Audio Node

Overview

The Audio Node is a highly integrated wireless audio processing and playback development board. Powered by the Nordic nRF5340 dual-core Bluetooth 5.x SoC and Cirrus Logic CS47L63 audio DSP/CODEC, it supports local media playback via microSD, multiple audio outputs, and efficient battery/USB-C power management. Ideal for prototyping wireless speakers, voice-controlled devices, and portable audio applications.

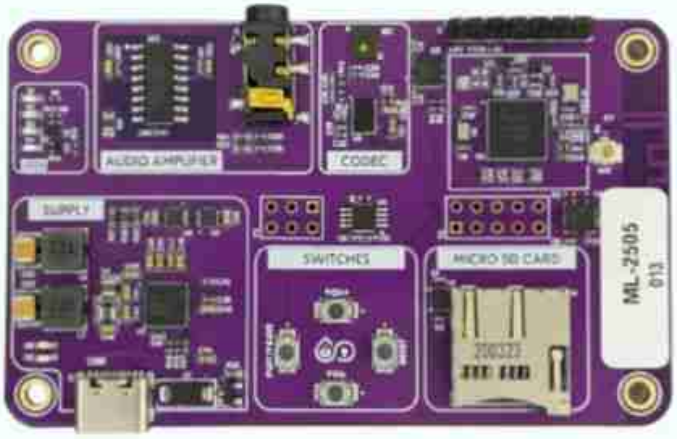

Fig:Audio Node

Key Features

- Dual-Core Processing: Nordic nRF5340 ARM Cortex-M33 for application and BLE tasks
- Advanced Audio: CS47L63 low-power DSP/CODEC with headphone and speaker output
- Wireless Connectivity: BLE, IEEE 802.15.4, ANT, and proprietary 2.4 GHz protocols
- Audio Outputs: 5W Class-D speaker amplifier, 3.5mm stereo jack, MEMS microphone input
- Flexible Power: USB-C or single-cell Li-ion/Li-Polymer battery with integrated charging
- Efficient Regulation: XCL210 step-down DC/DC converters for 1.2V and 3.3V rails
- User Interaction: PLAY/PAUSE, VOL+, VOL-, RESET switches; RGB status LEDs
- Expansion & Debugging: SWD, GPIO, and I²C headers for peripheral integration

Technical Specifications

- Dual-core Nordic nRF5340 ARM Cortex-M33 SoC with BLE 5.x, IEEE 802.15.4, ANT for high-performance wireless
- Cirrus Logic CS47L63 DSP/CODEC with MEMS microphone for advanced audio processing
- 5W Class-D speaker amplifier, 3.5 mm headphone jack, and microSD card playback
- Flexible Power: USB-C or 3.7V Li-ion battery with PM1300 PMIC and XCL210 DC/DC converters
- User Interface: PLAY/PAUSE, VOL+/VOL-, RESET switches; RGB status LEDs
- Expandable: SWD/debug, GPIO, I²C headers for peripheral integration
- Wireless Enhancements: U.FL connector for external high-gain antenna
- Robust & Reliable: Onboard protection for stable operation in prototypes and field use

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Applications

- Portable Bluetooth Speakers: High-quality wireless audio streaming from phones, tablets, or computers
- Standalone Music Players: Play MP3 or high-fidelity audio directly from microSD card
- Voice-Controlled Smart Devices: Smart assistants or voice-activated gadgets using onboard microphone and DSP
- Wireless Intercoms / Walkie-Talkies: Two-way communication for home, office, or recreational use
- Assistive Listening Devices: Enhance ambient sound for hearing support
- Interactive Educational Toys: Smart toys with music, sound effects, and spoken content
- Public Address & Info Systems: Announcements or background audio in museums, retail, or transit
- Portable Field Recorders: Capture podcasts, interviews, or personal notes using microSD storage