RTM AUDIO

RTM COMPARE

Manual · for Mac

Version 1.1 · Copyright 2026 RTM AUDIO

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Quick start

Five steps from two files to a fair A/B comparison.



The main window. Files on the left, A and B with the frequency comparison in the middle, playback at the bottom.

1. Drop two versions of a song into **Files**, or choose **Add**. Wait until each file shows its loudness.
2. The first file becomes A and the second becomes B. Click **A** or **B** at the bottom to choose what you hear.
3. Press Space to play. Press S to switch between A and B at the same point in the song.
4. Turn on **Match level**. The louder file is turned down to the quieter one, so you compare sound, not volume.
5. Read the curves in **Frequency comparison** and the numbers under them. Save the project when you are done.

> **TIP** Press **Shift+B** for a blind test. A and B become X and Y until you reveal them.

Listen. Compare. Decide.

A guide to the standalone Mac app. Keep a reference in place, switch between versions at the same point, and see their measurements together.

Install

Requires macOS 14.4 or later. This app includes Intel and Apple Silicon executables. Open the DMG, drag RTM COMPARE into Applications, then launch the copy in Applications. After the copy finishes, eject the disk image.

All audio analysis and listening previews run locally. The app includes its own audio engines; Python, FFmpeg and a DAW do not need to be installed. Streaming is a local loudness and codec preview, not an online music service.

Activate

The first launch asks you to activate. Choose Activate in browser and sign in to your RTM AUDIO account to start a free 14-day trial or activate your licence. COMPARE unlocks by itself when Moonbase confirms. A licence covers two computers, and a trial upgrades to the full licence when you buy.

The licence button at the bottom of the window shows the trial days left or that COMPARE is licensed; it also opens from RTM COMPARE > Licence. There you can Check licence now, activate a full licence during a trial, or Deactivate this computer to free its seat for another computer. Your projects and audio are not affected. COMPARE confirms the licence online now and then. Offline it keeps working, with a notice after seven days asking you to connect once.

Your first comparison



The transport at the bottom of the window: play, A, B, switch, loop and **Match level**.

1. Choose Add files in Files, or drop audio into that module. Wait for each file to show Ready. Each file then shows its integrated LUFS and true peak for a quick read.
2. The first files you add fill A and B, with a mix or reference in A and a master in B. Assign A and B from file actions at any time. To keep versions of one song together, drop one file onto another to make a stack.
3. Choose a second file, press Space to play, and press S to switch. A and B use one shared playhead.

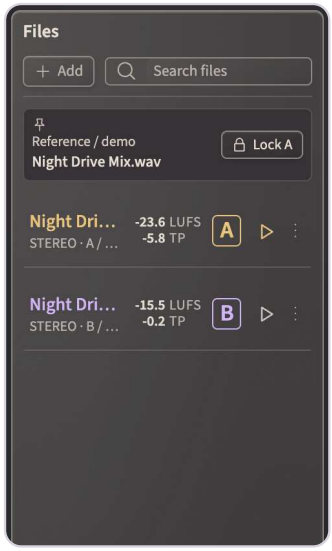
4. Enable Match level to lower the louder file to the quieter file. The quieter file stays at its original level.
5. Save the project with Command+S. Use Project > Save portable copy to copy the project together with its source audio.

Where sound comes out

COMPARE follows the current macOS system audio output. The Output control changes both sources equally. Fresh launches and New project start at 0 dB, with playback stopped. Opening a saved project restores its saved output level. Workspace defaults remember the layout only.

Files and song stacks

Files lists every file you load and keeps the versions of one song together.



Files with two songs loaded. Each shows its integrated loudness (LUFS) and true peak (TP).

A plain list until you stack

Added files appear as a plain list. Each ready file shows its integrated loudness in LUFS and its true peak, so you can read every version at a glance. COMPARE never groups files on its own.

Drag a file onto the middle of another file to make a stack for that song. Drop more files onto a stack, or onto any file in it, to add versions. Drag a file onto the top or bottom edge of another file to change the order. Drag a stacked file out onto the plain list, or choose Take out of stack in its actions, to return it. A stack left with one file returns to the plain list.

> **TIP** Stacking never changes or deletes your audio files. Undo puts things back as they were.

Compare inside a stack

Choose Compare on a stack to select its A/B pair. A mix or reference goes to A and the newest master to B, judged from the filenames and available title tags. A file you drop onto a stack becomes B; a locked reference stays in A. Use the stack's A/B button to switch quickly. The song you listen to opens automatically and other stacks collapse; the chevron opens or closes a stack without changing A/B.

Earlier versions stay in the stack. Open its version history to listen to an earlier file or make it A or B again. Stacking never overwrites or deletes the original files. Undo restores the previous project edit.

Replace, refresh and clear

To replace one version explicitly, choose Replace file in its actions. The comparison slot stays in place and the new file is fully analyzed. Re-analyze reads the current file again and refreshes its measurements, spectrum and playback data, which helps after an export is overwritten on disk. A failed refresh keeps the previous working audio and measurements.

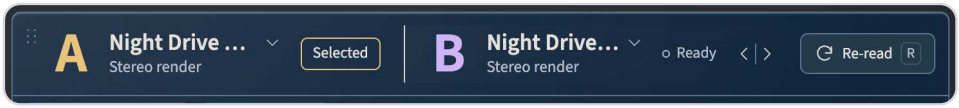
Each stack has its own Clear button. It asks first, then removes that stack's files from the project and leaves every other file in place. The audio files stay on disk, and Undo brings them back. Projects save stacks and selected versions together with the rest of the workspace. Blind listening hides names, filenames and version history until you reveal or end the round.

Re-read A and B

Re-read beside A and B, or the R key, reads both files again from disk, for example after a new bounce over the same file. Every measurement follows. A file that has not changed keeps its results.

Build your comparison

Choose a reference, line the files up in time, and listen fairly.



A and B at the top of Frequency comparison. Each side names its file and how it plays.

Files and references

Choose Lock A in Files to fix the current A as your reference. To choose a different demo or reference, open that file's actions and choose Use as locked A or Replace locked A. The strip shows the locked filename and an Unlock control.

While locked, selecting another song, listening to another file, adding a version to a song stack or using the candidate arrows changes B while A stays fixed. Candidate arrows move through all ready files. Ordinary A assignment cannot replace the lock; choose a new reference explicitly or Unlock first. Unlock keeps the current pair. Projects remember the lock, including when its source needs relinking.

Remove and Clear all remove entries from the project; the original audio files stay on disk. A missing source can be relinked from its file actions or the project menu. The app identifies ADM from file contents, rather than the filename or extension alone.

Timing and looping

Click the Timeline to seek. Drag a region to set a shared loop. Press L, or click the active loop button, to stop looping without losing the boundaries. A/B and blind switching keep the same region.

Auto align compares matching passages in A and B within a ten-second search range. A stays fixed; the app applies a timing offset to B. It does not stretch tempo or edit files. Unclear matches remain unchanged. Use Undo alignment to restore the previous B offset, or enter a manual offset in the file actions.

Blind comparison

Shift+B starts or ends a blind round. A and B become X and Y, and identifying names, measurements and visuals are concealed. Use X, Y or S to listen. Reveal shows the identities for the current round. New round randomizes the assignment again.

> **TIP** Turn on **Match level** before a blind round. A louder version often sounds better only because it is louder.

Level matching

Match level only lowers the louder A/B file to the measured LUFS of the quieter file. The quieter file stays at 0 dB playback gain. No file is boosted and no extra true-peak headroom reduction is added. True peak remains available as a measurement. Output controls your overall listening level. The original files are unchanged.

Read and hear the spectrum

See where in the frequency range A and B differ, and listen to one band at a time.



Overlay draws A (solid line) and B (dashed line) on one scale.

One chart, two sources

Overlay draws A and B together using their source colours. Difference subtracts B from A: above zero means A has more energy at that frequency; below zero means B has more. Both views share one scale for A and B. Difference fits its scale to the measured difference when a pair is analysed, and a dashed 0 dB line marks where A equals B. If 0 dB is off the chart, an arrow shows how far away it is.

Zoom

Use the dB + and - buttons to zoom the level scale, and the Hz + and - buttons to zoom the frequency range. Scroll over the chart to zoom frequencies around the pointer; hold Shift while scrolling to zoom levels. Middle-drag or the arrow keys move the view. View lets you type exact frequency limits, a level span and a centre.

Auto centre keeps the body of the line in the middle of the view at any zoom, using the typical level of the visible frequencies. The axis always shows the true dB values. Parts of a curve outside the view are cut off at the edge rather than flattened, and the chart says so. Fit shows every visible point. Zooming changes only the chart, never the sound or the measurements.

Shift-drag across the chart to select a frequency range, then choose Zoom selection. Markers zooms to your frequency markers. Zoom to solo, in the solo row, zooms the frequency view around a solo band while you listen and returns to your previous zoom when solo ends. Analysis and Live use the same view.

Analysis and Live

Analysis shows a steady average of the whole file or selected region. It helps compare overall tone. **Live** shows short snapshots of both prepared sources at the shared playhead, including alignment offsets. Pause freezes the snapshot. **Speed** sets how fast the live curves move: Fast shows every snapshot, while Medium, Slow and Very slow average recent snapshots and redraw less often. The level scale is taken from the Analysis of the same sources and then held, so it does not move with the music.

The live chart describes the prepared audio before level matching, band solo and device tests. It is not a meter of the final system output. Region selects the measured interval for Analysis; Live always follows the playhead.

Frequency solo and reminders

Hold and drag on the chart to hear only that frequency area. Press A, B or S while holding to compare the same band. Adjust the centre frequency and width for a precise check. Keep solo leaves the band active after release; Full range or Escape restores the complete sound.

> **TIP** Zooming and solo change only what you see and hear in COMPARE. Your files and measurements stay the same.

Option-click the chart to leave a frequency marker. Option-click the existing marker to remove it. Markers are reminders and do not change the sound. The marker controls also let you enter a frequency directly.

Side-by-side measurements

Measurement	What it helps you compare
Integrated LUFS	Average perceived loudness over the measured interval.
Short-term max	The loudest measured three-second passage.
True peak / dBTP	Estimated peaks between samples as well as at samples.
Loudness range / LU	Contrast between sustained quiet and loud sections.
Crest factor / dB	The gap between peak and average level.
BPM and key	Musical estimates. Ambiguous rhythm or harmony can make them uncertain.

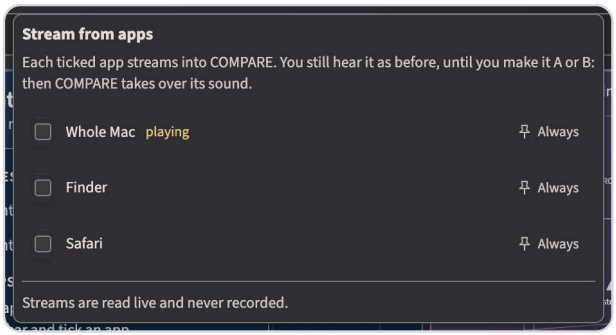
Unavailable measurements remain blank or are marked unavailable. They are not substitute values.

Stream from apps

Listen to another app on this Mac and measure it while it plays.

Listen to an app

Open **Stream** in the toolbar. It lists the apps playing sound on this Mac, and **Whole Mac** for all of them at once, without COMPARE itself. Tick an app and it streams into COMPARE. You still hear it as before.



Stream lists the apps that are playing sound. Tick one to stream it into COMPARE.

The first time, macOS asks whether RTM COMPARE may record system audio. COMPARE uses this only to read the sound as it plays. If no sound arrives, allow RTM COMPARE in System Settings, Privacy & Security, Screen & System Audio Recording.

Tick **Always** beside an app to stream it every time COMPARE opens. The apps you stream are also saved with the project.

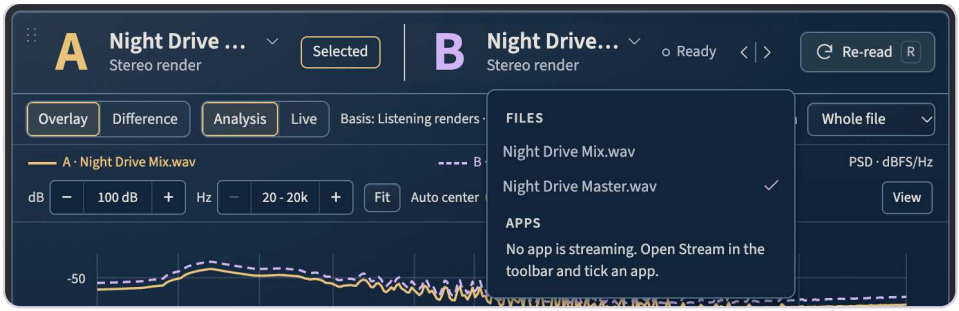
Stream uses the audio taps built into macOS.

Nothing is recorded

Streams are read live and never recorded. No file of the app's sound is written, and nothing of it is kept when you stop. This is why the modules that measure a whole file wait for a file, while live readings work on the stream.

An app as A or B

Beside A and B in the transport, the source picker chooses what each side is: a file, or an app that is streaming. The side then shows the app's name. When an app is A or B, COMPARE takes over its sound: A and B switch as they do for files, and the side you are not listening to is silent.



The source picker beside A and B: a file, or an app that is streaming.

Level matching works live. COMPARE measures the loudness of each side as it plays and turns only the louder side down. Play something in the app so it can measure. The transport shows the live loudness and true peak of an app side.

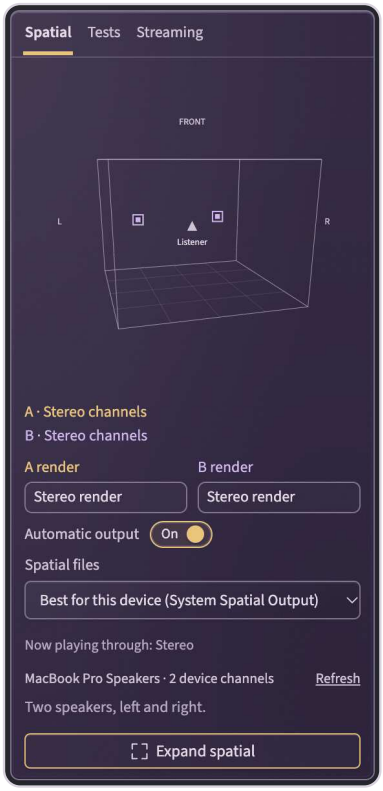
What is read live

With an app as a side, the frequency comparison draws that app's spectrum as it plays. In Analysis, the column of an app side reads momentary, short-term and integrated loudness, true peak, crest, width and correlation live. Live Tips and the Stereo & Phase scope read the app too. Modules that measure files say so and wait for a file.

Live readings keep going when the COMPARE window is hidden or behind other windows, so you do not have to watch them.

Spatial listening

Play an ADM file and a stereo master side by side, on headphones or speakers.



Spatial in the Inspector: the scene, the render of A and B, and where the sound goes.

ADM against stereo

Load an ADM file and a stereo master, then assign A and B as usual. The Spatial view shows authored ADM objects and beds, while stereo uses its channel view. Object movement follows the ADM information and the track's timing offset.

Drag the scene to orbit, scroll to zoom, or use Expand spatial for a larger view. The same play, A/B and loop commands remain available. Reset spatial view restores the camera, without changing audio. Escape closes the expanded view.

Choose an output setup

Spatial > Output setup offers Headphone preview, System Spatial Output, Stereo, 5.1, 5.1.2, 5.1.4, 7.1 and 7.1.4. Headphone preview uses the generic SADIE renderer. System Spatial Output sends labelled 7.1.4 PCM to macOS, which adapts it to the current device. Spatial effects depend on the device and macOS settings; this is not encoded Dolby Atmos passthrough.

Speaker layouts send separate channels and require enough device outputs. Choose and configure your interface in macOS Audio MIDI Setup, then press Refresh in Spatial. Channel routing lists the render order. 5.1.2 uses EBU front heights. Stereo masters remain on left and right, with other channels silent. Level matching, band solo, looping and A/B share the chosen output path.

Automatic output and stereo files

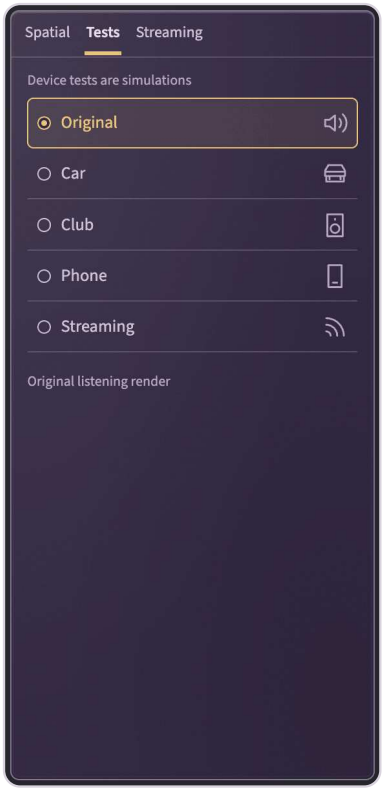
With **Automatic output** on (the default), a project with an ADM file plays through your spatial setup and a stereo-only project plays in Stereo; the choice follows the project as you add or remove files. **Spatial files** sets that spatial setup. Best for this device picks 7.1.4 when the interface has 12 or more outputs, then System Spatial Output, then Headphone preview. **Stereo files** chooses the two interface outputs for stereo masters, for example a separate pair of stereo monitors on outputs 13 and 14. A and B always share one output stream and one clock, so switching between an ADM mix on the speakers and a stereo master on its own pair stays instant. Headphone preview and System Spatial Output keep stereo on left and right. Choosing an output setup yourself turns Automatic output off.

