

Calibration for ICT & FC

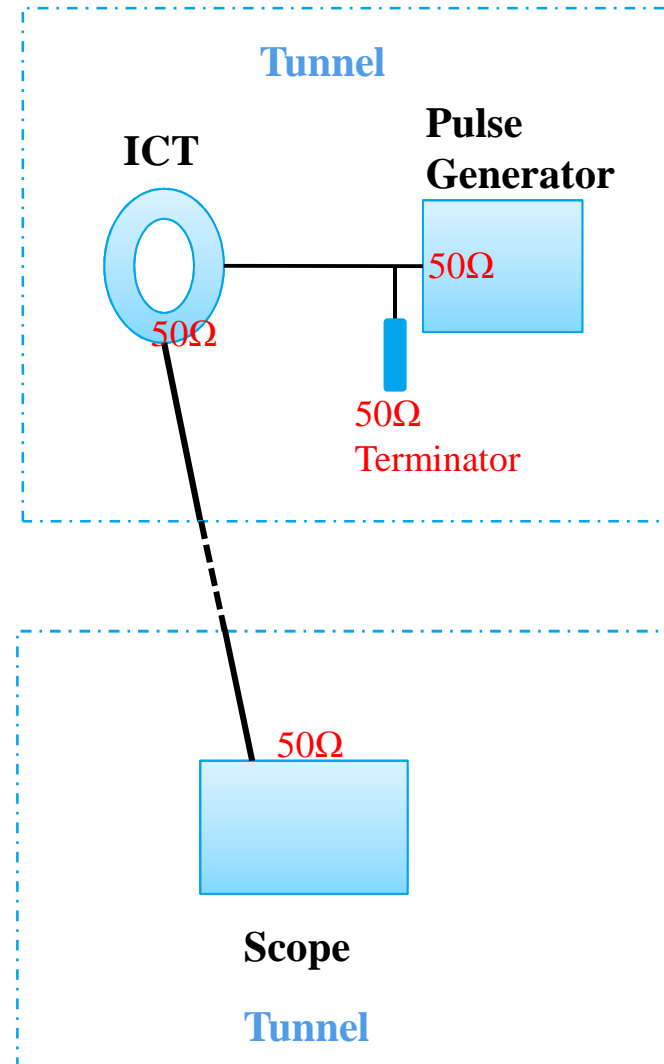
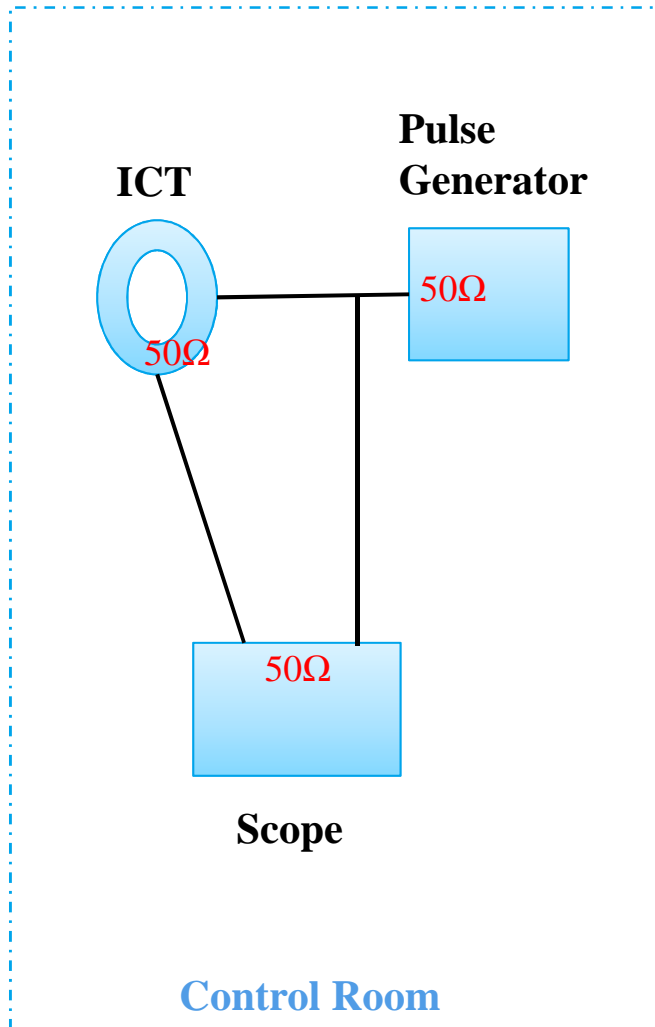
- **Calibration setup**
- **Calibration result**

Xin Li

PPS

Desy, 01.09.2016

Calibration setup and steps



Calibration setup and steps

ICT Input:

- Rising(min 2ns)
- Width (3ns, 10ns)
- Amplitude(0~10V)
- Continued pulses (1 MHz)

