

Updates on HRPPD #25 activities

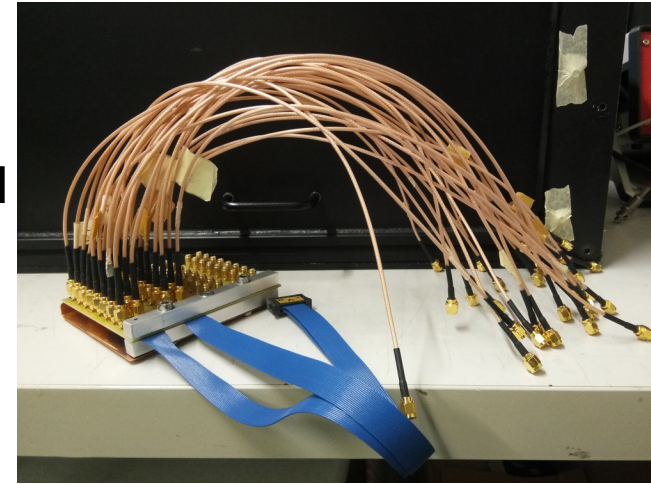
Signal from single pads

Chandra, Fulvio, Jinky
25/03/2025

Outline

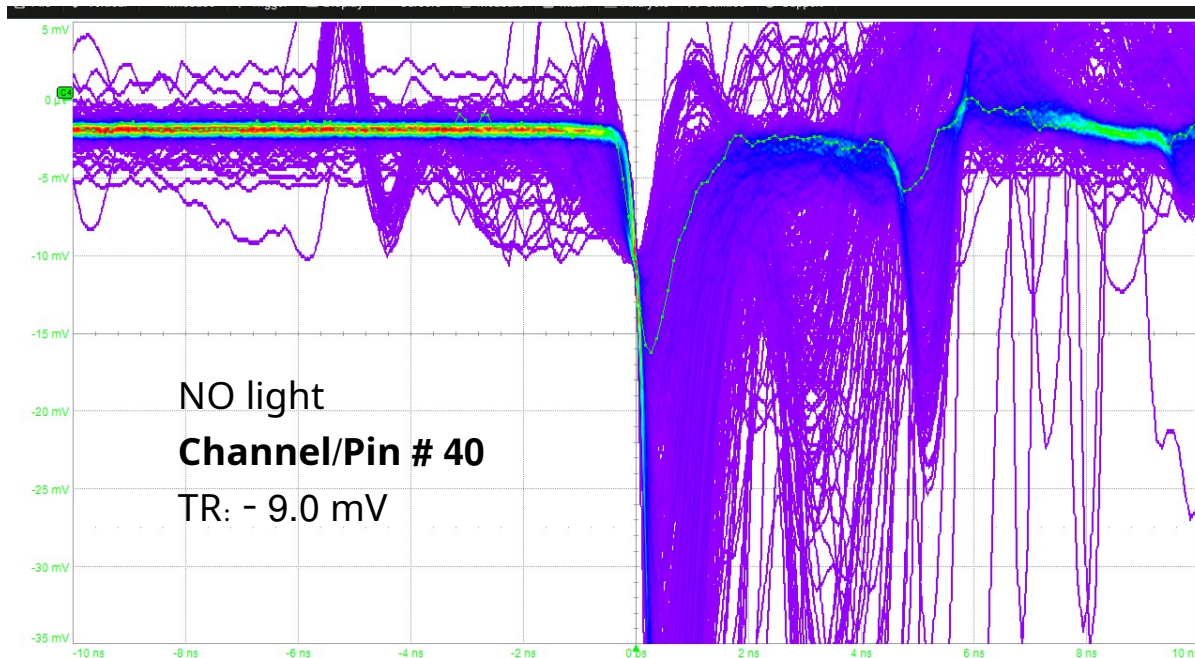
- Signals from single pads – Without light
- Signals from single pads – With light

- Looking at the **signals after mechanical contacts improved**
 - Micro-coax flat cables mounted on bread board is used
 - Usual corner with protection card and modified hole



First dark signal from single pad

Reading pads from usual corner: μ -coax plugged in to 32 pins; the other 32 pins are grounded using the 'red' PCB



Configuration:

- **Robust grounding on backplane – provided**
- Anode HV pin terminated – 0Ω
- 15 Grounding caps plugged in
- HV bias: -200_-700_-200_-700_-30V

