# Complete Software Radio Solution

Pentek, Inc. has announced one of the first digital upconverter and D/A VIM-2 (Velocity Interface Mezzanine) modules in the industry, allowing engineers to generate wideband analog IF signals in real time right from a DSP. The Model 6229 is ideal for radio transmission and can be combined with any Pentek TMS320C6x digital signal processor board and digital receiver to build a complete, low-cost transmit and receive software radio system.
Applications for the Model 6229 include next generation wideband mobile telephony, radar test signal generation, electronic countermeasures, transmit functions for advanced software radio and satellite communications systems and synthesized signal generation for test and measurement.
The Model 6229 is a VIM module that attaches directly to VIM-compatible DSP processor boards. The digital upconverter and D/A module contains two complete upconverter channels, each accepting wideband digital baseband input signals and generating frequency-translated analog IF output signals up to 80 MHz. Each upconverter is suitable for linking a DSP system to a radio or satellite transmitter, and includes an interpolation filter, local oscillator, complex digital mixer and wideband D/A converter.
For applications requiring a non-translated baseband D/A output, samples from the VIM processor board can be upsampled to 200 MHz with no frequency translation and then sent to the D/A converter. This minimizes the phase and frequency effects of an output-smoothing filter, ideal for time domain signals like complex radar pulses. The local oscillator is implemented as a direct frequency synthesizer, programmable with 32-bit resolution to cover a LO range from DC to 80 MHz.
Either channel of the 6229 can be configured to output the LO signal directly through the D/A converter to produce an analog CW sinewave, which is useful as a synthesized test signal reference oscillator or clock for driving other system devices. Complex baseband samples generated by the baseboard processor with bandwidths up to 22.5 MHz are delivered into the 6229 through the 32-bit parallel bi-FIFO, easing the burden of data flow for the DSP.

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