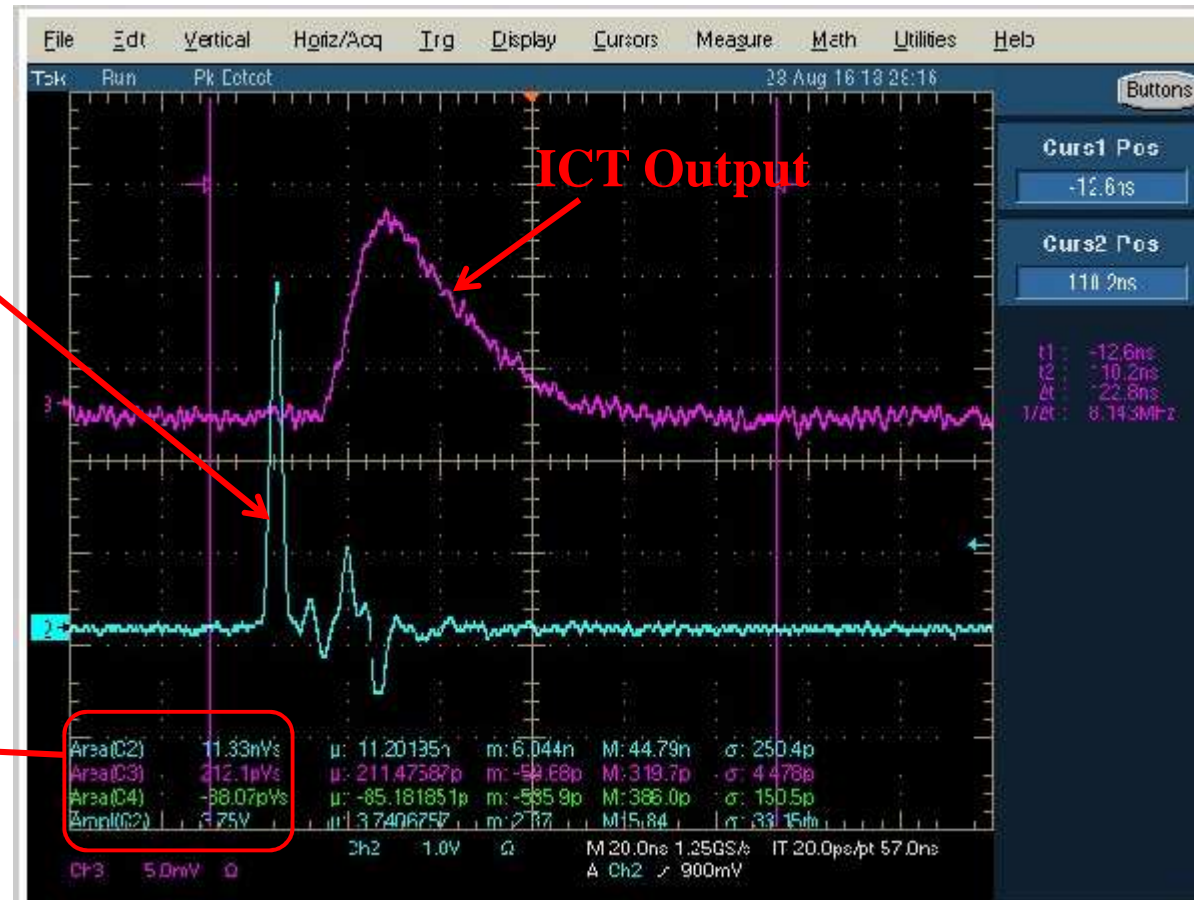
Matlab script

ICT:

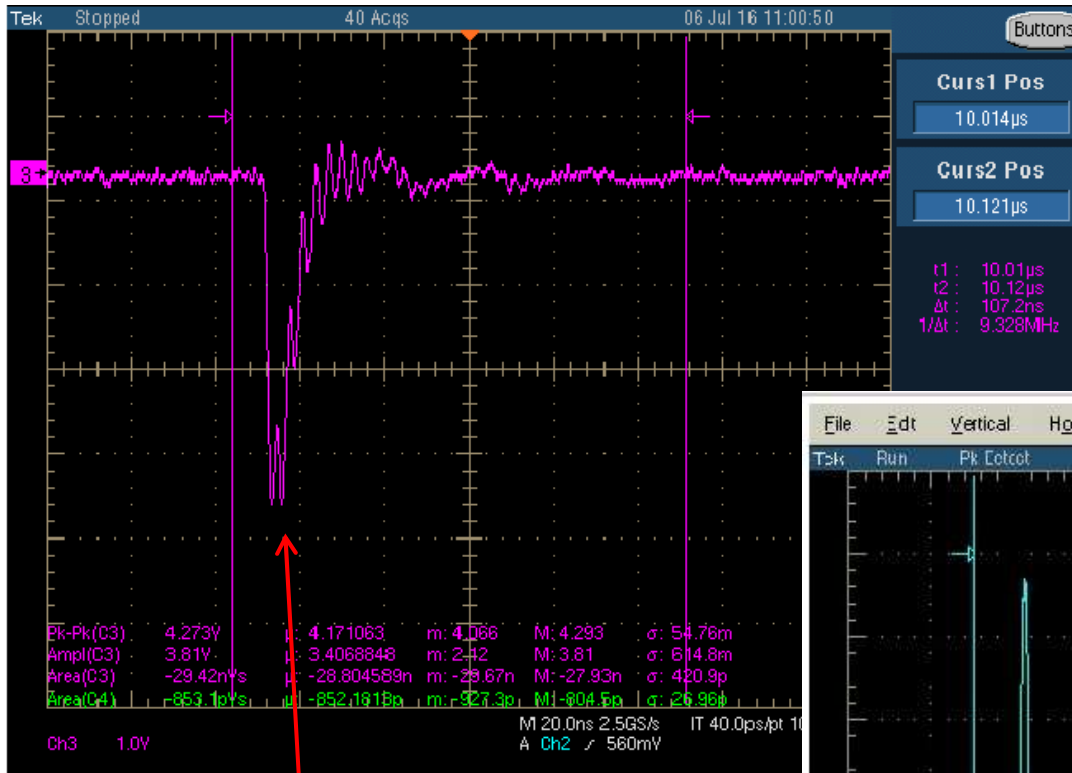
$$Q = \frac{\text{Area}}{50\Omega} \times 40$$

FC:

