

# AUDIFIED

# MIXCHECKER PRO

User Manual

Version 1.3.4

**Webpage:** [audified.com](https://audified.com)

**Support:** [audified.zendesk.com](https://audified.zendesk.com)

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## Introduction

MixChecker saves your time. Plug it in the master track of your project as the last segment of your listening chain and quickly turn your studio monitors into classic reference monitors or several consumer devices.

The Pro version adds many new features but the interface isn't more complicated than the original MixChecker.

## New from version 1.2

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- Redesigned interface
- Improvements in the simulations

## Software Installation

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Get the recent version of the plug-in from your user account on our website:

**Webpage:** [audified.com/account/downloads](https://audified.com/account/downloads)

- **Windows:** The downloaded file is packed, unzip it. Run the installer and follow the on-screen instructions. You can select the destination path and the installed plug-in format during the process.
- **Mac:** Mount the downloaded disk image and run the installer. You can select the installed plug-in format by clicking the Customize button. Plug-ins are installed in the standard locations.

## Software Uninstallation

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- **Windows:** Navigate to the MixChecker program folder in the Start menu and run the uninstaller.
- **Mac:** Open the provided disk image and run the uninstaller.

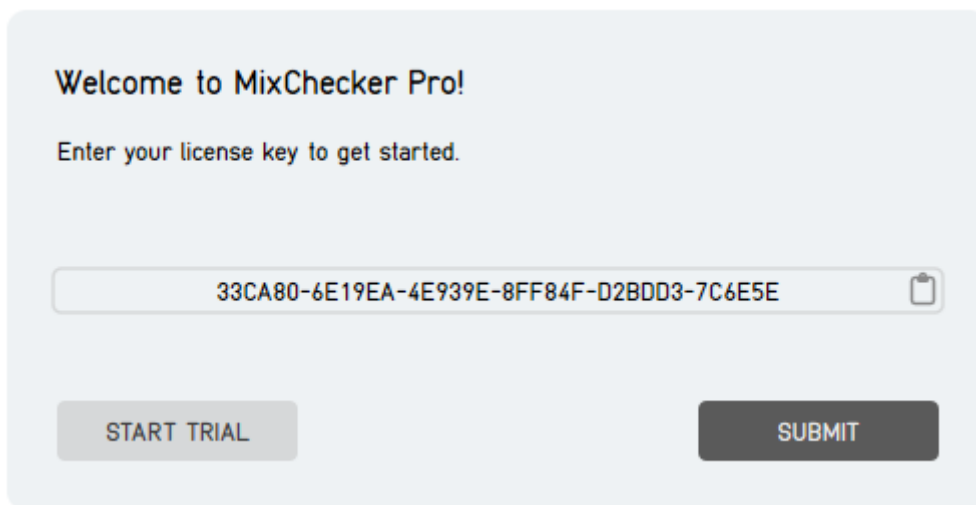
## Product activation

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Starting with version 1.3.0, you will automatically create an account via checkout if you are a first-time buyer. You can also sign in to your account anytime on our site [audified.com](https://audified.com) via the Account icon in the right corner to access your Account dashboard.

Upon completing the purchase, you will receive an automatic email containing your serial numbers and the download link for your purchased products.

When you first launch the plugin, you will be asked to enter the serial number, or you can use the product for a limited time as a trial.



The screenshot shows a light blue dialog box with the following content:

- Header: **Welcome to MixChecker Pro!**
- Text: Enter your license key to get started.
- Input field: A text box containing the license key `33CA80-6E19EA-4E939E-8FF84F-D2BDD3-7C6E5E` and a clipboard icon on the right.
- Buttons: A light gray button labeled **START TRIAL** and a dark gray button labeled **SUBMIT**.

## Opening the plug-in

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AUDIFIED MixChecker works in all major digital audio workstations (recording applications) as a plug-in.

To open the plug-in, locate the plug-in selection (usually a hierarchic menu). MixChecker is listed in the Distortion group or in the AUDIFIED group when the manufacturer sorting is offered.

