

**Product Bulletin**

# SFF SDR Development Platform

**Overview**

The Small Form Factor (SFF) Software-Defined Radio (SDR) Development Platform is a unique new product that addresses the special portable SDR needs of public safety and commercial markets. It was designed around the latest DSP and FPGA technology as a low-cost, off-the-shelf, integrated hardware and software development solution.

The SFF SDR Development Platform is separated into three distinct modules — the Digital Processing Module, Data Conversion Module and RF Module — offering developers highly flexible development capabilities.

**Potential Applications**

The following applications will benefit greatly from using the SFF SDR Development Platform.

**Public safety**

- Such public safety applications as TETRA and APCO band communications, vehicular systems, transponders and broadband data systems will be greatly enhanced by their use of the SFF SDR Development Platform.

**Commercial**

- RFID readers, WiMAX and Wi-Fi customer-premises equipment (CPE), broadband data systems, vehicular systems, as well as femto and pico base stations are but a few applications that can be developed with the SFF SDR Development Platform.

**Key Features**

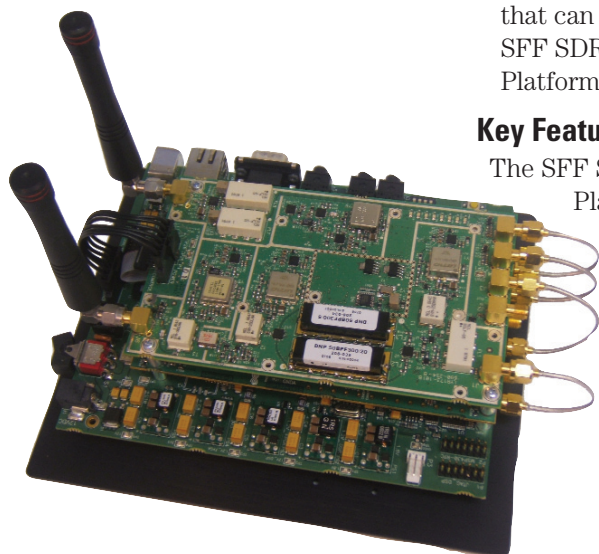
The SFF SDR Development Platform includes the following leading-edge features:

- TMS320DM6446 DSP system-on-chip from Texas Instruments
  - TMS320C64x+™ DSP core, 594 MHz

**Key Benefits**

- Small form factor for easy portability
- Self-contained
- Embedded, independent power monitoring for each processor
- Seamless hardware and software integration from baseband to antenna
- Supports model-based design tools, accelerating prototyping
- Integrated troubleshooting and hardware-in-the-loop co-verification capabilities
- The platform incorporates GPP, DSP and FPGA, making it easy to implement all protocol layers for a complete radio
- Easy adoption of third-party RF and I/O boards
- Ethernet remote access capabilities

- ARM926 core, 297 MHz
- Rich set of peripherals including serial ports, USB, EMAC, DDR2 EMIF, as well as video ports
- Virtex-4 SX35 FPGA from Xilinx
- ADS5500, 125-MSPS, 14-bit dual-channel analog-to-digital converter from Texas Instruments
- DAC5687, 500-MSPS, 16-bit dual-channel digital-to-analog converter from Texas Instruments
- Selection of bandwidth (5 MHz or 20 MHz)
- Modular — allows additional boards to be stacked
- RF module operating between 360 MHz and 960 MHz
- Optional supports of a second RF module for full-duplex operation or to cover additional bands



