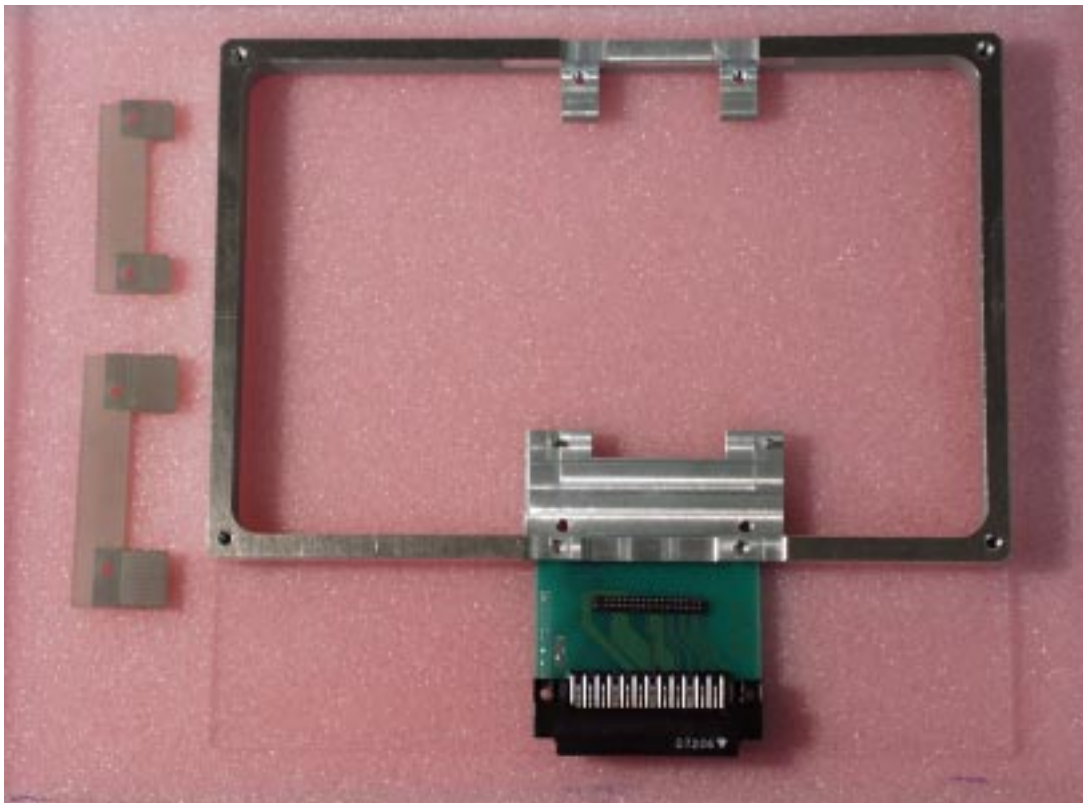


## Cooling Performance of a Barrel Module Handling Box

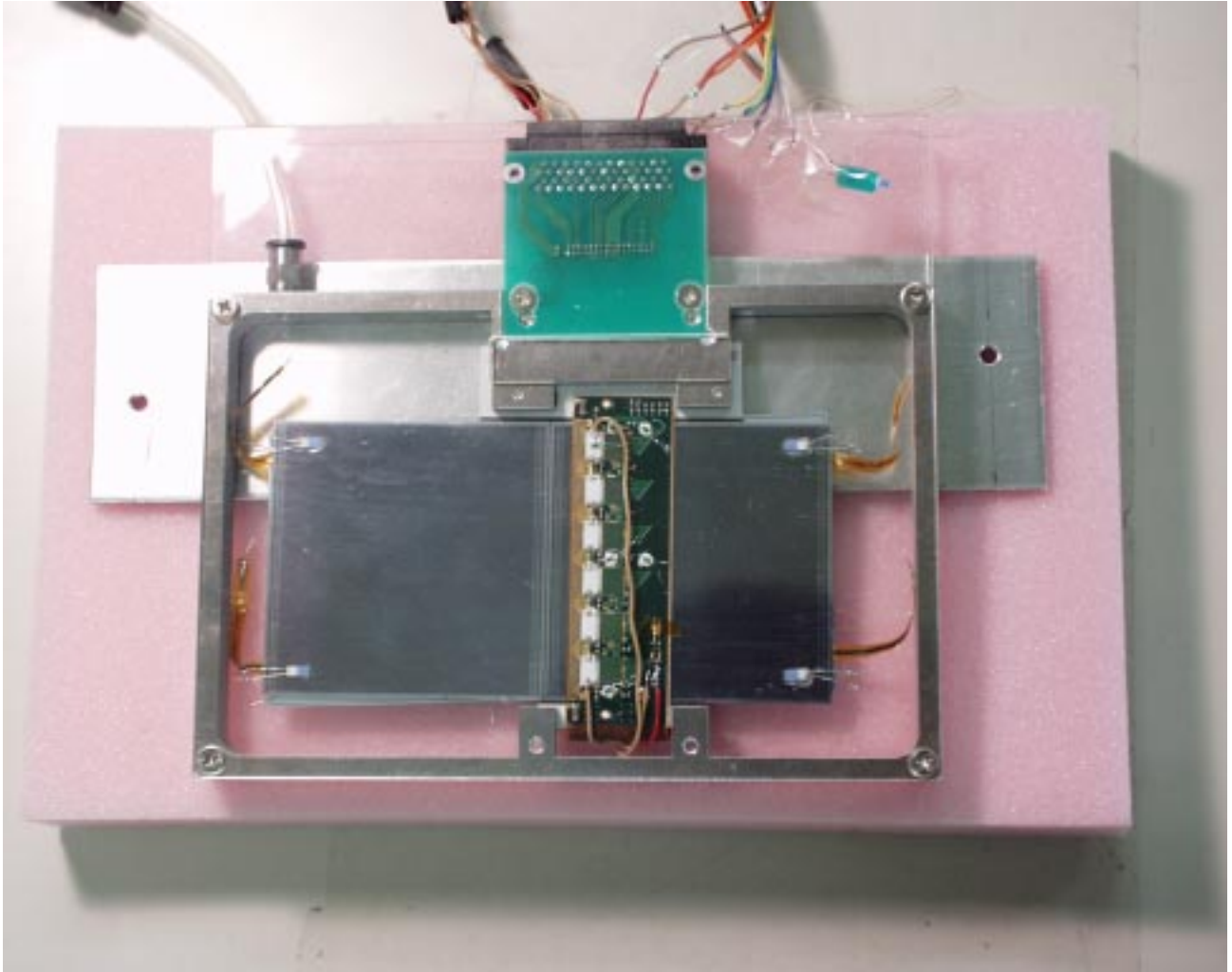
The handling box made of aluminum



Cooling can be done by attaching a cooling block on  
the cooling face opened  
backside of the box.

## Backside of the box

A heater Module, which had a BeO facing, was used for the measurement.

