V-DOSC V7

Version 7 represents the most comprehensive set of presets released to date. Due to the number of new presets introduced, it was necessary to divide preset libraries into 5 types:

V-DOSC, dV-DOSC, KUDO, L-ACOUSTICS and MTD

Features for the V-DOSC V7 preset library are described in the following.

INTRODUCTION

An exhaustive series of measurements conducted throughout the summer of 2003 including controlled laboratory and field trials combined with computer simulations have resulted in significant improvements to V-DOSC.

- improved mid and high section frequency response based on detailed spatial averaging (smoother between 300-500 Hz, HF equalization adjustments at 1K6, 2K5, 6K7)
- revised low section processing including optimized low end shelving eq (5 dB increase between 40-60 Hz)
- revised mid/low section time alignment providing improved power response
- revised mid/high output gain scaling for LO presets to provide flatter system response
- revised sub/low processing for all 4-way presets
- revised sub/low time alignment procedure
- better utilization / repartition of available power resources for sub/low/mid/high bands
- increased overall SPL output and low frequency impact

Based on these improvements, the V-DOSC V7 preset library has been completely revised. Standard X, 4W and X AUX presets have been reoptimized to account for the improvements in the V-DOSC low section and the following new presets have been introduced:

- 3-way and 4-way INFRA mode presets (60 Hz HPF / crossover point, respectively)
- 5-way presets for SB218 (stacked) / dV-SUB (flown) / V-DOSC (flown)

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An overview of new features for the V-DOSC V7 preset library follows:

- LO/HI processing for the HF section
- 3WX (30 Hz HPF for V-DOSC low section)
- 3W INFRA (60 Hz HPF for V-DOSC low section)
- Subwoofer Time Alignment Recommendations
- Sub/Low Gain Scaling Procedures
- INFRA (60 Hz crossover between SB218 and V-DOSC low section)
- 4W (80 Hz crossover between SB218 and V-DOSC low section)
- X (SB218 = 25-200 Hz, V-DOSC low = 30-200 Hz)
- X AUX (SB218 = 25-80 Hz/negative polarity, V-DOSC low = 30-200 Hz)
- 5W INFRA (SB218 = 25-60 Hz, dV-SUB = V-DOSC low = 60-200 Hz)
- 5W X (SB218 = 25-80 Hz/negative polarity, dV-SUB =V-DOSC low=30-200 Hz)
- V-DOSC + dV-DOSC presets
- New Subwoofer Presets (DELAY ARC, LCR)

SUB / LOW OPERATING BANDWIDTH SUMMARY

3-WAY PRESETS

PRESET	V-DOSC LOW
3W INFRA	60 – 200 Hz + LF shelving eq
3W X	30 – 200 Hz + LF shelving eq

4-WAY PRESETS

PRESET	SB218	V-DOSC LOW
INFRA	27 – 60 Hz	60 – 200 Hz + LF shelving eq
4W	27 – 80 Hz	80 – 200 Hz
X	27 – 200 Hz	30 – 200 Hz + LF shelving eq
X AUX	27 – 80 Hz (inverted)	30 – 200 Hz + LF shelving eq

OPTIONAL 5-WAY PRESETS (FLOWN dV-SUBs)

PRESET	SB218	dV-SUB	V-DOSC LOW
5W INFRA	27 – 60 Hz	60 – 200 Hz	60 – 200 Hz + LF shelving eq
5W X	27 – 80 Hz (inverted)	30 – 200 Hz	30 – 200 Hz + LF shelving eq

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LO/HI PRESETS

As for previous preset libraries, all V-DOSC presets come in pairs (LO = smooth, HI = bright) where there is a 3 dB difference in HF shelving eq between LO and HI presets. In addition to the HF shelving eq difference, for V-DOSC V7 LO presets, the mid/high section output gains have been scaled up by 2 dB in order to:

1) provide a flatter overall response curve (for classical music and speech reinforcement)

