Technical Article

Are 66AK2L06 SoCs an Answer to Miniaturization of Test and Measurement Equipment?

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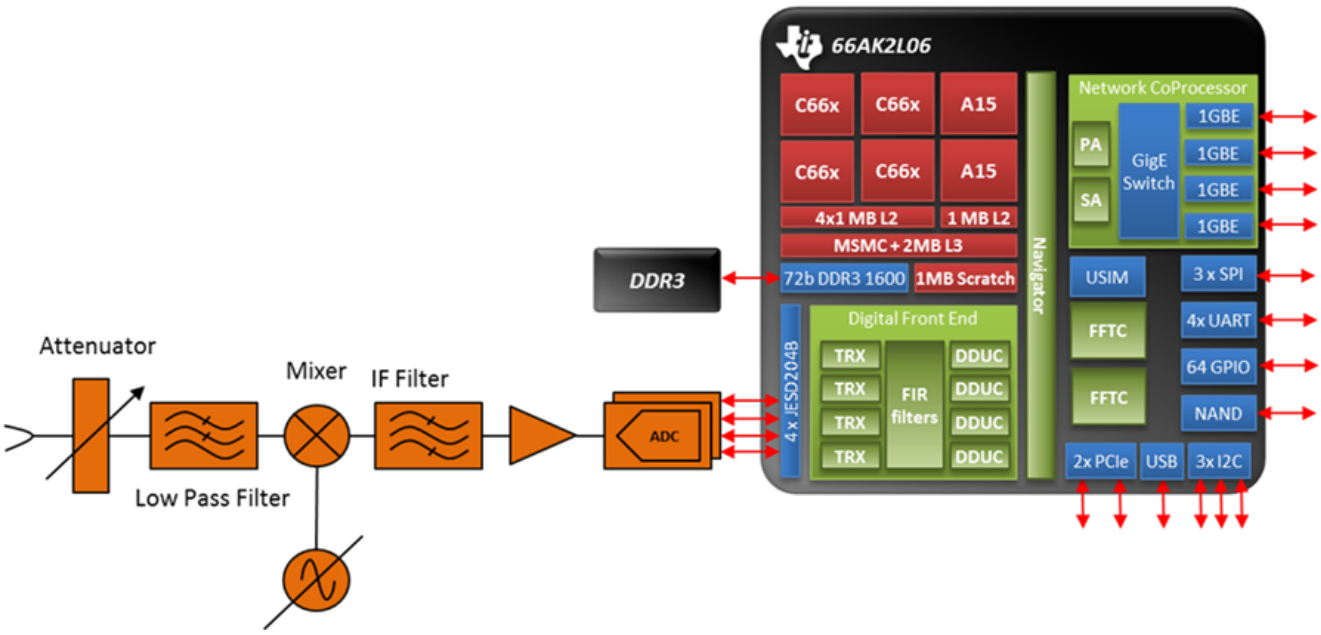
Did you know that all electronic products have their design, development and production processes built around test and measurement equipment? Test and measurement equipment have the same goal for all electronic products – to ensure product quality and reliability. So thanks to this equipment, electronic products have become an integral part of our lives. Almost every industry ranging from consumer electronics, enterprise and telecommunications to avionics and defense, industrial and medical use test and measurement equipment to validate quality and reliability today.

The test and measurement equipment industry needs to evolve beyond the capabilities of electronic products and become more technologically future-proof. Per TechNavio's Global Test and Measurement Equipment Market 2011-2015 report, test and measurement equipment manufacturers are moving toward the trend of miniaturization. Moving to miniaturization will minimize the high cost of production while maximizing portability. During the deployment phase, electronic products will rely on portable and handheld test and measurement equipment for in-field testing. This trend is also making technology providers to look at different ways to support the trend of miniaturization. One such solution is TI's recently announced DSP+ARM® system-on-chip (SoC) – 66AK2L06.

The 66AK2L06 SoC is KeyStone™ II architecture-based with four C66x DSPs and two ARM Cortex®-A15 cores. The SoC integrates a software-programmable digital front end (DFE) for sample rate conversion and digital filtering and a JESD204B interface for seamless connection to high speed data converters (ADCs/DACs) from TI. In addition, the SoC offers up to 46 MFFT/s and 84dB SNR of FFT performance using the integrated fast fourier transport coprocessor (FFTC) hardware accelerator. The 66AK2L06 SoC offers a rich hardware environment and a complete software environment to enable monolithic processing from sample (JESD204B) to result (Ethernet/PCIe/USB).

The SoC delivers a flexible and high-performance platform to address advanced measurement and precision requirements of test and measurement applications. As an example, implementing a spectrum analyzer on the 66AK2L06 SoC would involve the DFE performing the sample level processing, FFTC hardware accelerators performing frame level processing and the Multicore Software Development Kit (MCSDK) along with DSPLib supporting block level processing on the C66x DSP cores. The 66AK2L06 SoC capabilities enable a spectrum analyzer to perform frequency vs. power and phase measurements in real-time.



The higher integration, programmability and flexibility offered by the 66AK2L06 SoC translate to significant benefits to customers – C-SWaP (cost, size, weight and power) efficiency and time-to-market acceleration. The combination of DFE and JESD204B eliminates the need for expensive FPGAs/ASICs, further reducing the board space.

In recognition of TI's efforts in the space, TI earned the 2015 enabling technology award from Frost & Sullivan for the 66AK2L06 SoC. Frost & Sullivan viewed the 66AK2L06 SoC from TI ahead of competitor technologies, when evaluated based two key factors – technology leverage and customer impact. The 66AK2L06 SoC targets diverse applications including avionics, defense, radar, medical, sonar and specifically within test and measurement market signal generators, spectrum analyzers, signal analyzers, oscilloscopes and telecommunication testers.

Are you ready to start developing your next generation test and measurement equipment? You can get a head start using a system reference design that pre-validates the 66AK2L06 and wideband ADC12J4000 and DAC38J84 data converters.

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