Audio Calculators Roundtable Toolbox

Air Absorption Calculator

Merlijn: It keeps me from losing my sanity; allows me to verify what I can expect from changes in temperature and humidity.

Danely iOS Apps

Bob: Cardioid Array, End Fire, Acoustical calculator to add dB at different phase values.

Floor Bounce Calculator

Merlijn: Allows me to do a rough estimate to find cancellations caused by floor bounce reflections.

Mauricio: I use this to prove to students that You cannot equalize everything you see in the analyzer.

Difference between curves by Mija Krieg Schreiber

Merlijn: You can buy a microphone that comes with a correction curve from the manufacturer, but this calculator allows you to do some tweaking and export a mic correction curve into Smaart. I can make my cheaper Audix microphones report the same information as my more expensive DPA. It's not calibrated to pressure, but they produce identical transfer functions.

Bob: As long as your mics are calibrated to each other, that's the most important thing.

Notepad Calculator

Nathan: Keep a running history of your design calculations.

Phase Calculator

Merlijn: Demonstrates the effect of phase when adding simple sines or pink noise.

PixelStick

Merlijn: Measure the distance between two pixels on your desktop and use Forward Aspect Ratio and Lateral Aspect Ratio regardless of design software because they are unitless.

Bob: I do a lot of design in MAPP XT where I never even run a prediction. There's a lot you can do if you know what the shape of the speakers.

Rita

Merlijn: Import an impulse response and apply virtual filters to the loudspeaker response.

Single Loudspeaker Aim

Daniel: Useful for speakers that you can't stand next to and focus. It's hard to get the downtilt exactly right for a center cluster when you're standing on the orchestra pit lift.

Spatial Distribution

Merlijn: How the summation, combing, transition, and isolation zones are distributed over space.

Sub Align

Merlijn: Visualize the part of the audience where everyone will be coupled between the main speaker and subwoofer.

Sub Array Designer

Bob: Anytime I'm confronted with something unusual or unknown, this is a great resource.

Mauricio: This is my favorite calculator. It saves me a lot of time. I recently used it to convince a local system tech that our design would work.

Triangle Solver for iOS

Nathan: I use Triangle Solver in the field if I need to find speaker aim, but I only know speaker height and distance to the last seat.

Uncoupled Array Calculator

Bob: It does much more than just uncoupled arrays. It also provides you with the coverage width or lateral aspect ratio. Use for spacing mains and front fills.

Merlijn: I use it all the time. Especially the older Excel version. It will allow you to calculate what loudspeaker you need if someone has already determined their location.

Mauricio: I use it to demonstrate to the promoter that we may need two more front fills because if we use less than that, it may not be properly covered.

Linear to Log conversion table

Bob: Use to find speaker model. Convert range ratio to dB. See fig.1.14 in Sound System Design and Optimization.

Here's the math: 20xLOG10(Linear)
- 20xLOG10(2) = 6dB
- 20xLOG10(0.5) = -6dB

**When calculating summation, subtract if polarity is reversed.

Here's the table you should memorize
- 20dB = x 10
- 6dB = x 2
- 5dB = x 1.8
- 4dB = x 1.6
- 3dB = x 1.4
- 2dB = x 1.25
- 1dB = x 1.1
- 0dB = x 1.0
- -1dB = x 0.9
- -2dB = x 0.8
- -3dB = x 0.7
- -4dB = x 0.6
- -5dB = x 0.55
- -6dB = x 0.5