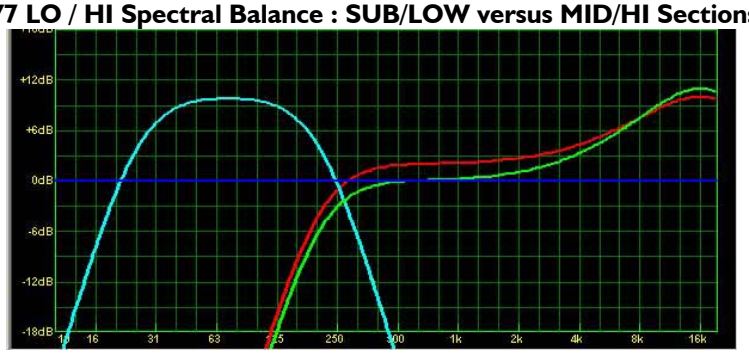
2) maximize A-weighted SPL output

3) obtain a better utilization of the available power resources

4) keep up with the increased sub/low energy obtained in V7

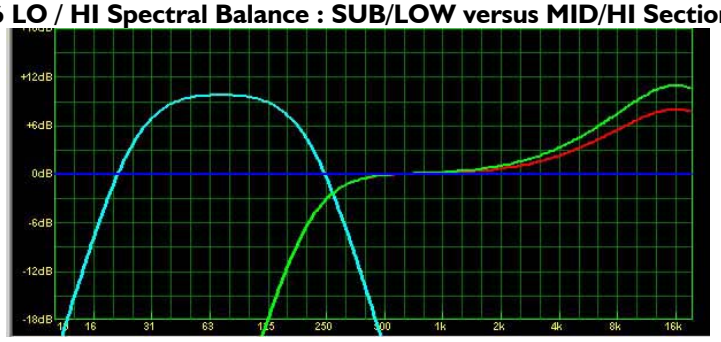
5) create a bigger difference between LO and HI presets in order to address their target applications, i.e., LO = speech, classical, proximity use and HI = rock or electronic music, long throw applications

V7 LO / HI Spectral Balance : SUB/LOW versus MID/HI Sections



Note: To obtain the previous spectral balance that was provided in V6 presets (and earlier), simply reduce the mid/high section output gains by 2 dB (to -5 dB / -5 dB). See the figure below.

V6 LO / HI Spectral Balance : SUB/LOW versus MID/HI Sections



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3-WAY STEREO PRESETS

3WX (30 Hz HPF for V-DOSC low section)

Computer simulations taking into account: preset filtering and equalization, component power handling and excursion have shown that processing of the V-DOSC low section has been too conservative in the past, i.e., with optimized high pass filtering and low frequency shelving eq, significantly more LF energy can be obtained from V-DOSC itself (without subs). For larger systems, there is the added benefit of improved low frequency pattern control since the larger the V-DOSC array, the lower in frequency that pattern control extends. This fact, combined with optimized low section processing, allows us to significantly improve the low frequency performance of the V-DOSC system (without subwoofers) and was the main objective for the 3WX preset.

The 3WX preset is intended for standalone applications without subwoofers or for AUX SUB drive using the SB218 DELAY ARC 80 Hz or SB218 LCR 80 Hz presets (subs with inverted polarity).

3W INFRA (60 Hz HPF for V-DOSC low section)

The 3W INFRA preset includes a 60 Hz HPF for the V-DOSC low section along with optimized low section shelving eq. High pass filtering at 60 Hz provides additional over-excursion protection for the V-DOSC low section.

The 3W INFRA preset is intended for standalone applications without subwoofers or for AUX SUB drive using the SB218 DELAY ARC 60 Hz or SB218 LCR 60 Hz presets (subs with positive polarity).

4-WAY PRESETS

SUBWOOFER TIME ALIGNMENT RECOMMENDATIONS

For the V7 release, sub/low sections are "pre-aligned" for 4-way and 5-way presets in a closely coupled measurement configuration, i.e., ground plane measurements were conducted on a closely coupled stack of 1 SB218 + 1 V-DOSC and all sub channel delays were prealigned for this configuration. This way, when V-DOSC is flown and subs are ground stacked all that is required is to measure the geometric/physical path difference (at your reference point of choice) and add this to the standard pre-aligned sub delay. If using Bushnell Rangefinders to measure the path difference, the accuracy corresponds to +/- 1 meter so the geometric starting point can be varied by +/- 3 msec to verify optimum summation. This provides a quick and easy subwoofer alignment technique for those who don't have the measurement gear required to measure impulse responses. If you have the ability to measure impulse responses, refer to the figures below for the individual presets as a reference for time alignment. Basically, when you look at the separate impulse responses for sub and low sections, there is a "sine wave" signature that needs to be aligned.

Sub/Low Gain Scaling Procedures

The same sub/low ratio scaling procedure apply as for previous releases – the only thing different the starting point.

2:1 V-DOSC:SB218 ratio	scale subwoofer gain by +2 dB (or low section by -2 dB)
1.5:1 V-DOSC:SB218 ratio	standard gains
1:1 V-DOSC:SB218 ratio	scale low gain by +4 dB

For some V7 presets the subwoofer output gain has been scaled from +4 to +6 dB in order to account for the relatively low input sensitivity of the LA48a (+9.5 dBu). In terms of gain structure, it is preferable to use the output drive capability of the DSPs to run the amplifiers instead of running the console outputs / dsp inputs too hot and risk digital clipping of the dsp input section.

