GROWL AUDIO

gFractor — User Manual

gFractor v1.3.8

For end users

growl-audio.com

2026-11-17

CONTENTS

1. What gFractor is
2. Quick start
3. The Primary / Secondary concept
4. Interface tour
5. The Spectrum view
6. The Oscilloscope view
7. The Waterfall view
8. Reference and Ghost (A/B)
9. Metering panels
10. Exporting a PNG
11. Presets
12. Settings (Preferences)
13. Keyboard shortcuts
14. Standalone & About
15. Troubleshooting

This is the end-user manual for **gFractor 1.3.8**, a multi-mode spectrum analyzer, oscilloscope, waterfall, and metering plugin from GrowlAudio. It assumes you're an audio engineer or producer who already knows what FFT, mid/side, slope tilt, transients, and phase correlation are.

---

1. What gFractor is

A measurement plugin (VST3 / AU / Standalone) you put on any bus to **see** what's in your audio. It offers three views — a spectrum analyzer, a tempo-synced oscilloscope, and a scrolling waterfall (reassigned spectrogram) — over four channel decompositions (Mid/Side, Left/Right, Tonal/Transient, and L+R mono-sum), with a goniometer + correlation + correlation-per-octave metering panel and a full ITU-R BS.1770-4 LUFS meter alongside. It does not colour the audio unless you tell it to: a gain stage, a dry/wet mix, and the audition filters are the only signal-path controls — plus listening to the reference, which swaps a sidechain or a loaded audio file in for the input (section 8).

VST3 and Standalone run on macOS (11 or later), Windows, and Linux; AU is macOS-only.

Insert it post-fader on a master bus or any group whose tonal/stereo balance you want to monitor. The analyzers read the signal **entering** the plugin; only the LUFS meter reads what leaves it (and while you listen to the reference, the stereo meters follow the reference too).

---

2. Quick start

1. **Load gFractor** on a bus and play audio.
2. Two coloured spectrum curves animate in real time. By default:
   - **Green** is the **Primary** channel (Mid in M/S mode, Left in L/R, Transient in T/T).
   - **Amber** is the **Secondary** channel (Side, Right, or Tonal).
3. Press `Tab` to cycle the channel decomposition: **M/S → L/R → TRN → M/S...** The pill captions in the footer rename themselves to match (`MID|SIDE` , `LEFT|RIGHT` , `TRANS|TONAL`). The fourth mode, **L+R mono-sum**, is selected from the footer **Mode** dropdown (`Tab` cycles only the first three — see section 3).
4. Press `V` to cycle the view: **Spectrum → Oscilloscope → Waterfall → Spectrum...**
5. Click `STEREO` in the footer to slide out the right-side metering panel (goniometer, correlation, correlation per octave). Click `LUFS` for the loudness meter. (Only one of the two can be open at a time.)
6. Hover the spectrum to read frequency / dB / nearest musical note. **Right-click and drag** to audition a bell filter (drag vertical for Q).
7. Drop an audio file anywhere on the plugin to load it as a **reference**, then press `R` to listen to it and `G` to overlay it on your own curves (section 8).
8. Press `E` (or the camera pill in the header) to save a PNG of the current view.
9. Optional: turn on **Piano Keys** in **Preferences → Display** to get a pitch-aligned keyboard under the spectrum that highlights the key you're hovering.

That's the whole product, conceptually. The rest of this manual explains each piece.

---

3. The Primary / Secondary concept

gFractor's most important UI decision: the **same two channel toggles, the same two curves, and the same two colours** are reused across all channel modes. They are always labelled **Primary** (green) and **Secondary** (amber) internally — only the captions change.

CHANNEL MODE	PRIMARY (GREEN)	SECONDARY (AMBER)
M/S	Mid = (L+R)/2	Side = (L−R)/2
L/R	Left	Right
TRN (Tonal/Transient)	Transient component	Tonal component
L+R (mono-sum)	L+R summed to one trace	— (single lane; Secondary hidden)

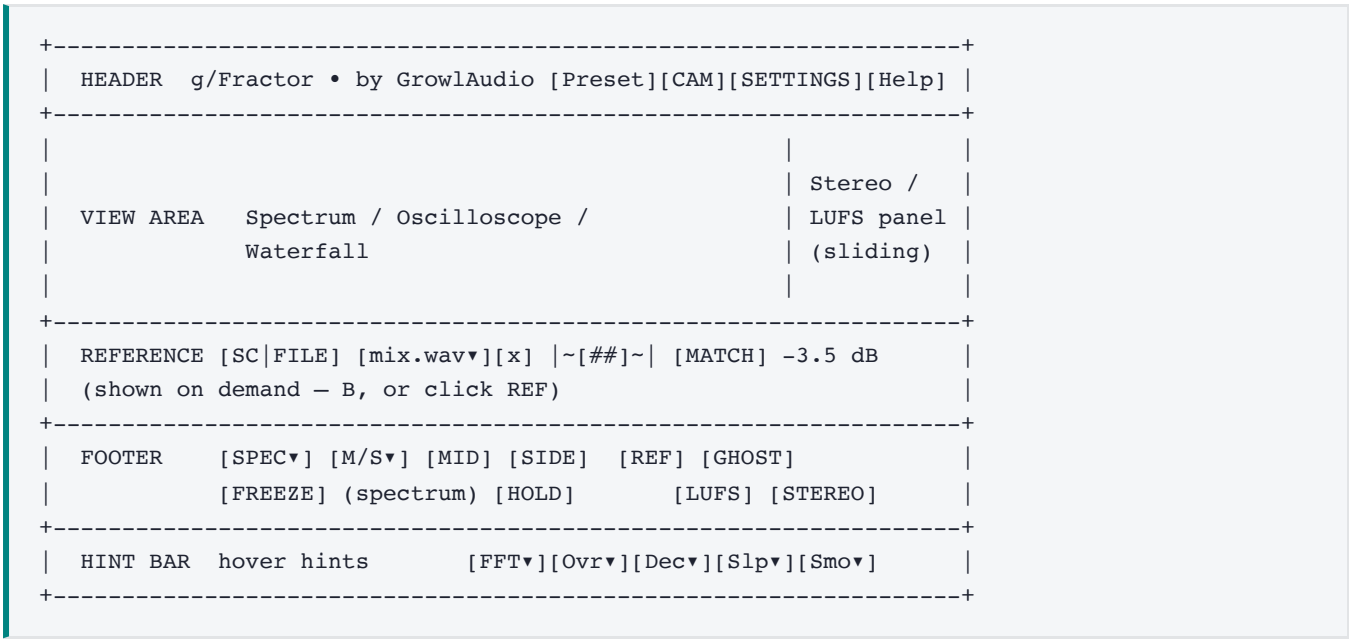
A few consequences:

