DAQ status update

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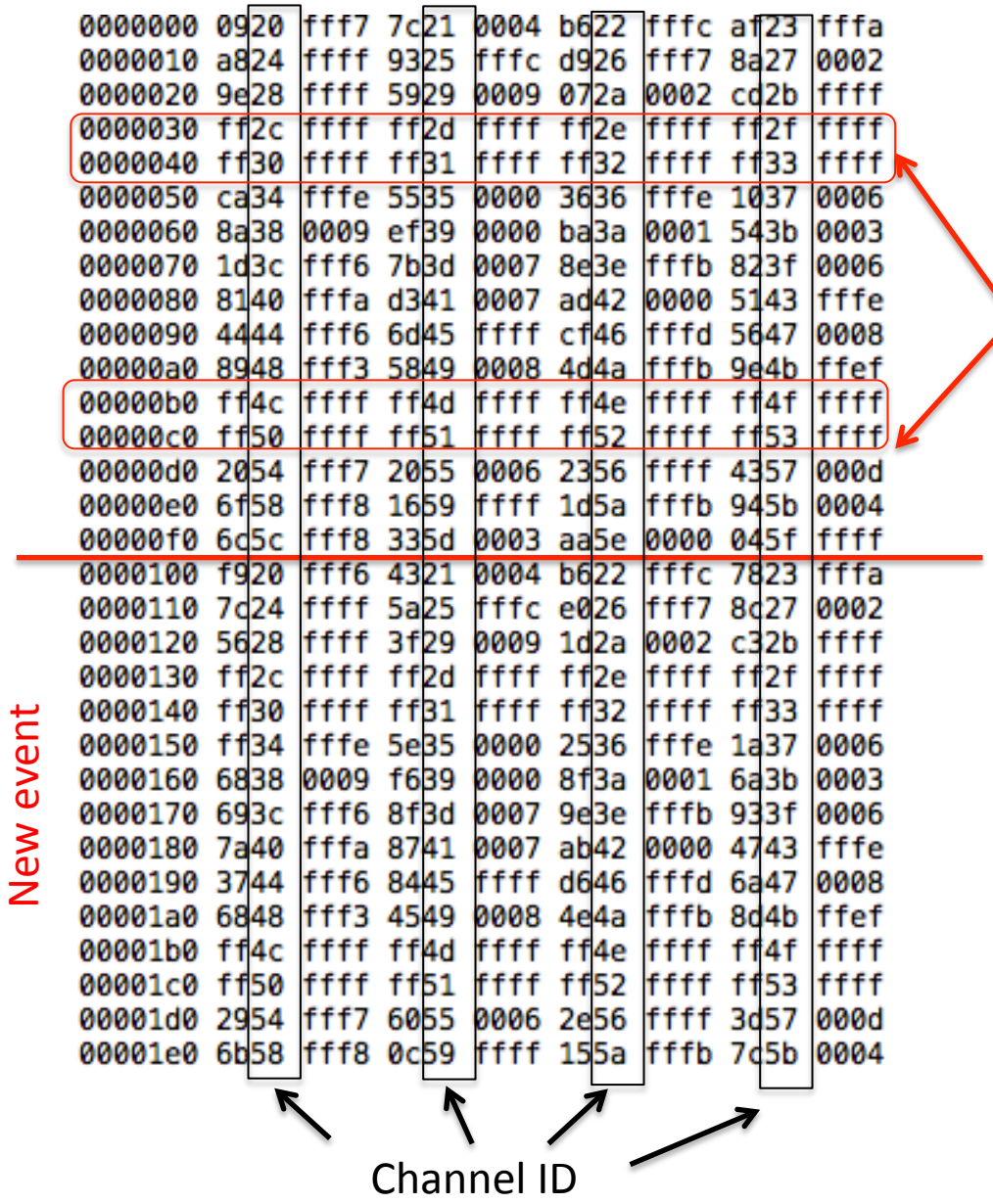
Outline

- Verifying number of channels in data stream
- Verifying if CSS indeed shows true sampling rate using 60 Hz input signal
- Operating ACQ2006
- Cross-talk issue ?!