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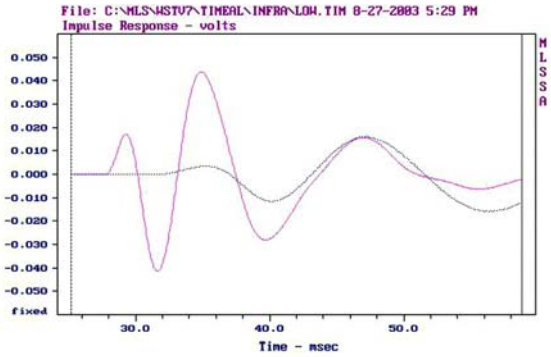
INFRA (60 Hz crossover between SB218 and V-DOSC low section)

The main benefits obtained using the INFRA preset are: improved low frequency impact from the flown V-DOSC array, simplified time alignment since wavelengths are longer, and subjective preference for the subs 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 preset is intended for ground stacked subwoofer + flown V-DOSC configurations (physically separated). AUX SUB drive can be implemented using Input B / Output 6 or by using SB218 DELAY ARC 60 Hz or SB218 LCR 60 Hz presets (subs with positive polarity).

INFRA PRESET: Align SB218 peak 1/dip1/peak 2 with V-DOSC low section

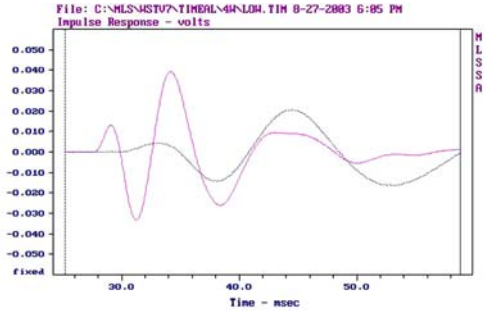


4W (80 Hz crossover between SB218 and V-DOSC low section)

Changes between 4W presets for V7 versus V6 are minor since the 80 Hz HPF for the V-DOSC low section does not allow full benefit of the revised V-DOSC low end shelving eq. The main differences are in mid/high section equalization and the revised subwoofer time alignment procedure. Note: for those interested in comparing the mid/high section eq changes for V7 versus V6, it is recommended that the 4W presets be used when conducting listening tests. Overall, 4W presets provide a flatter response that is considered more suitable for classical music or speech reinforcement. In addition, the low end can sound tighter due to the 80 Hz crossover point but this is a matter of taste and program material.

The 4W preset preset is intended for ground stacked subwoofer + flown V-DOSC configurations (physically separated). AUX SUB drive can be implemented using Input B / Output 6 or by using the SB218 DELAY ARC 80 Hz or SB218 LCR 80 Hz presets (subs with positive polarity).

4W PRESET: Align SB218 dip1/peak 2 with V-DOSC low section



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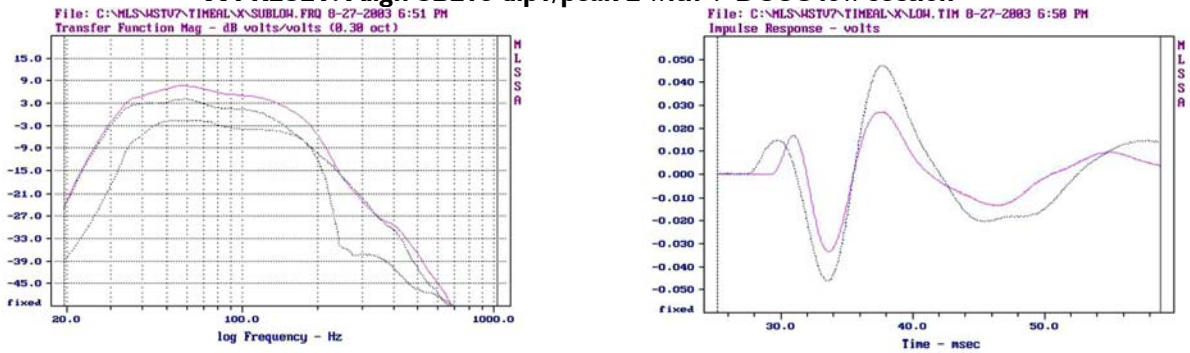
X (SB218 = 25-200 Hz, V-DOSC low = 30-200 Hz)

The V7 X preset takes full advantage of revised V-DOSC low section processing and is intended for closely coupled applications where SB218 subwoofers are physically close to V-DOSC (flown beside or stacked directly underneath as an extension of the system). The X preset optimizes the overall sub/low output of the system and provides the best repartition of resources between sub, low and high sections.

