pn Timing mode:

- what causes the brighter line?

Eckhard Kendziorra, Marcus Kirsch
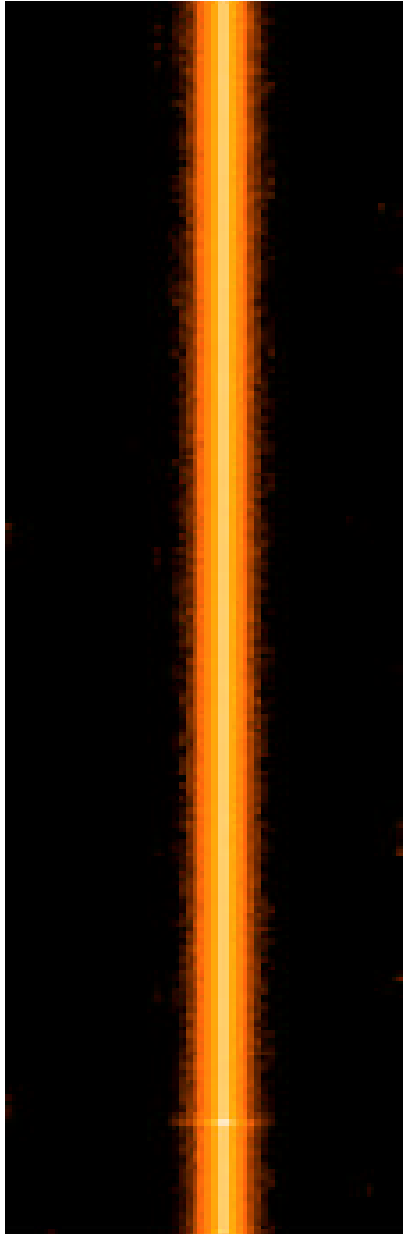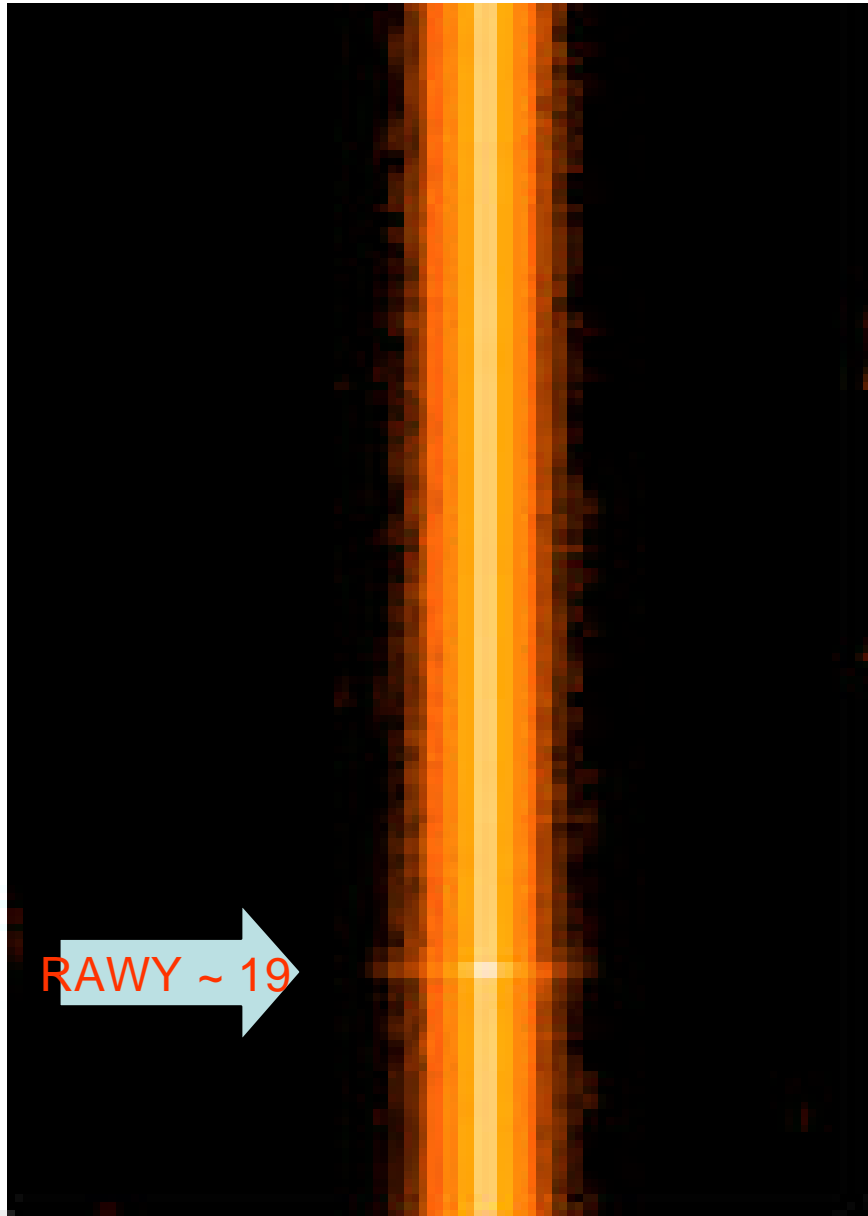01.02.2005

image of point source
in RAWX, RAWY

bright line, why?

