KUDO V2

The KUDO V2 preset library is a major preset release that features revised low/mid section processing. The low/mid section crossover point has been changed from 300 Hz to 200 Hz and low/mid equalization has also been reworked. Minor changes to high section equalization have also been introduced, resulting in improved overall power response and on-axis frequency response.

Preset library organization and 4-way preset formats remain unchanged with respect to Version 1.

Support for the XTA DP428 digital signal processor is also introduced with the KUDO V2 release.

REVISION HISTORY – KUDO V1 PRESETS

Features for the KUDO V1 preset library are described in the following.

3-WAY STEREO PRESETS

There are two types of 3-way stereo presets for KUDO: 3WX and 3Wi. When using KUDO as a full range 3-way system without subwoofers, the choice between 3WX and 3Wi presets will largely depend on the application. For speech reinforcement and classical music, the INFRA preset is recommended while for most music applications, the X preset should be used.

3WX PRESET

The 3WX preset (X=extension) features a 40 Hz high pass filter for the KUDO low section combined with optimized low frequency shelving equalization to provide maximum low frequency extension. With the 3WX preset, significant LF energy can be obtained from KUDO itself and, in some cases, KUDO can be used without additional subwoofers. For larger systems, there is the added benefit of improved low frequency pattern control since the larger the KUDO array, the lower in frequency that pattern control extends.

The 3WX preset is intended for standalone applications without subwoofers.

3W INFRA PRESET

The 3W i preset (i=INFRA) features a 60 Hz HPF for the KUDO low section along with optimized low section shelving equalization. Compared with the 3WX preset, 60 Hz high pass filtering provides additional over-excursion protection for the KUDO low section.

The 3W INFRA preset is intended for standalone applications without subwoofers for classical music or speech reinforcement

Parc de la Fontaine de Jouvence • 91462 MARCOUSSIS Cedex • France • Tél: +33 (0)1 69 63 69 63 • Fax: +33 (0)1 69 63 69 64
Website : www.l-acoustics.com • e-mail :info@l-acoustics.com

4-WAY PRESETS

There are 2 types of 4-way presets when using KUDO with SB118 or SB218 subwoofers: X and i. X and INFRA presets are optimized for standard cabinet ratios of:

3 KUDO : 1 x SB218 (i.e., 3:1)
3 KUDO : 2 x SB118 (i.e., 3:2)

KUDO+SB118 i and KUDO+SB218 i presets (i=INFRA) feature a complimentary 60 Hz crossover point for KUDO and its companion subwoofer and are recommended for all closely coupled applications.

KUDO+SB118 X and KUDO+SB218 X presets (X=EXTENSION) feature 40 Hz high pass filtering for the KUDO low section combined with optimized low frequency shelving equalization. Subwoofers are low pass filtered at 80 Hz and operated with negative polarity to account for the phase shift cancellation that occurs due to the overlapping sub and low pass bands.

SUB/LOW GAIN SCALING PROCEDURES

KUDO presets have been optimized for a 3:1 cabinet KUDO:SB218 ratio or 3:2 KUDO:SB118 ratio. As a starting point, output channel gains are as follows:

BAND / PRESET	X	INFRA
SUB	+6 dB	+6 dB
KUDO LOW	0 dB	0 dB
KUDO MID	-5 dB	-5 dB
KUDO HIGH	-5 dB	-5 dB

Recommended gain scaling procedures for different cabinet ratios are summarized as follows:

2:1 KUDO : SB118 ratio scale subwoofer gain by +2 dB (or low section by -2 dB)
1.5:1 KUDO : SB118 ratio standard gains
1:1 KUDO : SB118 ratio scale low gain by +4 dB

Following this gain scaling procedure according to cabinet ratio will provide a consistent sub/low spectral contour for all 4-way presets. The mid and high sections should then be scaled up or down equally according to the size of the array in order to compensate for low frequency coupling effects and to provide the overall desired tonal balance.