Rise time: ~ 0.6 ns

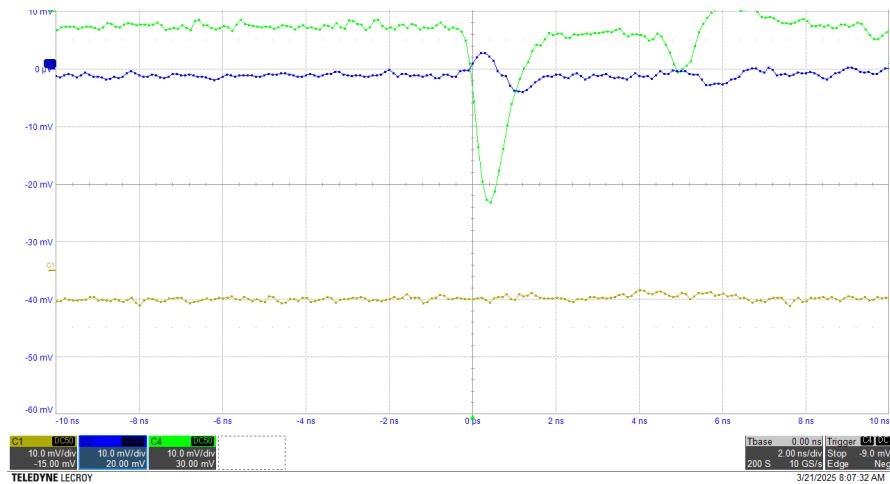
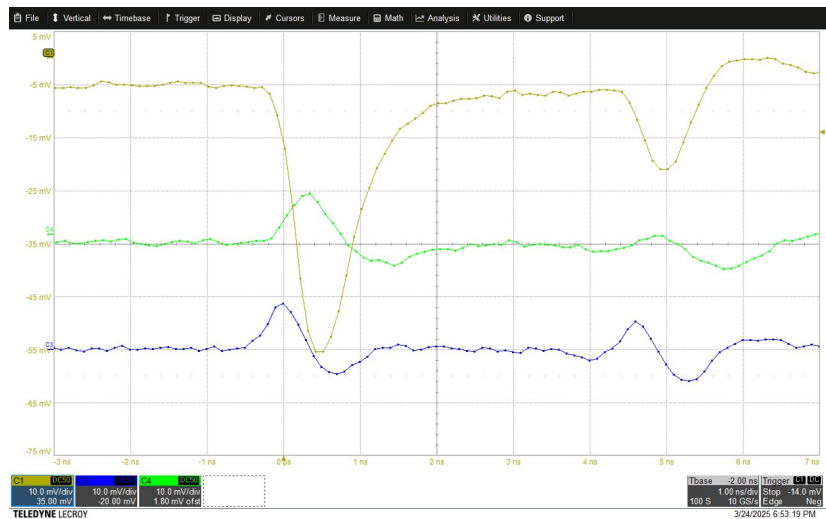
Fall time: ~ 1.6 ns

Dark Count Rates (different Pads):
 $\sim 20 - 50$ Hz (Threshold -7 mV)



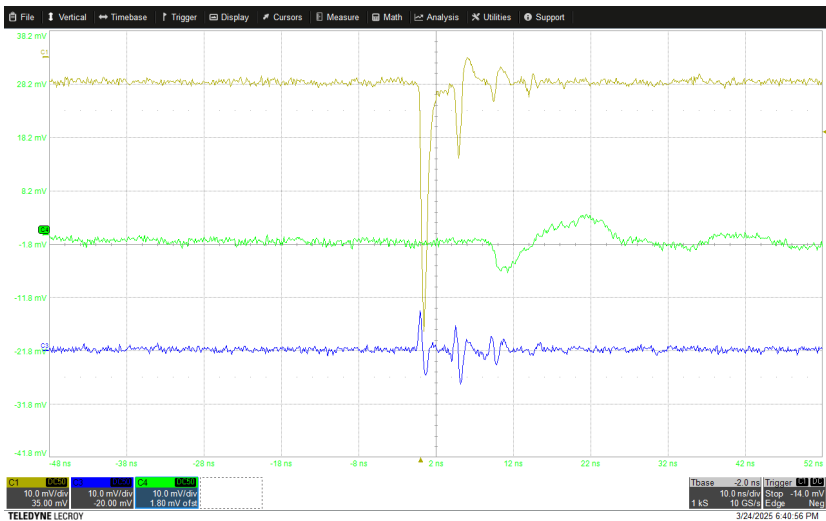
Tbase	0.00 ns	Trigger	C4 DC
	2.00 ns/div	Stop	-9.00 mV
200 S	10 GS/s	Edge	Neg

