Comparing an original Chinese Ribbon Mic with a modified Chinese Ribbon Mic

I started with two of the same ribbon mics from China. One was kept as a control mic just as it came from the factory (called OrigMic from now on) and the other was modified (called ModMic from now on). These are non-scientific tests done with these Chinese ribbon mics set up side by side. For this test, I set both mics facing forward at the same height, both canted slightly in so each would be facing a single point sound source in front. The mics were approximately four inches apart. They were plugged into either side of a stereo preamp and level calibration was done crudely using peak meters to calibrate them to similar output levels, within 1 dB peak value.

The differences in the two mics are:

A) Some of the mesh screening (three layers) in the OrigMic was removed from the ModMic, leaving the ribbon exposed other than the outer mesh frame.

B) The transformer in the ModMic is a Lundahl that replaced the original Chinese transformer.

I used several sources that I had available since I was not in the studio.

1) Some kitchen utensils that I used a percussion instruments (metal measuring cups of differing sizes).

2) My key chain with keys rattling in front of the mics.

3) My voice.

Here are the frequency response charts of the resulting recordings. The two lines represent the two different mics. The blue line is the ModMic and the orange line is the OrigMic. You can see the dB value scale on the X axis and the frequency values on the Y axis.

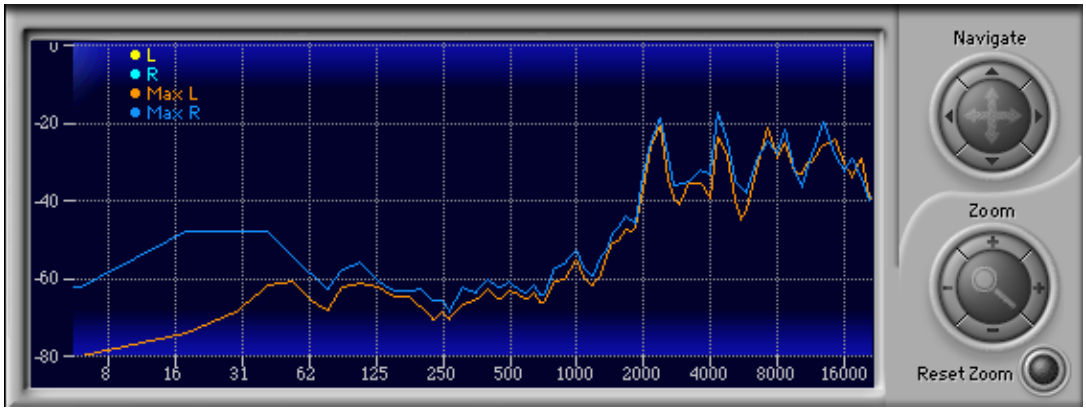

Fig. 1-Kitchen Percussion 1

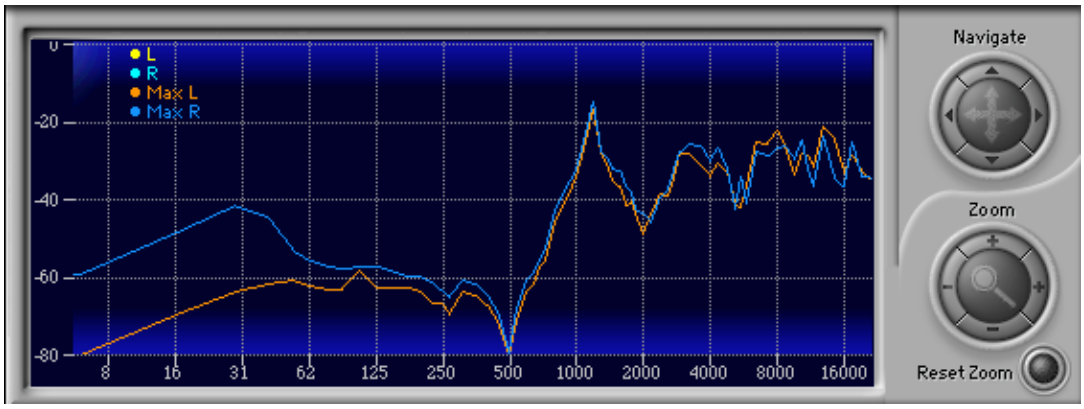

Fig. 2-Kitchen Percussion 2

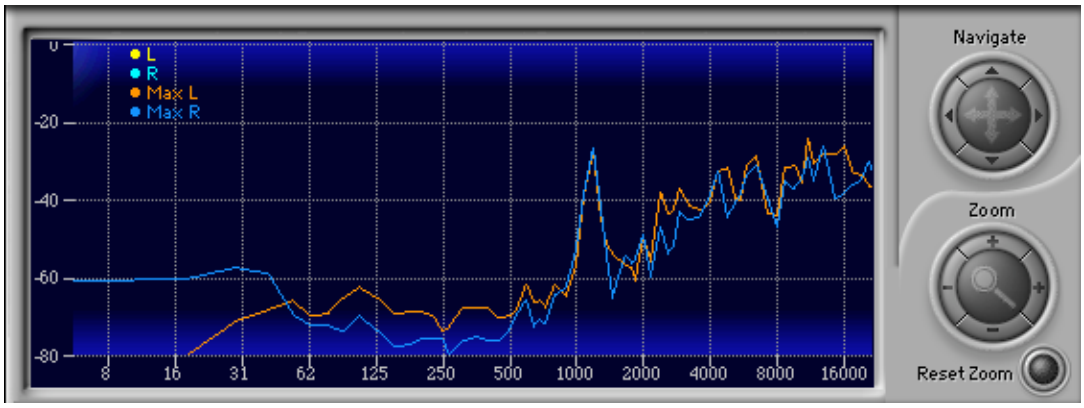

Fig. 3-Kitchen Percussion 3

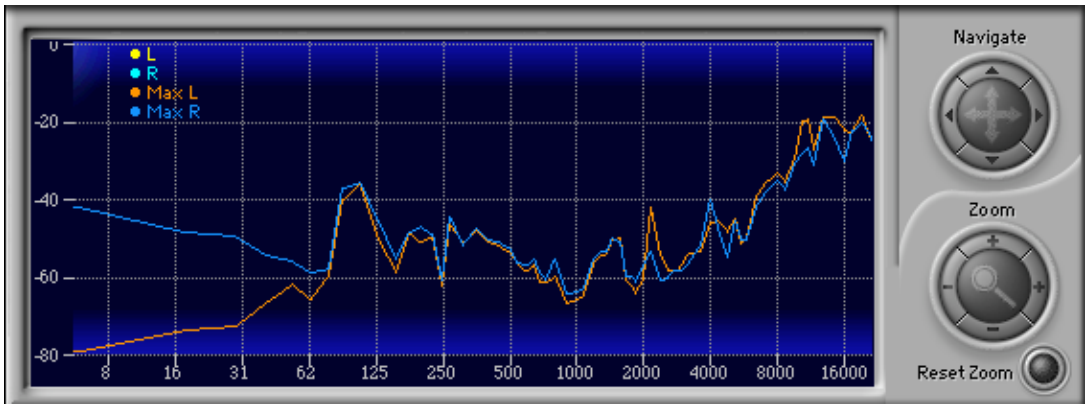

Fig. 4-Car Keys rattling

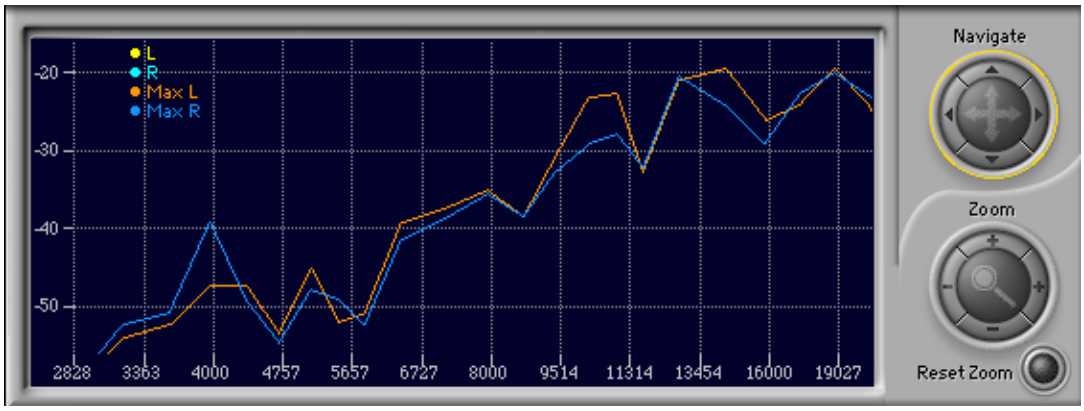

Fig. 5-Keys, same recording as Fig. 4, but zoomed in on the range above 3K to show the differences. Blue is ModMic and orange is OrigMic.

