

DAQ status update

Kabir, Irakli, (with participation from
Vince)

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

```

00000000 0920 fff7 7c21 0004 b622 fffc a123 fffa
00000010 a824 ffff 9325 fffc d926 fff7 8a27 0002
00000020 9e28 ffff 5929 0009 072a 0002 cd2b ffff
00000030 ff2c ffff ff2d ffff ff2e ffff ff2f ffff
00000040 ff30 ffff ff31 ffff ff32 ffff ff33 ffff
00000050 ca34 fffe 5535 0000 3636 fffe 1037 0006
00000060 8a38 0009 ef39 0000 ba3a 0001 543b 0003
00000070 1d3c fff6 7b3d 0007 8e3e fffb 823f 0006
00000080 8140 fffa d341 0007 ad42 0000 5143 fffe
00000090 4444 fff6 6d45 ffff cf46 fffd 5647 0008
000000a0 8948 fff3 5849 0008 4d4a fffb 9e4b ffef
000000b0 ff4c ffff ff4d ffff ff4e ffff ff4f ffff
000000c0 ff50 ffff ff51 ffff ff52 ffff ff53 ffff
000000d0 2054 fff7 2055 0006 2356 ffff 4357 000d
000000e0 6f58 fff8 1659 ffff 1d5a fffb 945b 0004
000000f0 6c5c fff8 335d 0003 aa5e 0000 045f ffff
-----
00001000 f920 fff6 4321 0004 b622 fffc 7823 fffa
00001010 7c24 ffff 5a25 fffc e026 fff7 8c27 0002
00001020 5628 ffff 3f29 0009 1d2a 0002 c32b ffff
00001030 ff2c ffff ff2d ffff ff2e ffff ff2f ffff
00001040 ff30 ffff ff31 ffff ff32 ffff ff33 ffff
00001050 ff34 fffe 5e35 0000 2536 fffe 1a37 0006
00001060 6838 0009 f639 0000 8f3a 0001 6a3b 0003
00001070 693c fff6 8f3d 0007 9e3e fffb 933f 0006
00001080 7a40 fffa 8741 0007 ab42 0000 4743 fffe
00001090 3744 fff6 8445 ffff d646 fffd 6a47 0008
000010a0 6848 fff3 4549 0008 4e4a fffb 8d4b ffef
000010b0 ff4c ffff ff4d ffff ff4e ffff ff4f ffff
000010c0 ff50 ffff ff51 ffff ff52 ffff ff53 ffff
000010d0 2954 fff7 6055 0006 2e56 ffff 3d57 000d
000010e0 6b58 fff8 0c59 ffff 155a fffb 7c5b 0004
  
```

New event

Channel ID

- 4 8-character words per line
- 16 lines per event
- Amplitude for channels in rows 4-5 & 11-12 are “ffff” 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

clk_count		19677750281	32776127 Hz
sample_count		149653161	64015 Hz
TRG	external	d1	rising
CLK	external	d1	falling
SYNC	internal	d0	falling
EVENT1	disable	d0	falling

Ports/modules: d1, SHOT, CLKDIV, 1

Ports/modules:

d0-main/motherboard
d1/2- ACQ435 modules

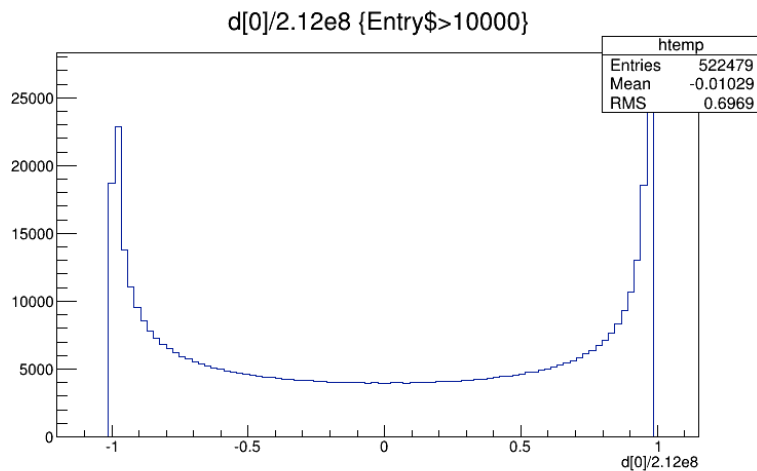
clock

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 indi
128kHz!

