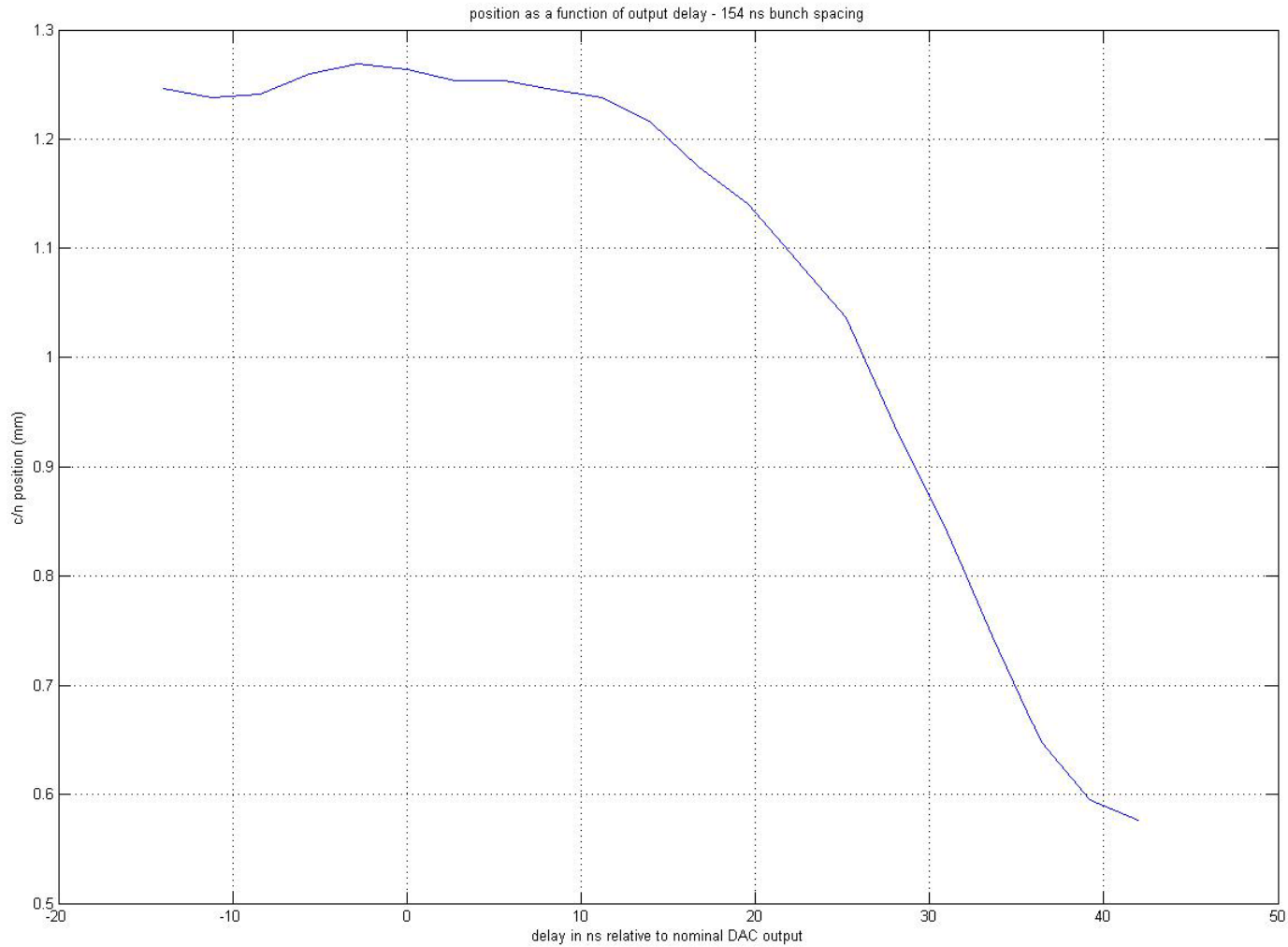


# FONT4 May Run Analysis

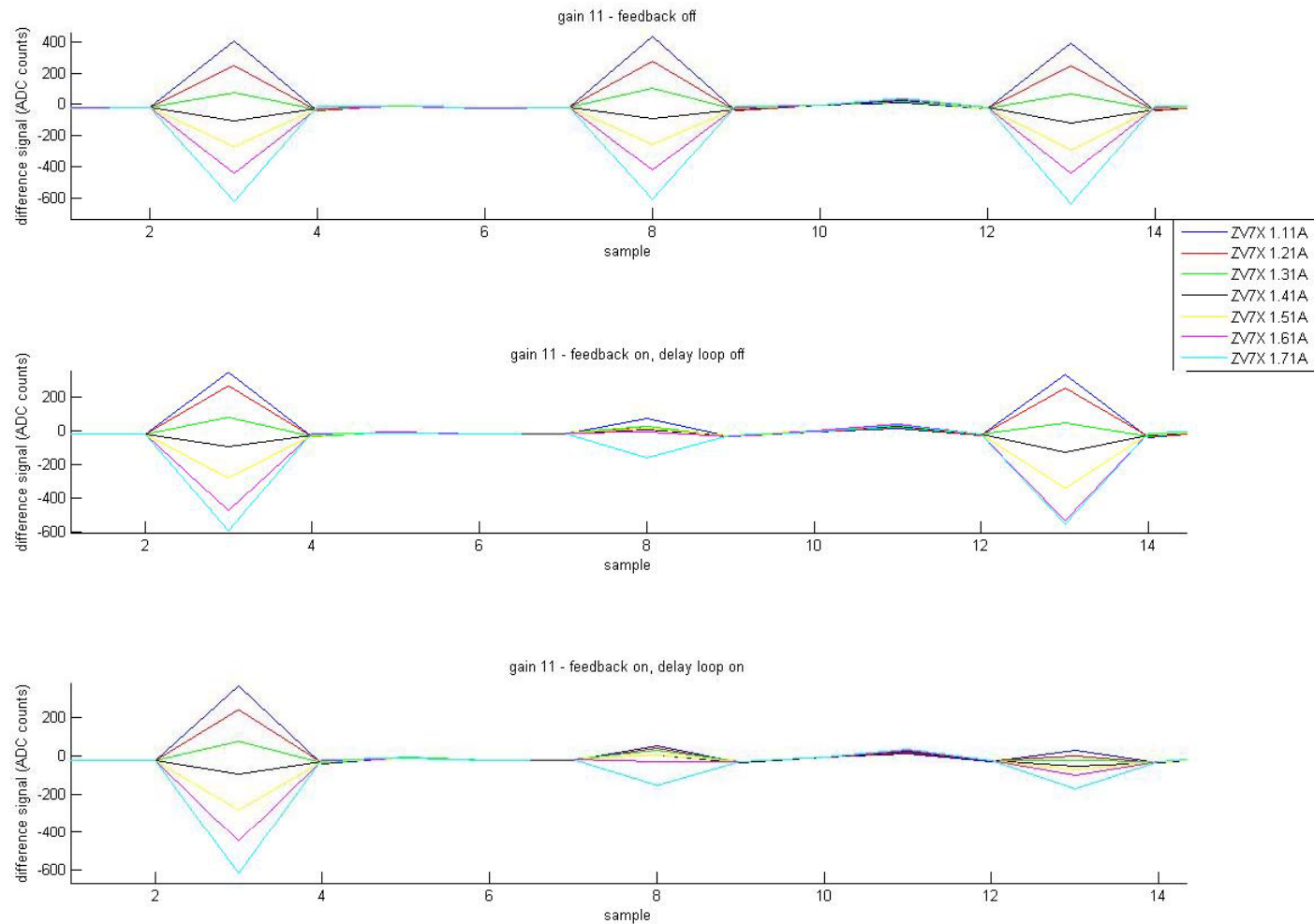
8 June 2007

# Latency (shift 2) ~140ns



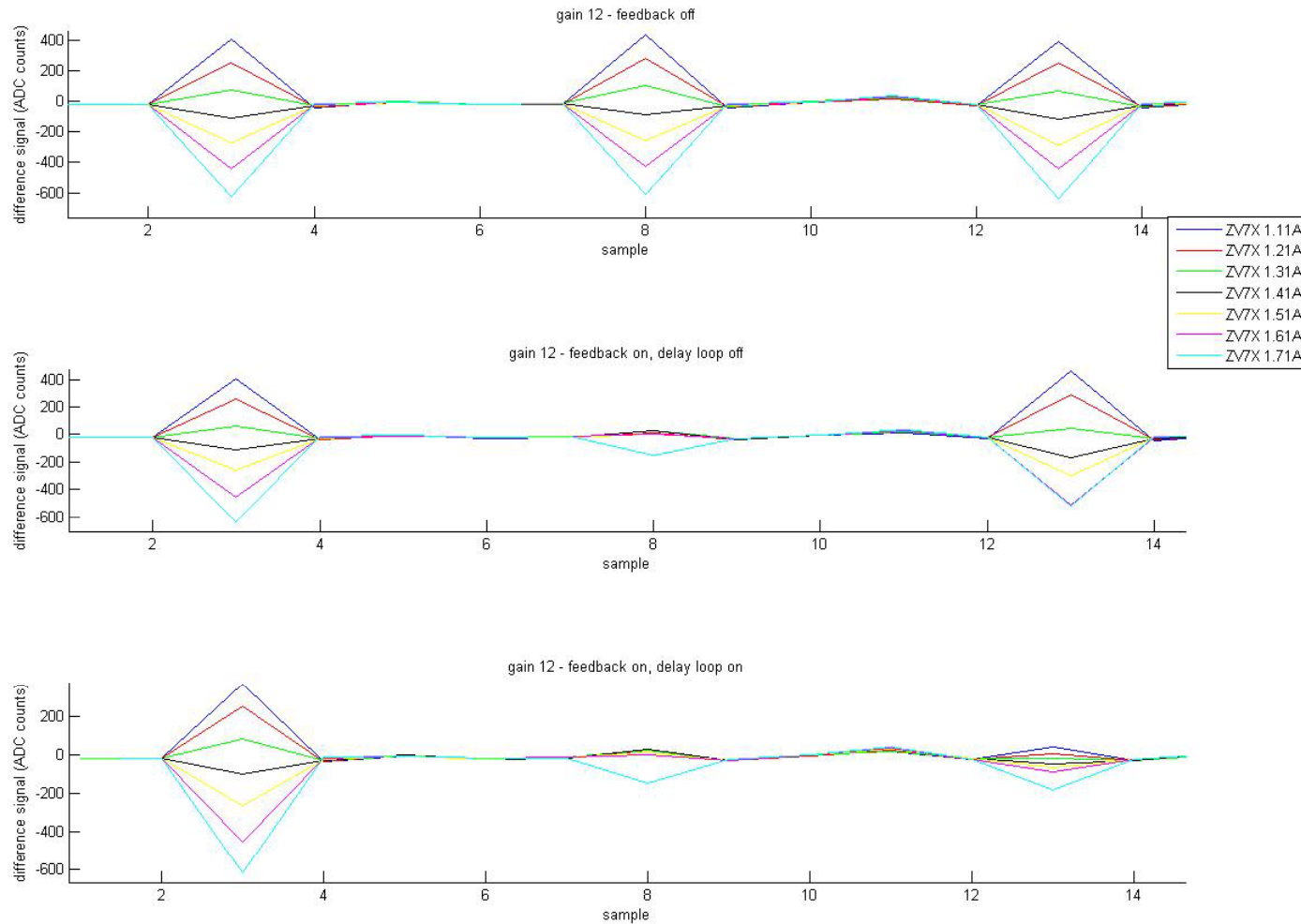
# Feedback results (Quicklook)

## No Q-normalisation Gain 11



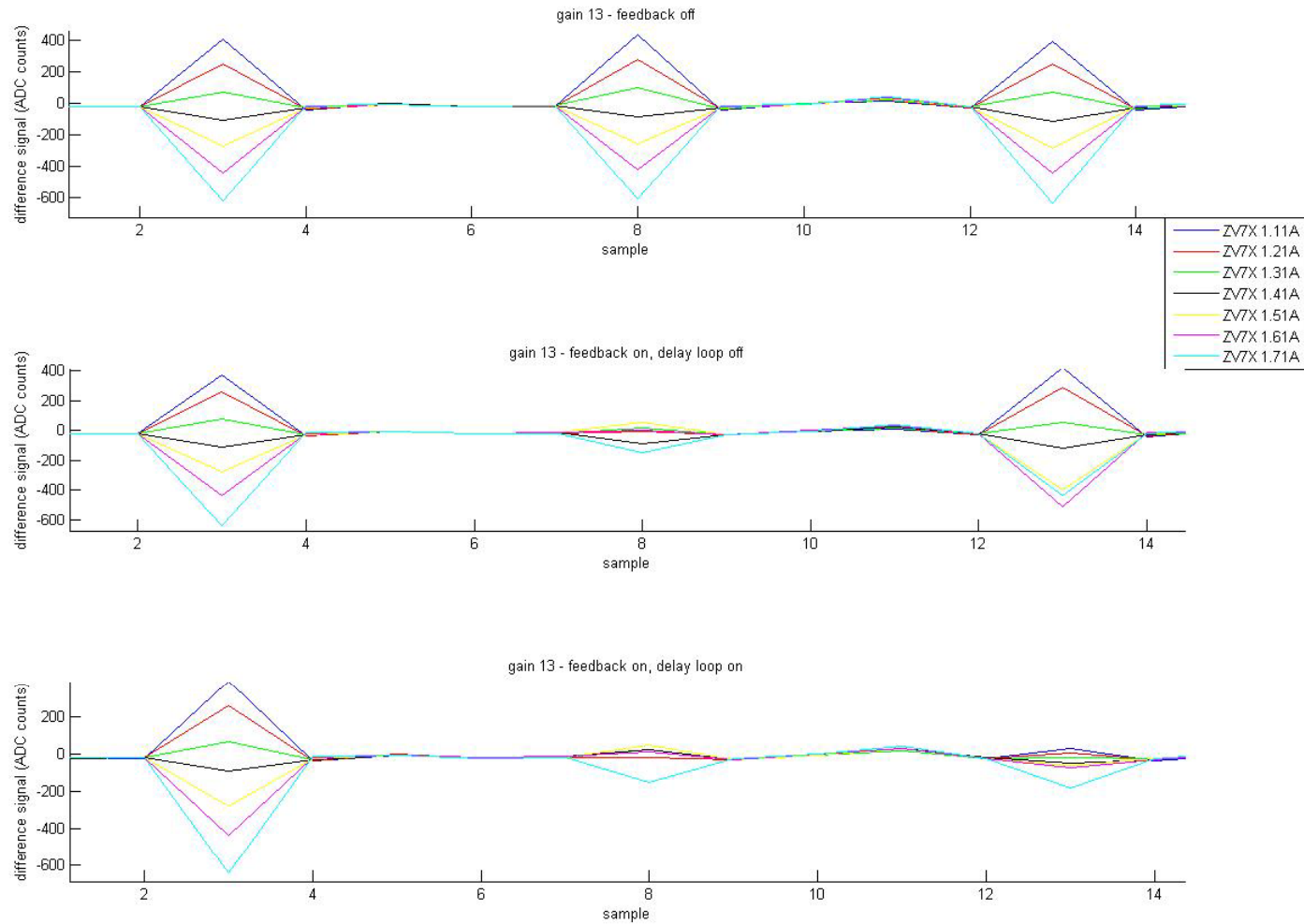
# Feedback results (Quicklook)

