



Meeami Technologies
(Acoustic Echo Canceller)
Data Sheet

Version 1.0

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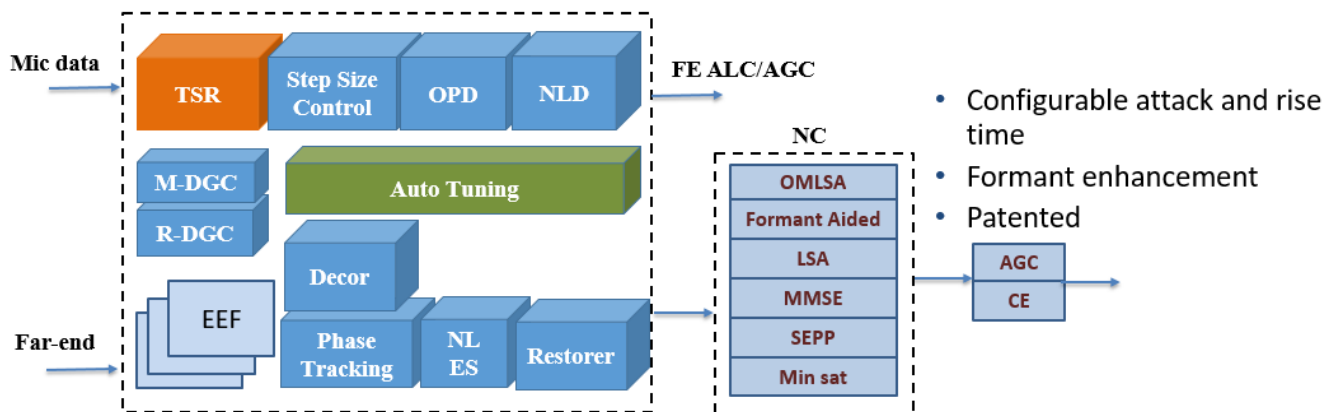
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Table of Contents

1	Description.....	3
2	Features.....	4
3	System Requirement.....	5

1 Description

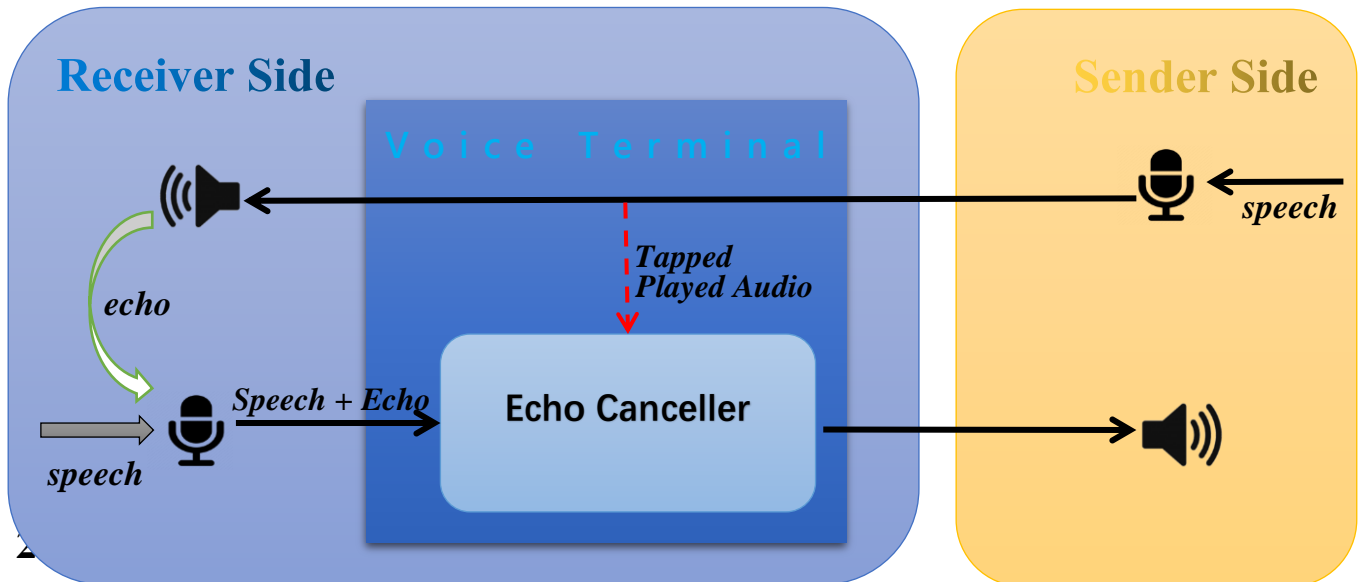
Meeami Technologies ClearVoice Echo Canceller effectively eliminates echo from the record path where mic recorded data mixed with data played through speaker. It need played audio as reference which gets tapped from playback path as shown in diagram below. Now played data is echo when it get mixed with speech data through mic, so it will send to echo cancellation process along with reference played audio to perceive better intelligibility and quality of speech. AEC operates on frame by frame basis with the frame size of 10ms as well as comfortably works well with Positive Delay in range between 0ms to 40ms and effectively eliminates echo from original speech and gives outcome as improved quality echo free speech.



