

Mastering Process from Har-Bal International

www.har-bal.com

by Earle Holder

Follow the steps below and you will have great sounding masters. Don't be afraid to experiment a little.

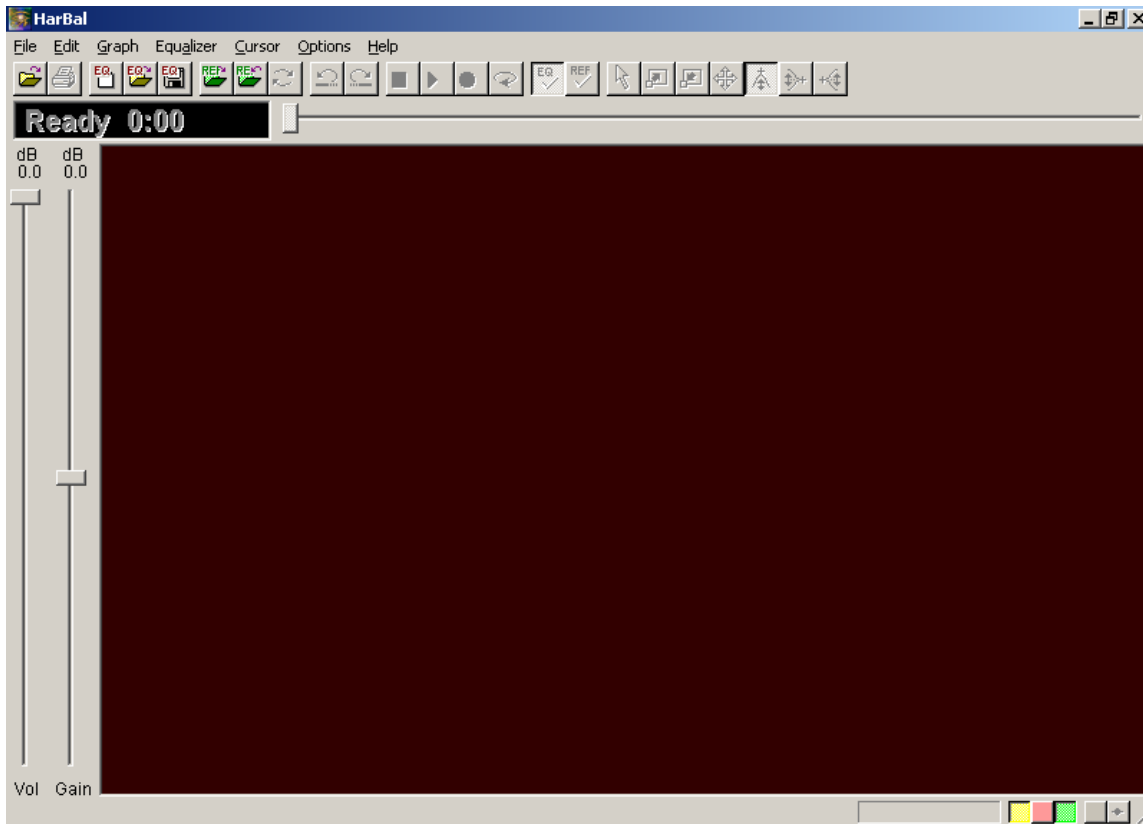
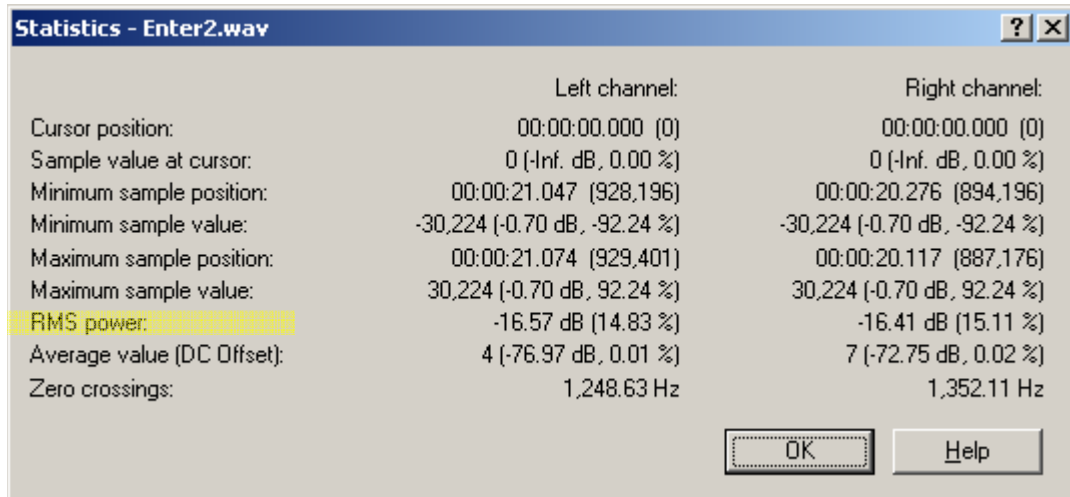


Figure 1 Do not continue without this tool.

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Whichever sound editor (Sound Forge, Wavelab) you are using you should have a method to look, **FIRST** at the statistics of your track.