## No Q-normalisation Gain 12



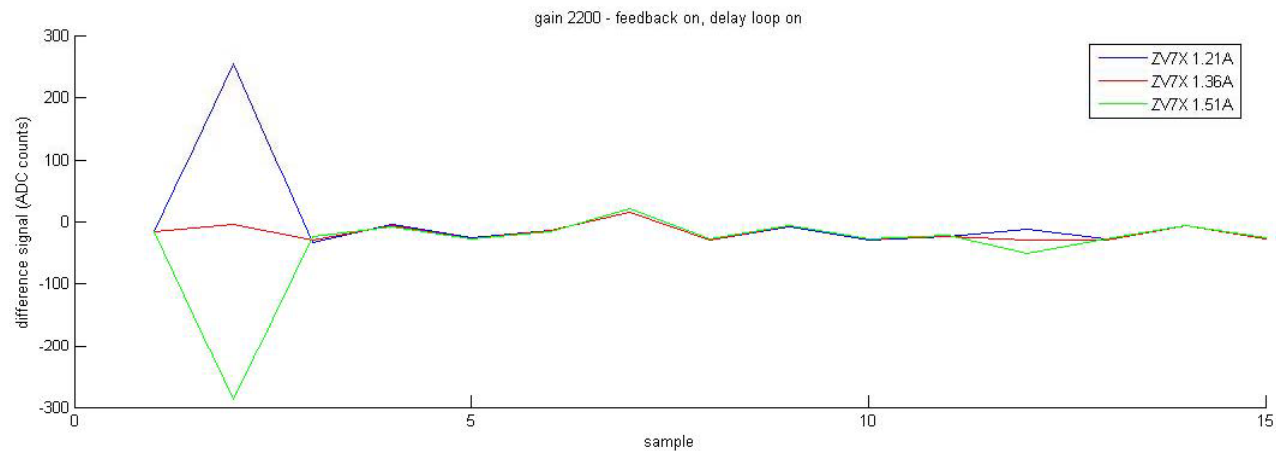
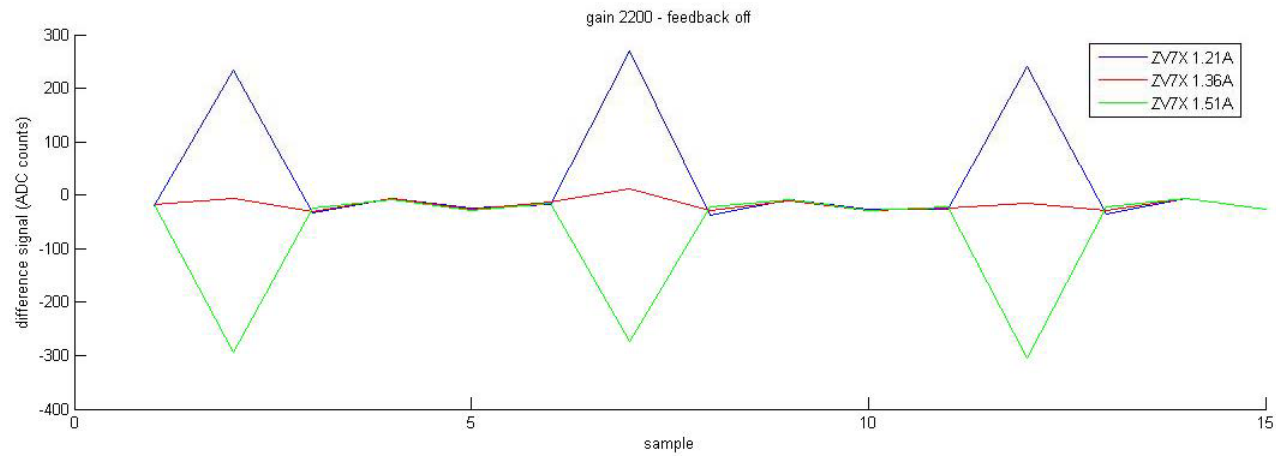
# Feedback results (Quicklook)

## No Q-normalisation Gain 13



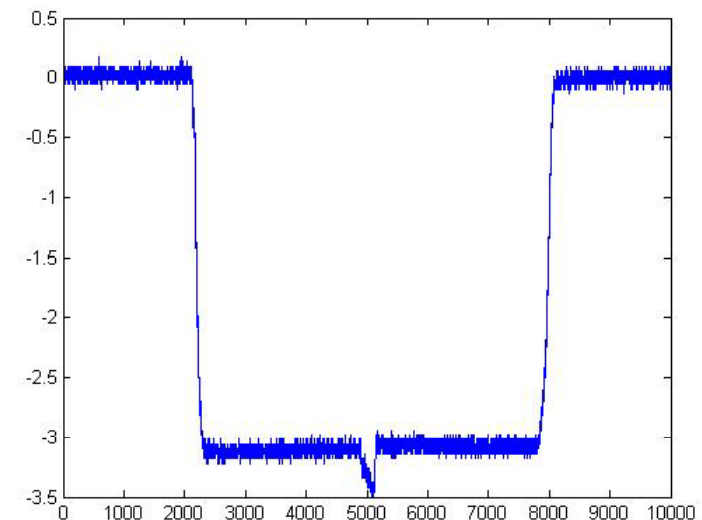
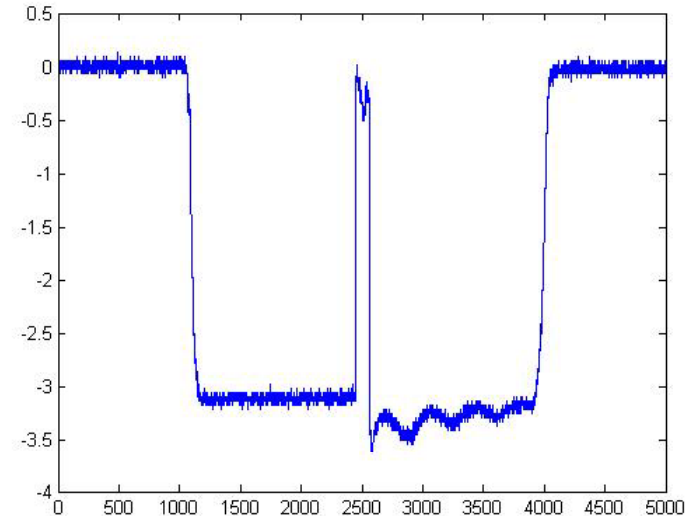
# Feedback results (Quicklook)