- Each channel pill has two zones. The **label** (and keys `1` / `2`) toggles the *visibility* of the green and amber traces — it only affects what you *see*. The **speaker icon** on the left of the pill (and `Shift+1` / `Shift+2`, or Shift/Alt-click anywhere on the pill) **mutes** that channel in the audio output.
- In **L+R** mode there is only one lane: both channels are summed into a single Primary trace and the Secondary pill is hidden. Useful for a quick mono-compatibility check or a clutter-free view.
- The ghost (reference) curves use their *own* colours (**Reference P** / **Reference S**, blue and pink by default) to avoid collisions, so you can run a reference comparison without losing track of which curve is which.

About `Tab`: the keyboard cycle steps through the first three modes only (M/S → L/R → TRN). To reach **L+R**, pick it from the footer **Mode** dropdown.

The T/T mode is worth a separate note: it uses a per-sample dual-envelope tracker (fast vs slow envelope, normalised by body level), not an FFT, so it adds no latency — gFractor always reports 0 samples. The Transient curve emphasises percussive content; the Tonal curve emphasises sustained content. Adjust the time constant in **Preferences → Analyzer → Trans Len** (default 1.0 ms; range 0.1–10 ms).

4. Interface tour



Header bar

- **Preset pill** — shows the current preset name, with a dot if the state is dirty. Click for the preset menu.
- **Camera pill** — saves a PNG of the current view (section 10). Same as `E`.
- `SETTINGS` — opens the Preferences overlay (section 12).
- `Help` — About gFractor, Check for Updates, Manual, and (in standalone) Audio Settings. When a newer version exists, the menu reads **Update available: *version*** and a small dot appears on the button.

View area

The main display. One of three views renders here — **Spectrum**, **Oscilloscope**, or **Waterfall** — cycled with `V` or the footer view dropdown (`SPEC` / `SCOPE` / `WTF`). Press `W`, or the button in the plot's corner, to expand any view fullscreen; only the hint bar stays.

Reference strip

Appears above the footer when you ask for it — press `B` or click the `REF` pill. It holds the reference source pick (`SC` / `FILE`), the reference file with its loop region, and the loudness match. See section 8.

Footer bar

The control surface. Most footer pills are **toggles**; a few (View, Channel Mode, Vertical Scale, Time Window, and the Waterfall pills) are **dropdowns**. Pill captions on the left depend on channel mode; pill

availability depends on which view is active — spectrum, oscilloscope, and waterfall each show their own set. `GHOST` is greyed out until there is a reference to compare against — a routed sidechain or a loaded file.

Hint bar

The bottom strip is contextual: hover over any control or the spectrum/scope itself, and the hint bar shows what you can do there (e.g. `CLICK | DRAG — Audition band | Move between bands`). On the right, in spectrum mode, you also get five global dropdowns for **FFT size**, **Overlap**, **Decay**, **Slope**, and **Smoothing**.

Right-side panels

The **Stereo** and **LUFS** pills each slide out a panel on the right edge. They share the right column, so **only one can be open at a time** — opening one closes the other. Drag the vertical divider on the left edge of the panel to resize. Which panel is open, and its width, are remembered.

---

5. The Spectrum view

A real-time FFT magnitude spectrum, log- or linear-frequency × dB, with 256 log-spaced render points across the visible range. Both Primary and Secondary curves are drawn simultaneously and can be overlaid with the Ghost (reference) curves and peak Hold.

Analysis parameters (hint-bar dropdowns)

CONTROL	OPTIONS	NOTES
FFT	256 / 512 / 1024 / 2048 / 4096 / 8192 / 16384 / 32768 / 65536	Larger = finer low-end resolution, slower update. A 65536-point window spans about 1.4 s of audio. Default 8192. Key `F` cycles.
Overlap	2× / 4× / 8× / 16× / 32× / 64×	Higher overlap = smoother time-resolution at higher CPU. Default 4×. Key `O` cycles.
Decay	Off / Fast / Med / Slow / XSlow	Exponential ballistics on the rendered magnitude. *Off* shows raw instantaneous bins; *XSlow* settles slowest, for a long-term average. Default Med. Key `D` cycles.
Slope	0 / +1.5 / +3 / +4.5 / +6 dB/oct	Tilt to compensate for the 1/f spectral slope of music. **+4.5** approximates a pink-noise-flat display. Default 0. Key `S` cycles.
Smoothing	Off / 1/3 / 1/6 / 1/12 Oct	Fractional-octave smoothing to tame spiky spectra. Default Off. No default key.

The **frequency scale** (Log or Linear) is set in **Preferences → Analyzer → Freq Scale**, not the hint bar. Log is the classic view; Linear is handy for inspecting harmonic spacing. The axis reaches down to **1 Hz** (Min Hz), and with **To Nyquist** on — the default — its right edge follows half the session's sample rate.

Cmd+wheel (macOS) / **Ctrl+wheel** (Windows/Linux) over the spectrum zooms the dB axis about 0 dB. The new range is saved to your preferences, the same as setting Min/Max dB by hand.

