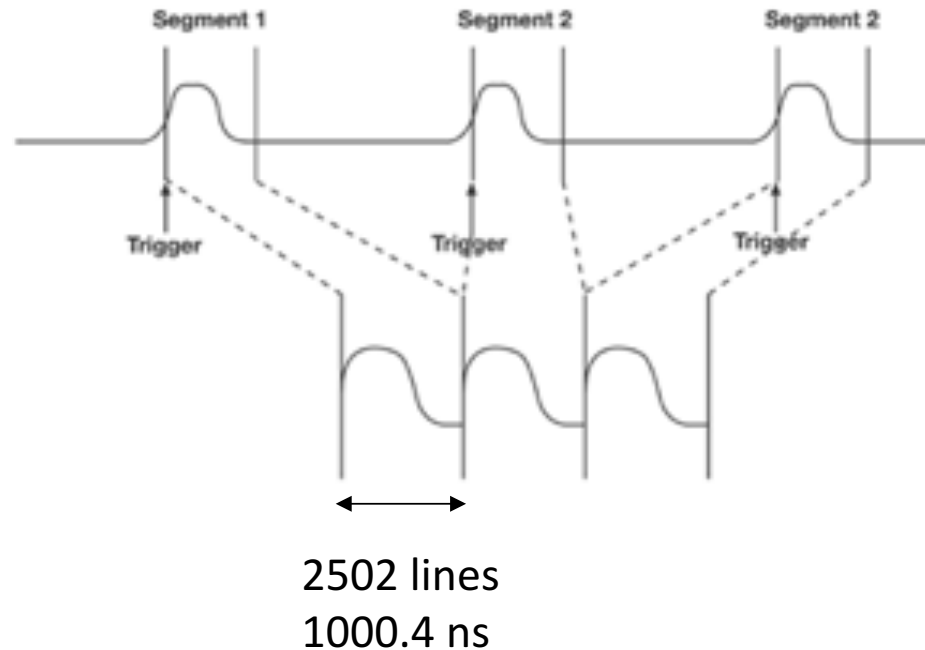


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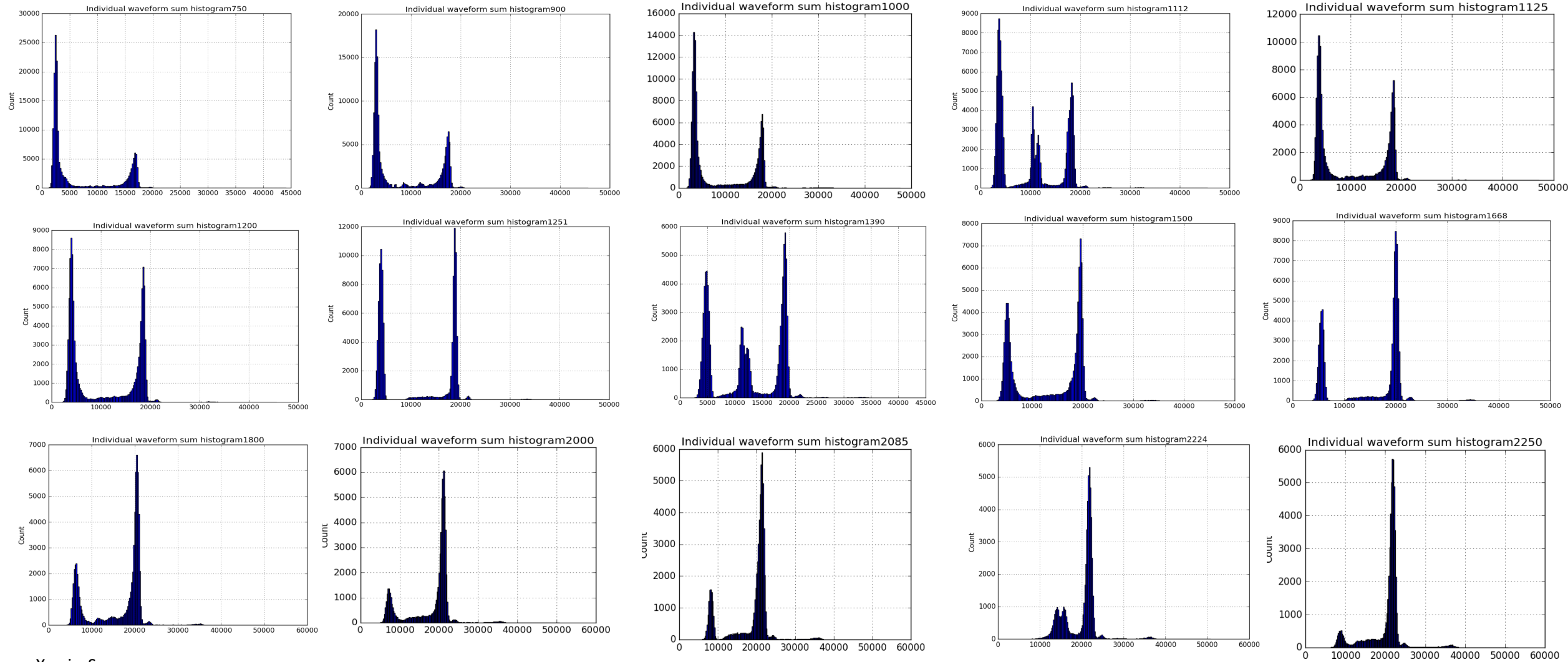
Adam Knoetze