Hexdump of binary data file



- 4 8-character words per line
- 16 lines per event
- Amplitude for channels in rows 4-5 & 11-12 are “ffffff” which is zero in “reverse sampling”? (need correct word)

Next event repeats the same pattern

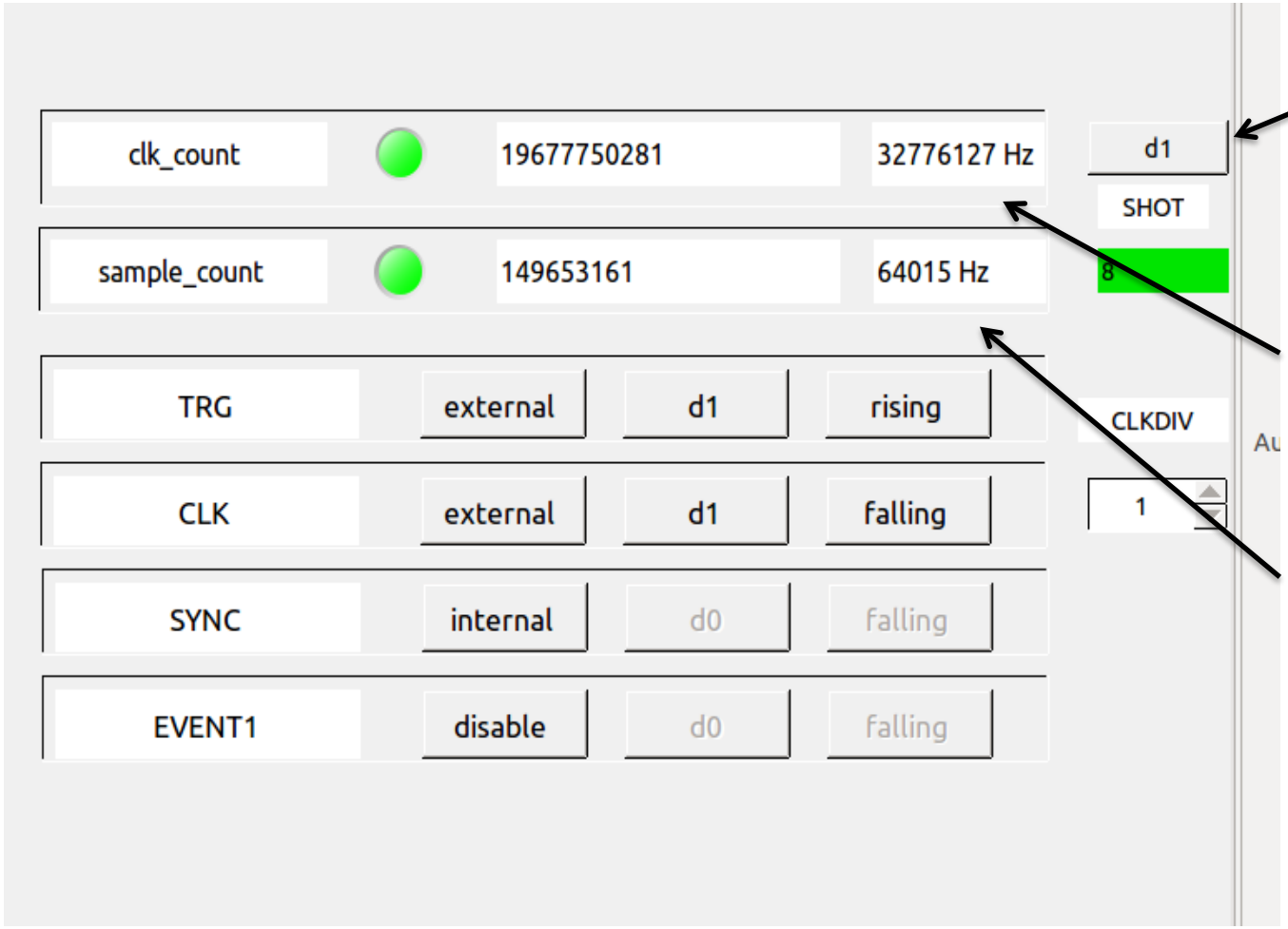
Conclusion: we have 64 channels in our data stream, 16 of those report zero Amplitudes.

