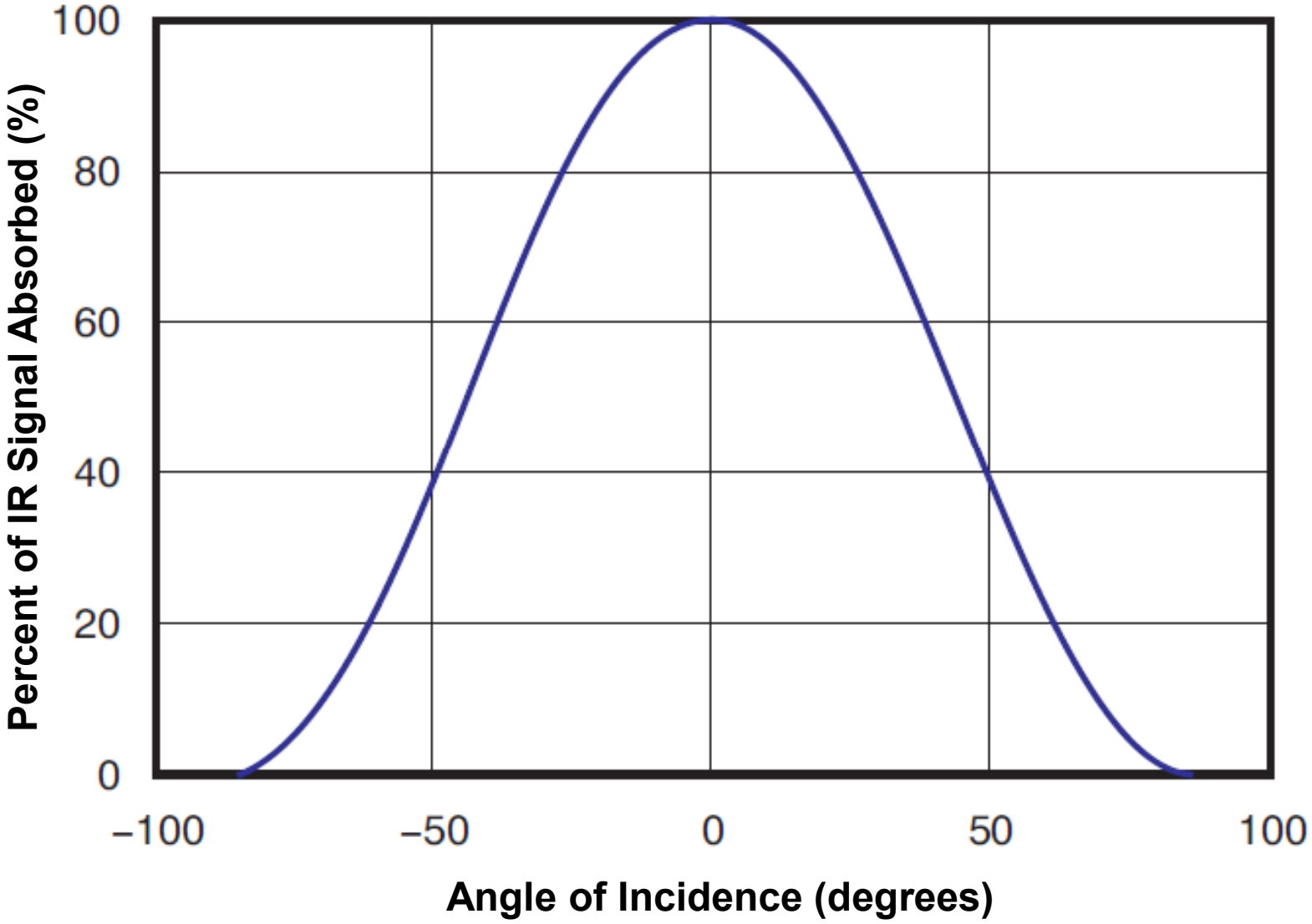
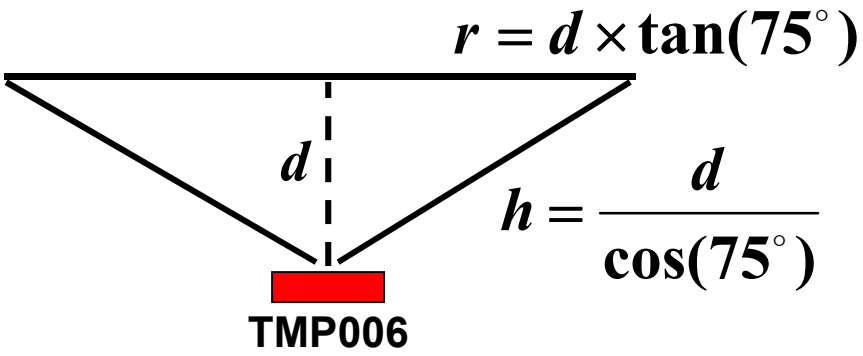
TMP006 Field of View