## Q-normalisation Gain 2200

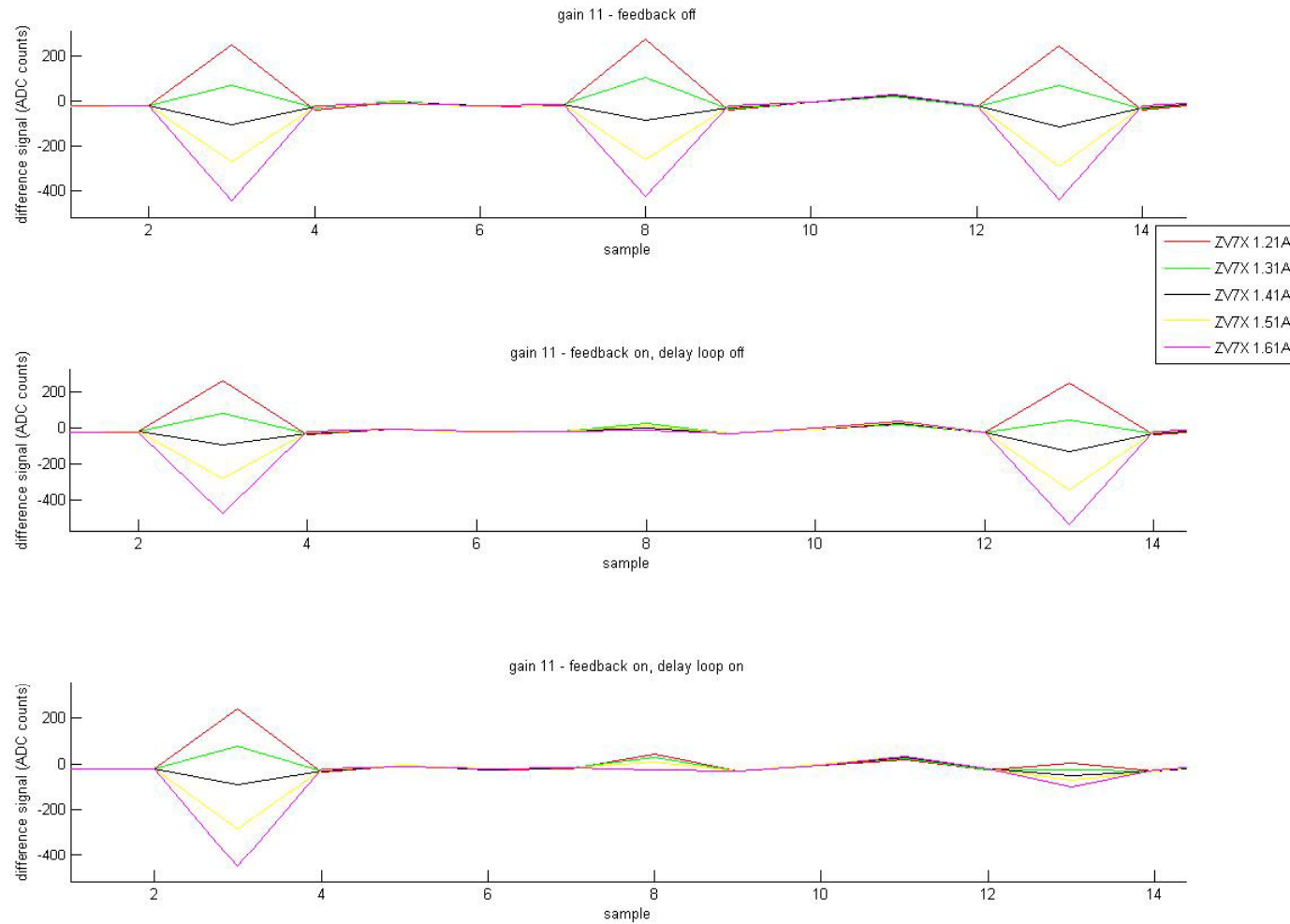


# Current monitors

- Problem with current monitors seen in data on going through zero
- No response to changes in position although feedback clearly working
- Don't know if just broken or if this is the same problem as seen in Feb.

