

Waveform Development Time Shortened for JTRS Software Defined Radios

4DSP Inc. has publicly released the AD350, a new PMC product that was successfully engineered to reduce development time of waveforms used in Software Defined Radio (SDR) applications of the Joint Tactical Radio System (JTRS).

The AD350 developed for the processing of waveforms has enabled the JTRS platform to reach into space:

- The AD350 Enabling emulation of the GMR EDM modem FPGA Processing Element with the JSR (JTRS Surrogate Radio) deployed by SPAWAR NED & T&E for WNW performance testing.
- Provided a target for porting the JTRS GMR MHAL (Modem Hardware Abstraction Layer) enabling porting of GMR waveform PHY components to the JTRS Surrogate Radio (JSR).
- Enabled the porting the JTRS WNW of PIM-DM SiS (Signal-in-space) as part of an successful port of the WNW to the JSR..

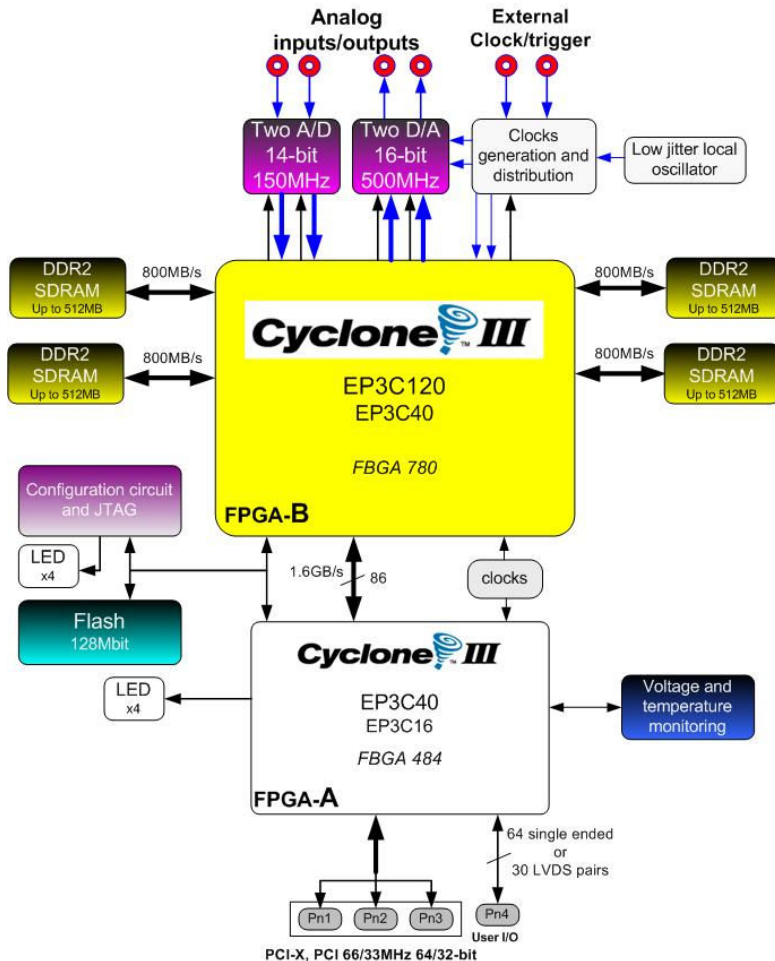
Featuring two Altera Cyclone® III FPGAs, the AD350 is a PMC expansion card developed for use in wireless base stations and MIMO test-bed systems applications. The AD350 is the ideal prototyping system to implement flexible and scalable multi-input and multi-output antenna transmitter systems. The AD350 can also be used in synchrotron systems to regulate amplitude voltages, phase.

Mechanically and electrically compliant to the PMC IEEE P1386.1 specifications, the AD350 features Dual-Channel 14-Bit A/D input, sampling up to 150MSPS with a dual-channel 16-Bit 500MSPS high-speed D/A output converter supported by 1 external clock source connection and an on-board generated clock signal.

All channels are connected front panel connected via SMA 50Ω terminated double baluns connectors. Input analog signals are AC coupled with wideband transformers operating very efficiently in the 4.5MHz to 650MHz band-range, providing reduced amplitude and phase noise distortion of signals. The output analog channels are also AC coupled, using wideband transformers (4.5MHz to 3GHz). An external trigger is available on the front panel via an SMA connection, single-ended and compatible with LVTTTL and TTL GPS receivers generating a 1pps. The architecture provides high performance as well as flexibility with user-selectable external or on-board clock, carefully designed, to minimize jitter and phase noise degradation of the A/D and D/A SNR.

TERMS:

- **JTRS GMR:** The Joint Tactical Radio System, **Ground Mobile Radios**, is a software-programmable radio system providing secure, reliable, multi-channel voice, data, imagery and video communications for mobile military users. The system delivers networked communications on-the-move at the tactical edge supporting information sharing and combat readiness between service branches.
- **JTRS GMR EDM = Engineering Development Models (EDM)** of the Joint Tactical Radio System Ground Mobile Radios (JTRS GMR) to the U.S. Army's Future Combat Systems (**FCS**) program
- **SPAWAR NED T&E = Network Enterprise Domain - Waveform Test & Evaluation.**
- **MHAL = Modem Hardware Abstraction Layer**
- **WNW = Wideband Network Waveform** - enabler for network centric operations and is being developed as part of the Joint Tactical Radio Systems (JTRS) Ground Mobile Radio (GMR) program.
- **PIM-DM SiS = Protocol Independent Multicast – Dense Mode, Signals in Space**
- **SPAWAR NED T&E = Network Enterprise Domain - Waveform Test & Evaluation.**
- **MHAL = Modem Hardware Abstraction Layer**



4DSP Inc. products represent the state-of-the-art in real-time digital signal processing and analog-to-digital signal conversion. 4DSP's strengths are centered in its efficient algorithmic development FPGA coding optimized for maximum signal performance with the least use of FPGA logic. 4DSP designs employ the latest available FPGA and Analog semiconductor technology as well as PCBs optimized to the performance advantage of the software, firmware and FPGA algorithms.

4DSP designs and manufacture hardware, software and FPGA firmware to meet the demanding requirements for light weight, compactness and low power consumption. 4DSP solutions are of the highest performance for applications of image processing, software defined radio (SDR), RADAR and SIGINT applications. 4DSP provides quick turnkey solutions for mixed signals across many application areas such as medical and chemical equipment manufacturers. However, 4DSP is primarily a supplier to U.S. commercial aircraft and aerospace industries and the U.S. Department of Defense (DoD). Customers include: Northrop Grumman, NASA, Philips, Boeing, Lockheed Martin, U.S. Navy, ViaSat, Pratt & Whitney and many more.

In addition to hardware and system components 4DSP offers high performance Commercial Off-The-Shelf Intellectual Property cores

Please visit our [IP cores page](#) for more details about IP for FPGA devices and feel free to contact us for information or advices on how to make your next signal processing project a smooth experience.

The AD350 data sheet may be found at the 4DSP, Inc. link: http://www.4dsp.com/pdf/AD350_DATA_SHEET.pdf

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