

Testing Fermilab PoF system in LAr IX (Dec 2,2020)

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Umut KOSE

Test #1

- Testing thin white fiber.

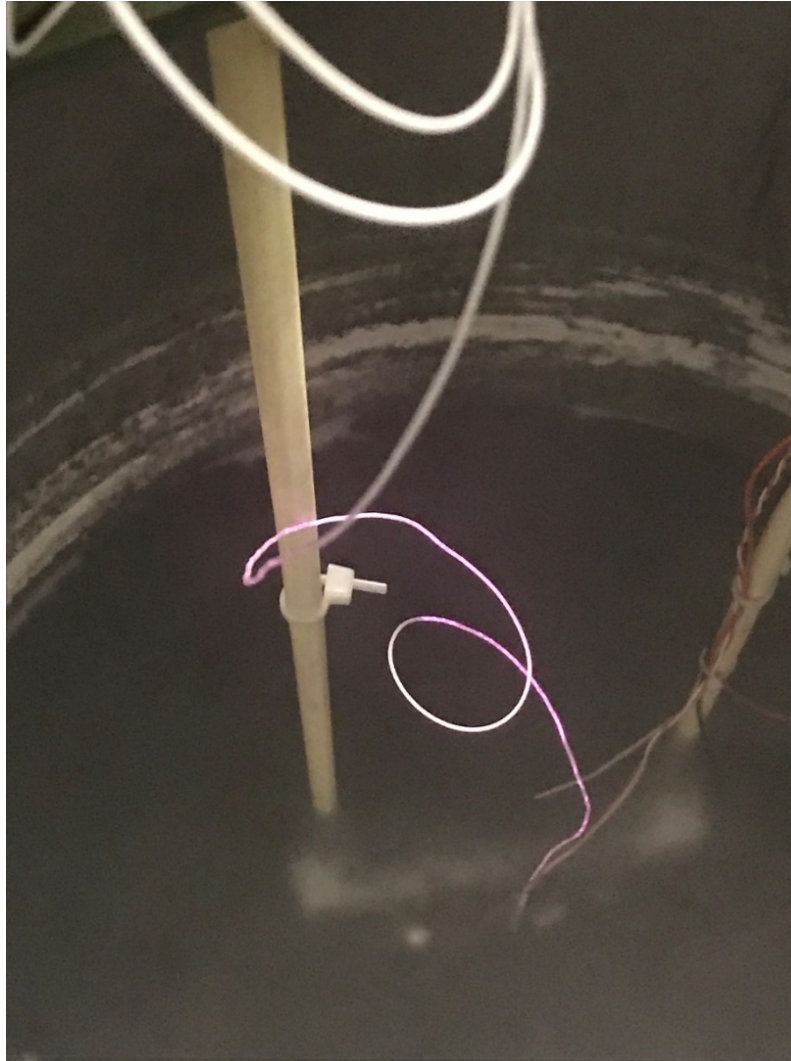
Test #2

- Using potentiometer (1kOhm) as a variable resistors to find maximum power we can reach.
- Laser power set: setting resistors of 0.360, 0.750, 1.2 and 1.8 kOhm.