Finding Waveform Duration for ASCII Data Formatting



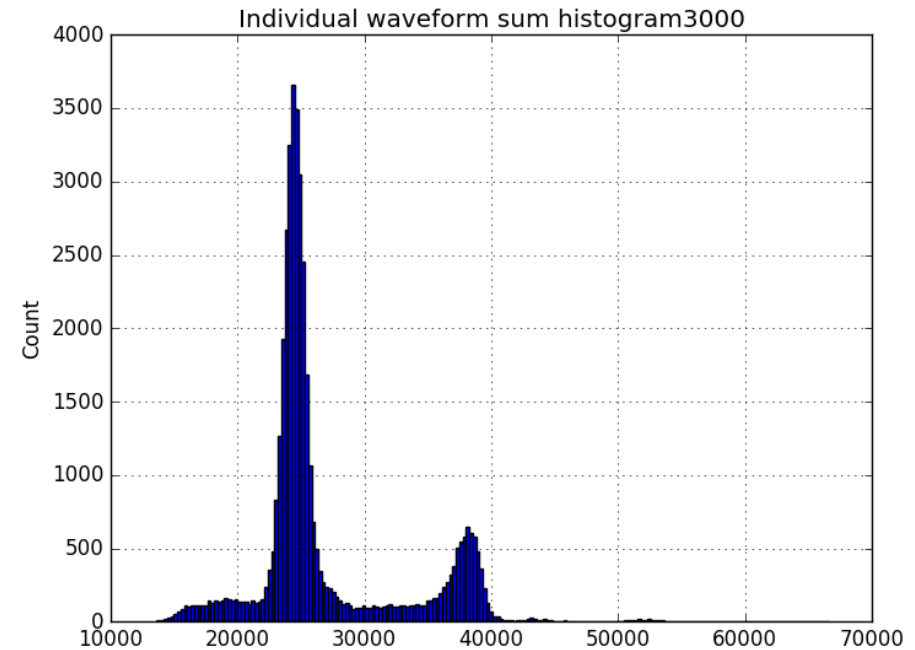
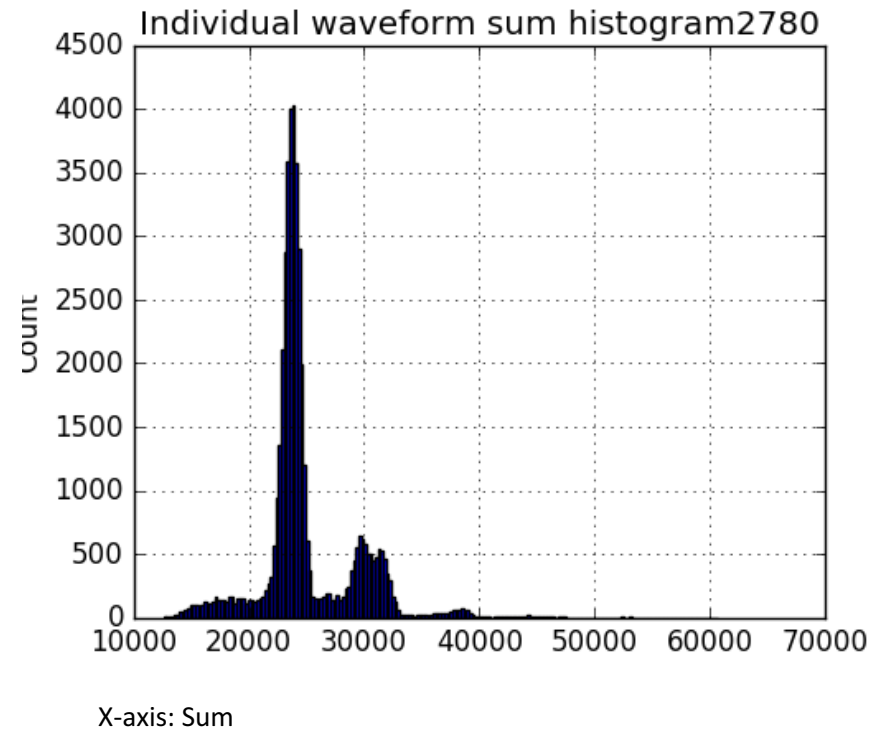
- Form inspection of data files, initially thought each waveform was 1000 lines (400 ns).
- Checked with histogram of waveform mV sum for one data file (splitting every 1000 lines). Appeared fine
- Double checked by using all files from a run (51 files). Double peak appeared.
- Repeated above step with different length splits. (factors of total line length of data file)
- “Best” waveform length 2502.
- Same number of bins used in each histogram
- Using 1.98mmCol_7.24mmAbs_25kHzRate
- Double checked with data from other runs