Dark Signal present on one pad and induce in others

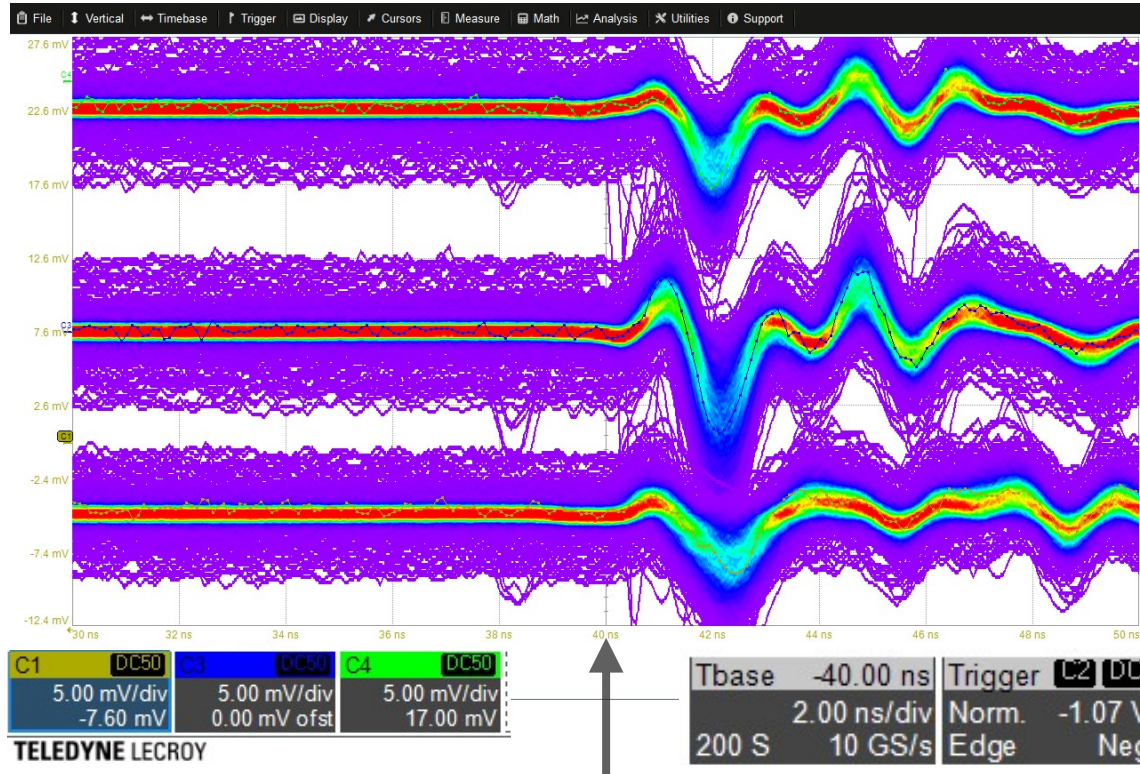


Different single channels

Triggering (at ~ -14 mV) on one channel



Light signals from single pads



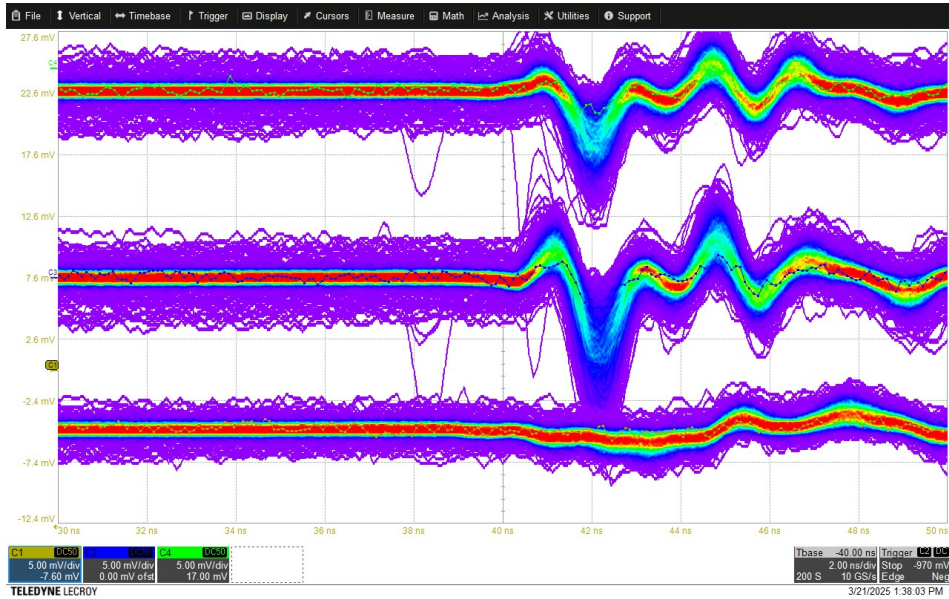
Ch #14, Ch # 10, Ch # 12

40 ns

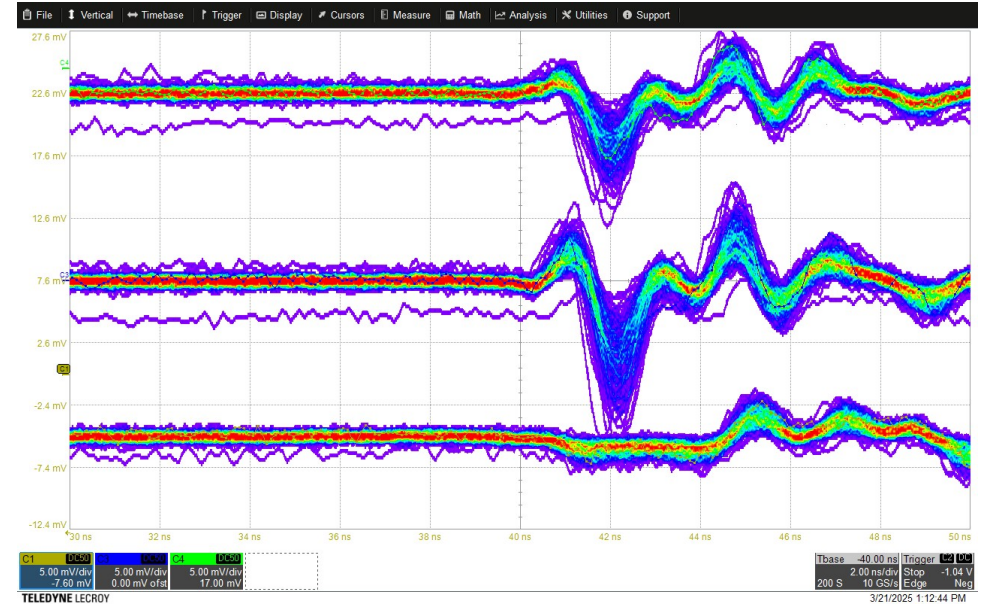
Configuration:

- **Robust grounding on backplane – provided**
- Anode HV pin terminated – 0Ω
- 15 Grounding caps plugged in
- HV bias: -200_-700_-200_-700_-30V
- Triggering on Laser sync pulse ($1.2 V_{\text{RMS}}$, 600.0 Hz)
Int. 2.0
- Appears at 41 ns