Persistence controls (footer)

- `FREEZE` (key `Z`) — pauses the display without stopping audio analysis. Useful for taking a screenshot of a transient. Freeze applies to whichever view is active.
- `HOLD` (key `H`) — infinite peak hold. Adds a glow trace at the maximum bin levels seen since enabled. Disable + re-enable to reset. The `HOLD` state is saved with the session and presets.

Ghost and audition

- `GHOST` — the reference pill, split like `MID` / `SIDE`. Its **label** (key `G`) draws the reference — sidechain or file — as a second, dimmer pair of curves in the reference colours under the main ones,

so you can compare two sources without switching anything; it brightens while you listen. Its **speaker** (key `R`) listens to the reference. Greyed out until there is a reference (section 8).
- **Right-click drag on the spectrum** — auditions a resonant bell filter on the audio path at the cursor frequency. Horizontal drag sweeps frequency, vertical drag adjusts Q (0.5–10, default 4). The label shows the Q while you sweep. Release to remove. Useful for confirming a resonance by ear.

Band-pass auditions — this bell and a soloed band below — add **make-up gain** so the filtered sound plays about as loud as the unfiltered signal, instead of dropping away as you narrow in. The gain is capped at +30 dB, held through silence, and never lifts the band more than about 5 dB above the programme level, so a narrow band can't jump out. Cuts (notches) are not compensated.

Band audition strip

Just above the frequency axis, gFractor draws a thin clickable strip with seven musical band labels: **Sub** (20–80 Hz), **Low** (80–300), **Low-Mid** (300–600), **Mid** (600–2000), **Hi-Mid** (2000–6000), **High** (6000–12000), and **Air** (12000–20000 Hz). Audition a band to hear a problem frequency in isolation:

- **Click** a band to **solo** it (band-pass) while the mouse is held.
- **Cmd-click** (macOS) / **Ctrl-click** (Windows/Linux) to **latch** the band so it stays active after you release.
- **Right-click** a band to **cut** it instead — a notch (band-reject) rather than a solo.
- **Drag** along the strip to move between bands without releasing.
- A **plain click anywhere else** in the spectrum clears a latched band and resets the curves. It acts on release, and only if the pointer didn't move — a drag measures instead (below).

Solo and cut are visually distinct — a **blue accent with solid boundaries** for solo ("keep"), a **warm red with dashed boundaries** for cut — and the styling is colour-blind friendly. These filters act on the audio output, which is what makes them audible. The strip can be hidden with **Preferences → Display → Band Hints**.

Hover readout and crosshair

Move the pointer over the spectrum and a crosshair tracks it. The crosshair is drawn whether or not **Show Tooltip** is on — that setting governs only the intersection dots on the curves and the freq/dB/note balloon. Turn it off when you want an uncluttered display but still need to line a frequency up by eye.

Two-point measurement

Left-drag across the spectrum to measure between two points. gFractor reads the curve at each end and shows the level at both points, the **difference** (end minus start), and the **slope in dB/octave** between them — handy for checking a tilt against a target contour, or how far a resonance stands above its neighbours. The measured curve is fixed when you press, and the readout updates live as you drag. Release to clear it.

Piano keyboard

An optional keyboard strip under the spectrum, frequency-aligned with the plot so each key sits at its own pitch on the axis. Enable it in **Preferences → Display → Piano Keys**; it is **off by default**. Hovering the plot marks the key under the cursor and carries the crosshair down to it, giving you the pitch of whatever you're pointing at without reading the tooltip. The strip is drawn dimmed so it never outshines the curves.

Reference guidelines

Up to **six** horizontal reference lines can be drawn over the spectrum, each with its own colour, label, anchor level, and **slope from –12 to +12 dB/oct** — so a guideline can be a tilted target contour (a –4.5 dB/oct pink-noise curve, say) rather than a flat level. Add, remove, and configure them in **Preferences → Guidelines** (section 12).

Split spectrum

Press `X` in spectrum mode (or toggle **Preferences → Display → Split Spectrum**) to stack the channels — **Primary in the top half, Secondary in the bottom half** — so you can compare them without overlap.

Fullscreen

Press `W` (or the button in the plot's corner) to hide the footer and expand the view across the window; only the hint bar stays. It works in every view. Press `W` again to restore.

---

6. The Oscilloscope view

Press `V` until the oscilloscope shows. Time-domain waveform of Primary and Secondary — tempo-synced to the host by default, or free-running.

CONTROL	OPTIONS	NOTES
Sync	HOST / FREE	**HOST** follows the transport, with the cursor tracking DAW playback. **FREE** runs on its own clock and keeps drawing when the transport stops. Dropdown in the footer. Default HOST.
Time window	HOST: 1/16 → 8 bars · FREE: 200 ms / 500 ms / 1 s / 2 s / 5 s / 10 s	HOST windows are synced to the host BPM; FREE windows are fixed lengths (default 500 ms). Each sync keeps its own pick. Dropdown in the footer.
Vertical scale	0.5× / 0.75× / 1× / 2× / 5×	Gain on the display only — doesn't affect audio. Dropdown in the footer.
Spectral coloring (key `C`)	on/off	Tints each sample by its instantaneous frequency content — bass darker, highs brighter. Off = flat trace colour.
Split Scope (key `X`, or Preferences → Display → Split Scope)	on/off	Draws Primary and Secondary in their own stacked lanes instead of sharing a centred axis. Better when both channels have content near each other.
Scope dB Cursor (Preferences → Display)	on/off	A horizontal line follows the pointer, labelled with that height's level in dB relative to the lane's zero line. In split view it measures the lane under the pointer. On by default.

An optional **CRT filter** (Preferences → Display) gives the trace a warmer, more analog feel, paired with a denser grid graticule.

Pan and zoom

- **Mouse wheel** over the scope — horizontal zoom, centred on the pointer.
- **Horizontal drag** (or a horizontal trackpad swipe) — pan the time window when zoomed in.
- **Scrollbar** — once you're zoomed in, a horizontal scrollbar appears under the trace showing which slice of the window you're looking at. Drag it to pan, as an alternative to dragging the waveform itself.