Sound Forge - Tools/Statistics



	Left channel:	Right channel:
Cursor position:	00:00:00.000 (0)	00:00:00.000 (0)
Sample value at cursor:	0 (-Inf. dB, 0.00 %)	0 (-Inf. dB, 0.00 %)
Minimum sample position:	00:00:21.047 (928,196)	00:00:20.276 (894,196)
Minimum sample value:	-30,224 (-0.70 dB, -92.24 %)	-30,224 (-0.70 dB, -92.24 %)
Maximum sample position:	00:00:21.074 (929,401)	00:00:20.117 (887,176)
Maximum sample value:	30,224 (-0.70 dB, 92.24 %)	30,224 (-0.70 dB, 92.24 %)
RMS power:	-16.57 dB (14.83 %)	-16.41 dB (15.11 %)
Average value (DC Offset):	4 (-76.97 dB, 0.01 %)	7 (-72.75 dB, 0.02 %)
Zero crossings:	1,248.63 Hz	1,352.11 Hz

Figure 2 Example from Sound Forge notice the RMS power.

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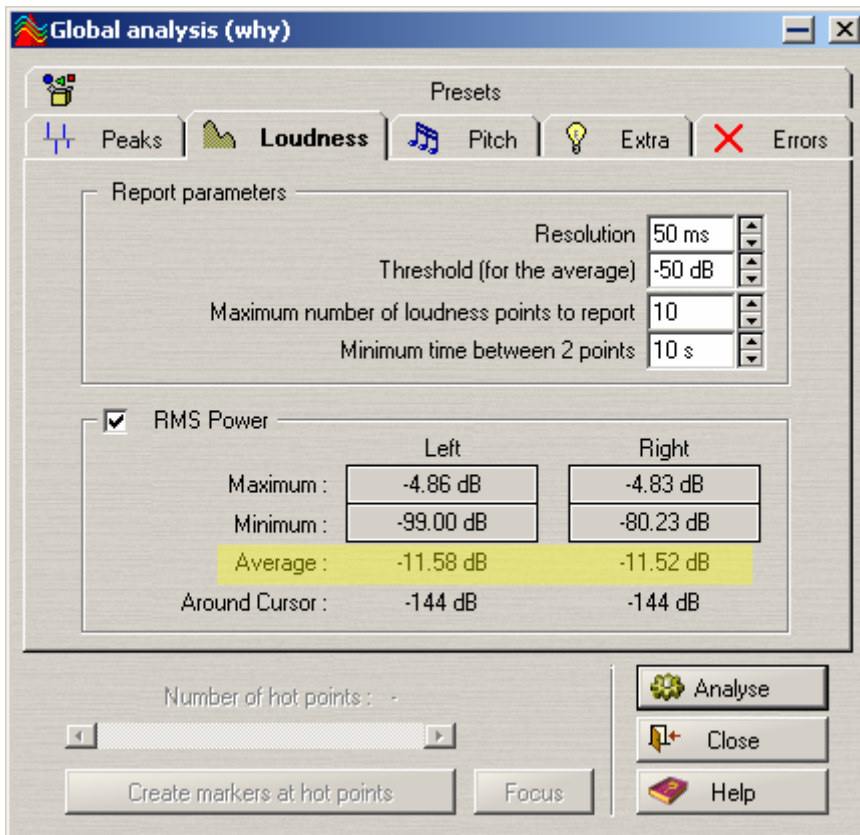


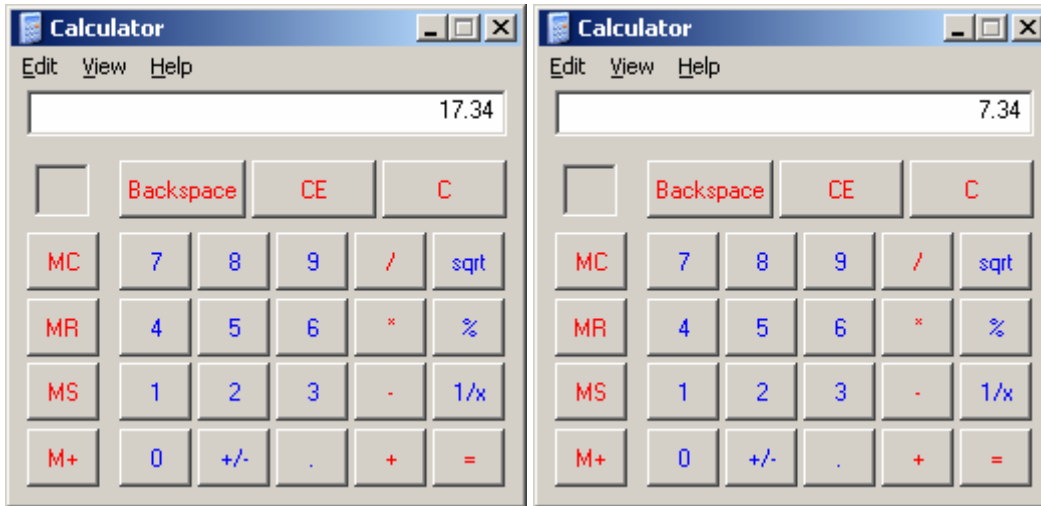
Figure 3 Wavelab - Analysis/Global Analysis. Under RMS Power notice the Average. Note: You need to highlight the wave file before doing this in Wavelab.

You should pay special attention to your RMS power levels and adjust these based on the genre of the music.

I know there are a few mastering engineers out there that hate the loudness war (rightfully so) happening with certain types of music. But the fact remains, if your music isn't matching in volume to another song in your genre it will appear weak sounding. These are just the times we are living in.

