

# sidekiq™ NV100

Wideband RF transceiver in  
M.2 2280 Key M form factor  
with FPGA and GPSDO



## Exceptional RF Tuning, Fidelity and Instantaneous Dynamic Range in a Tiny SDR

### For simultaneous, multi-channel processing needs

Sidekiq NV100 is a highly flexible RF powerhouse optimized to tackle your most challenging signal environments. This embeddable SDR-based RF transceiver comes in a tiny M.2 2280 Key B + M form factor that allows it to be used in millions of host devices where PCIe-based NVMe® solid state drives (SSDs) are supported. Sidekiq NV100 leverages Analog Devices' ADRV9004, a wideband transceiver RFIC that delivers extended RF tuning capabilities, as well as exceptional RF fidelity and instantaneous dynamic range. Multiple RF operating modes are supported, including single channel 1 Rx + 1 Tx FDD/TDD, dual-channel phase coherent Rx or Tx, and dual-channel independently tunable Rx or Tx. Rx pre-select filtering is automatically, intelligently configured by Epiq Solutions' libsidekiq API. Sidekiq NV100 integrates on-board Rx pre-select filters for interference protection and a GPS disciplined oscillator (GPSDO) for enhanced long-term timing accuracy. These and other integrated features create a complete, high performance, low latency, wideband transceiver that reduces the number of bulky, external hardware elements required in a final system while increasing processing capabilities and allowing you to either save space and reduce your product size, or free up space to accommodate other technology needs.

#### KEY HIGHLIGHTS

- Extended RF tuning range covering 30 MHz to 6 GHz (RF access to 10 MHz) with integrated sub-octave Rx pre-select filtering that provides out-of-band interference protection on both RF receiver paths from 400 MHz to 6 GHz
- Xilinx® Artix®-7 XC7A50T FPGA with a Gen2 x2 PCIe interface for high rate data transport to a host CPU, as well as local signal processing capability for demanding high-performance applications
- On-board GPSDO provides high stability timebase
- Ideal for low-SWaP on-the-go EW, SIGINT, C5ISR, and tactical communications applications
- Platform Development Kit (PDK)\* includes one Sidekiq NV100 integrated into an Intel NUC computer running Linux (to serve as a reference development platform), as well as a second NV100 card mounted to a Thunderbolt™ 3 development board

\* Platform Development Kit (PDK) required for initial purchase.



## RF SPECIFICATION

### RF INTERFACE

Antenna Port 1: U.FL coaxial connector supporting Tx or Rx

Antenna Port 2: U.FL coaxial connector supporting either Tx or Rx

### RF TUNING RANGE

30 MHz to 6 GHz (RF access to 10 MHz)

### RF CHANNEL BANDWIDTH

Up to 40 MHz

### TYPICAL RX NOISE FIGURE

< 5 dB

### TYPICAL RX IIP3

+2 dBm

### RX AND TX SAMPLE RATES RANGE

Up to 61.44 Msamples/sec

### A/D AND D/A CONVERTER SAMPLE WIDTH

16-bits

### RX GAIN RANGE

0-36 dB, 0.5 dB steps

### TX GAIN RANGE

0-48 dB

### TYPICAL TX OUTPUT POWER

+5 dBm

### GPS

NMEA sentences, PPS output, and frequency-disciplining

Multi-channel GPS and GLONASS/BEIDOU, SBAS, QZSS overlay systems receiver

U.FL antenna input, 3.3V bias for active GPS antenna

### EXTERNAL CLOCK REFERENCE

W.FL coaxial input or edge connector, configurable for 10 MHz or 40 MHz input clock

W.FL coaxial output, 40 MHz signal suitable to drive another Sidekiq module

### EXTERNAL PPS

W.FL coaxial input or edge connector

## DIGITAL SPECIFICATION

### FPGA

Xilinx® Artix®-7 XC7A50T FPGA with a Gen2 x2 PCIe interface to host

### FPGA REPROGRAMMING

Over PCIe

### GPIO

Available at M.2 edge connector; one GPIO available on a W.FL connector

### COMPONENT TEMPERATURE RANGE

-40 deg C to +85 deg C

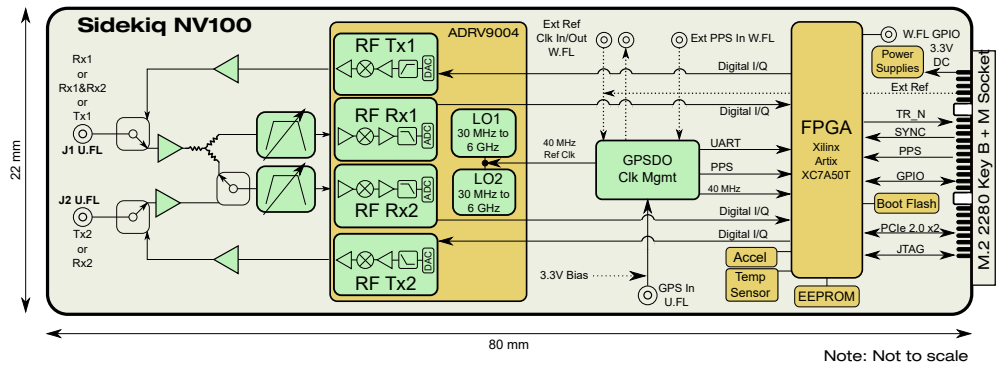
### TEMPERATURE SENSOR

-55 deg C to +125 deg C (+/- 2 deg C)

### MOTION TRACKING

6-axis, combining a 3-axis gyroscope and 3-axis accelerometer

## BLOCK DIAGRAM



## RX PRE-SELECT FILTERING SPECIFICATION

Includes sub-octave pre-selection from 400 MHz to 6 GHz

## PHYSICAL SPECIFICATION

### FORM FACTOR

M.2 2280 key B + M form factor, commonly used for NVMe SSD drives

### DIMENSIONS

22mm x 80mm x 4.4mm

### WEIGHT

9g

### TYPICAL POWER CONSUMPTION

4 - 6 W

## THUNDERBOLT 3 PLATFORM SPECIFICATION

### DIMENSIONS

TBD

### WEIGHT

TBD

### POWER CONSUMPTION

5 - 7 W

### RF INTERFACE

Tx1/Rx1, Tx2/Rx2, CLK Reference, PPS, GPS

### INTERFACE TO HOST

Thunderbolt 3 over USB-C connector (provides both power and data transport)

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Specifications subject to change without notice.

Epiq Solutions is a small business dedicated to advancing RF technology through products designed and manufactured in the U.S.A.