Induced signals – due to light



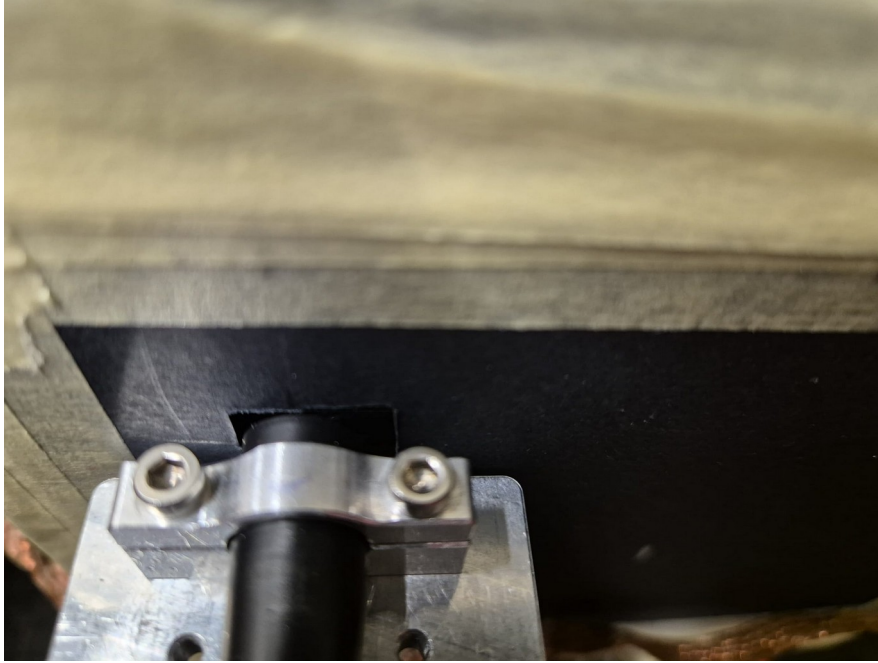
Ch #17, Ch # 10, Ch # 12



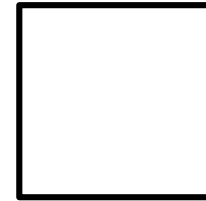
Ch #7, Ch # 10, Ch # 12

Light signal was not observed in any 32 pads.
NOT light signals. Light were going somewhere
else. These are **induced signals** (cross-talks).

Light signals – not the induced one



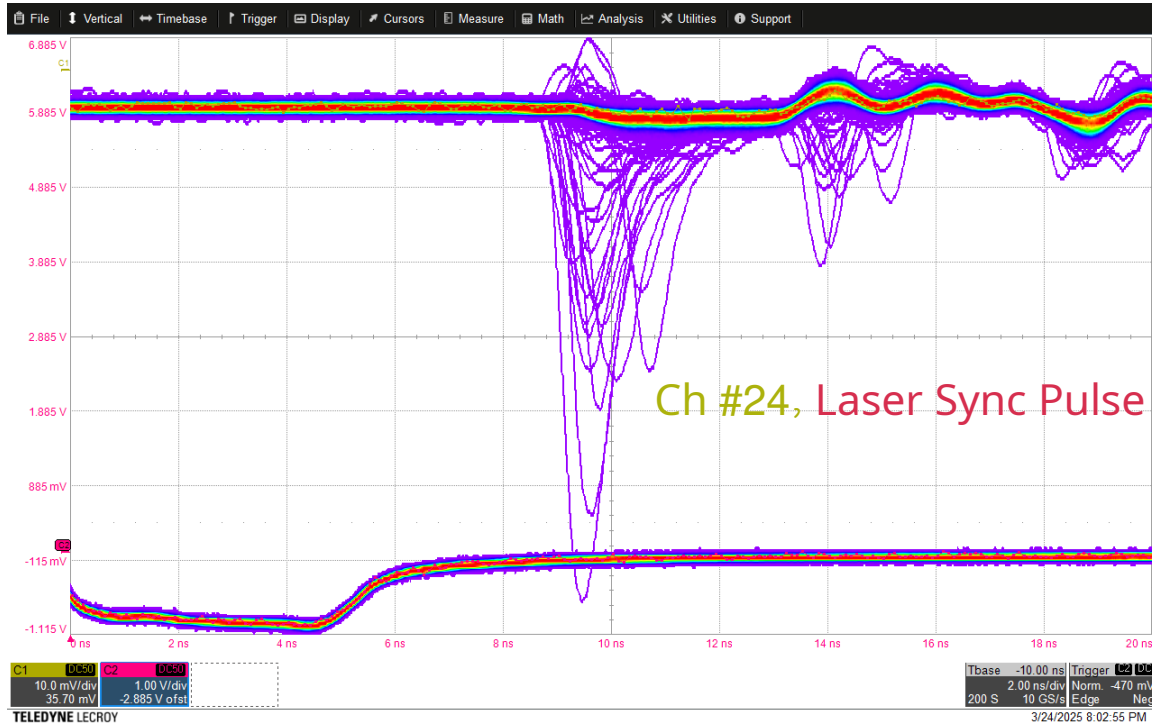
Hole enlarged
It was 8 mm diameter, circular