Example histograms for waveform duration <2502 lines (<1000.4 ns)



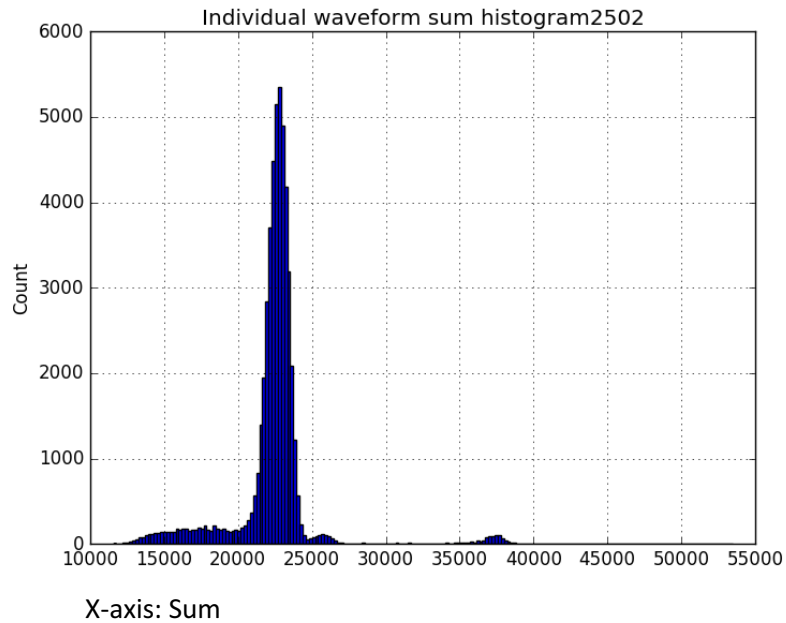
X-axis: Sum

Example histograms for waveform duration >2502 lines (>1000.4 ns)