The X preset preset is intended for closely coupled subwoofer + V-DOSC configurations (minimum physical separation). AUX SUB drive can be implemented using Input B / Output 6 (see also X AUX below) or by using the SB218 DELAY ARC 80 Hz or SB218 LCR 80 Hz presets (subs with negative polarity).

X PRESET: Align SB218 dip1/peak 2 with V-DOSC low section

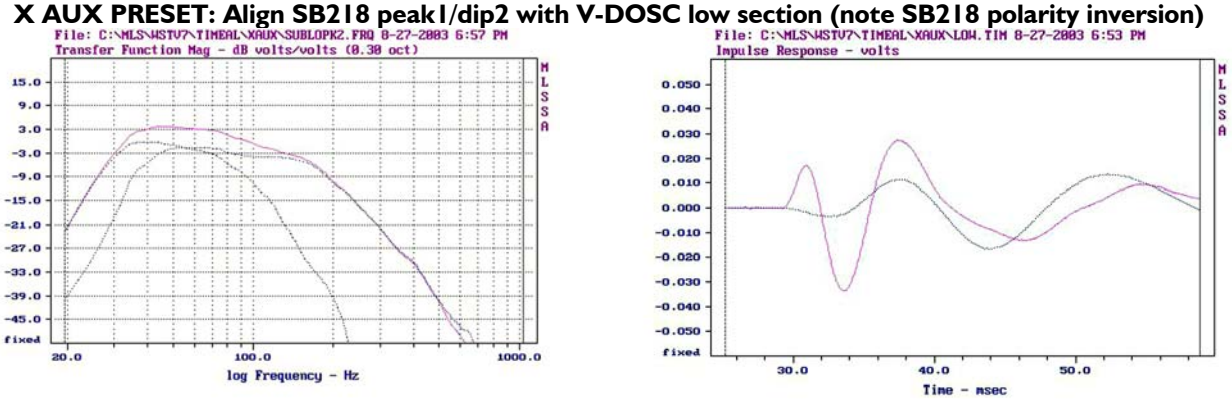


X AUX (SB218 = 25-80 Hz/negative polarity, V-DOSC low = 30-200 Hz)

The V7 X AUX preset takes full advantage of revised V-DOSC low section processing and corresponds to Input B / Output 6 for the standard X preset. For 4+2 configurations (V-DOSC + ARCS or dV-DOSC), separate X AUX presets are provided for XTA and BSS processors.

The X AUX preset is intended for applications where the SB218 subwoofers are ground stacked and physically separated from the flown V-DOSC. AUX SUB drive can also be implemented using the SB218 DELAY ARC 80 Hz or SB218 LCR 80 Hz presets (subs with negative polarity).

X AUX PRESET: Align SB218 peak1/dip2 with V-DOSC low section (note SB218 polarity inversion)

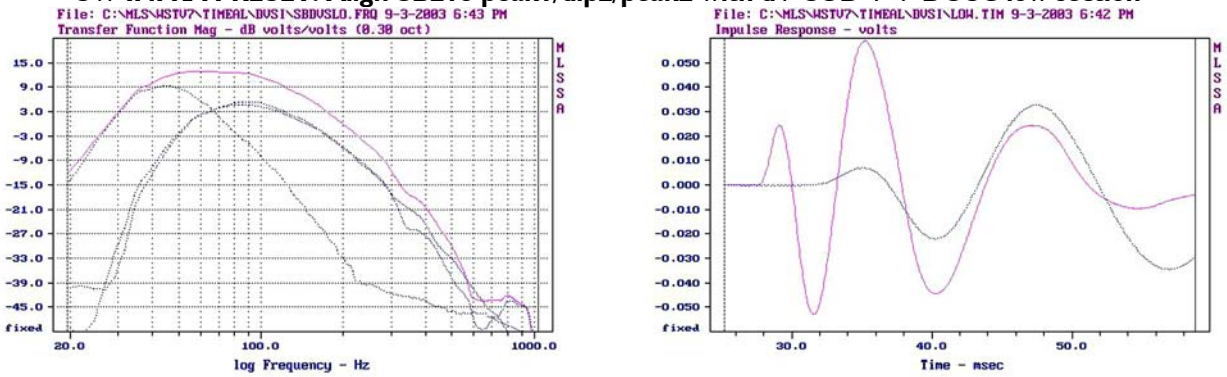


5W INFRA (SB218 = 25-60 Hz, dV-SUB = V-DOSC low = 60-200 Hz)

The 5W INFRA preset is intended for configurations where SB218s are ground stacked and dV-SUBs are flown beside V-DOSC in a closely coupled configuration. The V-DOSC low section and dV-SUBs work over the same operating bandwidth (60 – 200 Hz) and given the optimized V-DOSC LF shelving eq plus additional contribution of the dV-SUBs, the impact of the flown system is significantly enhanced. Ground stacked SB218s are crossed over at 60 Hz (INFRA mode).