# Working with MixChecker

## Control overview

The screenshot shows the Audified MixChecker Pro interface. At the top, there's a utility menu with icons for zoom, volume, copy/paste, and notifications. Below this is a grid of 12 simulated listening devices: 7" Vintage, Disco Pool, 2" Black, TV 37", 15" Silver, 9" Bookshelf, 5" Silver, White, HiFi 35 B, Sedan Pas, Small Black, and Micro Silver. Below the grid are five main mode buttons: NOISE (cyan), AUTO (green), BYPASS (red), MONO (blue), and DIST (yellow). At the bottom, there are adjustment sliders for Noise type (set to 'Environment 1'), Level, Channel mode (set to 'Mono'), and Distortion (set to 'Dist Clip').

**Utility menu**  
Volume settings, Copy&Paste

**Notifications**  
New features and promotions

**Load Button Set**  
Select one of the sets of buttons you have prepared in the EDIT mode.

**Edit Button Set**  
Enter the Button Edit mode. See the Edit screen on the next page.

**Simulation**  
Select the device you want to check your mix on. Cycling all these buttons, you get an overview how your mix sounds in a real life.

**Custom label**  
A label appearing in the button. Only labels in the user set can be modified.

**Distortion**  
Turns the simulation of distortion on or off

**Mono**  
In the default mode, it makes the signal monophonic. The advanced mono modes are available in the Adjustments pane

**Bypass** the whole effect  
Be sure to turn this button on before you export your mix

**Auto Advance**  
Automatically switch the simulated devices. The advance time is selectable in the Adjustments pane

**Noise**  
Add the noise of a real listening conditions. Adjust the noise and its volume available in the Adjustments pane

**Audified services**  
Updates, Information, Manual

**Zoom**

**AUDIFIED MIXCHECKER PRO** Default Mastering

7" Vintage, Disco Pool, 2" Black, TV 37", 15" Silver, 9" Bookshelf, 5" Silver, White, HiFi 35 B, Sedan Pas, Small Black, Micro Silver

NOISE, AUTO, BYPASS, MONO, DIST

Noise type: Environment 1, Level, Channel mode: Mono, Distortion: Dist Clip

## Standard workflow

- MixChecker Pro works in all main digital audio workstations (recording applications) as a plug-in.
- To open the plug-in, locate the plug-in (usually a hierarchic menu). MixChecker Pro is listed in the “Other” group or in the “AUDIFIED” group when the manufacturer sorting is offered in the DAW.
- Usually, the checking takes place in the end of mixing and mastering process. Click the selected simulated devices and listen to the results.



Once the checking is finished, we suggest to fully bypass the plug-in (not only deselecting the simulations).

## When upgraded from MixChecker to MixChecker Pro

MixChecker Pro offers all functions of MixChecker.

If you close the Edit pane and if you use one Button set, the Pro version control is almost the same as of the original MixChecker. But the simulations are much more realistic and there is less latency.

Once you have used MixChecker Pro successfully in its basic mode, you may start utilizing more advanced features.

Start opening the Edit Pane at the bottom and check the new parameters.

Then click EDIT and explore the flexibility of assigning simulations to the buttons, rearrange the button order and adjust additional parameters.



**Important:** There is one principal difference between MixChecker and MixChecker Pro: The original MixChecker simulates only linear features of the devices but the Pro version Distortion makes the processing non-linear. You never know the volume the listeners set for your recording. But you may calibrate MixChecker Pro, so the listening volume and the distortion of devices is realistic.

# MixChecker screens

## Default screen



The basic MixChecker Pro screen offers the effective and quick setting of various listening environments.

The Adjustment area offers to edit the parameters assigned to the buttons in the bottom line. These settings are independent of the simulated device selection.

## Default screen with volume adjustments

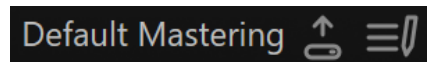


The Edit mode serves for the setup of MixChecker Pro simulations.

Entering the Edit mode, you may assign any of the available simulations to each button and adjust some more parameters for the simulation.

Then you may save the assignment to one of the Button Sets.

You may easily switch various Button Sets in the top bar.



## Adjustments pane controls

The Adjustments pane includes several controls:

- Noise type:** A dropdown menu currently set to "Ext Street 1".
- Level:** A circular knob with a checkmark icon.
- Time:** A circular knob with a minus sign icon.
- Channel mode:** A dropdown menu currently set to "Mono".
- Distortion:** A range indicator with "Dist" and "Clip" labels.