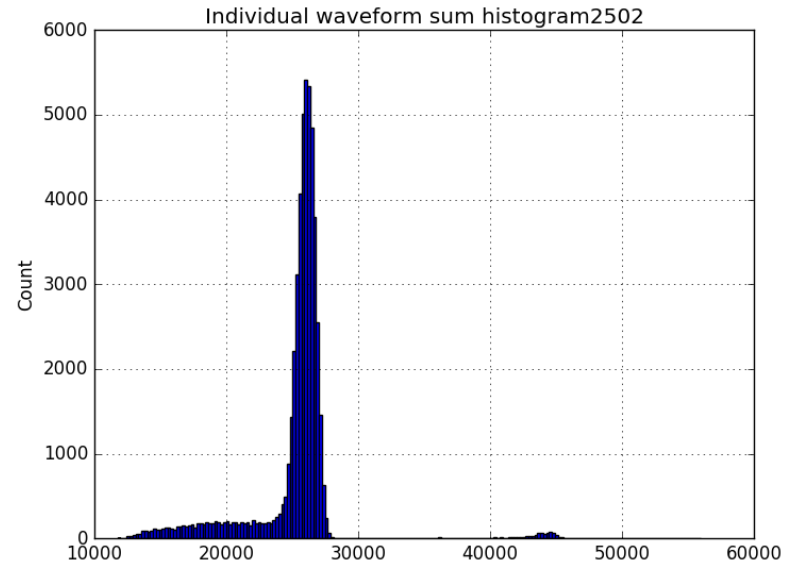


2502 lines, 1000.4 ns

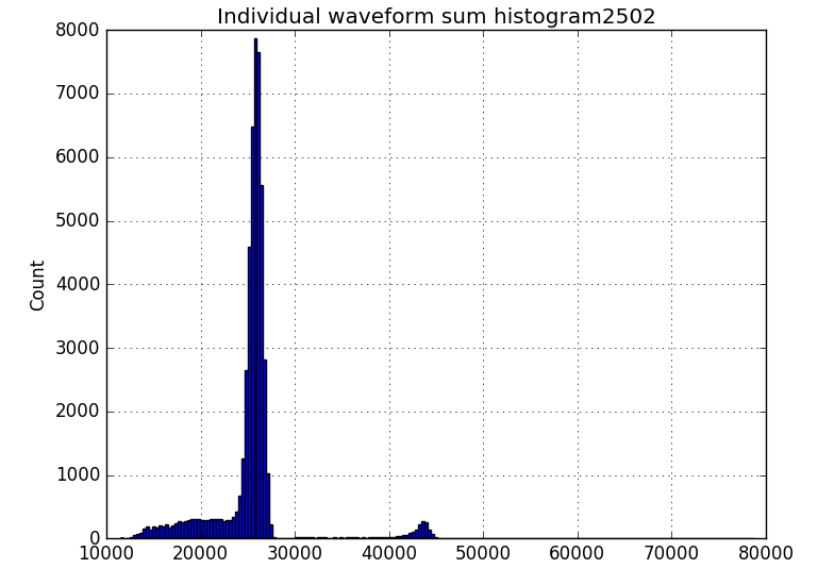
1.98mmCol_7.24mmAbs_25kHzRate



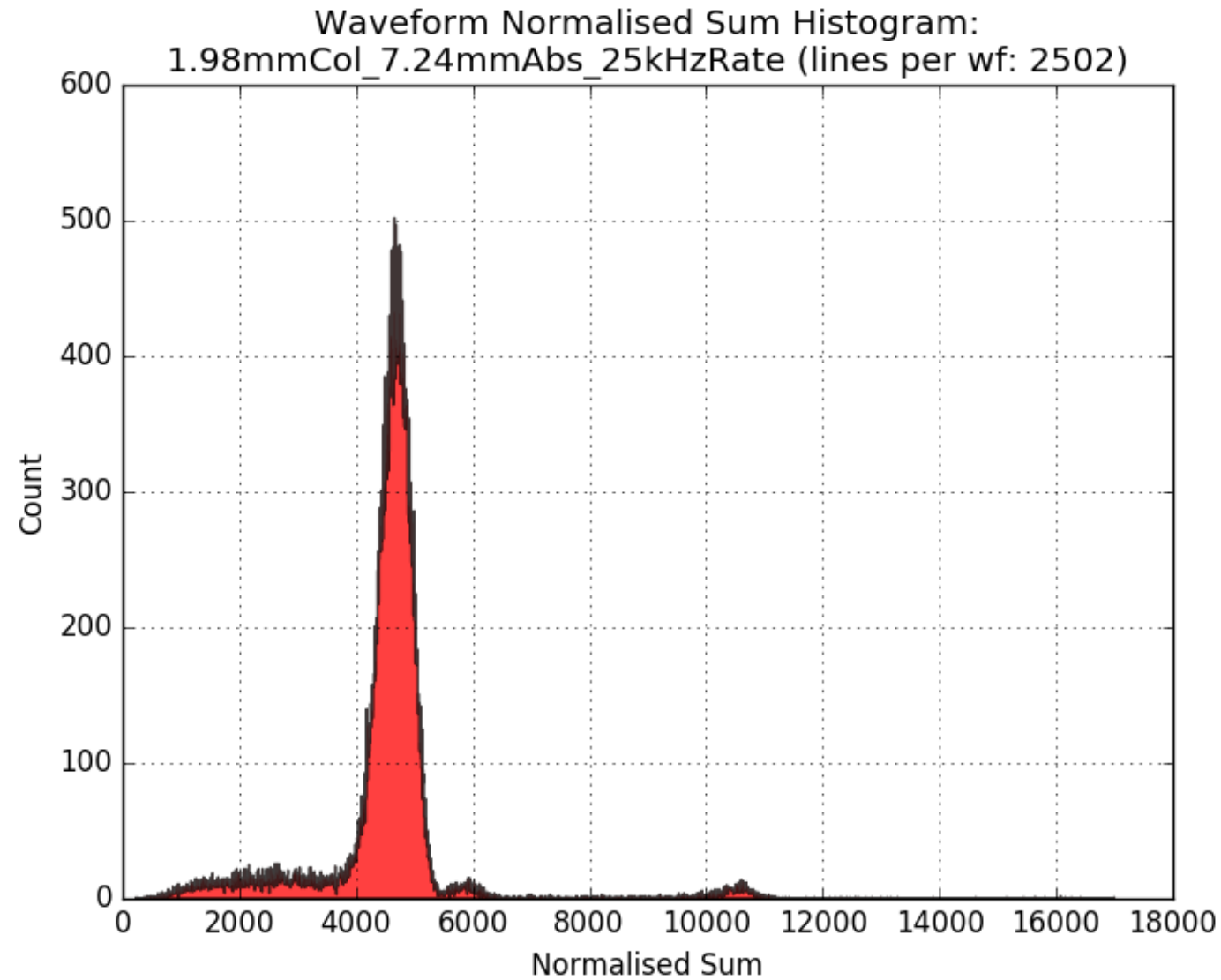
