Embeddable Software Defined Radio

The Sidekiq family of products provides a breakthrough small form-factor software defined radio (SDR) transceiver solution, ready for integration into systems that support either MiniPCIe or the more recent M.2 card form factors. With a 70 MHz to 6 GHz RF transceiver plus programmable logic, millions of host devices (laptops, tablet computers, embedded computers, etc) can immediately be transformed into RF processing powerhouses with the addition of Sidekiq.

Sidekiq enables solutions for RF test and measurement, point-to-point communications, and a variety of other wireless applications where size, weight, and power consumption are critical. To support the development of these solutions, the Sidekiq Platform Development Kit (PDK) provides customers with access to both a software API for interfacing to the card, as well as the source code for the FPGA reference design for customization. The software API provides an easy-to-use interface for configuring the RF transceivers and streaming data between the host and Sidekiq over the PCIe interface. Advanced users can add their own processing blocks to the FPGA to radically increase the signal processing capabilities of the system.

**KEY FEATURES**

**General**
- RF tuning range: 70 MHz to 6 GHz
- Up to 50 MHz RF bandwidth per channel
- Integrated FPGA for custom signal processing
- Typical power consumption: 2.1W
- Platform Development Kit (PDK) required for initial purchase
- Fully supported host options available

**Sidekiq MiniPCIe**
- MiniPCIe card form factor (30mm x 51mm x 5mm)
- Flexible RF front end supports two operating modes:
  - Two phase coherent RF receivers (common LO)
  - One RF receiver + one RF transmitter (separate LOs)
- PCIe Gen11 x1 (2.5 Gbps) interface to host + USB 2.0 interface

**Sidekiq M.2**
- M.2 T3042-D3-B-M card form factor (30mm x 42mm x 4mm), Module Key B or Module Key B and M, Socket 2
- Flexible RF front end supports two operating modes (based on card version):
  - Two RF receiver + two RF transmitter (2x2 MIMO)
  - One RF receiver + one RF transmitter (separate LOs)
- PCIe Gen2 x1 (5 Gbps) interface to host + USB 2.0 interface
FLEXIBLE RF FRONT END SUPPORTS TWO OPERATING MODES

**Sidekiq MiniPCIe**
- Two phase coherent RF receivers (common LO)
- One RF receiver + one RF transmitter (separate LOs)

**Sidekiq M.2**
- Two RF receiver + two RF transmitters (2x2 MIMO)
- One RF receiver + one RF transmitter (separate LOs)

**RF TUNING RANGE**
70 MHz to 6 GHz

**RF CHANNEL BANDWIDTH**
Up to 50 MHz

**TYPICAL RX NOISE FIGURE**
< 8 dB

**TYPICAL RX IIP3**
-10 dBm

**RX SAMPLE RATE RANGE**
200 Ksamples/sec to 614.4 Msamples/sec

**TX SAMPLE RATE RANGE**
200 Ksamples/sec to 614.4 Msamples/sec

**A/D AND D/A CONVERTER SAMPLE WIDTH**
12-bits

**RX GAIN RANGE**
0-76 dB, 1 dB steps

**TX GAIN RANGE**
0-80 dB, 1 dB steps

**TYPICAL TX OUTPUT POWER**
+10 dBm (+13 dBm < 2 GHz)

**FGPA**
- **Sidekiq MiniPCIe**: Xilinx Spartan 6 LX45T FPGA with x1 PCIe interface to host
- **Sidekiq M.2**: Xilinx Artix 7 XC7A50T FPGA with x1 Gen2 PCIe interface to host

**USB**
Cypress FX2 micro controller with USB 2.0 interface to host

**FPGA REPROGRAMMING**
Over USB or PCIe

**GPIO**
Available for custom I/O

**TEMPERATURE SENSOR**
-55 deg C to +125 deg C (+/- 2 deg C)

**ACCELEROMETER**
3-axis

Specifications subject to change without notice

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FORM FACTOR

**Sidekiq MiniPCIe**: MiniPCIe card with x1 PCIe and USB 2.0 interfaces

**Sidekiq M.2**: M.2 (2042-D3-B-M) card with x1 PCIe Gen2 and USB 2.0 interfaces

DIMENSIONS

**Sidekiq MiniPCIe**: 30mm x 51mm x 5mm

**Sidekiq M.2**: 30mm x 42mm x 4mm

WEIGHT

**Sidekiq MiniPCIe**: 8 grams

**Sidekiq M.2**: 6 grams

TYPICAL POWER CONSUMPTION

2.1W

Epiq Solutions exports its products strictly in accordance with all US Export Control laws and regulations which shall apply to any purchase or order.