Changing the output setup briefly pauses playback while both sources are prepared. With Automatic output off, the project saves the choice. If a device cannot carry a saved layout, choose Stereo or Headphone preview. Auto align uses a stereo render for timing analysis while preserving your listening layout.

Surround measurements use all rendered channels: true peak checks every channel; LUFS excludes LFE and applies the appropriate speaker weights. Frequency charts average channel powers, including LFE, without cancelling opposite-phase channels.

Listening tests

Hear how A and B change in a car, a club or on a phone, or after a streaming encode.



Tests in the Inspector. One choice applies to A and B together.

Translation tests

Choose Stereo or Headphone preview for these device simulations. Original plays the prepared render. Car, Club and Phone apply listening simulations to both sources. Cabin noise adds a masking check in Car; Mono speaker checks the mono combination in Phone. These are useful approximations, not models of a particular vehicle, venue or handset.

Streaming preview

Choose Streaming under Tests, or Enable streaming preview in the Streaming tab. One target and codec profile applies to both comparison sources.

Normalized changes loudness only. **Encoded** additionally encodes and decodes the audio for playback and analysis. AAC uses 256 kb/s; Opus uses 192 kb/s. Wait for preparation to finish before comparing.

The LUFS target is your local preview setting. A service may use different normalization, codecs or playback rules. COMPARE does not upload your files or stream from an online service.

Modules

Modules are panels you add. Each one answers one question about your files.

What a module is

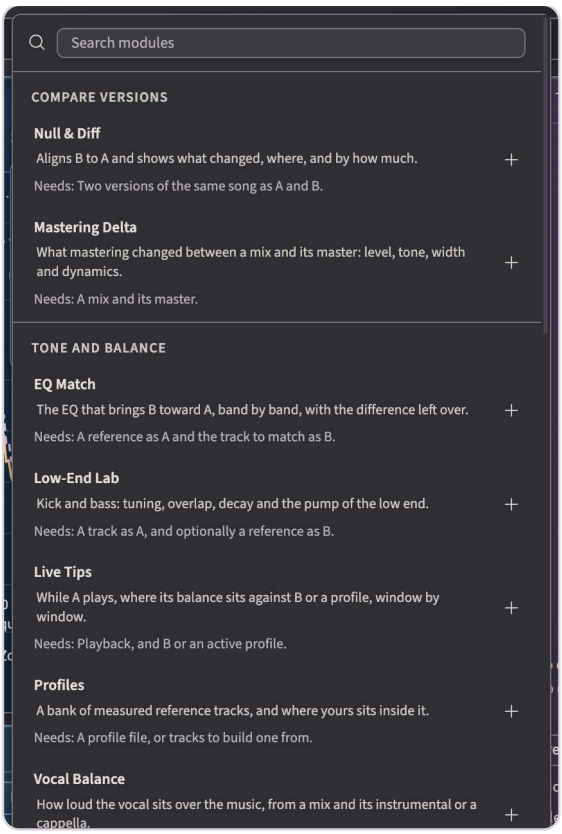
A module is a panel that answers one question about your files, such as what changed between two versions, or whether a delivery nulls against its master. COMPARE 1.1 has 19. Every module is hidden until you add it.

Choose **Modules** in the toolbar and click a module to add it. It appears at the end of its column. Click it again to hide it. In Arrange a module behaves like any other panel: move it, float it, resize it or hide it (see Make the workspace yours).

> **TIP** Click **Focus** on a module to open it over the whole work area. Press Esc to go back.

The Modules menu

Type in **Search modules** to narrow the list by name or by what you want to check, such as phase, punch or vinyl. In a role workspace, **Suggested for** the role comes first. Below it are **Workspace panels** (Analysis, Inspector and the other built-in panels), then the modules grouped by category: Compare versions, Tone and balance, Dynamics, Stereo and phase, Song and album, Recording and Delivery checks.



The Modules menu. Search, or click a module to add it. Each line says what it answers and what it needs.

Each entry has one line on what it answers. A check mark shows what is on screen, and the foot of the menu counts it, for example **3 of 19 modules on screen**. With Info on, pointing at a module also shows what it needs loaded. Reset layout returns to the default arrangement.

What a module reads

A module uses A, B or other files in the Files list, as its chapter below says. Until those are loaded, it says what to load. Most modules read the 48 kHz audio COMPARE prepares for playback, so their sample counts are at 48 kHz. Delivery QC and Family Check read each file as delivered, at its own sample rate and bit depth.

Measurements run in the background, once per file, and are kept for the session. Closing and reopening a module, switching workspaces or swapping A and B back does not measure again. A module that cannot read a file says so in the panel, with the reason.

Figures, not verdicts

Every figure in a module is a measurement, with its unit. Modules do not score, rate or set targets. Where a module compares a file with the role its name gives it, as in Family Check and Stem & Alt-Mix, it shows the measured relation and the numbers behind it. Where something cannot be measured, the module says so or leaves the reading blank.

Files recognised by name

Family Check, Stem & Alt-Mix, Vocal Balance and Album Sequence sort the Files list by filename only, never by sound. Case does not matter, and underscores, dots and hyphens count as spaces. Words are checked from the top of this table, so **Lead Vocal STEM** is a stem. To change how a file is read, rename it.

Read as	When the name contains
Stem	stem or stems
A cappella	a cappella, acapella, acap, vocal only, vocals only or lead vocal
Instrumental	instrumental, inst, instr, no vox, novox, karaoke or backing track
TV mix	tv, tv mix, tv track or show mix
Clean	clean, radio clean or censored
Radio edit	radio edit or edit
Encode	mp3, aac or opus, or the file is .mp3, .m4a, .aac, .ogg or .opus
Hi-res	88, 96, 176 or 192 followed by k or kHz, or hi res
Main	none of the above

Blind test

During a blind round, every module that would show which source is X and which is Y hides its readings and says **Hidden during the blind test**. The Scope tab of Stereo & Phase keeps working, because it shows only what is playing. Reveal or end the round to see the modules again.

Listening buttons

Some modules can play what they measured: **Listen to the null** in Null & Diff, **A + B as recorded** and **A + B aligned** in Mic Align, **Listen to the difference** in Family Check and **Listen to what is left** in Stem & Alt-Mix. Each one plays the lined-up result through the normal output and starts playback if it is stopped. Click the button again to stop it.

Choosing A, B or another file returns to normal listening, and so do starting a blind round, removing or clearing files, and Undo. **B + EQ** in EQ Match works differently: it is a filter on B that plays whenever B plays, until you turn it off, press E while EQ Match is open, or close EQ Match.

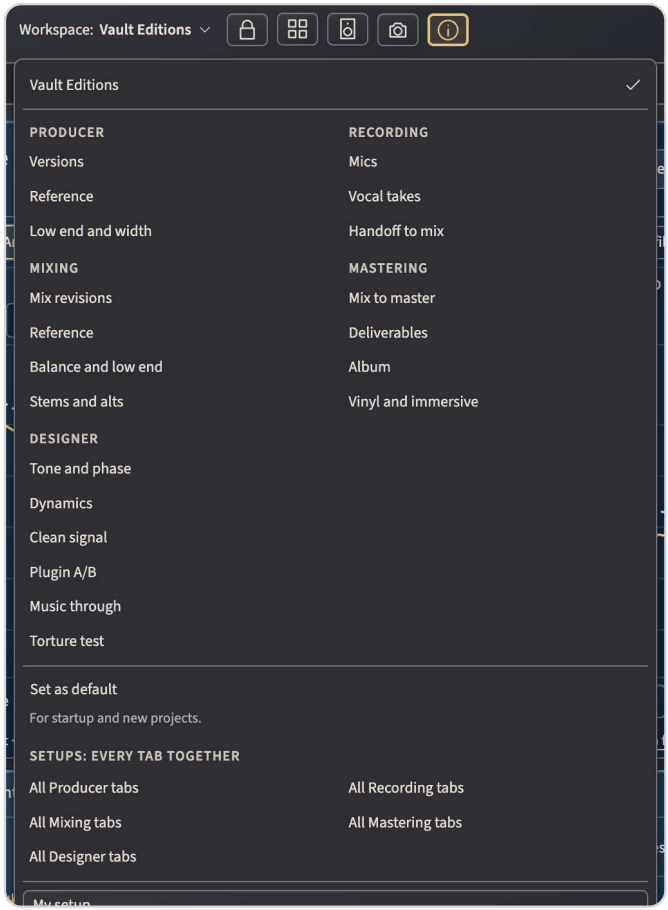
Times and ranges in a module are links. Clicking one sets the shared loop to that range and moves the playhead to its start; press L to stop looping. Clicking a chart over time moves the playhead there. **Copy report** puts a plain-text summary with every figure on the clipboard.

Role workspaces

Open the modules a producer, a recording, mixing or mastering engineer, or a plugin designer uses most, in one click.

Choose a role

Open the Workspace menu in the toolbar. Beside Vault Editions it lists five role workspaces: **Producer**, **Recording**, **Mixing**, **Mastering** and **Designer**. Each opens the three modules that role uses most, with room to work: the first fills the centre under Frequency comparison, the next two sit in the right column.



The Workspace menu: each role with its presets, and setups that open every tab together.

To make that room, a role workspace hides Analysis and the Inspector. Both stay one click away under Workspace panels in the Modules menu. The rest of the role's modules are listed first in the Modules menu, under **Suggested for** the role.



The Mixing preset **Mix revisions**: three modules, with room to work.

Workspace	Opens	Also suggested
Producer	Sections & Lift, Null & Diff, Low-End Lab	Band Punch, EQ Match, Live Tips
Recording	Mic Align, Null & Diff, Sibilance & Plosives	Delivery QC, Stereo & Phase
Mixing	Null & Diff, Stem & Alt-Mix, Vocal Balance	EQ Match, Stereo & Phase, Band Punch, Low-End Lab
Mastering	Null & Diff, Family Check, Delivery QC	Codec Overs, Mastering Delta, Stereo & Phase, Album Sequence
Designer	Frequency & Phase, Harmonics & Distortion, Latency Check	Dynamics Curve, Aliasing, Intermodulation, Noise, Idle & Tails, Plugin A/B, Music Through, Torture Test

Your own workspaces

Role workspaces do not change the workspaces you saved, or your default. Rearrange a role workspace as much as you like, then use Save layout to keep it under a name of your own. A saved workspace cannot take the name Vault Editions, Producer, Recording, Mixing or Mastering, so the built-in ones always open as described here.

Presets for each role

Each role also has workspace presets: three modules chosen for one job, such as **Versions** for a producer or **Deliverables** for mastering. Choose one in the Workspace menu and it opens in the tab you are in. The + beside the tabs opens a preset in a new tab instead.

Under **Setups: every tab together**, each role replaces your tabs with all of its presets, one per tab. Files, audio and measurements stay.

In the Project menu, **New project from a preset** starts a project with a role's tabs and level matching on, so versions play at the same loudness.

Compare versions

See what changed between two versions of one song, and by how much.

Null & Diff

What changed between two versions of the same song, where, and by how much.



Null & Diff with a mix as A and its master as B: the facts first, then the map of changes.

Load

Two versions of the same song as A and B. A is the reference.

On screen

The facts first. **Offset** (how many samples B is early or late), **Polarity**, **Gain to match** (applied to B), **Timing** (one offset, a clock drift in ppm, or edits, each listed with its time), **Dynamics** (shown when B's level change follows A's loudness), **Null depth**, **Match strength** and **Length**. Four tabs follow. **Changes** maps B minus A over time and frequency: the B colour where B is louder, the A colour where B is quieter, grey where the content differs at the same level, and stripes where B has no matching audio. A list gives each changed region with its time, frequency range and size. **Tone** shows the steady tone change over the whole song. **Null over time** shows what is left after the null. **Timing** shows the offset measured along the file.

Use it	Click a region in the list to loop it, or click the map or a chart to move the playhead. **Listen to the null** plays A minus the lined-up B, so you hear only what differs.

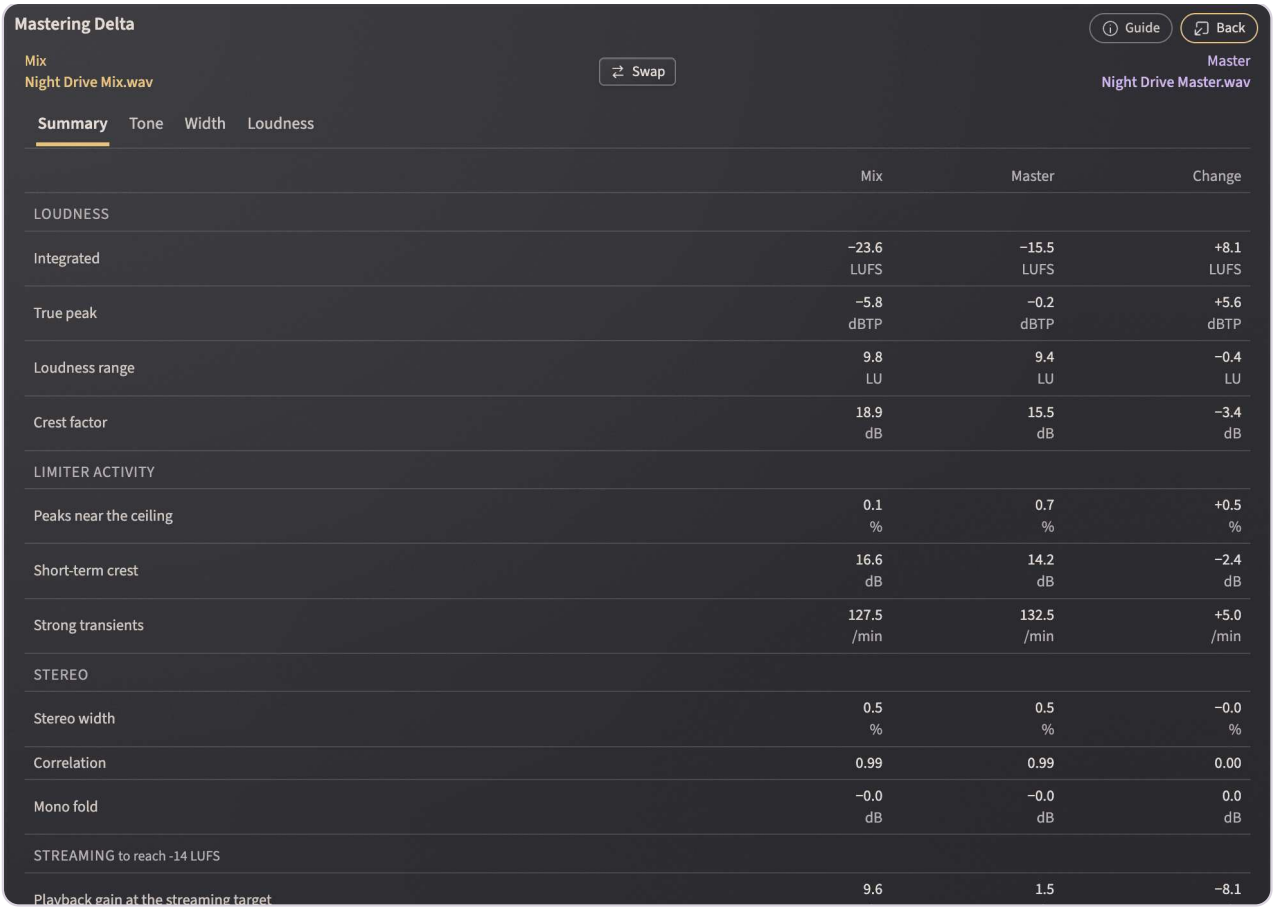
Measured: B's offset is found to a fraction of a sample (GCC-PHAT), with its polarity and gain, and B is placed on A's timeline, following any drift or edit. The map is B minus A per third octave every 0.5 s. Null depth is the power left after the subtraction against A's power, from 100 Hz to 10 kHz. Tone takes out each moment's overall level change and keeps the median over the song, so a limiter or level riding cancels and a steady EQ stays.

Limits: files that share no audio are refused, with their match strength. An edit point is exact to 10 ms, unless the music repeats across the cut. Phase-only differences above 16 kHz are not listed, because converters always differ there; level changes are listed at every frequency.

How to use	Load two versions of the same song as A and B: A is the reference. Read the facts at the top, then open Changes to see where they differ. Click a change in the list to loop it, or press Listen to the null to hear only what differs.
What it shows	Offset, Polarity and Gain to match say how B had to be moved to line up with A; Timing says whether that held for the whole song. Changes maps B minus A over time and frequency; Tone shows the steady tone change over the whole song. Null depth is how much is left after subtracting the lined-up B from A, against A, from 100 Hz to 10 kHz.
How to read it	Look at Match strength and Null depth first: they say whether the rest is worth reading. On the map, the B colour means B is louder there and the A colour quieter; colour starts at 0.5 dB and is full at 3 dB, and grey means different sound at the same level. The deeper (more negative) the null, the less is left: every 20 dB deeper is a tenth of the level.
What it can tell you	A null of -60 dB or deeper means the two are the same audio, with only noise or rounding left; a 256 kb/s AAC encode left about -30 dB on the bench, and a mix change you can hear leaves far more. Tone separates a steady EQ from level riding: a limiter cancels out of it, an EQ move stays. Edit points are exact to 10 ms unless the music repeats across the cut, and phase-only differences above 16 kHz are not listed.

Mastering Delta

What mastering changed between a mix and its master: level, tone, width and dynamics.



Mastering Delta: the mix, the master and the change, side by side.

Load

The mix and its master as A and B. Filenames with mix or master decide which is which (mix, mixdown, premix, premaster or unmastered against master or mstr). If the names do not tell, A is taken as the mix and a note says so. **Swap** changes it.