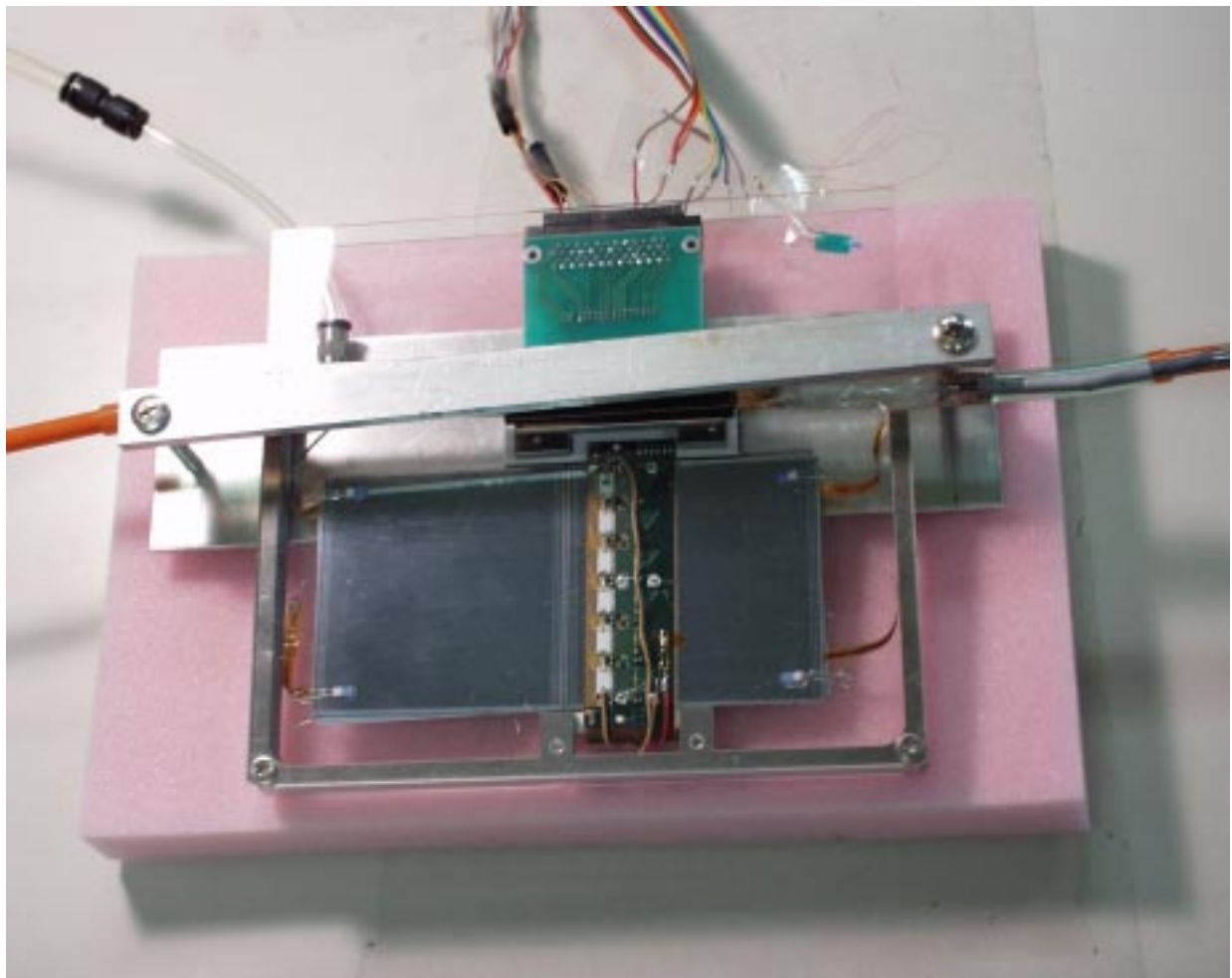
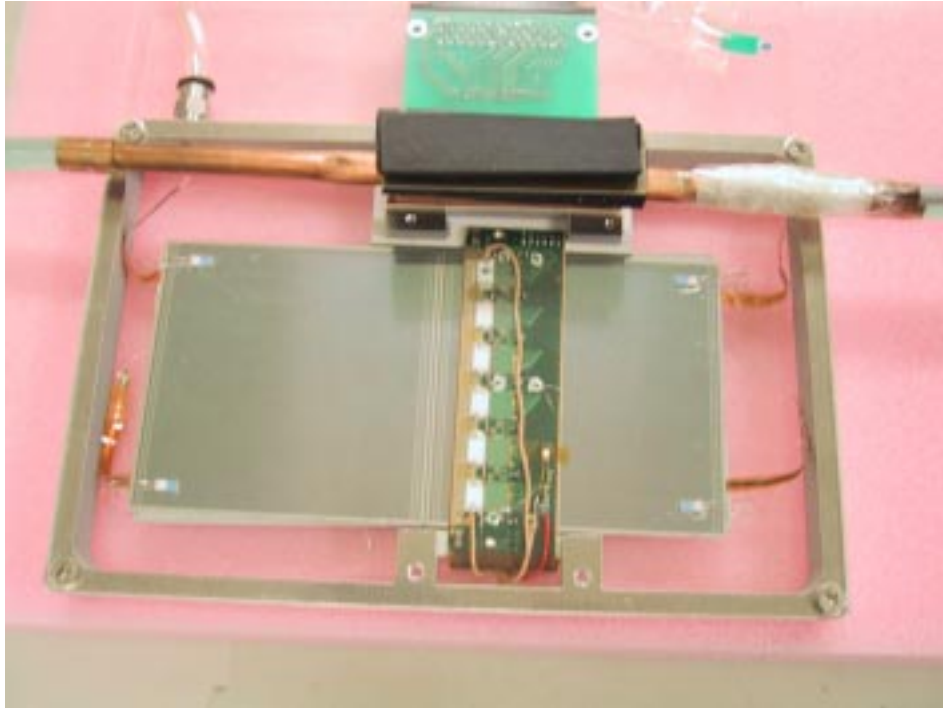