Callout boxes provide further details:

- Noise type and level:** Select the noise and its level for the Noise button.
- Auto Advance time:** Adjust the time for automatic cycling of the simulations.
- Mono mode:** The extended channel modes are:
  - Mono
  - Stereo
  - Left channel to both speakers
  - Right channel to both speakers
  - L-R swapped
- Distortion level:** Indicates the range, where distortion is applied.

## Button Edit mode

The Button Edit mode interface includes the following elements:

- Buttons:** A grid of buttons representing different simulated devices, such as "7" Vintage", "Disco Pool", "TV 37", "15", "5" Silver", "White", "HiFi 35 B", "Sedan Pas", "Small Black", and "Micro Silver".
- Assigned simulation:** A dropdown menu currently set to "HiFi Micro Silver".
- Custom Label:** A text input field currently containing "Micro Silver".
- Parameters:** Three sliders for "Stereo Base", "Distortion", and "Volume".
- Buttons:** "Save As..." and "Cancel" buttons.

Callout boxes provide further details:

- Rearrange buttons:** Drag the buttons to rearrange.
- Assigned simulation:** Assign the simulated device from the list. The same simulation with various settings for multiple buttons is allowed.
- Custom label:** Type a label appearing in the button and tooltip.
- Stereo base:** Adjust the width of stereo base. The leftmost position produces mono signal. The setting applies to one button, unlike the main Mono in the main view.
- Distortion:** Adjust the distortion level for the simulated device. This allows to simulate the device distortion as if the listener would use different listening levels, without a need to change the level of the mix.
- Save or cancel:** Once the button set is modified, click Save or Save as... to store the whole button set.
- Volume correction:** Adjust the volume level for the button.

# Reference

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## Button sets

The Button set is a complete configuration for all 12 buttons. Button sets can be:

- **Loaded:** Click the Preset symbol in the main display.
- **Edited:** Click the EDIT label on the right of the main display, then edit the contents of the button set in the Edit Mode.
- **Saved:** Once you have finished the editing of all buttons, click the Save or Save As... button at the bottom. Saving is not organized alphabetically but there are fixed numbered slots for each button set.

Each button has adjustable features;

- **Assigned simulation** - the simulated device with the related button symbol.
- **Custom label string** - user defined string that is shown in a tooltip.
- **Stereo Base** - a possibility to reduce the stereo base.
- **Volume Level** - custom user volume adjustment.
- **Distortion** - simulation of nonlinear behavior of the simulated devices.



Some buttons in a button set may have assigned no simulation.



Multiple buttons may have assigned the same simulated device with various volume, distortion, and stereo base levels. We suggest to distinguish them using the Custom label.

## Noise

When activated, some background noise is added to the output, simulating the real environment. The amount of noise is adjustable by the Level button.



When the noise is added to the headphones simulations, the noise is processed as if it went through the headphone shell from the outside.



Playing the noise depends on the DAW transport state, it may differ in various DAW's.

## Auto Advance

When activated, all buttons are sequentially turned on from the first to the last with a bypassed state included. Each of the buttons is active for the time set by the auto-advance time knob below in the Edit pane.

## Mono

The MONO button has several more modes than just the standard monophonic function. You may also listen to the left channel signal from both speakers, the right channel signal from both speakers or to swap the left and right channels.



In this mode, the simulated device type is disconnected from the DAW automation.

## Distortion

We've analyzed the behavior of the devices in a wide volume range and we focused on the specific distortion produced by each device when it is normally loaded. This nonlinear behavior was transformed to a model unique for each of the devices, using less or more harmonics depending on the current device harmonic distortion characteristics. Each model was tuned to be as close as possible to the original device, including A/B listening tests, etc.

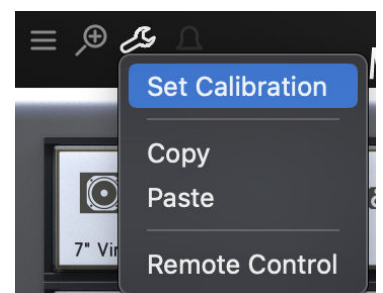
- If the signal reaches the level when the distortion is audible, the yellow indicator shines.
- If the signal exceeds the level which the simulated device could really process, the red indicator shines. In this case, a hard limiting is applied to the signal.