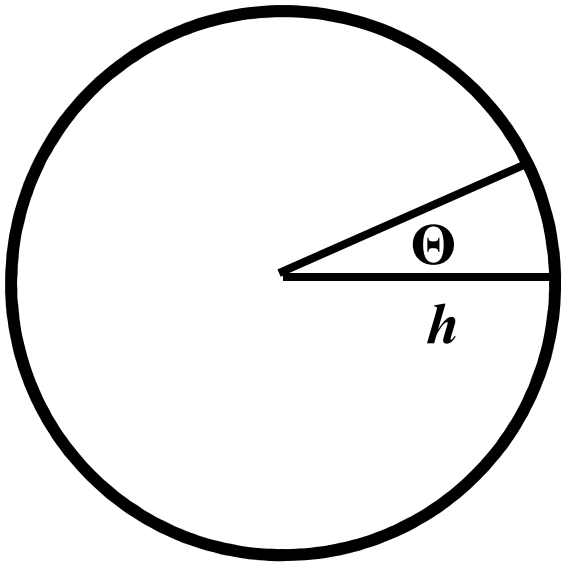


Paper Cone Method

- A paper cone can be constructed from a circle to produce a tangible model of the TMP006's field of view
- A representation of the system is shown to the right
  - d: distance to target object
  - r: radius of field of view
  - h: radius of circle
  - Θ: angle of wedge to cut out of circle

$$\Theta = \frac{h - r}{h} \times 360^{\circ}$$

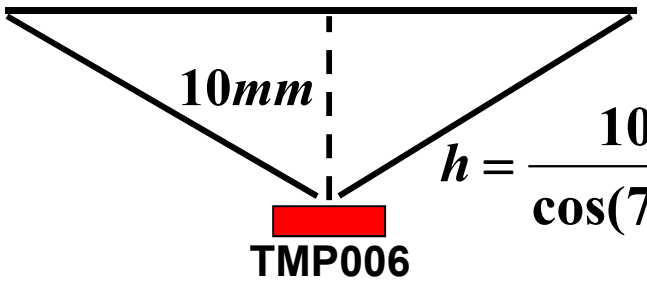




Paper Cone Example

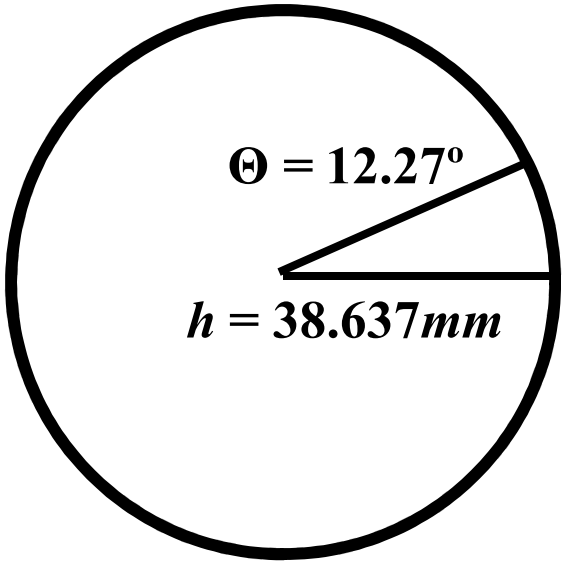
- A cone was made to simulate the field of view for a TMP006 mounted 10mm from the object to be measured
- A circle of radius 38.637mm was cut out
- A 12.27 degree wedge was cut out of the circle
- Tape together the edges of the cut to form a cone

$$r = 10 \times \tan(75^\circ) = 37.32mm$$



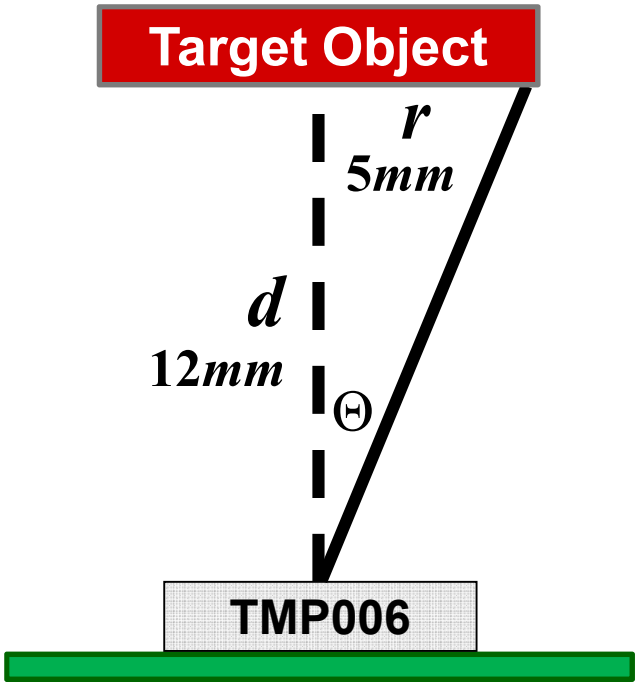
$$h = \frac{10}{\cos(75^\circ)} = 38.637mm$$