$$Q = \frac{\text{Area}}{50\Omega}$$



Calibration setup and steps



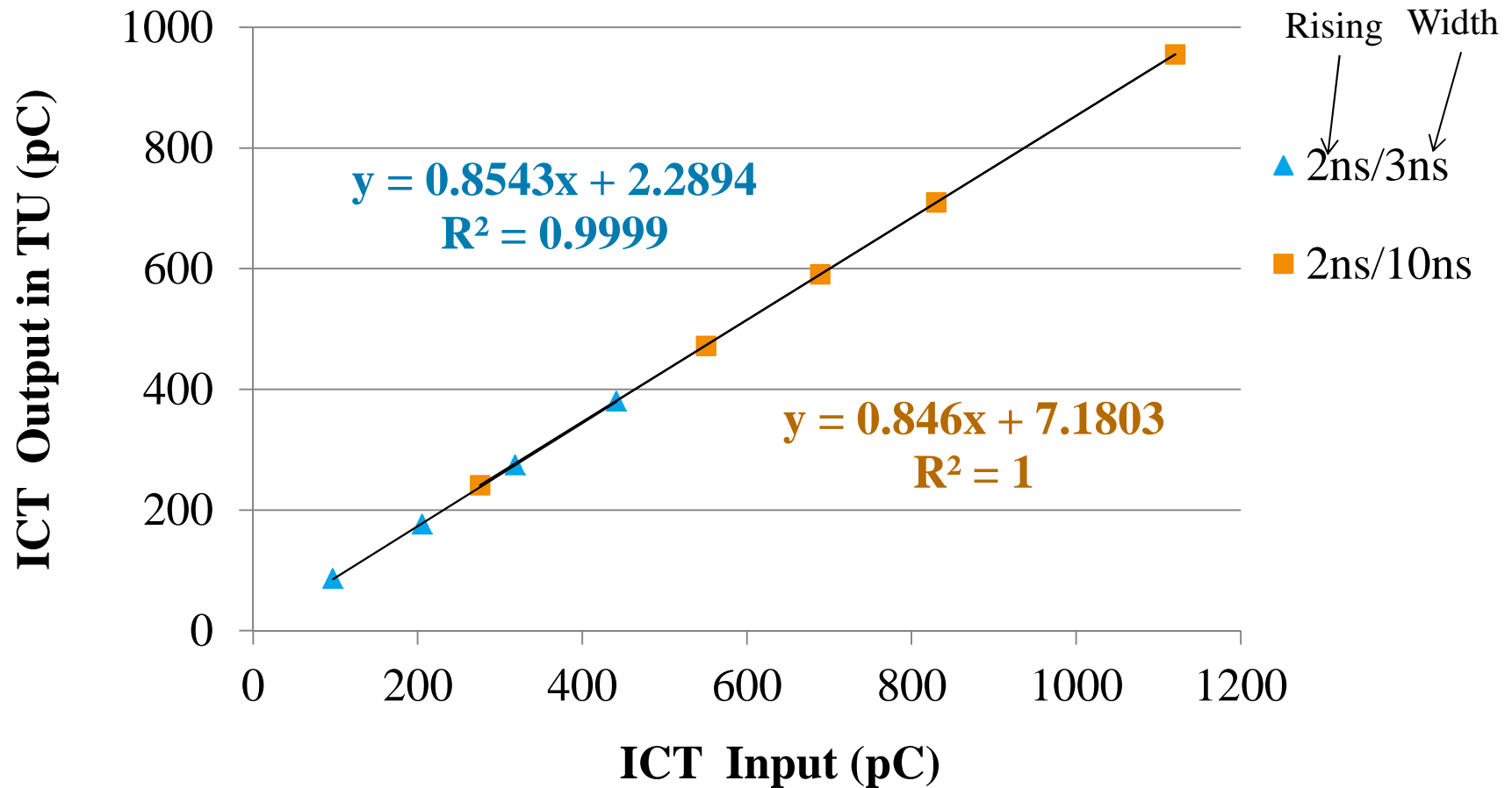
Calibration signal

Real FC output in CR

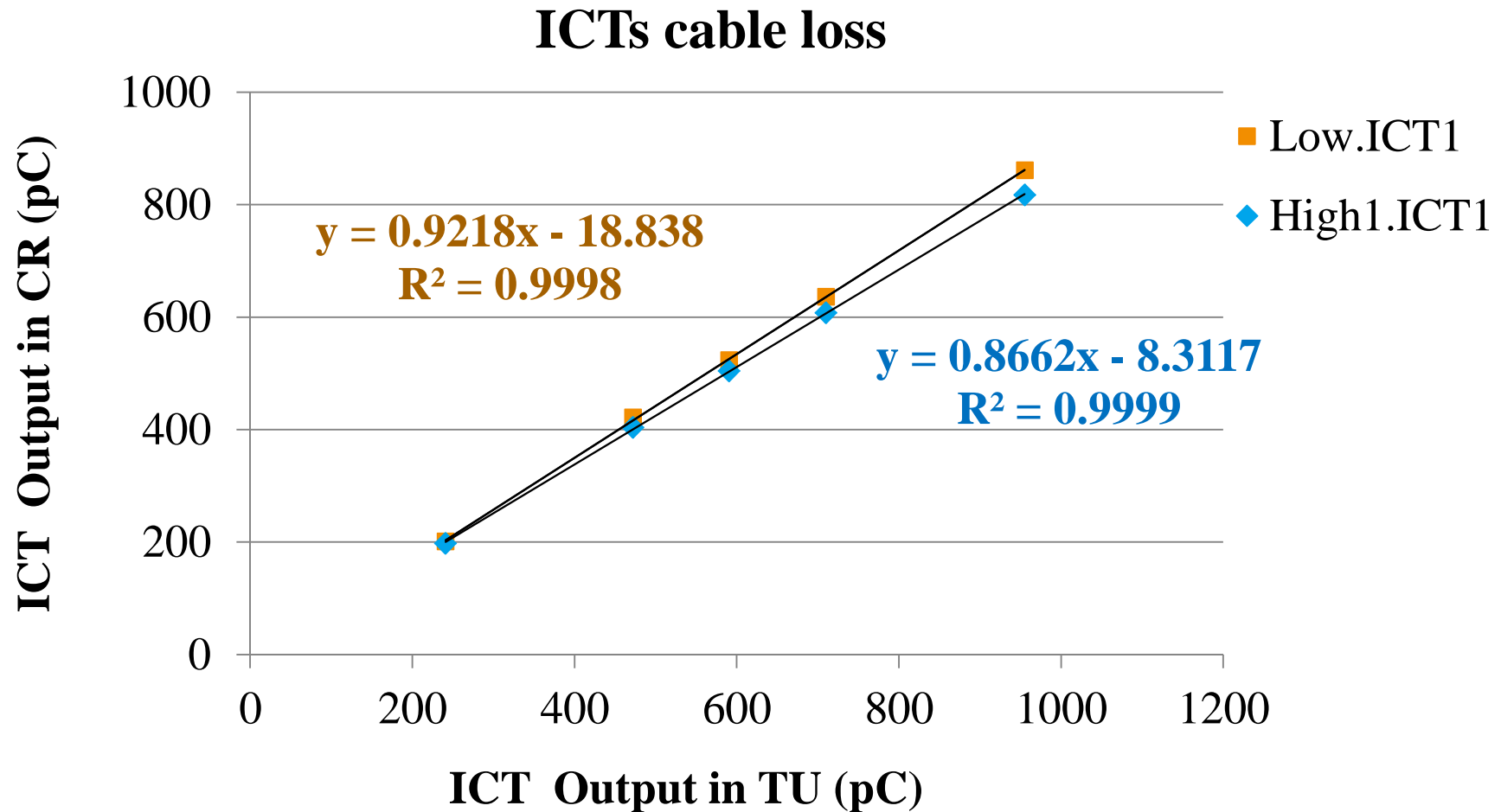


