Status Update of a LIGO Lock Acquisition Simulation

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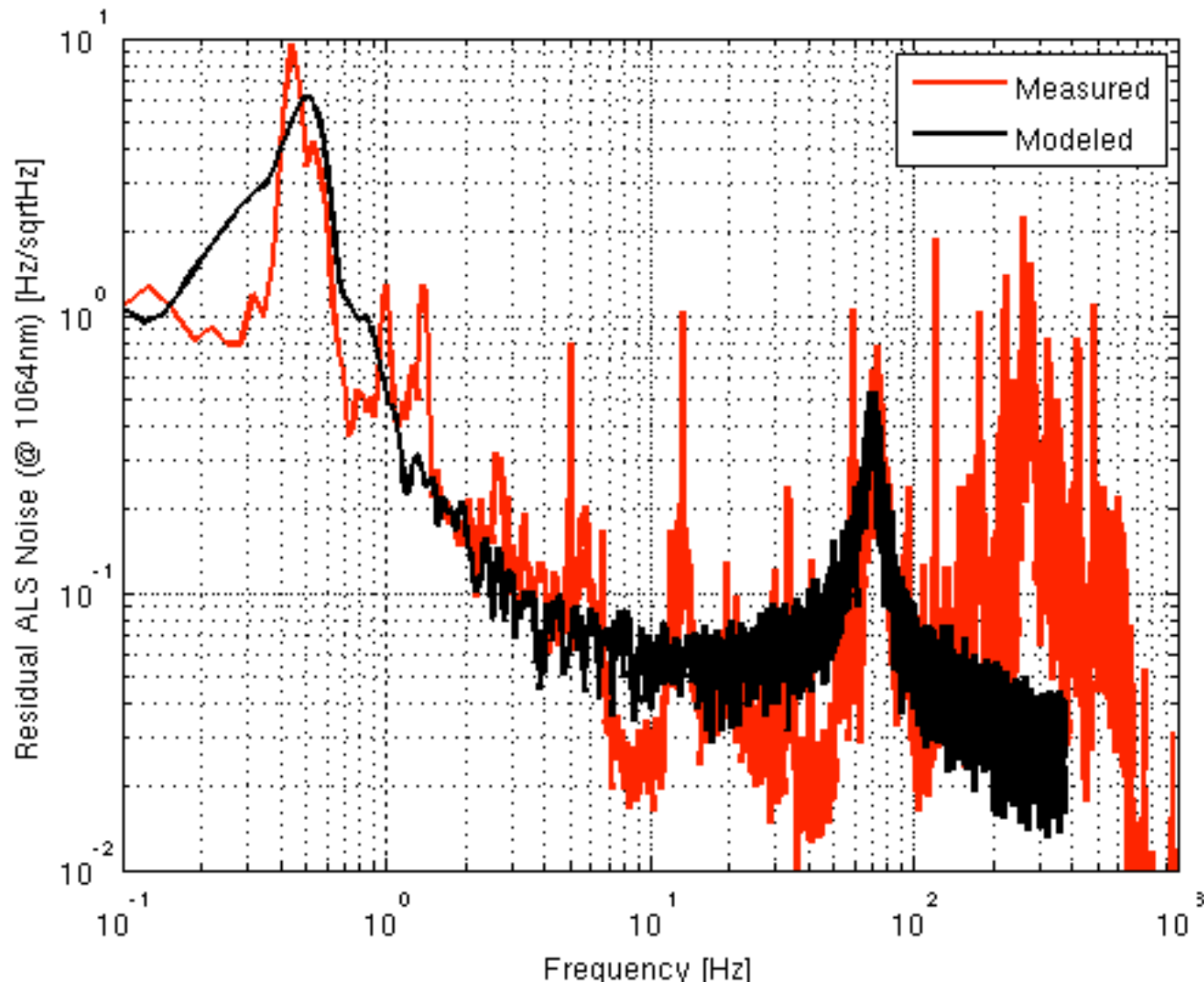
Summary

- Started simulating realistic CARM frequency noise.

  => Acoustic noise around 200 Hz need to be included soon.