Check your RMS level in your mix....lets say the average RMS is -17.34 in your track. We need to get it to -10 or -11 to suitably fit in with other similar songs. Take out your calculator and input 17.34 and now subtract 10.00 you should get 7.34

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This is the number we are shooting for and will probably be the number you feed into your limiter.

(Remember with RMS levels the lower the number the louder the song)

You can input this number as a negative into your limiter and your RMS level for your overall loudness will be -10.00

For example: Which song is louder RMS level -18.23 or -12.16

-12.16 is louder

Quite a few mastering engineers use what they call a mastering chain and during the course of building or fattening the song they already have an idea what they would like the end result (RMS) to be.

As you get into mastering deeper you will find that it is more than just sticking a number into the limiter and your done.

Your mastering chain should consist of the following: (Below are some options)

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Figure 4 When you are finished mixing a track, import it into Har-Bal and check for peaks and valleys.

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Figure 5 This is how your track should look before going any further. Do not worry about peaks to the right of the 5k mark. Getting rid of peaks (yellow line) and filling holes (green line) in the spectrum is the real magic of Har-Bal and prevents your compressor from working too hard.

Open a wave editor (Wavelab, Sound Forge)

Place the following plugins into the chain in this order and save as a preset with the same numbers I have inputted.

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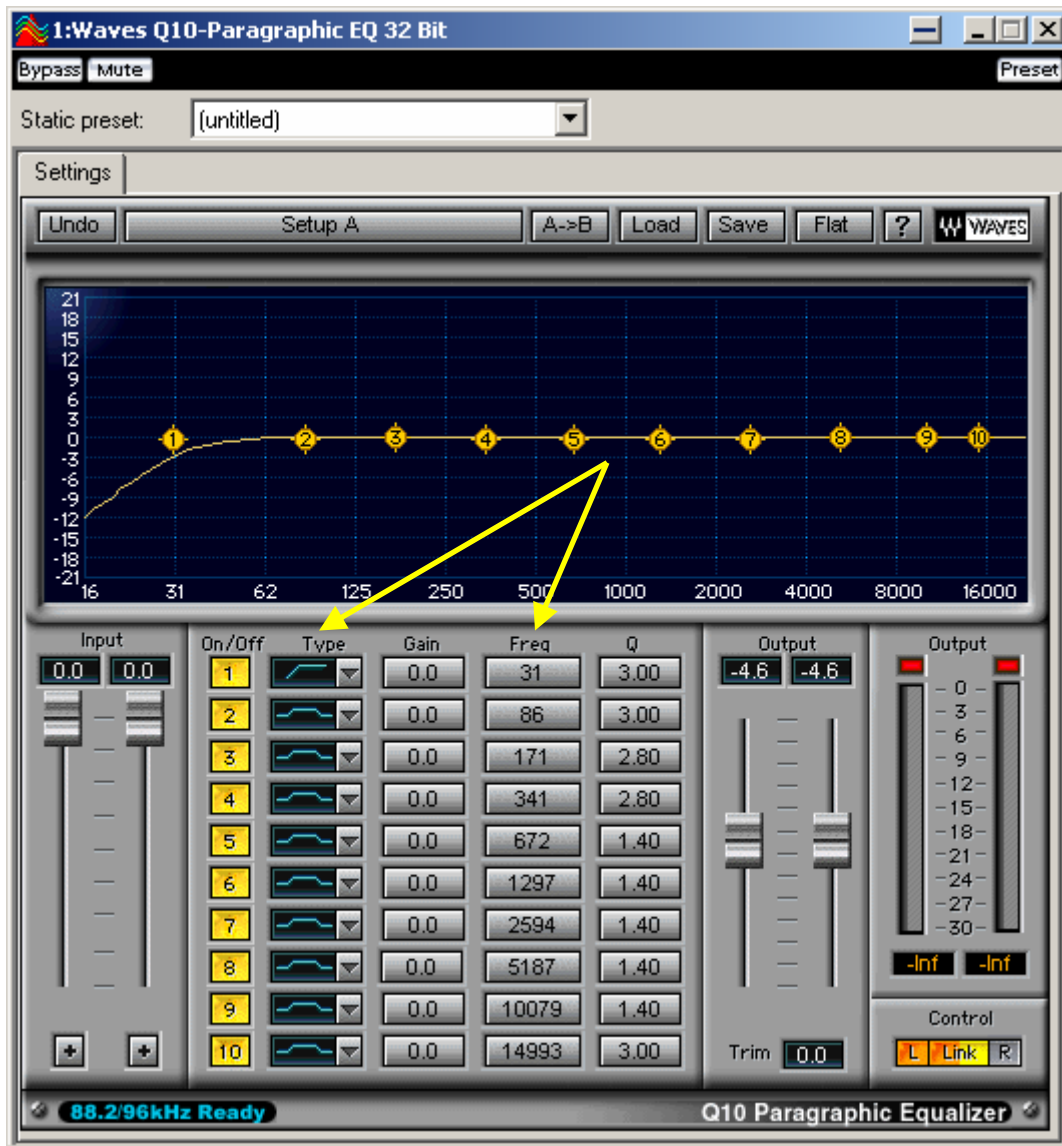


Figure 6 Waves Q10 Paragraphic EQ or something similar. Adjust your high pass filter between 40 and 60hz to get rid of low rumble (Sweep back and forth until it sounds right). You may need to use a subwoofer. Too much in the low end will prevent you from increasing your overall volume