ICT calibration result

ICT cal in CR



ICT calibration result



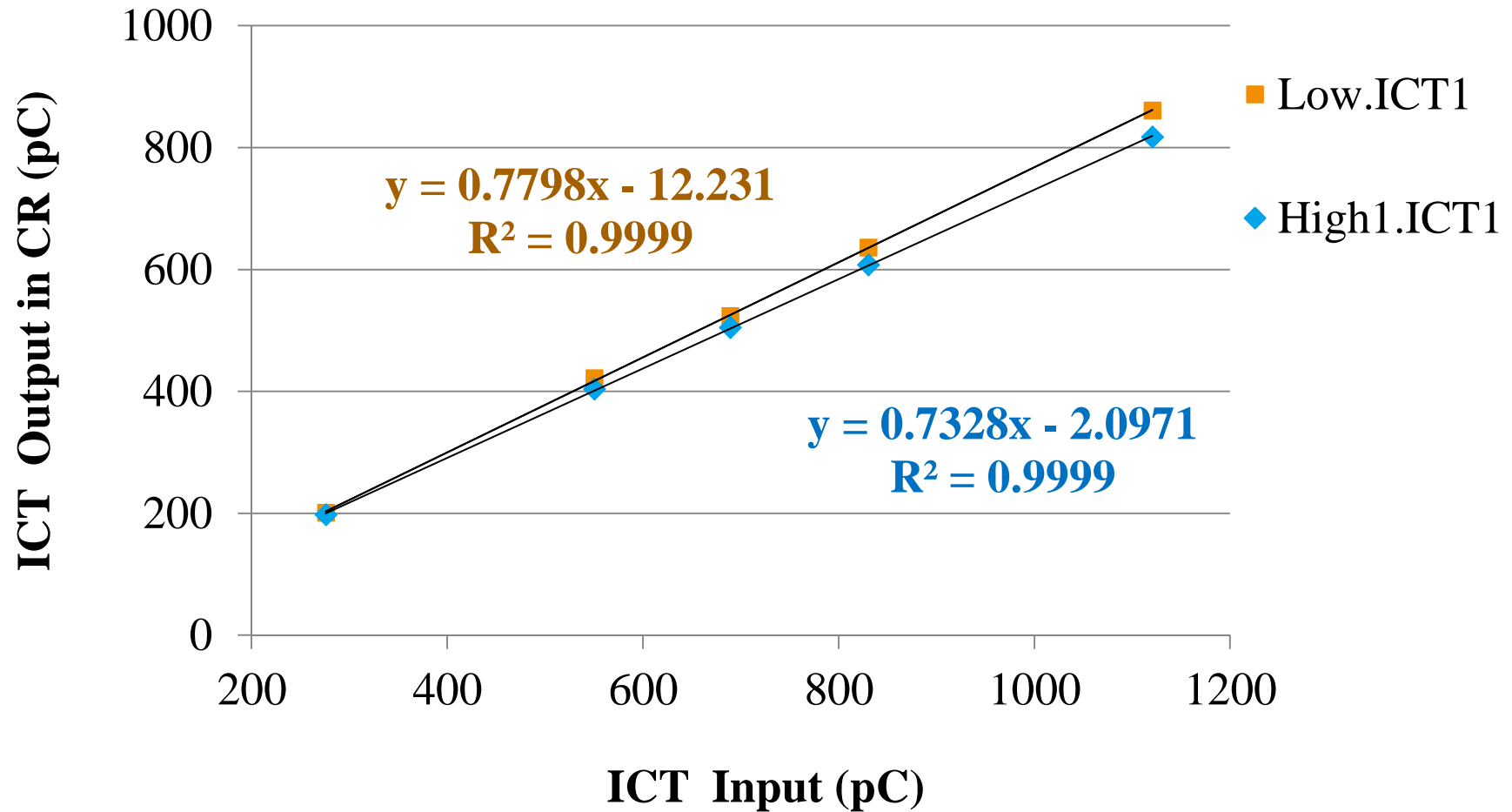
Low.ICT1: 8% loss on cable

High1.ICT1: 14% loss on cable

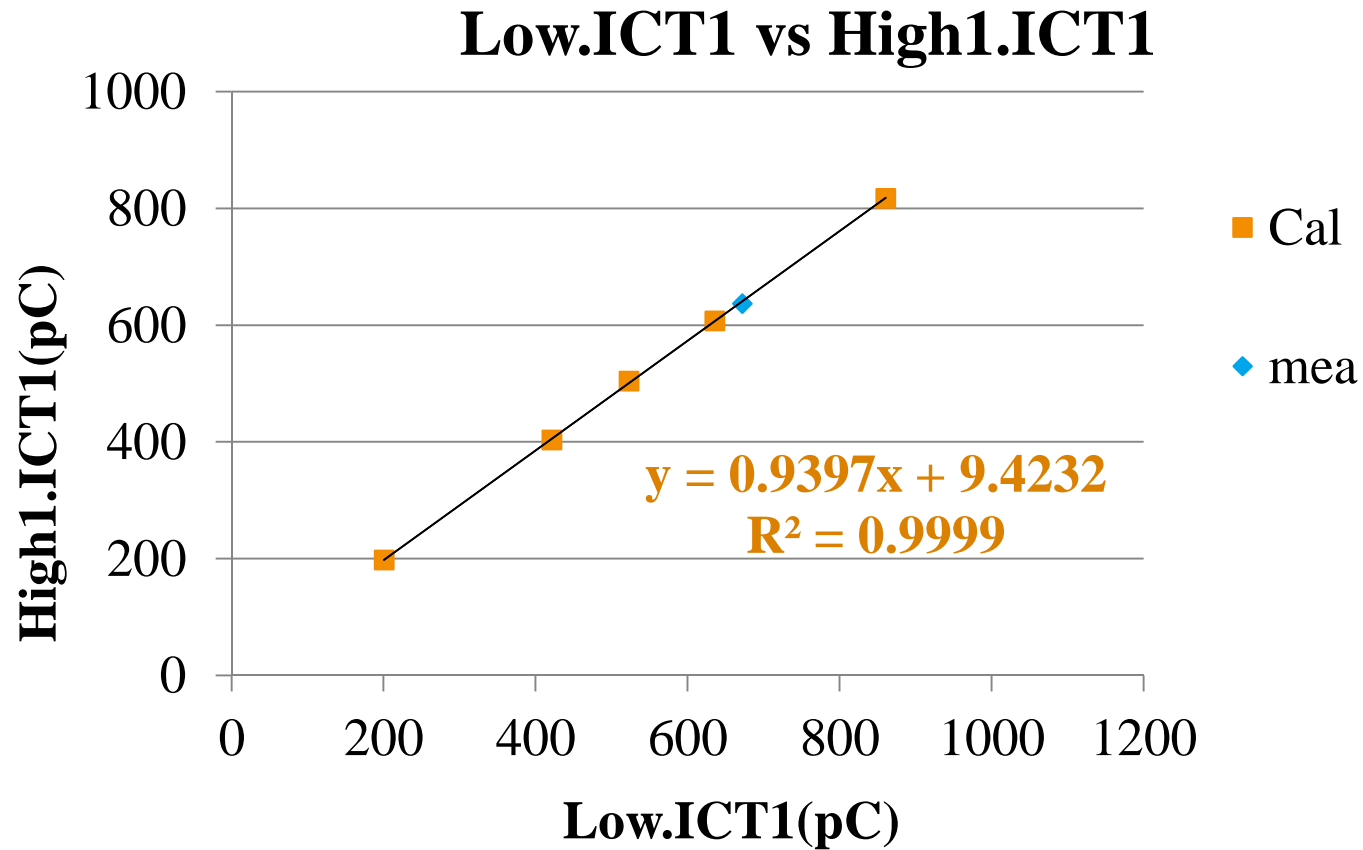