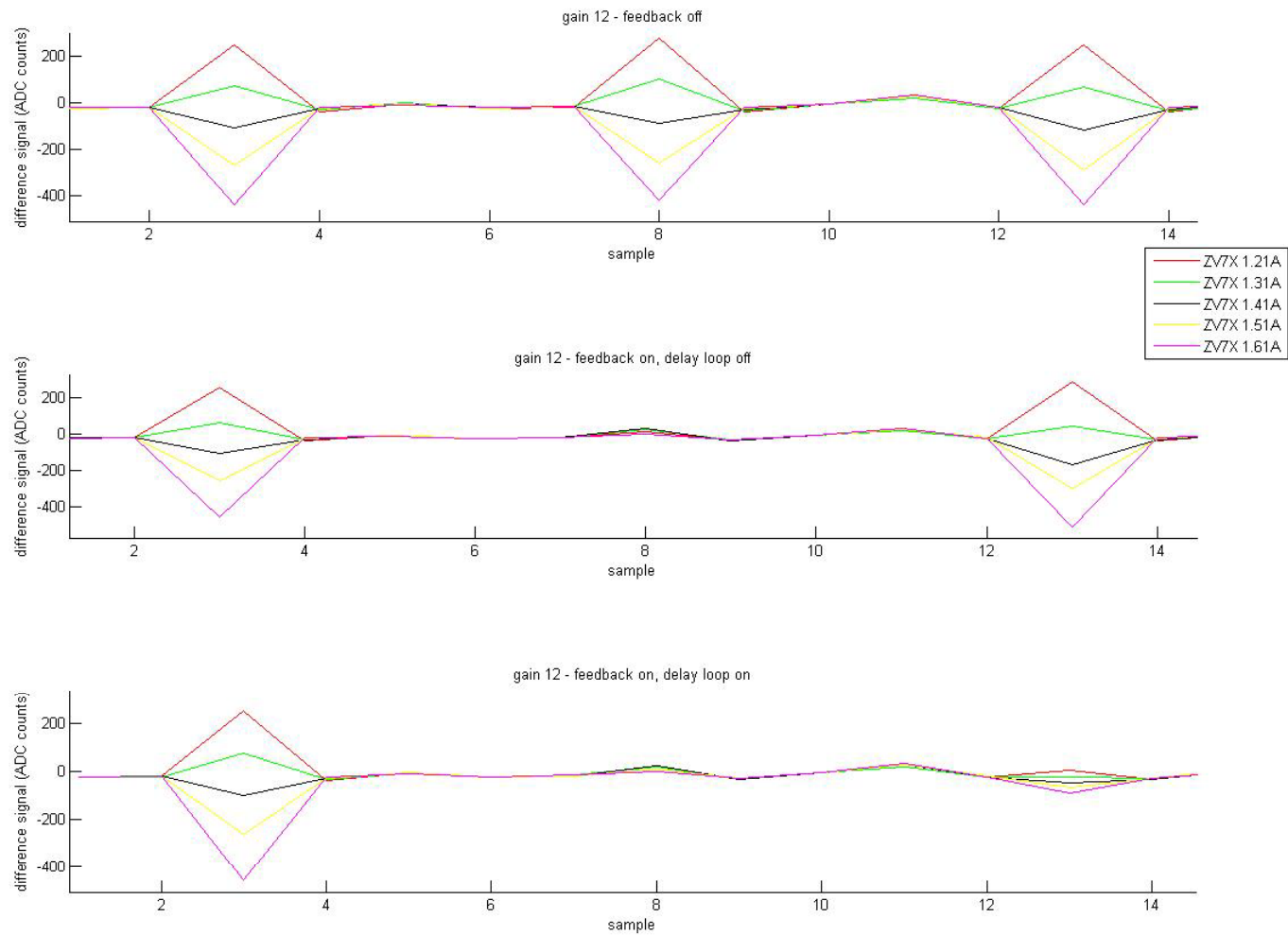


# Gain 11 – saturated points removed

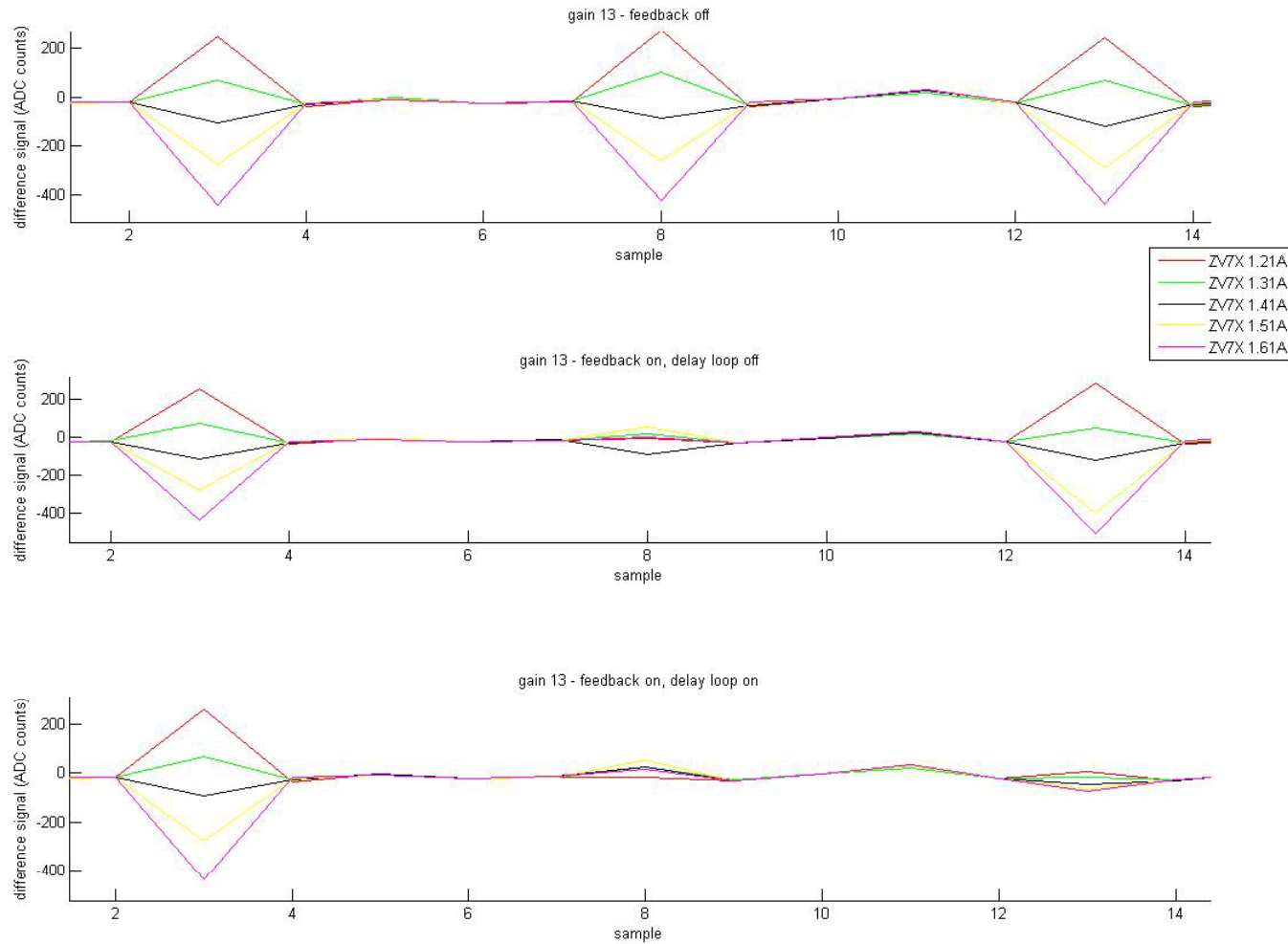




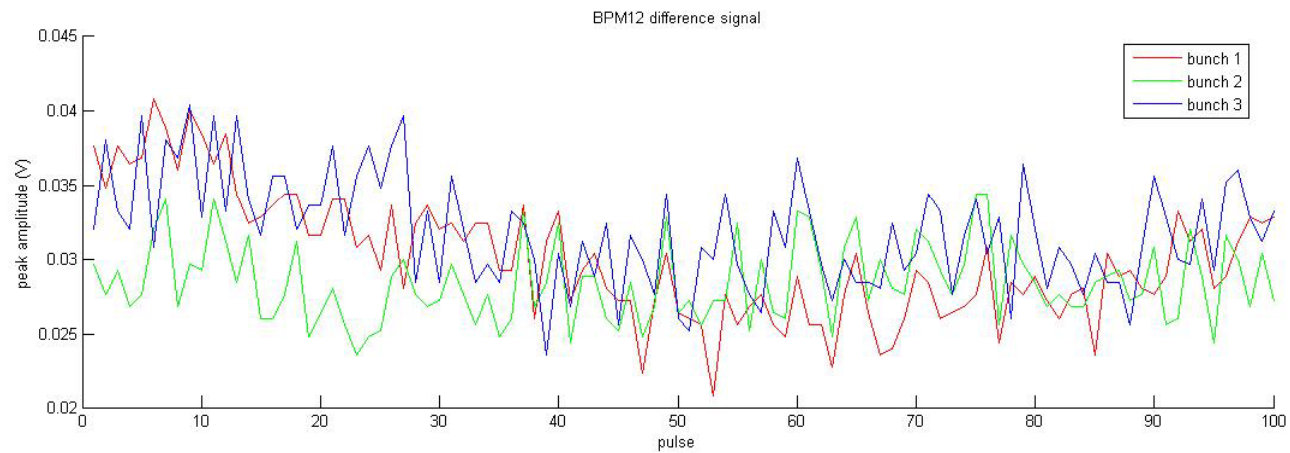
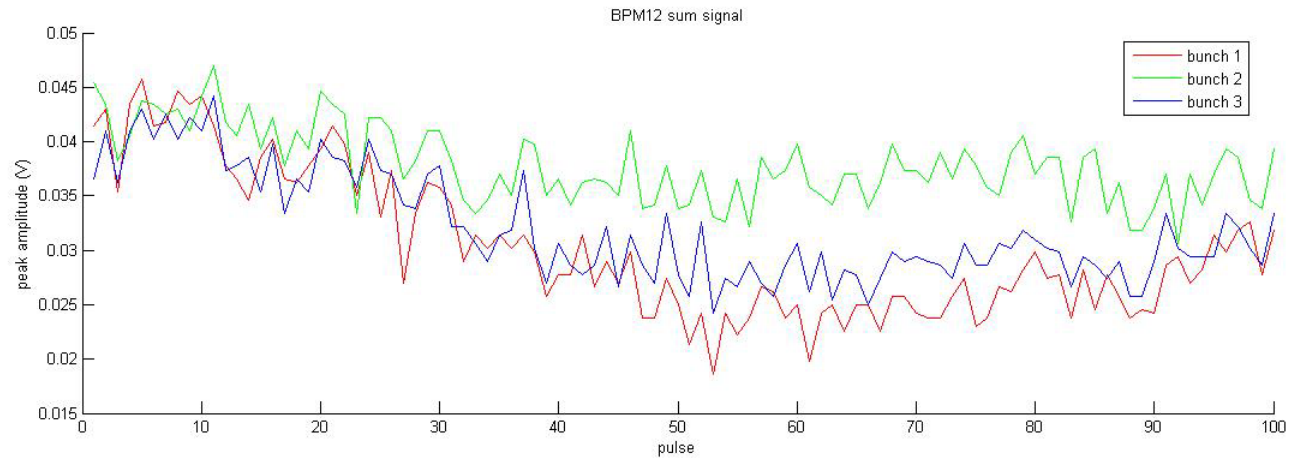
