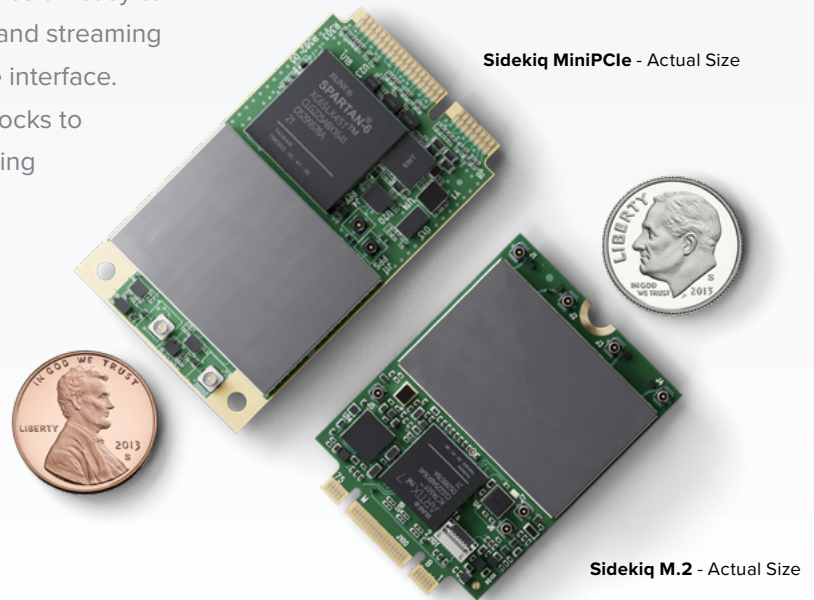


# Embeddable Software Defined Radio

The Sidekiq family of products provides a breakthrough small form-factor software defined radio (SDR) transceiver solution, ready for integration in to 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 Gen1.1 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

## RF SPECIFICATION

### FLEXIBLE RF FRONT END SUPPORTS TWO OPERATING MODES

#### Sidekiq MiniPCle

Two phase coherent RF receivers (common LO)

One RF receiver + one RF transmitter (separate LOs)

#### Sidekiq M.2

Two RF receiver + two RF transmitter (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 61.44 Msamples/sec

### TX SAMPLE RATE RANGE

200 Ksamples/sec to 61.44 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)

## DIGITAL SPECIFICATION

### FPGA

#### Sidekiq MiniPCle

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)

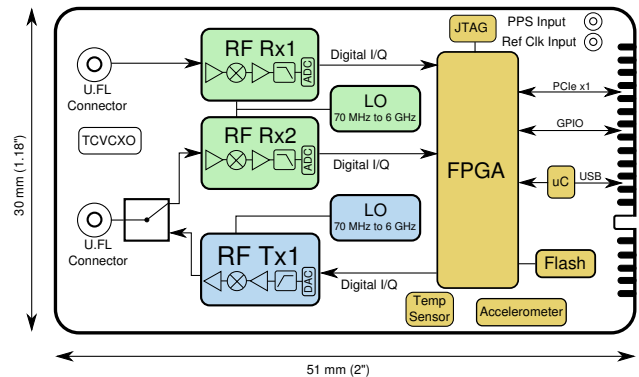
### ACCELEROMETER

3-axis

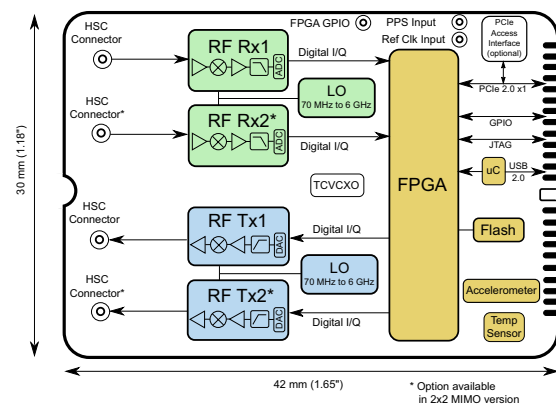
Specifications subject to change without notice

## BLOCK DIAGRAMS

### Sidekiq MiniPCle



### Sidekiq M.2



## PHYSICAL SPECIFICATION

### FORM FACTOR

#### Sidekiq MiniPCle

MiniPCle card with x1 PCIe and USB 2.0 interfaces

#### Sidekiq M.2

M.2 (3042-D3-B-M) card with x1 PCIe Gen2 and USB 2.0 interfaces

### DIMENSIONS

#### Sidekiq MiniPCle

30mm x 51mm x 5mm

#### Sidekiq M.2

30mm x 42mm x 4mm

### WEIGHT

#### Sidekiq MiniPCle

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.