ICT calibration result

ICTs calibration

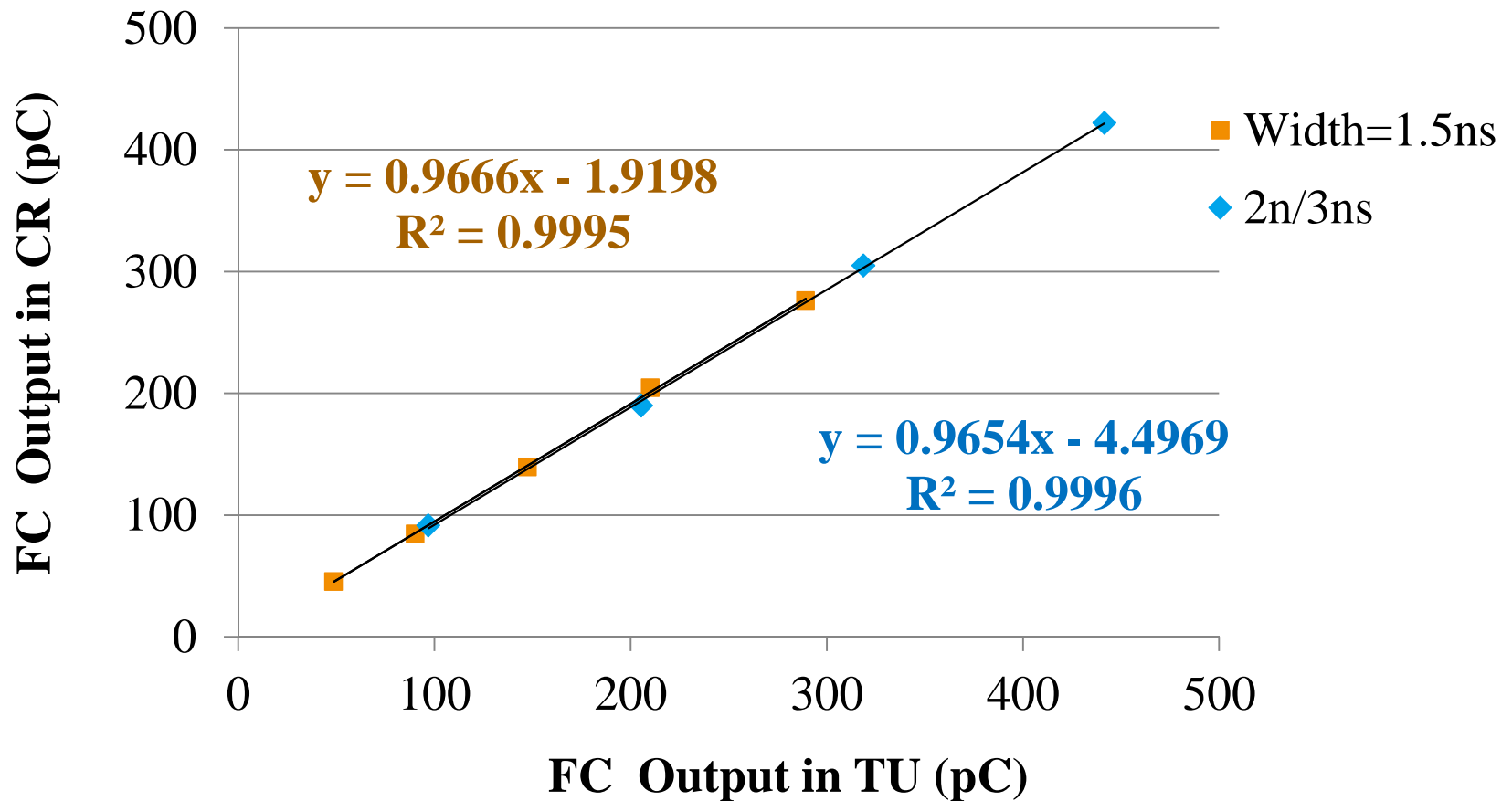


ICT calibration result



Faraday Cup calibration result

Low.FC1 cable loss