SUBWOOFER TIME ALIGNMENT RECOMMENDATIONS

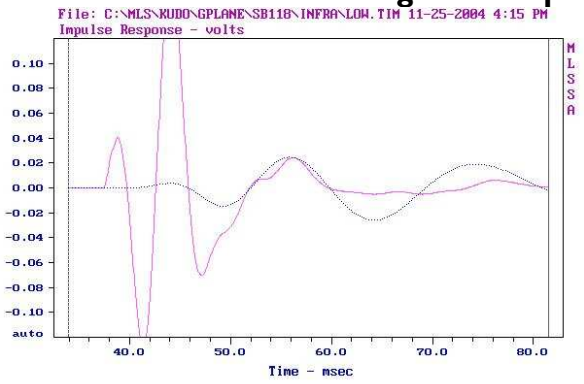
Sub/low sections have been "pre-aligned" for all 4-way presets in a closely coupled measurement configuration, i.e., ground plane measurements were conducted on a stack of 3 KUDO+1 SB218 (or 3 KUDO+2 SB118) and sub channel delays adjusted to obtain optimum summation. Therefore, when KUDO is flown and subs are ground stacked, just measure the geometric physical path difference (at your reference point of choice) and add this to the standard pre-aligned sub delay. Pre-alignment allows for quick and easy subwoofer time alignment for those who don't have the measurement gear required to measure impulse responses. If you have the ability to measure impulse response, refer to the following figures for individual presets as a reference for time alignment. Basically, when you look at the impulse responses for sub and low sections, there is a "sine wave" signature that needs to be aligned.

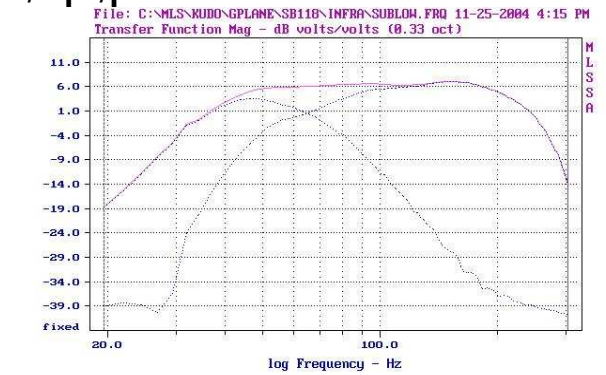
INFRA PRESET

The INFRA preset features a 60 Hz crossover between SB118 or SB218 subwoofers and the KUDO low section. Main benefits obtained using the INFRA preset include: improved low frequency impact from the flown KUDO array, simplified time alignment since wavelengths are longer, and possible subjective preference for the subwoofers when run from 60 Hz on down since they become more of a delocalized effect. In addition, power resource simulations have shown that the INFRA preset provides an excellent repartition of resources between sub, low and high sections.

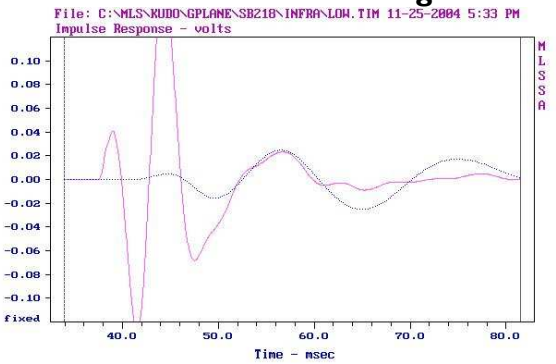
The INFRA preset is intended for closely coupled (stacked) applications and can also be used for ground stacked subwoofer and flown KUDO configurations (physically separated).

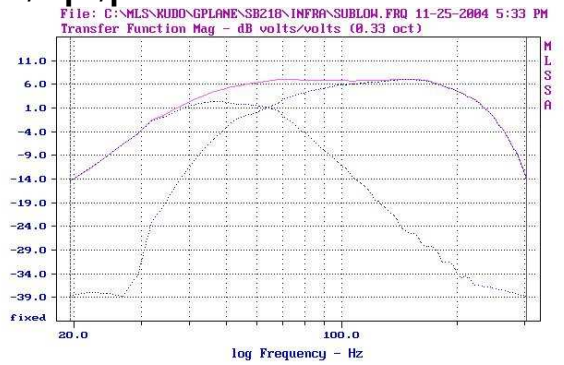
SB118 INFRA PRESET: Align SB118 peak 1/dip1/peak 2 with KUDO low section





