Cadence Announces Tensilica HiFi 3z DSP Architecture for Latest Mobile and Home Entertainment Applications

HiFi 3z DSP provides more than 1.3X better voice and audio processing performance than its industry-leading HiFi 3 DSP predecessor

SAN JOSE, Calif., July 25, 2017—Cadence Design Systems, Inc. (NASDAQ: CDNS) today announced the Cadence®Tensilica® HiFi 3z DSP IP core for system-on-chip (SoC) designs targeted for the latest mobile and home entertainment applications, including smartphones, augmented reality (AR)/3D goggles, digital TVs and set-top boxes (STBs). The new HiFi 3z architecture offers more than 1.3X better voice and audio processing performance than its predecessor, the HiFi 3 DSP, which leads the industry in the number of audio DSP cores shipped. For more information on the Tensilica HiFi 3z DSP, visit www.cadence.com/go/hifi3z.

Higher voice sample rates require more complex voice pre-processing. Enhanced Voice Services (EVS), the latest mobile voice codec supporting voice over LTE (VoLTE), supports up to a 48kHz sample rate, compared to 16kHz for the previous AMR-WB codec. The new HiFi 3z DSP delivers more than 1.3X better performance for EVS than the HiFi 3 DSP core. Home entertainment is driving a similar workload increase as audio codecs like Dolby AC-4 and MPEG-H transition from channel-based to object-based. In addition, audio post-processing functions such as Waves Nx 3D/AR audio and the immersive audio of Dolby Atmos-enabled TVs are driving higher complexity signal processing. The HiFi 3z DSP provides more than 1.4X better performance on Dolby Atmos-enabled TVs than the HiFi 3 DSP.

"The combination of Waves' constantly evolving technological portfolio and Cadence's new generation of efficient HiFi 3z DSP cores allows us to continue on our mission to deliver

cutting-edge audio capabilities to consumers everywhere and at all times," said Tomer Elbaz, executive vice president and general manager, Consumer Electronics

Division of Waves Audio. "Waves algorithms running on the HiFi 3z DSP are 20 percent more efficient. When combined with the versatility of our audio-processing portfolio, this offers a compelling package for manufacturers looking to provide a great audio experience to their customers."

The HiFi 3z DSP offers a number of architecture and instruction set architecture (ISA) improvements over the earlier HiFi 3 DSP, including:

- Dual load/store

- Advanced FLIX bundling (multiple-base ISA operations per cycle)

- Double the MACs for 16x16 (octal MAC)

- Enhanced ISA for accelerating FFTs, FIRs and IIRs

- New instruction extensions to improve codec (especially EVS) performance for mobile

- 4-way, 8-bit load for improved voice trigger performance

- 8-way, 8-bit load for reduced neural network memory usage

"In pursuit of better consumer experiences, new audio and voice codecs and pre- and post-processing functions have emerged that significantly increase the signal processing and control code workloads," stated Larry Przywara, group director of marketing, audio/voice IP at Cadence. "We've designed the HiFi 3z DSP to efficiently support these new audio and voice compute requirements. The HiFi 3z DSP has already been licensed to a leading customer that has taped out their mobile SoC with anticipated production in 2018."

Tensilica HiFi DSPs are the most widely licensed audio/voice/speech processors, with support for over 200 proven software packages and more than 95 software partners in the Tensilica Xtensions™ partner program. More than 75 top-tier semiconductor companies and system OEMs have selected Tensilica HiFi DSPs for their audio, voice and speech products. For more information on the Tensilica HiFi DSP family, visit http://ip.cadence.com/ipportfolio/tensilica-ip/audio.

About Cadence

Cadence enables electronic systems and semiconductor companies to create the innovative end products that are transforming the way people live, work and play. Cadence software, hardware and semiconductor IP are used by customers to deliver products to market faster. The company's System Design Enablement strategy helps customers develop differentiated products—from chips to boards to systems—in mobile, consumer, cloud datacenter, automotive, aerospace, IoT, industrial and other market segments. Cadence is listed as one of Fortune Magazine's 100 Best Companies to Work For. Learn more at cadence.com.

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