Another confirmation:TTreeBinary Scan

```
Info in <TUnixSystem::ACLiC>: creating shared library /home/daq/n3He_DAQ/n3He_ACQ164/libNPDG/TBranchBinary_cc.so
*****************************************************************************************************************************************************
*    Row   *      d[0] *      d[1] *      d[2] *     d[12] *     d[16] *     d[19] *     d[32] *     d[33] *     d[34] *     d[44] *     d[48] *     d[51] *     d[63] *
*****************************************************************************************************************************************************
*        0 * -16737840 *    320801 *   -205534 *      -212 *      -208 *      -205 *   -349888 *    491841 *     50754 *      -180 *      -176 *      -173 *    -61089 *
*        1 * -16665187 *    322849 *   -202206 *      -212 *      -208 *      -205 *   -346560 *    489793 *     60482 *      -180 *      -176 *      -173 *    -58017 *
*        2 * -16591024 *    312865 *   -208350 *      -212 *      -208 *      -205 *   -348352 *    496193 *     50754 *      -180 *      -176 *      -173 *    -68513 *
*        3 * -16518089 *    318497 *   -213470 *      -212 *      -208 *      -205 *   -340672 *    497473 *     58434 *      -180 *      -176 *      -173 *    -55969 *
*        4 * -16443132 *    325153 *   -208094 *      -212 *      -208 *      -205 *   -343488 *    507713 *     51778 *      -180 *      -176 *      -173 *    -58529 *
*        5 * -16367459 *    320289 *   -208350 *      -212 *      -208 *      -205 *   -343488 *    496961 *     62274 *      -180 *      -176 *      -173 *    -56481 *
*        6 * -16291555 *    324641 *   -207326 *      -212 *      -208 *      -205 *   -348864 *    497729 *     57666 *      -180 *      -176 *      -173 *    -56737 *
*        7 * -16215600 *    321825 *   -202462 *      -212 *      -208 *      -205 *   -346816 *    501825 *     61250 *      -180 *      -176 *      -173 *    -47265 *
*        8 * -16138851 *    334625 *   -209118 *      -212 *      -208 *      -205 *   -351680 *    500289 *     51522 *      -180 *      -176 *      -173 *    -62113 *
*        9 * -16061283 *    327969 *   -202718 *      -212 *      -208 *      -205 *   -353216 *    493633 *     58178 *      -180 *      -176 *      -173 *    -62369 *
*       10 * -15983868 *    319521 *   -206302 *      -212 *      -208 *      -205 *   -349120 *    500033 *     46658 *      -180 *      -176 *      -173 *    -56737 *
*       11 * -15905814 *    324641 *   -208862 *      -212 *      -208 *      -205 *   -352448 *    502081 *     55874 *      -180 *      -176 *      -173 *    -63393 *
*       12 * -15827299 *    326945 *   -211934 *      -212 *      -208 *      -205 *   -355776 *    500545 *     60994 *      -180 *      -176 *      -173 *    -51361 *
*       13 * -15747862 *    326433 *   -212958 *      -212 *      -208 *      -205 *   -347072 *    490561 *     57922 *      -180 *      -176 *      -173 *    -62369 *
*       14 * -15667222 *    325921 *   -202206 *      -212 *      -208 *      -205 *   -357824 *    489281 *     55362 *      -180 *      -176 *      -173 *    -64929 *
*       15 * -15586172 *    326177 *   -198878 *      -212 *      -208 *      -205 *   -357056 *    493377 *     58178 *      -180 *      -176 *      -173 *    -67745 *
*       16 * -15505072 *    337953 *   -213470 *      -212 *      -208 *      -205 *   -346560 *    500033 *     50242 *      -180 *      -176 *      -173 *    -53153 *
*       17 * -15423280 *    328993 *   -200670 *      -212 *      -208 *      -205 *   -354752 *    503617 *     57666 *      -180 *      -176 *      -173 *    -55713 *
*       18 * -15340796 *    329505 *   -210910 *      -212 *      -208 *      -205 *   -359616 *    496449 *     47938 *      -180 *      -176 *      -173 *    -65697 *
*       19 * -15259312 *    338209 *   -203998 *      -212 *      -208 *      -205 *   -347328 *    491841 *     50498 *      -180 *      -176 *      -173 *    -60833 *
*       20 * -15175728 *    334625 *   -200926 *      -212 *      -208 *      -205 *   -353984 *    497217 *     46402 *      -180 *      -176 *      -173 *    -56737 *
*       21 * -15092707 *    335905 *   -193502 *      -212 *      -208 *      -205 *   -354240 *    488513 *     60226 *      -180 *      -176 *      -173 *    -60065 *
*       22 * -15008176 *    331297 *   -208350 *      -212 *      -208 *      -205 *   -361408 *    500033 *     57922 *      -180 *      -176 *      -173 *    -67745 *
*       23 * -14924899 *    332321 *   -209886 *      -212 *      -208 *      -205 *   -345024 *    494657 *     52034 *      -180 *      -176 *      -173 *    -70817 *
```

