Horn Driver Matrix

INTRODUCTION

ABOUT THIS MANUAL
This User's Manual explains the *Horn Driver Matrix* (*HDmix*) software

WHAT THIS USER MANUAL DOES COVER
HDmix is a new horn-driver simulation tool. Using a new equation, it correlates measurement and FEA to obtain a virtual horn-driver absolute SPL frequency response, this manual allows the user to quickly become efficient with the user interface *HDmix* software.

LICENSE AGREEMENT AND WARRANTY

THANKS
Thank you for purchasing your *HDmix* software. We hope that your experiences using *HDmix* will be both productive and satisfying.

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website: www.speakerlab.it
e-mail: info@speakerlab.it

Technical support is free at this time; however, we reserve the right to charge for this service in the future as conditions, overhead, and support personnel requirements dictate.

INSTALLATION

SYSTEM REQUIREMENTS

HDmix software is a low intensive numerical application. *HDmix* requires a full 32 or 64 bit operating system and can be installed in any personal computer with the following minimum system requirements:

- 1.3 GHz CPU speed
- 500 MB RAM
- Mouse and Keyboard
- 350 MB free HDD space
- Minimum size of screen resolution 1024x768
- Microsoft Windows XP, 7, 8, 8.1, 10, 11
- Adobe Acrobat Reader

SOFTWARE INSTALLATION

- Delete all previous installations, included Demo Version
- From the installer folder, locate and run the Setup.exe file as administrator user (right click: Run as Administrator)
- Follow the instructions on the screen
- After installation Shutdown and Restart OS
- Run *HDmix* from relative link on desktop or from SpeakerLAB folder on Start Menu
- At first launch *HDmix* creates a code on desktop, send this code to the factory: copy or attach it in the e-mail info@speakerlab.it

Assess measurement

Measure the Compression Driver in a Plane Wave Tube (PWT)
Using your preferred system to assess measurements, for example the Audiomatica Clio ®
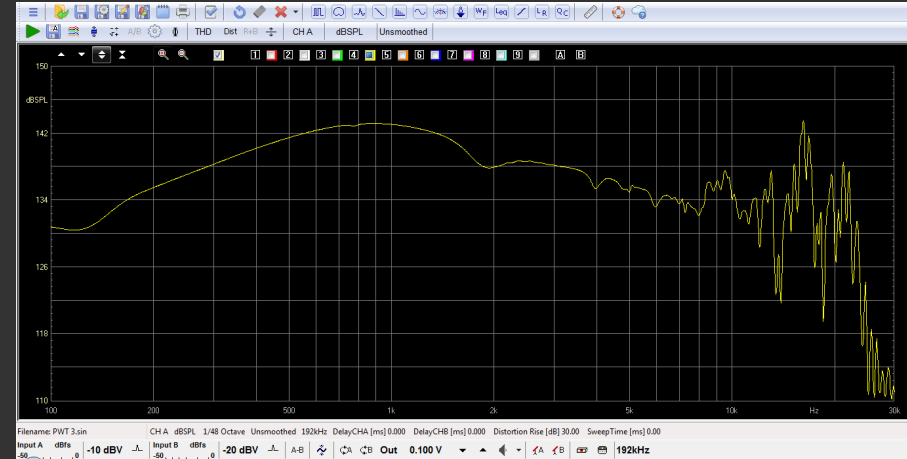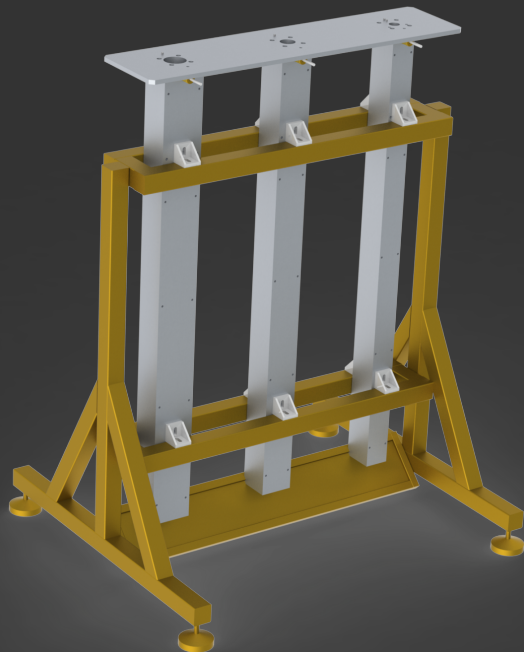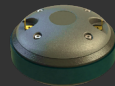
Suggested PWT measurement: sinusoidal sweep signal @1W

Follow AES Standard "Plane-Wave Tubes - Design and Practice"