- Boot loader located in the flash memory for autonomous use of the platform

## Specifications

### Digital Processing Module

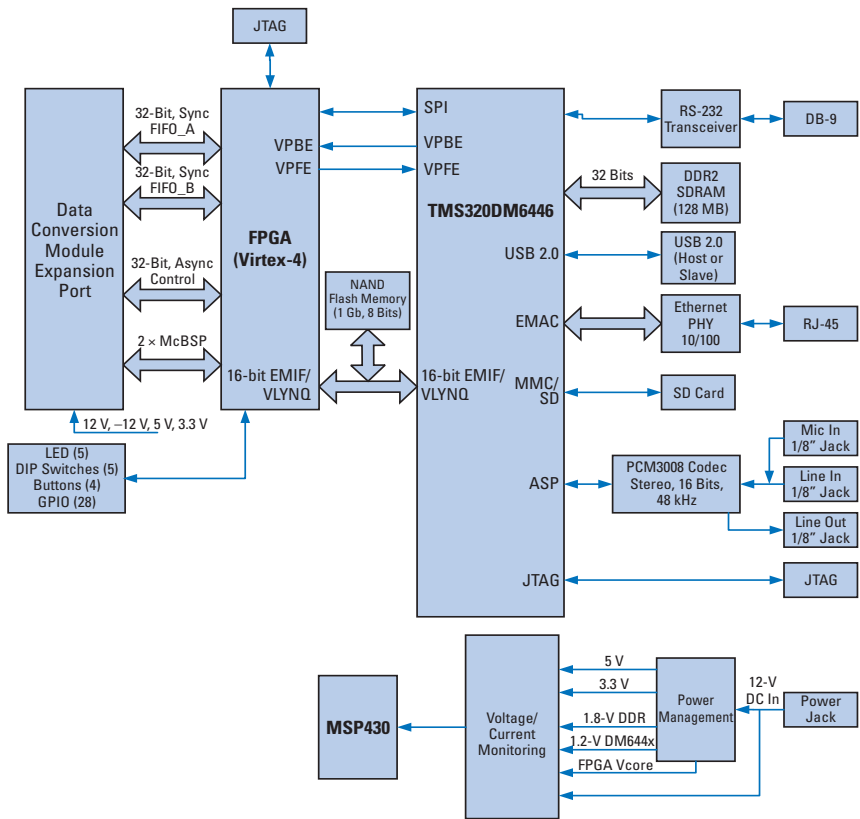
- TMS320DM6446 DSP system-on-chip from Texas Instruments
  - 297-MHz ARM926EJ-S RISC CPU
  - 594-MHz C64x+ DSP
- Virtex-4 SX35 FPGA from Xilinx
- MSP430 MCU from Texas Instruments for power management
- 128-MB DDR2 SDRAM
- 128-MB NAND Flash memory
- Stereo audio codec (8 kHz to 48 kHz) from Texas Instruments
- 10/100-Mbps Ethernet
- JTAG probing access
- HMI (LED, push buttons, dip switches)

### Data Conversion Module

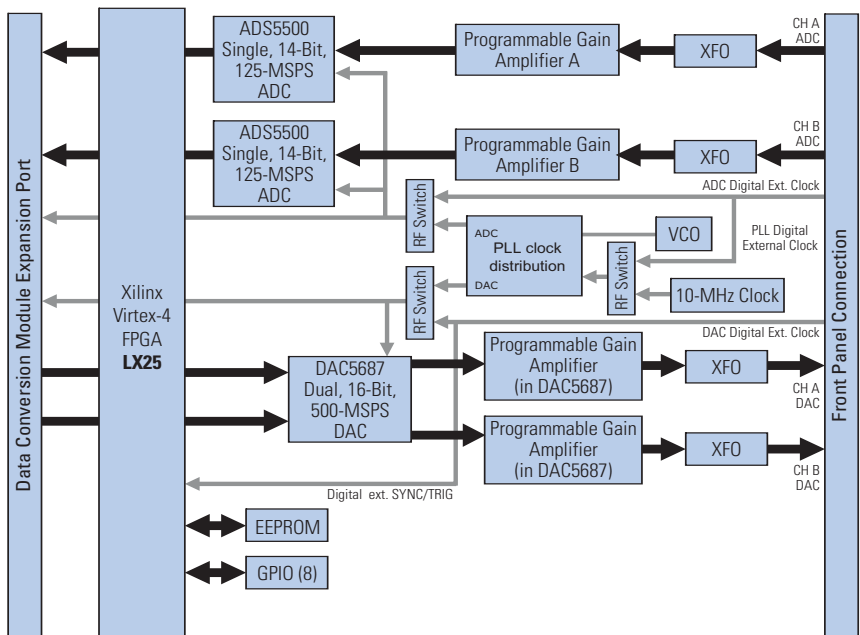
- Two 14-bit, 125-MSPS input channels (ADS5500 ADC from Texas Instruments)
- Dual-channel 16-bit, 500-MSPS output channels (DAC5687 DAC from Texas Instruments)
- Multiple clock sources
  - Two external clock inputs (ADC and DAC)
  - 10-MHz onboard reference clock
  - Reference clock input for synchronization