On screen

Four tabs. **Summary** is a table of Mix, Master and Change in four groups. Loudness: Integrated, True peak, Loudness range, Crest factor. Limiter activity: Peaks near the ceiling, Short-term crest, Strong transients. Stereo: Stereo width, Correlation, Mono fold. Streaming: Playback gain at the streaming target, using the LUFS target set in Streaming. With a profile active, a Profile column shows its median and 10th to 90th percentile. **Tone** shows master minus mix, smoothed, and the same change measured as EQ bands. **Width** shows the width change per band, with bands where the master loses more than 3 dB in mono shaded. **Loudness** shows the level of both over time.

Measured: Peaks near the ceiling is the share of 10 ms blocks whose peak is within 1 dB of the file's highest sample peak. Short-term crest is the median peak over RMS of 3 s windows. Strong transients counts 10 ms blocks that rise more than 6 dB over the 30 ms before them, at least 100 ms apart, per minute. Tone uses the EQ Match engine at 1 octave smoothing, with the overall level change removed first; changes under 0.75 dB are not listed as moves.

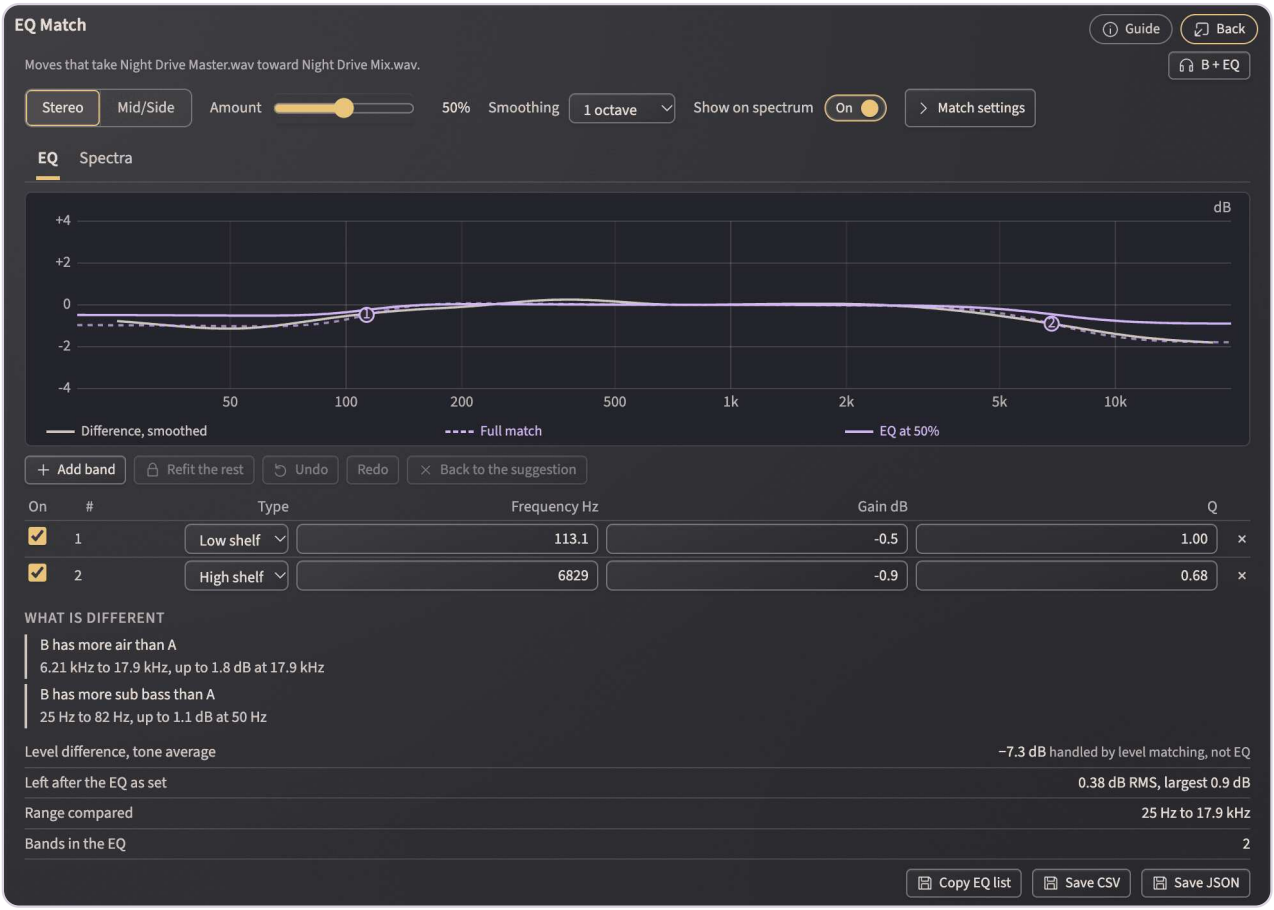
How to use	Load the mix and its master as A and B; names with mix or master decide which is which, and Swap changes it. Start on Summary, then open Tone, Width and Loudness for the detail.
What it shows	Summary lists each reading for the mix, the master and the change, grouped as Loudness, Limiter activity, Stereo and Streaming. Tone is master minus mix with the level change removed, also measured as EQ bands; Width is the width change per band. Loudness draws the level of both over the song.
How to read it	Read Integrated, True peak and Crest factor together: louder with less crest means the peaks were brought down relative to the body. Limiter activity moves one way under limiting: more Peaks near the ceiling, lower Short-term crest, fewer Strong transients. On Width, above zero means the master is wider in that band; shaded bands lose more than 3 dB when summed to mono.
What it can tell you	It shows what mastering did as measurements: level, peak control, tone moves and width. Playback gain at the streaming target is how much a service at that target would turn each version up or down, so it shows how much of the loudness gain a listener keeps. Tone moves under 0.75 dB are not listed, and the mix and master must be the same song for the tone and width changes to mean anything.

Tone and balance

Compare tone and balance with a reference, or with a bank of references.

EQ Match

The EQ that brings B toward A, band by band, with the difference left over.



EQ Match: the EQ that brings B toward A, as numbered points you can drag.

Load

The reference as A and the track to match as B. To average more references with A, open **Match settings** and tick other loaded files under Target. With a profile active, **Match to** offers A or Profile.

On screen

The **EQ** tab draws the smoothed difference, the full match and the EQ at the chosen Amount, with a shaded band where the references disagree. Each band is a numbered point. The **Spectra** tab draws A, B and B with this EQ, predicted. Below are the band table (On, Type, Frequency, Gain, Q), **What is different** (each measured region with its range and peak), and the facts: Level difference, Left after the EQ as set, Range compared and Bands in the EQ.

Use it	Choose **Stereo** or **Mid/Side**; in Mid/Side, Mid or Side picks the chain to edit. **Amount** scales the whole EQ (50 % to start), and the table shows each gain as it plays. **Smoothing** runs from 1/3 octave to 2 octaves. Match settings set the range (25 Hz to 18 kHz to start), Bells at most (6) and Gain limit (6 dB).

Drag a point to move a band, Shift-drag to change its Q, and double-click to add a bell. Type a value and press Enter, or select a point and use the arrow keys, [and] for Q and Delete to remove. A suggestion you touch becomes yours. **Refit the rest** keeps your bands and suggests the others again around them; **Back to the suggestion** starts over. Undo and Redo last for the session and clear when A or B changes. The EQ holds 16 bands.

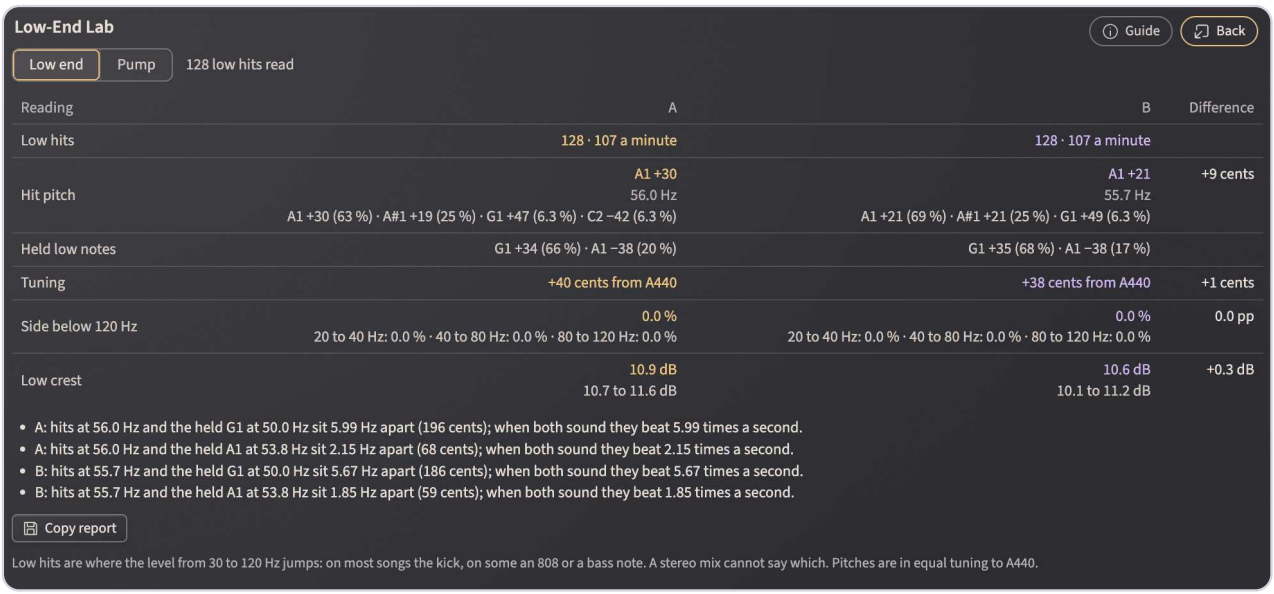
B + EQ plays B through the EQ as set, with its loudness change compensated, whenever B plays; E turns it on and off while EQ Match is open. With **Show on spectrum** on, B through the EQ as set is drawn as a dashed line on the Frequency comparison chart (stereo EQ only). **Copy EQ list** copies the bands as text; **Save CSV** and **Save JSON** save a file you name.

Measured: EQ Match compares the spectra from COMPARE's own analysis (mid and side spectra in Mid/Side), smoothed. The broadband level difference, the median difference from 100 Hz to 10 kHz, is left to level matching. The fit adds bells and shelves until every point is within 0.75 dB, or within the references' own spread where they disagree, so no move is suggested there. Smoothing sets the narrowest bell, and bells stay at or below 14 kHz; a high shelf covers the air band. Left after the EQ is the RMS and largest difference that remain with the bands as set.

How to use	Load the reference as A and the track to match as B, or choose Profile under Match to. Read the EQ tab, set Amount and Smoothing, and press B + EQ (or E) to hear B through it. Drag points to edit, then copy or save the EQ list for your own EQ.
What it shows	The EQ tab draws the smoothed difference, the full match, and the EQ at the chosen Amount; each numbered point is a band in the table. Spectra draws A, B and B with this EQ, predicted. Left after the EQ as set is the difference that remains with the bands as they are.
How to read it	Above zero, B needs more at that frequency to reach A; below zero, less. A shaded band means the references disagree there, so no move is suggested in it. Ignore Level difference for tone: it is the broadband level, which level matching handles, not EQ.
What it can tell you	It turns a tonal difference into EQ moves you can read in dB, Hz and Q. Coarser Smoothing shows the broad balance and allows only wide bells; finer smoothing follows narrower features. It matches the average spectrum only: it cannot match dynamics, stereo image or arrangement, and a reference with different instruments asks for moves no EQ makes sound alike.

Low-End Lab

What the low end does: the low hits and their pitch, the held low notes and their tuning, how far apart they sit, and how the level above the low end dips around each hit.



Low-End Lab: the low hits, the held low notes and their pitch.

Load A song as A. Load a reference as B to add a Reference and a Difference column.

On screen Two tabs. **Low end** lists Low hits (count and per minute), Hit pitch (note, cents and Hz), Held low notes (with their share of the time), Tuning, Side below 120 Hz (also per 20 to 40, 40 to 80 and 80 to 120 Hz) and Low crest. A line names any hit and held note that sit close in pitch, and how many times a second they beat. **Pump** draws the level above 150 Hz around the low hits, against the level just before each hit, with Depth, Deepest at, Back within 1 dB and the depth By band.

Measured: a low hit is a moment where the 30 to 120 Hz level stands 6 dB over the 100 to 20 ms before it. Hit pitch is what each hit adds below 120 Hz, with the held tones under it taken out. A held note is the strongest 25 to 130 Hz peak in 1 s frames that holds within 30 cents. Tuning is against A440 and is shown only when the held notes agree within 15 cents; otherwise it reads No single tuning. Pump folds six octave bands from 150 Hz to 9.6 kHz on every hit, from 60 ms before to 600 ms after, against their level 60 to 10 ms before, and takes the median; the shared curve is the dip every band has in common. It needs 20 hits.

Limits: the module says low hits, not kick. On most songs they are the kick, on some an 808 or a bass note, and a stereo mix cannot say which. Notes that start on the hit and fade also lower the level, so listen before reading a dip as pump.

How to use Load a song as A, and a reference as B to add a Reference column. Read the Low end tab, then open Pump.

What it shows	Low hits are where the 30 to 120 Hz level jumps; Hit pitch is the note each hit adds, and Held low notes are the sustained notes from 25 to 130 Hz. Side below 120 Hz is the share of low-end power in the side; Low crest is peak over RMS from 20 to 120 Hz. Pump draws the level above 150 Hz around every low hit, against the level just before it.
How to read it	Hit pitch and held notes are in note names and cents from A440 equal tuning. When a hit and a held note sit a few Hz apart, they beat that many times a second while both sound. On Pump, a dip that every band shares after the hit is what a sidechain or bus compressor makes; read Depth with Back within 1 dB.
What it can tell you	It shows whether the low hits and the bass notes sit on the same pitch, and how much the rest of the mix ducks around the hits. A higher Side below 120 Hz means more low end that cancels when the two channels are summed. It says low hits, not kick: a stereo mix cannot tell a kick from an 808 or a bass note, and notes that start on the hit and fade also make a dip.

Live Tips

While a file plays, where its loudness, tone, width and low-end side sit against B or the active profile, window by window.

Load	B, or choose a profile in the profile bar, or both. Live Tips measures whatever is playing. B is a target while something other than B plays.
On screen	Choose the window: **5 s**, **10 s** (to start), **30 s** or **Since play**. After 5 s of audio it shows Loudness, True peak, Width, Side below 120 Hz and DC offset for the window, then a list for each target: **Against B** and **Against profile** (marked no sound). Each tip states its numbers and the target's range. **Inside its range** means nothing stands out. Overs above 0 dBTP and a steady DC offset show with no target.

Measured: the window is measured with the same code that measures a profile track. A window is compared with how windows of the same length vary inside the target: B's own windows, or the windows of every track in the profile. So a quiet verse is not flagged for being a verse. A tip starts only clearly outside that range (1 dB of tone over at least 1/3 octave, 0.5 LU, 0.5 dB of true peak, or 2 % of width or side). It appears after holding for 5 s, stays while it is outside, then shows (earlier) for 5 s before it goes. Loudness range and the loudest 3 s need a whole song, so they are not tipped live.

Limits: a tip describes where the window sits against B's or the profile's range. It is not a standard, and a profile built before Live Tips existed needs its tracks added again.

How to use	Load B, or choose a profile in the profile bar, then press play. Choose a window: 5 s, 10 s, 30 s or Since play.

What it shows	Loudness, True peak, Width, Side below 120 Hz and DC offset of what is playing, over the window. A list of tips for each target, Against B and Against profile, each with its numbers and the target's range.
How to read it	A tip appears only after holding for 5 s, and shows (earlier) for 5 s after it stops. Inside its range means this window sits where windows of the same length sit in the target. A short window follows the music closely; Since play describes everything heard so far.
What it can tell you	It tells you, while you listen, which part of the spectrum or which reading sits outside the target's range, and by how much. Overs above 0 dBTP and a steady DC offset are shown without any target. It compares with B or the profile, not with any standard: a different target gives different tips.

Profiles

A bank of measured reference tracks, and where a track sits inside it.

Load	The reference tracks into Files. Choose **New**, then **Add tracks** on the Tracks tab: every ready file in Files is measured once and added. A profile needs 3 tracks to be used; 5 or more gives a firmer spread. It holds up to 200.
On screen	Three tabs. **Curve** draws the bank's median tone and the 10th to 90th percentile its tracks cover, for Stereo, Mid or Side, with Integrated loudness, True peak, Loudness range, Loudest 3 s, Stereo width and Side below 120 Hz as median and range. **Tracks** lists the tracks, the ones furthest outside the others first, with where and by how much; the cross removes one. **Check a track** places the track loaded as B inside the bank and lists every region and reading outside its range.
Use it	**Use as reference** makes the profile active for this project, and the project saves that choice. **Make default** starts new projects and the startup session with this profile; a saved project keeps its own choice. **Open file** adds a .rtmprofile file; **Save as file** saves one to share. Files from the old RTMprofile app are not opened, because that app measured tone differently: build a new profile from the same tracks.

While Profiles is open or a profile is active, a profile bar sits under A and B in Frequency comparison. Pick a profile or None there, open a file, or open Profiles. A profile has no sound: it is never in the A/B switch and never replaces B. EQ Match, Stereo & Phase, Mastering Delta and Live Tips show it next to B. In Overlay view the Frequency comparison chart draws it too: the median as a dashed line and the 10th to 90th percentile shaded, shifted to A's level.

A profile stores measurements only, never audio. Profiles live in the Profiles folder: ~/Library/Application Support/RTM COMPARE/Profiles.