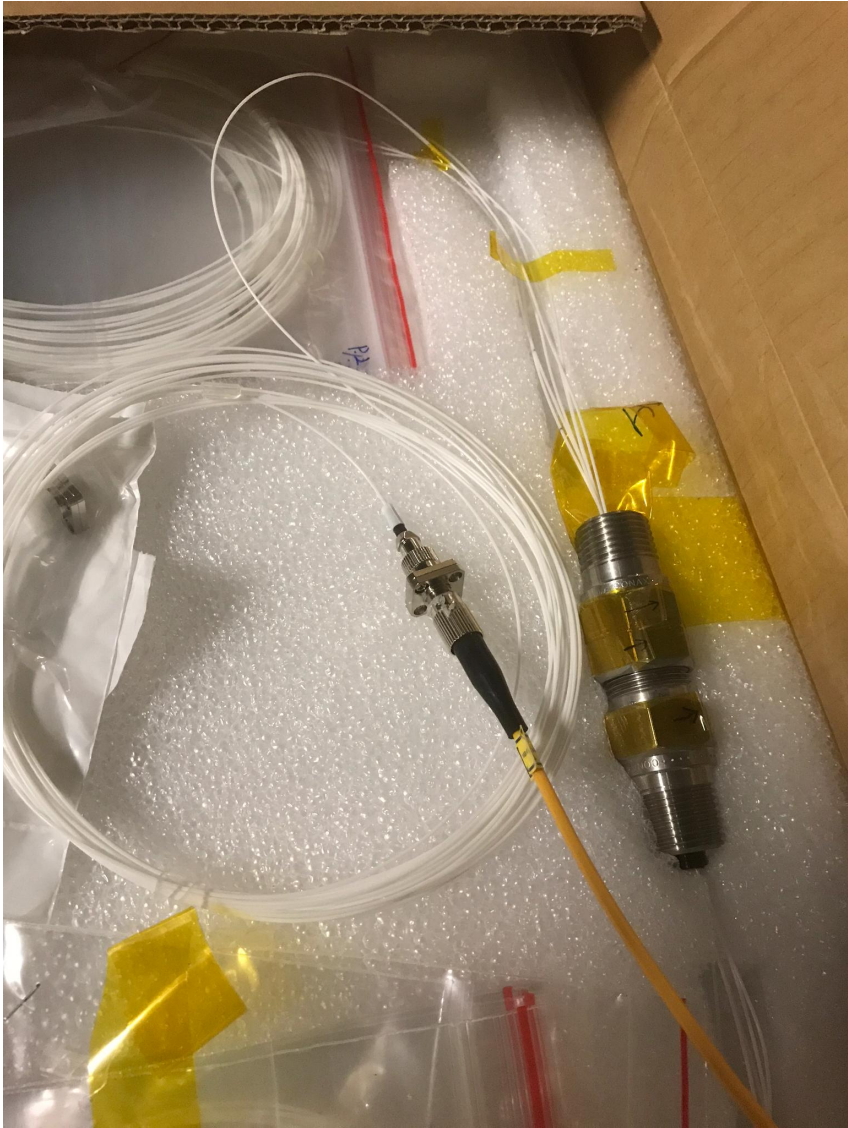
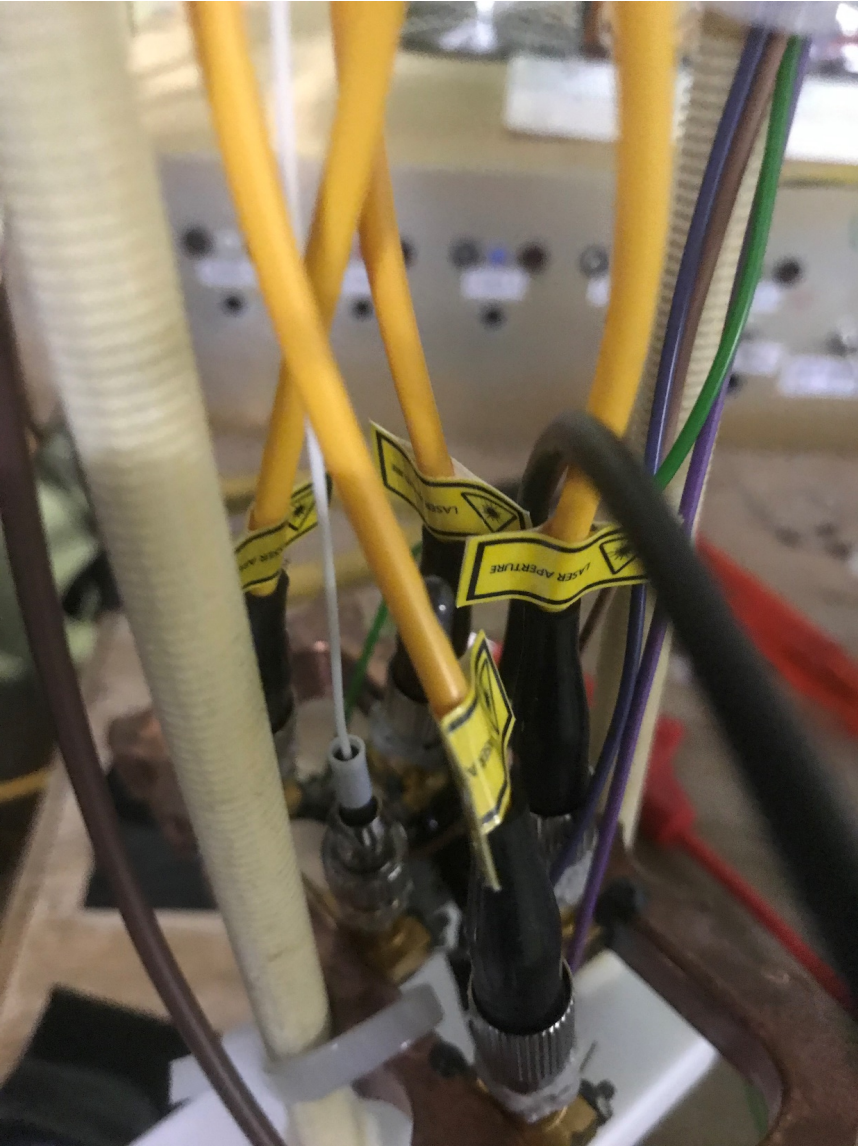