HDMatrix method

Import CD measurements

Open DHmix and import Compression Driver PWT measurements

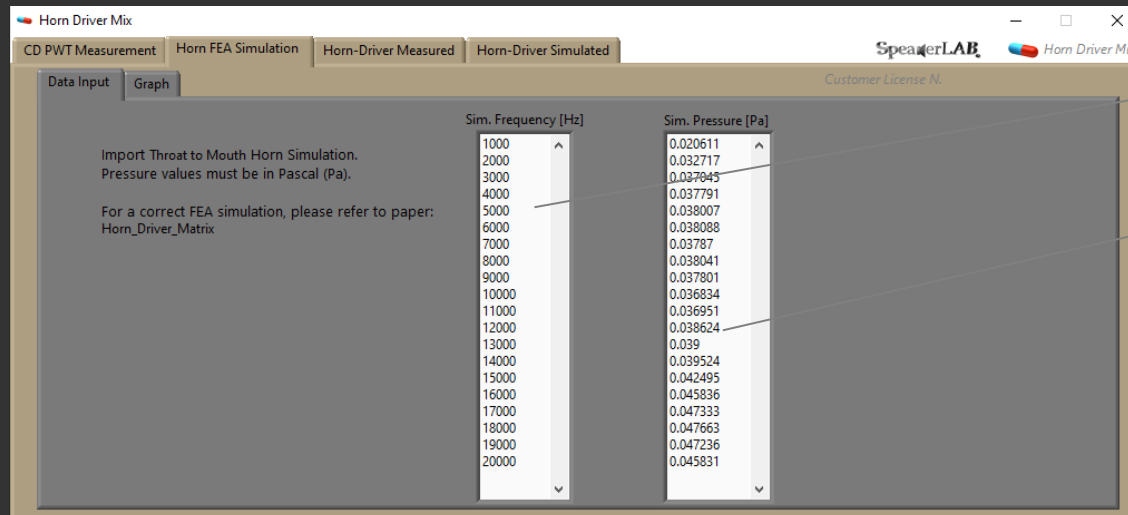Paste the frequency column (in Hz)

Paste the pressure columns (in dBSPL)

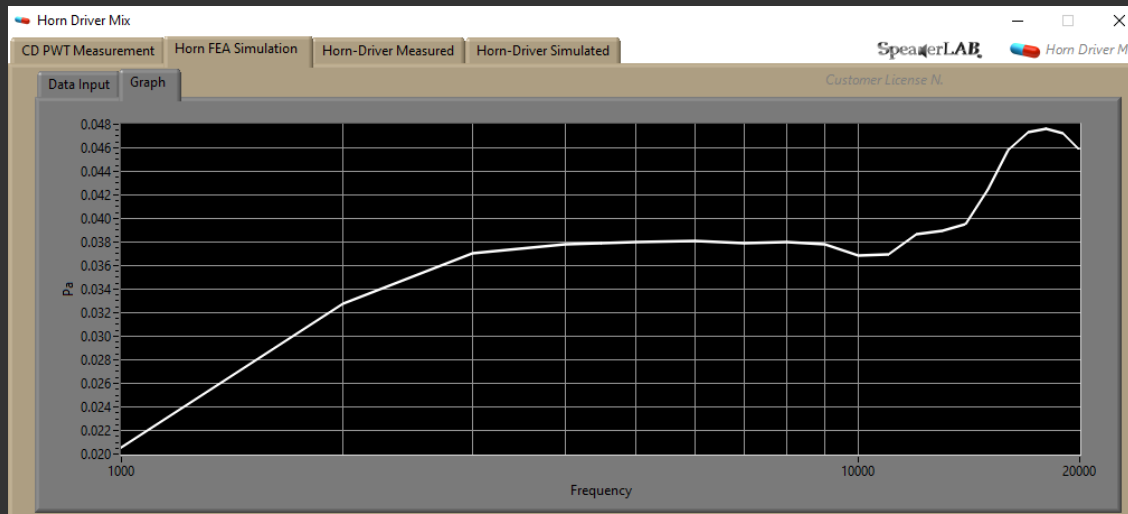Verify measurements and average data

HDMatrix method

Import horn FEA

Paste the frequency column (in Hz)

Paste the pressure columns (in Pa)

Verify FEA curve

HDMatrix method

Import HD measurement or target (optional)

Horn Driver Mix

| CD PWT Measurement | Horn FEA Simulation | Horn-Driver Measured | Horn-Driver Simulated |

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(Optional).
Importing the final measurement of the Driver+ Horn unsmoothed. This is useful for a fast comparison between measurement and simulation, after the horn realization.

Positioning microphone at the same distance and angle of the simulated horn.
Using the same signal and power of the PWT measurement.

