For open field test the following part are needed:

* Custom built cabinet (80/20) on the table
* Frame (Thorlabs)
* Lighting (amazon)
* Camera (point grey)
* Box by machine shop with some items from stock room

It takes a while to order and get everything, so prioritize items with longer lead times. Conversely, McMaster-Carr, amazon.com and Thorlabs items come as fast as overnight. Many items need to be machined so plan ahead.

**Cabinet**

Is built from 80/20 (<https://8020.net/>) parts, the cost of the material as a kit is $894.12. Standard led time is 1 ½ weeks. Assemble if necessary. Ordering the cabinets pre-assembled will significantly up their price but will also save you a couple of days. It might be a good idea to have holes for ventilation and cables/wires drilled by a machine shop beforehand.

2” hole in the left panel for ventilation. The diameter depends on the size of tubing you use and exact position - on where room ventilation system and how it is easier to connect to it. For the optoma a good position would be 4” from the top edge of the panel and 4” towards the center of left panel.

2” hole in the bottom right corner of the right panel for cabling. Exact position does not matter, see how better to connect with power supplies and computer. We suggest 3.5” from the top and 3.5” from the edge of the panel.

Order acoustic insulation foam form McMaster

5692T49 - Sound Absorber Sheeting, Easy-Clean Adhesive Back, 1" Thick, 54" Wide, 5 ft. Length

Install the acoustic insulation foam. The foam comes in 54”-wide rolls with custom length. Be wise about ordering the length, as you need single pieces for each panel. We estimate that about 5-ft long pieces should be enough for our cabinet. Since we assemble cabinet ourselves, the strategy here is to cut the foam same size as each panel along each dimension since you want to be able to tuck the extra foam underneath the metal support rods in the cabinet. This will ensure proper insulation along the edges and give a nice esthetic effect. Use razor blade to cut, and make sure to protect the floor from scratches. After assembling, panels can waggle to prevent this use rubber door seals.

**Frame**

We used Thorlabs parts for frame since most pieces were available in lab. Please check with solutions@knottsco.com they might offer more cost efficient solution.

Frame should be fixed firmly to the table, in our case we attached it to the optical table, instead you can use solid aluminum optical breadboards, like Thorlabs MB30 - Aluminum Breadboard 30" x 30" x 1/2", 1/4"-20 Taps

<https://www.thorlabs.com/thorproduct.cfm?partnumber=MB30> or connect several small ones to match your size.

The strategy here is to have 4 point support and adjustable floor height.

* 25mm construction rails and corners
  + Qty 6 of XE25L30: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25L30>
  + Qty 4 of XE25L24: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25L24>
  + Qty 2 of XE25L18: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25L18>
  + Qty 4 of RM1G: <https://www.thorlabs.com/thorproduct.cfm?partnumber=RM1G>
* Dovetail rail carriers
  + Qty 8 of RC1: <https://www.thorlabs.com/thorproduct.cfm?partnumber=RC1>
  + Qty 4 of RC2: <https://www.thorlabs.com/thorproduct.cfm?partnumber=RC2>
* Right angle brackets
  + Qty 8 of AB90B: <https://www.thorlabs.com/thorproduct.cfm?partnumber=AB90B>
  + Qty 8 of AB90C: <https://www.thorlabs.com/thorproduct.cfm?partnumber=AB90C>
  + Qty 8 of XE25A90: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25A90>
* Low-profile T-nuts and screws
  + Qty 4 bags of XE25T3: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25T3>
  + Qty 4 bags of XE25T1: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25T1>
  + Qty 4 bags of

SH25LP38 /4"-20 Low-Profile Channel Screws (100 Screws/Box) : <https://www.thorlabs.com/thorproduct.cfm?partnumber=SH25LP38>

* Rail Joiner for 25 mm Rails
  + Qty 4 of XE25J: <https://www.thorlabs.com/thorproduct.cfm?partnumber=XE25J>

**Camera**

Here we use Blackfly S Mono 1.3 MP USB3 Vision Point grey camera, it can runs up to 170fps full frame at 1280 x 1024.

We recommend the following objectives from Thorlabs, note 3.5mm and 4.5mm has fish eye effect that had to be corrected and 6 mm lens has a long focal distance, so mouse is 150cm from camera. Currently we use 4.5mm.

* 6 mm lens
  + Qty 1 of MLV6WA: <https://www.thorlabs.com/thorproduct.cfm?partnumber=MVL6WA>
* 3.5mm lens
  + Qty 1 of MVL4WA: <https://www.thorlabs.com/thorproduct.cfm?partnumber=MVL4WA>
* 4.5 mm lens
  + Qty 1 of MLV5WA: <https://www.thorlabs.com/thorproduct.cfm?partnumber=MVL5WA>

**Box 18” x 18”**

For box we used leftovers from the chamber panels. You can order similar material from McMaster 8586K271 ABS Sheet, 24" x 48" x 1/4", Black

Ask machine shop to cut metal corners and drill screw hole it them. They can also thread plastic and assemble box for you