~ 16 mm x 16 mm

Light signals – not the induced one

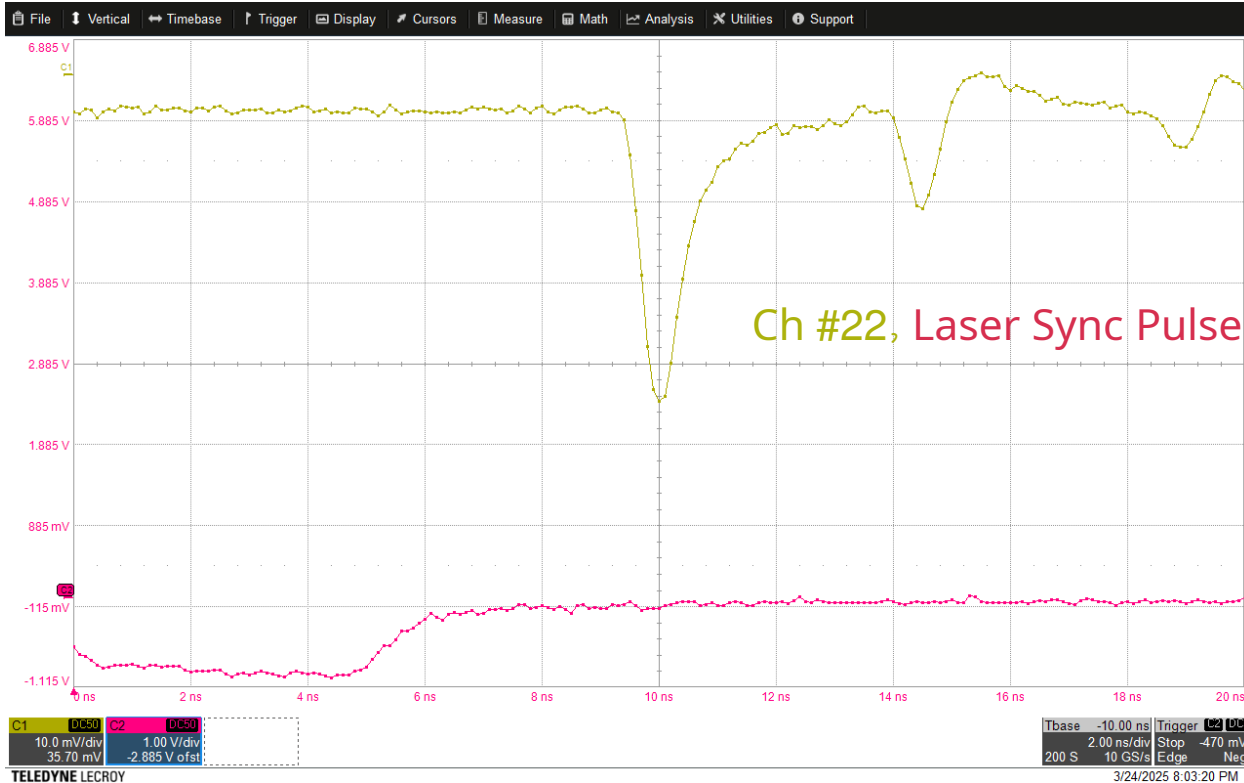
HV bias: -200_-700_-200_-700_-30V
Intensity: 1.8



Low rate of light signals observed
10 to 70 mV of amplitude

Light signals – not the induced one

HV bias: -200_-700_-200_-700_-30V
Intensity: 2.1



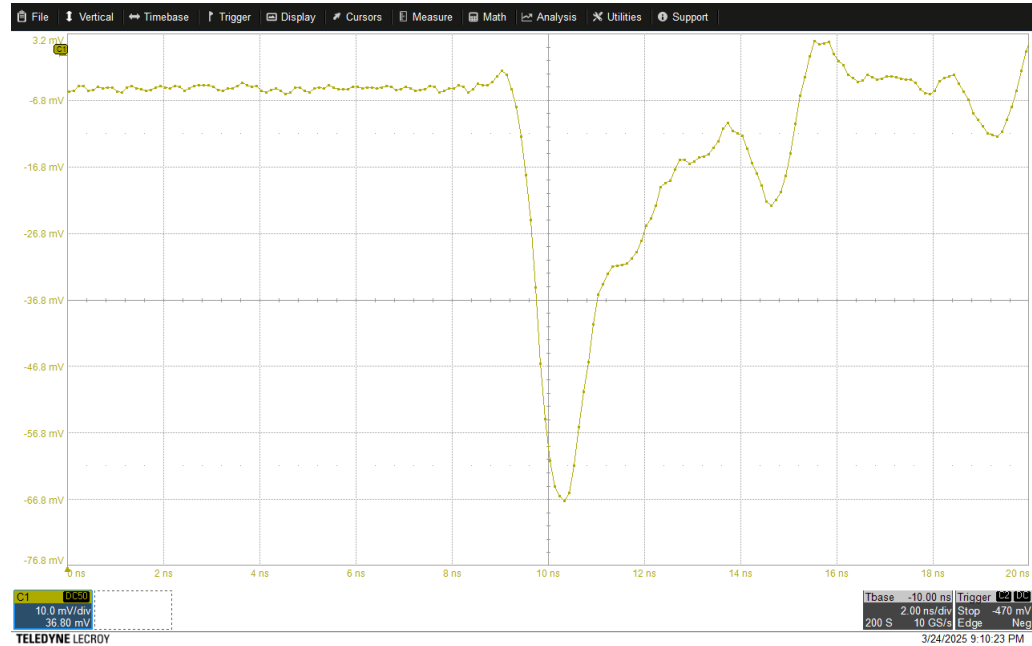
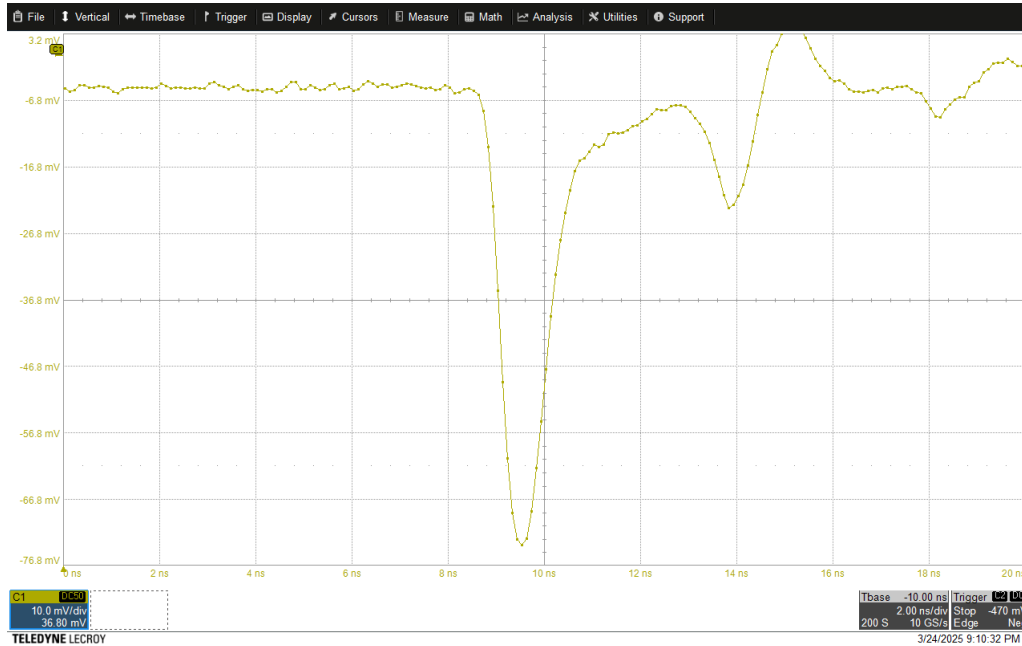
First light signal