- Plotted some signals as a function of the CARM offset to see how they look like.

Important Quantities

- Single arm full linewidth
  ~ 80 Hz(or ~ 1 nm)

- Power recycled CARM linewidth
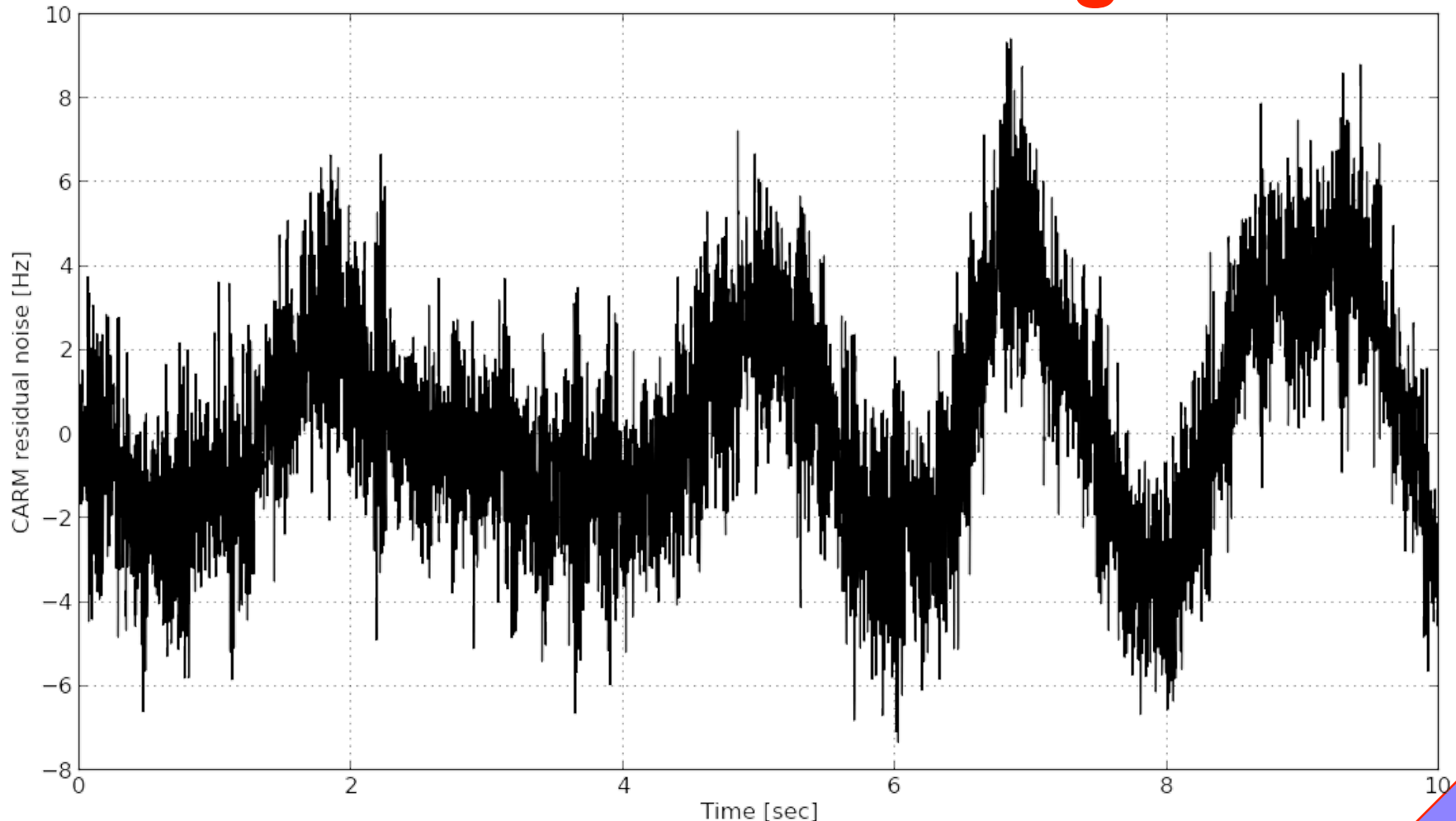 ~ 1 Hz (or ~ 14 pm)