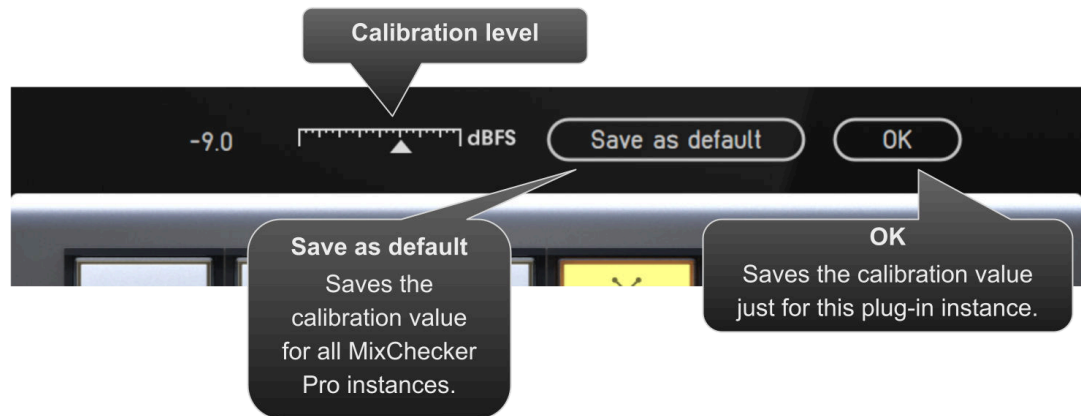


Some of the devices have disabled the Distortion controls - typically the studio monitors, producing negligible harmonic distortion.

## Calibration

Calibration adjusts the relation between the digital zero (maximum signal value in digital system) and the analog zero (the value which is used for distortion, affecting the non-linear characteristics of the effect).





**Setting the calibration:** Select a simulation of a cheap device with distortion. Listen to the loudest part of the mix. Increase the calibration level so the red indicator starts to glow. Then slightly decrease the calibration level. With these settings, you simulate the listening at the maximum level. When you need to simulate listening from the device at a lower level, decrease the distortion level in the Edit mode of MixChecker Pro by the same.

## Modeled devices

<b>Studio monitor</b>	Studio 4" Vintage
	Studio 5" Modern
	Studio 6" Modern
	Studio 7" Vintage
	Studio 5" Vintage
	Studio Cube
<b>LiveSound / PA</b>	PA Disco Pool
	PA Disco Stage
	PA Cheap Satellite
	PA Club Engineer
	PA Club Near
	PA Club Center
	PA Cheap Full-Range
<b>Computer Audio</b>	Desktop 2" Black
	Desktop 3" Wooden
	Desktop 3" Red

	Desktop 5" Black
	LCD Screen 24"
<b>TV</b>	TV 24"
	TV 37"
	TV 22"
	TV 32"
<b>Laptop Speakers</b>	Laptop 12" Grey
	Laptop 13" Silver
	Laptop 15" Black
	Laptop 15" Silver
<b>Tablet</b>	Tablet 9" Grey
	Tablet 9" Golden
<b>Smart Phone</b>	Phone 5" Grey
	Phone 4" Black
	Phone 5" Silver
<b>In-Ear Headphones</b>	Earplugs Black
	Earplugs White
	Earplugs Grey
	Earplugs Iso Black
<b>On-Ear Headphones</b>	Studio 30mm Silver
	Studio 40mm Black
	DJ 40mm Black
	DJ 40mm Red
	DJ 50mm Red
	HiFi 35mm Black
	HiFi 40mm Grey
	Studio 45mm Silver
	HiFi 40mm Silver
	Studio 40mm Blue
	Studio 40mm Yellow
	HiFi 50mm White

<b>Car Audio</b>	Wagon Driver
	Wagon Co-driver
	Sedan Driver
	Sedan Co-driver
	Sedan Passenger
	Minivan Driver
	Minivan Co-driver
	Minivan Kid
<b>Radio</b>	Bluetooth Speaker
	Smart Home Speaker
	Small Radio Black
<b>HiFi</b>	HiFi Micro Silver
	HiFi Micro Black
	HiFi Mini Silver
	HiFi Floor-stander

## Types of noise

Exterior City Street 1
Exterior City Street 2
Exterior Park 1
Exterior Park 2
Exterior Playground
Exterior Railway Station 1
Exterior Railway Station 2
Exterior Subway
Interior Bar
Interior Bus 1
Interior Bus 2
Interior Car 1
Interior Car 2
Interior Shopping Center