- Amplitude - ~35 mV
- Rise time - ~ 0.6 ns
- Fall time - ~2 ns

One in ~ 100 events

Light signals – not the induced one

HV bias: -200_-700_-200_-700_-30V
Intensity: 2.1



Light signal
Very low rate (1 in ~100)
60-70 mV

Induced signals – due to light

HV bias: -200_-700_-200_-700_-30V

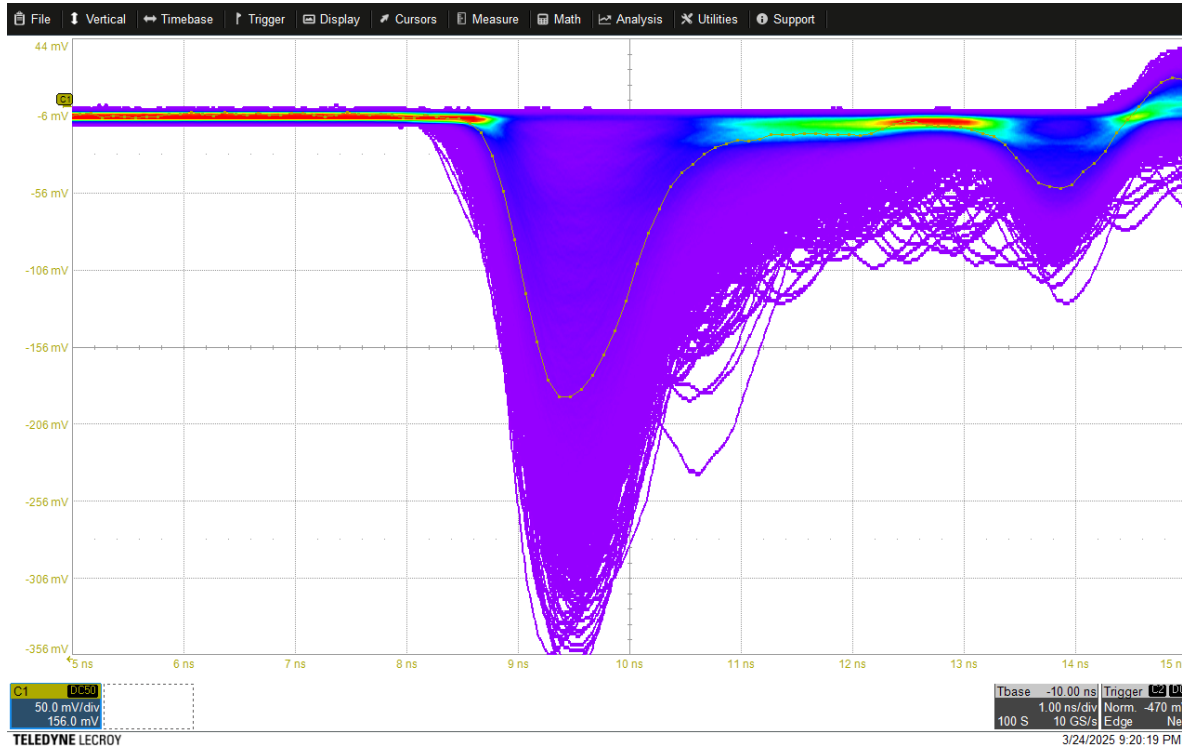
Pin #22

Fibre coordinate

91.8, 48, 43

It was (96.8, 48, 51)