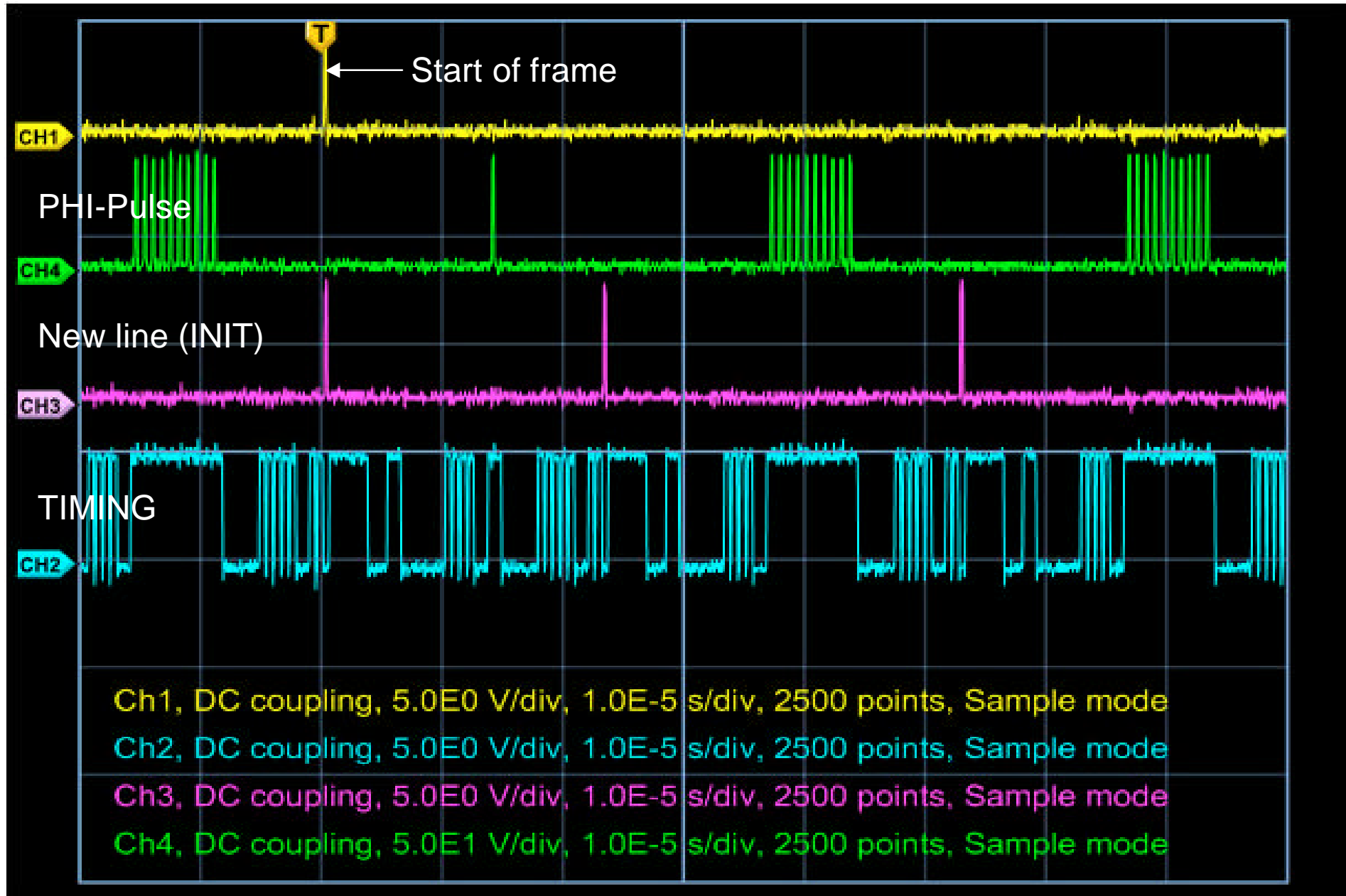Zoom of feature

? Shows up only
  for bright point
  sources

? Problem in
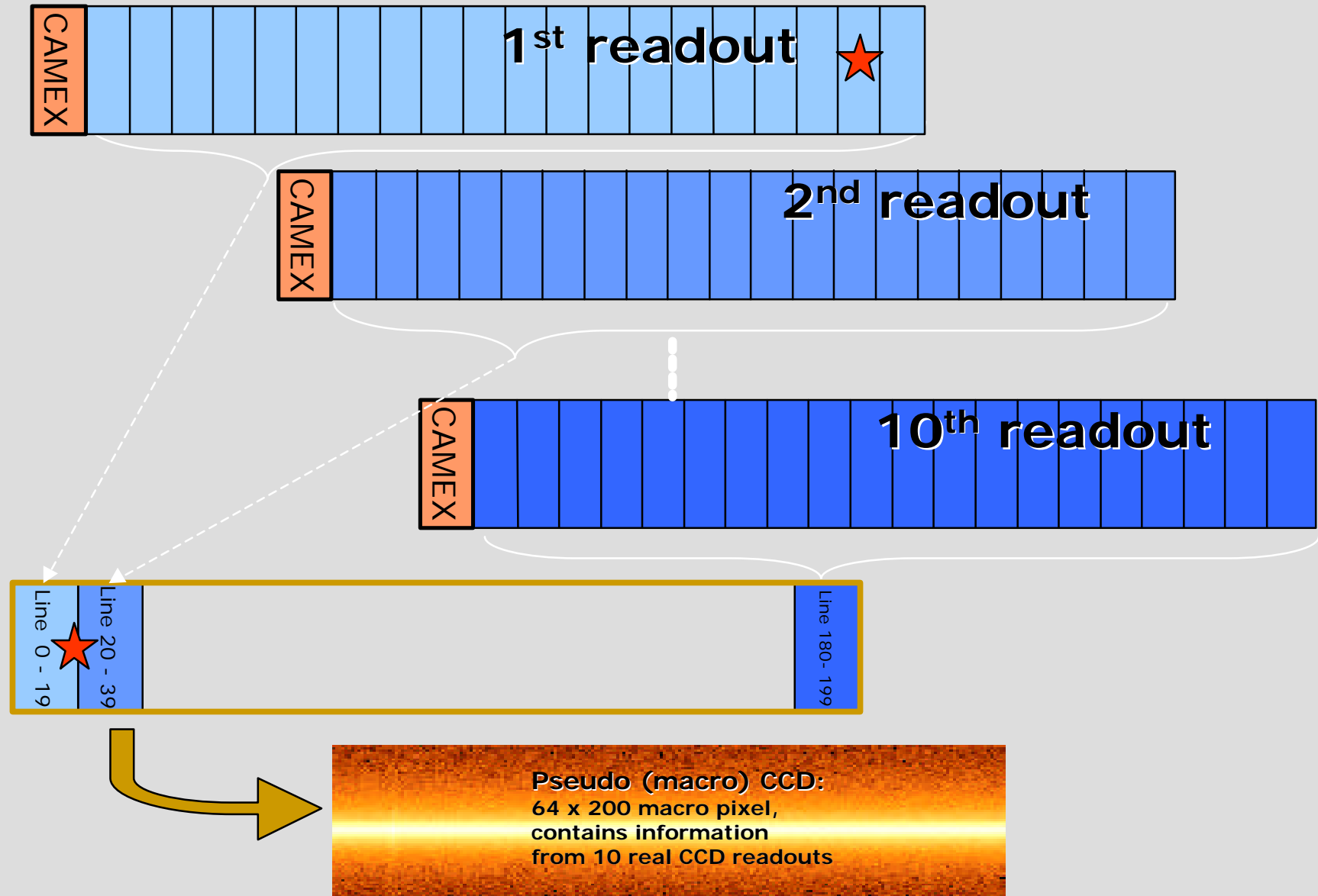- offset map? no
- common mode? no
- integration time? yes

Timing sequence measured with engineering model at IAAT

?QM boards of master sequencer, SECOM and CPU used

? on board (PROM) S/W for EPEA V5.14
- but no changes in mode set-up since

?command sequence to set up Timing mode copied from flight procedures

? only one CCD (200 x 64 pixel)
- same as in flight

Screen shot from oscilloscope

CCD readout in Timing Mode (M.K.)

1st readout

2nd readout

10th readout

CAMEX

Line 0 - 19
Line 20 - 39
Line 180 - 199

Pseudo (macro) CCD:
64 x 200 macro pixel,
contains information
from 10 real CCD readouts

Result of hiccup

? First „macroline" contains only ONE CCD line,
   set to BAD anyhow

? „Integration time" during readout of second macroline
   is (29 + 23) µs

➡ integration time for point source at RAWY = 189
   is factor 1.8 longer than for all other macrolines

➡ macroline no. 19 gets factor 1.8 higher flux from
point source

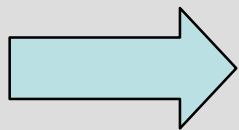# Corrective actions

None,

?error cannot be corrected on board,

?no need for S/W modification on ground

Effect on science

None, as long as integration time for spectra and light curves = 5.9 ms

Possibly for pulse phase spectroscopy with bin sizes below 5.9 ms, but only if pulse period = beat frequency of frame time

- leave as is,
- mention feature in Users Hand Book

How the back contact voltage is monitored

HV converter → to CCD

280 kO

280 kO

5.6 kO

1 mV$_{ADC}$ ~ 1 V$_{CCD}$

8 bit ADC

EPCE average of 4 readings