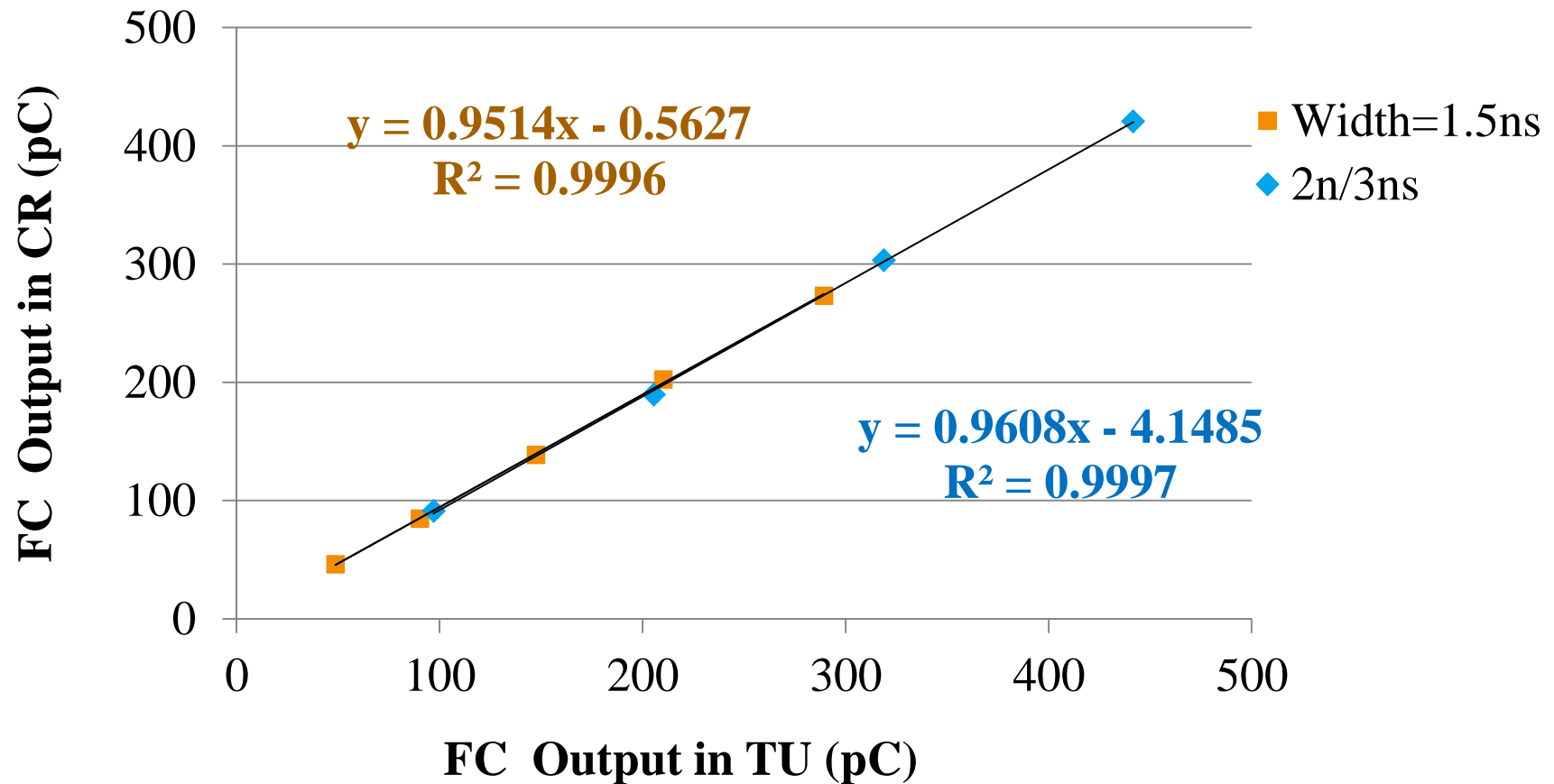


3% loss on cable



Faraday Cup calibration result

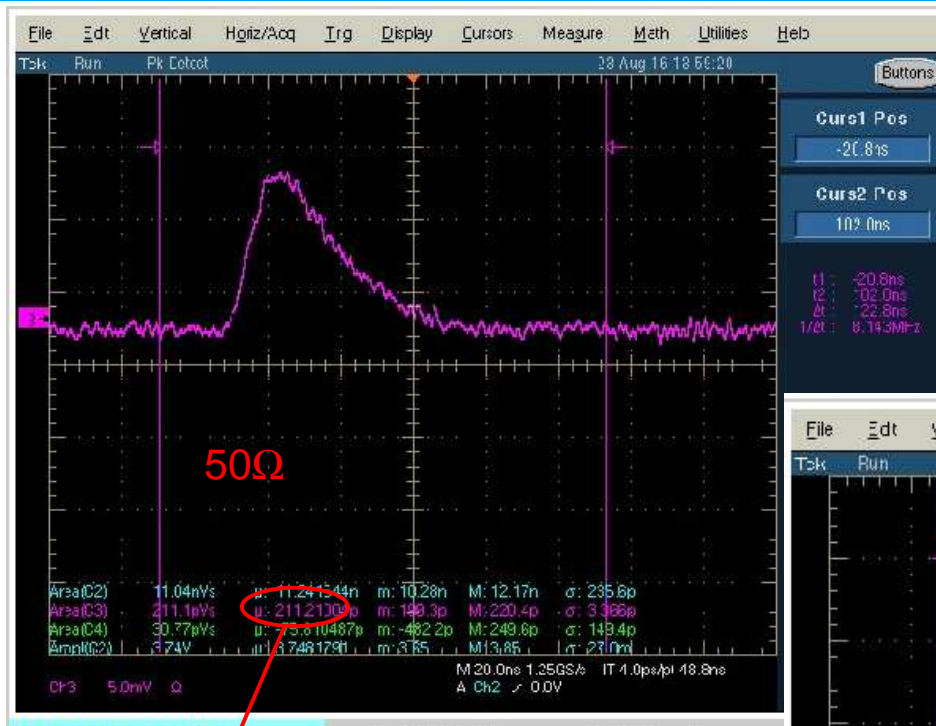
Low.FC2 cable loss



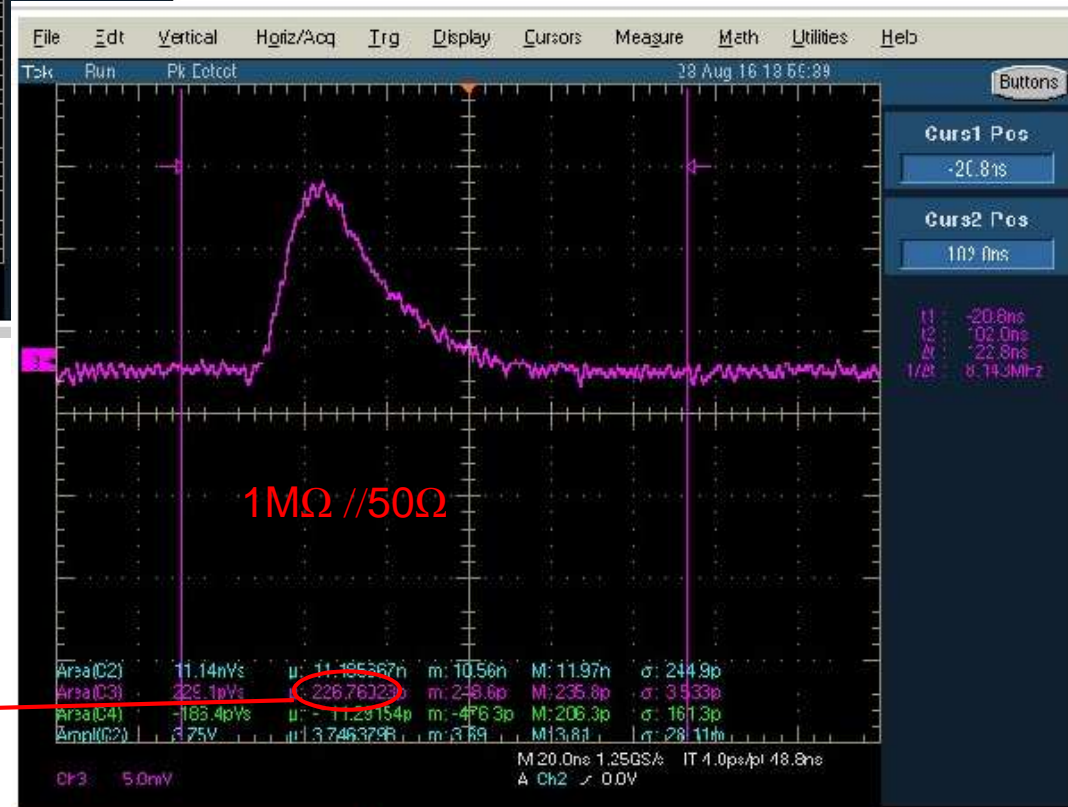