CARM noise

measured RMS = 6Hz (RMS not shown)

sim. CARM in time series

RMS doesn't look like 6 Hz
=> needs to include 200 Hz region noise

Simulation settings
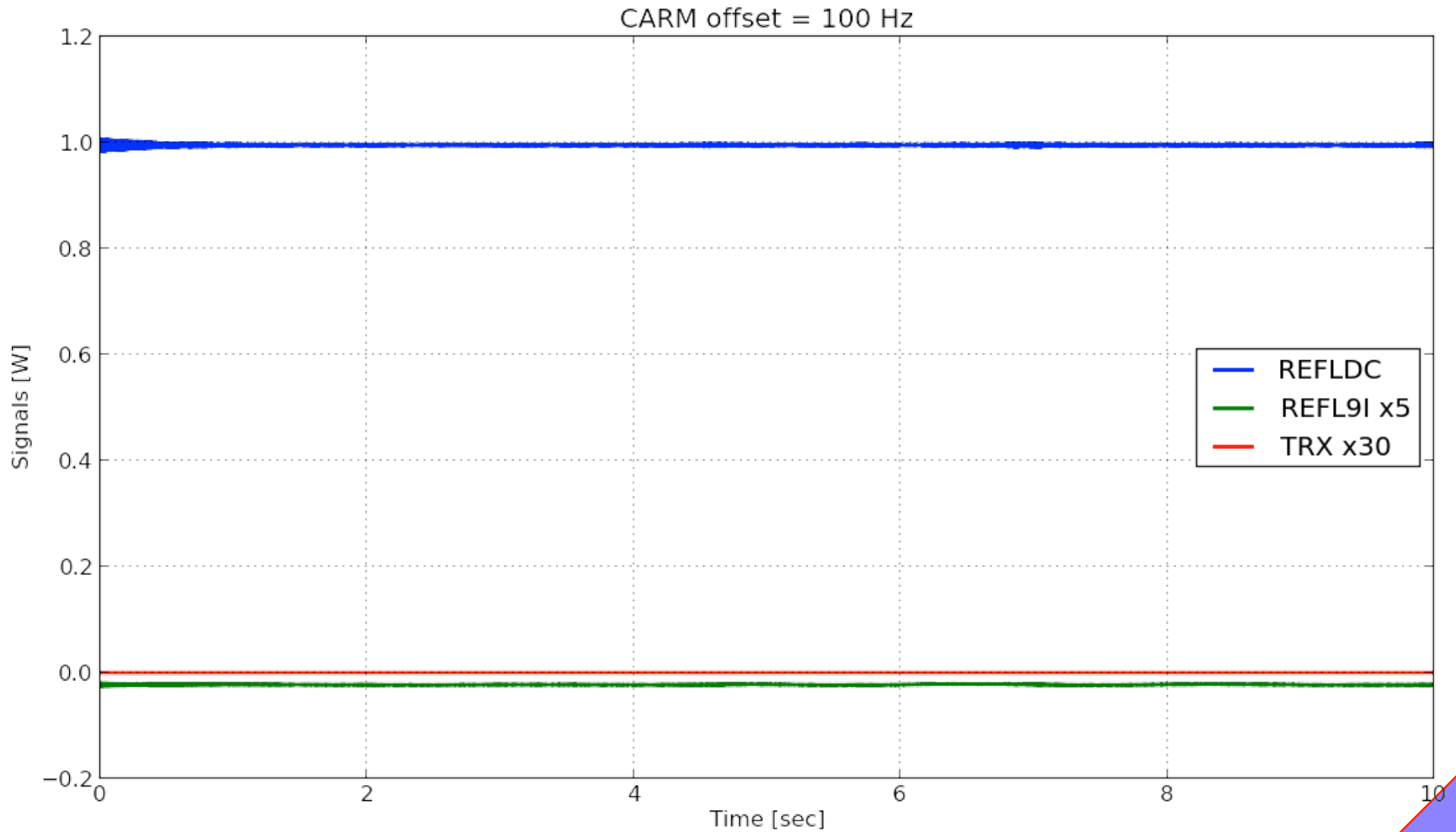
- DRMI