SB218 INFRA PRESET: Align SB218 peak 1/dip1/peak 2 with KUDO low section



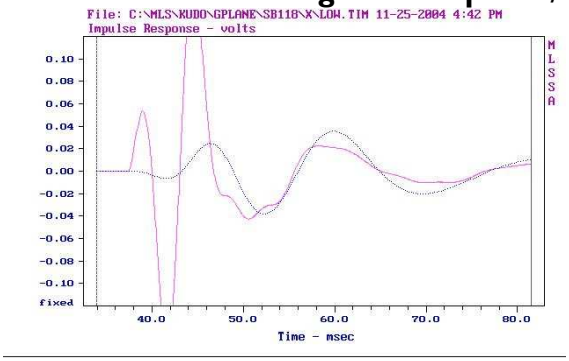


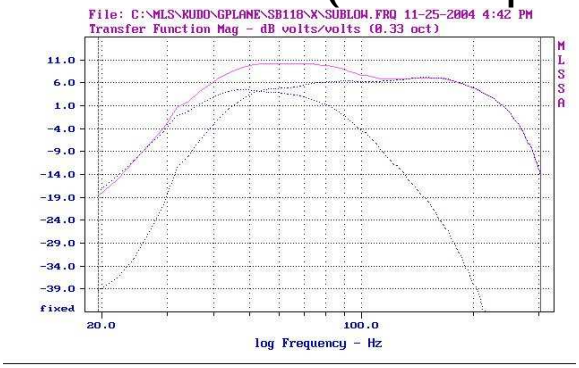
X PRESET

The X preset extends the KUDO low section down to 40 Hz while ground stacked SB218s are run from 25-80 Hz with negative polarity to account for the phase shift due to the overlap in operating bandwidths (SB118 or SB218 = 25-80 Hz with negative polarity, KUDO low = 40-300 Hz).

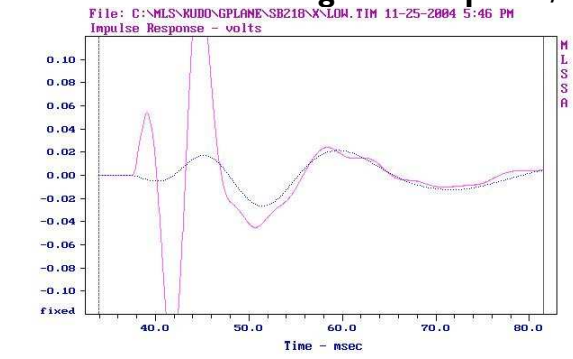
The X preset is intended for applications where the subwoofers are ground stacked and physically separated from the flown KUDO.

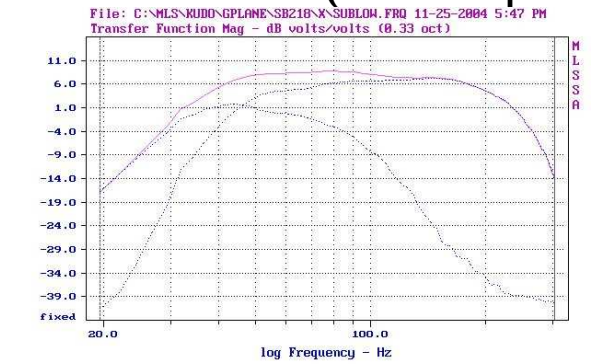
SB118 X PRESET: Align SB118 peak1/dip2 with KUDO low section (SB118: –ve polarity)





SB218 X PRESET: Align SB218 peak1/dip2 with KUDO low section (SB218: –ve polarity)





Parc de la Fontaine de Jouvence • 91462 MARCOUSSIS Cedex • France • Tél: +33 (0)1 69 63 69 63 • Fax: +33 (0)1 69 63 69 64
Website : www.l-acoustics.com • e-mail :info@l-acoustics.com