Test #1

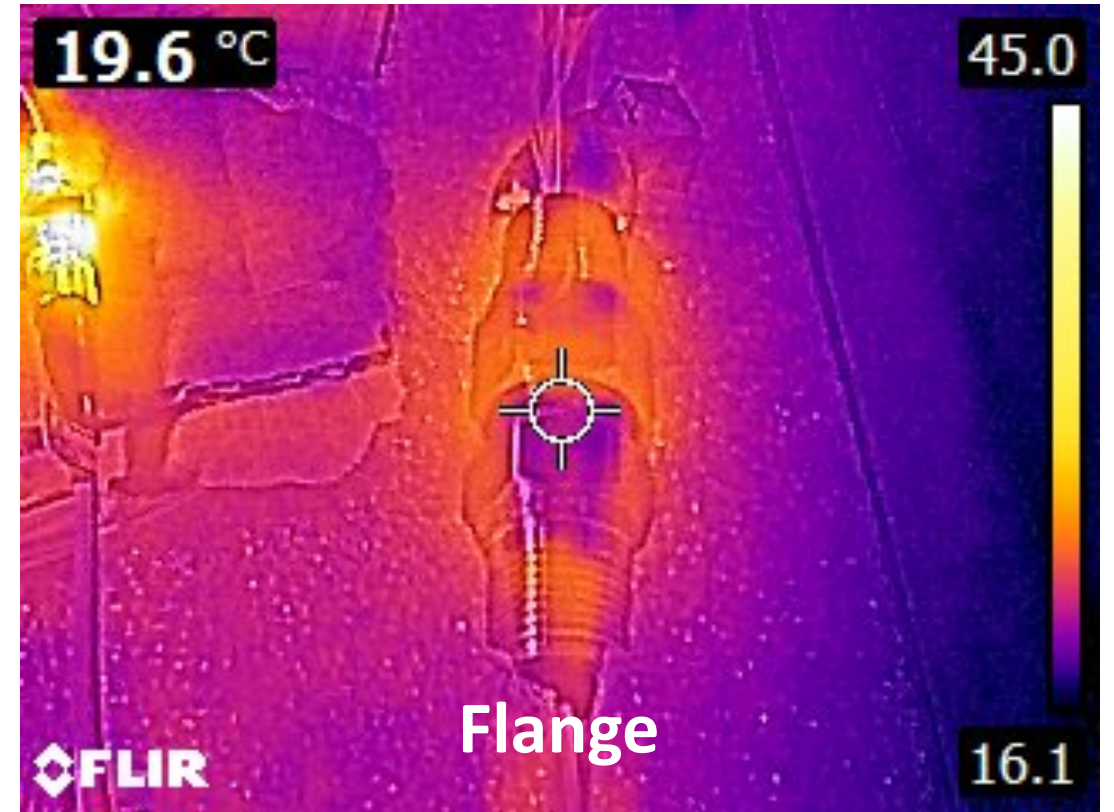
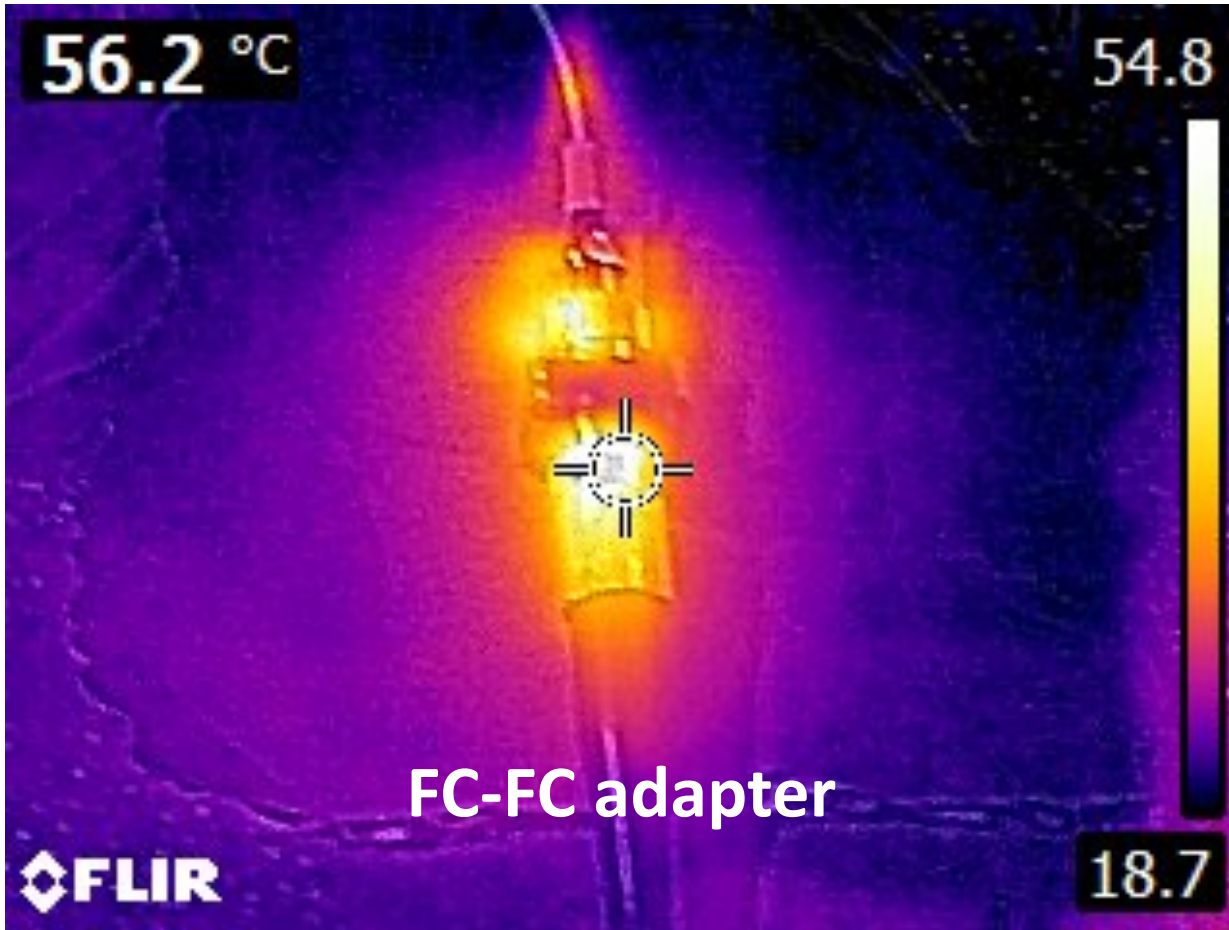
This test triggered from the observation we had in a different laser system (808 nm).
We observed lose of power along the fiber!