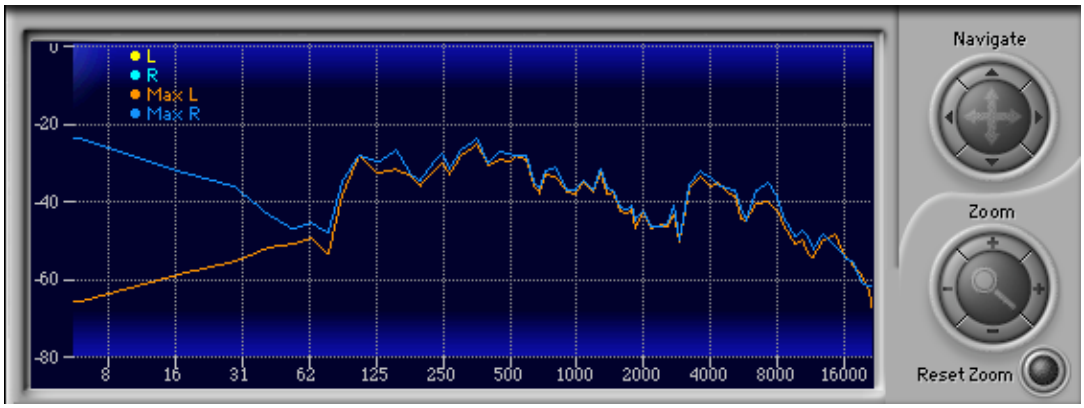

Fig. 6-My spoken voice.

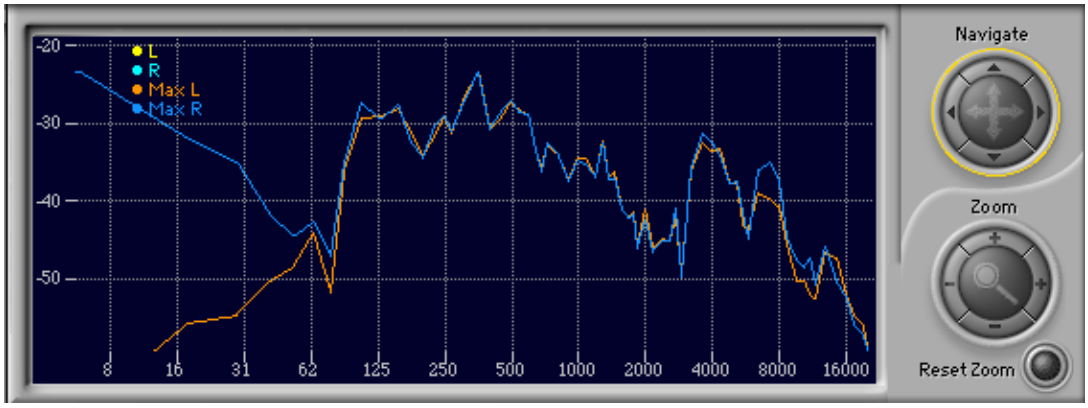

Fig. 7-My spoken voice (same recording as Fig. 6) zoomed in on vertical scale, with OrigRib gain boosted by 1 dB to match the levels better.

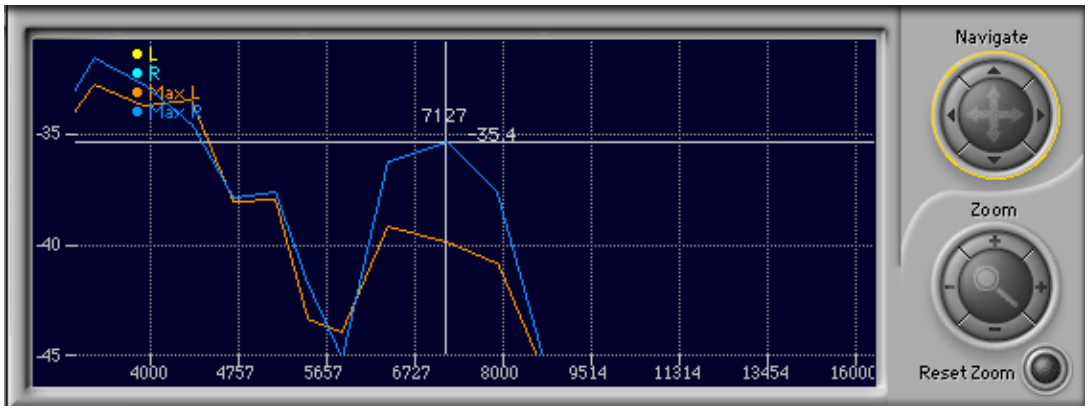

Fig. 8-My spoken voice (same recording as Fig. 6), zoomed in horizontally to detail upper mids. Note 4 dB difference in output level at 7127 Hz. Blue line is ModMic.