Measured: each track is measured with COMPARE's own spectrum method, plus mid and side, width per third octave, BS.1770-4 loudness, true peak and EBU Tech 3342 loudness range. Each curve is smoothed to 1/3 octave and level-aligned to the others by the median difference from 100 Hz to 10 kHz. The centre is the median and the range is the 10th to 90th percentile. A region is reported only when it sits at least 0.5 dB outside that range over at least 1/3 octave.

How to use	Load the reference tracks into Files, choose New, then Add tracks on the Tracks tab. Press Use as reference to make it active, and open Check a track with a track as B.
What it shows	Curve draws the bank's median tone and the 10th to 90th percentile its tracks cover, with loudness, true peak, loudness range and width. Tracks lists the tracks, the ones furthest outside the others first. Check a track places B inside the bank and lists every region and reading outside its range.
How to read it	A wide shaded range means the tracks disagree there; a narrow one means they agree. A finding outside the range gives how far from the median and how far past the edge. The curves are level-aligned, so the vertical position shows tone, not loudness.
What it can tell you	It shows where a track sits among references you chose, in the same terms as those references. A profile needs 3 tracks to be used; with fewer than 5 the range is a rough estimate. It holds only what its tracks share: a bank of one genre says nothing about another.

Vocal Balance

How loud the vocal sits over the music, from a mix and its own instrumental or a cappella.

Load	The mix as A, and its instrumental or a cappella in Files. The partner is found by name (see Files recognised by name): the instrumental or a cappella whose name shares the most words with the mix. To compare with another mix, load it as B with its own instrumental.
On screen	**Vocal over music**, **Typical, 3 s at a time** (median and 10th to 90th percentile), **Vocal level range** and **Vocal width**, then Vocal over music by band in seven octaves from 125 Hz to 16 kHz, and a chart 3 s at a time. Click the chart to loop that stretch. A line gives the alignment and the music left in the vocal.

Measured: the instrumental or a cappella is lined up with the mix (offset, polarity, drift and edits) at the same gain, never rescaled, and the vocal is the mix minus the instrumental. Levels are BS.1770 loudness, each gated. The music left in the vocal is measured every 3 s, and a warning shows when it comes within 20 dB of the vocal: a processor on the whole mix, or files at different levels, leave it there. The reading is exact when the mix is the instrumental plus the vocal. There is no right balance, so none is shown.

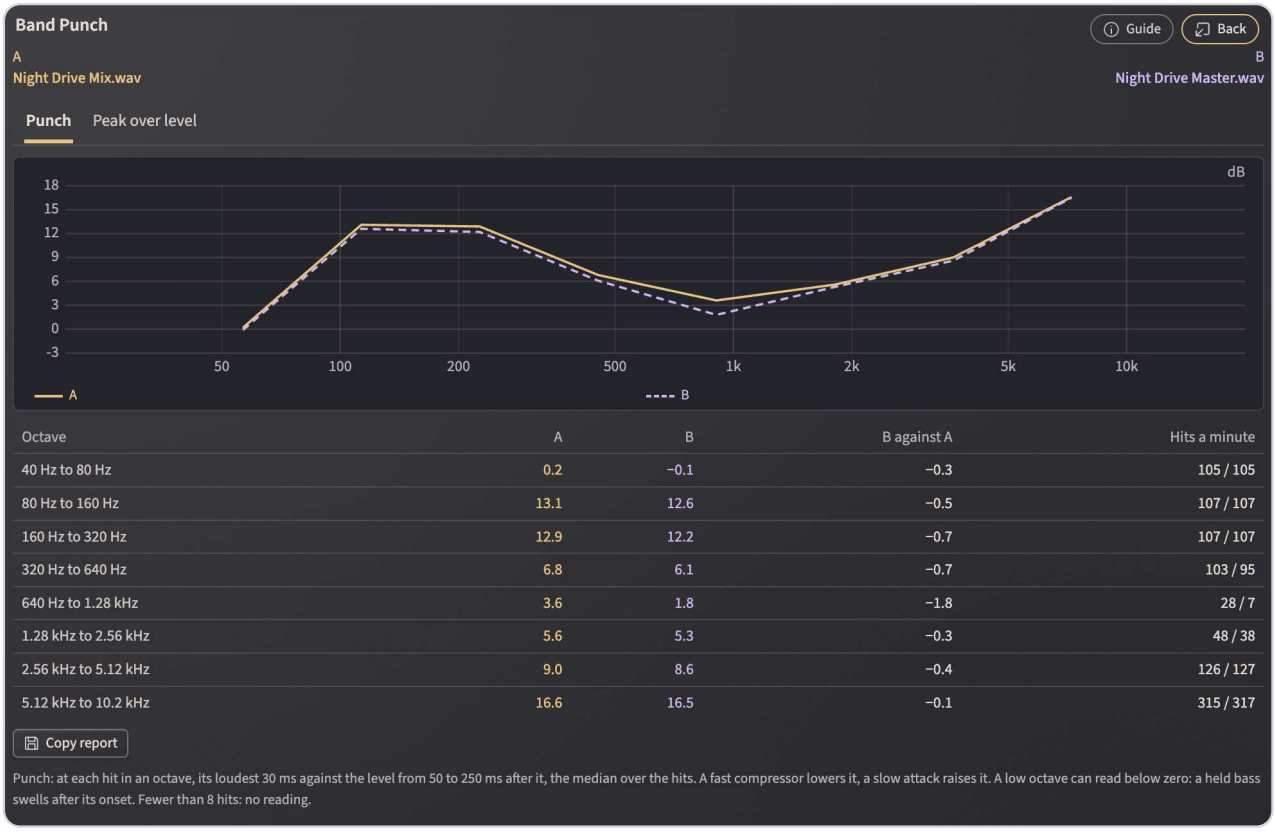
How to use	Load the mix as A and add its instrumental or a cappella to Files; it is found by name. For a reference, load another mix as B with its own instrumental.
What it shows	Vocal over music is the vocal's loudness against the music's, in LU. Typical, 3 s at a time is the median of that reading where both are present, and Vocal level range is how much the vocal level moves. The band table gives vocal over music in seven octaves from 125 Hz to 16 kHz.
How to read it	Above zero, the vocal is louder than the music; each 1 LU is about 1 dB. Read the 3 s chart for where the balance moves through the song. If the warning about music left in the vocal shows, every reading includes that music.
What it can tell you	It measures the vocal level against the music directly, which the ear judges only relative to everything else. It is exact when the mix equals the instrumental plus the vocal; a processor on the whole mix breaks that, and the module measures how much. There is no right balance: compare with a reference to see the difference.

Dynamics

See how hard each part of the spectrum hits, A against B.

Band Punch

How hard each octave hits, and its peak over its level, A against B.



Band Punch: punch and peak over level for each octave, A against B.

Load A mix as A. Load a second mix or a reference as B to compare.

On screen Two tabs, **Punch** and **Peak over level**, each drawn per octave for A and B. The table lists every octave from 40 Hz to 10.24 kHz with A, B, **B against A** and **Hits a minute**. An octave more than 30 dB under the loudest one reads quiet and is not measured. **Copy report** copies both readings.

Measured: the mid signal is split into eight octaves. Punch is, at each hit in an octave, its loudest 30 ms against its level from 50 to 250 ms after, as the median over the hits; with fewer than 8 hits there is no reading. A fast compressor lowers it and a slow attack raises it. A low octave can read below zero, because a held bass swells after its onset. Peak over level is the 99.9th percentile of the octave's samples over its RMS while it plays: a sine reads 3 dB, and limiting and clipping lower it.

How to use Load a mix as A, and a second mix or a reference as B. Read the Punch tab, then Peak over level.

What it shows	Punch, per octave, is each hit's loudest 30 ms against the level from 50 to 250 ms after it, as the median over the hits. Peak over level is the octave's peak against its RMS while it plays. B against A is B minus A in each octave.
How to read it	A higher Punch means the hits stand further out of what follows them in that octave. A sine reads 3 dB of peak over level; limiting and clipping bring it down toward that. Ignore octaves marked quiet, and low octaves below zero: a held bass swells after its onset.
What it can tell you	It shows where in the spectrum compression changed the hits: a fast compressor lowers punch, a slow attack raises it. It reads A and B on their own hits, so the two need not be level-matched. An octave with fewer than 8 hits gives no punch reading.

Stereo and phase

See how wide a mix is, band by band, and what it loses in mono.

Stereo & Phase

Width and correlation per band, and where the mono sum loses level.



Stereo & Phase: width and correlation for each band, A and B.

Load A stereo file as A, and optionally B. Mono, surround and Atmos files are not measured here; the Scope tab still shows what plays.

On screen Three tabs. **Bands** draws width and correlation per third octave for A and B, shades bands that lose more than 3 dB in mono and names them, and gives the whole-file Width, Correlation and Mono fold. With a profile active, its width range shows as a band and a Profile row. **Over time** draws correlation in 400 ms windows for All, Below 200 Hz, 200 Hz to 2 kHz or Above 2 kHz; click it to move the playhead. **Scope** is a live vectorscope and correlation meter of what is playing.

Measured: with mid as (L+R)/2 and side as (L-R)/2, width is the side power over mid plus side power, from 0 (mono) to 1. Correlation is the cross power of L and R over the square root of their powers, from -1 to +1; below zero, that part cancels in mono. Mono fold is the level of the mid against the average level of L and R; Cancels means the mid is silent. The Scope's meter averages over 300 ms.

How to use	Load a stereo file as A, and optionally B. Read Bands first, then Over time for where it happens, or Scope while playing.
What it shows	Width per band is the side power over mid plus side power, from 0 (mono) to 1. Correlation per band runs from +1 (the same in both channels) through 0 (unrelated) to -1 (opposite). Mono fold is how much level is lost when left and right are summed.
How to read it	Look at the shaded bands first: they lose more than 3 dB in mono. Width and correlation go together: wide with correlation near zero is decorrelated sound, correlation below zero is sound that cancels. On Over time, a dip below zero shows where that part of the mix cancels in mono.
What it can tell you	It shows how a mix will change on a mono speaker or a summed playback system, band by band. Wide low end and negative correlation in the lows mean energy that disappears in mono. Mono, surround and Atmos files are not measured here.

Song and album

Find the parts of a song, and hear an album as one sequence.

Sections & Lift

The song's parts, and how much one part lifts over another.



Sections & Lift: the parts of the song, found from its sound.

Load — A song as A. Load a reference as B to compare its lift with yours.

On screen — Two tabs. **Map** shows a strip of the parts across the song, coloured by part number, over the change curve, and a table of every part: Part (with the earlier part it repeats), Time, Loudness, PLR, Width and Low end. **Lift** picks two parts, from and to, for yours and for the reference, and lists the change in Loudness, True peak, PLR, Width, Low end and Tone level, with the frequency ranges that rise or fall most. To start, Lift picks the first appearance of the loudest repeated part and the part before it.

Use it — Click a part in the strip, or its time in the table, to loop it. Click the strip to add a marker, and click a boundary line to remove it: the parts and every measure follow your markers. **Back to found parts** returns to the boundaries COMPARE found. Markers are saved with the project, for each file. **Copy report** copies the map or the lift.

Measured: every half second, the mean third-octave band levels of the 8 s before and the 8 s after are compared. A boundary is a peak of that change of at least 2.4 dB that is the highest within 6 s each side, and never within 8 s of either end. A part repeats an earlier one when the two line up sound for sound. PLR is true peak minus loudness, Width is side over mid plus side, and Low end

is the share of the power below 120 Hz. Lift is the second part minus the first, with the level change taken out of Tone so it is not counted twice.

Limits: parts are numbered, not named verse or chorus, because that cannot be measured. Boundaries sit on a half-second grid. A long steady stretch whose sound keeps changing can split into several parts with the same number; markers merge them.

How to use	Load a song as A, and a reference as B for Lift. Read Map, then pick two parts on Lift. Click a part to loop it, click the strip to add a marker, and click a line to remove it.
What it shows	Map splits the song where its sound changes and gives parts that repeat the same number. Each part has its Loudness, PLR (true peak minus loudness), Width and Low end share. Lift is the second part minus the first, for yours and for the reference.
How to read it	Positive Loudness lift means the second part is louder; Tone level is shown with that level change taken out. Compare your lift with the reference's in the Difference column. Boundaries sit on a half-second grid.
What it can tell you	It shows how much a part rises over another in loudness, width, low end and tone. Parts are numbered, not named verse or chorus: that cannot be measured. A long stretch whose sound keeps changing can split into several parts; markers merge them.

Album Sequence

The loaded masters as an album: order, gaps and level from track to track.

Load	Two or more masters in Files. Files named as stems, instrumentals, a cappellas or TV mixes are left out.
On screen	The track count, running time and album loudness, and a note when sample rates are mixed. Each row gives the start time, the name, its loudness and its difference from the album in LU, and its true peak. Between rows: **Gap**, the silence heard, the levels at the cut, and the loudness step to the next track.
Use it	Use the arrows to change the order, and type each Gap in seconds. Type a level in **Play the album at** to see one gain for every track and each true peak after it; a line says how far the album can rise before its highest true peak reaches 0 dBTP. No level is suggested. The order, gaps and level are saved with the project. **Copy sheet** copies it all.

Measured: album loudness is BS.1770 gating over every track's 400 ms blocks together, the way an album is measured, not the mean of its tracks. One gain for every track keeps the differences between tracks as mastered. The silence heard is the tail of one file after its last sample above -60 dBFS, plus the gap, plus the head of the next. The step runs from the last 3 s of one track to the first 3 s of the next.

How to use	Load two or more masters into Files. Put them in order with the arrows and type each Gap in seconds. Type a level in Play the album at to see one gain for every track.
What it shows	Each track's loudness and its difference from the album, and its true peak. Between tracks: the silence heard, the levels at the cut, and the loudness step to the next track.
How to read it	The step is from the last 3 s of a track to the first 3 s of the next, so read it for how the change between tracks sounds. With a level typed, look at each true peak after the gain, and at how far the album can rise before 0 dBTP.
What it can tell you	It shows the album as a listener plays it: one gain keeps the differences between tracks as mastered. The silence heard includes the files' own tails and heads, not only the gap you type. No playback level is suggested: the level is yours.

Recording

Line up two microphones, and compare vocal takes.

Mic Align

Delay, polarity and comb loss between two microphones on one source.



Mic Align with two files as A and B: the delay, the polarity and what the sum does.

Load Two recordings of the same performance as A and B: two mics, or a DI and its amp. A is the reference.

On screen How far B arrives after or before A, in milliseconds, samples and path difference, and the shift and polarity that line B up with A. Then **Polarity**, **Confidence** (how far the match stands above chance), **Steadiness** over the take, and any **Second arrival**. Three tabs: **Sum** shows per band what A + B does as recorded and aligned (+3 dB adds fully, 0 dB nothing in common, below 0 cancels), with the comb notches marked; **Correlation** shows the match at every delay within 50 ms; **Phase by band** shows the phase left after aligning.

Use it **A + B as recorded** and **A + B aligned** play the two sums. **Copy settings** copies the delay, polarity and path difference.

Measured: the cross-correlation (GCC-PHAT) is built up over the whole take, so faint bleed still counts. The delay is the peak within 50 ms, refined to a fraction of a sample, and the polarity is its sign. A delay is reported only when the peak stands 5 dB above the largest peak chance alone gives. A second arrival is the next peak more than 1 ms away, at least 15 % of the first. Delays are in samples at 48 kHz.

Limits: the delay is relative, and path difference does not say where the mics are. A filter in one path, such as an amp's speaker or a high-pass, moves the delay by a few samples; Mic Align reports the effective delay, which is the one that lines up the sum.

How to use	Load two recordings of the same performance as A and B: two mics, or a DI and its amp. Read the delay and polarity, then compare A + B as recorded with A + B aligned.
What it shows	How far B arrives after or before A, in ms, samples at 48 kHz and path difference. Sum shows per band what adding the two does, as recorded and aligned. Confidence is how far the match stands above chance.
How to read it	On Sum, +3 dB means the two add fully, 0 dB that they share nothing, and below 0 that they cancel. Marked notches are the comb filter the recorded delay makes. Steadiness says whether the delay held over the take; Second arrival is another sound at another distance.
What it can tell you	It shows how much low end or body the two mics lose together, and what aligning gets back. Phase by band shows what no delay can fix, such as a different mic or a filter in one path. The delay is relative: path difference does not say where the mics are.

Sibilance & Plosives

Esses and pops per minute of singing, take against take.

Load	A vocal take as A: the vocal alone, not a mix. Load a second take or mic as B to compare.
On screen	A table of Singing time, Body level, Esses a minute, Typical ess, Loudest ess, Pops and Loudest pop, with B against A. A chart places every ess over time against the body, and two lists give the loudest esses and the pops with their times and lengths.
Use it	Click a time in a list to loop that ess or pop, or click the chart to loop 3 s from there. **Copy report** copies the readings.

Measured: the body is 300 Hz to 3 kHz in 10 ms frames. An ess is a burst from 4 to 10 kHz at least 6 dB over the same moment's body, 30 ms or longer; its level is its loudest 10 ms in that band against the body. A pop is a burst from 20 to 80 Hz at least 12 dB over the 2 s around it, shorter than 120 ms, with 20 to 50 Hz at least as strong as 50 to 100 Hz, so a sung note does not count. Counts are per minute of singing, and levels are against the take's own body, so a louder recording reads the same.

Limits: this counts band energy and does not recognise speech, so a t, a ch or a breath that is mostly high frequencies counts as an ess. A brighter take crosses the ess threshold more often: compare the levels before the counts.

How to use	Load a vocal take, the vocal alone, as A; a second take or mic as B. Read the table, then click a time in the lists to loop that ess or pop.

