MiniWoofer™ Shrinks Subwoofer by 85%

Redrock Acoustics and Waves Develop MaxxBass® Optimized Subwoofer

LOS ANGELES, CALIFORNIA
AUDIO ENGINEERING SOCIETY CONVENTION
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WAVES LTD., a leading supplier of psycho-acoustic audio signal processing solutions for the professional, broadcast and consumer electronics audio markets, has announced today that Redrock Acoustics has developed a MaxxBass® optimized subwoofer design. This new type of subwoofer called the MiniWoofer™ can reduce cabinet volumes by as much as 85% without reducing the perceived bass content or increasing power consumption.

Waves MaxxBass extends the bass frequency range up to one and one half octaves using patented psycho-acoustic technology. MiniWoofers are the first speaker systems that have been optimized to use MaxxBass through custom driver, electronics and enclosure acoustics to reduce the size and power of traditional subwoofers. The first example of the MiniWoofer uses a 7 inch cube shaped enclosure with a custom 6.5" driver. This tiny speaker system is able to produce linear perceived bass response to below 40Hz and up to 107dB SPL with a 100W amplifier. The acoustic performance is similar to a high quality 10" woofer in a one cubic foot enclosure.

The MiniWoofer product will be demonstrated at the Audio Engineering Society Convention in the Waves booth #1146.

Both passive and active versions of MiniWoofers can enable improved bass response in space and cost restrained applications such as car audio, DVD Receiver, mini/micro-comp and televisions. The MiniWoofer enclosure can also be implemented in various innovative design options such as a thin profile, wall mountable version.

Redrock Acoustics will initially offer a active MiniWoofer system using Waves MX3000AS MaxxBass ASIC for aftermarket car audio applications. Passive versions of the MiniWoofer can be used with DVD Receiver systems with a software enabled MaxxBass function in the existing audio decoder DSP. Waves and Redrock will also provide the key speaker parameters of the MiniWoofer as a reference design to speaker manufacturers.
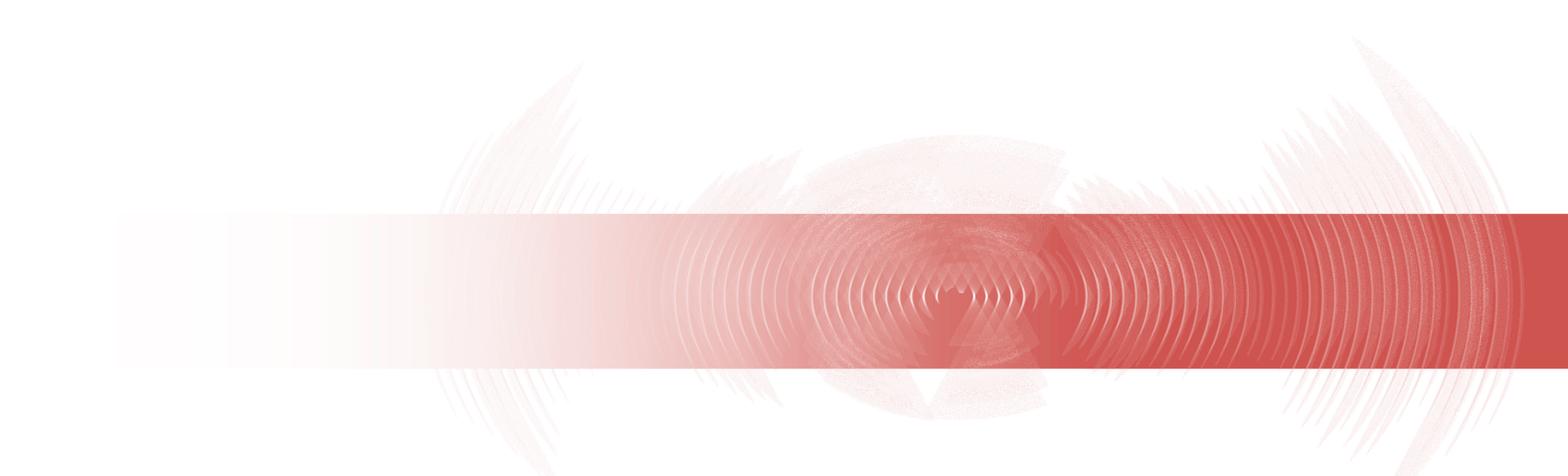
"Waves MaxxBass changes the rules of traditional loudspeaker design enabling dramatically smaller enclosures and higher power efficiency," stated Patrick Turnmire, President of Redrock Acoustics. "Our initial speaker design offers the sound quality of a traditional 10" woofer, but with 85% less volume and no additional power by redesigning the driver and enclosure to optimize its performance with MaxxBass."

