January 8, 2016

Main observations from calibrations

**1. Noise floor limit from TDT device.**

= 42 dB SPL (relative to a reference of 12 mV/Pa)

Measured when no input plugged into IN-A. Gain set to bypass. When gain is added (using TDT control) the noise is amplified as much as the signal.

When mic input is plugged in, and amp is turned off, noise floor is ~44-45 dB SPL.

When amp is on, but speaker is off, noise floor is ~55 (?) dB SPL.

*Solution:* Ultimately, trust handheld measurements to verify that output is at the desired level. If it becomes necessary to read low inputs through TDT, try amplifying the signal with a low noise amp *before* it is sent to the TDT.

**2. High pass filter of the buffer appears to have a very small effect.**

Changing the amount of attenuation or the cutoff frequencies causes very little change in the frequency response curve.

Removing the filter altogether has a small effect, raising levels across frequencies, even frequencies above those that were supposed to be filtered. And it makes the level measurements more variable, point-to-point.

*No action required. Keep in mind to ask Dan Stolzberg about next time he visits.*

**3. Cage creates distortions in the 2-8 kHz range when the mic position is changed.**

With cage and all equipment, deviations in level from changing the position of the microphone are frequency-specific and of a magnitude around +/- 10 dB.

Sub- notes to implicate cage itself:

Replacing the plastic poop tray with acoustic shielding foam does not prevent the distortion.

Wrapping cage in foam (isolating it) does not reduce the distortion observed.

*Solution:* Can we design a new cage, perhaps with acoustically transparent fabric, wrapped tightly around thin metal/hard plastic frame?

🡪 RESEARCH THIS – HIGH PRIORITY