**NOTES on chin CMR stimuli generation**

*To document versions used in LSA chinch code for training/testing (notes in newest to oldest order)*

*April 9 2021*

* In Git: branch LSAstim\_updates
* Create CB experiment (CMRCB1) – new code Create\_CMR\_CB\_stim
  + Tone in single band
    - Like REF condition
  + UNMOD versus MOD
  + Few BWs: 500 and 3000 Hz
  + For now – create 4 training conditions
    - 500/3000 x Mod/uMod
* Niemiec et al 1992
  + CR: very broad re: humans
    - ~32 dB at 4 kHz 🡺 1000Hz BW
  + CB: narrower than CR, but still worse humans
    - 4kHz: CBW = 1800 Hz.
      * 500 Hz : 68.5,
      * 3000: 72.5 dB
      * 4 dB diff!!! in THR.
  + Ripple noise: similar human
  + NN: similar human
* STEP 1
  + Get chins started on simple training, since they are not performing well
  + Get them back performing
  + Test full data set on humans with
    - Chin code or Fernando code.
    - Replicate CB effect
    - Adjust to chins
  + QUESTIONS
    - Can we see CB effects in chins ??
      * Detect tone vs BW
      * What is chin CB?
    - Do we see modulation release from masking at high BWs?
  + ??? Random samples – where is that code?

*Aug 24 2020*

* CMR3\_ACR\_test20\_3575

*June 23 2020*

* Start Q323 on Testing
  + He’s done well whole time on training (70/30)
  + Use broader level range to find right range
    - No=30,
    - tone = 70:-4:30 (11);
  + fine tune later with smaller steps

*June 14 2020*

* Set up new training stim based on CMR2 conditions
  + Use new 540 Hz noise, with Hari params (CMR2)
  + 2 chins have learned the task well (323 and 337)
    - Set up 70/30 CMR2 for them
  + Other 4 need help – make tone 5 dB louder, and noise 5 dB softer
    - Set up 75/25 CMR2 for them

*June 7 2020*

* CMR2
  + Update based on Hari and Vibha’s comments
* Set up to store tone and noise level in file names, and easy to create a range of either one depending on how we want to adapt level (tone or noise).
* Now saving 11 tone levels, and 1 noise spectrum level
  + ? Seems like REF is easier, but not as clear for Mike as would expect. Is it him or stimuli? According to Hari’s data, he being middle aged should have less CMR (6dB) than younger listeners (for whom Hari reports up to 10-12 dB diff bw REF and ACORR).
  + See his data figures and stim PPT demo

*June 3 2020*

* Starting chins on training with CMR stimuli.
  + They have been running SAM detection (pure tone vs SAM tone) in background noise, so we need to convert them:
    - from a tone (and noise) being in both std and sig, and task is to ID presence of modulation
    - to a noise being present in both std and sig, and the tone only being present in sig (to be detected)
  + This can be done in a simple case (REF only), with a clearly detectable tone.
    - Setting up:
      * 4-kHz tone to be detected
      * 1000-Hz BW noise, centered at 4 kHz
        + 1000 Hz is ~an ERB for chins based on Q10 values from ANFs
        + Modulated at 10 Hz
        + Spectrum level of No=30 dBSPL/Hz

OVERALL LEVEL is No + 10\*log10(1000) = 60 dB SPL

When we add two more bands (to increase noise level by x3), we will add 10\*log10(3) = ~5 dB, so that will make OAL noise level ~65 dB SPL, which is fine and leave some head room if we need to go louder (we have run SAMIN conditions with 77 dB OAL noise, and that is pretty loud for them over and over).

Tone level = 70 dB SPL is what they are used to, and will be clearly detectable

* + - * THIS IS testing condition: CMR1
        + REF file names to use for initial training:

CMR1\_REF\_sig

CMR1\_REF\_std

* + - * + Make new stim # 890 to just be basic no param storage.
* Using simple file names for now for simplicity, will expand later as conditions expand