

Bluetooth LE Audio Test Infrastructure

Graduate



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Introduction: The introduction of Bluetooth® 5.2 has paved the way for new audio transmission features like LE Audio and Auracast™, revolutionizing the wireless audio technology landscape. Auracast™ allows users to broadcast audio to multiple devices simultaneously, enhancing shared listening experience in public or private settings. A typical setup includes a transmitter sending a broadcast, receivers listening to the broadcast, and an assistant that configures which broadcast receivers render. Currently, a few end-user devices already support this new feature and more will come in the future.

In collaboration with Sonova, we started development of a test library, which facilitates the testing of Auracast™ features in their products. Within the existing .NET test environment, control over broadcast transmitters and assistants is required for defining automated test scenarios.

Approach / Technology: The project utilizes Nordic nRF5340 Audio Development Kits for the broadcast transmitter and assistant roles. Several strategies for the communication between the boards and the .NET library were evaluated. Ultimately, a simple yet scalable solution, using serial communication via UART with a custom Protocol Buffers-based layer on top, being chosen.

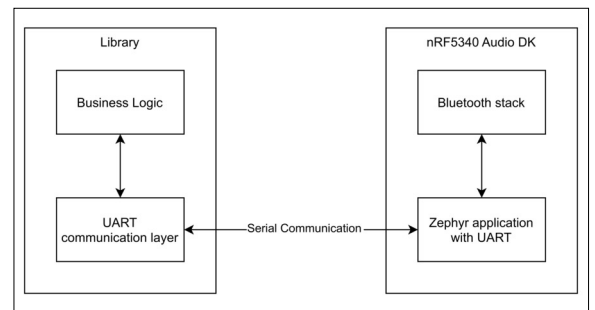
Existing sample applications for the Nordic boards were translated from C to C++ and customized to meet the project's requirements. Additionally, a small console application was developed to test the setup.

Result: The key functionality has been implemented, however, some of the more advanced features and configuration operations did not fit into the time frame of the project. After the completion of this bachelor

thesis, there will be a handover process and the project will be continued by Sonova. They will use it to support their development of Auracast™ capable products.

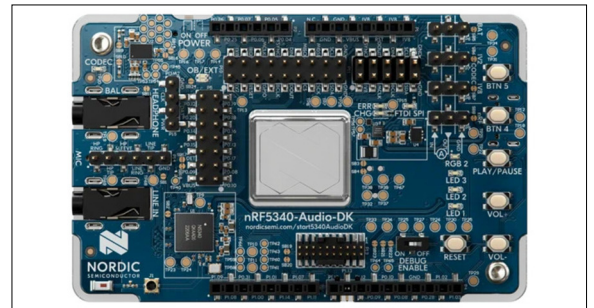
Chosen Communication Strategy

Own presentation



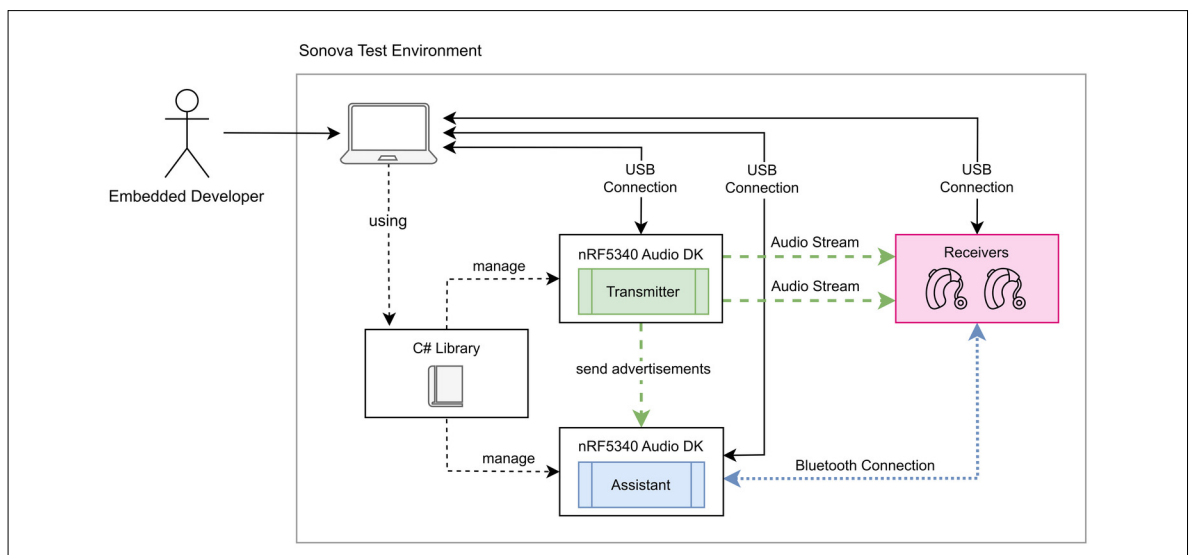
nRF5340 Audio Development Kit

Nordic Semiconductor



Environment Diagram

Own presentation



Advisor
Thomas Corbat

Co-Examiner
Guido Zraggen,
Google Switzerland,
Zürich, ZH

Subject Area
Software

Project Partner
Sonova Holding AG,
Stäfa, ZH