Chart

Description automatically generatedThe rectangular scintillator diminsions are:

Height= 1.5 inches

Width = 1.0 inches

Length = 7.0 inches

Volume 10.5 cu inch

A picture containing line chart

Description automatically generated

Chart, line chart

Description automatically generatedThe Halfway trapezoid dimensions are similar to the rectangle with one base half the other.

Volume 7.875 cu inch, 75% the rectangle

The triangle dimension are just the rectangle cut in half diagonally through thinnest dimension.

Volume 5.25 cu inch, half the rectangle

The source was below the scintillator and aimed vertically with a small solid angle. The source was moved different distances from the SiPM. The distances started at 0.5 inch and ended at 6.5 inch. The step size was 0.5 inch.

Chart, line chart

Description automatically generatedFigure 1

Figure 1 shows the ratio of the average SiPM hits and the number of photons created. Each run was 1e5 events. The trapezoids shapes had better efficiency. The trapezoid with of of the bases equal to zero did the best.

Chart, line chart

Description automatically generatedFigure 2

Figure 2 show the percent of gamma hits per total events. It is obvious that the thicker portions have more hits.

Chart, line chart

Description automatically generatedFigure 3

Figure 3 show the average number of SiPM hits per scintillator hit.

Figure 4

A picture containing text, shoji

Description automatically generated

Figure 4 show total SiPM hit from 1e5 event vs the distance from the SiPM. Beyond 2 inches the rectangle collects more SiPM hits. It does have a considerable amount more volume to create more photons.