- Acoustic Echo Cancellation (AEC) removes unwanted acoustic feedback between a speaker and a microphone in audio communication involving a loud-speaker.
 - Hands free communication – Mobiles, Laptops, PC’s, Smart TV’s etc.
- Seamless full duplex communication on different communication and conferencing systems
- 20+ years’ experience in AEC
- Multiple algorithms catering to multiple product segments
 - 20 MHz – 200 MHz
 - “Very low footprint applications” as well as “Extremely high volumes applications (Soundbars and Smart Speakers)”
 - Human-Machine and Human-Human configurations

Meeami AEC Data sheet

- 50 million+ devices deployed in the market
- 50+ granted patents on AEC algorithms



- Easily portable to any platform as it is written in C
- C - callable API functions for hassle free integration in telephony, live video chat, audio/video recordings and live video streaming
- Algorithm delay is 10ms
- Supports 8, 16, 24, 44.1 and 48 kHz sampling rates, 16-bit little endian PCM.
- Supports Single Mic Channel Operation
- Supports Single and Dual Speaker Channel Operation and dynamic memory allocation
- Supported OS - Linux, Windows, MAC, iOS and Android
- Supported Processors - ARM , x86 and DSP.
- Scalable multi-delay filtering to multiple microphones and speakers
- Tested with multiple speakers, Stereo in and Stereo out.
- Patented OPD, Echo path change detection, Auto tune, step size control, TSR, etc.
- Multiple algorithms
- Tuned for Machine / Human backend
- Minimal/medium/complete/ultra- aggressive modes of noise suppression
- Multiple patents

- Supports built-in noise control and gain control
- Echo span of up to 128ms(td) in a 640ms(tr) moving window to ensure superior performance across the devices with varying acoustic characteristics and environments
- Cancels echo without distorting near-end speech for better keyword detection performance (lower FRR)
- Supports up to 96kHz sampling rate (full band)
- Supports multiple speakers connected through an audio splitter
- Cancels more than 60dB during single talk and more than 30dB during double talk.

3 System Requirement

- CPU usage:
 - CPU measured On RPI aarch64 : *1.4GHz is tabulated below.*
 - CPU will vary for configuration of Speaker and Mic channel count (Mono or Stereo) and Sampling rates of 16Hz and 48Hz. CPU spikes (initially) will be observed when dynamic estimation is enabled. Suggested to use static/fixed (tx-rx) delay if customer aware of the their system delay. Refer header file for more info related to delay.

Note: It may vary slightly on different processor and with different memory configurations.

Table 1. CPU Usage Approx:

Nearend	Farend	Avg. CPU - 16KHz	Avg. CPU - 48KHz
mono	mono	163	240
mono	stereo	195	274
stereo	mono	404	449
stereo	stereo	505	579

- Memory usage:
Total Memory Required: *Approx. 1.8 MB*

Table 2. Memory Usage Approx.

Text Memory	370KB
Data Memory	60KB
State Memory	1240KB
Stack memory	60KB

Last Page of the Document