1.98mmCol_NoAbs_25kHzRate



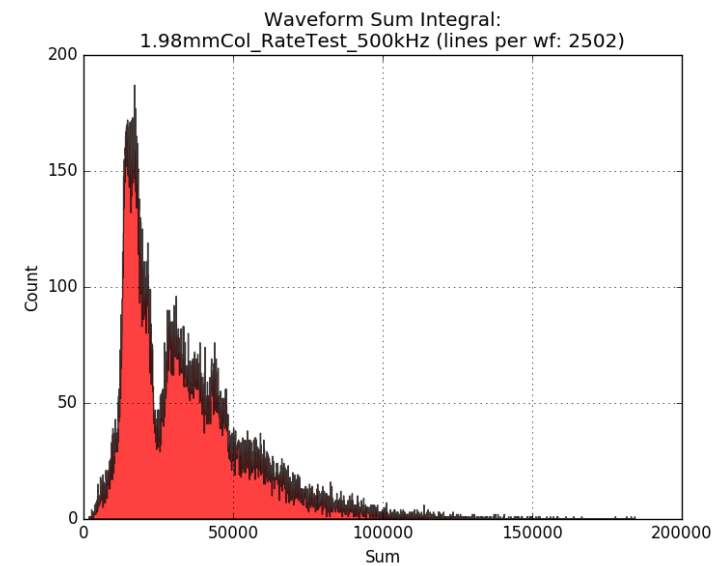
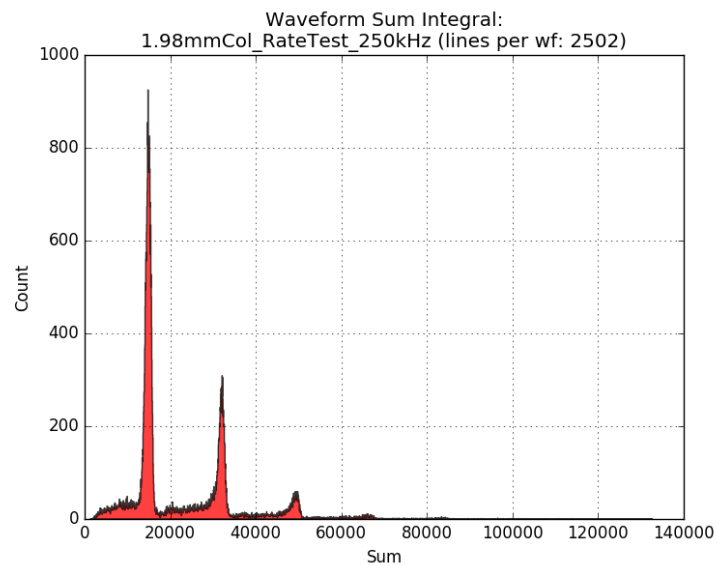
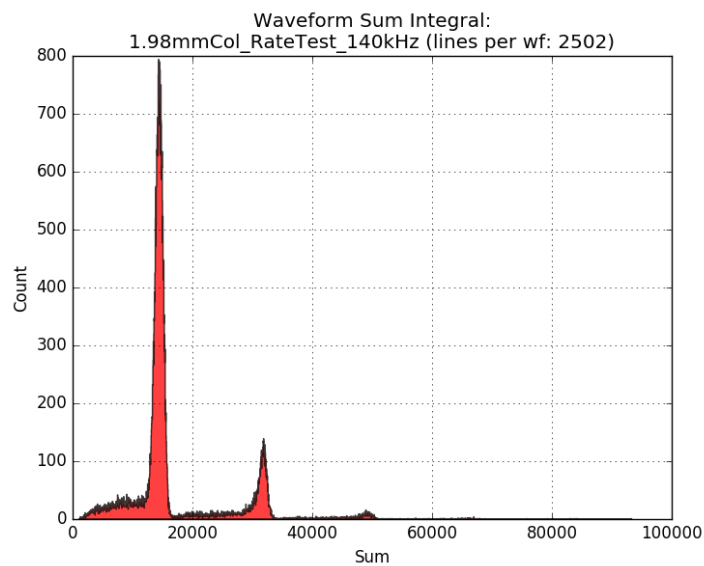
