

By Staff -- EDN, 12/18/2008

Feature

## The Hot 100 Electronic Products of 2008

EDN's editors offer up their annual list of the year's 100 most significant ICs, components, buses, boards, EDA tools, power devices, test instruments, and more.



It's time once again for *EDN's* annual Hot 100 Products list. Each year, manufacturers announce thousands of new products and technologies. *EDN's* editors spend countless hours narrowing that massive list to the hundreds of items they consider innovative and newsworthy enough to report on both in print and on the Web. The list on these pages represents the best of the best—the products and technologies that in 2008 really grabbed the attention of our editors and our readers.

Click each product's name to see *EDN's* original coverage the Hot 100 products you see listed here. For continuous new-product coverage, check out [www.edn.com/productfeed](http://www.edn.com/productfeed).

### Applied Systems:

#### **Pentek Inc Model 7142-428 digital transceiver**

##### News and New Products



The Model 7142-428 PMC/XMC from Pentek is a complete software-radio system with input and output signal bandwidths of 8 kHz to 40 MHz.

### Transceiver features multiband digital downconverter

By Warren Webb, Technical Editor -- EDN, 11/8/2007

Currently available communications protocols and new requirements for wireless-Web digital services have produced numerous wireless standards, each with unique signal requirements. To address these new standards, **Pentek** recently released the Model 7142-428 digital transceiver with a multiband DDC (digital downconverter) and an interpolation filter. The transceiver is a complete software radio system in an off-the-shelf

PMC/XMC form factor. The module employs four ADCs and one DAC that can operate at bandwidths exceeding 40 MHz for direct connection to the HF or IF ports of communications or radar systems.

By offering a range of more than four orders of magnitude for both decimation and interpolation, the Model 7142-428 addresses a wide range of commercial and military communication systems. In a transceiver, the decimation factor and interpolation factor determine the ratio between the IF frequency and the bandwidth of the received and transmitted signals. Pentek implements the 428 IP (intellectual-property) core as two cascaded DDC stages, each with a programmable decimation of one to 256. Because the decimations from the two stages multiply, users can choose an overall decimation of two to 65,536. Four 14-bit ADCs at the front end operate at sample rates as high as 125 MHz. Each of the four identical DDC engines uses an independent four-input multiplexer to select any one of these four ADCs as its input source. The four DDCs feature independent tuning and decimation to translate any frequency band at the input down to zero frequency.

On the upconverting side, a **Texas Instruments** DAC5686 offers a 500-MHz, 16-bit DAC and a DUC (digital upconverter) operating at a sample rate as high as 320 MHz. The DUC has a built-in interpolation range of only two to 16; however, the 428's IP core-interpolation filter extends this range by an additional factor of two to 2048, providing an overall range of two to 32,768. This extended DUC-interpolation range matches the DDC-decimation capabilities of two to 65,536, offering symmetrical support for transmitting and receiving functions for signals of any bandwidth. After interpolation, you can tune the DUC to translate the baseband-transmitting-signal frequency to any IF output frequency as high as 140 MHz. Pentek supports all of the 428 IP core functions with a board-support package and software-development tools compatible with the Windows, **Linux**, and VxWorks operating systems.

<http://www.edn.com/article/CA6622869.html>