- Intensity 1.8
- Only Light signals
- No induced signals
- Amplitude ~ 70 mV



Mapping (from Rear end)

ERF8 Pin Numbers (for any group)

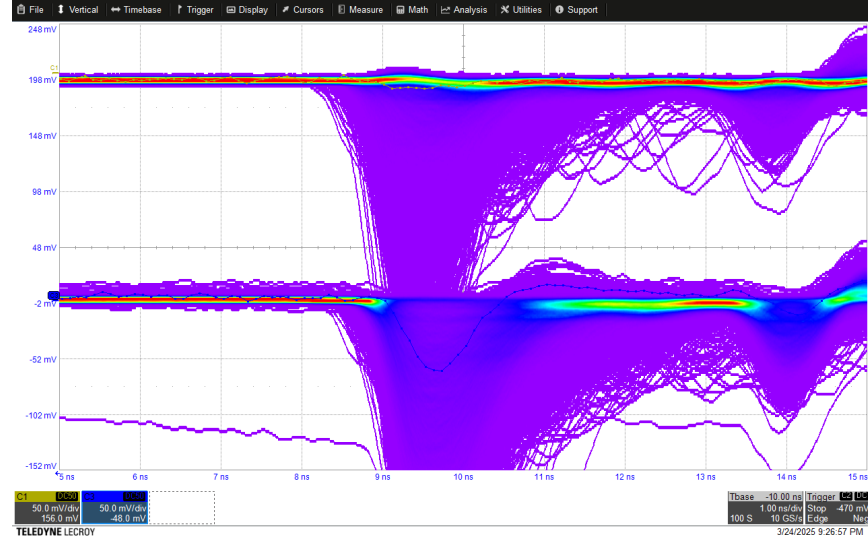
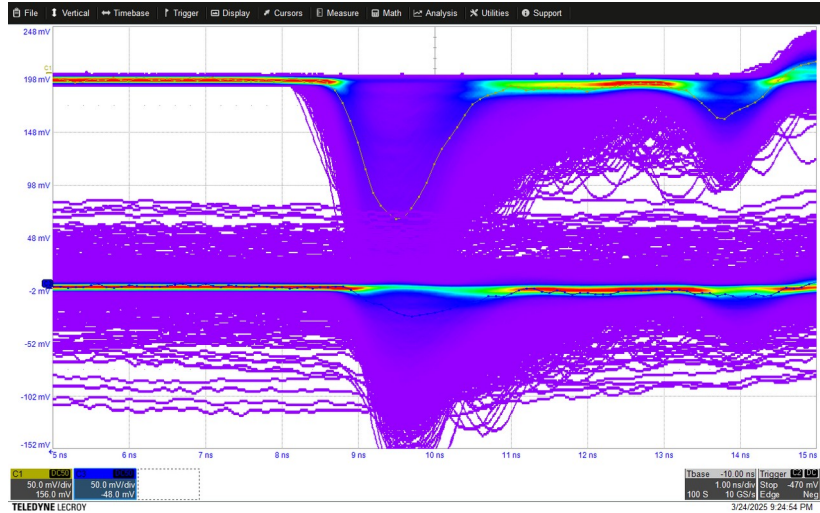
t39	t37	t35	t33	t31	t29	t27	t25	t23	t21	t19	t17	t15	t13	t11	t9	t7	t5	t3	t1
t40	t38	t36	t34	t32	t30	t28	t26	t24	t22	t20	t18	t16	t14	t12	t10	t8	t6	t4	t2

b2	b4	b6	b8	b10	b12	b14	b16	b18	b20	b22	b24	b26	b28	b30	b32	b34	b36	b38	b40
b1	b3	b5	b7	b9	b11	b13	b15	b17	b19	b21	b23	b25	b27	b29	b31	b33	b35	b37	b39

Pin Numbers on Readout Pads (from Group A3)

A3t39	A3t33	A3t29	A3t23	A3t19	A3t13	A3t9	A3t3
A3t37	A3t31	A3t27	A3t21	A3t17	A3t11	A3t7	A3t1
A3t40	A3t34	A3t30	A3t24	A3t20	A3t14	A3t10	A3t4
A3t38	A3t32	A3t28	A3t22	A3t18	A3t12	A3t8	A3t2
A3b2	A3b8	A3b12	A3b18	A3b22	A3b28	A3b32	A3b38
A3b4	A3b10	A3b14	A3b20	A3b24	A3b30	A3b34	A3b40
A3b1	A3b7	A3b11	A3b17	A3b21	A3b27	A3b31	A3b37
A3b3	A3b9	A3b13	A3b19	A3b23	A3b29	A3b33	A3b39