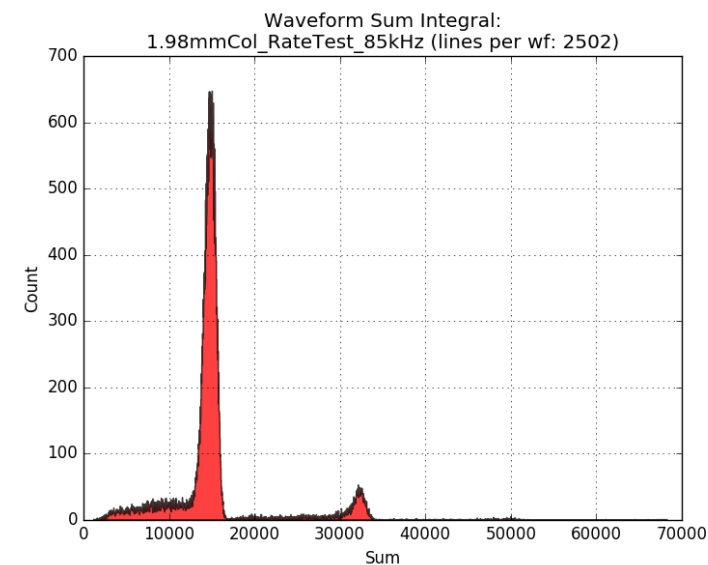
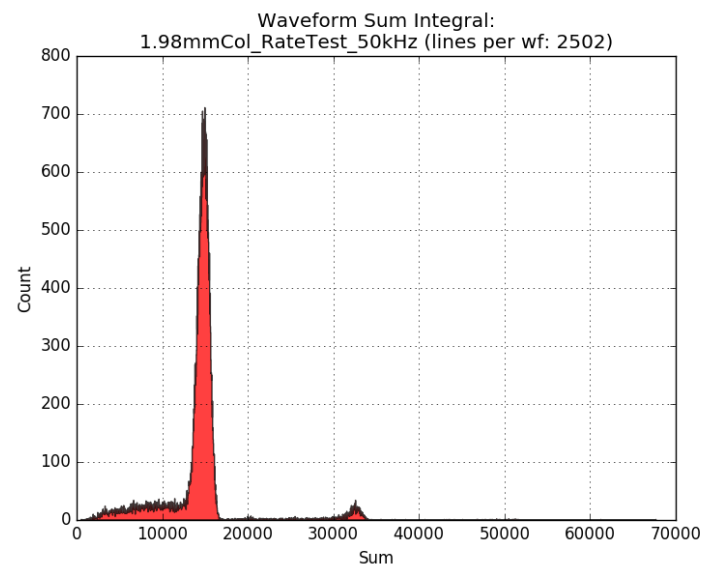
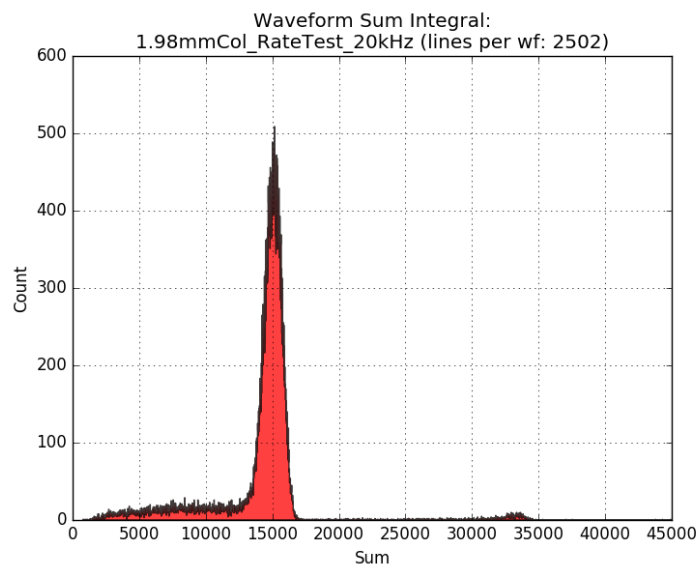
1.98mmCol_RateTest_50kHz