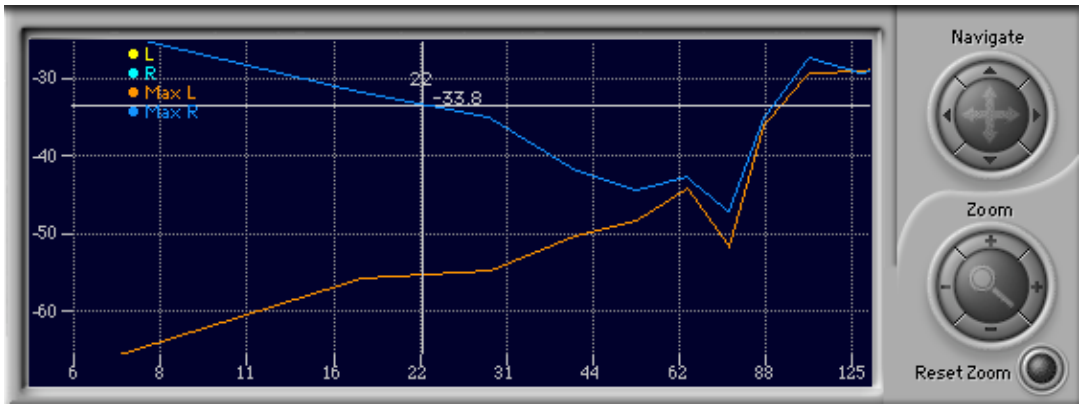

Fig. 9-My spoken voice (same recording as Fig. 6), zoomed in to detail extreme low end below 125 Hz. Notice that there is a 22 dB difference at 22 Hz.

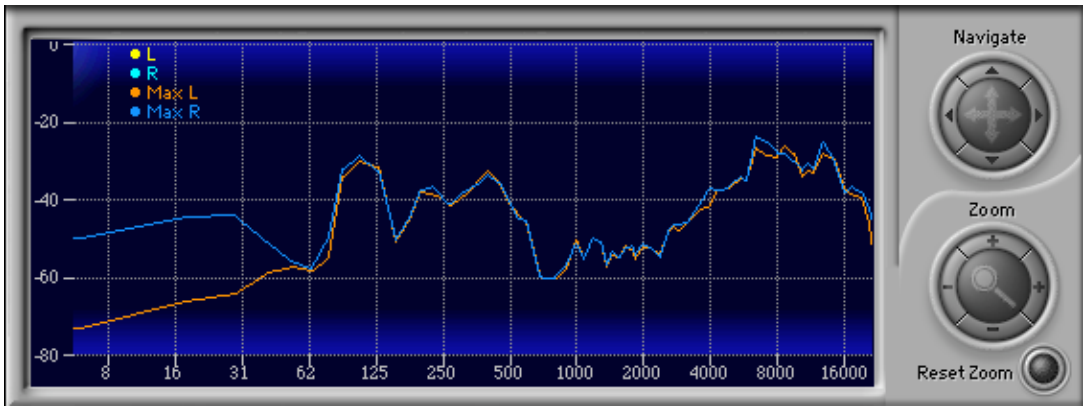

Fig. 10-Sibilance test using my voice making a "tsss" sound into the mics.

My findings, based on looking at the graphs alone, no listening yet.

1) The output level of the modified mic with the new transformer was nearly identical to the output of the original mic, within 1 dB.

2) The low end extension of the modified mic is the greatest difference of all between the two.

3) Because there are two variables, it is impossible to accurately determine which change accounts for which difference observed.

4) The polarity of the mics that came from China is inverted. Applying a positive pressure to the front of the mic (in this case a small puff of air-NOT ADVISED!) resulted in a negative swing in the output of the mic. The ModMic was correct in polarity when it was returned, but it was the opposite of the OrigMic as it came from China. The output of the OrigMic was inverted at the preamp so all the samples you see (graphs) and hear are in correct polarity.

5) The sensitivity to blasts and plosives is drastically increased when the extra screening is removed. Is that a result of removing the screening? Most likely. Is it further enhanced (exaggerated) by changing the transformer? Possibly.

6) Is there a drastic difference in high end response due to taking out the extra screening or changing the transformer? It appears not, at least not a consistent difference, as evidenced by the graphs above.

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