Removing Cell Phone Noise Using LIVE/Forensics

One of the hottest topics in the audio forensic world deals with how to handle noise generated by nearby cell phones and recorded along with your good audio. The problem is caused by the fact that your cell phone is a radio transmitter and highly sensitive to nearby radio signals. These are picked up by the components in the recorder and are "demodulated" just like a regular radio receiver does. But in this case, we don't want our recorders to be radio receivers.

There's really not much we can do about the recorders, however, we can work on the resulting audio. Cell phone noise presents itself in three main ways:

1. Short staccato bursts of fast and slow pulses (almost like musical clicks) which do not overwhelm the underlying audio. Any digital phone can cause this problem. Usually the cell noise is not overpowering, but is annoying.

2. Long bursts (2 seconds or more) of seemingly continuous noise presented as a tone (actually it's a large number of tones all together). Again, this can come from just about any phone where it's transmitting continually. Usually, the good audio is still audible but this is super annoying.

3. Nextel noise - the king of cell noises. These are VERY loud bursts that repeat two or three times per second. They typically go rail to rail on your recording and can obscure the underlying good audio. If you study these bursts, you'll find they are made up of several individual pulses of about 2ms in width.

So, how do we deal with them with DC Live Forensics? For types one and two, we have created presets that are good starting points for these types of noise. You can download them here: http://www.tracertek.com/khxc/media/waves

 Just use Edit/Manage Presets to load them into your copy of DC Live/Forensics.

For Nextel noise, we need to take a different approach. As you know, these can be a bear to work with. There are two approaches that work well:

Nextel Approach One: Zoom in, one at a time, on each burst. You'll see it's made up of pulses. Select each pulse one at a time and then hit the "I" key on your keyboard. This is the Interpolate function and is meant for impulses that are very long. Your pulse will be gone and will be replaced with good audio. This method works well, but will likely take you 10 minutes for every minute of audio you repair. Not bad if your recordings are short.

Nextel Approach Two: This is a unique approach that can work on very long files. First, we want to change the sample rate on the original file to 192khz. If you don't have a soundcard capable of playing this file (such as our ESI Julia), that's OK - we don't have to listen to it right now. Once you have converted it to 192khz, then use the Speed Change

tool to double it's speed. Do this 3 times which means we have increased its speed by 8 times in total. Your 8-minute file will now be 1 minute in length.

Now run the Expert impulse filter on the whole file. Set threshold to 1, size to 60 and tracking to about 30. Adjust tracking as necessary. Use Vinyl mode. Now run the filter. The impulses are now 8 times shorter than they were and the automatic click remover can repair them.

Once this is done, return to normal speed and sample rate and listen. The audio will not be perfect by any means, but the majority of the cell noise will be gone.

As always, call us with any questions or comments.