$$\Theta = \frac{38.637 - 37.32}{38.637} \times 360^\circ = 12.27^\circ$$



Determining Field-of-View Requirement

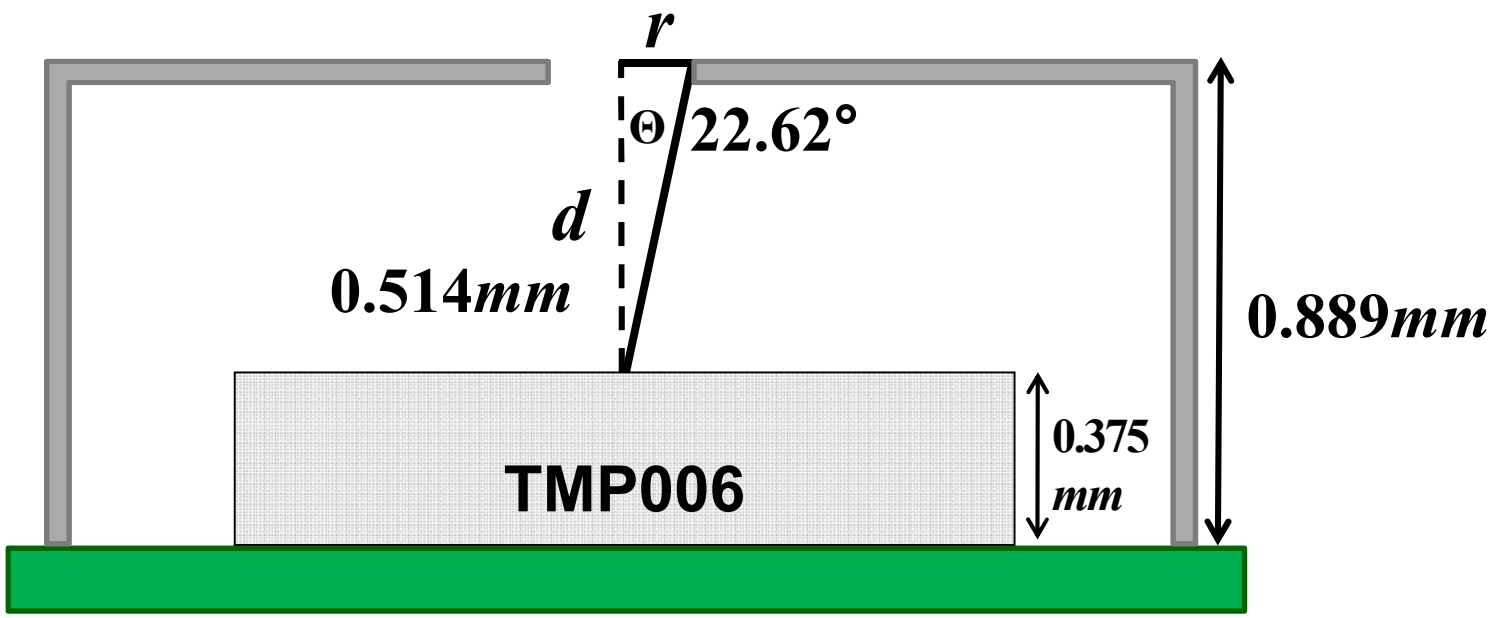
- The drawing to the right represents the geometry of a possible application
  - d: distance to target object
  - r: radius of target object
  - Θ: required field of view angle



$$\Theta^{\circ} = \arctan\left(\frac{r}{d}\right)$$

$$\Theta^{\circ} = \arctan\left(\frac{5mm}{12mm}\right) = 22.62^{\circ}$$

Sizing the Aperture



$$r = d \times \tan(\Theta)$$

$$r = 0.514mm \times \tan(22.62^{\circ}) = \boxed{0.214mm}$$

- 0.375mm is the median height of the TMP006 package after soldering
- 0.889mm is the typical height of a metal cover