Verification that CSS rate is the same actual sampling rate

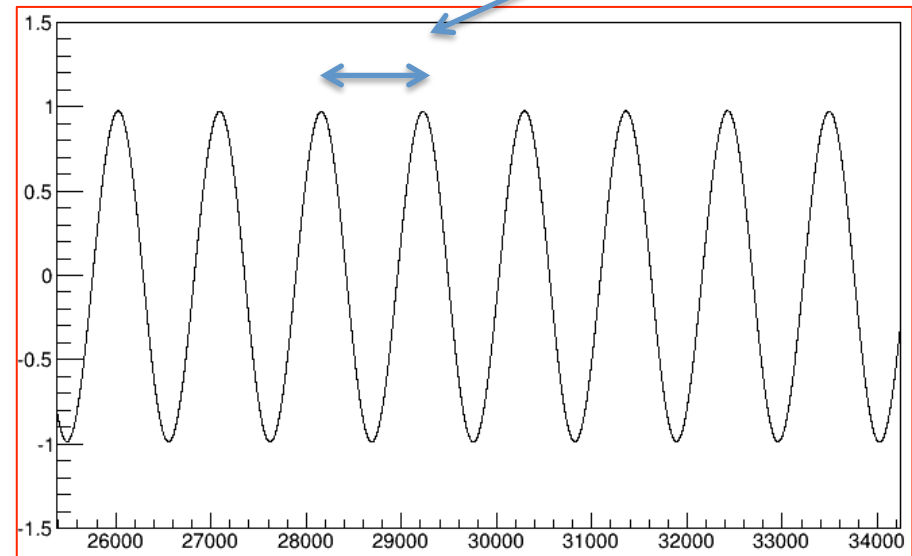
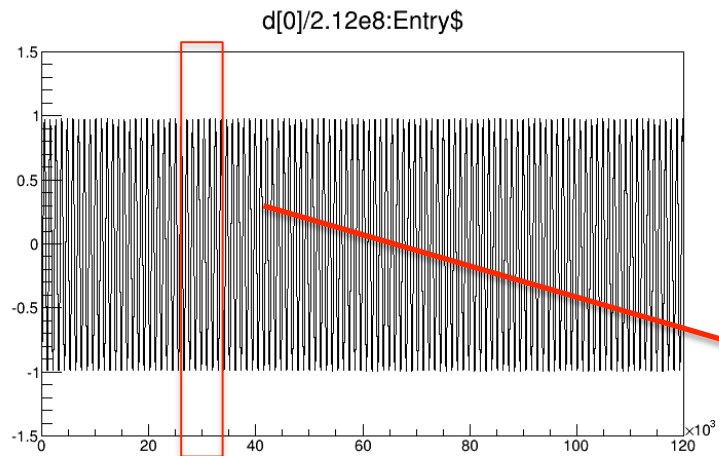