"MaxxBass can extend the low frequency performance of a loudspeaker up to one and one half octaves with no loss of efficency, no increase in power input and no increase in box volume," stated Vance Dickason, Editor of VoiceCoil and author of the Loudspeaker Cookbook. "Using MaxxBass to re-optimize speaker performance by reducing size and power opens a new degree of flexibility in loudspeaker design."

"Waves has found many consumer electronic manufacturers interested in the improved bass quality that Waves MaxxBass can offer loudspeakers; however the largest market for MaxxBass may be to reduce the size and power consumption of speaker systems," stated Gilad Keren, President and CEO of Waves. "This requires redesigning the speaker driver, enclosure and electronics by a skilled loudspeaker designer, Waves believes the combination of MaxxBass and new optimized speaker designs will enable a huge range of new innovative products for consumers."

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Redrock Acoustics will offer a complete turn-key solution with its international manufacturing partners for an active MiniWoofer system for car audio aftermarket firms. There is also interest in various MiniWoofer enabled solutions in many other applications such as minisystems, television and even portable applications. The Thiele / Small speaker parameters for the initial custom MiniWoofer driver will also be available as a reference design for other manufacturers interested in manufacturing their own MiniWoofer products.

Waves is the leader in computer based audio signal processing tools in the professional market, and its tools such as limiters, equalizers, compressors and effect processors are used on practically every top album and movie soundtrack. Ten years of leadership experience with this very quality conscious market has allowed Waves to develop a rich expertise to psycho-acoustics, including the patented MaxxBass technology. MaxxBass is a bass frequency extension technology that extends the perceived low frequency response by up to one and one half octaves below the physical low frequency cut off of a loudspeaker system. MaxxBass utilizes the psycho-acoustic Phenomenon of the Missing Fundamental. The MaxxBass software "plug-in" tool is commonly used today in mastering much of the world's most popular music to improve mix compatibility on smaller loudspeaker systems; however using MaxxBass in loudspeaker systems is even more powerful, since it can be optimized to extend the bass response of the specific loudspeaker system.

Waves recently introduced the MX3000AS, a low cost ASIC (Application Specific Integrated Circuit) for MaxxBass making this technology cost-effective for consumer electronic products. This ASIC integrates high quality analog, sigma delta A/D/A and a custom DSP into a low cost 16-pin SOIC package. Datasheets and other technical information is available at www.maxx.com.

MiniWooferTM is a trademark for KS-Waves Ltd.
MaxxBass(r) is a registered trademark for KS-Waves Ltd.

About Redrock Acoustics
Redrock Acoustics is a leading design consulting firm focused on acoustics and electronics of speaker systems. They have designed over 500 speaker products for the US market in the past 6 years. Redrock Acoustics designed products have won a large number of industry awards including CES Innovations and Grand Prix awards. Their products can be found in every US car audio store, car audio magazine and audio retail catalog. For more information, visit the Redrock Acoustics website at http://www.redrockacoustics.com.

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About Waves Ltd.
Waves is a leading provider of audio DSP solutions for professional, broadcast, and consumer electronics audio markets. Waves has ten years of expertise in the development of psycho-acoustic signal processing algorithms that leverage knowledge on the human perception of hearing to radically improve perceived sound quality. Waves award-winning processors are utilized to improve sound quality in the creation of the world's most popular music, movie sound tracks and multimedia titles. Waves offers computer software solutions and hardware plus software solutions for the professional and broadcast markets. Waves also offers semiconductor with embedded software solutions under the Maxx brand for the consumer electronics audio applications. Waves' Maxx technology dramatically enhances audio performance in consumer applications and has been licensed to several leading companies, including Motorola and Microsoft. For more information, visit Waves Web site at http://www.waves.com

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