Frequency [Hz]	Measure [dBSPL]
98.57	50.66
100	56.94
101.45	53.09
102.92	54.41
104.41	58.53
105.93	55.57
107.46	57.16
109.02	53.78
110.6	58.84
112.2	54.85
113.83	54.74
115.48	59.54
117.15	56.79
118.85	52.24
120.57	59.32
122.32	55.75
124.09	53.76
125.89	58.21
127.72	53.71
129.57	58.8
131.45	57.16
133.35	56.95

Paste the frequency column (in Hz)

Paste the pressure columns (in dBSPL)

HDMatrix method

Prediction vs Measurement/Target
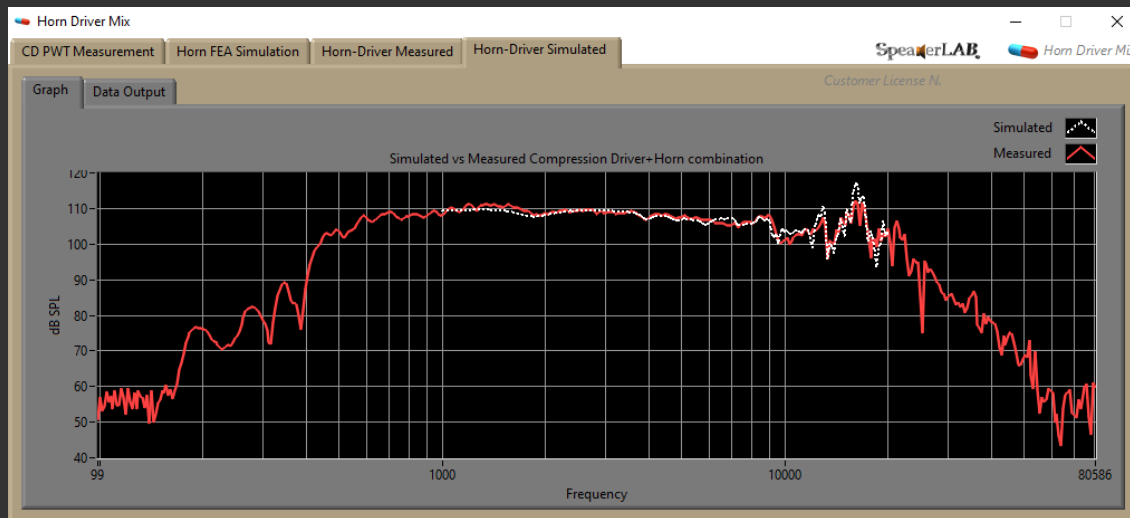
Predicted curve

Measured (optional)

The measured red curve is the real HD and this plot is useful for a fast comparison.

Otherwise, it is also possible to import a target profile using the red curve as a reference.
In this case if the prediction doesn't match the target you can work with the horn FEA simulation or try to import a different compression driver measurement

HDMatrix method

Exporting predicted HD

Resolution Step is useful to modify exported points number
Resampling: 1 Hz ÷ 1 kHz
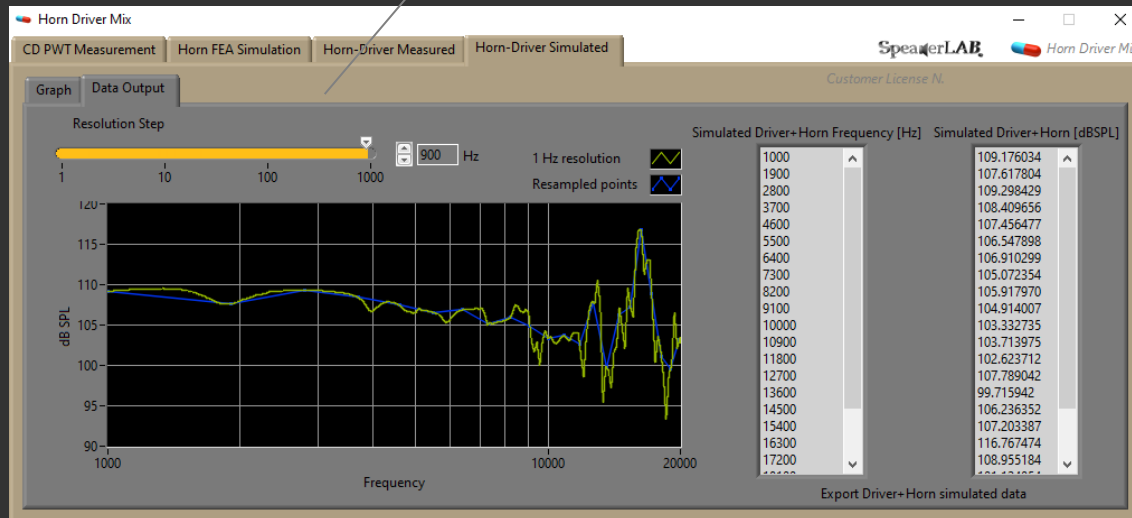
Copy Hz and dBSPL columns into your
spreadsheet or measurement system

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