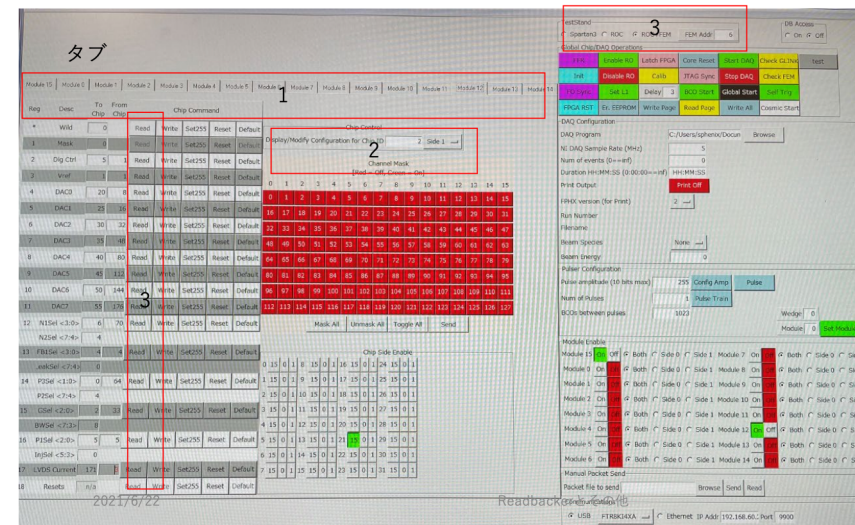# ReadBacker Test @ RIKEN

RIKEN/RBRC

Itaru Nakagawa

Readbacker Test in RIKEN Test Bench

- Tested Takashi's Readbacker in RIKEN Test bench.
- Installed exact same programs as NWU
  - fem_ib_top.bit
  - fem_ib_Untitle.mcs
  - nevis_gui_for_calib3.py
  - fphxtb.py
- Followed exactly Takashi's instruction