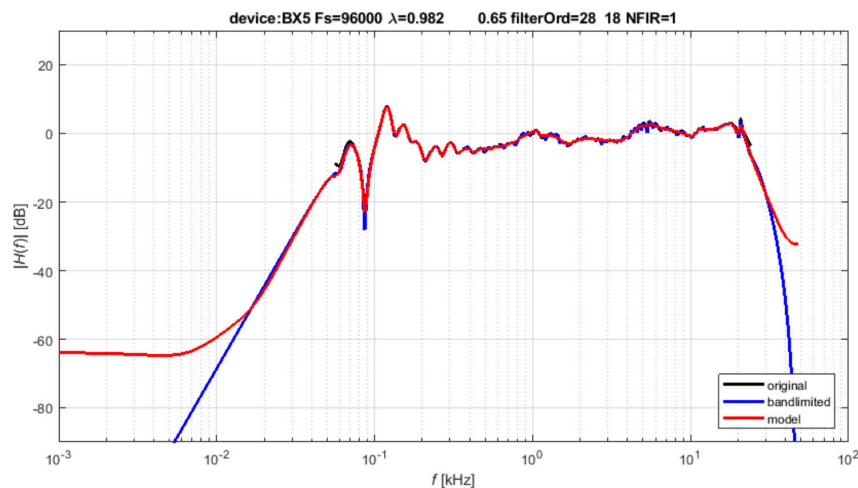
# Theoretical background and measurement details

## Parallel Warped Filters

The linear part of the model uses transfer function modeling by fixed-pole parallel filters based on the dual-band warped filter design.

Thanks to the filter design on a warped frequency scale, the frequency resolution of the model takes into account the frequency resolution of the auditory system. The dual-band design brings even more precise modeling at low frequencies without reducing precision at high frequencies.

The parallel structure of 2nd-order minimum-phase filters brings extremely low latency, minimal phase distortion, and high stability.

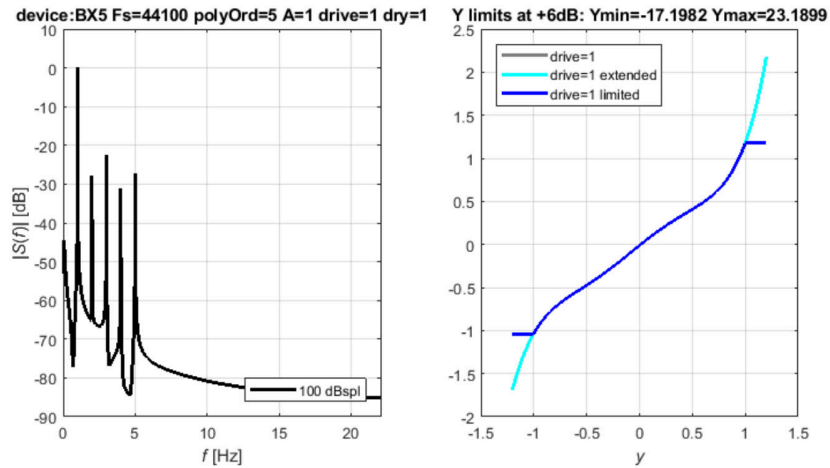


*Desktop 5" Black: magnitude response (measured and model)*

## Extended Wiener Model

The non-linear part of the model uses a proprietary model based on the Wiener model.

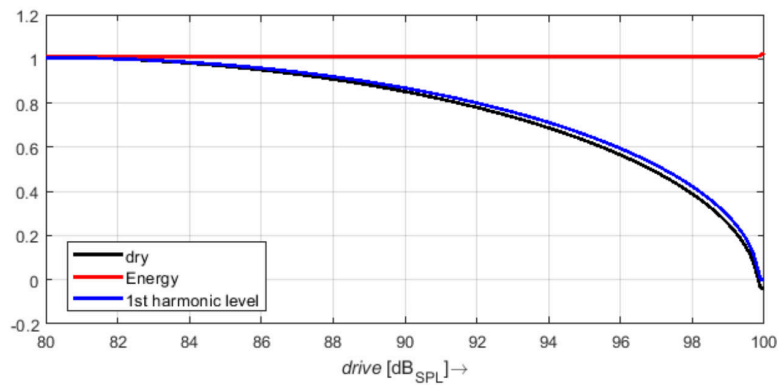
The nonlinear model extends the standard Wiener model and introduces dynamic nonlinearity and frequency-dependent nonlinearities while keeping the computing demands low.