  magically stays locked with zero noise

- DARM

  magically stays locked with zero noise

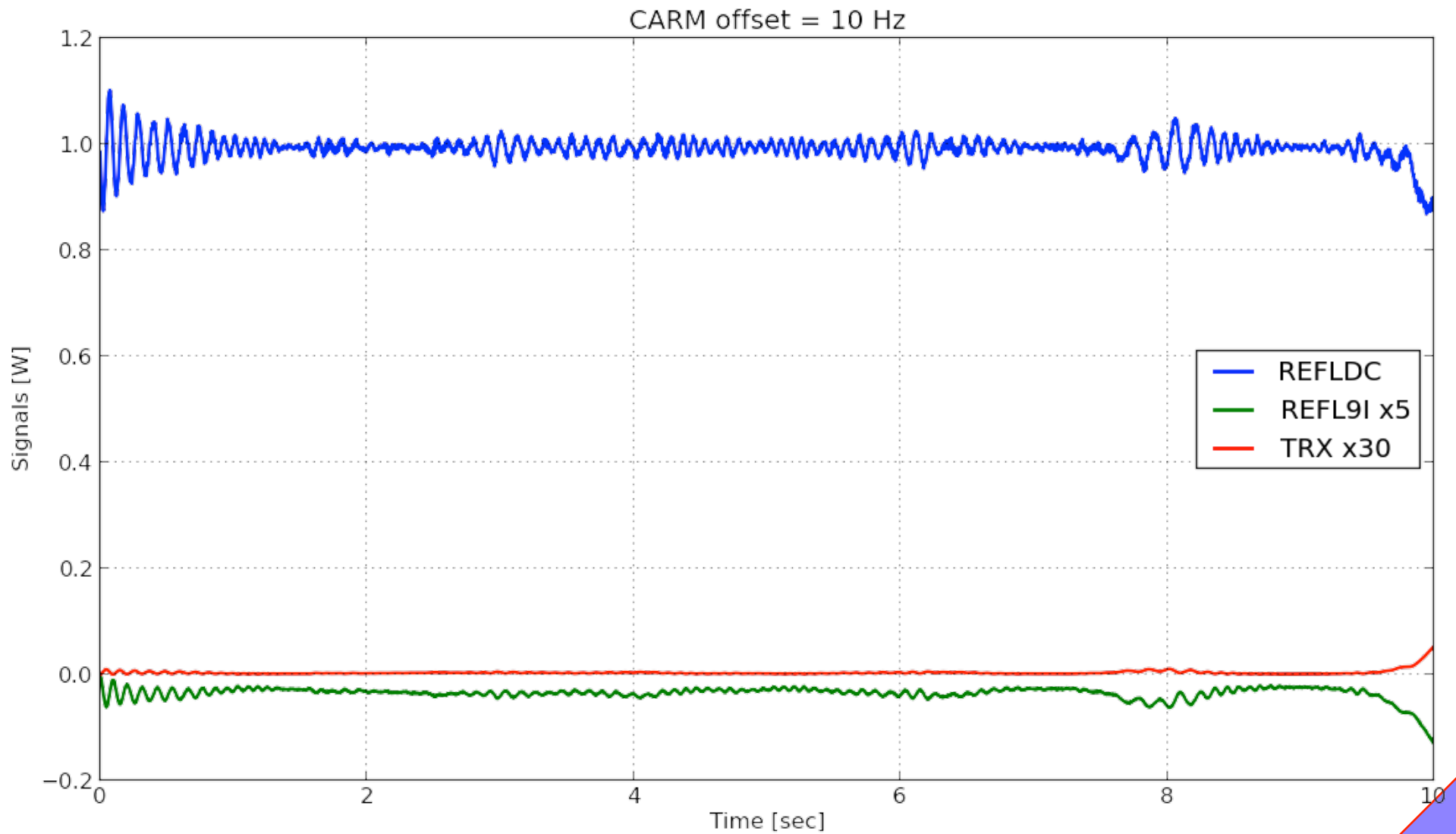- CARM

  the simulated signal is injected at the PSL frequency. No active servos.