ReadBackerの使い方

1. ROCのポートに対応するModule#のタブを選ぶ
2. 設定したいチップとサイドを選ぶ
3. FEMのIDを選ぶ(基板上のロータリースイッチ)
4. Readボタンを押す

Takashi's Instruction

Readbacker Test in RIKEN Test Bench

- Readback values are somehow not exact.
- Looks like readback data is shifted by 1 bit
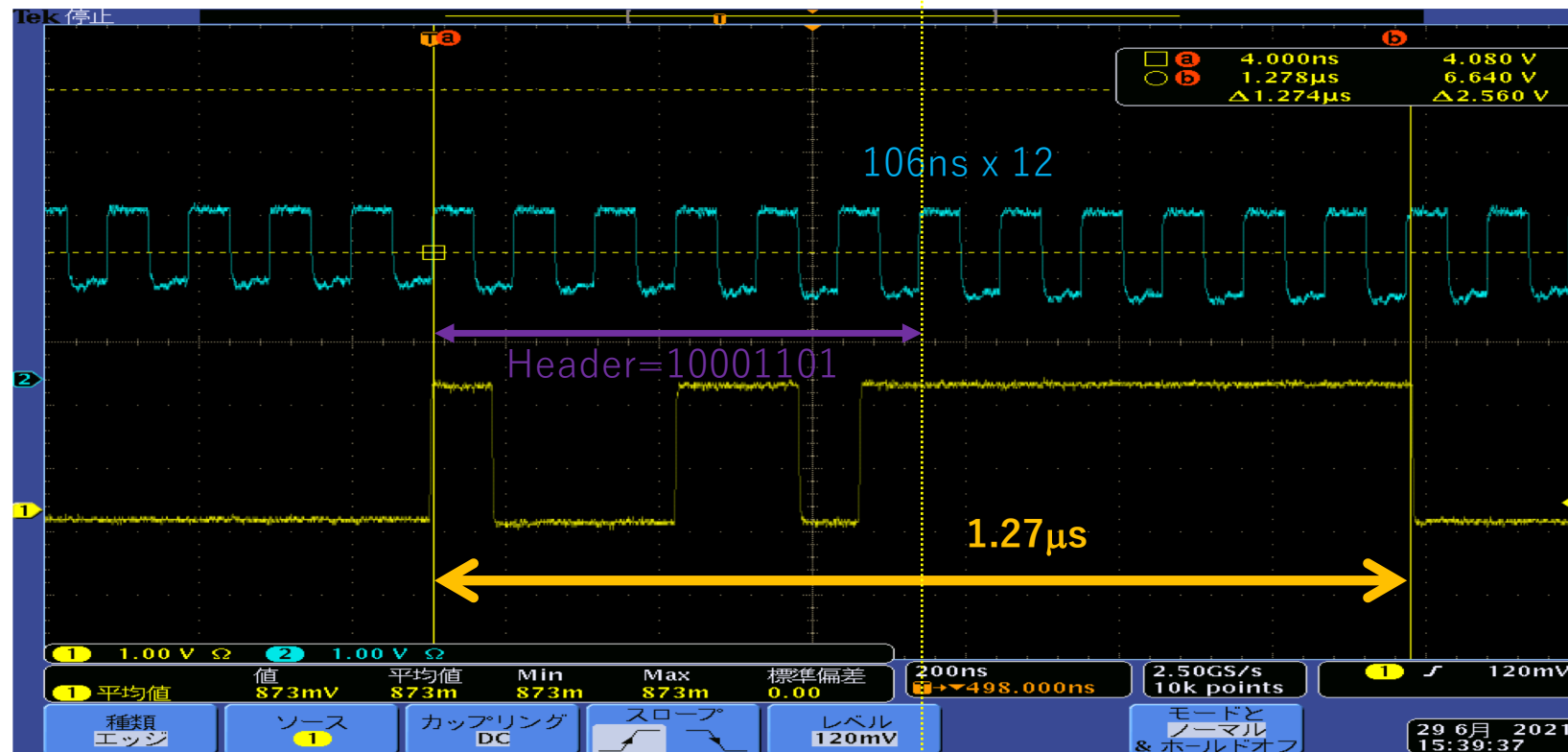- This response is common to all parameters

