

File: EyeRIS-Thermal-Calculations
Project: 800139 EyeRIS Remote Imaging System
Author: Paul Roberts
Modeling From: Jon Erickson

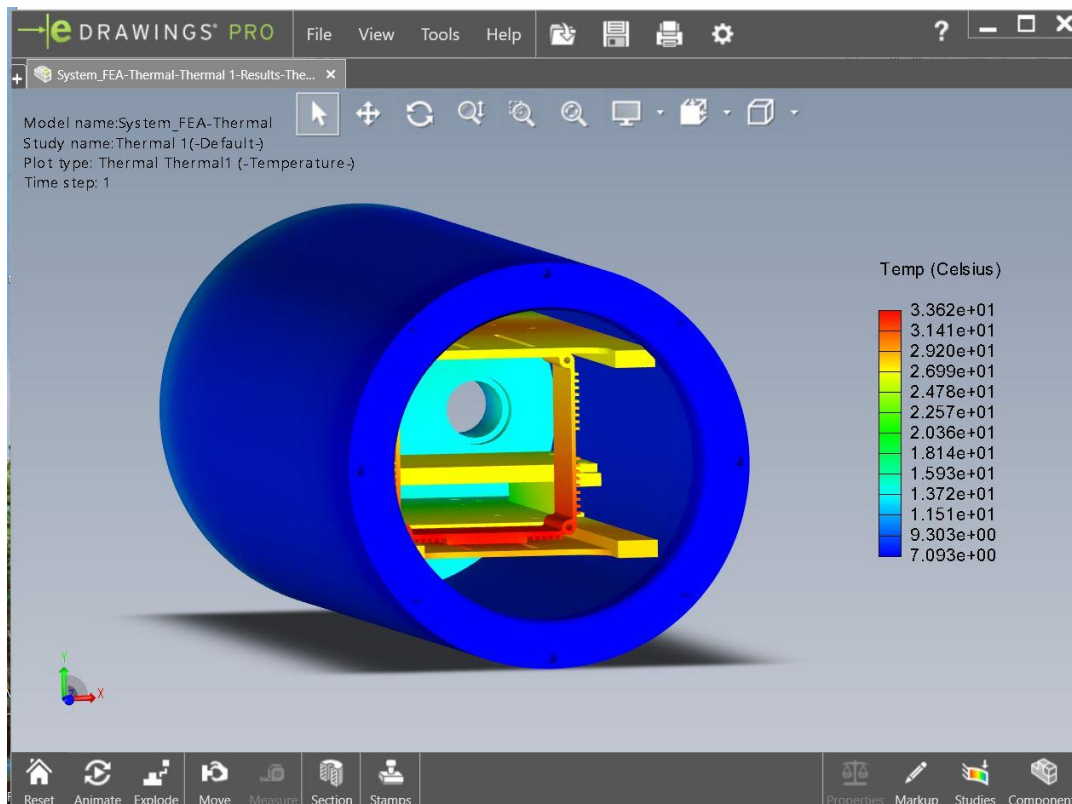
Sources of heat in the housing:

- MBC-275: 27W
- MBC-41: 3W
- PHT4: 7 W
- R26: 13 W

Setup and Assumptions:

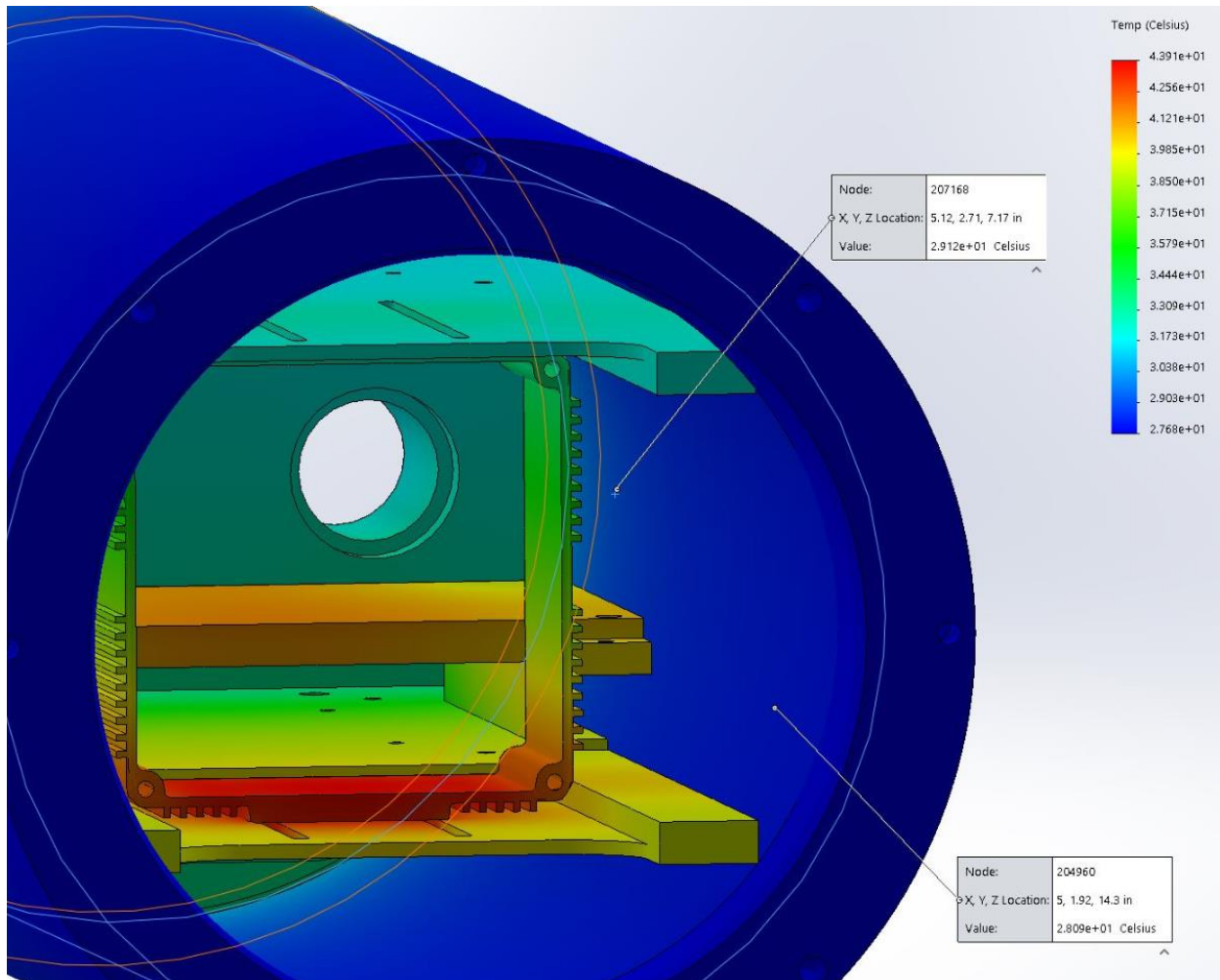
- All heat flux from camera is through the bottom mounting plate. This is a worst-case assumption and in practice there is likely convection inside the camera housing that will better distribute heat.
- Tflex HD90000, 0.12" thick material is used to transfer heat from PCBs and camera to chassis. The material has a thermal conductivity of 7.5 W/mK.

Case 1: housing immersed in 7 C water, all components at full power



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Case 2: Camera operated in air without lights powered on



Results:

- In water at 7 C the hottest part of the system is directly under the camera mount block at 34 C.
- In air with the lights turned off, the hottest part of the system is directly under the camera at 44 C.