Test #1



Test #1



- At junction point we see an increase on the heat load:
- Matching between two fibers! Probably the core diameters is different.
- No evidence of degradation in the voltage and current from PPC (test done with 2W of laser power)

Test #2

Setting R (k Ω)	Pmax (mW)	Voltage (V)	Current(mA)	Load (ohm)
0.360	77	8.54	9.01	947
0.750	256	11.34	22.57	503
1.2	455	11.11	40.98	271
1.8	593	11.00	53.87	204

***Potentiometer set done with screw drivers.**

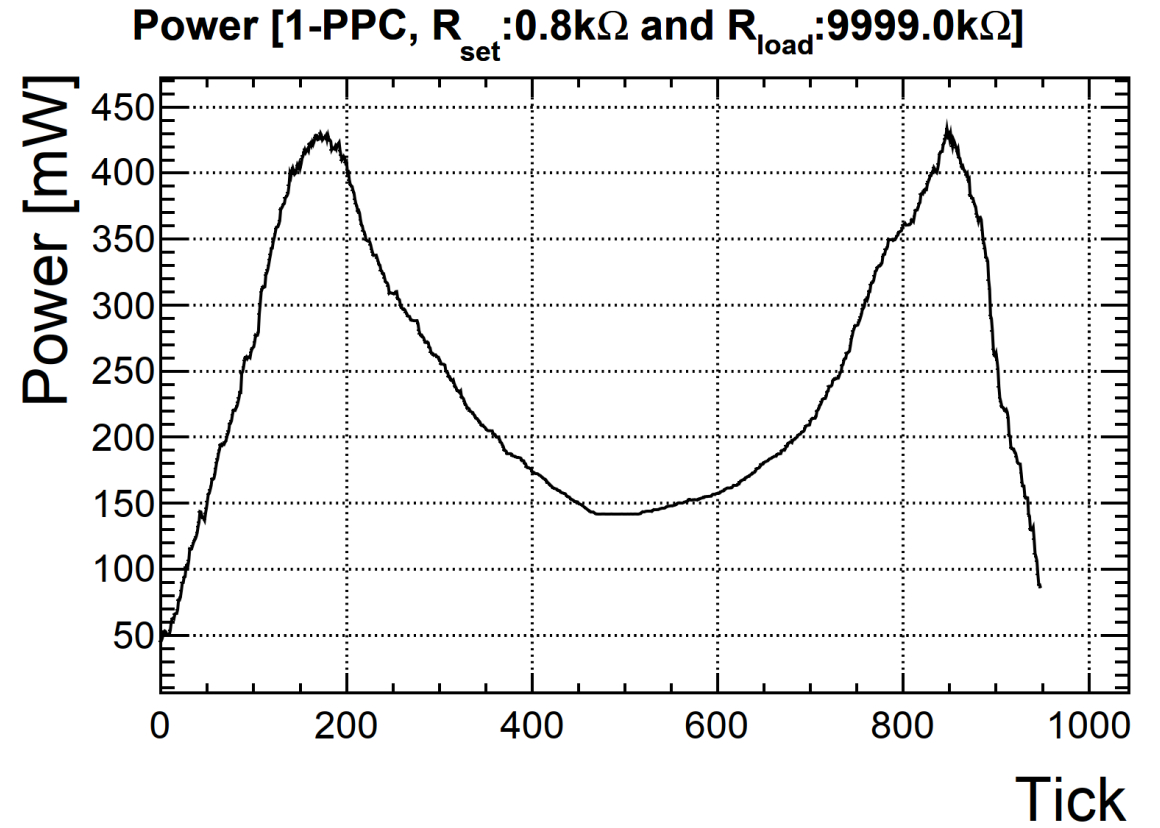
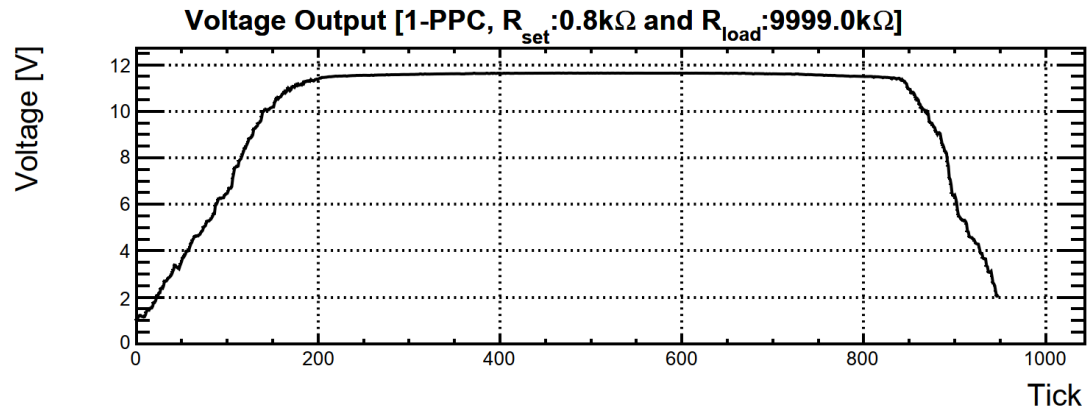
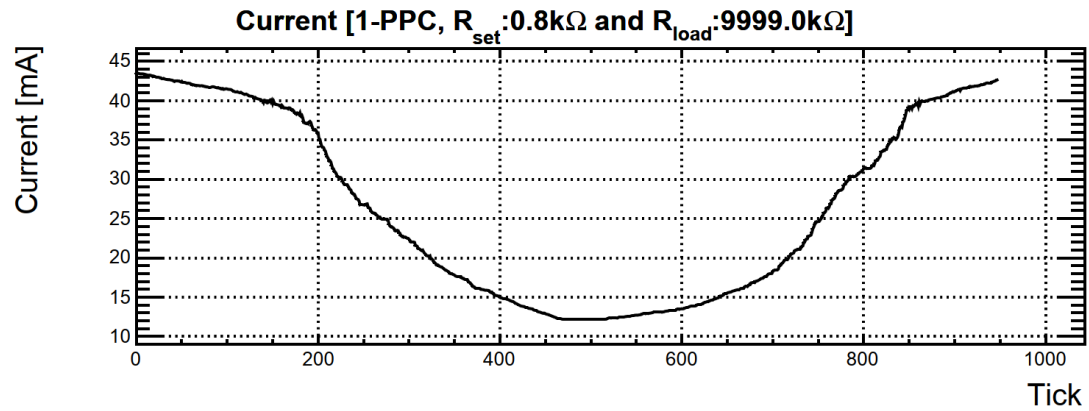
Laser Power Settings *