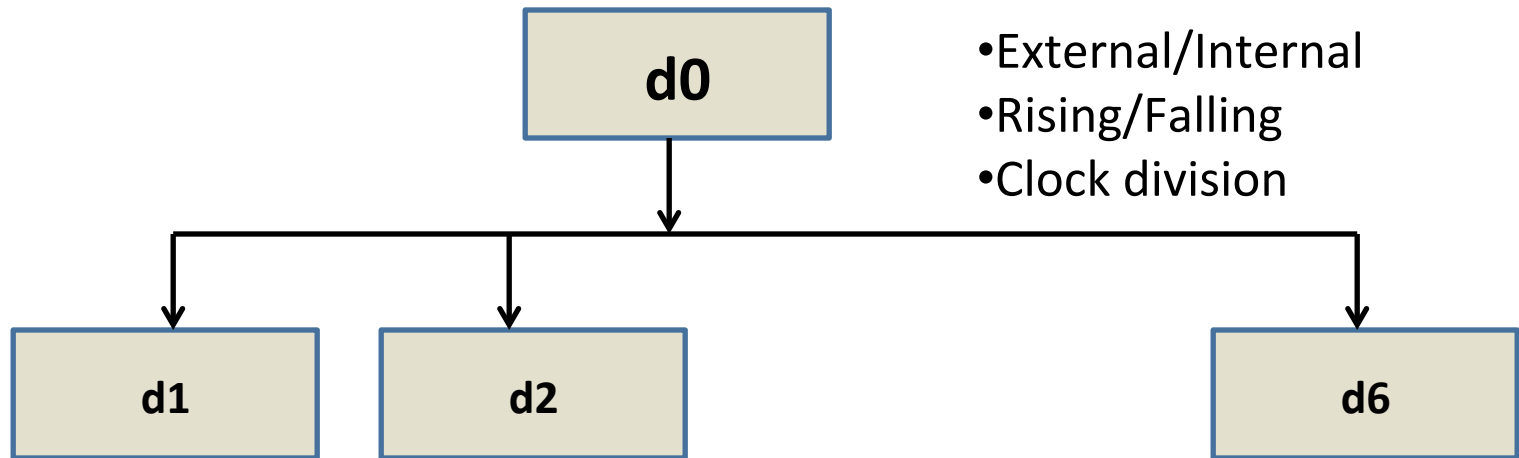
Used 60 Hz input sinusoidal signal

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

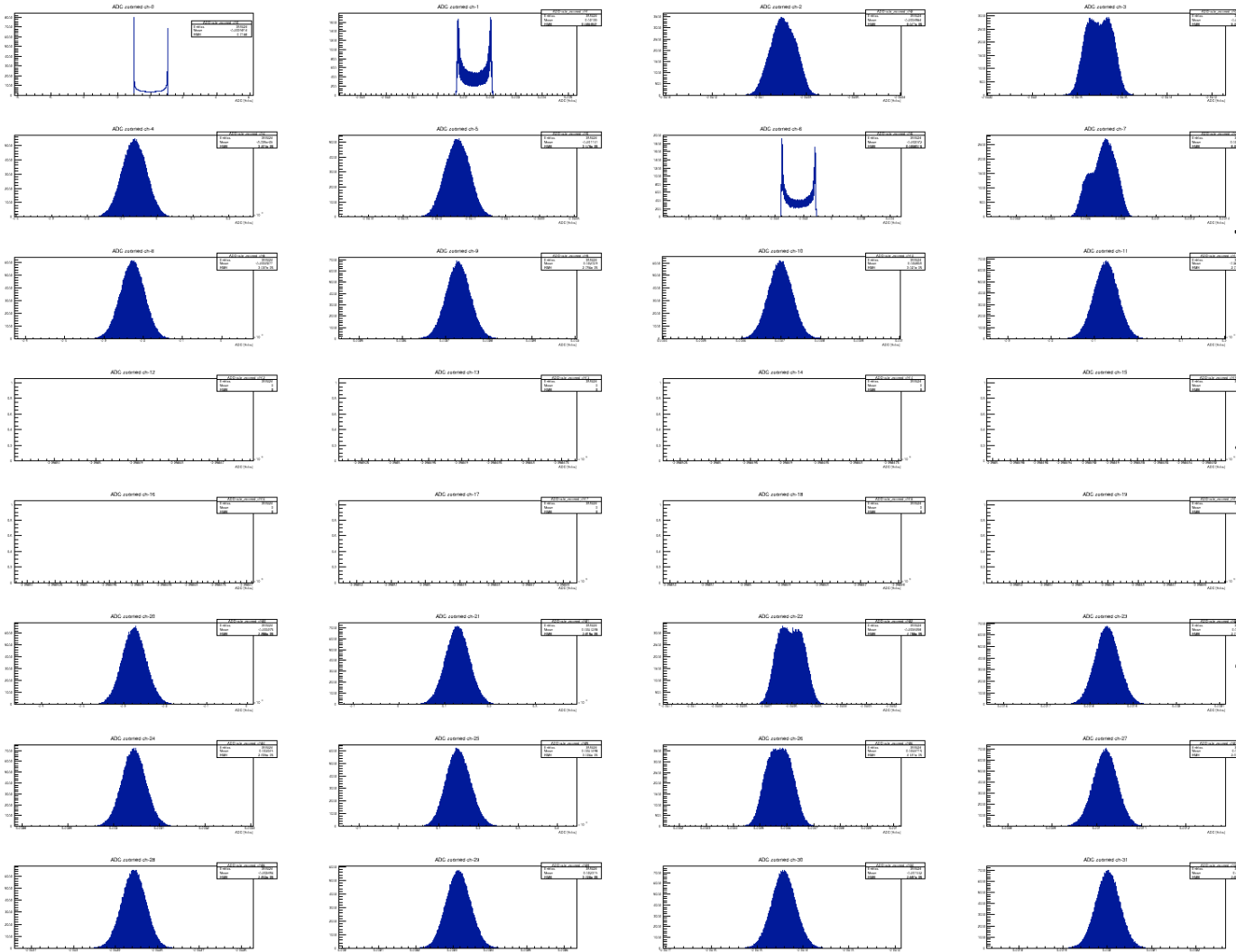




Command at d0: “mc_clk value1 value2”

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