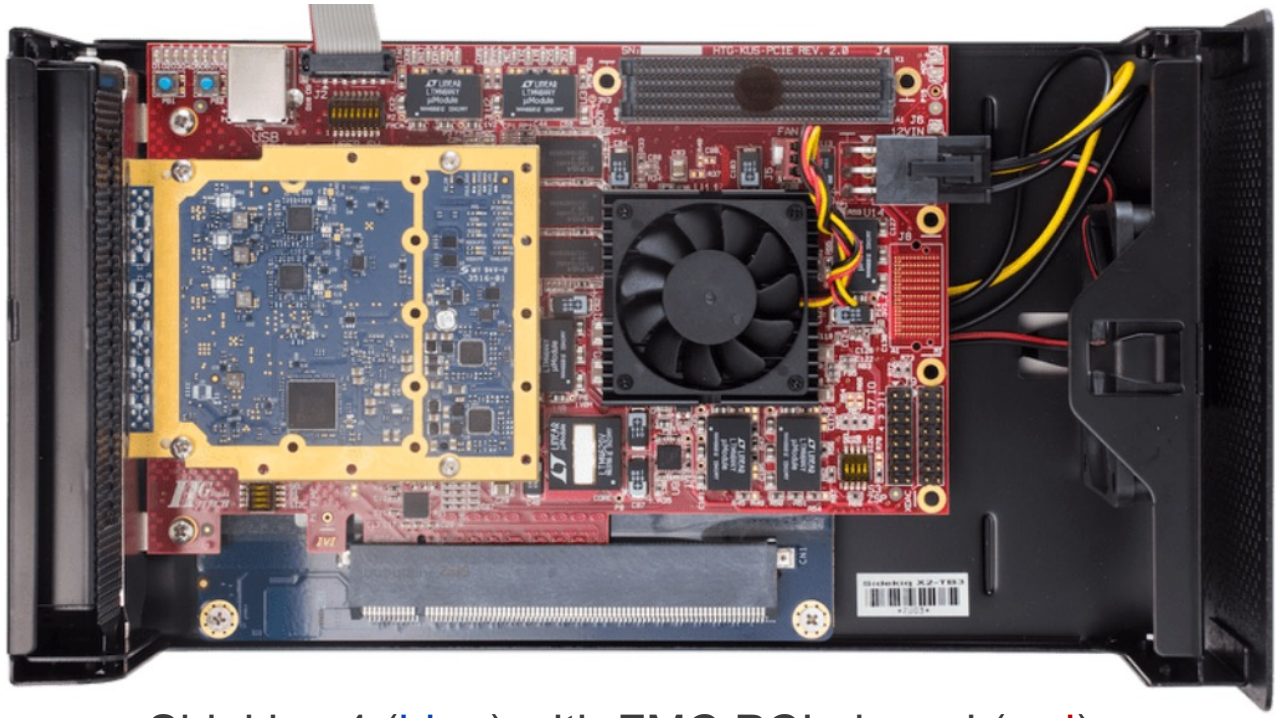
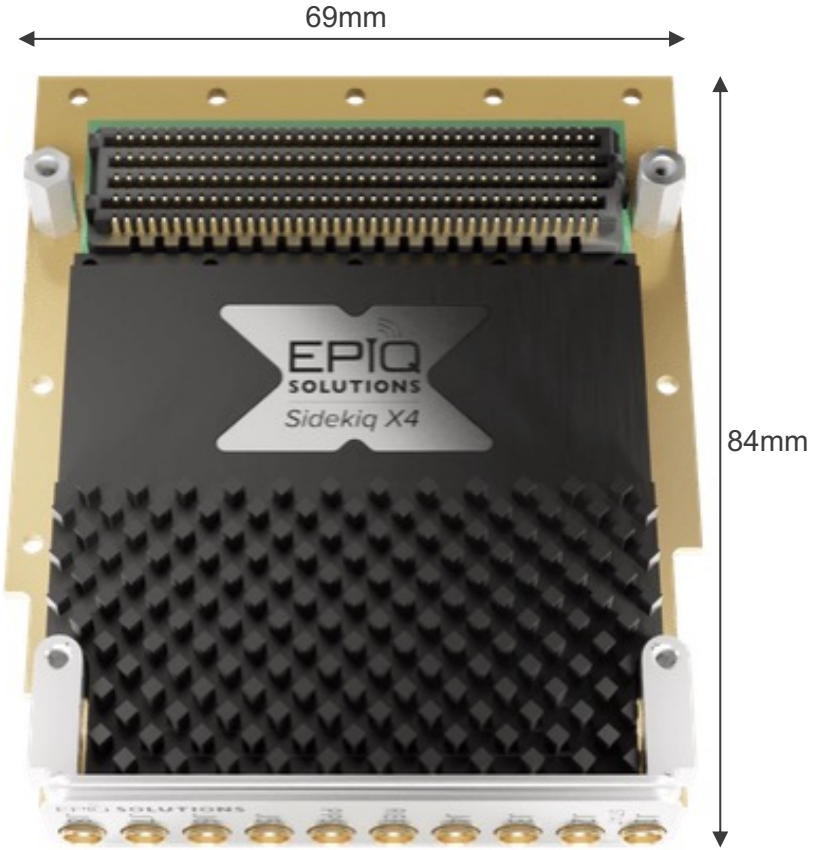
Epiq Solutions' Sidekiq X4 Software Defined Radio (SDR)