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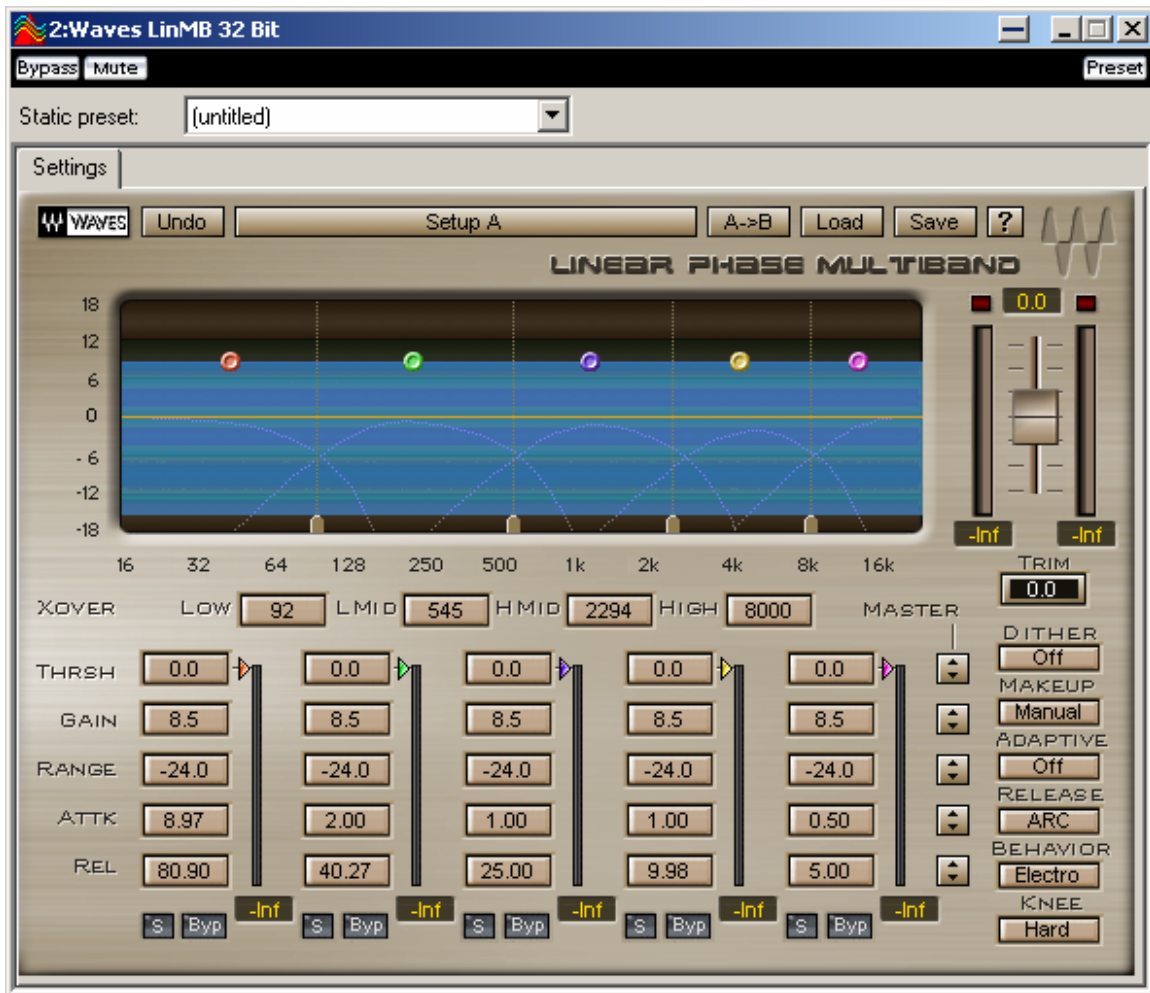


Figure 7 Linear Phase Multiband Compressor

Below is the process for using the Waves Linear Phase Multiband. The example below shows the preset named "Too Much Limiting". The most commonly used preset is "Adaptive Multi Electro Mastering", however you can use any preset you desire. The process will still be the same.

Allow your song to play through completely to the end.