CARM offset = 100 Hz

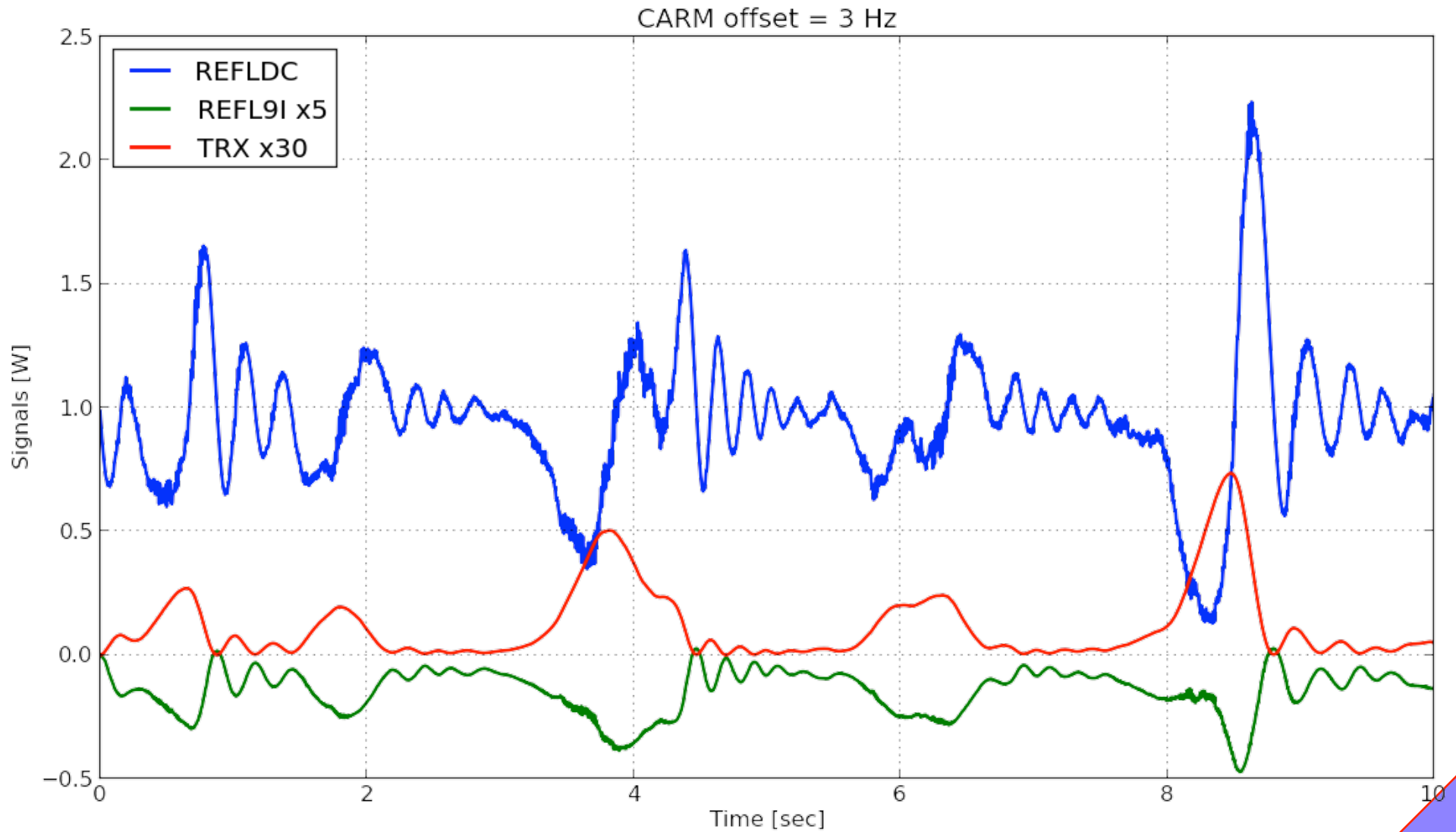# CARM offset = 10 Hz

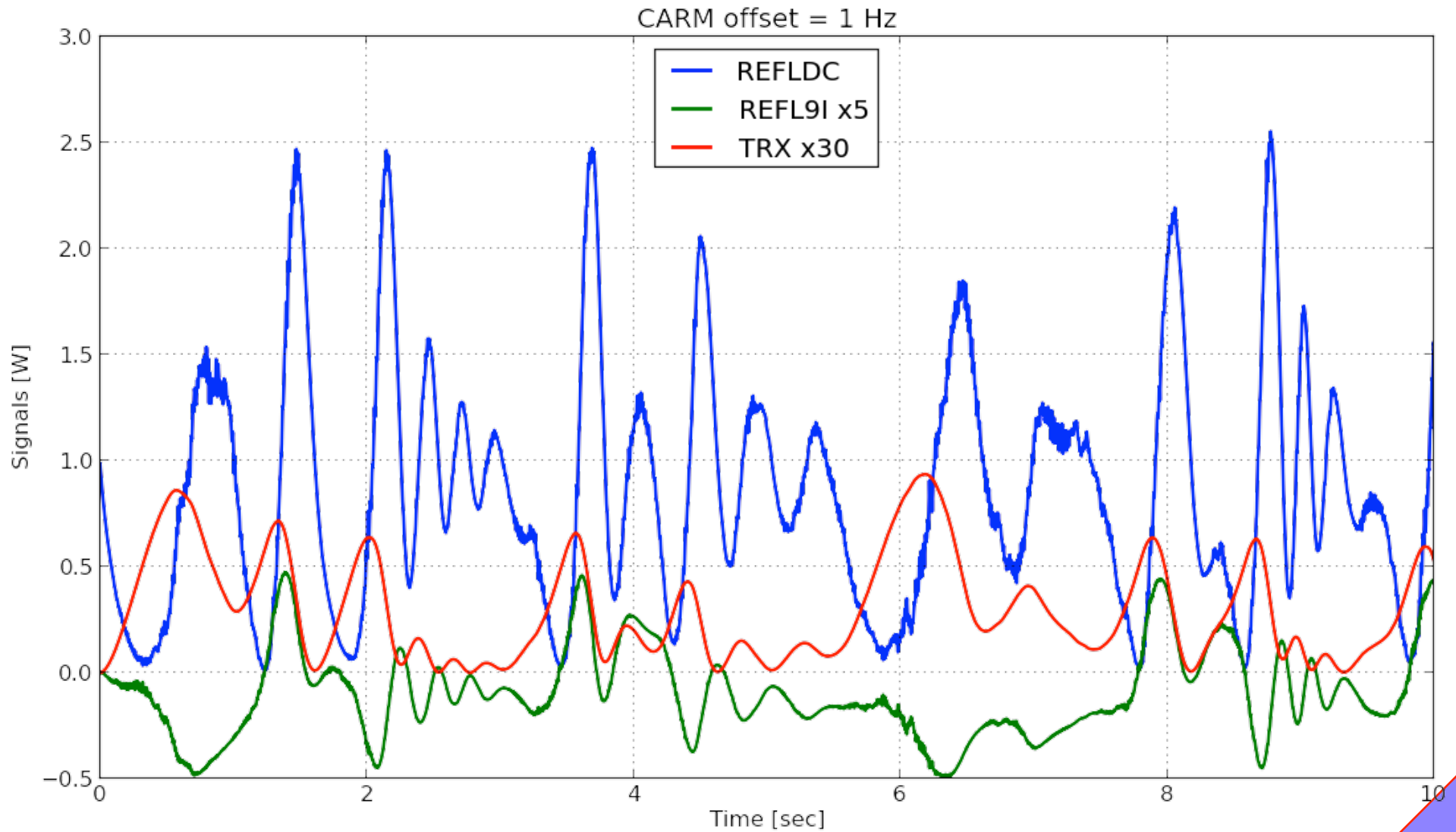