- High performance multi-channel RF transceiver
- PCIe interface with host computer
  - High pin count (HPC) interface to attach to COTS FPGA mezzanine cards (FMC)



Sidekiq x4 (blue) with FMC PCIe board (red)



Sidekiq X4

Comparing X4 to Commonly Used SDRs

	Sidekiq X4	USRP B210	USRP N310	USRP X410
RFIC	2 x ADRV9009	AD9361	2 x AD9371	Xilinx Zynq ZU28DR RFSoC
Instantaneous Bandwidth	400 MHz	56 MHz	100 MHz	400 MHz
Max Sample Rate	491.52 MS/s	61.44 MS/s	153.6 MS/s	491.52 MS/s
ADC/DAC Precision	16-bit A/D 14-bit D/A	12-bit A/D 12-bit D/A	16-bit A/D 14-bit D/A	12-bit A/D 14-bit D/A
Frequency Range	75MHz - 6GHz	70MHz – 6GHz	10MHz – 6GHz	1MHz – 7.2GHz

- FR1 max bandwidth: 100 MHz
- FR2 max bandwidth: 400 MHz

Why use Epiq Solutions SDRs?

- Multitude of form factors
  - Low size, weight, and power (SWaP) options
  - High performance options (like the x4)
- Field-tested (SDRs include RF shield covers)
- More hardware choices for the OAI community

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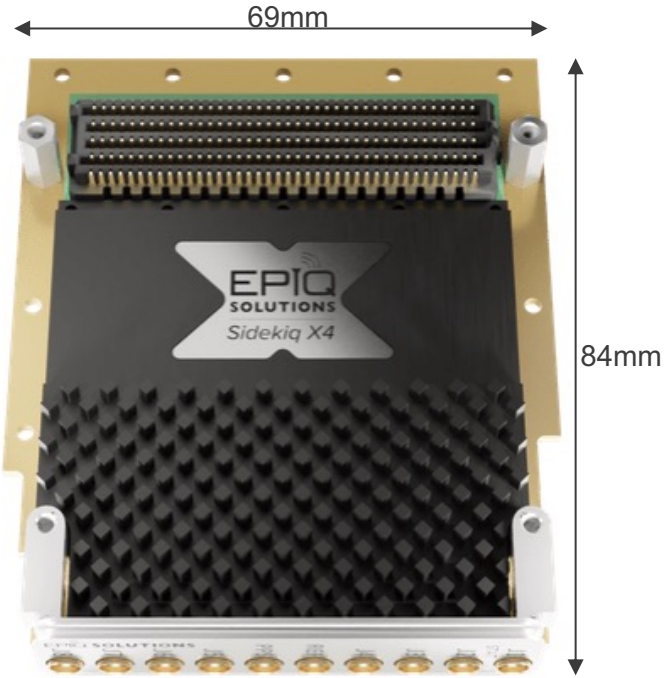

Sidekiq X4

Demo Setup

- Epiq Solutions' Sidekiq X4 running as OAI gNB
  - 100 MHz channel bandwidth
  - SISO antenna config
- OAI 5G CN
- COTS UE
  - Quectel RM500Q-GL

- gNB Host Computer Specs
  - Intel NUC Extreme
  - CPU: Intel i9-11900KB
    - 3.30 GHz, turbo up to 4.9 GHz
    - 8 cores, 16 threads
    - avx512 support
  - OAI source code: 2022.wk42b (Sidekiq integration not yet publicly available)
  - Native OAI LDPC decoding (using CPU)