Normalized (Sum/Step) Histogram



Zeroed (roughly) Histograms for Rate Tests



Emulations using Previous Histogram Data

- Output histogram data to .csv file formatted for CAEN DT5800
- Completed with:
 - Poisson distributed signal rate – for all
 - Constant, actual rate – for rate test data only
- Inbuilt “shaped exponential” signal shape

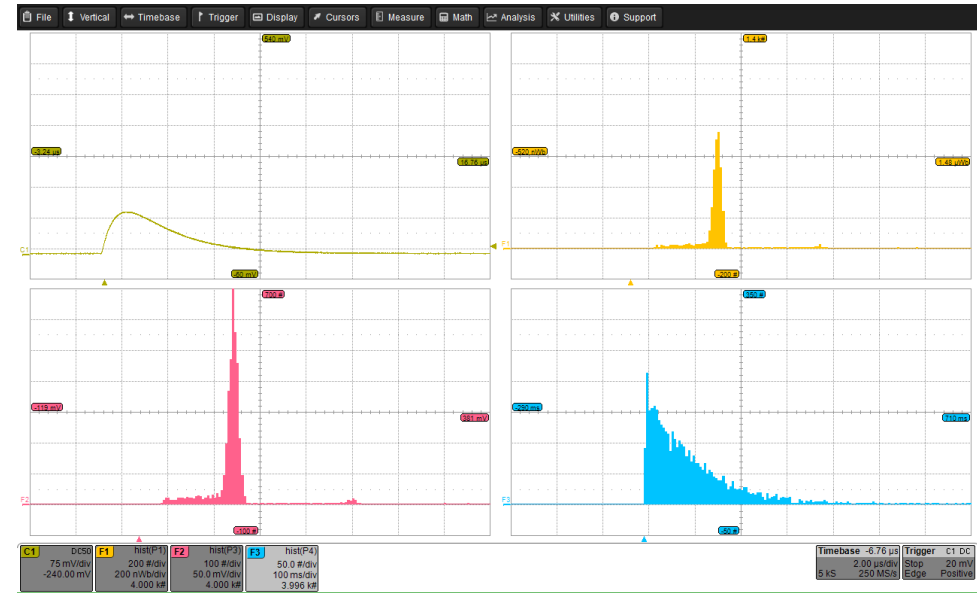
Waveform Shape	Area Histogram
Amplitude Histogram	Trigger Δt Histogram