LVDS Current Readback

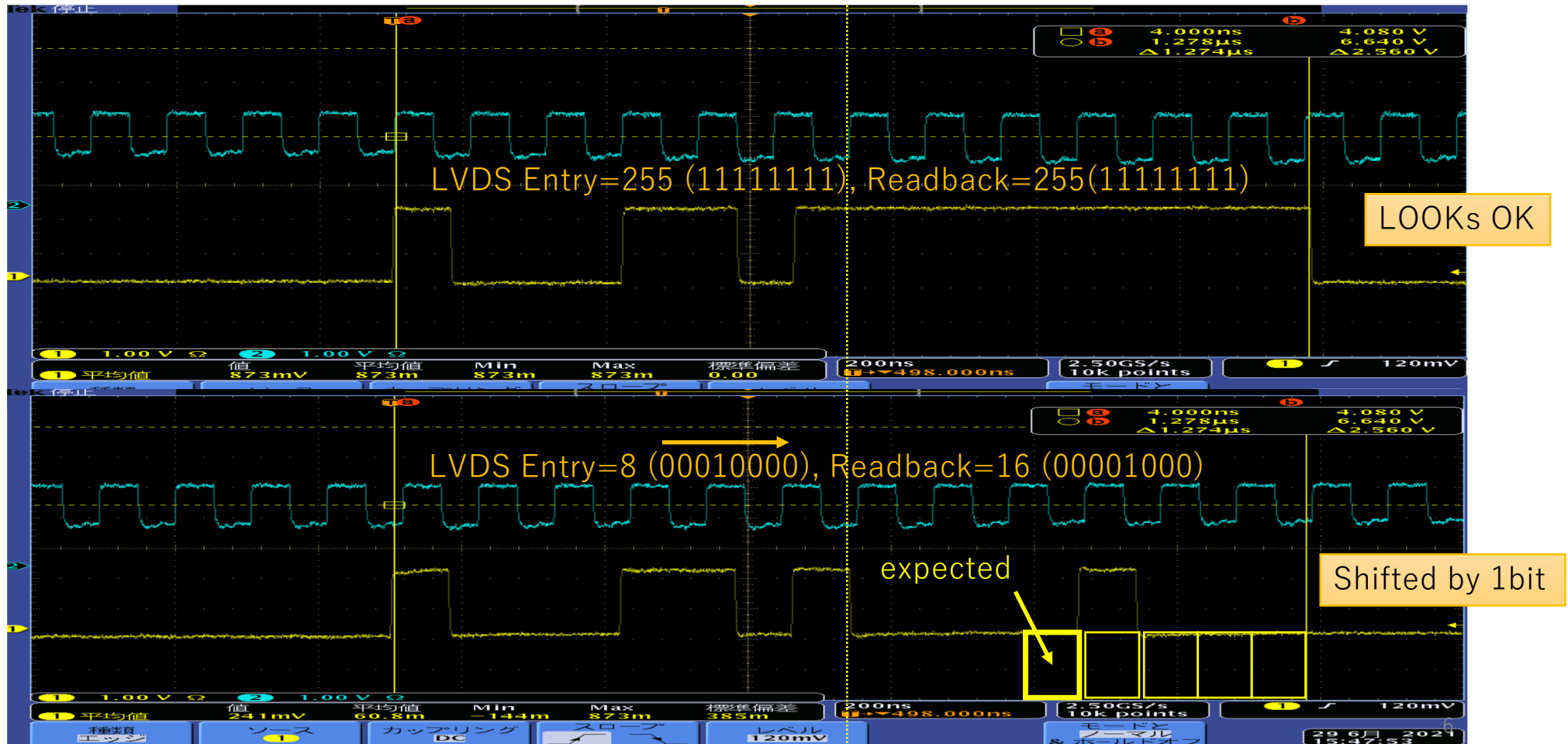| Write	Readback
0	0
1	3
2	4
4	8
8	16
16	32
32	64
64	128
65	131
126	255
127	255
128	0
129	3

DI_SC_VME Observed Pattern

LVDS Entry=255, Readback=255

1.27μs/16bit ~ 80ns/bit. Is this what expect?

DI_SC_VME Observed Pattern

LVDS Entry=255 (11111111), Readback=255(11111111)

LOOKs OK

LVDS Entry=8 (00010000), Readback=16 (00001000)