With the transport running in HOST sync, the sweep stays synced to the host: it keeps drawing on loops shorter than the time window, and blanks everything outside the current loop iteration rather than smearing stale samples across the turnaround — wherever the loop starts, and including while zoomed. When the playhead runs outside the host's loop region (Live and Reaper keep looping on while you play elsewhere), the sweep draws normally.

Free-running sync

Switch the footer **Sync** dropdown to **FREE** to watch a signal without a running transport — a synth patch, an input you're monitoring, a standalone session. The window is a fixed length from 200 ms to 10 s, and the sweep ignores host loops and the time offset. Switching between HOST and FREE clears the display. At very high sample rates the longest windows are limited by the scope's buffer (about 5.5 s at 192 kHz). The sync and the FREE window are saved with the session and presets.

Time offset

When a sound doesn't land on the grid — a live take with floating tempo, a late onset — it can split across the window edge. **Alt+click** makes the clicked point the left edge, **Alt+drag** slides the sweep's phase, and **Alt+double-click** resets it. While an offset moves the current division, a small *Offset N ms* readout shows at the top left. The offset is a musical position, so it holds when you change the time window, and it is saved with the project. It applies in HOST sync only.

Ghost / Reference in the scope

- `GHOST` (key `G`) draws the **reference** — sidechain or file — as a desaturated grey envelope beneath the main curves, sample-aligned with them — useful for checking a kick against a bass, or pre against post on the same musical moment.
- Listening to the reference (key `R`) changes what you hear, not what the scope draws: the main trace keeps showing your live signal (section 8).

---

7. The Waterfall view

Press `V` until the waterfall shows — a scrolling **reassigned spectrogram**. Energy is snapped to its true time–frequency location, so a pure tone paints a single crisp line instead of a smeared band, making harmonics, sidebands, and transients far easier to read. Frequency runs along one axis, time scrolls, and level is mapped to colour (range fixed at –100 to 0 dB).

The waterfall has its own footer pills (the channel-mode and channel controls are hidden in this view; `REF` and `GHOST` stay):

CONTROL	OPTIONS	NOTES
FFT	2k / 4k / 8k	Window length. Larger = finer low-frequency detail; smaller = sharper transients in time. Default 4k.
Colour	JET / FIRE / VIRID / MONO	Heatmap palette. Default JET.
Scroll	30 / 60 / 120 / 240	Scroll speed in rows (FFT frames) per second. Default 120.
`SHARP`	on/off	Spectral reassignment. On sharpens tonal content; off falls back to a plain magnitude spectrogram (smoother for broadband material). Default on. Has no effect in Tonal/Transient mode, which always draws the plain spectrogram.

Hover the waterfall for a **readout** — a crosshair plus the frequency, level, note, and the age of the row under the pointer, snapping to the loudest pixel nearby. The box follows **Show Tooltip**; the crosshair always draws. A **dB colour scale** shows how the heatmap maps to level, and a **seconds axis** marks how far back each row is.

The shared **`FREEZE`** (key **`Z`**) pauses the waterfall so you can study a moment in detail.

With **`GHOST`**'s label on, the display splits: your live signal scrolls in the upper half and the reference (marked `REF`) in the lower half, on the same frequency axis. Turning the ghost on or off restarts both halves.

8. Reference and Ghost (A/B)

The reference is the "B" of an A/B comparison. It can come from either of two places, and everything below works the same way whichever you use:

- a **sidechain** input routed to gFractor in your DAW, or
- an **audio file** loaded in the reference strip (section 8.1) — no routing needed.

The `REF` pill always says which of the two is live: a two-paths-merging glyph and `SIDECHAIN` for the sidechain, a document glyph and the file's name (without its extension, cut to 9 characters) for a file, or `NO SOURCE`. Click it — or press `B` — to show or hide the reference strip; its label brightens while the strip is open. The glyph lights blue whenever a source is live, strip open or not.

Listen and Show

`GHOST` works the reference the way `MID` / `SIDE` work their channels, in two halves you can click independently:

HALF	KEY	WHAT IT DOES
Speaker (left)	`R`	**Listen.** The reference replaces the main input for the whole audio chain, so the channel split and audition filters act on it. The spectrum, scope, and waterfall keep showing your live signal; the stereo meters and the LUFS meter follow what you hear. The switch crossfades over about 10 ms, so tapping it doesn't click.
Label (right)	`G`	**Show.** Draws the reference as a second, dimmer pair of curves for direct comparison, without changing what the main curves show. With a file loaded, its curve keeps rolling under your live one even while you're not listening.

Important: while you listen, **gFractor's audio output becomes the reference.** Use it on a monitoring/analysis insert (or the last slot on your master, where hearing the reference is the point), not in the middle of a live mix path.

- `Ctrl` — each press flips listening on or off, like `R`; releasing it does nothing. The fastest way to A/B.
- Listening switches itself off whenever a reference appears or disappears (a sidechain is routed or unrouted, a file is loaded or cleared), and whenever a session or preset is loaded.
- The label half changes only when you click it, press `G`, or load a session or preset — never because a reference came or went. With it on and no reference, nothing is drawn; the ghost comes back as soon as a reference does.

On the spectrum the ghost curves use the **Reference P** / **Reference S** colours from **Preferences → Traces**; the scope draws its ghost in grey, and the waterfall uses its heat-map colours.

8.1 Reference file

Drop an audio file anywhere on the plugin (it lights up with *Drop to load as reference* while you drag, and the strip opens), click the empty waveform, click `FILE` with nothing loaded, or click the file pill and pick one. **WAV, AIFF, FLAC, and Ogg** load everywhere, plus **MP3 and M4A on macOS**. The file pill's menu also lists the 8 most recently used files.

A loaded file **loops on its own**, whether or not the host is playing, until you clear it — there is no play or stop, so `REF` and `GHOST` always have something to compare against.