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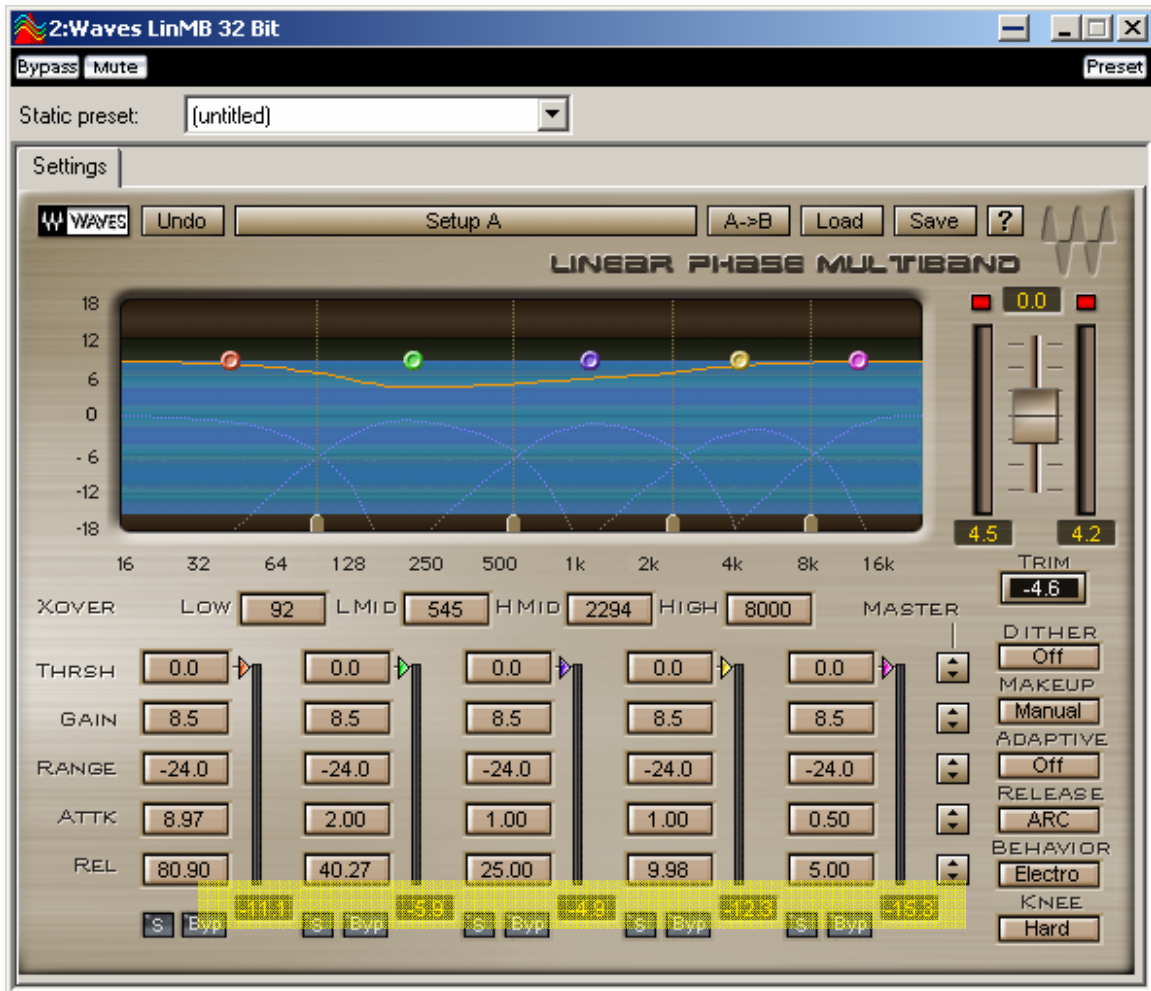


Figure 8 Observe the numbers at the bottom of each band. (These are your peaks)

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Figure 9 Change the threshold numbers for each band to match the new peak numbers that appear at the bottom.

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Figure 10 Click on the “Makeup” button on the right and change it to “Auto”. This will keep your volume the same while you are pulling down your master threshold.

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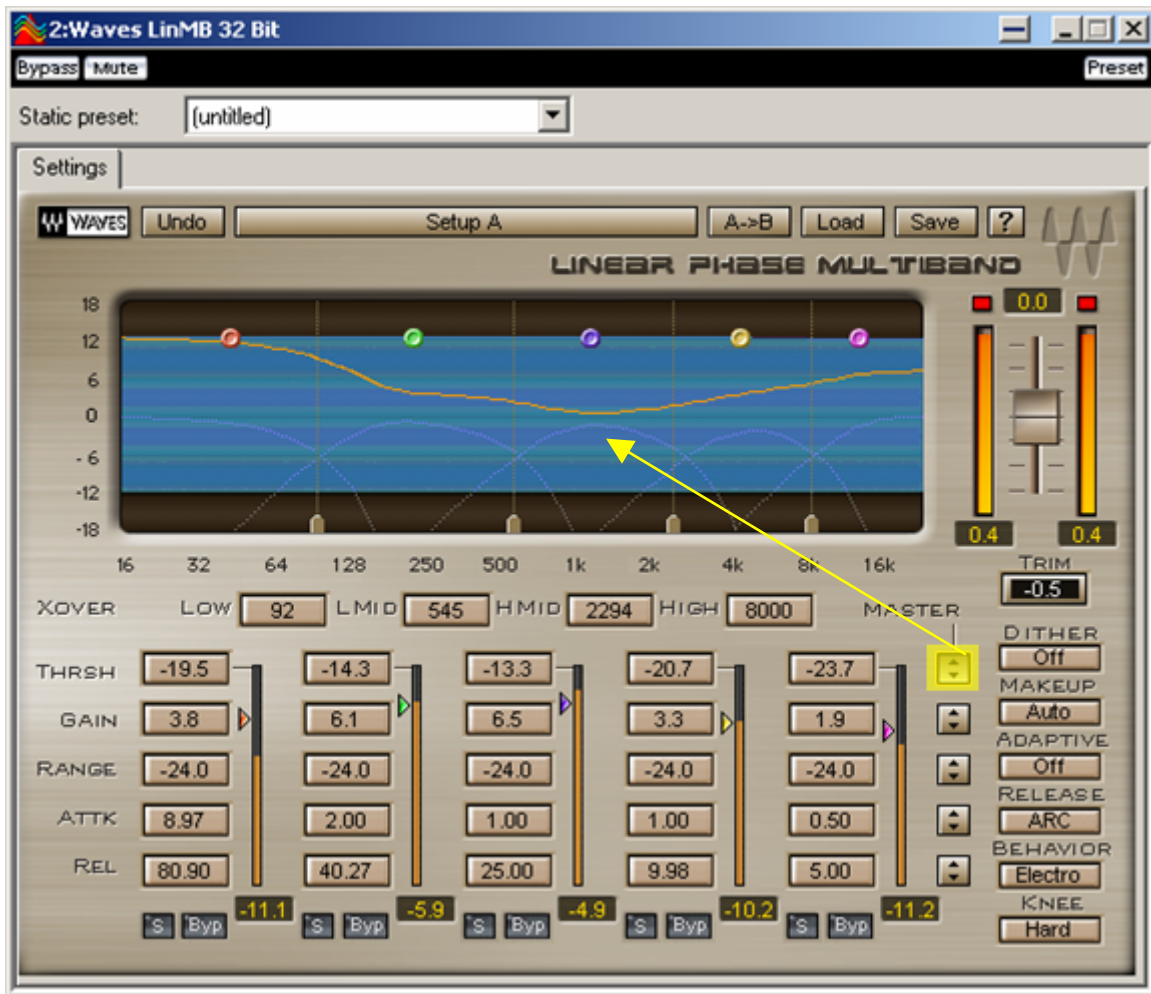


