

ReadBacker Test @ RIKEN

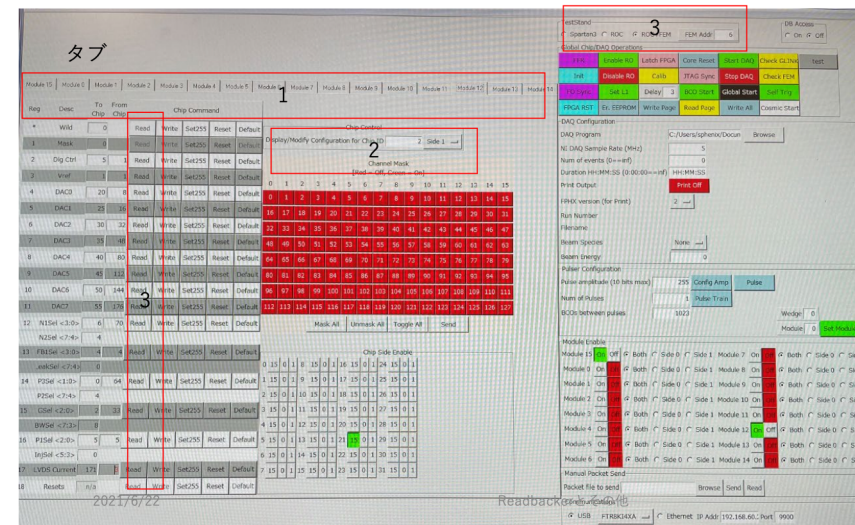
RIKEN/RBRC

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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