What it shows	Esses a minute and Pops are counted per minute of singing. Typical ess and Loudest ess are the esses' level against the take's own body, 300 Hz to 3 kHz.
How to read it	Compare the levels before the counts: a brighter take crosses the ess threshold more often. A higher ess level against the body means the esses stand further out of the voice. Levels are against the body, so a louder recording reads the same.
What it can tell you	It compares how much sibilance and how many plosives two takes or mics carry. It counts band energy and does not recognise speech: a t, a ch or a breath can count as an ess. On a mix, hats and cymbals fire the same band, so read a take alone.

Delivery checks

Check every delivery against the master before it leaves.

Stem & Alt-Mix

Whether the stems add up to the mix, and what each alt mix leaves out.

Load

The approved mix as A. In Files, load its stems (names with STEM or STEMS) and any alt mixes (names with instrumental, a cappella, TV or clean). Load stems, alt mixes or both. Stems need the mix's channel count.

On screen

A headline (the stems rebuild the mix, nearly rebuild it, or do not) and the number of findings, such as **1 finding**. Then **Mix minus the stems**, **After the best stem gains**, **Stems** and **Length**. Four tabs: **Findings** lists each measured fault with its numbers; **Stems** gives each stem's Offset, Polarity, Best gain, Share and Peak, with echo and clips marked; **What is left** draws the residual over time and by third octave; **Alt mixes** gives each alt's null, what it was checked against, and where it differs. With no stems loaded, the alt mixes are still checked and shown.

Use it

Click a range to loop it, or click What is left over time to move the playhead. **Listen to what is left** plays the mix minus every stem. **Copy report** copies the findings.

Measured: the files are read block by block. The plain sum of the stems is subtracted from the mix, overall, every 0.5 s and per third octave, and a least-squares fit finds the gain and polarity for each stem that rebuild the mix best. Each stem is placed against the whole mix and against the mix minus the other stems; when those disagree by more than 1 ms, the stem is read as an echo, such as a delay throw, not an offset. When what is left grows 1.5 dB or more for every dB of mix, the mix carries bus processing the stems do not. When most stems would need a gain at least 1 dB different to rebuild the mix, the mix was not made from these stems as they are: level and missing-content findings are held back and timing is marked tentative. A stem more than 1 ms out also holds back those checks.

An alt mix is checked against what it leaves out, when that file is loaded: for an instrumental or TV mix, the a cappella or a stem whose name says lead or lead vocal; for an a cappella, the instrumental. These are found by name. Otherwise the alt is checked against the full mix, and the panel says so; the ranges where an instrumental then differs are where the vocal sings.

Limits: missing content is found by time, not named: the module says when, you say what.

How to use

Load the approved mix as A, then its stems and any alt mixes into Files; they are found by name. Read the headline and Findings, then open Stems and What is left. Press Listen to what is left to hear the mix minus every stem.

What it shows	Mix minus the stems is what is left when the stems are added up and subtracted from the mix. After the best stem gains is what is left once each stem gets the gain that rebuilds the mix best. Alt mixes gives each alt mix's null against what it leaves out, or against the full mix.
How to read it	The deeper the null, the closer the stems add up: -80 dB or deeper reads as rebuilding the mix, -50 dB as nearly. If After the best stem gains is much deeper than Mix minus the stems, the stems differ in level from the mix. On What is left, a rise toward the highs points at a small timing error; a broad lift that follows the music points at bus processing.
What it can tell you	It shows whether a stem delivery rebuilds the approved mix, and which stem is late, flipped or at another level. Missing content is found by time, not named: it says when, and you hear what. Stems printed without the mix bus processing cannot null against the mix, and the module says when that is so.

Family Check

Whether each delivery (16-bit, 44.1 kHz, encode, clean, instrumental, radio edit) comes from the hero master, and how.

Load	The approved hero master as A, and every file made from it in Files. Each file's role is read from its name (see Files recognised by name); stems are left out. Every file is read at its own sample rate and bit depth.
On screen	The hero's loudness, true peak and rate, then one row per file: name, role, relation and loudness against the hero. Relations run from Identical, Same audio moved, Same audio level changed, Requantized, Resampled, Encoded and Speed changed, through Edited, Differs in places and Re-rendered with changes, to Different master, Differs throughout and Not from this master. Select a row for one sentence with its numbers, a line on how that relation compares with the file's role, and Null against the hero, Offset, Polarity, Gain to match the hero, Sample rate, Bandwidth, Loudness, True peak, Length, and any cuts or ranges.
Use it	Click a cut or range to loop it. **Listen to the difference** plays the hero minus the lined-up file. **Copy report** copies every row.

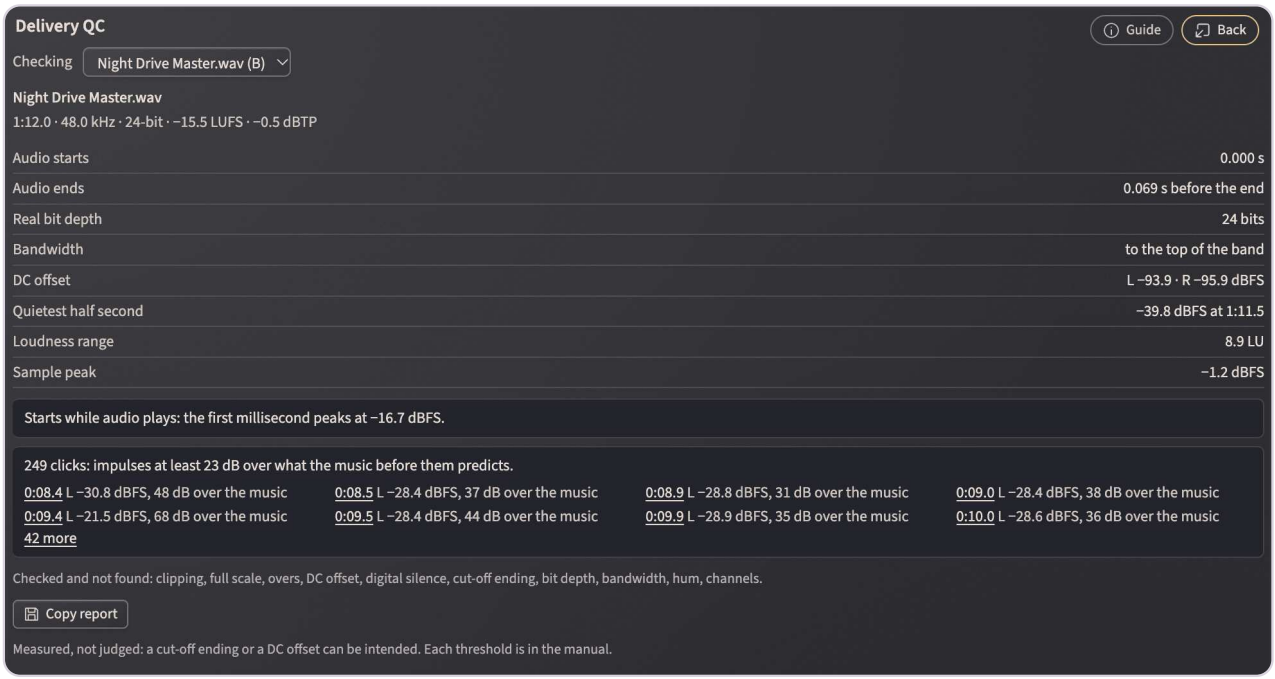
Measured: each file is lined up with the hero (offset, polarity, gain, timing), converted to the hero's rate where it differs, and the most exact explanation wins. Identical: every 0.5 s of what is left is under -140 dBFS. Requantized: what is left is steady noise under -70 dBFS; its level gives the bit depth at 6.02 dB per bit, and an offset of half a step means truncated. Edited: the timing jumps by 1 ms or more and stays. Differs in places: changes cover less than 60 % of the song and the rest nulls at least 60 dB deep. Encoded or resampled: a null of at least 12 dB with no tone change. Different master: a steady tone change of 0.5 dB or more, or a dynamics change. Loudness is BS.1770-4 with 4x true peak.

Limits: an instrumental, TV mix or a cappella lacks a part over most of the song, so Family Check cannot prove it is right and points you to Stem & Alt-Mix. Bandwidth is read to the third octave. A clean exported again through the same plugins can read as re-rendered rather than edited.

How to use	Load the approved master as A, then every file made from it into Files. Click each row to read its sentence, and press Listen to the difference.
What it shows	Each file's role from its name, and its relation to the hero: identical, moved, level changed, requantized, encoded, edited, re-rendered, or another master. Null against the hero is what is left after lining the file up with the hero.
How to read it	Read the relation and its sentence first, then the numbers under it. A null under -140 dBFS is the same samples; steady noise under -70 dBFS is requantization; a null of -12 dB or deeper with no tone change is an encode or a resample. Requantized gives the bit depth the noise implies, at 6.02 dB per bit.
What it can tell you	It shows how each delivery was made from the master, and whether that is what its name says. An instrumental, TV mix or a cappella lacks a part over most of the song, so it is checked in Stem & Alt-Mix. Roles come from file names only: rename a file to change its role.

Delivery QC

Clips, overs, DC, silence, real bit depth, bandwidth, hum and clicks in one file.



Delivery QC on one file: each check, what was found, and where.

Load The file as A. Every sample is read once, at the file's own sample rate and bit depth, with no resampling or gain.

On screen The length, rate, bit depth, loudness and true peak. Then **Audio starts**, **Audio ends**, **Real bit depth**, **Bandwidth**, **DC offset**, **Quietest half second**, **Loudness range** and **Sample peak**. Each finding is one sentence with its numbers and the places it occurs; click a place to loop it with a second either side. A last line lists what was checked and not found. **Copy report** copies it all.

Each finding is a measurement against the threshold below. A cut-off ending or a DC offset can be intended; the module does not decide.

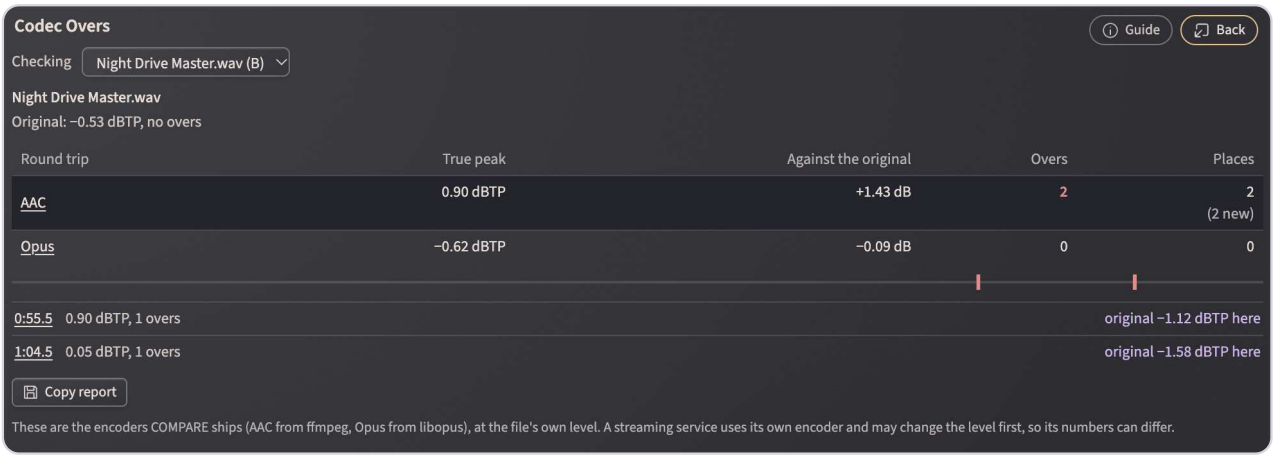
Check	Reported when
Clipping	3 or more runs of 3 or more equal samples at one level, above -6 dBFS, at any ceiling. Runs under 0.5 s apart are one place.
Full scale	Samples reach full scale. Samples above it mean a float file that clips when written as integers.
Overs	True peak above 0 dBTP (BS.1770 meter, 4x oversampled).
DC offset	The weighted mean of a channel, per 0.5 s, is steady and at least 0.1 % of full scale (-60 dBFS). Read over the whole file and in 10 s windows.
Digital silence	Exact zeros on every channel for 10 ms or more inside the programme, or one channel at zero while another plays.
Start and end	Audio starts and ends at the first and last sample above -60 dBFS. A cut-off start or ending: the first or last millisecond peaks above -45 dBFS.
Real bit depth	The finest step the samples use. A finding when an integer file leaves its lowest bits unused, or a float file carries 16 bits or fewer.
Bandwidth	A brick wall: 30 dB down a sixth of an octave above, and staying down. Always a reading; a finding only below 17 kHz and below 86 % of the Nyquist frequency.
Hum	In passages under -60 dBFS: a line within 1 Hz of 50 or 60 Hz, 10 dB over its neighbours, with a harmonic 6 dB over.
Clicks	An impulse 23 dB over what a model of the preceding music predicts, above -80 dBFS, and narrow: at most 6 samples within 1 ms reach 30 % of its height.
Channels	The two channels are identical, one is the other inverted, or one is silent throughout.

How to use Load the file as A. Read the findings, and click a place to loop it.

What it shows	Every sample read at the file's own rate and bit depth: clipping, overs, DC, digital silence, start and end, real bit depth, bandwidth, hum, clicks and channels. Each finding gives its numbers and where it is; the last line lists what was checked and not found.
How to read it	Real bit depth smaller than the file's bit depth means the lowest bits are always zero. A bandwidth stopping well below the sample rate's limit means a lossy encode, a low-pass or a lower-rate source. Each threshold is in the manual.
What it can tell you	It shows what a delivery check looks for, measured, with where in the file it occurs. A cut-off ending or a DC offset can be intended: the module reports them, it does not decide.

Codec Overs

Where AAC and Opus encodes of the master go over 0 dBTP, and by how much.



Codec Overs: the master after an AAC and an Opus round trip, beside the original.

Load	The master as A.
On screen	The original's true peak and overs, then one row per round trip, AAC and Opus: True peak, Against the original, Overs and Places, with how many places are new where the original stays under 0 dBTP. Click a row to see its places on a strip across the song and in a list with each peak, its overs and the original's level there. Click a place to loop it. **Copy report** copies both.

Measured: the master is encoded and decoded at its own level with the encoders COMPARE ships, the same ones the Streaming preview uses: AAC at 256 kb/s (ffmpeg) and Opus at 192 kb/s (libopus). Each decoded file is checked for a time offset, then measured every 100 ms with the same 4x true-peak meter as the original. Places under 0.5 s apart are one place; the first 50 are listed.

Limits: a streaming service uses its own encoder and may change the level first, so its results can differ. There is no MP3 encoder in COMPARE.

How to use	Load the master as A. Click AAC or Opus to see where it goes over, and click a place to loop it.
What it shows	The true peak and overs of the master after an AAC 256 kb/s and an Opus 192 kb/s round trip, beside the original. Against the original is how much the true peak rose through the codec.
How to read it	Look at the new places first: there the original stays under 0 dBTP and the encode goes over. A larger rise means the codec adds more peak to this master.
What it can tell you	It shows how much headroom a master leaves for lossy encoding. These are the encoders COMPARE ships, at the file's own level; a service uses its own encoder and may change the level first.

Vinyl Premaster

Side length, low end in the side, the recording curve, high bursts and peaks: what a cutting engineer looks at, measured.

Load	A two-channel master as A.
On screen	Choose the format: 12-inch, 33⅓; 12-inch, 45; 7-inch, 33⅓; or 7-inch, 45. Type where side B starts (minutes and seconds), or leave it empty for one side. The format and side B are saved with the project. The side table gives Length, the Published optimal and most minutes, Groove speed at the end and High bursts in the last third. Then the side share below 300 Hz, the low-end correlation over time with the places it runs out of phase, the lift through the RIAA recording curve with its loudest moments, high bursts per minute, and true peak, loudness and PLR.
Use it	Click a side, a place or a moment to loop it. **Copy report** copies the readings.

Measured: side share is side power over mid plus side in 20 to 100, 100 to 150 and 150 to 300 Hz. The low end runs out of phase where the 20 to 150 Hz correlation, per 0.5 s, falls under -0.2 while that band is within 30 dB of its loud end; places under 1 s apart join. The RIAA curve is 3180, 318 and 75 µs with 0 dB at 1 kHz: the lift is the programme's loudness through it minus without, and its moments are the loudest 10 ms through it against a full-scale 1 kHz sine. High bursts are 4 to 10 kHz levels 12 dB over the band's running median.

Limits: no limit is published for most of these readings, and the cutting engineer decides. Side times are Disc Makers' published figures. Groove speed assumes the groove runs from a 146 mm radius at a constant pitch and reaches 56 mm at the format's longest side; no radius is published for 7-inch, so no speed is given. High bursts count esses, hats and cymbals alike.

How to use	Load a two-channel master as A. Choose the format, and type where side B starts.

What it shows	Side length against Disc Makers' published minutes, and the groove speed at the end of a 12-inch side. The side share below 300 Hz, and the places where the 20 to 150 Hz low end runs out of phase. How much the RIAA recording curve raises the programme, and its loudest moments through it.
How to read it	Out-of-phase low end is cut as vertical groove motion, so read those places first. The RIAA moments are against a full-scale 1 kHz sine: above zero means hotter than that sine through the curve. High bursts in the last third of a side are cut nearest the label, where the groove is slowest.
What it can tell you	It measures what a cutting engineer looks at before cutting. No limit is published for most of these readings, and the cutting engineer decides. High bursts count esses, hats and cymbals alike.

Atmos Conformance

The ADM master folded to stereo against the stereo master: level, length and timing.

Load	The Atmos master (ADM BWF) and its stereo master as A and B, either way round. The module compares the ADM file's stereo render. If the output setup is not Stereo, choose **Use the stereo render**, which switches the output setup to Stereo.
On screen	A label naming the render. A table of Length, Head, Tail, Loudness, True peak and Width for Stereo and Atmos, with the difference. Apple's published figures are listed beside, as published. Then the start offset and polarity, the null once the two are lined up and level-matched, the tone difference, and the places where the Atmos differs from the stereo; click one to loop it. **Copy report** copies the readings.

