Synopsys Releases Industry's First Bluetooth LE Audio Codec for Power-Sensitive Audio and Voice Applications

New Low-Power Codec Optimized for Synopsys' ARC Processor IP Enables High-Quality Audio and Voice Streaming from Smart Home, Mobile, and Wearable Devices

Disclaimer: GlobalFoundries acquired the Synopsys Processor Solutions business on June 1, 2026. Clickhere to learn more.

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Highlights:

- Synopsys collaborated with Fraunhofer Institute for Integrated Circuits (IIS) to release an implementation of the next-generation Bluetooth LE Audio Low Complexity Communication Codec (LC3)
- The new codec is designed to be compliant with the upcoming Bluetooth LC3 audio codec specification and is optimized to deliver high-quality audio and voice playback in battery-powered devices incorporating ARC EM and HS DSP processors
- New LC3 codec expands the portfolio of DesignWare ARC audio codecs and post-processing software supporting popular audio standards and extends Synopsys' DesignWare Bluetooth Low Energy IP offerings

Synopsys, Inc. (Nasdaq: SNPS) today announced availability of the Bluetooth LE AudioLC3 Codec optimized for Synopsys' DesignWare® ARC® EM DSP and HS DSP processor IP. The LC3 codec is an important feature of Bluetooth LE Audio, the soon-to-be-released next-generation audio standard defined by the Bluetooth Special Interest Group (SIG) that enables system-on-chip (SoC) designers to efficiently implement high-quality voice and audio streaming in a wide range of applications, including mobile, wearables, and home automation. The LC3 codec for ARC processors is based on an implementation by Fraunhofer IIS that is designed to meet Bluetooth SIG requirements. The new LC3 codec, running on ARC EM and HS DSP processors, allows designers to rapidly integrate a complete, pre-verified hardware and software solution for voice and speech processing into Bluetooth-enabled devices requiring minimal energy consumption.

"The rapid growth of wearable devices requiring high-quality Bluetooth audio streaming is driving the need for power-efficient processor IP with DSP capabilities that can meet intensive computation requirements of voice and audio applications. Those applications require an optimized codec providing state-of-the art voice and audio quality at minimum computational complexity. The LC3 codec is designed exactly like that," said Manfred Lutzky, head of Audio for Communications at Fraunhofer IIS. "By porting the LC3 codec to the DSP-enhanced ARC processors, Synopsys is enabling customers to quickly implement LC3 codec functionality in their low-power SoCs. We look forward to continuing our collaboration with Synopsys so that the LC3 codec for ARC processors continues to incorporate the latest updates."

"The fact that the LC3 codec can provide very high-quality audio even at low bit rates makes it a key feature of the upcoming LE Audio standard," said Mark Powell, chief executive officer of the Bluetooth Special Interest Group (SIG). "We are pleased to see member companies working on implementations of the LC3 codec optimized for various processor architectures."

The 32-bit DesignWare ARC EM and HS DSP processors are based on the scalable ARCv2DSP Instruction Set Architecture (ISA) and integrate RISC and DSP capabilities for a flexible processing architecture. The ARC EM DSP processors offer ultra-low power and industry-leading performance efficiency while the multi-core-capable ARC HS DSP processors provide a unique combination of high-performance control and high-efficiency digital signal processing. All ARC processors are supported by the ARC MetaWare Development Toolkit, which includes a rich library of DSP functions to allow software engineers to rapidly implement algorithms from standard DSP building blocks. In addition, ARC processors and the LC3 codec can be combined with Synopsys' Bluetooth 5.1-compliant DesignWare Bluetooth Low Energy IP to deliver power-efficient, high-quality wireless audio capability for smart IoT and other Bluetooth-enabled devices.

"Optimizing the LC3 codec for DesignWare ARC Processors demonstrates Synopsys' continued investment in providing customers with a robust portfolio of audio codecs for a wide range of SoC designs," said John Koeter, senior vice president of marketing for IP at Synopsys. "Designed to process high-quality audio streams and deliver superior sound, the LC3 codec for ARC processors provides designers with a certified codec that reduces the integration time and testing required to deliver superior quality audio for Bluetooth streaming applications."

Availability and Resources

The Bluetooth LC3 codec is available now from Synopsys with DSP-enhanced ARC EMxD and HS4xD processors.

- Learn more about the optimized LC3 codec for ARC EM and HS DSP Processors
- Learn more about Synopsys DesignWare ARC DSP Solutions
- Learn more about Synopsys' DesignWare Bluetooth IP Solutions

About DesignWare IP

Synopsys is a leading provider of high-quality, silicon-proven IP solutions for SoC designs. The broad DesignWare IP portfolio includes logic libraries, embedded memories, embedded test, analog IP, wired and wireless interface IP, security IP, embedded processors, and subsystems. To accelerate prototyping, software development, and integration of IP into SoCs, Synopsys' IP Accelerated initiative offers IP prototyping kits, IP software development kits, and IP subsystems. Synopsys' extensive investment in IP quality, comprehensive technical support, and robust IP development methodology enables designers to reduce integration risk and accelerate time-to-market. For more information on DesignWare IP, visit www.synopsys.com/designware.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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