Figure 11 Grab the “Master Threshold” button and pull it downwards until the squiggly orange dynamics line is in the middle of the blue range.

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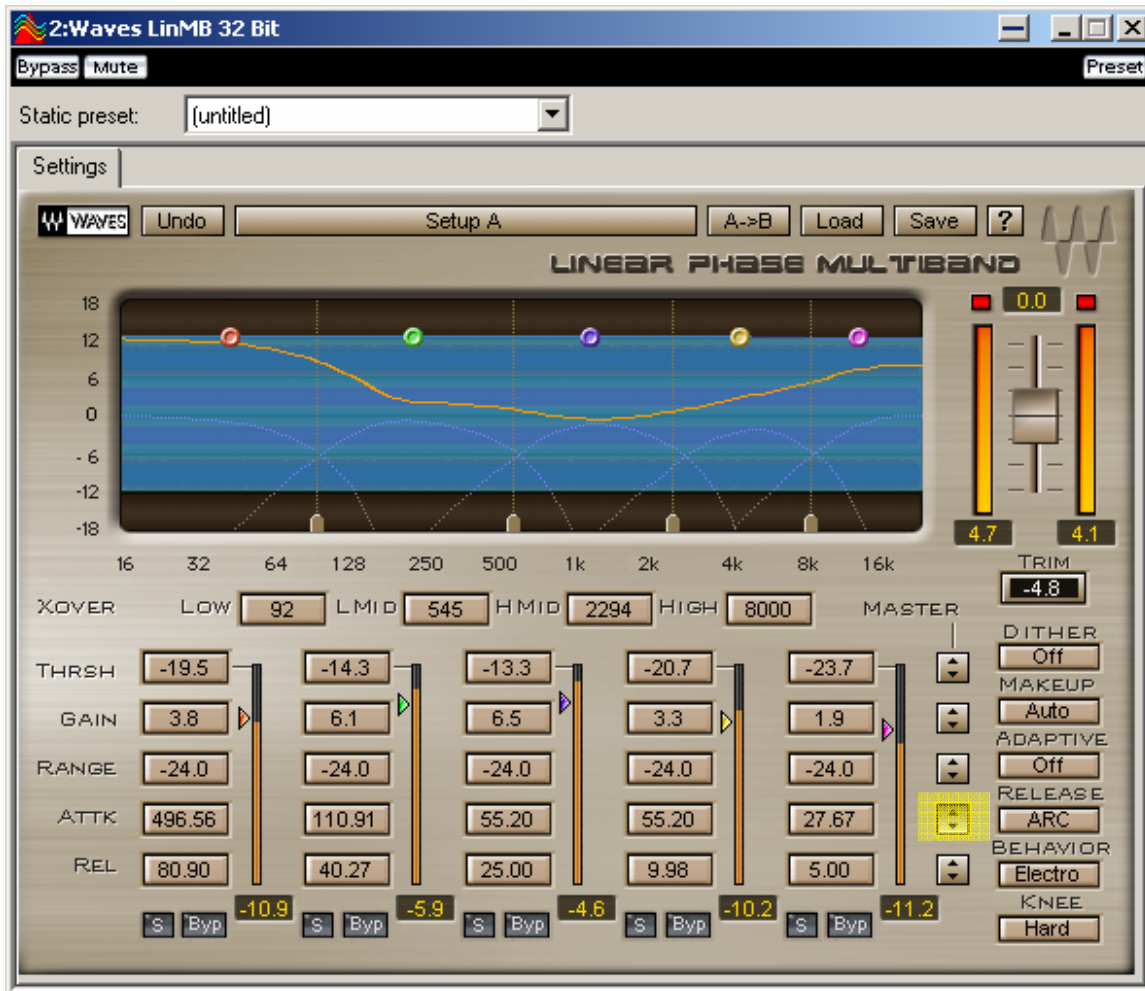


Figure 12 Grab the “Master Attack” Button and slowly move upwards until there is some stability in the first two bands of the orange dynamics line.