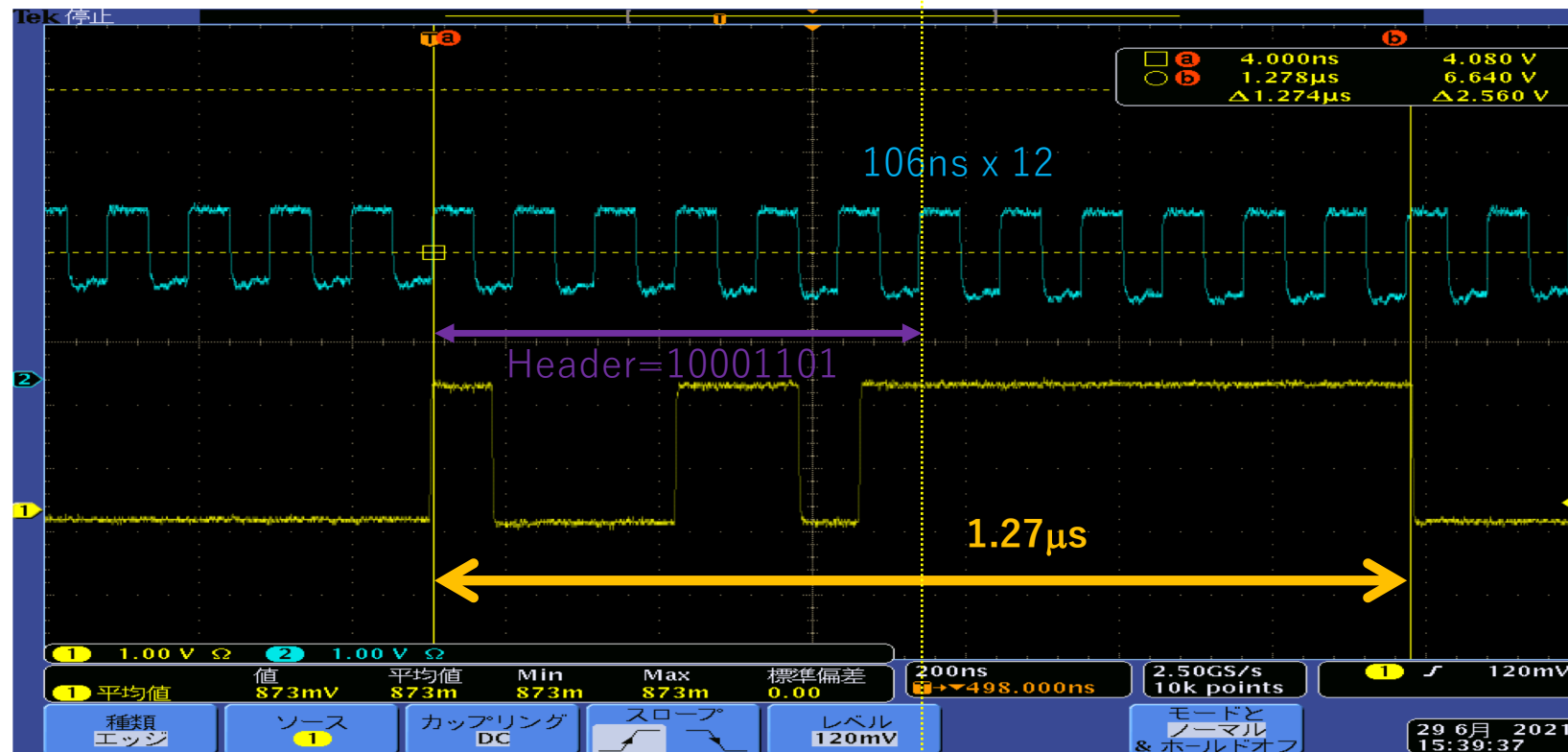
Reg	Desc	To Chip	From Chip	Chip Command					Display/Modify Configur
				Read	Write	Set255	Reset	Default	
*	Wild	0		Read	Write	Set255	Reset	Default	
1	Mask	0		Read	Write	Set255	Reset	Default	
2	Dig Ctrl	5	15	Read	Write	Set255	Reset	Default	
3	Vref	1		Read	Write	Set255	Reset	Default	0 1 2 3 4
4	DAC0	8	16	Read	Write	Set255	Reset	Default	0 1 2 3 4
5	DAC1	16	32	Read	Write	Set255	Reset	Default	16 17 18 19 20
6	DAC2	30	60	Read	Write	Set255	Reset	Default	32 33 34 35 36
7	DAC3	35	71	Read	Write	Set255	Reset	Default	48 49 50 51 52
8	DAC4	40	80	Read	Write	Set255	Reset	Default	64 65 66 67 68
9	DAC5	45	91	Read	Write	Set255	Reset	Default	80 81 82 83 84
10	DAC6	50	100	Read	Write	Set255	Reset	Default	96 97 98 99 100
11	DAC7	55	111	Read	Write	Set255	Reset	Default	112 113 114 115 116
12	N1Sel <3:0>	6		Read	Write	Set255	Reset	Default	Mask All
	N2Sel <7:4>	4							

