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.
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