

Main Check: The Plain-English Mix Assistant

Introduction

Welcome to Main Check.

If you look at the master bus of a professional mix engineer, you will see a mess of scientific tools: phase correlation meters, fast-fourier transform graphs, oscilloscopes, and lissajous figures. They are incredibly powerful, but they require you to translate complex visual squiggles into actionable mixing decisions.

Main Check is different. Instead of showing you the math, Main Check *listens* to the math and tells you exactly what is wrong with your mix in plain English. Acting as an intelligent safety net on your Master track, it analyzes your audio across four critical domains—Stereo & Phase, Tonal Balance, Dynamics, and Technical health.

If your mix is healthy, you get a green light.

If you are about to make a mistake that will ruin your track on club speakers or streaming platforms, Main Check taps you on the shoulder and tells you exactly what to fix.

Column 1: STEREO & PHASE

This column analyzes the spatial width of your mix and ensures it will sound powerful on everything from a massive club PA to a mono Bluetooth speaker.

- **Stereo: OK**
 - Your mix has a solid, anchored center and a safe, lush stereo width.
- **Mono Warning!**
 - **What's wrong:** Extreme phase cancellation. Your left and right speakers are pushing and pulling against each other. If played on a mono system (like a phone), your instruments will physically cancel out and disappear.
 - **Usual Suspects:** Pushing stereo widener plugins to 200+%, using the "Haas effect" (micro-delays) on main elements, or using out-of-phase synth patches.

- **How to rectify:** Dial back the width knobs on your stereo utility plugins. Collapse your master to mono to find the disappearing instrument and make it narrower. If you use Ableton Live, you can toggle the Utility device to 0% width; in Logic Pro, insert the Gain plugin and engage Mono; in Cubase or Studio One, use the Mono button directly on your master output fader or via a dedicated monitoring section.
 - **Muddy Bass**
 - **What's wrong:** Frequencies below approximately 150Hz are too wide. Bass requires massive physical energy, and wide bass causes a loss of punch and phase issues.
 - **Usual Suspects:** Stereo chorus pedals on bass synths, wide room-reverb on kick drums, or using multi-voice unison on sub-bass patches.
 - **How to rectify:** If you use Ableton Live, drop the Utility plugin on your bass/master track and engage "Bass Mono" at 120Hz (or even higher); in Logic Pro, load a Direction Mixer to center the bottom end; in Cubase or Studio One, use a stock multi-band processor or equalizer to pull the low band into absolute mono. Remove unison voices from your sub-oscillator.
 - **Lopsided Mix**
 - **What's wrong:** The structural balance of the track is leaning heavily to the left or right ear.
 - **Usual Suspects:** Hard-panning heavy rhythmic elements without a counter-balance on the opposite side, or using uneven stereo loops.
 - **How to rectify:** Re-evaluate your panning. Ensure your heaviest elements (Kick, Snare, Sub Bass, and Lead Vocal) are anchored dead center. Check your DAW's main output meters to see if the Left and Right signals are visually unbalanced during busy choruses.
 - **Weak Center**
 - **What's wrong:** You have massive energy on the extreme edges of your headphones, but a "hole" in the middle of the mix.
 - **Usual Suspects:** Hard-panning too many mid-range instruments, or using aggressive Mid/Side EQ to carve out the center channel.
 - **How to rectify:** Bring some of your core rhythmic or harmonic elements back toward the center pan position. Lower the volume of your extreme-panned tracks.
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Column 2: TONAL BALANCE

This column features a 4-band crossover that compares the frequency distribution of your track against premade dynamic genre profiles.

(Note: Main Check also features a **Custom Profile** mode. Click "Learn" while playing your favorite reference track, and Main Check will memorize its frequency footprint so you can match your mix to it perfectly. Be aware that Custom Profile resets to default after reloading the set).