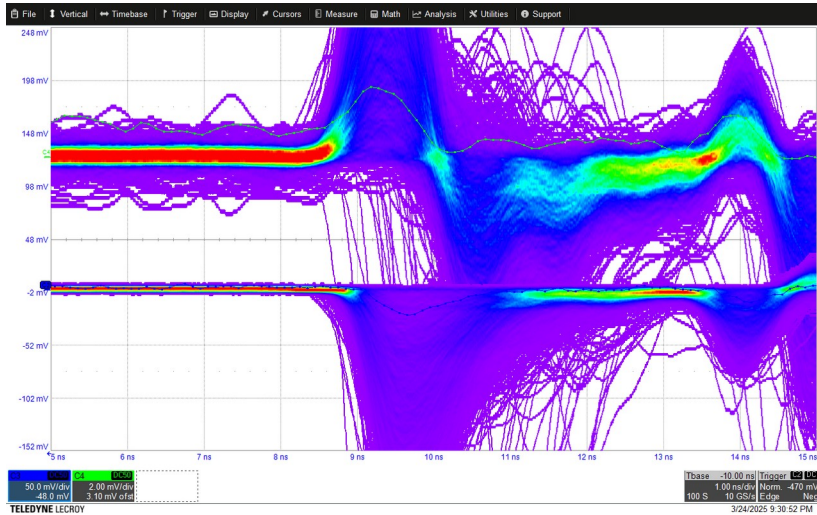
Induced signals – due to light



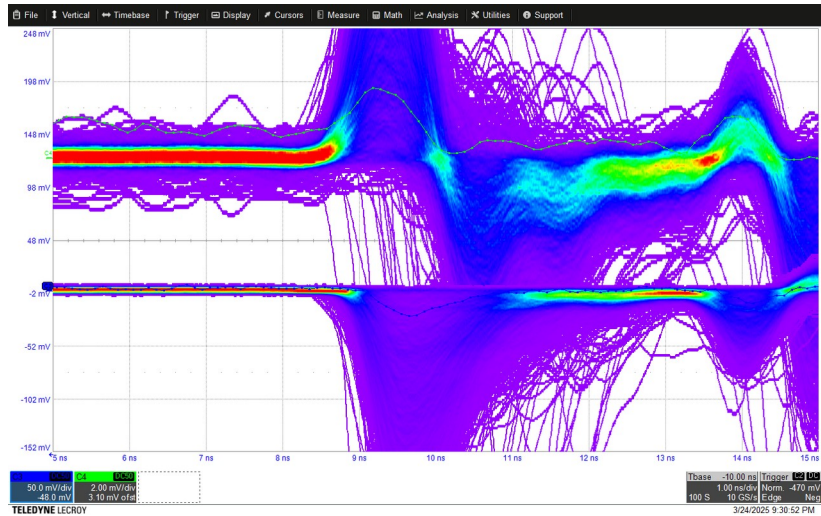
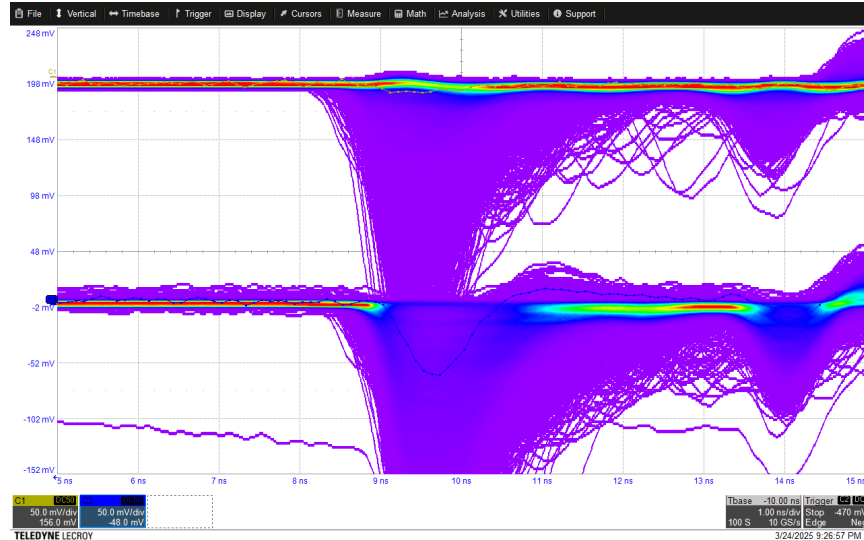
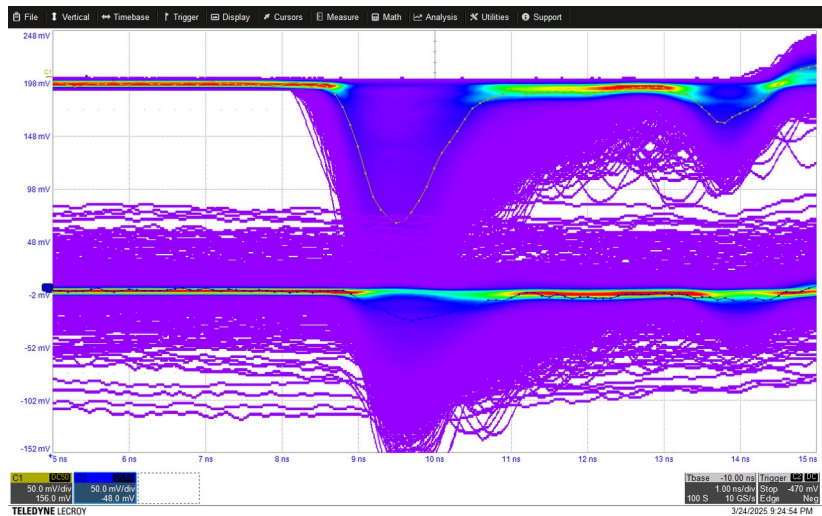
Top Pin # 22

Bottom Pin # 18

Moving light from 22 to 18



Induced signals – due to light



Top Pin # 22

Bottom Pin # 18

Moving light from 22 to 18

Frequency measured for Pin #18

Provided [kHz]	Measured [kHz]
0.60	1.2
1	1.55
2	2.4