4% loss on cable



Scope termination comparison--ICT



211pVs

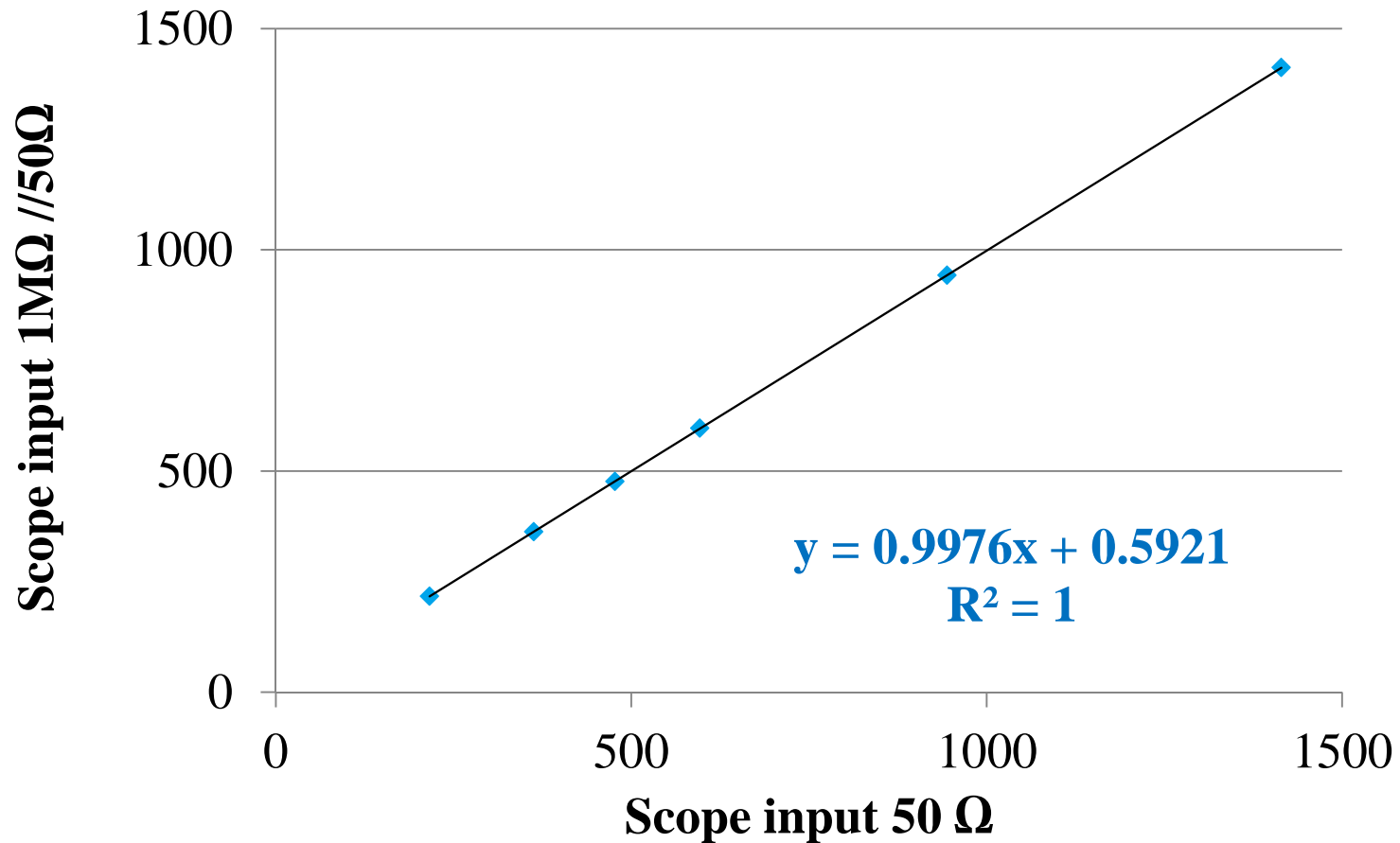


228pVs

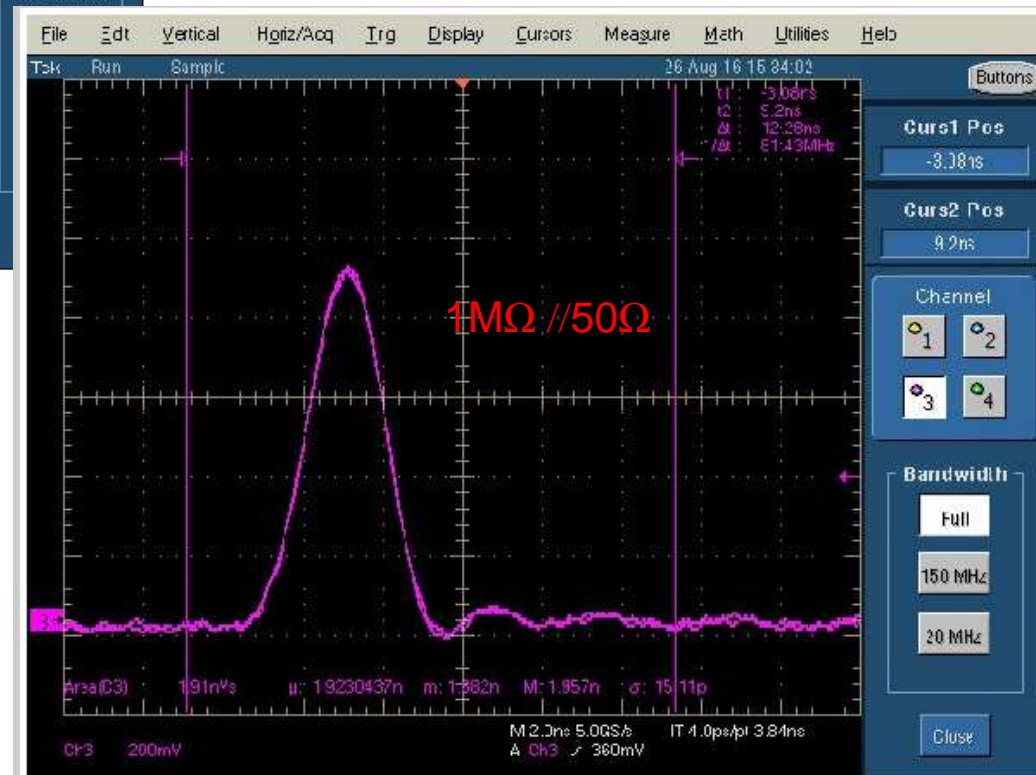
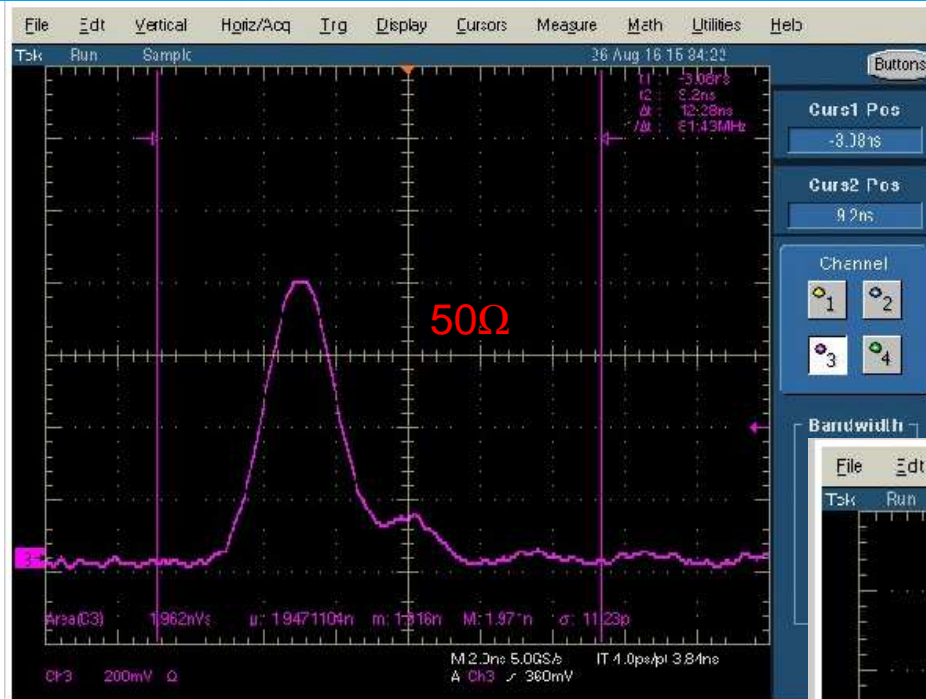