For the 5W INFRA preset, AUX SUB drive can be implemented using the SB218 DELAY ARC 60 Hz or SB218 LCR 60 Hz presets (subs with positive polarity).

5W INFRA PRESET: Align SB218 peak1/dip2/peak2 with dV-SUB + V-DOSC low section



5W X (SB218 = 25-80 Hz/negative polarity, dV-SUB = V-DOSC low = 30-200 Hz)

The 5W X preset is intended for configurations where SB218s are ground stacked and dV-SUBs are flown beside V-DOSC in a closely coupled configuration. The V-DOSC low section and dV-SUBs work over the same operating bandwidth (30 – 200 Hz) and given the optimized V-DOSC LF shelving eq plus additional contribution of the dV-SUBs, the sub/low output of the flown system is maximized. Ground stacked SB218s are run from 80 Hz with negative polarity to account for the phase shift due to the operating bandwidth overlap.

For the 5W X preset, AUX SUB drive can be implemented using the SB218 DELAY ARC 80 Hz or SB218 LCR 80 Hz presets (subs with negative polarity).

5W X PRESET: Align SB218 dip1/peak1/dip2 with dV-SUB + V-DOSC low section (note SB218 polarity inversion)

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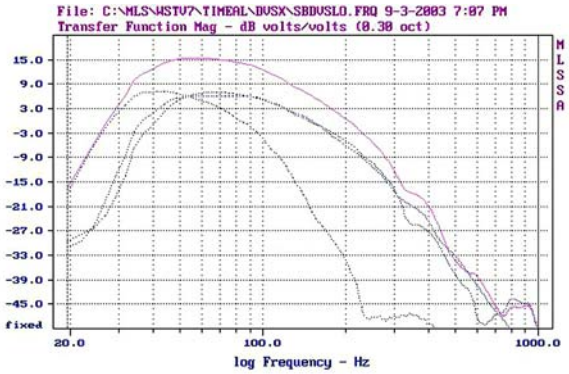

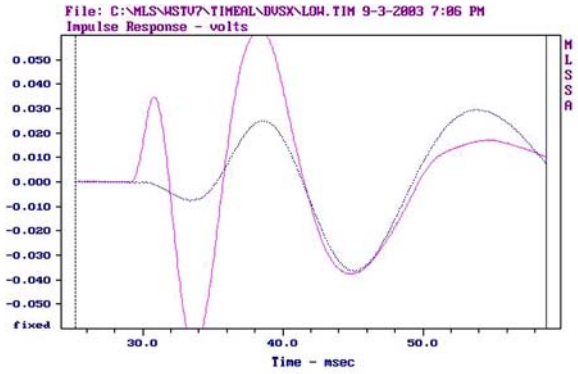

V-DOSC + dV-DOSC PRESETS

For downfill applications dV-DOSC has been scaled up by +1 dB for HI presets to match the approx 1 dB increase for the mid/highs that was obtained using revised eq (even though the channel gains are still at -5/-5). For LO presets dV-DOSC output gains have been scaled up by +2 dB (to match the +2 dB V-DOSC mid/high output channel gain increase to -3/-3).

NEW SUBWOOFER PRESETS (DELAY ARC, LCR)

For large format subwoofer configurations, a useful technique for processing a central ground-stacked horizontal line array of subwoofers is to use delay processing to electronically arc the array (please see the V-DOSC manual for full details). Two presets are provided in V7 with 60 Hz (SB218s in INFRA mode) and 80 Hz (SB218s in 4W or X AUX mode) crossover points.

Another useful technique is to create a Left/Centre/Right (LCR) array of subwoofers where each block has the same number of subwoofers. For the case of the LCR sub array, L/R arrays can be oriented at 45 degrees offstage and instead of a single buildup between L/R arrays (as for L/R split stacks), with an LCR array there are two "mini buildups" between L/C and C/R that help to smooth out the centre buildup that is obtained with L/R configurations. Two presets are provided in V7 with 60 Hz (SB218s in INFRA mode) and 80 Hz (SB218s in 4W or X AUX mode) crossover points and channel assignments that are suitable for implementing LCR sub arrays.

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