

# Issues Found During WGLC

# Issue #1

- Noise floor tracking for MDCT modes wasn't completely reset on an audio bandwidth change
  - If the bandwidth increased, old values could be used
  - Hurts seekability, decoder convergence after loss, etc.
- Fix is simple (reset the values)
- Doesn't affect quality testing (no tests involved)

# Issue #2

- The LPC prediction gain in SILK can be quite high
  - Makes it hard to write a decoder that's not bit-exact
  - Takes a long time to resync after packet loss on pure tones
- Solution: Limit the prediction gain
  - Prediction gain already available as part of the LPC stability checks
  - Uses the same mechanism used to ensure a stable filter
  - Just changes one if check
- Only occurs on very rare/synthetic signals

# Issue #3

- LTP and LPC states were not rescaled properly for very small gains
  - Small distortions when gains change
  - Solution: remove a clamp on the inverse gain, and make a few other minor adjustments to avoid overflow
- Such small gains are technically possible in the bitstream, but rarely if ever used in practice

# Issue #4

- The SILK resampler delay for each possible audio bandwidth and output sampling rate varies
  - Requires extra delay for some output sampling rates because the encoder doesn't know what the decoder will use
  - Complicated to get right
- Solution: Koen has a new set of resamplers that all have a common delay, and give slightly better quality