Measured: the ADM scene is folded to stereo (0+2+0) by the ITU-R BS.2127 reference renderer. The render is lined up with the stereo master to a fraction of a sample, with its polarity. Head and tail run to the first and last sample above -60 dBFS. Loudness and true peak are BS.1770, and the places come from the Null & Diff engine.

Limits: this is the reference renderer's fold, not the Dolby Atmos Renderer's, and not what a listener on a service hears. Apple's -18 LKFS and -1 dBTP are measured on Apple's own render, which can read differently, so the module gives no verdict on them.

How to use	Load the Atmos master (ADM BWF) and its stereo master as A and B. If asked, choose Use the stereo render. Read the table, then click a place to loop it.
What it shows	Length, head, tail, loudness, true peak and width of the stereo master and of the Atmos master folded to stereo. The start offset, the null once both are lined up and level-matched, and the places where they differ.
How to read it	Read the Length difference and the start offset first: they say whether the two line up. A deep null means the fold matches the stereo master; listed places are where a part is missing, added or moved in level.

What it can tell you	It shows whether the Atmos and stereo masters are the same length, start together and carry the same content. The fold is the ITU-R BS.2127 reference renderer's, not the Dolby Atmos Renderer's, and not what a listener on a service hears. Apple's -18 LKFS and -1 dBTP are measured on Apple's own render, so no verdict is given on them.

Designer: measure plugins and gear

Measure what a plugin does to sound, with COMPARE's own test signals.

What Designer is

Designer is a group of modules for people who build plugins and hardware. COMPARE sends its own test signals, or a section of a song, through an Audio Unit or VST3 effect or through your gear, and measures what comes back. Every figure is a measurement of the plugin or gear as set up, at the settings shown.

Each module explains what it measures, how to read it and what a reading can point to. None of them calls a result good or bad: a plugin that adds harmonics or rings on may be doing exactly what it was made for.

1. Open the Workspace menu and choose a Designer preset, or add a Designer module from **Modules**.
2. Choose a plugin, or **Hardware through the interface**, in the bar at the top of the module.
3. Set a plugin's parameters under **Parameters**, or open **Plugin window** and change them there.
4. Press **Measure**, then read the results and the module's Guide.

On Mac, Designer measures Audio Unit and VST3 effects and hardware, on macOS 14.4 or later.

Choose the plugin

The bar at the top of each Designer module chooses what is measured: a plugin, or **Hardware through the interface**, the first entry. Search plugins by name, maker or format. The first search lists the plugins on this computer; press **Rescan** after installing new ones. Plugin A/B has two bars, A and B.

Parameters lists the plugin's parameters as the plugin reports them. On Mac, **Plugin window** beside it opens the plugin's own window, or Apple's generic window for an Audio Unit without one. What you change there comes back into COMPARE as parameter values, so every measurement is made at values COMPARE can show and repeat. Changed values are saved with the project. **Default** returns one parameter to the plugin's own value.

Rate and **Block** set the sample rate and block size of the test. Torture Test runs every rate and block size by itself.

Measure

Press **Measure**. A bar shows the progress. Frequency & Phase and Latency Check measure again by themselves when a setting changes; the others wait for Measure. Results stay while COMPARE is open: switching tabs or opening a module again shows them at once.

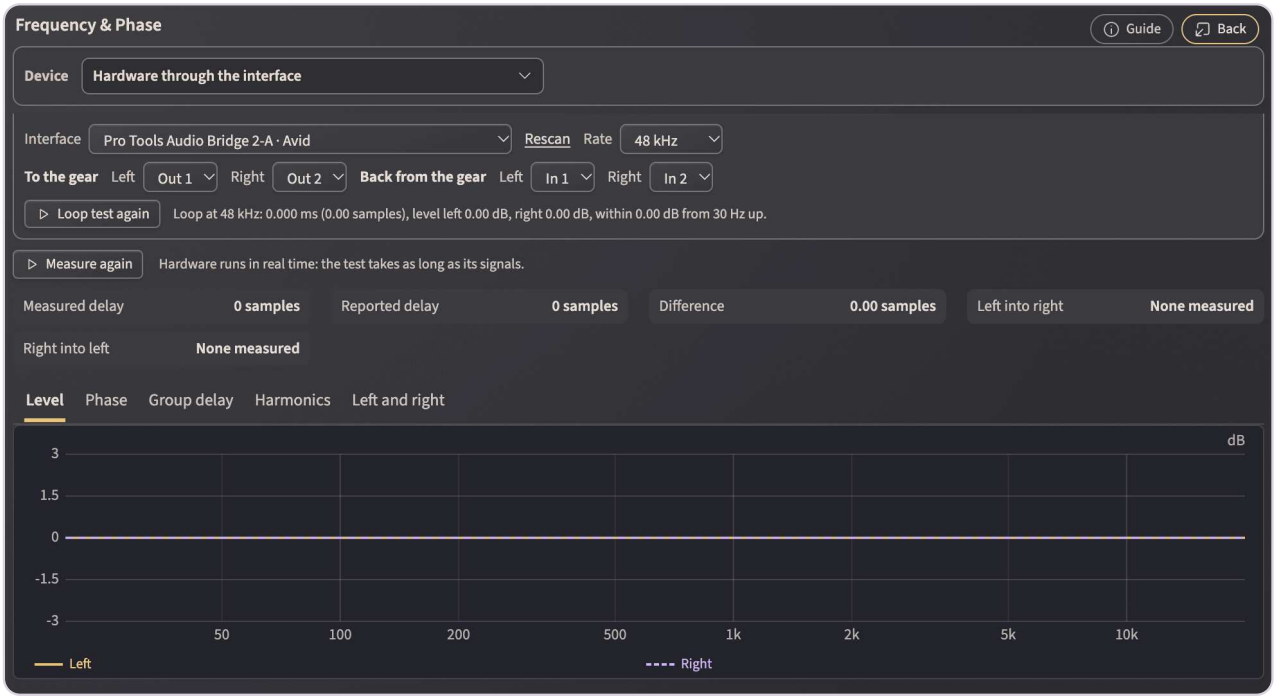
Plugins run in a separate helper, not inside COMPARE. If a plugin crashes, the helper stops, the module says so and COMPARE keeps running. Load the plugin again to continue.

> **TIP** Changes made in the plugin's own window come back into COMPARE as values, and every value is shown with the result, so you can repeat a measurement.

The Workspace menu has six Designer presets: **Tone and phase**, **Dynamics**, **Clean signal**, **Plugin A/B**, **Music through** and **Torture test**. Capture saves every open module as one PDF, with the plugin's name under each picture.

Measure hardware

On Mac, choose **Hardware through the interface** in the bar. Pick the interface and the rate, the two outputs under **To the gear** and the two inputs under **Back from the gear**. COMPARE plays the test signals, or a section of a song, out of those outputs, through the gear and back in on those inputs, in real time.



Hardware through the interface in Frequency & Phase, on a software loop from outputs 1 and 2 straight back to inputs 1 and 2.

Test signals can leave at full level. COMPARE asks you to confirm that the outputs go to the gear, never to speakers or headphones.

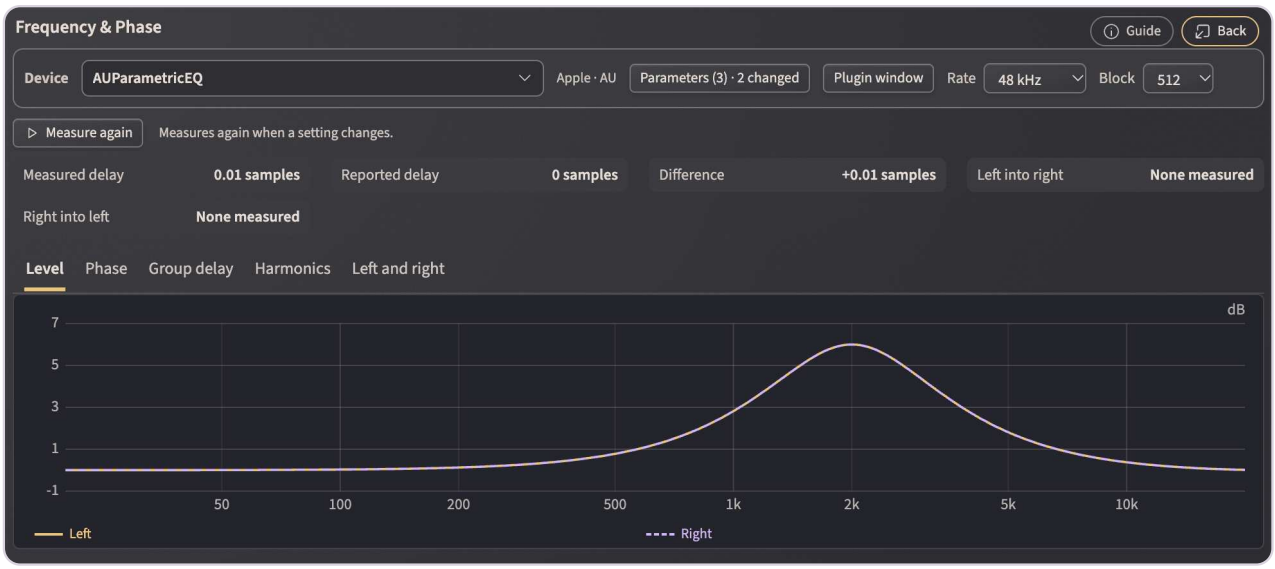
Then run the **Loop test** once for each rate: cable the two outputs straight to the two inputs, without the gear. COMPARE measures the delay and level of the interface itself and takes them out of every reading, so a plain cable reads 0 dB and 0 samples. The loop's own frequency response is shown, not taken out.

> **TIP** Run the loop test again after you change the interface, the cables or the rate.

Hardware runs in real time, so a test takes as long as its signals. Torture Test is for plugins only, and processing time is not measured for hardware.

Frequency & Phase

What the plugin does to each frequency: level, phase and delay, left and right.



Frequency & Phase measuring Apple's AUParametricEQ, set to 6 dB of gain at 2 kHz.

Load A plugin or hardware chosen in the module.

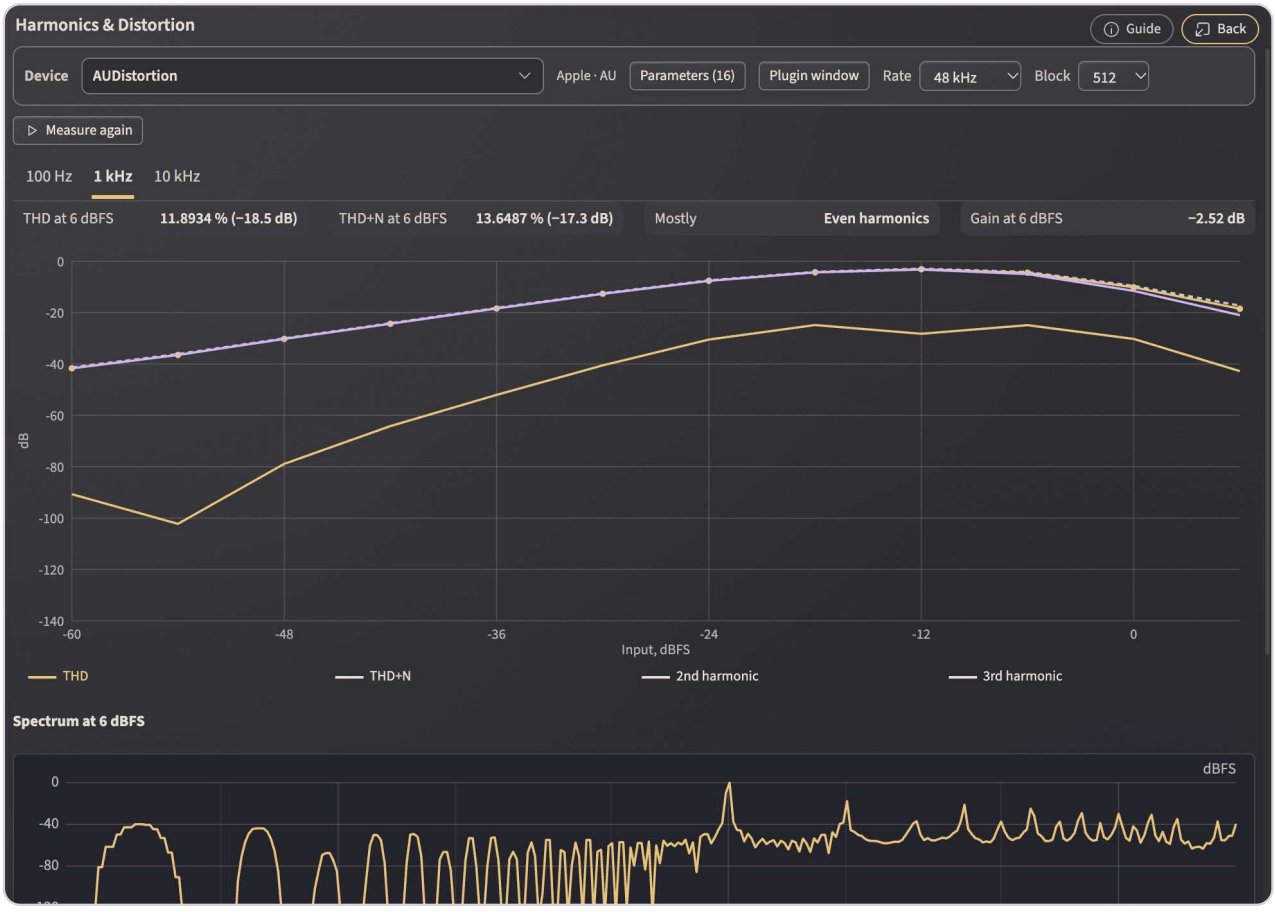
How to use Choose the plugin in the bar at the top of the module and set its parameters there. For gear, choose Hardware through the interface: pick the interface, the two outputs to the gear and the two inputs back, and run the loop test once with the outputs cabled straight to the inputs. Press Measure: COMPARE sends a sine sweep from 20 Hz to 20 kHz through each channel and reads what comes back. Change a parameter and the curves follow.

What it shows Level: how much louder or quieter each frequency comes out, in dB. Phase: how far each frequency is shifted in time, in degrees, with the plugin's fixed delay taken out. Group delay: how long each frequency is held back, in ms. Left and right separately, and how much of one channel leaks into the other. The 2nd and 3rd harmonics the plugin adds at each frequency of the sweep.

How to read it	A flat line at 0 dB means the plugin does not change the level of any frequency. Phase that bends around a frequency is normal for an ordinary EQ: it is how a filter changes level. A flat phase line with an EQ curve means a linear-phase design: it delays everything equally and can ring before a sharp sound. Group delay that rises at the bottom shows low frequencies leaving later than the rest.
What it can tell you	If the curve is not where the plugin's controls say, check the filter maths: coefficients designed for one sample rate drift at another. Curves that bend near 20 kHz at 44.1 kHz and not at 96 kHz come from filters squeezed near Nyquist; designs that account for it (or oversampling) keep the top end where it should be. Left and right that differ when the controls are linked point to a channel that is processed differently. Leakage between channels in a plugin that should keep them apart points to a mid-side or channel mix step.

Harmonics & Distortion

The harmonics the plugin adds at each level, even and odd, and THD.



Harmonics & Distortion measuring Apple's AUDistortion.

Load	A plugin or hardware chosen in the module.

How to use	Choose the plugin, then press Measure: COMPARE plays a steady tone at levels from -60 to +6 dBFS. Pick the test frequency: 100 Hz, 1 kHz or 10 kHz.
What it shows	The level of each harmonic, 2nd to 10th, compared with the tone, at every input level. THD: all harmonics together, in % and dB. THD+N: everything that is not the tone, including noise. Even against odd harmonics, and the gain at each level. The full spectrum at the loudest level.
How to read it	Harmonics that appear only above a certain level show where the plugin starts to saturate. Even harmonics (2nd, 4th) come from a curve that treats the top and bottom of the wave differently; odd harmonics (3rd, 5th) from one that treats them the same. THD+N far above THD at low levels means noise, not distortion, is what remains. Gain that falls at high levels shows compression or limiting inside the plugin.
What it can tell you	Distortion where none is intended points to clipping inside, a gain stage pushed too far, or numbers that run out of range. A saturator that is meant to add only even harmonics but shows odd ones has a curve that is not one-sided. Harmonics that keep rising past the 10th at 10 kHz will fold back as aliasing: see the Aliasing module.

Latency Check

The delay the plugin reports against the delay it really has, at each rate.



Latency Check measuring Apple's AUPeakLimiter.