- **Balance: OK**
 - Your frequency distribution perfectly matches your chosen reference profile.
- **Bass Overpowering**
 - **What's wrong:** Low frequencies are completely dominating the energy of the mix, suffocating the rest of the track.
 - **Usual Suspects:** The kick drum or sub-bass fader is simply too high, or an untreated mixing room is hiding the true volume of the bass from your ears.
 - **How to rectify:** Turn down your drum/bass group. Apply a low-shelf EQ cut to tame the bottom end. If you are using Ableton Live, pull down a low shelf on EQ Eight; in Logic Pro, use the standard Channel EQ; in Cubase or Studio One, use the stock console channel strip equalizer to perform fine adjustments while cross-checking the balance on headphones.
- **Thin Mix**
 - **What's wrong:** The track lacks a low-end foundation and will sound weak or brittle on large speakers.
 - **Usual Suspects:** Aggressive high-pass filtering on too many instruments, or using a weak, acoustic kick sample in an electronic mix.
 - **How to rectify:** Boost the volume of your sub-bass. Check if your high-pass filters are accidentally cutting away the "meat" of your guitars or synths. Ensure your high-pass cutoffs are kept lower (around 80Hz-100Hz for heavy guitars, and 120Hz+ only for hats, shakers, or incidental effects).
- **Muddy Low-Mids**
 - **What's wrong:** A frequency traffic jam in the 200Hz–500Hz range. The mix sounds "boxy" or muffled.
 - **Usual Suspects:** Too many warm pads, thick guitars, and reverb tails overlapping in the exact same frequency space.
 - **How to rectify:** Use an EQ to carve out a gentle -2dB to -3dB dip around 300Hz on your reverb returns, pianos, or thick synth pads. In Ableton Live, you can also use EQ Eight in Mid/Side mode to pull mud strictly out of the Side channel, keeping your center punch clean; in other DAWs, apply a subtle dynamic EQ dip to automatically smooth this area out during dense sections.
- **Harsh Midrange**
 - **What's wrong:** Dangerous buildup in the 2kHz–5kHz range. This causes rapid listener ear fatigue.
 - **Usual Suspects:** Aggressive synth leads, heavy distortion/saturation, or harsh resonances in the lead vocal.

- **How to rectify:** Apply soothing EQ cuts in the 3kHz region. Use a dynamic EQ or multiband compressor to tame synths only when they get too loud. In Ableton Live, smooth this range out with a Multiband Dynamics device; in Logic Pro, load Multipressor; in Cubase or Studio One, use the built-in Multiband Compressor to pin down the 4kHz band when it spikes.
 - **Piercing Highs**
 - **What's wrong:** The extreme high frequencies (air and treble) are too loud, making the mix sound "hissy" or painful at high volumes.
 - **Usual Suspects:** Over-boosted cymbals, excessive vocal sibilance ("ess" sounds), or loud white noise sweeps.
 - **How to rectify:** Apply a De-Esser to the vocal group. Use a high-shelf EQ to gently roll off the top end of your drum cymbals or bright synths. Try a dynamic high shelf to capture harsh cymbal crashes during transitions without making the rest of the arrangement sound dark.
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Column 3: DYNAMICS

This column measures True Peak and Stereo RMS to ensure your track hits hard without being destroyed by modern streaming algorithms.

- **Dynamics: OK**
 - Your track has a healthy dynamic range, punchy transients, and safe peak levels.
- **Over-Compressed**
 - **What's wrong:** The mix is a flat digital sausage. The difference between the peaks and the average volume is incredibly small, destroying all physical punch.
 - **Usual Suspects:** Pushing a master brickwall limiter way too hard, or stacking too many aggressive compressors on your groups.
 - **How to rectify:** Back off the input gain on your master limiter. Reduce the ratio on your drum bus compressor to let the transients breathe. If you use your stock DAW limiter (like Ableton's Limiter, Logic's Limiter, or Cubase's Brickwall Limiter), look closely at the Gain Reduction meter—if it is pinned down past -4dB consistently, back off the input drive.
- **High Dynamics**
 - **What's wrong:** Wild volume jumps. The transient peaks are massively louder than the average energy of the song.
 - **Usual Suspects:** Completely uncompressed drum grooves, or an extremely quiet acoustic verse followed by a massive, sudden wall of sound.