expected

Shifted by 1bit

DI_SC_VME Observed Pattern

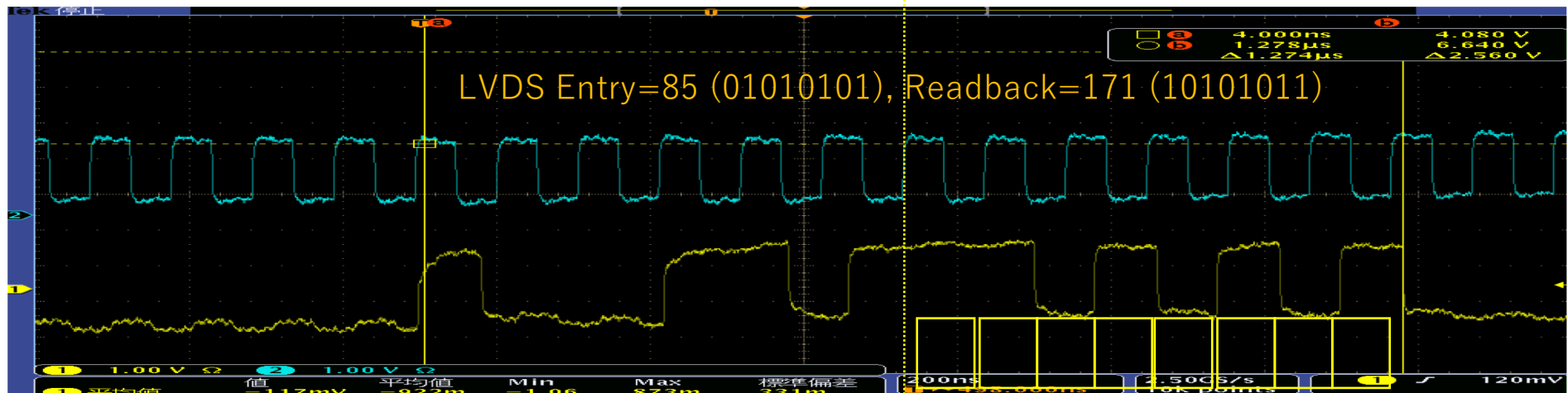|	Decimal	Binary
Write	1	10000000
Readback	3	11000000
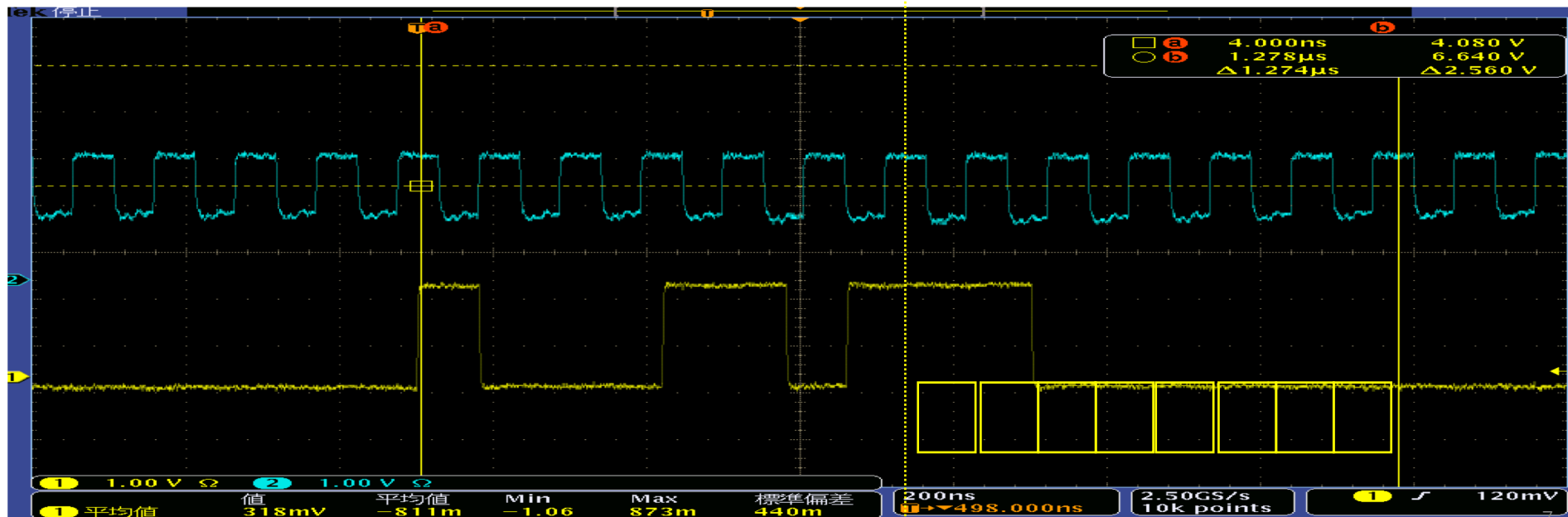
Data pattern is consistent with readback value appears in GUI

DI_SC_VME Observed Pattern

	Decimal	Binary
Write	85	10101010
Readback	171	11010101

Data pattern is consistent with readback value appears in GUI

Conclusion

- Checked Bit Patterns of Readback Data in FEM-IB.
- The pattern appears to be consistent with the value appears in GUI.
- The bit shift seems to be happening even upstream of the readout chain.
- Will investigate upstream.