# Gain 12 – saturated points removed



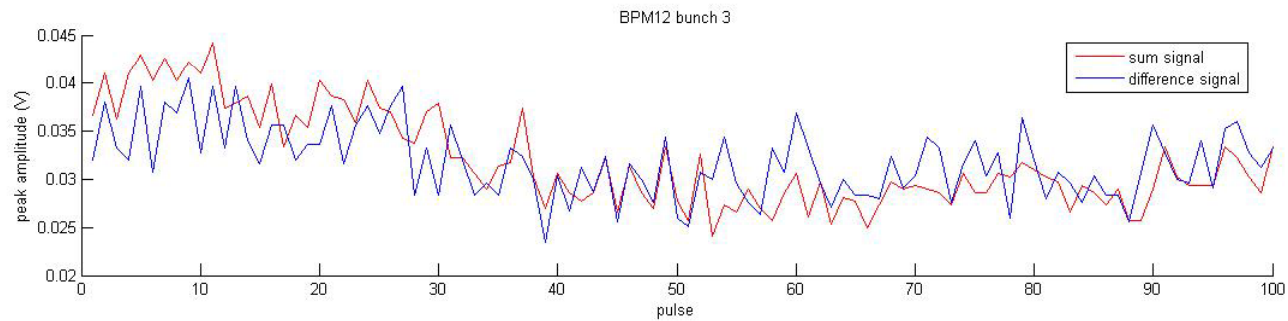
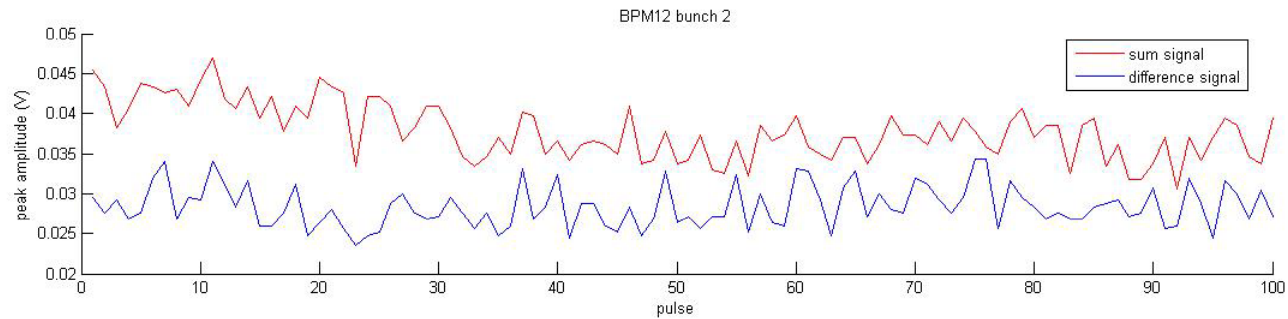
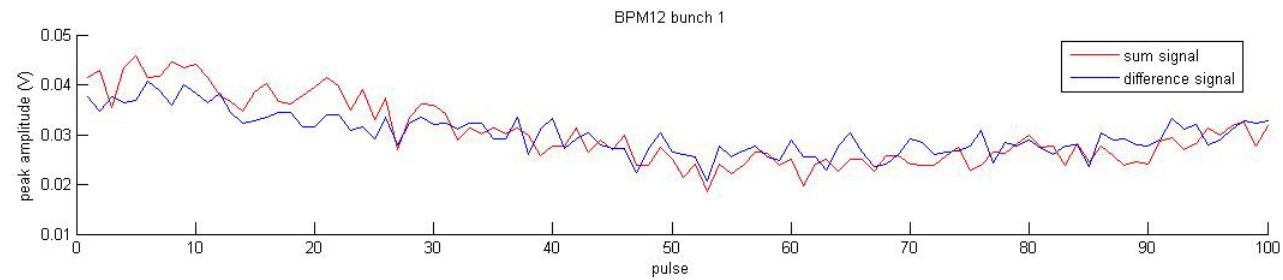
# Gain 13 – saturated points removed