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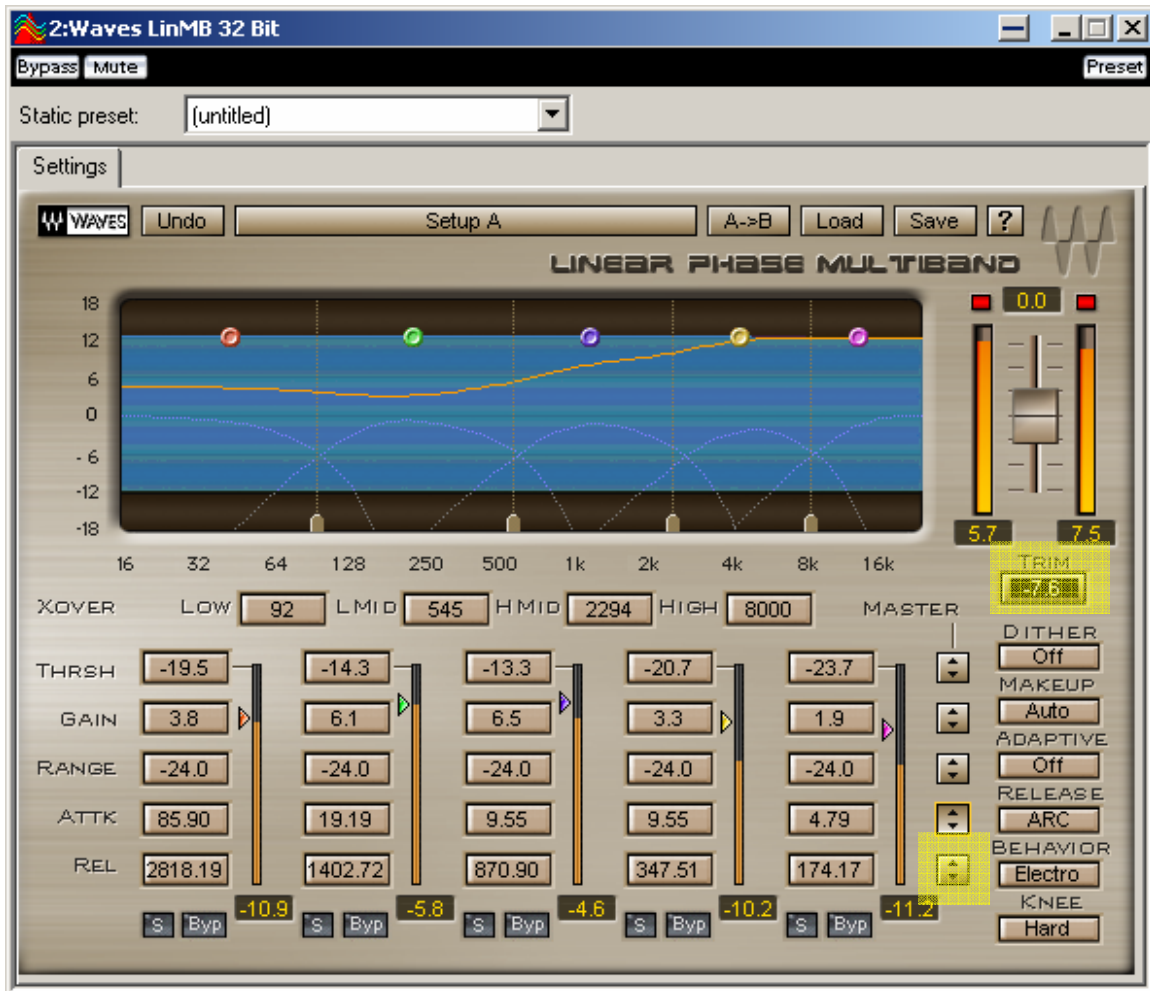


Figure 13 Now grab the “Master Release” button and slowly move upwards until the first two bands are almost horizontal in movement.

You may need to make small adjustments to the individual attack and release buttons for the first two bands. Usually, I leave the last three bands alone unless the highs are so uncontrollable my eyes start bleeding. Now click the “TRIM” button to set your faders to 0.0 Refer to Figure 13

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Figure 14 Stereo Imager - Correct any phase issues and RMS mismatches. If you have two different volumes for each track...DO NOT NORMALIZE to correct it. Just use the "Rotation" button while paying attention to the RMS levels in the "Level Meter"

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Figure 15 Limiter - Always use this and set the Out-Ceiling for -0.1. As you pull down the threshold fader slowly, look at the RMS level in your "Level Meter" If no longer see activity in your "out-ceiling" your song is too squished.

Please keep in mind that you may not need to use every one of these each time and can simply bypass any of them. (You will always need the Limiter)

Always, always to listen your song at 85db while mastering. This is not loud and it enables you to darn near HEAR your music almost flat. You can pick up a sound level meter from any Radio Shack (roughly \$30.00). If your song is too bassy or trebly you will know immediately at this volume.

Three meters you should always have open are below: These are included with Wavelab

Phasescope - To check the stereo image (Image should be mostly vertical (upright) with a little body to the east and west.

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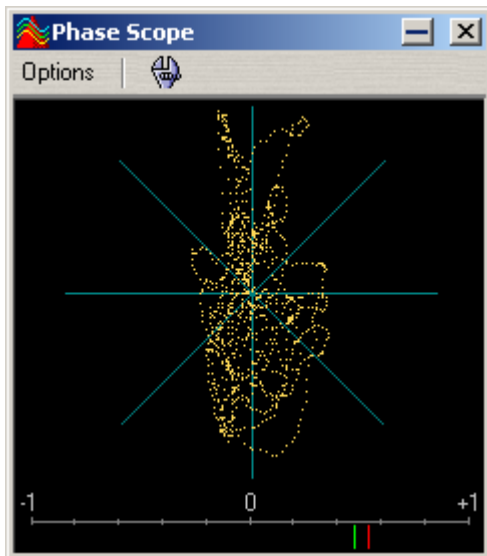


Figure 16 Phasescope - To check the stereo image (Image should be mostly vertical (upright) with a little body to the east and west).