### RF Module

- RF frequency range of 360 MHz to 960 MHz
- Selectable bandwidth: 5 MHz/20 MHz
- IF at 70 MHz
- Separate RF input and output SMA connectors
- Phase noise at 20 kHz from carrier: -70 dBc
- Half-duplex transceiver
- Stackable for full-duplex operation
- RF input
  - Gain: 22 dB
  - Saturation level: -30 dBm
  - Sensitivity: -110 dBm typical (S/N = 10 dB, BW = 1 kHz)
- RF output



### Digital Processing Module



### Data Conversion Module

- Gain: 22 dB
- Power: -5 dBm

### Supported Software Development Tools

The SFF SDR Development Platform supports the following

software development tools:

- Texas Instruments Code Composer Studio™ Integrated Development Environment
- Xilinx ISE Foundation for FPGA development
- Xilinx System Generator for DSP

- Green Hills Software MULTI® IDE
- Green Hills Software POSIX-compliant INTEGRITY® real-time operating system
- The MathWorks MATLAB® and Simulink™

## System Requirements

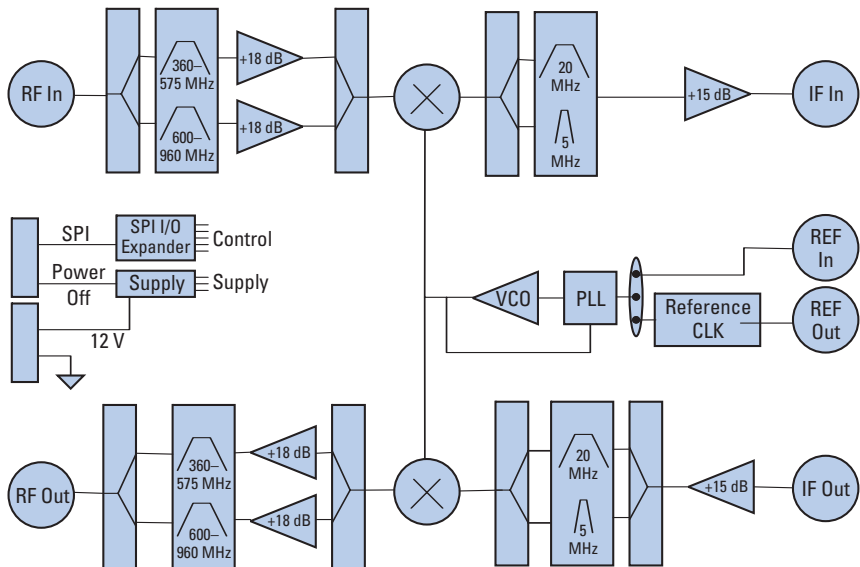
The following system requirements must be met to use the SFF SDR Development Platform.

### Operating system

- Windows® XP Professional (service pack 2)

### Hardware

- IBM-compatible computer
- *Processor:* Pentium III (or equivalent) or better
- *RAM:* 1 GB
- *Hard disk drive:* 40 GB of free space or more



### RF Module

- *Display:* 800 × 600 pixels or more

## Get Started Today

For more information and ordering, go to [www.ti.com/sdr](http://www.ti.com/sdr).

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