sidekiq™ NV100

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

EPIQ SOLUTIONS

Actual Size

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 a second NV100 card mounted to a Thunderbolt™ 3 development board

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

RF SPECIFICATION

BLOCK DIAGRAM

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
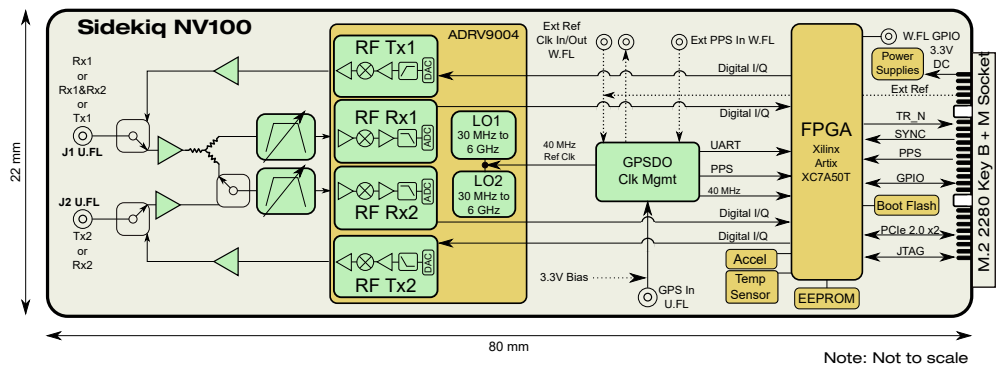
COMPONENT TEMPERATURE RANGE
-40 deg C to +85 deg C

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

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)