HFFx Auto

High Frequency Reconstruction Effect

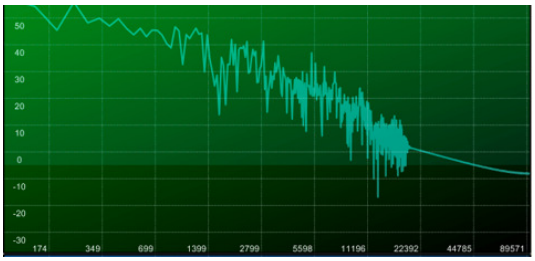
Overview

HFFx is an embedded application for audio high frequency restoration used in Soundbars, Speakers, Headphones, Earbuds, TVs and AVRs. Use cases include:

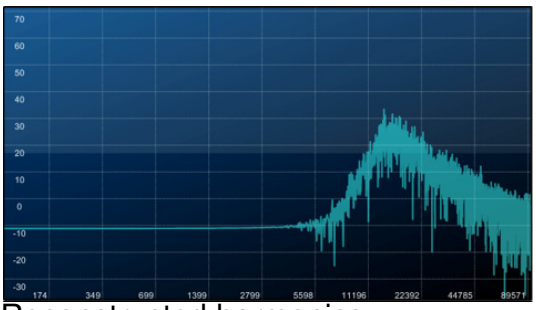
- Correcting low audio bandwidth caused by data rate restrictions, data 'throttling' and legacy codecs in Streamed AV and Digital Broadcast services and Digital TV
- Restoration of high frequency content that was removed by lossy sub-band coding (e.g. MP3, AAC, Bluetooth) and which produces a dull, lifeless sound without correction
- Extending the bandwidth of material that was recorded band-limited (e.g. recorded to analogue tape, low sample rate, or other restrictions)
- Up-conversion of audio from 1Fs (44.1KHz, 48KHz) to High Resolution audio rates such as 2Fs (88.2KHz, 96KHz) and 4Fs (176.4KHz, 192KHz) to create a more 'open' sound

Tuning UI Displays

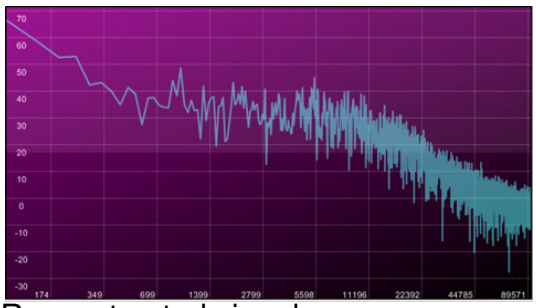
Devices are tuned using a PC app and the parameters are then transferred to the embedded code for manufacture.



Incoming audio with missing HF



Reconstructed harmonics



Reconstructed signal

Auto Mode

HFFx Auto Mode is a new feature which includes an adaptive algorithm that measures the channel bandwidth and allows HFFx to automatically and dynamically reconstruct full range bandwidth audio.

Examples where adaptation is required include:

- correction of HF loss in AV streamed services (e.g. YouTube, Amazon Prime) which may vary from clip to clip as well as channel to channel
- switching between different channels in DVB-T transmission where channel audio bandwidth can vary from ~17KHz down to ~10KHz

Further Information

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