CONTROL	WHAT IT DOES
`SC` / `FILE`	Picks the reference source. The lit half is the one feeding the comparison. `SC` is greyed (not hidden) when no sidechain is routed.
File pill	Open a file or pick a recent one.
`x`	Clears the reference file.
Waveform	The whole file as an overview. Drag the lit block to move the loop, drag its edges to resize it (1–60 s; 20 s when a file is first loaded), click elsewhere to drop the loop start there.
`MATCH`	Matches the reference's loudness to your mix, so the comparison is about tone rather than level. On for a new file; the correction is capped at ±24 dB.
dB readout	Trim + match combined. Drag it vertically to trim the reference by hand (±12 dB).
Chevron	Hides the strip.

Only the loop region is decoded — up to 60 seconds — so a long reference costs no more memory than a short one. Moving the region re-decodes it, which briefly ducks the reference rather than cutting. Loudness matching compares the reference's whole-file integrated loudness with your programme's, and holds its figure while you listen to the reference.

Loading a file hands it the reference role straight away, but the sidechain is one click away on `SC`, and the pick is saved with the session. If the source you picked disappears, gFractor falls back to whichever one is left; your pick comes back into force when its source does.

The file, its loop region, the match, the trim, the source pick, and whether the strip is open are all saved with the session. The path is absolute, so a project opened on another machine — or a preset shared with someone else — shows the file as missing; open it again from the file pill and nothing else is lost.

The reference file is ignored during an offline bounce. Listening replaces the whole chain's input, so leaving it latched through a render would print the reference into your mix. gFractor uses the sidechain for as long as the host reports a non-realtime render, then goes back to your pick.

8.2 Routing a sidechain

DAW	HOW
Logic Pro	The "Side Chain" menu in the top-right of the plugin window — pick the source bus.
Ableton Live	Drop gFractor on the main track; in the source track's I/O, set **Audio To** → the gFractor track → **Sidechain**.
Reaper	Add a second input pair on gFractor's FX, then route the reference track's send to channels 3/4 of the gFractor track.
Cubase / Nuendo	Enable the side-chain button at the top of gFractor's plugin window, then route the reference track's send to it.
Pro Tools	Set the plugin's Key Input to the reference bus.

In standalone mode there is no sidechain — use a reference file instead.

9. Metering panels

The footer's right side has two pills — `STEREO` and `LUFS`. They share the right column, so opening one closes the other.

Stereo metering panel

Click `STEREO` to open. Three instruments, top to bottom:

Goniometer

Two displays of the same stereo field, chosen in **Preferences → Meters → Display**:

- **Lissajous** (default) — a 45°-rotated dot cloud of L vs R with phosphor persistence. Reads the same way as any classical vectorscope: a vertical line = mono content; a wide diamond = strong stereo content with good phase; a horizontal line = out-of-phase (mono-collapse will cancel).
- **Polar** — the share of the signal's energy arriving at each angle between hard left and hard right, filled in as a shape. A centred mono source collapses to a narrow spike straight up the 0° axis, which is far easier to null a mic pair against than a round cloud; a fully out-of-phase pair splits to the two edges.

Correlation meter

A horizontal bar from –1 to +1. Useful at-a-glance check: stays around +0.4 to +0.9 for healthy stereo; dipping toward 0 or below 0 on a mix bus is a phase warning.

Correlation / Oct

L/R correlation **per octave band**, across ten ISO octave bands from **31.5 Hz to 16 kHz**. A broadband correlation number is energy-weighted, so a loud in-phase midrange hides an anti-correlated sub: a 40 Hz polarity error under an in-phase 2 kHz reads –0.00 on the broadband bar. The per-band chart shows exactly which octave is out of phase. The analysis runs on an 8192-point FFT so the 31.5 Hz band is actually resolved, and a band with no energy reads zero rather than painting a confident bar off noise.

LUFS panel

Click `LUFS` to open the loudness meter. ITU-R BS.1770-4 / EBU R128 compliant. Unlike the rest of gFractor, it measures the plugin's **output**.

- **The bar** shows short-term loudness, with the integrated value marked by an amber tick on the same axis. The scale defaults to a mastering-range **–15 to +2 LUFS**; set it with **LUFS Min / LUFS Max** in **Preferences → Meters**.
- **Seven readouts: Short Term**, **Integrated**, **Loudness Range** (EBU Tech 3342), **Dynamics** (PSR — peak minus short-term), **Avg Dynamics** (PLR — peak max minus integrated), and **Crest** — the plain,

unweighted peak-to-RMS ratio in dB over the same 3 s window as the peak. PSR and PLR measure peak against a K-weighted loudness; crest reads the waveform's shape instead, so a signal can be squashed in one sense and not the other. **DC Offset** reads the long-term mean of the louder input channel in dBFS (about a 1 s time constant), measured on the input before any processing — green below –60 dBFS, amber from –60 to –40, red above.

- **Three max trackers: Momentary Max**, **Short Term Max**, **Peak Max**. Click one to mark it on the bar; click again to clear the marker.
- **Reset** clears the integrated value, loudness range, and the max trackers.

LUFS, LU, or dBFS

The `LUFS` / `LU` / `dBFS` pills above the meter switch the loudness numbers between absolute LUFS, **LU relative to a target**, and plain **dBFS**. In LU, against the default –7 LUFS target, a –14 LUFS programme reads **–7 LU**. In dBFS the readouts are **unweighted RMS** over the same windows — a full-scale sine reads –3.0 dBFS — for when you want a level without K-weighting; the integrated figure is a gated mean of the blocks above –70 dBFS. Short Term, Integrated, and the loudness max trackers follow the switch; Loudness Range and the dynamics rows are differences already, and Peak Max is a sample peak, so those never change unit.