Some of the empty channels

CSS diagnostic view



Ports/modules:
d0-main/motherboard
d1/2- ACQ435 modules

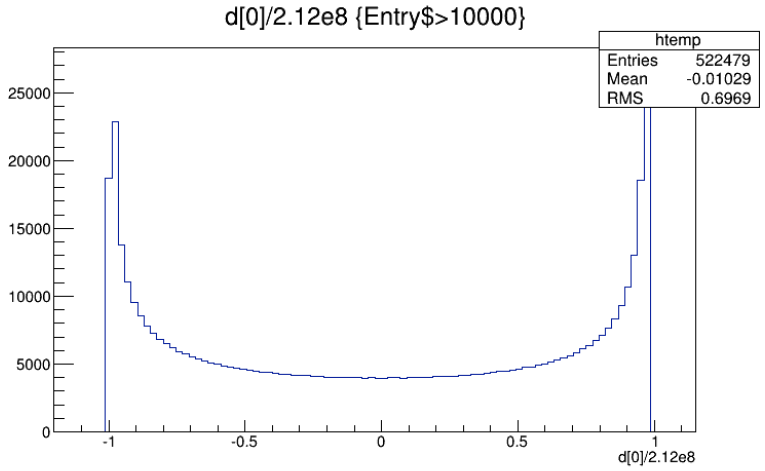
clock

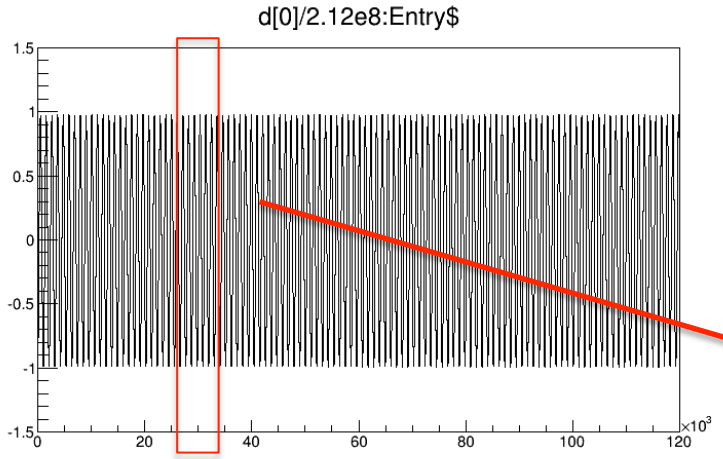
Actual sampling rate
64 KHz on picture!!!
for “hi_res_mode=1”

Maximum rate is not
51kHz but 64kHz!

At low res mode it is inde
128kHz!