*Desktop 5" Black: non-linear model - spectrum of excitation harmonic signal, nonlinear transfer function*

## Constant-Energy Distortion

The extended Wiener model contains technology that keeps the constant energy of the output signal for all distortion levels. It allows you to simulate distortion produced by the device at higher SPL without increasing SPL produced by your studio monitors. This also protects your studio monitors against mechanical damage.



*Desktop 5" Black: Dependence of 1st harmonic amplitude and dry parameter on the drive that preserves constant energy of the output signal*

## Constant Loudness

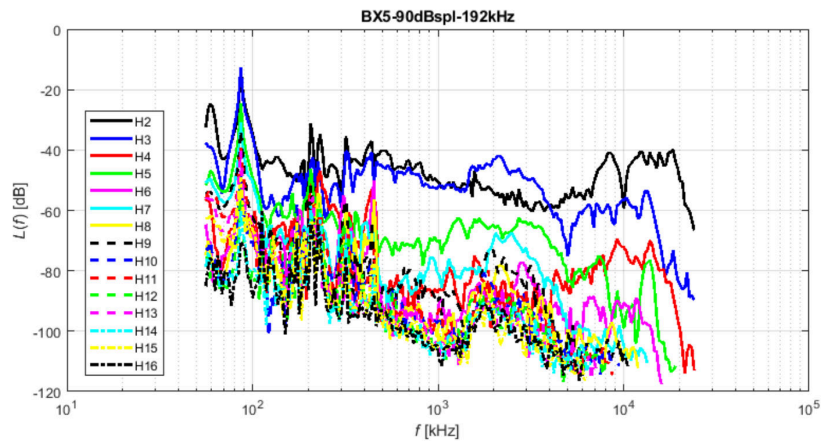
For the seamless switching among devices, the overall gain of all devices is normalized to the same objective loudness using an algorithm derived from Loudness Unit (LU) meter (ITU-R BS.1770-3).

## Acoustic Calibration

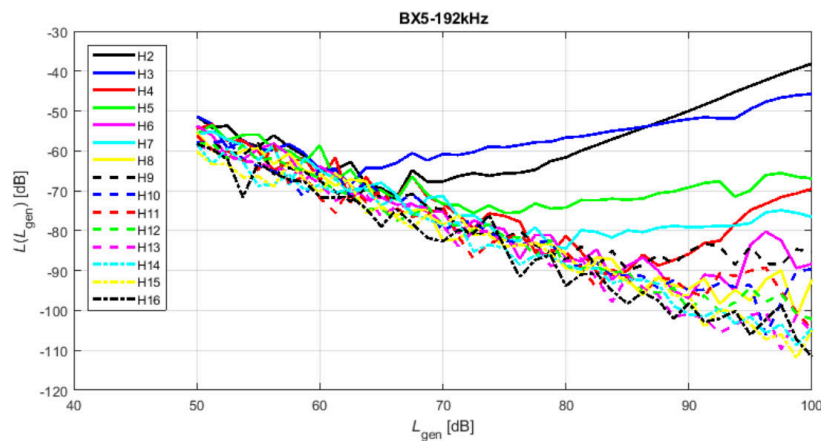
The scale of the distortion level is calibrated in real SPL measured in 1m distance in free field.

## Measurement

All characteristics of the devices used for identification of model parameters were measured using APx525 Audio Analyzer with an acoustic option in the anechoic chamber. Headphones were measured using B&K Type 4128-C.



*Desktop 5" Black: Measured dependence of higher harmonics ratio on input signal frequency*



*Desktop 5" Black: Measured dependence of higher harmonics ratio on input signal level*

# Technical info

## Specification

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- AAX, AU, VST3,
- macOS, Windows plug-ins.

## Requirements

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- macOS 10.14 and newer (64bit format delivered),
- Windows 7 and newer (64bit format delivered),
- 300 MB of disk space required.

## Conclusion

We are confident that you can now work with MixChecker Pro. However, if anything seems unclear or you need assistance, feel free to contact us.

**Support:** [audified.zendesk.com](https://audified.zendesk.com)

**Thanks for using AUDIFIED products.**