A copper block soldered on a cooling pipe  
Soft rubber was attached to be pressed down.

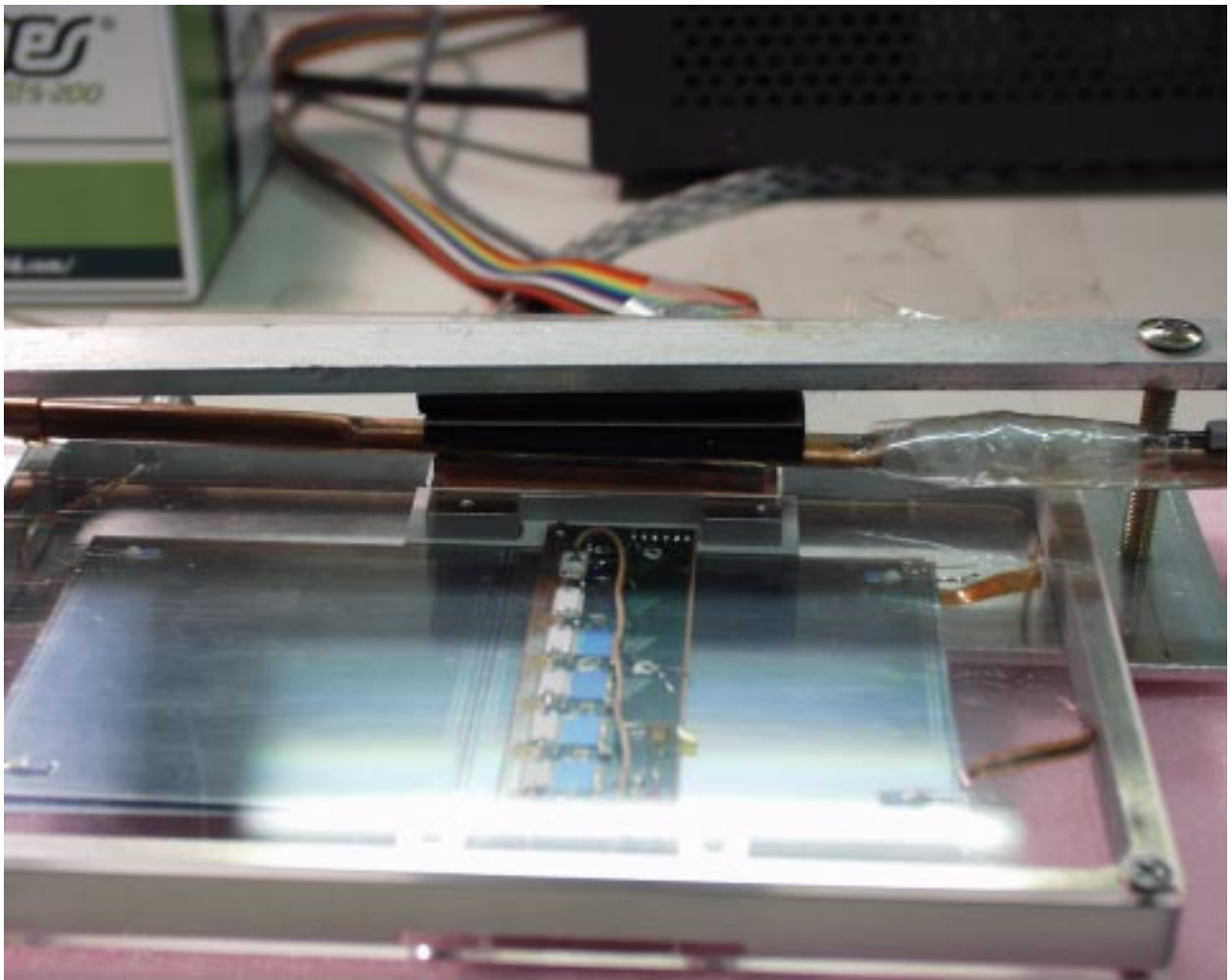


## Setup:

Just dry metal to metal touch without grease

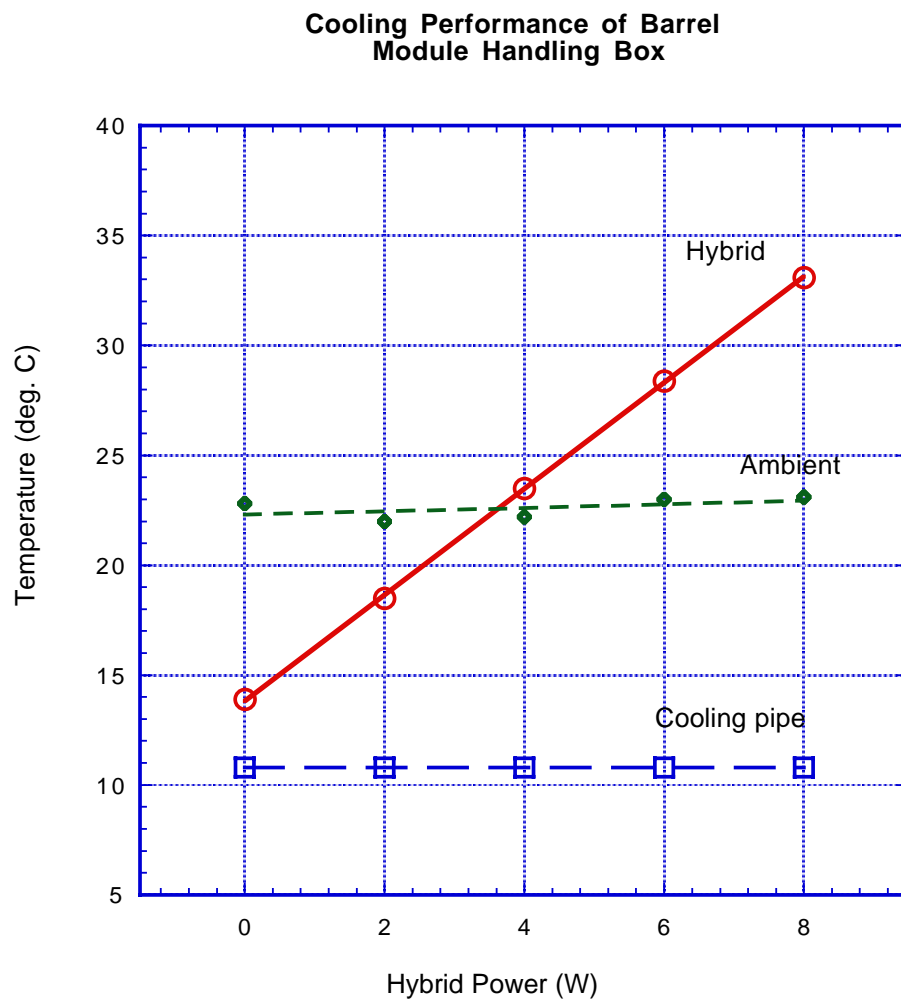


Clamping down with moderate pressing force



Does this simple metal contacting  
cooling scheme work well?

## Results:



- Ambient temperature near the box; ~23 deg.C
- Cooling pipe temperature just upstream of the cooling block; ~11 deg.C
- Hybrid power; 0 ~ 8 W
- Hybrid temperature;  
~14 to ~33 deg.C (~2.4 deg.C/W)

## Conclusions:

- In usual module operation of 5 to 7 W heat generation, the hybrid temperature can be maintained in the range of 26 to 32 deg. C with coolant temperature of about 10 deg. C.

--> working OK

- No need to disconnect and connect a coolant path to set the handling box

-->no messy coolant dripping

- No need to use thermal grease

--> no dirt on the box