Verification that CSS rate is the same actual sampling rate



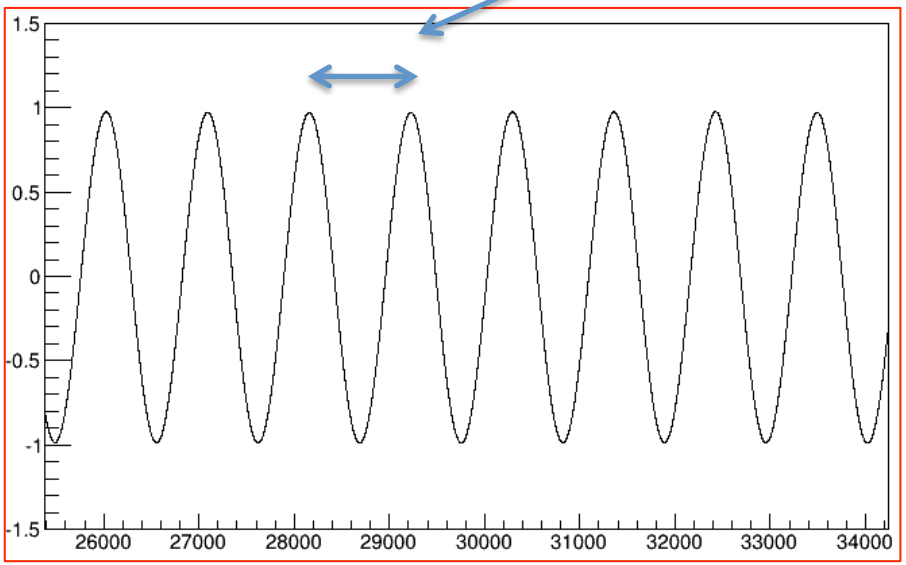


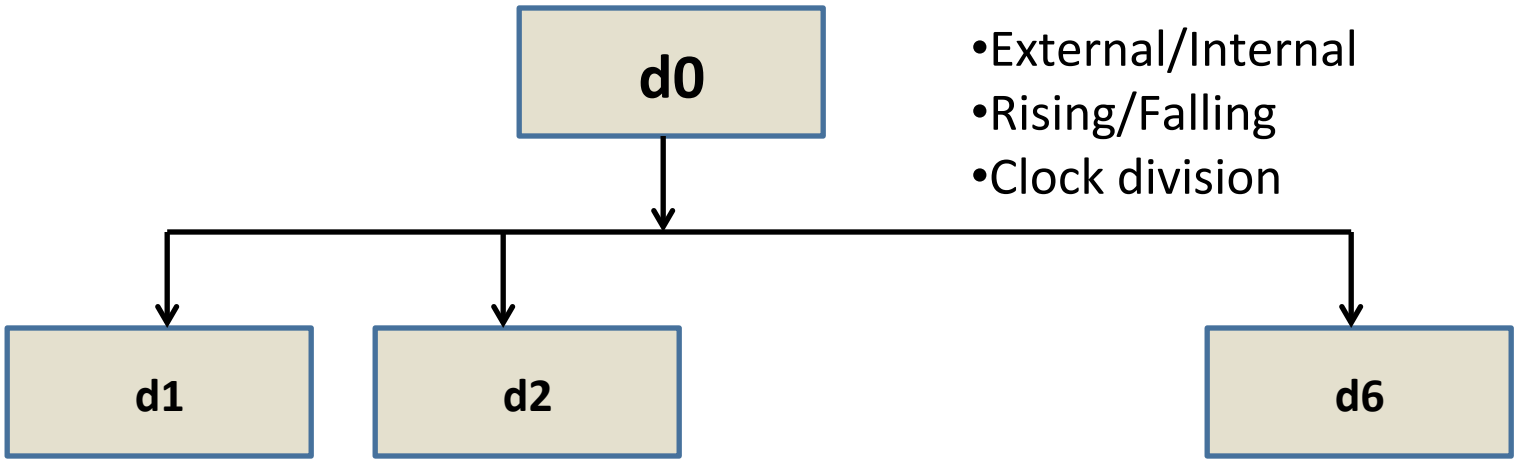
Used 60 Hz input sinusoidal signal

Shown data is indeed in 64 kHz sampling rate and hi_res mode

Calculated approximately number of bins within each period and verified actual sampling rate