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

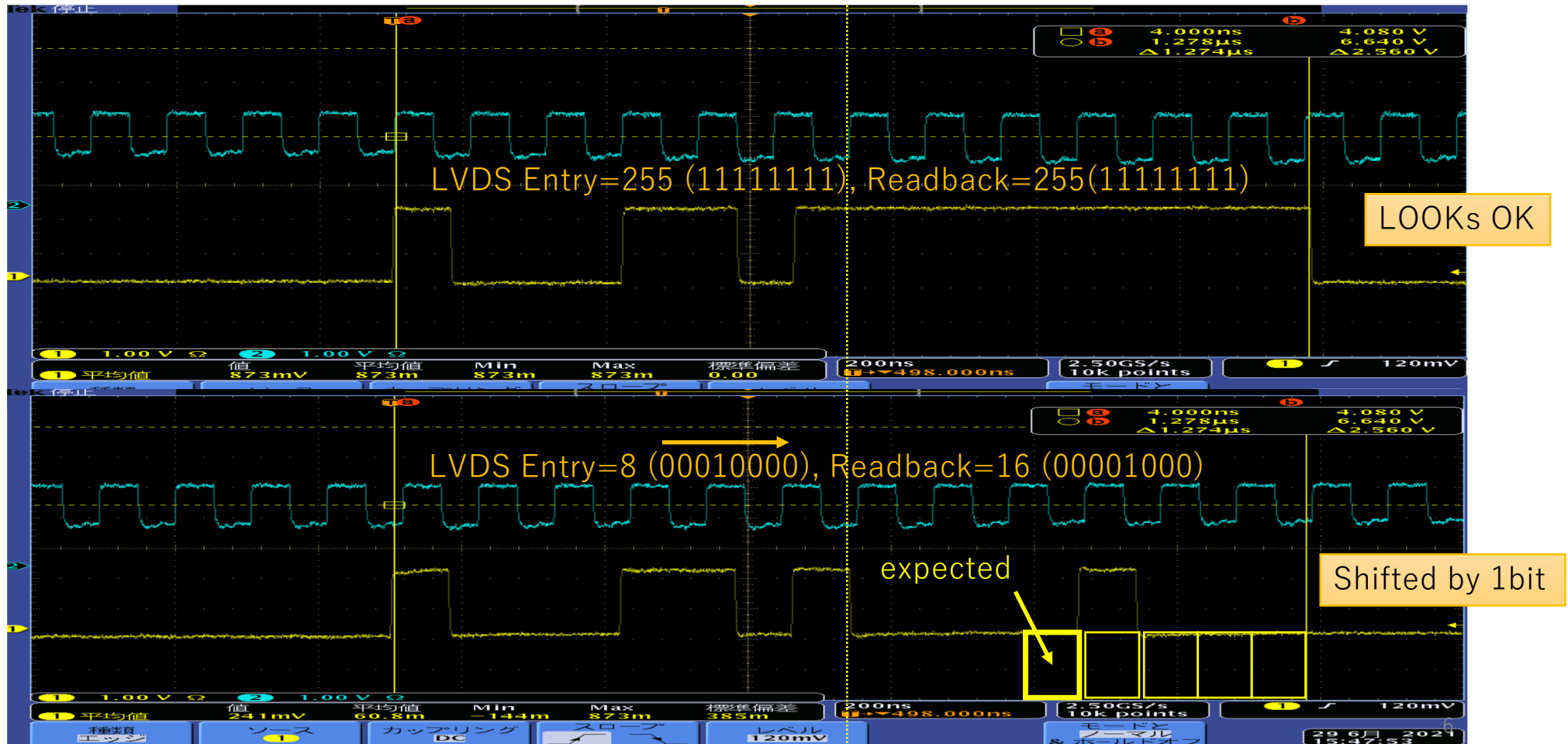
DI_SC_VME Observed Pattern

LVDS Entry=255, Readback=255



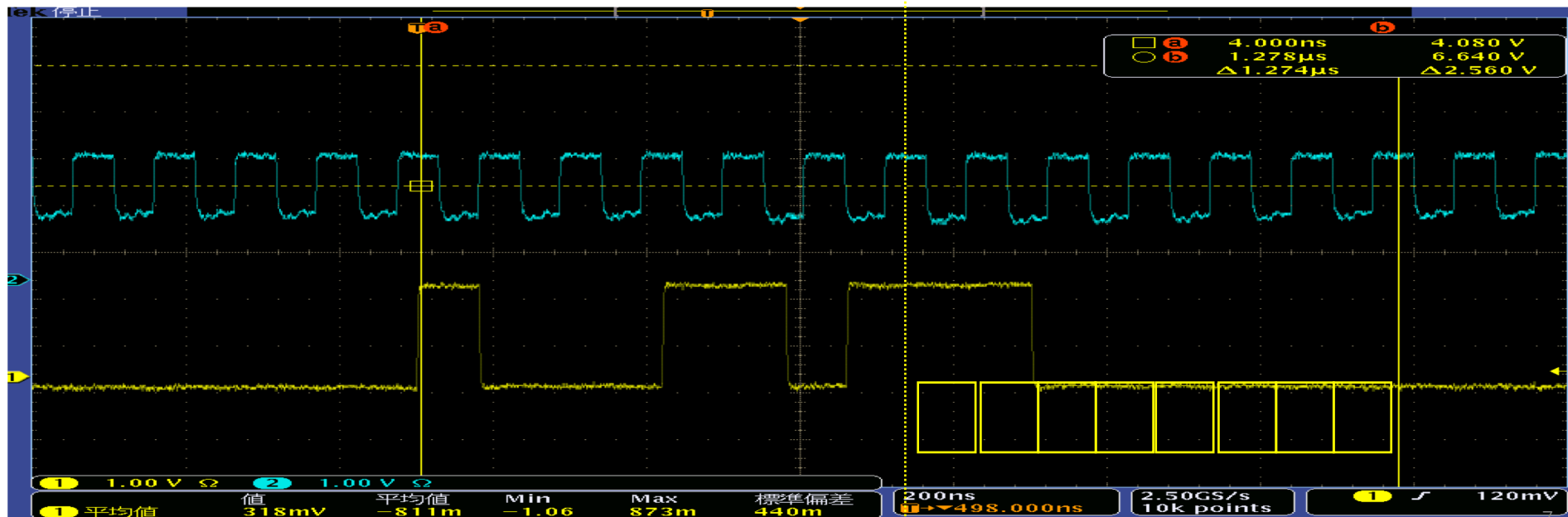
1.27μs/16bit ~ 80ns/bit. Is this what expect?