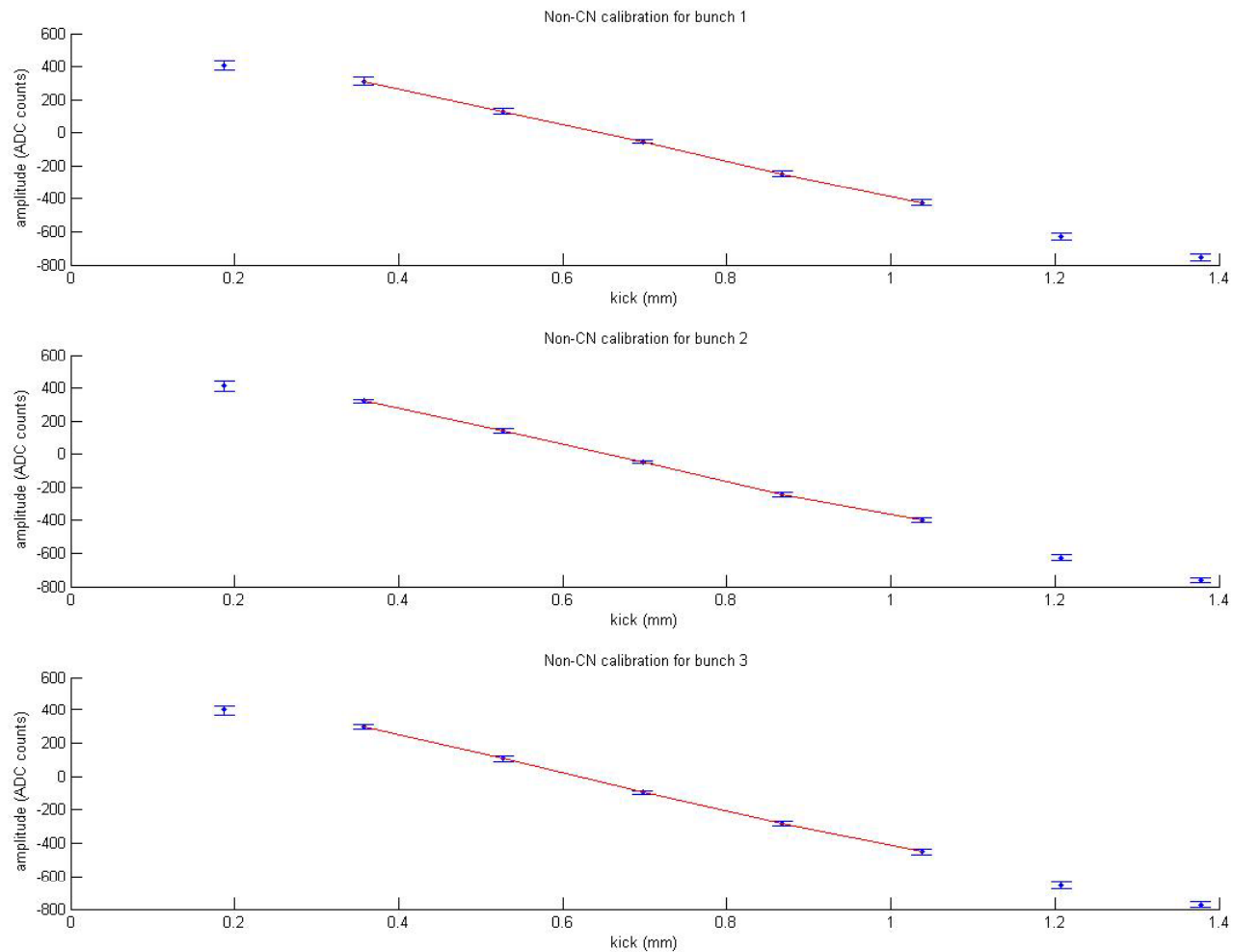
# Jitter at BPM12 over 100 pulses- without feedback



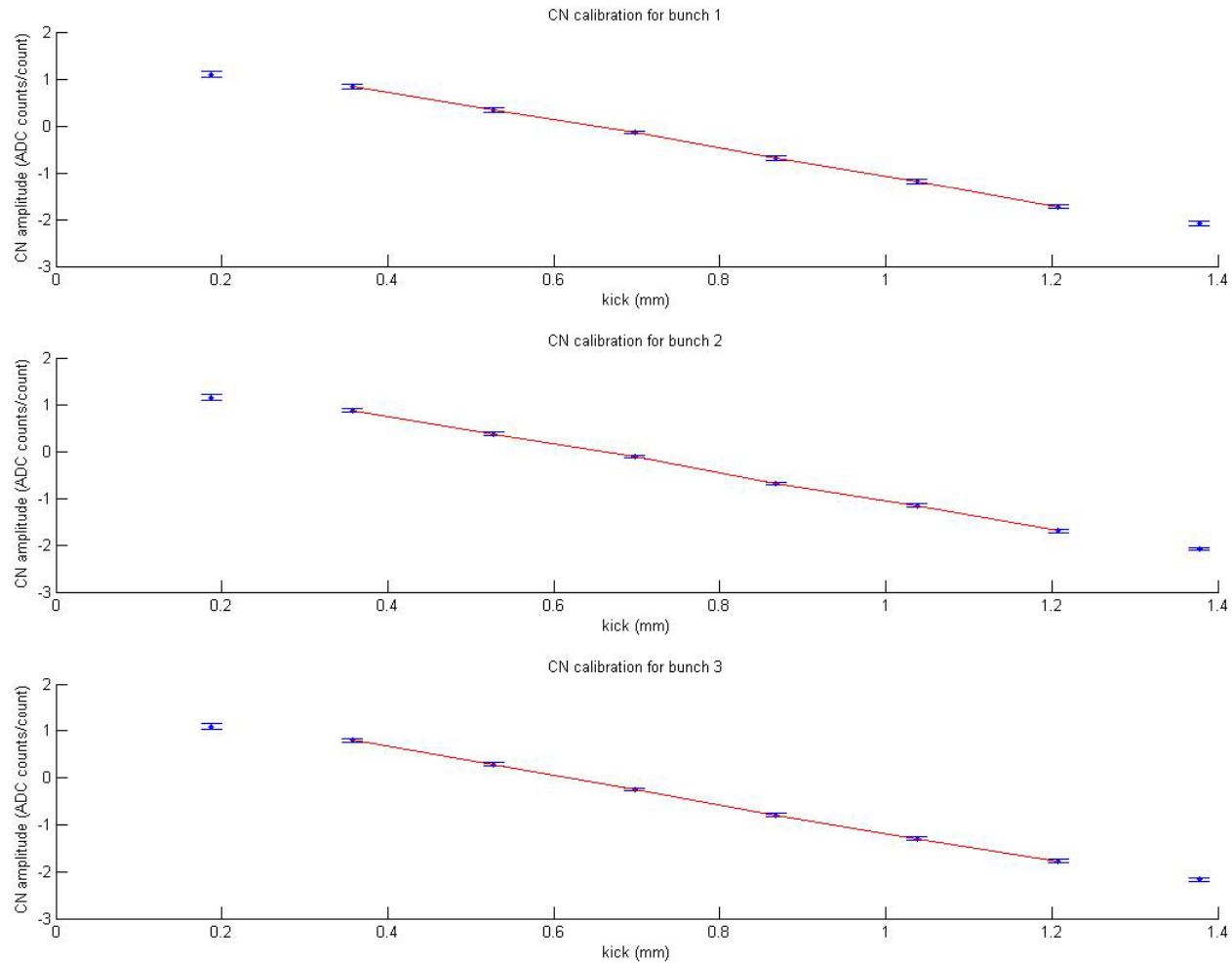
# Comparison of sum and difference signals