CSS and “this” sampling rates are identical



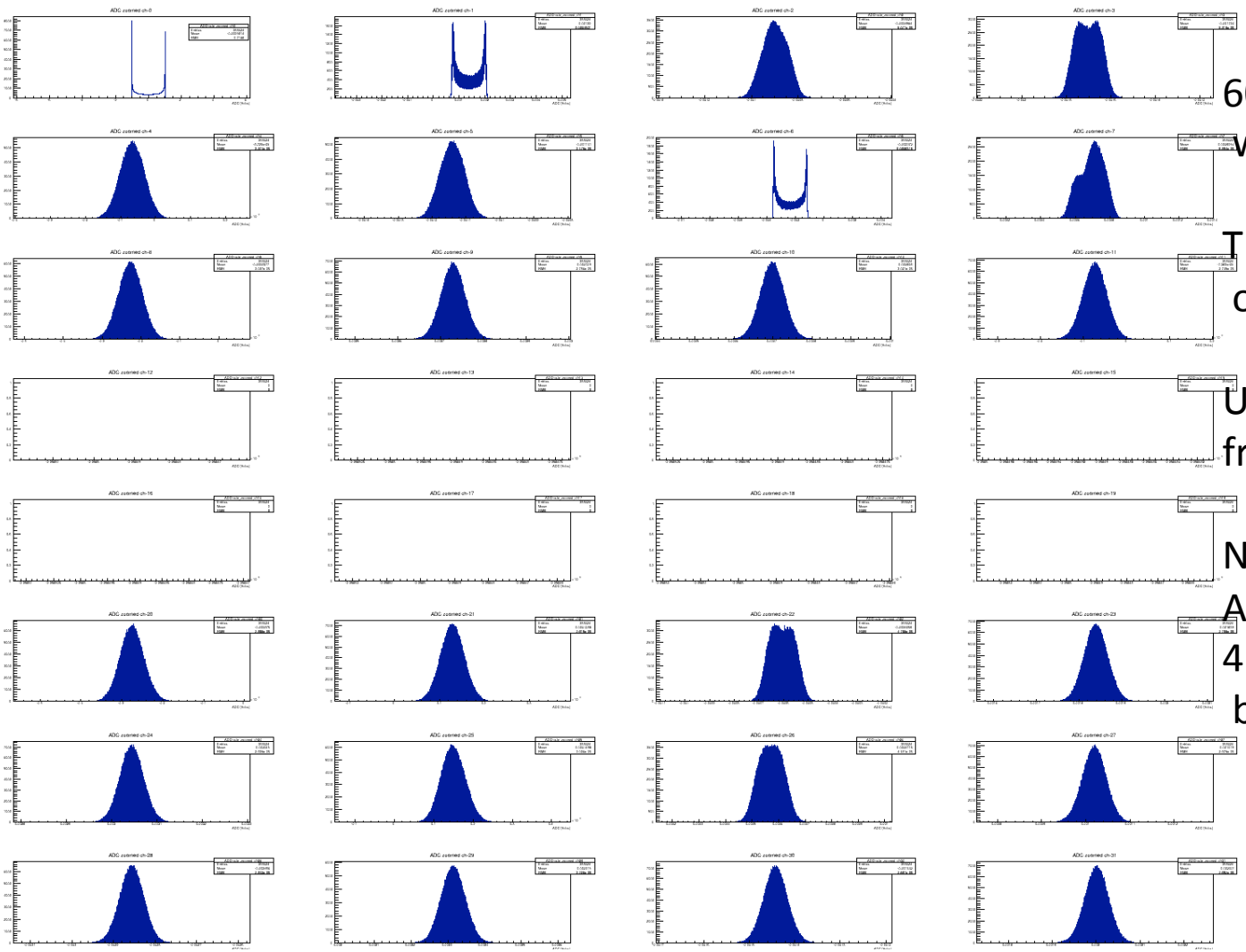


- External/Internal
- Rising/Falling
- Clock division

Command at d0: “mc_clk value1 value2”

Changing Sample Rate			
Value-1	Value-2	Sample Rate	d1/d2 Clk
64000	64000	64KHz	32MHz
64000	49000	49KHz	25MHz
32000	16000	32KHz	16MHz
32000	8000	16KHz	8MHz
10000	10000	64KHz	32MHz
8000	8000	18KHz	9.3MHz
32000	32000	Invalid	Invalid

Cross talk issue?!



60 Hz signal was input that went to channel-1

There is some structure in other channels

Used HDCI to VHDCI cable from Scotland

Need to verify this as soon As Diane sends us our own 4m cables with pre-amp board