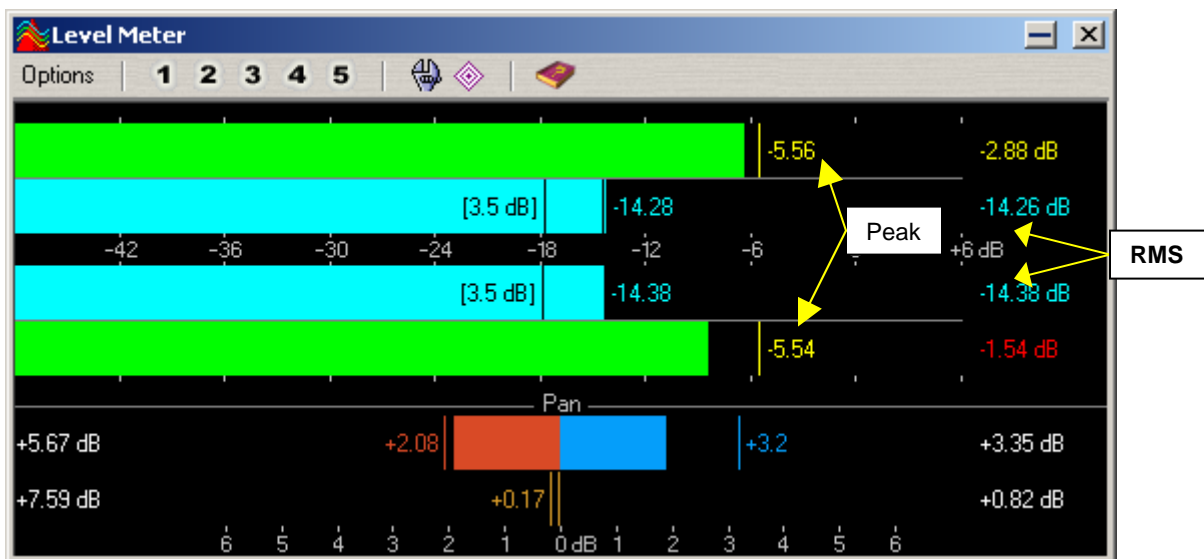


Figure 17 Level Meter - Checking the peak and RMS levels constantly (Make sure you are building up the song without clipping) How is it sounding....constantly keeping your listening level at 85db by bringing down your main volume. In other words even though I am increasing the overall volume, I am still maintaining my listening level.

Between -10 and -12 RMS in your Level Meter Great for most commercial songs

Between -16 and -12 RMS in your Level Meter Great for softer compositions

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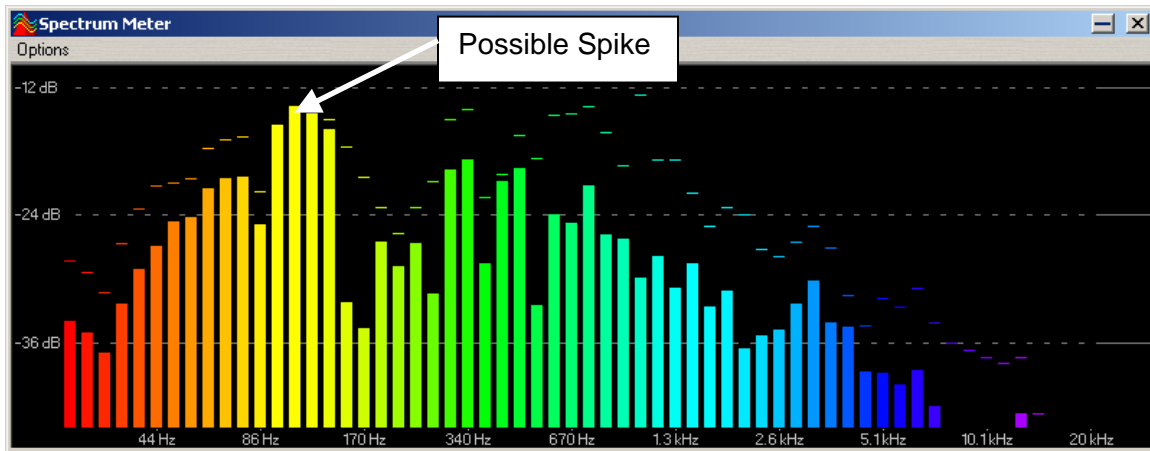


Figure 18 Spectrum Analyzer - checking for sudden spikes and overall patterns and adjust with your EQ

You should get into the habit of taking any commercial song and studying them while these meters are running. It will open a whole new world of understanding.

If you master your next project better than the last, you are only getting better. Get used to it. You will discover on a daily basis the real concept of mastering and the real reason why there are no perfect settings that can be used with every song.

The trick is to listen to a song completely and KNOW which tools to use. This knowledge comes from an understanding of the functionality of those tools.

Earle Holder is well known to American music artists, and is one of the few top legendary award winning mastering engineers who have managed to gain worldwide recognition for his work and is a rare individual, born with "golden ears", a definite prerequisite to becoming a great mastering engineer.

His home site is www.hdqtrz.com

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