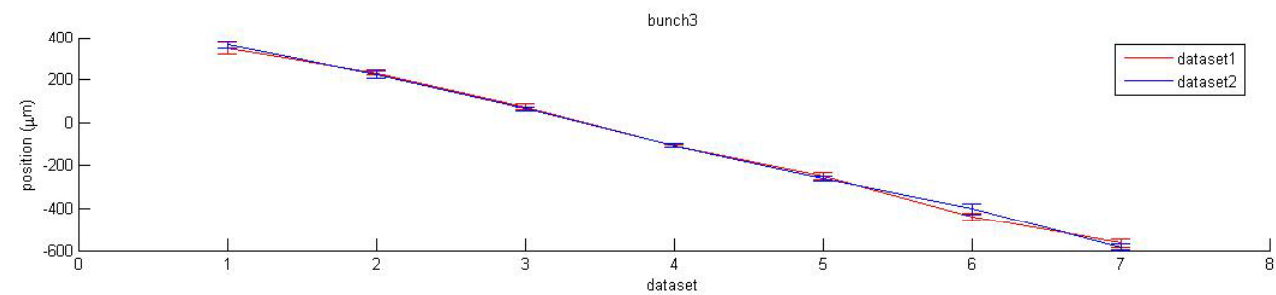
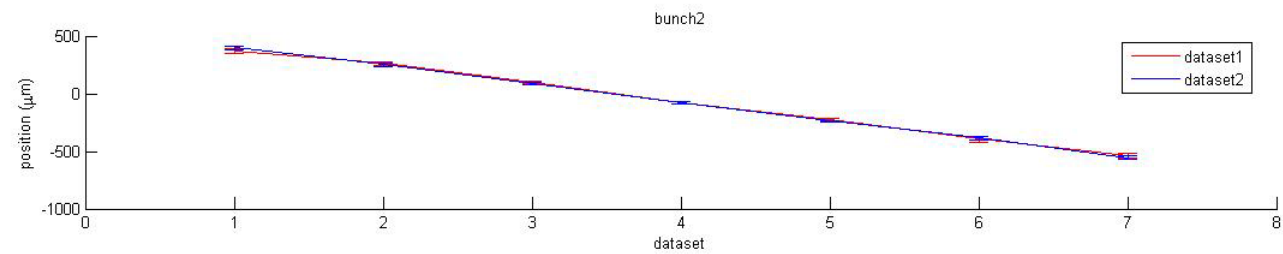
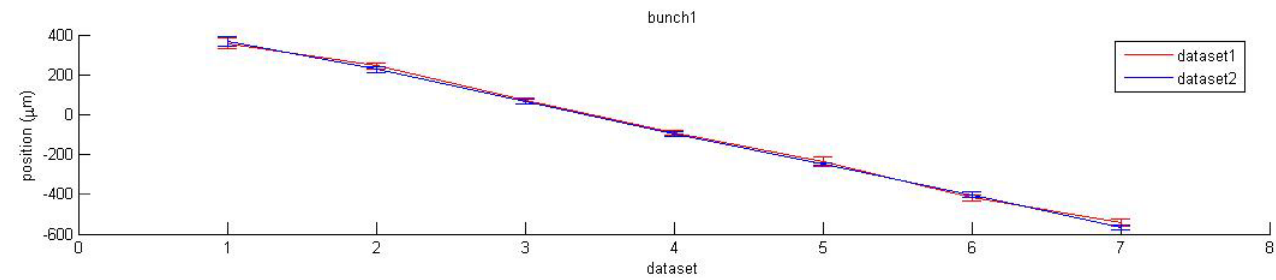
# Calibration of BPM11 (ILA data) – no offline Q-normalisation ( $\sim 1.1$ cnt/ $\mu\text{m}$ )



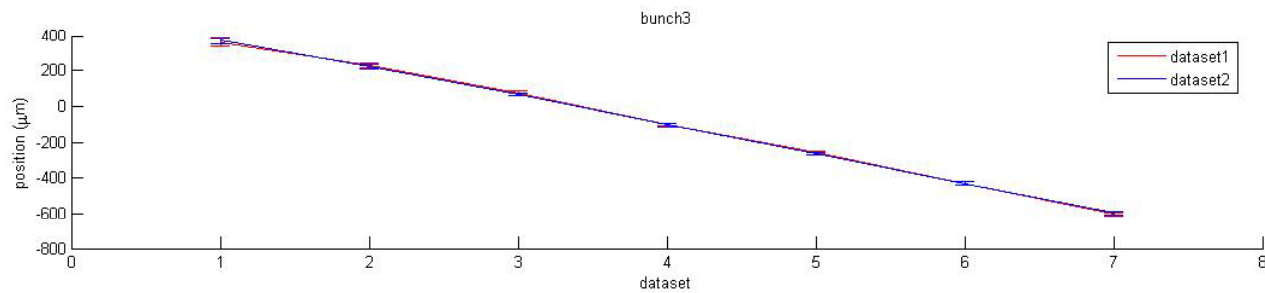
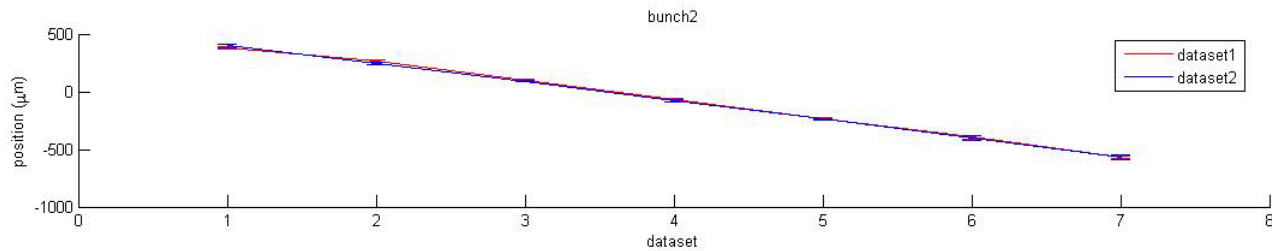
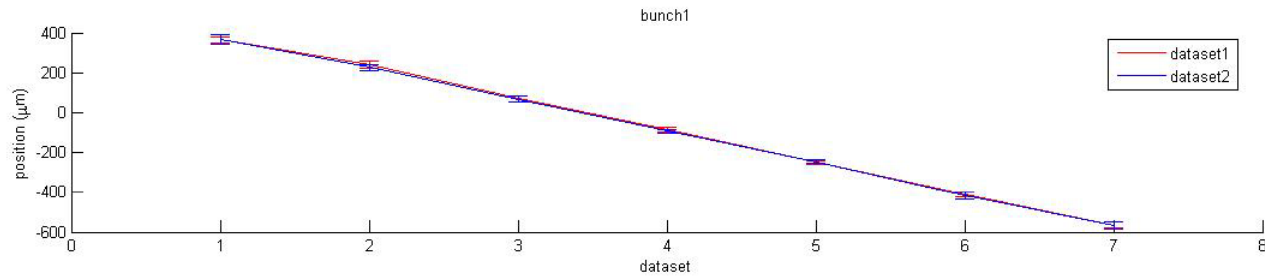
# Calibration of BPM11 (ILA data) – with offline Q-normalisation ( $\sim 3000$ / $\mu\text{m}$ )