In LU the bar's scale is drawn in LU too, and the target is marked on it as a dashed line at 0 LU, captioned with the absolute level it stands for. When the target falls outside the scale range, the caption pins to the nearest end of the bar with a caret pointing the way it lies. A `TARGET` badge next to the pills names the level (on a narrow panel it moves to its own row under the divider); **drag it vertically** to retarget in 0.5 LU steps. The target (–40 to 0 LUFS), the scale range, and the unit are global preferences, remembered across projects. **Preferences → Meters → Default Unit** picks the unit a new window opens in — *Last used* by default.

Reset on play

Preferences → Meters → Reset On Play restarts the loudness measurement whenever the host transport starts rolling, so each playback pass is measured on its own. Stopping changes nothing — the numbers stay up to be read, and only the next start clears them. Off by default, in which case the measurement runs until you press reset. Only the stopped → rolling transition triggers it, so a pass that keeps playing is never interrupted, and a host that reports no transport at all (some offline renders) never resets. It applies while the plugin window is open.

---

10. Exporting a PNG

Press `E`, or click the **camera pill** in the header, to save a picture of the current view. gFractor renders it at a fixed **2×** regardless of UI scale, adds a caption strip — the logo, the version, the view and channel mode, and for the spectrum the FFT size, slope, and dB range — then reveals the file.

Files are named `gFractor-YYYYMMDD-HHMMSS.png` and go to a **gFractor** folder in your Pictures folder (macOS `~/Pictures/gFractor`, Windows *Pictures*|*gFractor*, Linux `$XDG_PICTURES_DIR/gFractor`). If there's no Pictures folder, gFractor falls back to the Desktop, then your home folder.

Export is unavailable while the Preferences overlay or the About dialog is open — close it first.

11. Presets

Click the preset pill in the header to open the menu.

- **Init** — loads the default state (always available).
- **User presets** — click any saved preset to load it; the current one is checked.
- **Save Preset...** — prompts for a name and writes the current state (overwrites if the name exists).
- **Delete "*name*"** — removes the active user preset after a confirmation (disabled on Init).

User presets are `.xml` files in your user application-data folder:

OS	PRESETS FOLDER
macOS	`~/Library/GrowlAudio/gFractor/Presets`
Windows	`%APPDATA%\GrowlAudio\gFractor\Presets`
Linux	`~/.config/GrowlAudio/gFractor/Presets`

A **dot next to the preset name** indicates the state is dirty — a parameter or a saved display setting has changed since the preset was loaded. Loading another preset, saving, or loading Init clears the dot.

What a preset stores

A preset saves the **plugin parameters plus the display/view state** — channel mode, view mode, Primary/Secondary/Ghost visibility, vertical scale, time window, spectral coloring, the waterfall FFT/colour/scroll/reassign settings, the spectrum's FFT / overlap / decay / slope / smoothing, `HOLD`, the scope sync, FREE window and time offset, and the reference (file, loop region, match, trim, and source pick).

What a preset does **not** store — these are **global per-user** and apply across all instances: the Preferences-panel settings (trace colours, dB/Hz ranges, frequency scale, To Nyquist, theme, UI scale, text size, brightness, skin background (image, opacity, animation), fill mode, split toggles, tooltip, scope dB cursor, band-hint and piano-key toggles, reference guideline lines (including their per-line slopes), curve order, the LUFS meter scale / LU target / unit and default unit / Reset On Play, the goniometer display, the Windows renderer, analytics consent, and keyboard shortcuts), plus window size, which metering panel is open and its width, and the daily update-check cache.

12. Settings (Preferences)

Click the `SETTINGS` pill in the header. A modal panel overlays the view, organised into seven tabs: **Analyzer, Traces, Guidelines, Display, Meters, System, Keys**. Within each tab the rows are grouped into framed cards by topic — on **Display**, for instance, *Skin*, *Appearance*, *Layout*, and *On-screen help*.

Analyzer

SETTING	OPTIONS / RANGE	NOTES
Interpolation	on / off	Smooths the spectrum and ghost-spectrum curves between bins.
Simplify Curve	on / off	RDP simplification of the curve path for cheaper drawing.
Freq Scale	Log / Linear	Logarithmic or linear frequency axis.
Trans Len	0.1 – 10.0 ms	Transient-detection envelope time constant for T/T mode. **Automatable**.
Min Hz	1 to 200 Hz	Left edge of the spectrum axis.
Max Hz	5000 to 96000 Hz	Right edge of the spectrum axis. Locked while To Nyquist is on.
To Nyquist	on / off	The right edge follows half the session's sample rate. On by default.
Min dB	–120 to –12 dB	Floor of the spectrum axis.
Max dB	–24 to +12 dB	Ceiling of the spectrum axis.

Traces

SETTING	OPTIONS	NOTES
Colours	4 swatches	Primary, Secondary, Reference P, Reference S — kept separately for each theme. Click any swatch for a colour picker.
Curve Order	drag to reorder	Choose which analyzer curves (Primary / Secondary / Ghost) draw on top of which.

Guidelines

Configurable horizontal **reference lines** on the spectrum — handy for marking target levels and target contours. **Add** and **remove** lines here, up to **six**.

SETTING	OPTIONS / RANGE	NOTES
Enable	on / off	Show or hide the line without deleting it.
Colour	swatch	Click for a colour picker.

SETTING	OPTIONS / RANGE	NOTES
Label	text	Drawn at the line — e.g. `-14 LUFS target`.
Anchor dB	slider	Level the line sits at (at 1 kHz when the line is tilted).
Slope	−12 to +12 dB/oct	Tilt of the line. 0 is flat; −4.5 traces a pink-noise contour.
Add / Remove	up to 6 lines	Buttons at the bottom of the tab.

Slopes are stored **per line** and persisted with the rest of your global preferences. Setups made before 1.2.2 keep the old fixed 0 / −3 / −4.5 / −6 dB/oct lines, so nothing shifts under you on upgrade.