Emulations for Rate Test Data

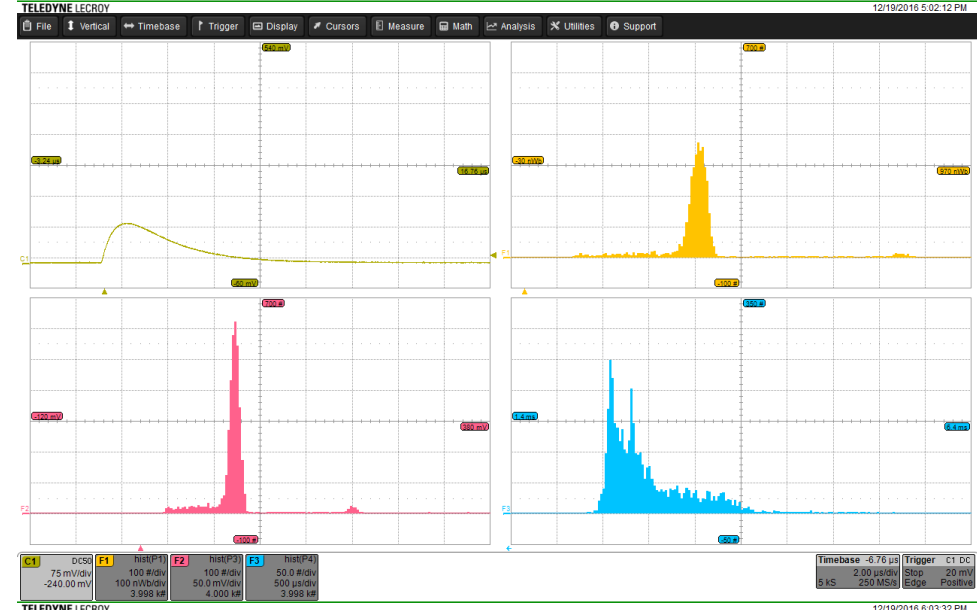
20KHz

50KHz

Poisson



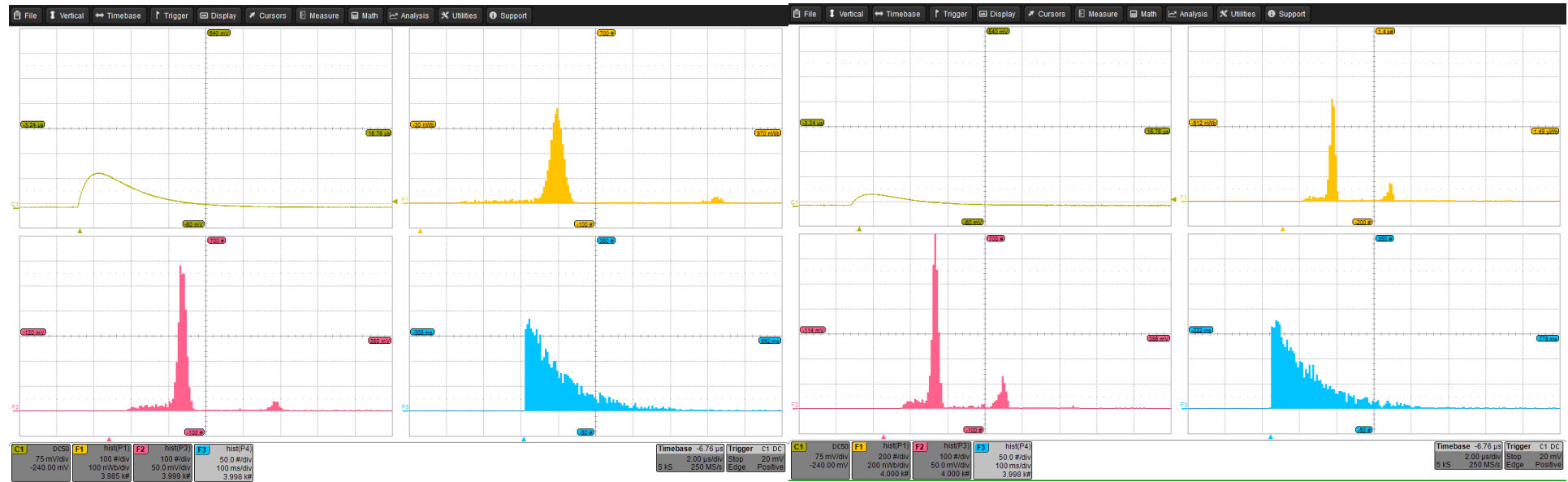
Constant
Actual
Rate



85KHz

140KHz

Poisson



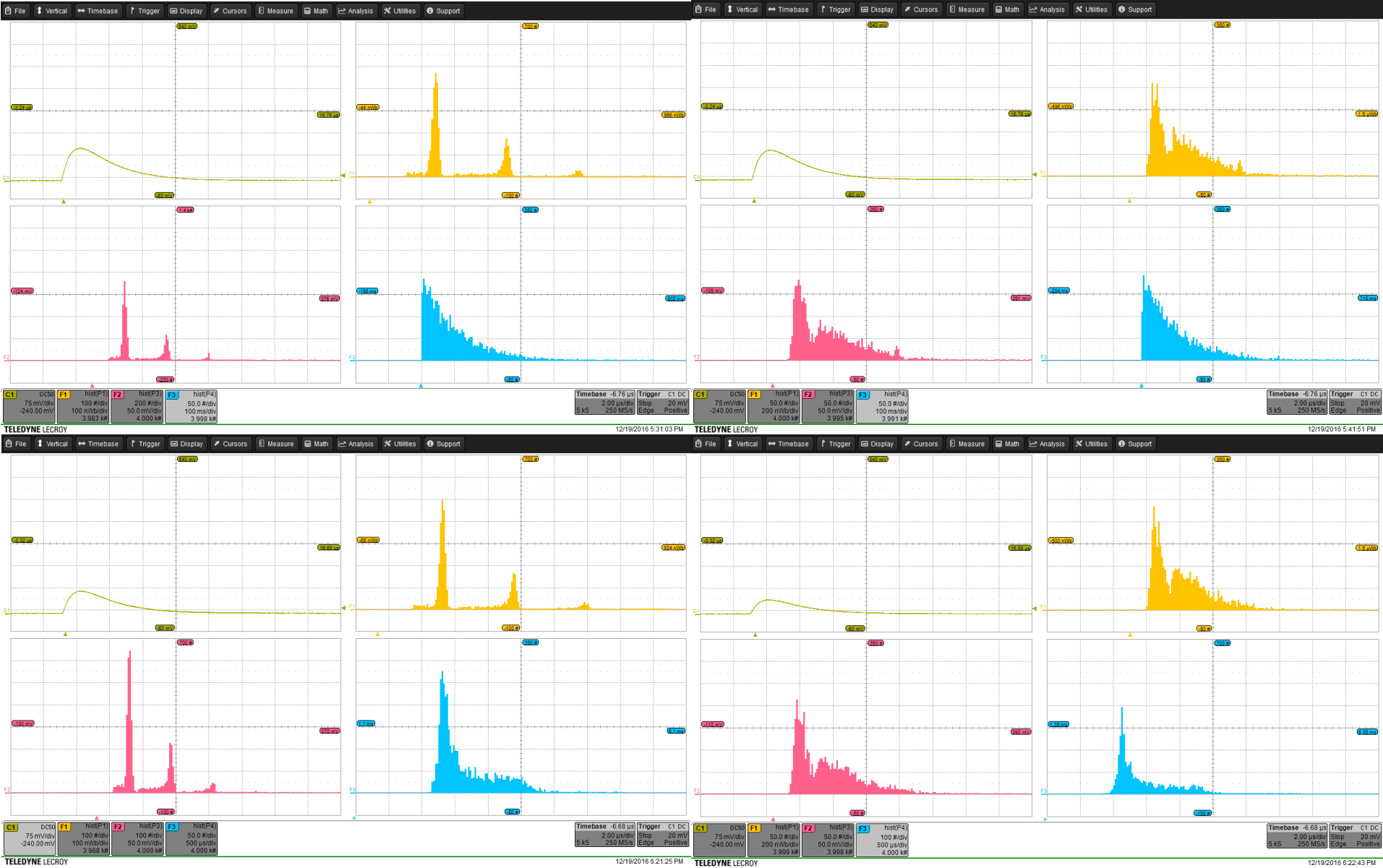
Constant
Actual
Rate



250KHz

500KHz

Poisson



Constant
Actual
Rate