



ROOM AND LOUDSPEAKER PROCESSOR

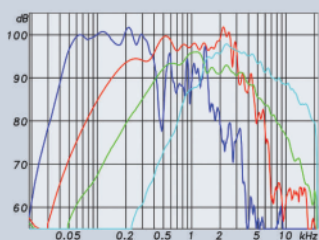


Linear Phase Loudspeaker and Room Equalization

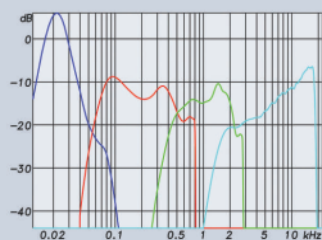
FIR technology, 48 bit / up to 192 kHz

Room and Loudspeaker Processor HD2

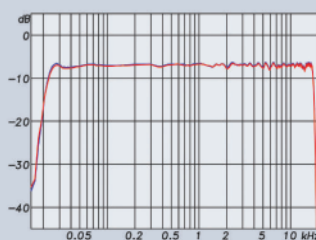
Speaker Equalization



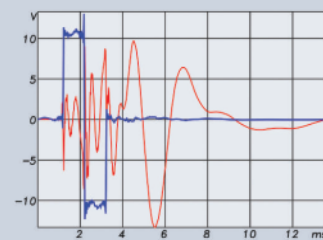
Loudspeaker responses



HD2 FIR filter responses



Resulting magnitude response



Min/lin phase rect response

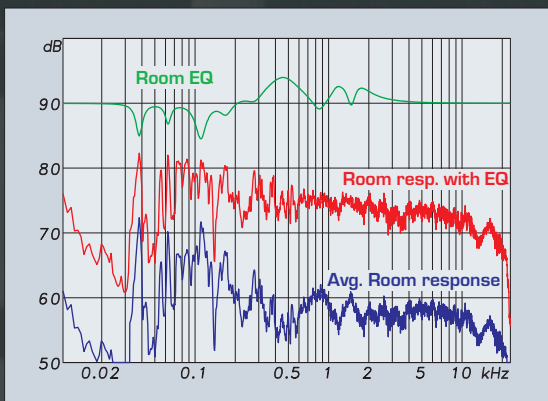
Loudspeaker measurements are carried out in an anechoic chamber with our measurement system "Monkey Forest".

After setting crossover frequencies and slopes, "Monkey Forest" calculates FIR filters from the speaker measurements allowing to adjust amplitude and phase independently.

The figures to the right illustrate the effect of different phases:

The two equalizations with linear and minimum phase provide the same result in amplitude over frequency. In the time domain, a short double pulse (500Hz) behaves differently when passed through the two equalizations due to different phase settings. With IIR filters (minimum phase), it is not possible to select phase and amplitude independently.

Room Equalization



After the speaker setup, the room response is measured at 50 positions. An energetic average gives the average room response.

By EQ-ing, the room response is fit into a reasonable shape. Not every dip or peak must be flattened.

The EQs are integrated into the FIR filter to avoid phase distortion by IIR EQs.

Housing Features

SOLID

The housing is made of a CNC milled solid aluminum block. The heavy construction avoids vibrations.

COOL

The PCBs are thermally coupled to the housing by silicone gel pads.

SILENT

No fan is necessary for cooling, no acoustic and electronic noise emissions from a fan occur.

SHIELDED

The digital and analog components are in separate compartments for optimum shielding.

Operating Software

The device is configured over ethernet. It can simply be included in a WLAN and operated from a Windows, MacOS X or Linux computer.

For daily use, e.g. gain, some EQs and preset selection can conveniently be adjusted by an iPad app.



ROOM AND LOUDSPEAKER PROCESSOR

Linear Phase Loudspeaker and Room Equalization

FIR technology, 48 bit / up to 192 kHz

Operation by Remote Software from iPad / Windows / MacOS X

Complex FIR Equalization based on Speaker Measurements

Room Correction based on Measurements in Listening Environment

Cool and solid housing - CNC milled from a solid aluminum block

Measurement and Setup Services provided

HD2-Audio Performance

Max. input level	+28, +21, or +15 dBu (selectable)
Max. output level	+18 dBu
Frequency response (-0.5dB)	4 Hz up to 45 kHz
Dynamic ranges	
ADC	> 130 dB (dual range mode) 118 dB (single range mode)
DAC	121 dB
Overall	121 dB (dual range mode)
THD (1 kHz)	
ADC	-113 dB (+4 dBu) -105 dB (0 dBFS)
DAC	-110 dB (+4 dBu) -102 dB (+18 dBu)

All values ref. 20 Hz - 20 kHz, linear weighting

Technical details subject to modification



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