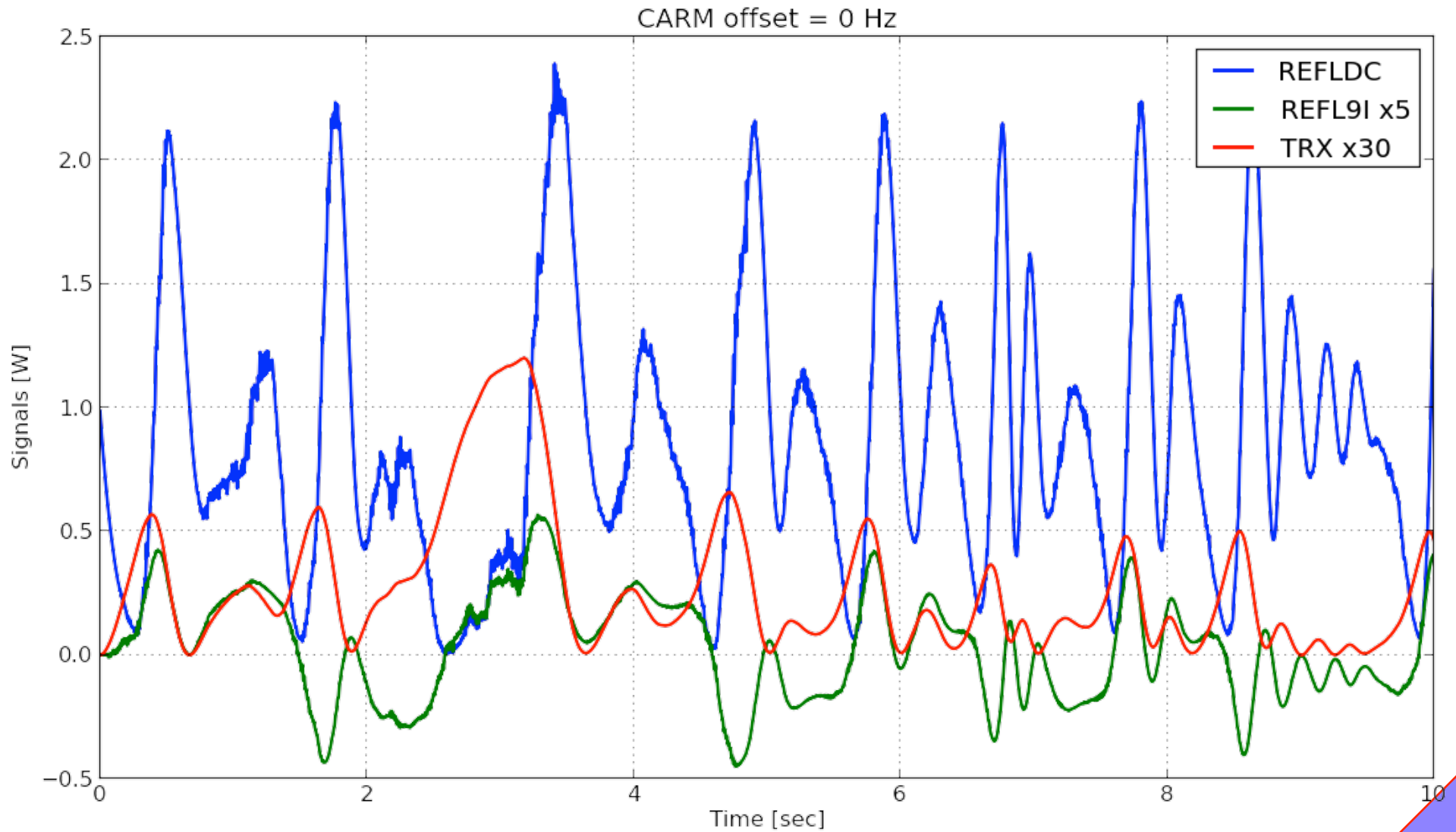# CARM offset = 3 Hz

CARM offset = 1 Hz

CARM offset = zero Hz

CARM offset = 0 Hz

Summary and Plans

- No conclusions yet.

- Will include 200 Hz region noises

- Will try a direct transition
  namely jump to REFL9I