# Comparison of 17 May datasets with feedback off



# Comparison of 17 May datasets with feedback off (with offline Q-normalisation)





# Further analysis

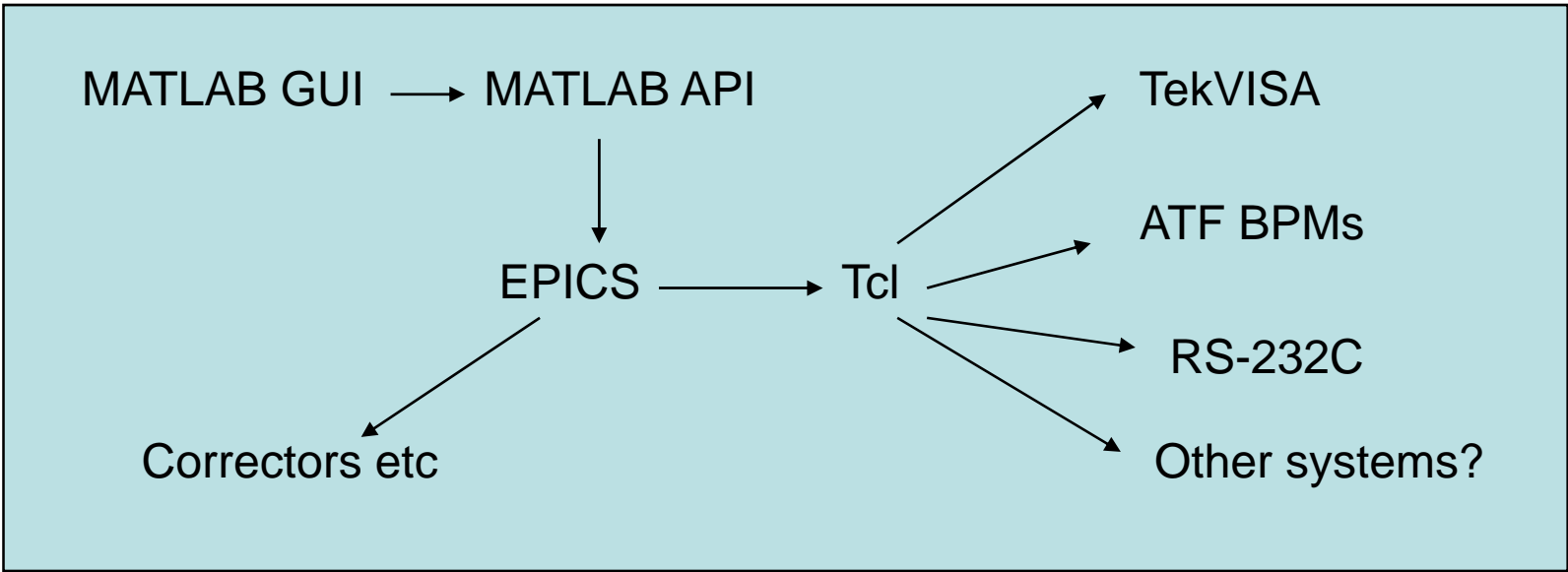
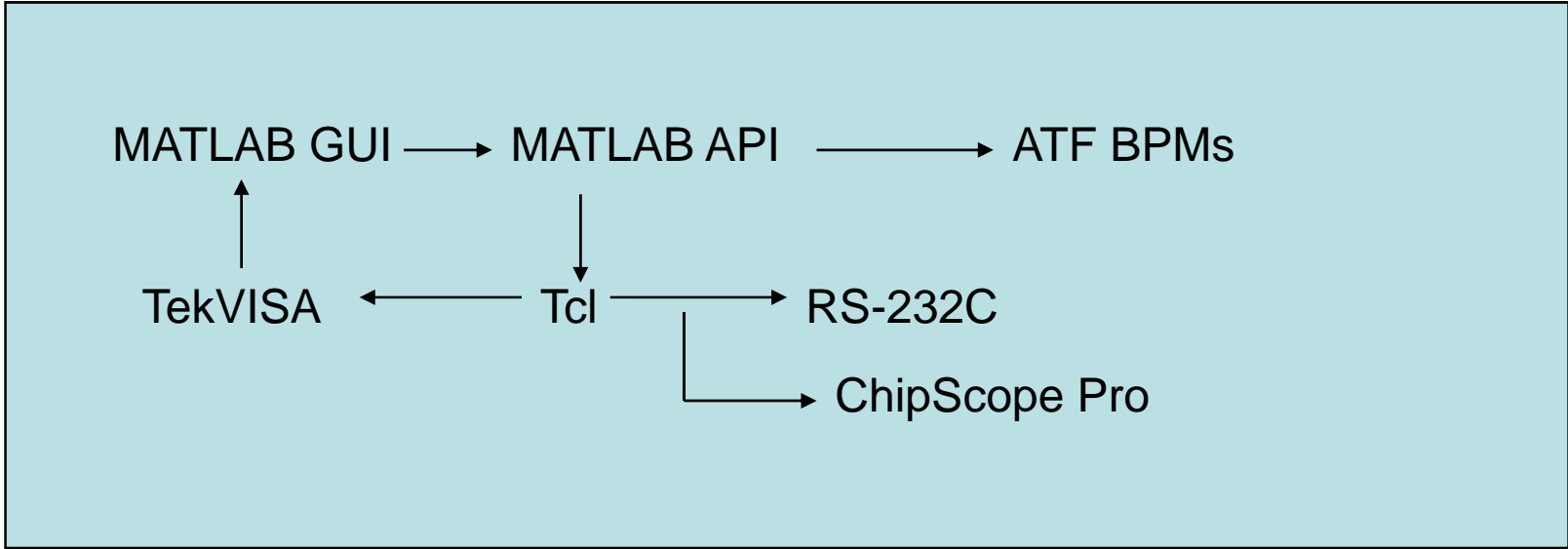
- Study jitter with feedback on/off, with/without Q-normalisation, online/offline normalisation for long datasets (bpm 11 and 12 witnesses)
- Are feedback results fully consistent with 'banana' shape of beam?
- In-tunnel/out-of-tunnel comparisons – measurement of relative offsets/resolution?
- Look at jitter, banana etc for other (worse) datasets

# List of things to think about – Digital I/O issues

- Digital input resolution: calibration 1 cnt/um is too low – gives a full scale range of +/- 8mm ! For +/- 100 um uses only 7/14 bits! Can we use amplifiers? (CP)
- Digital output: even with 6dB attenuation on output amplifier saturation occurs before numerical overflow. Set up on bench so that overflag flag indicates saturation. 15<sup>th</sup> bit is protected but could extend that to maximum useful output. What about the plans for the new intermediate amplifier? (CP)
- Current monitors???

# DAQ issues

- Scope DAQ – current MATLAB DAQ system needs to be extended/fixed to acquire more data from more sources and re-integrate ATF BPM system
- Digital DAQ – move from working in eels bedroom to control room – RS232 interface
  - Simple interface running on hyperterminal
  - More sophisticated interface – Tcl/Tk, PERL/Tk, Python
  - Get video cards for scopes



# Other issues

- Digital board resolution (ADC/DAC tests) on bench
- Measuring resolution – how to proceed?
- Knowing kicker strip positions
  - Build own readback system – test and calibrate in house (RS-232)
- Data repository and m-file library