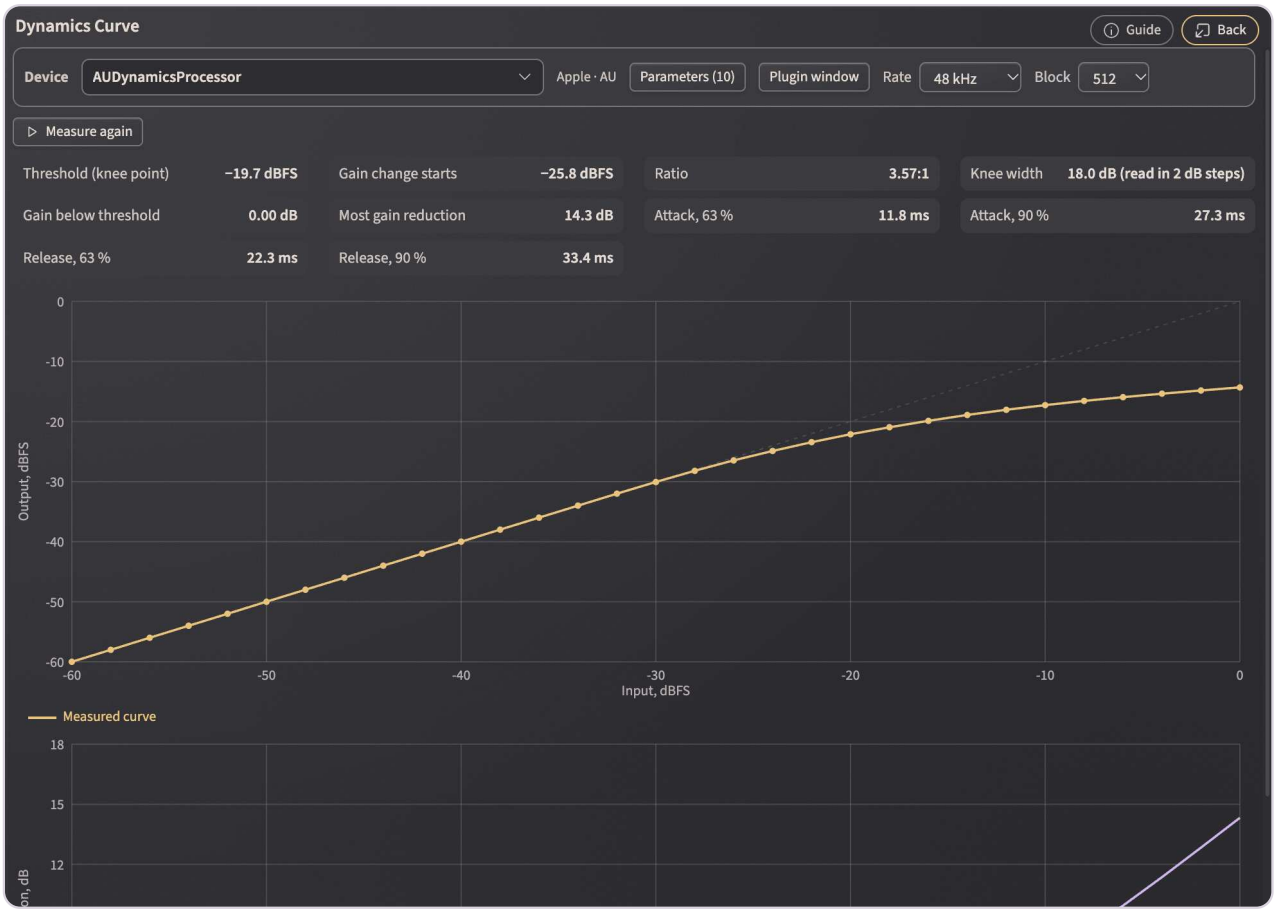
Load	A plugin or hardware chosen in the module.

How to use	Choose the plugin, then press Measure: COMPARE sends an impulse and a short sweep at several sample rates.

What it shows	For each rate: the delay the plugin reports, the delay COMPARE measured, and the difference in samples and ms.
How to read it	A DAW moves the plugin's track earlier by the reported delay; if the real delay differs, the track ends up early or late by the difference. A difference of 0 means the report is right at that rate.
What it can tell you	A report that is right at one rate and wrong at another points to a delay that was worked out for one rate only. Reports that do not change when a lookahead or oversampling setting does mean the plugin does not tell the host when its delay changes. A delay that is not a whole number of samples cannot be fully reported: hosts only shift by whole samples.

Dynamics Curve

Measured threshold, ratio, knee, attack and release.



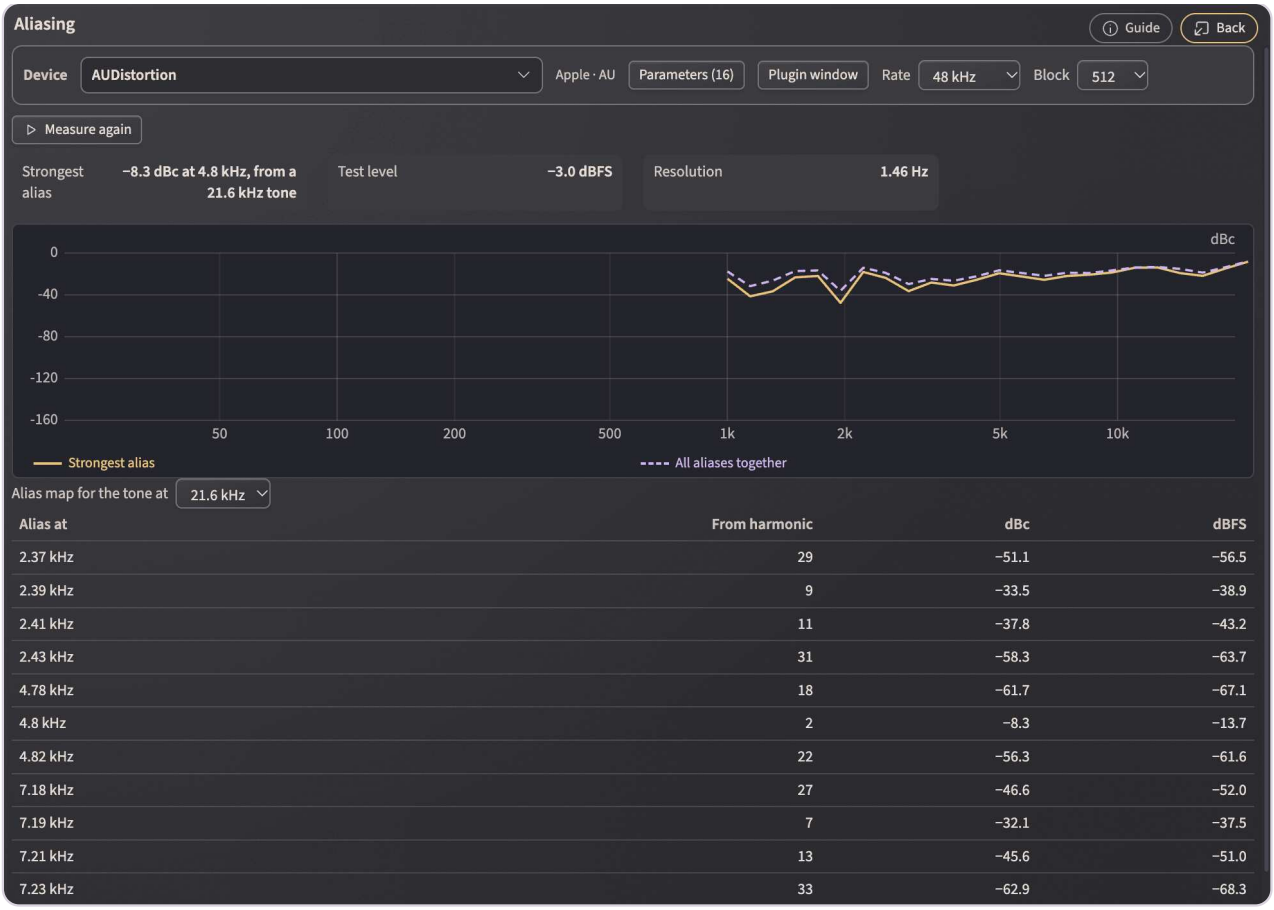
Dynamics Curve measuring Apple's AUDynamicsProcessor.

Load	A plugin or hardware chosen in the module.

How to use	Choose a compressor, limiter or gate, set it up in the bar, then press Measure. COMPARE plays a tone at rising levels for the curve, then short bursts for the timing.
What it shows	The curve: output level against input level. Threshold, ratio and knee, measured from the curve. Attack and release: how long the gain takes to move, to 63% and to 90% of the way.
How to read it	Below the threshold the line has a slope of 1: every dB in is a dB out. Above it, the ratio is how many dB in it takes for one dB out. A wide knee bends gradually; a hard knee turns at one level. If no gain change is found, the plugin behaves like plain gain at these settings.
What it can tell you	A measured threshold or ratio that differs from the controls points to the detector: peak, RMS and level references change where it acts. Attack or release that differs from the control usually comes from how the time constant is defined; 63% is one time constant, 90% is about 2.3. Release that depends on how long the burst lasted shows a programme-dependent design.

Aliasing

Tones the plugin folds back below Nyquist, and how strong.



Alias at	From harmonic	dBc	dBFS
2.37 kHz	29	−51.1	−56.5
2.39 kHz	9	−33.5	−38.9
2.41 kHz	11	−37.8	−43.2
2.43 kHz	31	−58.3	−63.7
4.78 kHz	18	−61.7	−67.1
4.8 kHz	2	−8.3	−13.7
4.82 kHz	22	−56.3	−61.6
7.18 kHz	27	−46.6	−52.0
7.19 kHz	7	−32.1	−37.5
7.21 kHz	13	−45.6	−51.0
7.23 kHz	33	−62.9	−68.3

Aliasing measuring Apple's AUDistortion.

Load A plugin or hardware chosen in the module.

How to use Choose the plugin, then press Measure: COMPARE plays loud tones from 1 kHz up to near the top of the sample rate. Try the plugin's oversampling settings and measure again.

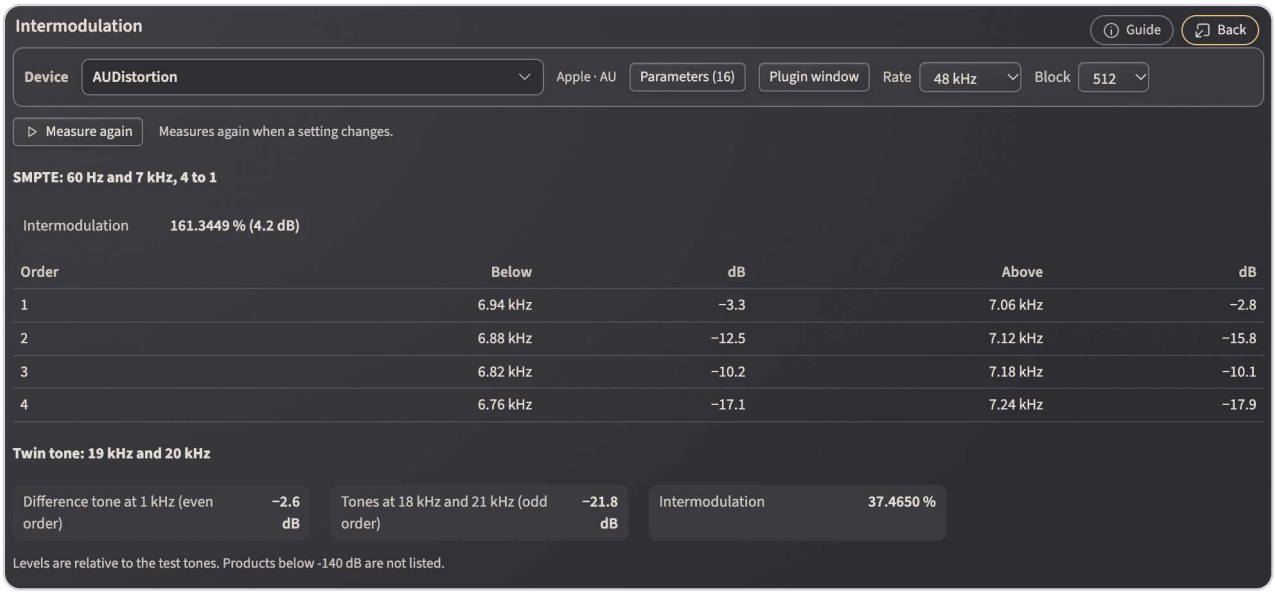
What it shows For each test tone, the strongest tone that should not be there, and where. All of that energy together, compared with the tone. A map of the extra tones for a few test frequencies.

How to read it Harmonics of the tone are expected from a plugin that distorts; aliases are tones that are not harmonics. Aliases usually grow as the test tone rises, because its harmonics pass the top of the sample rate sooner. Nothing listed means no aliasing was measured above the noise.

What it can tell you Aliasing comes from processing that creates frequencies above half the sample rate: they fold back down as tones unrelated to the music. Oversampling before the non-linear step and filtering after it keeps the folded tones low; how low depends on the filters. Smooth curves create fewer high harmonics than hard corners, so they alias less.

Intermodulation

New tones made when two tones pass through together.



Intermodulation measuring Apple's AUDistortion.

Load A plugin or hardware chosen in the module.

How to use Choose the plugin, then press Measure: COMPARE plays two standard pairs of tones.

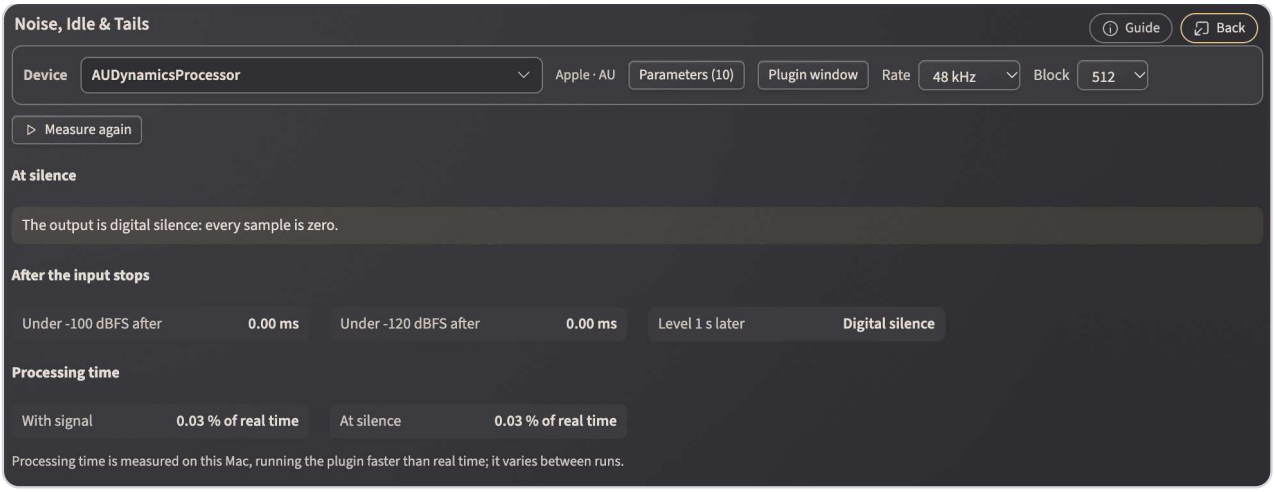
What it shows SMPTE: a low and a high tone together, and the new tones around the high one. Twin tone: 19 kHz and 20 kHz together, and the new tones at 1 kHz and around them. Each as a level against the test tones, and as a percentage.

How to read it A new tone at 1 kHz from 19 and 20 kHz comes from even-order distortion. New tones at 18 and 21 kHz come from odd-order distortion. Nothing listed means no intermodulation was measured above the noise.

What it can tell you Intermodulation shows how a plugin treats two sounds at once: it creates tones that are not harmonics of either, which the ear finds easier to notice. The same causes as harmonic distortion apply: a curve, a clipper, a gain stage pushed too far.

Noise, Idle & Tails

Noise and DC at silence, how long it rings on, and CPU.



Noise, Idle & Tails measuring Apple's AUDynamicsProcessor.

Load A plugin or hardware chosen in the module.

How to use Choose the plugin, then press Measure: COMPARE sends silence, then a short tone followed by silence.

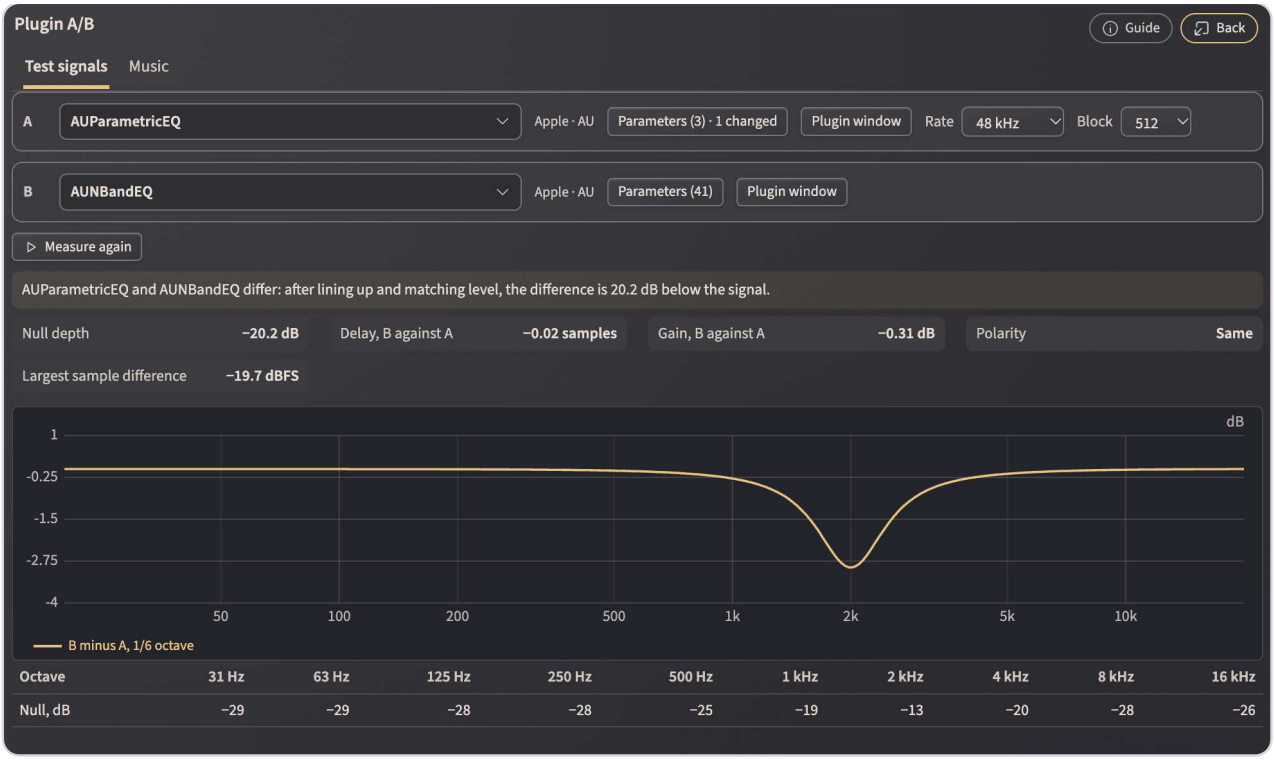
What it shows Noise at silence, plain and A-weighted, and its peak. DC offset on each channel. Tail: how long the output keeps going after the input stops. CPU: how long processing took, compared with the length of the audio.