Display

SETTING	OPTIONS / RANGE	NOTES
Theme	Balanced / Dark / Light / Halloween / Merry Christmas / Techno / DnB / Hip-Hop / SynthWave / Emphaseas	Default is Balanced. Curve colours follow the active theme. The seven skins after Light come with their own animated background picture.
Background	Theme default / None / your own file	A picture drawn behind the whole UI — pills, dropdowns and meter troughs tint it rather than cover it. *Theme default* uses the skin's own picture (none for Balanced, Dark, Light); choose a **bitmap or SVG** of your own from the menu.
Image Opacity	0 – 100 %	How strongly the background shows through.
Animate	on / off	Slow pan, colour breathing, and each skin's live layer. On by default; flashes are kept within photosensitivity-safe limits. Turn off to save CPU.
UI Scale	50 / 75 / 100 / 125 / 150 / 200 %	Overall interface size.
Text Size	100 / 115 / 130 %	Enlarges text only, for legibility at small UI scales. Bars and pills keep their height; exported PNGs are unaffected.
Brightness	0 – 200 %	Dims or boosts the spectrum curve and scope trace.
Fill	No Fill / Gradient / Solid	How the spectrum curve is filled. Gradient is the higher-CPU option.
Split Scope	on / off	Same as the `X` key in the oscilloscope — per-channel lanes.
Split Spectrum	on / off	Same as the `X` key in the spectrum — Primary top, Secondary bottom.
Piano Keys	on / off	Frequency-aligned keyboard strip under the spectrum. Off by default.

SETTING	OPTIONS / RANGE	NOTES
Show Tooltip	on / off	The spectrum hover readout — intersection dots on the curves and the freq/dB/note balloon. The crosshair tracks the cursor either way.
Scope dB Cursor	on / off	The dB-labelled pointer line in the oscilloscope. On by default.
Band Hints	on / off	Shows or hides the seven-band audition strip.

Meters

SETTING	OPTIONS / RANGE	NOTES
LUFS Min	−60 to +6 LUFS	Bottom of the LUFS bar. Default −15.
LUFS Max	−54 to +12 LUFS	Top of the LUFS bar. Default +2. Kept at least 6 LUFS above LUFS Min.
Default Unit	Last used / LUFS / LU (relative) / dBFS (RMS)	The unit the loudness panel opens in. Default Last used.
LU Target	−40 to 0 LUFS, 0.5 steps	The level the relative LU readout is measured against. Default −7 (a target you set in an earlier version is kept).
Reset On Play	on / off	Restart the loudness measurement when the host starts rolling. Off by default.
Display	Lissajous / Polar	The goniometer's display (section 9). Default Lissajous.

System

SETTING	OPTIONS	NOTES
Analytics	Off / On	Opt-in usage analytics. No audio data is ever transmitted.
High-DPI Spectrum	Off / On	Renders the spectrum curve at display resolution — crisp at high UI scales.
Renderer (Windows only)	GPU / Software	GPU (Direct2D) is the default. Switch to Software if the editor stutters or freezes on your GPU or driver. Applied live.

Keys

A master **Shortcuts On/Off** switch (it takes effect at once, without Save), plus a **remappable** list of every keyboard action — click a row and press the key you want. A key bound twice is highlighted. Press **Backspace** or **Delete** while a row is capturing to turn that shortcut **Off** (shown dimmed) — its key then passes through to your DAW. Backspace and Delete themselves can't be bound.

Save commits all changes; **Cancel** discards them; **Reset** restores every tab's factory defaults — including the trace colours — and saves. `Esc` closes the panel, the same as Cancel.

Note: only `gain`, `dryWet`, `bypass`, `outputPrimaryEnable`, `outputSecondaryEnable`, and `transientLength` are exposed as DAW-automatable parameters. The Preferences settings above are user-global, not per-session — they apply across all instances of the plugin and are not stored in presets or session state.

---

13. Keyboard shortcuts

Shortcuts can be globally disabled — and individually remapped — in **Preferences → Keys**. These are the defaults.

Inside a DAW, gFractor takes keys only after you click in its window, and hands them back once focus moves elsewhere. **Cmd/Ctrl/Alt** chords always go to the host, so Cmd+S still saves your project.

Channel

KEY	ACTION
`1`	Toggle Primary visibility
`2`	Toggle Secondary visibility
`Shift+1`	Mute Primary (audio)
`Shift+2`	Mute Secondary (audio)
`Tab`	Cycle channel mode (M/S → L/R → TRN). L+R is chosen from the footer Mode dropdown.

View

KEY	ACTION
`V`	Cycle view (Spectrum → Oscilloscope → Waterfall)
`W`	Fullscreen (any view; press again to exit)
`X`	Split view (Split Spectrum in spectrum, Split Scope in oscilloscope)
`C`	Spectral coloring (oscilloscope only)
`E`	Export a PNG of the current view

Reference and overlays

KEY	ACTION
`R`	Listen to the reference (it replaces the input)
`Ctrl` (press)	Toggle listening to the reference
`B`	Show / hide the reference strip
`G`	Ghost — show the reference curves (every view)

KEY	ACTION
`Z`	Freeze (current view)
`H`	Infinite peak Hold (spectrum)

Spectrum parameter cycling

KEY	CYCLES
`F`	FFT size (256 → … → 16384)
`O`	Overlap (2× → 4× → 8× → 16×)
`D`	Decay (Off → Fast → Med → Slow → XSlow)
`S`	Slope (0 → +1.5 → +3 → +4.5 → +6 dB/oct)

Smoothing has no default key — use the hint-bar dropdown, or bind one in Preferences → Keys.