- **How to rectify:** *If you are mixing modern pop/electronic:* Add compression to your drum bus to tame the spikes. *If you are mixing unmastered acoustic/ambient music:* This warning may be safely ignored!
 - **Clipping Risk**
 - **What's wrong:** Your digital samples are hitting the absolute 0 dBFS ceiling. The audio is physically running out of digital bits, resulting in harsh, square-wave distortion.
 - **Usual Suspects:** Your master fader is in the red. Poor gain staging across the mix.
 - **How to rectify:** Select all the tracks in your session and pull the faders down by -6dB to create headroom. Place a Limiter on the master bus. Always make sure your master fader stays at unity gain (0.0dB) and use a dedicated limiter to control the absolute peak output before bounce.
 - **Streaming Penalty**
 - **What's wrong:** Your average volume is incredibly loud. Spotify, Apple Music, and YouTube will aggressively turn your track down, often making it sound weaker and quieter than the tracks next to it.
 - **Usual Suspects:** Mastering a track to -6dB RMS for a DJ club set, but uploading that exact same master to a streaming service.
 - **How to rectify:** If the track is destined for Spotify, lower the limiter gain to allow for a more dynamic, breathable master. Use a loudness meter to target an integrated level around -14 to -10 LUFS.
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Column 4: TECHNICAL

This column acts as a surgical microscope, hunting down invisible mathematical errors that can ruin a final export or mastering session.

- **Technical: OK**
 - The mix is clean, centered, and mathematically safe for export.
- **Hidden Clipping**
 - **What's wrong:** Intersample peaks. Your digital samples are safe, but when the listener's hardware converts the digital file back into a physical analog audio wave, the fluid curve *between* the samples will overshoot the ceiling and distort.
 - **Usual Suspects:** Setting a standard digital limiter's ceiling exactly to 0.0dB, or compressing the track to an MP3 format.

- **How to rectify:** Lower the "Ceiling" or "Out" knob on your master limiter to -0.3dB or -1.0dB . Alternatively, engage the "True Peak" button on your limiter. In Ableton Live's Limiter, ensure the ceiling is backed off; in Logic Pro's Limiter, tick the "True Peak" detection box; in Cubase or Studio One, ensure your master brickwall limiter has True Peak monitoring active before processing the final bounce.
- **DC Offset**
 - **What's wrong:** Your entire waveform is mathematically shifted off the zero-crossing center line. This invisibly eats up your headroom and can cause clicks when you edit audio.
 - **Usual Suspects:** Heavy asymmetric distortion/saturation plugins, or poorly coded analog-emulation synth oscillators.
 - **How to rectify:** If you use Ableton Live, drop a Utility plugin on the channel and click the "DC" filter button; in Logic Pro, engage the low-cut filter on the stock Gain plugin; in Cubase or Studio One, place a high-pass filter at the absolute bottom of the spectrum (around 10Hz) on the offending track to instantly re-center the waveform.
- **Sub Rumble**
 - **What's wrong:** There is massive, invisible energy below 20Hz. Humans cannot hear it, and speakers cannot play it, but it triggers your compressors early and steals valuable headroom from your mix.
 - **Usual Suspects:** Microphone plosives (pops) on vocals, recording in a room with traffic noise, or low-frequency synth artifacts.
 - **How to rectify:** Place an EQ Eight on your Master bus or vocal group and apply a sharp High-Pass filter at 20Hz. In Ableton Live, use EQ Eight with a steep 4x low-cut curve; in Logic Pro, use the Channel EQ's low-cut slider; in Cubase or Studio One, use the pre-filter section of the mixer channel to dial in a strict high-pass cut at 20Hz across all non-bass tracks.