Outline loudspeaker system's declared technical specifications

Shown below are some of the methods used when drawing up our loudspeaker system spec sheets.
Due to the lack of a standard which is universally and unequivocally accepted by loudspeaker system manufacturers, when necessary Outline referred to the two most accredited documents at international level: AES2-1984 recommended practice, published by the Audio Engineering Society and (when this was insufficient) IEC 268-5 Norms published by the International Electrotechnical Commission (IEC).
For all models manufactured by Outline, declared data are measured in the same conditions and using the same methods, to facilitate comparisons to the utmost.

Frequency response

The graphs shows the frequency response referred to normalized center band value.
The declared frequencies are those usefully reproduced by the system in question.

Sensitivity

Sensitivity is measured by applying a voltage of 2.83V on the rated impedance with full space (4π) radiation configuration, at a distance of one metre. Since this operating condition is almost never met during current use and rarely occurs in the majority of applications, for low frequencies the sensitivity value in half-space (2π) conditions is also declared, which is equivalent to the loudspeaker system operating in an open environment, but standing on the ground. As we know, this value of sensitivity in half space is 3dB higher than the data obtained in full space.
All indoor applications are much closer to half space radiating conditions, and in many cases even those of quarter space (π).

Continuous and peak power

This figure, declared according to the AES standards, indicates the electric power that can be applied continuously to the system. The power which can be applied with a music program (Peak) is also declared, following the application of the AES Standard test signal, which foresees a difference of 6dB between RMS and peak value. This value must be considered plausible for very short transients (< 20 msec), and is therefore referred to behaviour with a music signal. Data indicated refer to the power the component can handle within the system it's part of: the same loudspeaker used in two different enclosure models or versions could therefore have different power data.

Maximum sound pressure

This is the sound pressure generated by the system in the declared radiating conditions [half space (2π) or full space (4π)].
The maximum sound pressure values declared are those obtainable in relation to the declared applicable power values. These values are expressed in continuous (corresponding to AES applicable power), and peak conditions (corresponding to the music program power). The latter value is the closer to the real operating conditions of the system indoors with music signals.
All values are calculated not considering the power compression effect for thermal reasons.

Average dispersion 500 ÷ 10000Hz

These are the system's dispersion values, on the horizontal and vertical planes, referred to frequencies from 500Hz to 10000Hz. It's the data to be considered to understand what could be the system's sound coverage with music or speech.
Coverage angles are specified for an attenuation of -6dB compared to on-axis emission. At low frequencies, there will obviously be increasingly larger dispersion angles, up to omnidirectional emission (360° on both planes).

Average dispersion 500 ÷ 4000Hz

This is a mean dispersion value in the mid frequency range. This value shows the effective dispersion of the system around frequencies relative to the human voice.
This data is useful, as many systems are only used to reproduce speech (for conference room use, for example), in which cases it's necessary to bear in mind this higher dispersion figure compared with others shown.

Average dispersion > 5000 Hz

These are the system's dispersion values, on a horizontal and vertical plane, regarding high frequencies (>5000 Hz).
When designing a system, it's the figure to take into consideration to ensure perfect sound coverage even at high frequencies. Coverage angles are specified for an attenuation of -6dB compared to on-axis emission.

Impedance

Shows the impedance value of the load formed by the enclosure. In the event of systems intended for use in multi-amplification set-ups, this value us specified for each section in the system.
Two impedance values are stated: rated value and minimum value. The former, a convention of the audio industry, derives from the application of IEC norms and indicates, with a certain amount of approximation, the average impedance value. The minimum value is the effective minimum impedance that a load offers an amplifier at a certain (indicated) frequency.
This value is very useful and important for understanding when two loudspeaker systems can be used in parallel and when it's unadvisable, since the value's too low.

Outline is constantly committed to research aimed at continually improving its products, so new technology, material and manufacturing methods are applied to its existing range of products as an on-going expression of company philosophy. For this reason, Outline products may therefore differ slightly from the descriptions found in these pages, but specifications will always be the same as or better than those indicated here.

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