How to read it Noise far below -120 dBFS is below what a 24-bit file holds. A tail is expected from reverbs and delays; from an EQ or compressor it shows ringing or a slow release. CPU much higher at silence than with signal is a sign of very small numbers slowing the processor (denormals).

What it can tell you DC at silence comes from a stage that adds an offset, such as an asymmetric curve with nothing to remove the offset after it. Denormals appear when a filter or delay decays towards zero; adding a tiny offset or setting the processor to flush them to zero avoids the slowdown. A plugin that reports no tail but rings on can be cut off by hosts that stop processing at silence.

Plugin A/B

Two plugins, two versions, or hardware against a plugin, on test signals or music: what differs and by how much.



Plugin A/B with Apple's AUParametricEQ as A, set to 3 dB at 2 kHz, and AUNBandEQ as B.

Load Two plugins, or a plugin and hardware, chosen in the module.

How to use Choose A and B in the two bars: two different plugins, two builds or settings of the same one, or your hardware against a plugin. Choose Test signals or Music above the bars. Music uses a section of the file in A or B. Press Measure: COMPARE plays the same signal through both, lines B up with A and matches its level.

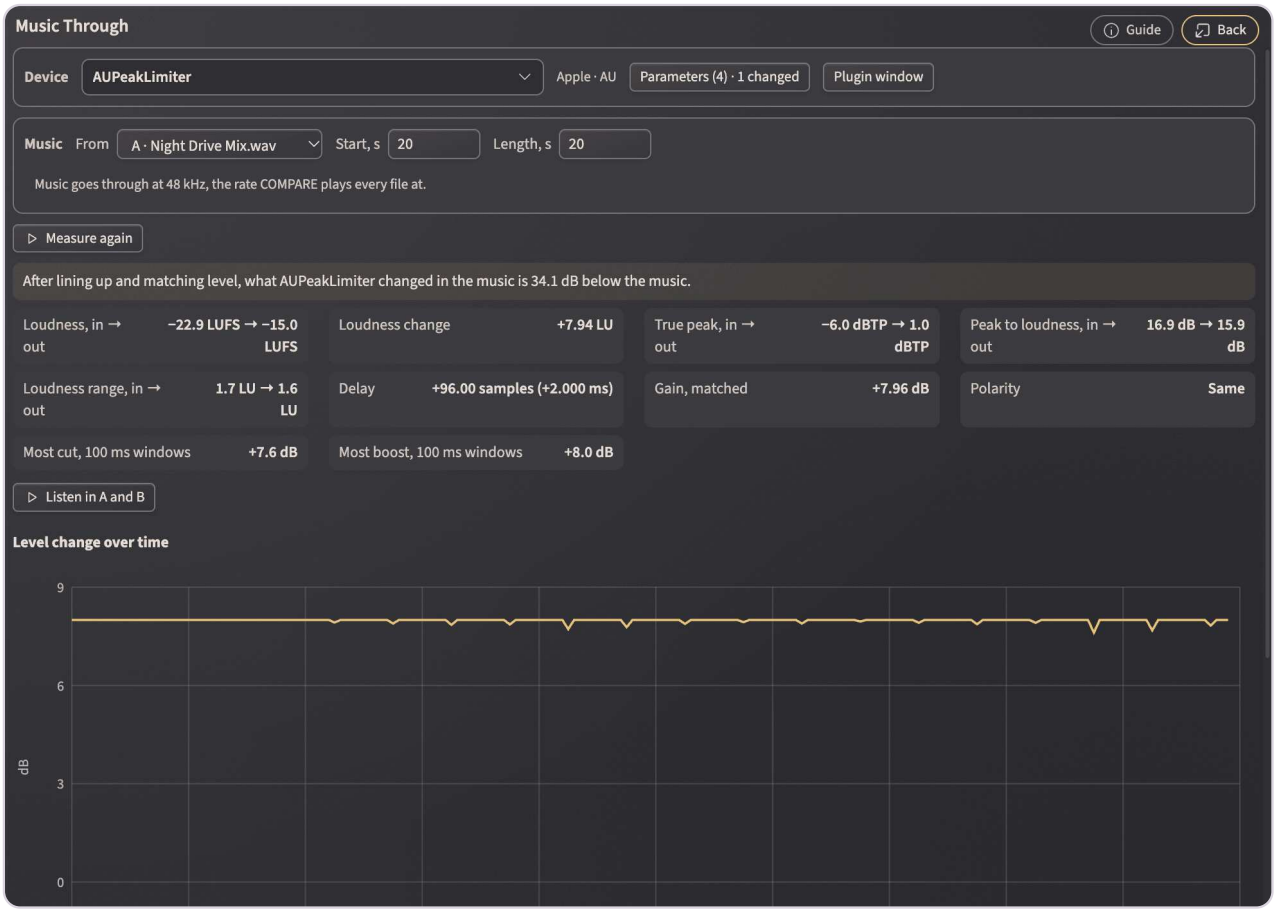
What it shows Whether the two are sample-identical. How deep they cancel (the null), overall and per octave. The difference in level per frequency. The difference in delay and gain, and the polarity.

How to read it Sample-identical means there is no difference at all. A deep null in every octave means the two do the same thing; a shallow one in one octave shows where they differ. Delay and gain differences are taken out before the null, so the null shows only what is left.

What it can tell you Comparing a new build with the last release shows exactly what a change did, and that nothing else moved. Two settings that should sound the same but do not null point to a parameter that does more than its name says. Hardware against a plugin that models it shows how close the model gets, and in which octaves it differs.

Music Through

A section of a real song through the plugin or the gear: what changed, and listen to it in A and B.



Music Through: 20 seconds of a mix through Apple's AUPeakLimiter, what went in against what came out.

Load A plugin or hardware chosen in the module, and a file in A or B.

How to use Choose a plugin, or Hardware through the interface, in the bar. Load a song in A or B, choose which one, where to start and how many seconds. Press Measure. Then press Listen in A and B to hear the music that went in as A and what came back as B.

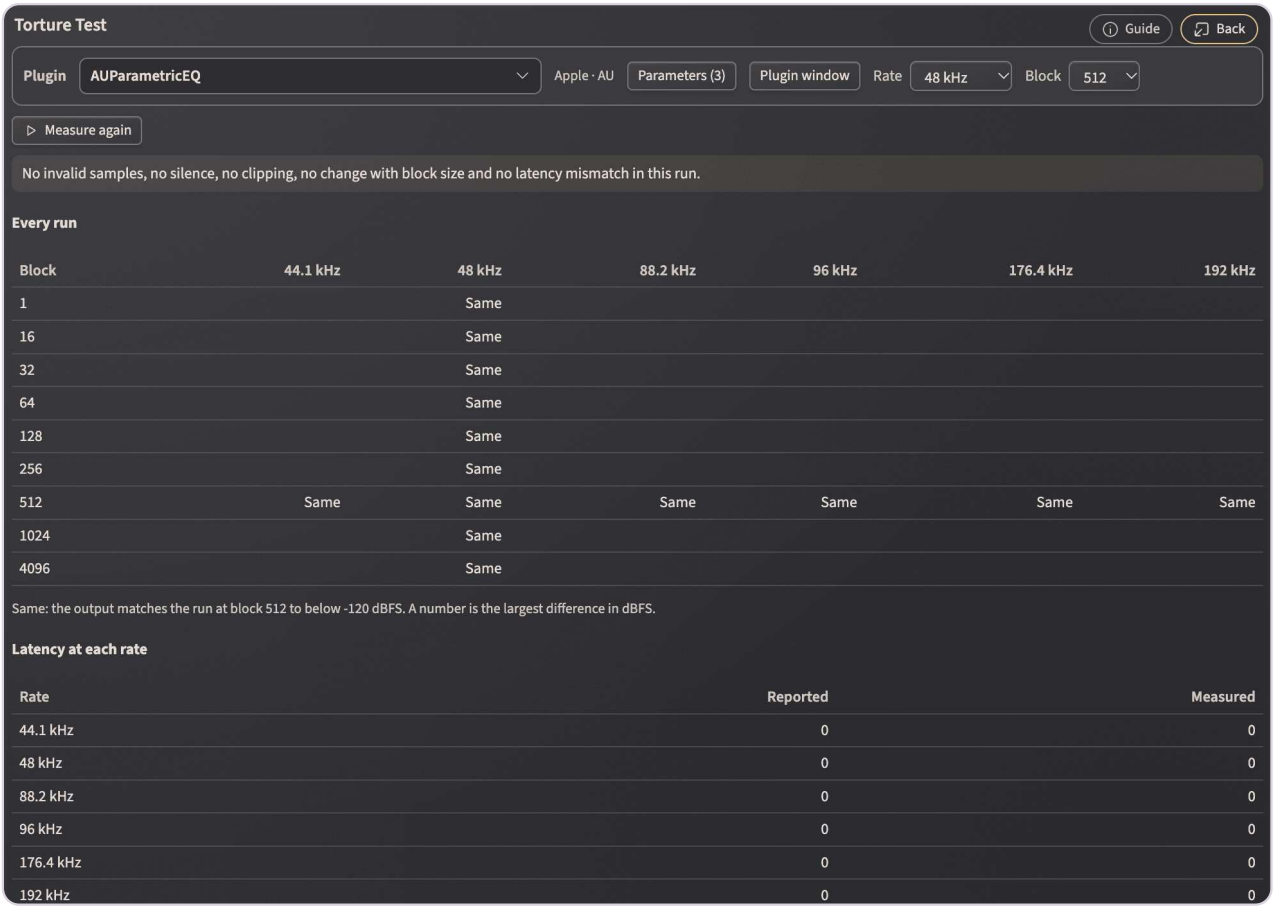
What it shows Loudness, true peak, peak to loudness and loudness range, in and out. How much the level changed over time, in 100 ms windows. How the tone changed per frequency, and the null per octave. The delay, the matched gain and the polarity.

How to read it Level change over time flat at 0 dB means the device did not change the level; dips show where it turned the music down. On a compressor the dips follow the loud parts: that trace is the gain reduction the music caused. The null shows how much is left after lining up and matching level: the deeper, the less the device changed.

What it can tell you Test tones show what a device does to one tone at a time; music shows what it does to everything at once, the way a listener hears it. A device that measures clean on tones but leaves a shallow null on music adds something that only shows on complex sound, such as intermodulation or level-dependent tone. Listening in A and B with the loudness matched shows whether the change is one you hear.

Torture Test

Every sample rate and block size: errors, silence and results that change.



Torture Test measuring Apple's AUParametricEQ.

Load A plugin chosen in the module.

How to use Choose the plugin, then press Measure: COMPARE runs a short programme at every sample rate and block size. This takes longer than the other tests.

What it shows Any invalid numbers (not a number, or infinity), and where. Silent output, and output above full scale. Results that change with the block size, and by how much. Reported and measured delay at every rate.

How to read it	Each finding names the rate and block size where it happened. No findings means none of these problems appeared in this run.
What it can tell you	Results that change with the block size point to state that resets each block, smoothing that runs per block, or a buffer sized for one block length. Invalid numbers at one rate point to coefficients that become unstable there, often a filter placed too close to Nyquist. Hosts use block sizes from 1 to several thousand and change them between calls; a plugin that works at 512 only may fail in another host.

Make the workspace yours

Arrange the panels, keep several workspaces in tabs, and save your projects.

Arrange, resize and combine

Choose Arrange to unlock panels. Drag their Move handles to another panel or column, resize from the panel controls, or choose Float. Split separates a combined module into individual panels. Choose Done arranging when finished so chart gestures remain dedicated to listening.

Analysis combines Timeline, measurements and Energy. Inspector combines Spatial, Tests and Streaming. Modules lists the available combined or split panels. Timeline keeps loop and alignment controls together while the charts adapt to the panel size. Very small custom panels can still be scrolled or enlarged to reach all controls. Reset layout restores the default arrangement without removing your audio.

Save layout in the Workspace menu gives your arrangement a name so it can be reused for other comparisons. Choose Dark, Light or System for appearance. Info on/off controls the plain-language help bubbles throughout the app.

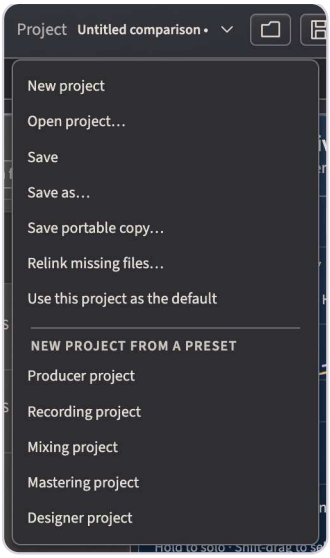
Set as default saves the current module arrangement for startup and New project. Saved projects keep their own layouts. Later edits do not change the default until you set it again. Use Vault Editions as default returns future sessions to the factory layout without rearranging your current project.

Window size

Drag the lower-right Window size grip or a window edge. Click Window size for Small, Standard or Fit to screen. The menu also lets you leave full screen. With the grip focused, use arrow keys to resize; Shift uses smaller steps. The last window size is remembered.

Projects and portable copies

A normal project saves its file references, A/B pair, timing offsets, loop, markers, listening choices and layout. Keep the source audio in place, or relink it when it moves. Save portable copy creates a separate project with copies of its source audio for transfer together.



The Project menu: save, portable copies, a default project, and new projects from a preset.

Save deliberately before starting a new project. The app also keeps recovery state for an interrupted session. Recovery is not a replacement for a saved project or your audio backups.

A default project

In the Project menu, **Use this project as the default** makes new projects and startup open with this project's tabs and level matching. Files are not included. **Clear the default project** goes back to the normal start.

Capture

Capture in the toolbar saves a PDF with a picture of every open module in every workspace tab, plus the frequency comparison. You choose where it goes. A long module is captured whole, in parts. Each picture names its module and tab, and in Designer modules the plugin. Press Esc to stop.

The pictures show the measurements exactly as they are on screen. Use Capture to send readings to a designer, a client, or yourself for later.

Troubleshooting

If a file fails, check that its download has completed, then use Retry. Cloud-only files need to be available locally. If a source moved, use Relink. If audio is silent, check the selected ready source, macOS output, app Output level, solo state and active listening test.

Workspace tabs

Keep several workspaces ready side by side in tabs under the toolbar, for example one for mixing and one for mastering, so no single workspace has to hold everything. Files, audio and measurements are shared by every tab; each tab keeps its own panels, modules and arrangement.

Choose + to add a tab: Vault Editions, one of the role workspaces, or a copy of the tab you are in. Double-click a tab, or press Enter on it, to rename it. Drag a tab to reorder it, and choose its x to close it. Up to 12 tabs.

To keep the whole arrangement, open the Workspace menu and choose Save setup: every tab is saved with its name and arrangement, and Setups lists it to load later. Save layout in the same menu still saves only the tab you are in. Tabs are also saved with the project.

When the arrangement on screen differs from the workspace it came from, the Workspace label says edited, and the menu offers Reset to return to it.

If a file or output fails

What to save and send when something goes wrong.

Save the details

If an error appears, choose Help > Save Support Report from the Mac menu bar. Save the file and share it with RTM Audio, together with what you were doing and a screenshot of the visible error. The report records the failed step, app and Mac versions, and checks of the included audio engines.

The report contains no audio, filenames, project contents, raw error text or environment variables. Nothing is uploaded or sent automatically. Saving a report does not change your project or retry the failed operation.

What the message means

An audio metadata message means the reader could not describe the source file. A system spatial output message concerns the playback helper. An incomplete or damaged project message means the chosen project document could not be read; try a complete copy or a backup. A saved report helps distinguish these steps from a stopped analysis process.

The app keeps a limited local history of recent failures. It records when older events have been discarded or the diagnostic history was unreadable. If the report cannot be saved, choose a different folder with available space. A diagnostic recording failure does not replace the original audio error.

Keyboard reference

The keys that save the most time.

Key	Action
Space	Play or pause
A / B	Select A or B
S	Switch the comparison source
L	Toggle the remembered loop
Shift+B	Start or end blind comparison
E	Turn B + EQ on or off while EQ Match is open
R	Re-read A and B from disk
X / Y	Select a concealed source in blind mode
Escape	End frequency solo; close expanded Spatial when open
Option-click spectrum	Add a marker, or remove an existing marker
Command+N	New project
Command+O	Open project
Command+S	Save project
Command+Shift+S	Save project as
Arrow keys on resize grip	Resize the app window; hold Shift for smaller steps

About this build

RTM COMPARE 1.1 is a standalone Mac application for macOS 14.4 or later. It is activated with your RTM AUDIO account through Moonbase and has no automatic update service. A DMG does not install on Windows.

Use Help > Third-Party Notices for the included licences, attributions and corresponding source materials. Use Help > RTM COMPARE Guide to open this document from the installed app.

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