Laser Power (W)	0.25	0.50	1.00	1.50	2.00	2.50	3.00	3.50
Setting Voltage (V)	0.28	0.39	0.60	0.85	1.08	1.31	1.56	1.78
Resistance (K Ω)	0.30	0.43	0.74	1.16	1.73	2.47	3.69	5.60

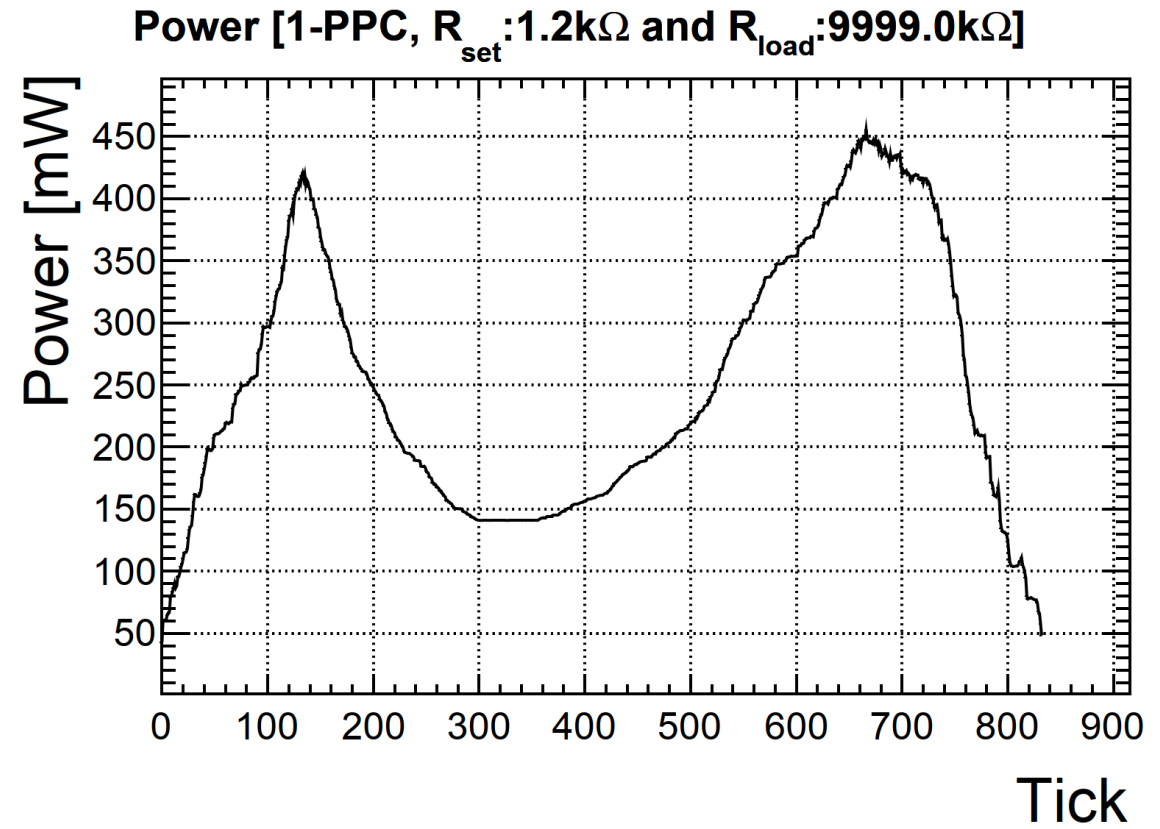
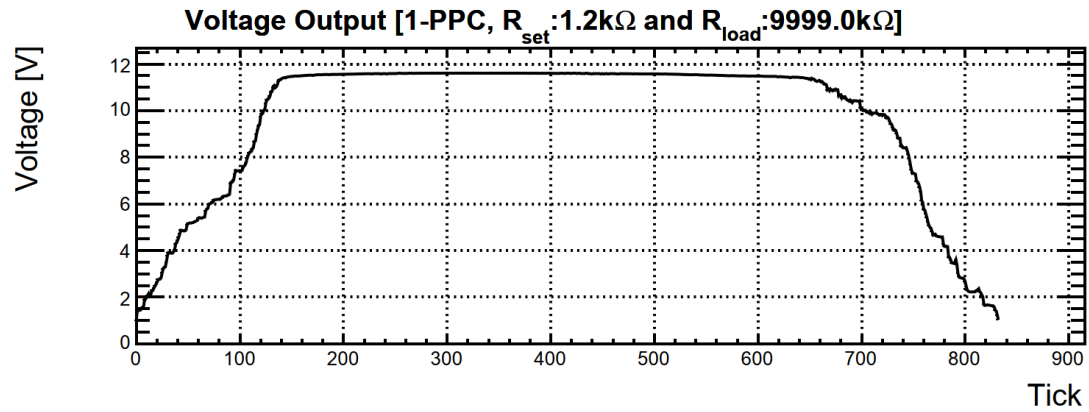
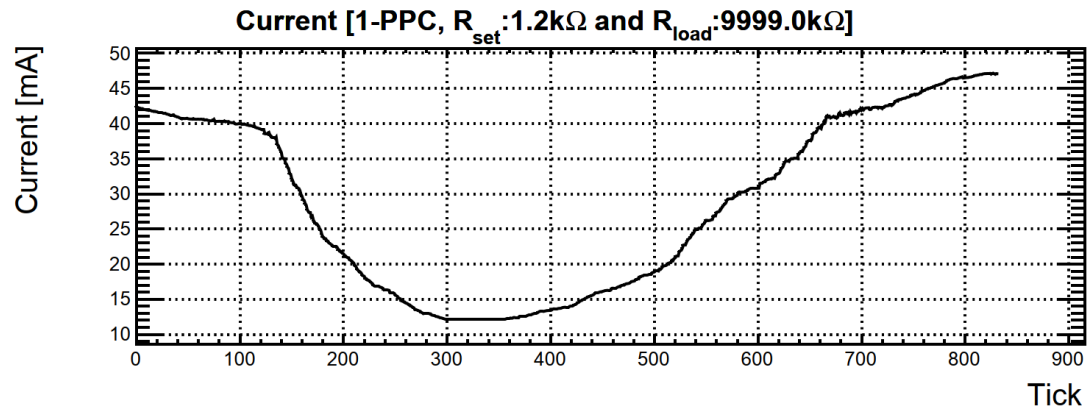
** Voltage setting between Pin 1(LIS) and Pin 4(GND) to adjust laser power*