Scope termination comparison--ICT

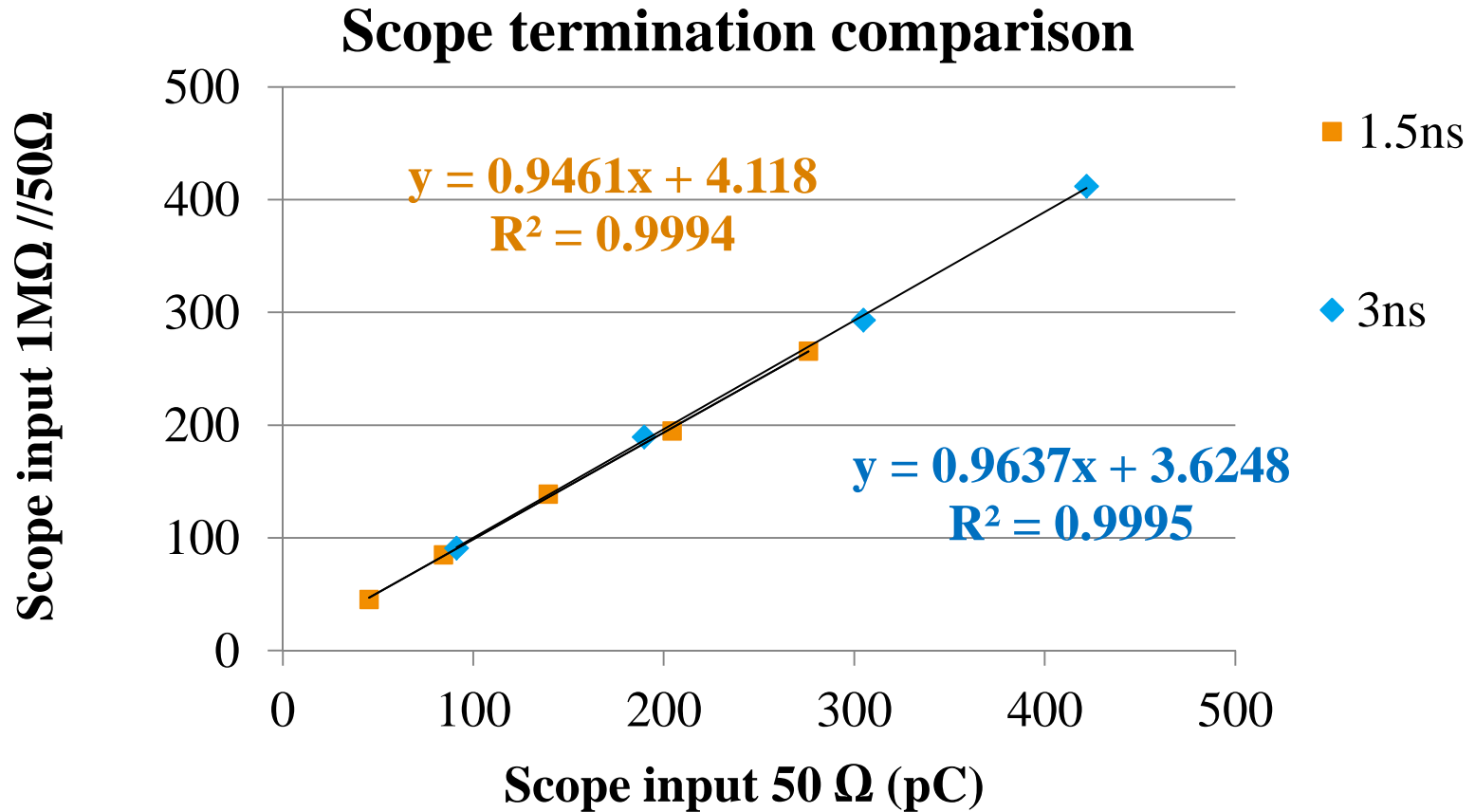
Scope termination comparison



Scope termination comparison--FC



Scope termination comparison--FC

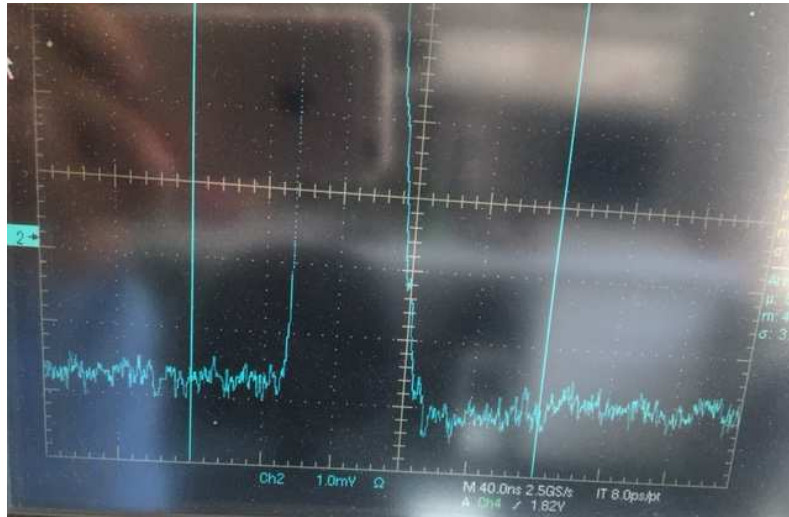


FC1&FC2: ~8% loss on cable & scope termination

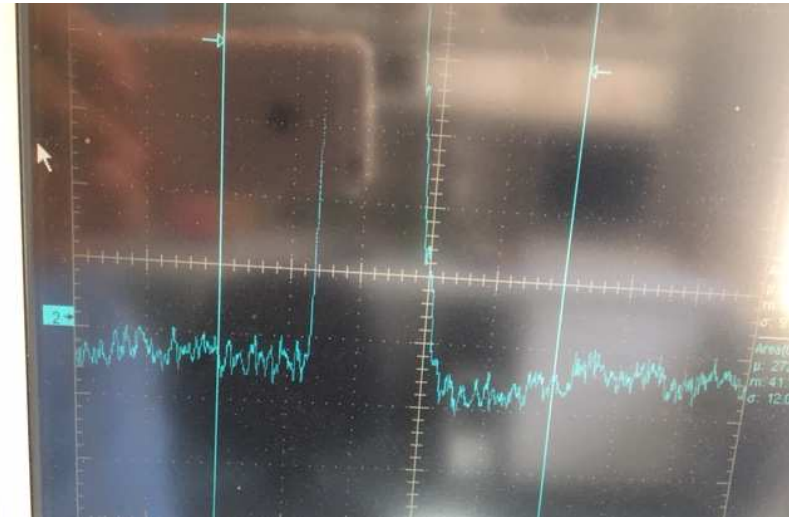


ICT offset

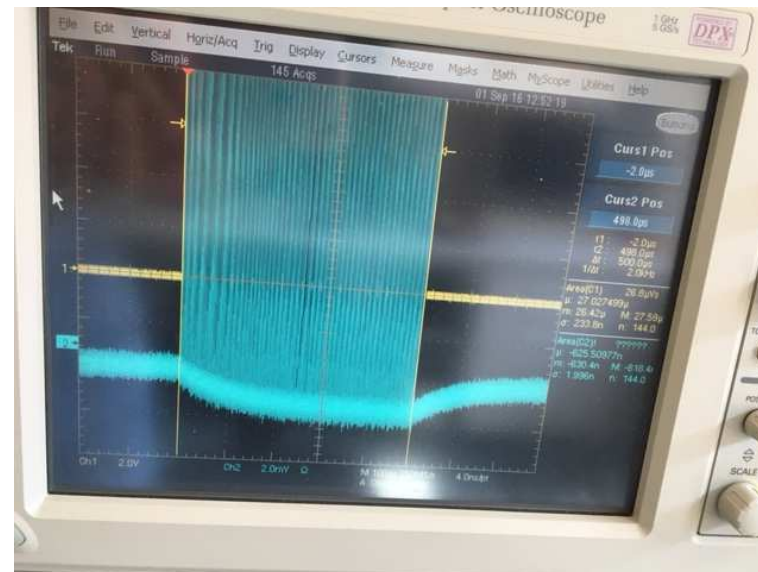
1 MHz



1 kHz



500 pulses train
1 MHz



Conclusion

- > Low.ICT1: 22% under-estimating the charge
- > High1.ICT1: 28% under-estimating the charge
- > FCs: ~8% loss on cable & scope termination. For more accurate result, the more reasonable calibration signal and the performance parameters of the FC are required.