DI_SC_VME Observed Pattern



DI_SC_VME Observed Pattern

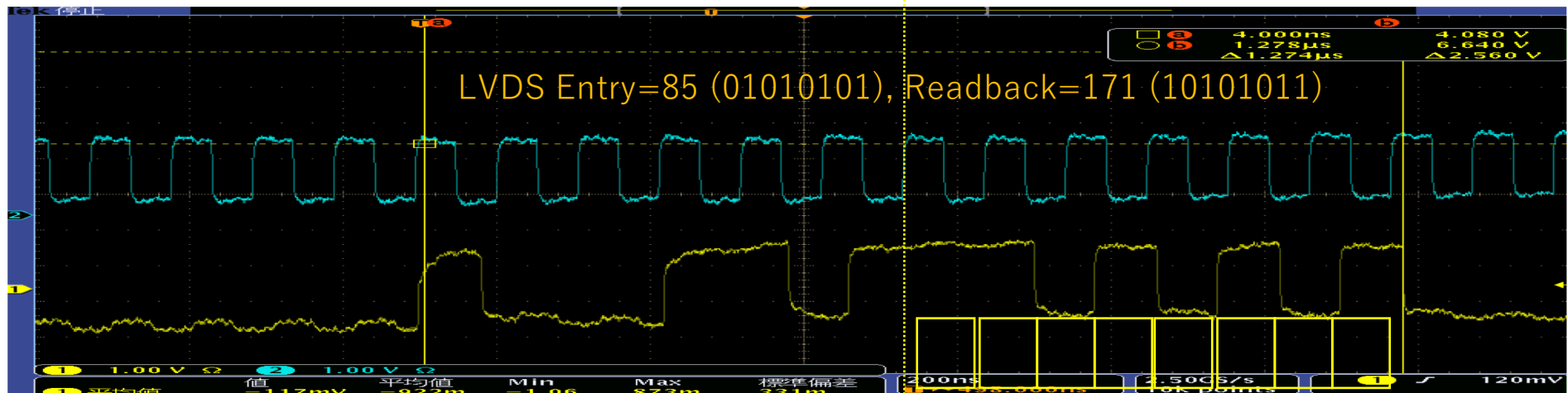
	Decimal	Binary
Write	1	10000000
Readback	3	11000000



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.