Misc

KEY	ACTION
`Esc`	Close the Preferences overlay (fixed key; works even with shortcuts off)
`P`	Performance display (debug builds only)

Mouse

ACTION	EFFECT
Hover spectrum	Crosshair (always) + freq/dB/note tooltip when Show Tooltip is on
Hover spectrum, piano on	Marks the key under the cursor and carries the crosshair down to it
Left-drag (spectrum)	Two-point measurement — level at each end, difference, dB/oct slope
Right-click drag (spectrum)	Audition bell filter — horiz: freq, vert: Q
Click in spectrum body (no drag)	Clear a latched band and reset the curves
Hover waterfall	Crosshair + freq/level/note/row-age readout (box follows Show Tooltip)
Cmd/Ctrl + wheel (spectrum)	Zoom the dB axis about 0 dB (saved)
Click band label	Solo that band (band-pass) while held

ACTION	EFFECT
Cmd/Ctrl-click band label	Latch the band
Right-click band label	Cut that band (notch)
Drag band label	Sweep across bands
Click channel pill label	Show / hide that channel
Click channel pill speaker icon	Mute / unmute that channel's audio
Wheel over scope	Horizontal zoom
Drag in scope / horizontal swipe	Pan time window
Drag scope scrollbar	Pan time window when zoomed in
Alt+click / Alt+drag (scope)	Set the left edge / slide the sweep's phase
Alt+double-click (scope)	Reset the time offset
Drop an audio file on the plugin	Load it as the reference
Drag the loop block / its edges (reference strip)	Move / resize the reference loop
Drag the dB readout (reference strip)	Trim the reference
Drag `TARGET` badge (LUFS, LU mode)	Retarget in 0.5 LU steps
Drag panel divider	Resize metering panel
Drag window corner	Resize window

14. Standalone & About

gFractor ships as a **standalone app** alongside the VST3 and AU plugins. The standalone window uses the **native OS title bar**, and audio device settings live in the `Help` menu (Audio Settings...). There is no sidechain in standalone mode, but a reference file works the same as in a DAW.

The `Help` menu also opens a custom **About gFractor** dialog — the gFractor brand mark, a link to growl-audio.com, and credits, rendered as a native overlay that matches the rest of the interface. (There may be a little something hidden in there for the curious.)

---

15. Troubleshooting

`GHOST` **is greyed out.** There is no reference — the `REF` pill reads `NO SOURCE`. Route a sidechain to gFractor (section 8.2), or press `B` and load a reference file.

The audio changes when I listen to the reference. Expected — listening feeds the reference through the whole chain, output included. Use `GHOST`'s label (`G`) to compare by eye without changing the output, or put gFractor on an analysis insert.

My reference file says "file not found". The session stores its absolute path, so moving the file, or opening the project on another machine, loses it. Click the file pill and open it again from its new location.

Where did the reference play button go? It was removed in 1.3.8: a loaded reference file now always loops until you clear it, so there is nothing to start or stop.

The oscilloscope is blank when the transport is stopped. In HOST sync the scope follows the transport. Switch the footer **Sync** dropdown to **FREE** to keep it drawing.

The reference went quiet for a moment while I dragged the loop. Expected — only the loop region is held in memory, so moving it re-decodes, and the reference ducks across the swap rather than cutting.

Pressing `Tab` / `R` / `Z` etc. does nothing. Inside a DAW, gFractor only takes keys after a click in its window — click anywhere inside it first. Otherwise your DAW may capture the key before gFractor sees it (common with `Tab` in Live and Pro Tools), or shortcuts are switched off in **Preferences → Keys**. Workaround: change modes via the footer dropdowns, or remap the shortcut. Cmd/Ctrl/Alt chords always go to the DAW by design.

`Tab` **won't switch to L+R mono mode.** That's expected — `Tab` cycles only M/S → L/R → TRN. Select **L+R** from the footer **Mode** dropdown.

A band stays soloed. You Cmd/Ctrl-clicked it, which latches. Click anywhere in the spectrum body to clear it.

Where did SAVE / LOAD / TARGET go? The target-curve overlay was removed in 1.3. To compare against a reference master, load it as a reference file (section 8.1) and use `GHOST`.

Spectrum looks coarse at the low end. Increase FFT size (key `F`). Below 80 Hz, frequency resolution is limited by the FFT and a smaller size won't resolve adjacent bass notes.

Spectrum is choppy. Increase Overlap (key `O`) and/or set Decay to *Slow* (key `D`). If CPU is the constraint, drop the FFT size.

Big FFT sizes feel laggy. A 65536-point window spans about 1.4 seconds of audio (at 44.1/48 kHz), so every frame is an average over that much time. Raising Overlap makes new frames arrive more often but can't sharpen them — for a display that reacts quickly, pick a smaller FFT size.

Plugin uses high CPU. The biggest cost factors are FFT × Overlap. Try 4096 / 4× as a baseline; reserve 32768 / 65536 and 8×–64× for static-track analysis. Gradient fill and High-DPI Spectrum also cost more — switch Fill to Solid/No Fill, turn on Simplify Curve, or turn High-DPI off if needed. The oscilloscope, waterfall, and metering panels are comparatively cheap.

The editor stutters or freezes on Windows. Switch **Preferences → System → Renderer** to **Software**. It applies live.

The spectrum shows my input, not my processed output. By design — everything except the LUFS meter analyzes the signal entering the plugin (while you listen to the reference, the stereo meters follow it too). Place gFractor after whatever you want to measure.

The LUFS numbers reset every time I press play. Preferences → Meters → Reset On Play is on. Turn it off to keep one measurement running until you press reset.

`E` **doesn't export a PNG.** Close the Preferences overlay first — export is refused while it's open.

Preset state didn't recall correctly. Presets store plugin parameters plus display/view state (channel mode, view, FFT/overlap/decay/slope/smoothing, waterfall settings, the reference). They do **not** store Preferences-panel settings (trace colours, dB/Hz ranges, frequency scale, theme, skin background, UI scale, brightness, meter settings, etc.) — those are **global per-user**. If something didn't recall, check whether it's a Preferences setting rather than a preset value.

The Help button has a small dot on it. A newer version of gFractor is available — the Help menu shows **Update available: *version***. Click it to open the download page.

Update check failed / I want to disable it. The check hits `growl-audio.com/plugins/gfractor/version.json` at most once per calendar day on a worker thread. No telemetry is sent. There is no UI toggle to disable the check itself; if you need to block it, block the domain at your firewall.

---

gFractor 1.3.8 — © GrowlAudio. Built with the JUCE Framework.