ADAPTIVE DIGITAL
TECHNOLOGIES

HD AEC Full Duplex STM32F4 Demo

Demonstrating High Definition Acoustic Echo Cancelation (HD AEC) on the ARM Cortex-M-4.

HD AEC HD AEC is a software-only, high definition voice quality library which integrates Noise Reduction (NR) and Auto Gain Control (AGC) into the Acoustic Echo Cancellation (AEC) algorithm, with the appropriate hooks to make them seamlessly work together to provide superior speech enhancement.
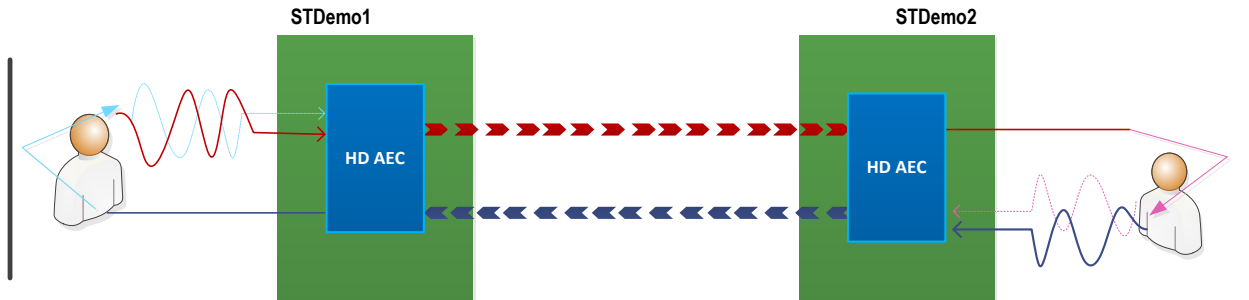
- The inclusion of Noise Reduction in the HD AEC algorithm results in a far cleaner audio stream.
- HD AEC adapts to gain changes in the acoustic path (including gain/loss changes). When the changes are known, like in the case of controlled gain changes, the HD AEC communicate with the application to tell it the nature of the gain change so it can adjust immediately rather than take time to reconverge.

HD AEC™ HIGHLIGHTS:

‣ Automatically adjusts for unknown bulk (buffering/audio driver) delay.

‣ Able to handle strong echo (speaker to microphone gains up to 20 dB).

‣ Programmable sampling rate, supporting narrowband wideband with no artificial cutoff of high frequencies.

‣ True full-duplex operation, even when microphone input signal is weak.

The demonstration software runs on **STM32F407G-DISC1**, combined with the **STM32F4BIS-BB** extension board.

This demo uses (2) STM32F407 Discovery boards configured to provide full duplex audio communication between each other. **This demo allows the HD AEC to be enabled and disabled for evaluation**.
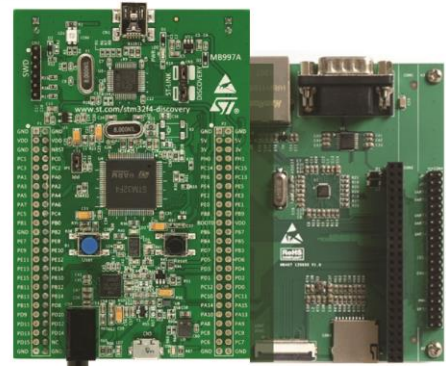

This demo can be easily set-up and run with default parameters (See Quick Start Guide).

STM32F4DISCOVERY The STM32F4DISCOVERY kit leverages the capabilities of the STM32F407 high performance microcontrollers, to allow users to easily develop applications featuring audio. Processor: 32-bit ARM® Cortex® -M4

Affordability: STM32F407G-DISC1 boards are reasonably priced at < $20, STM32F4BIS-BB <$45 | Additional Hardware requirements: Windows PC (2000, XP, Vista, 7), speakers (2), USB type A to fMini-B cables (2), and USB AC Power Adapters (2).

STM32F407G-DISC1

STM32F4BIS - BB
STM32F4 Base Board

HD AEC is available for evaluation on several DSPs and platforms.