** Tested with 3 meter 62.5um fiber at 25 °C ambient*

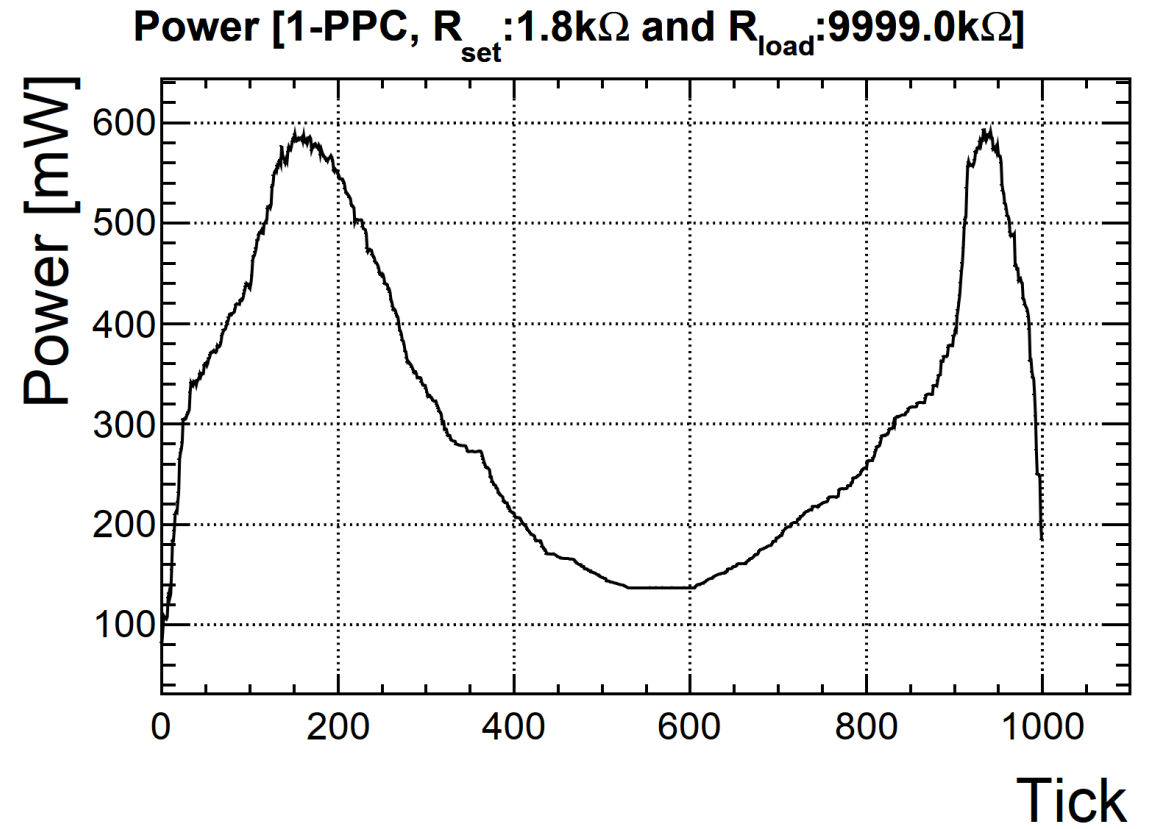
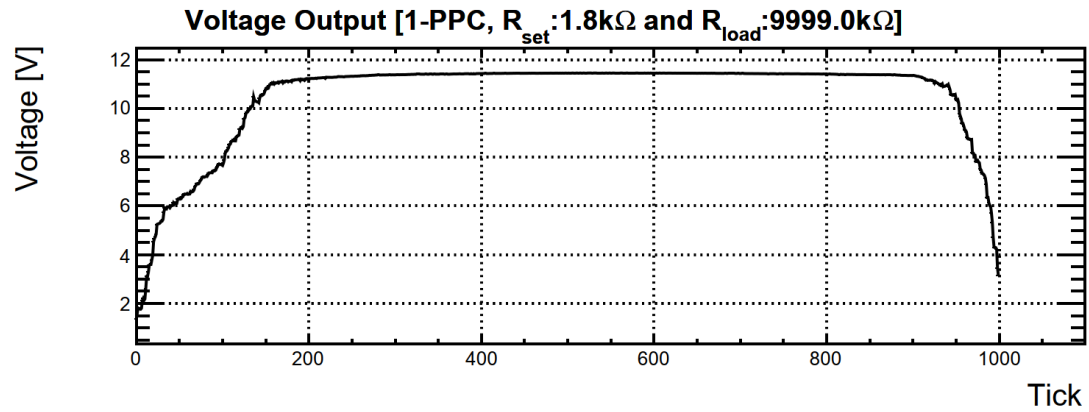
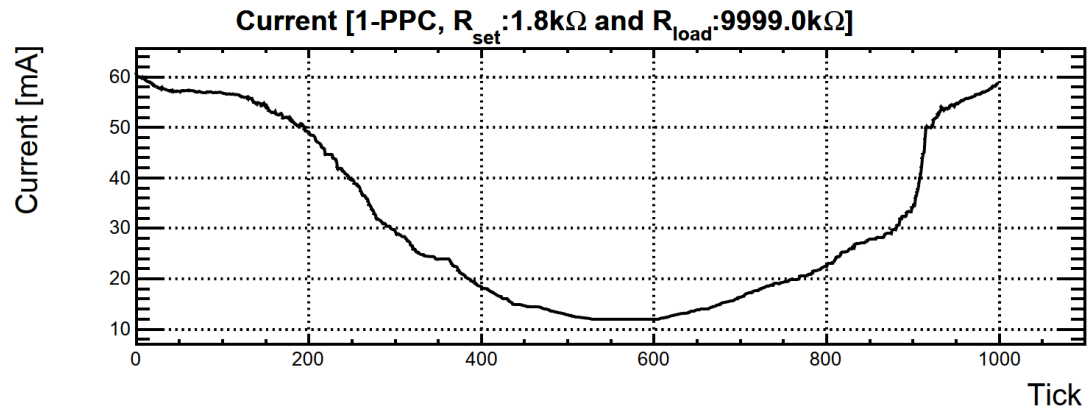
Test #2



Test #2



Test #2



Test #2

