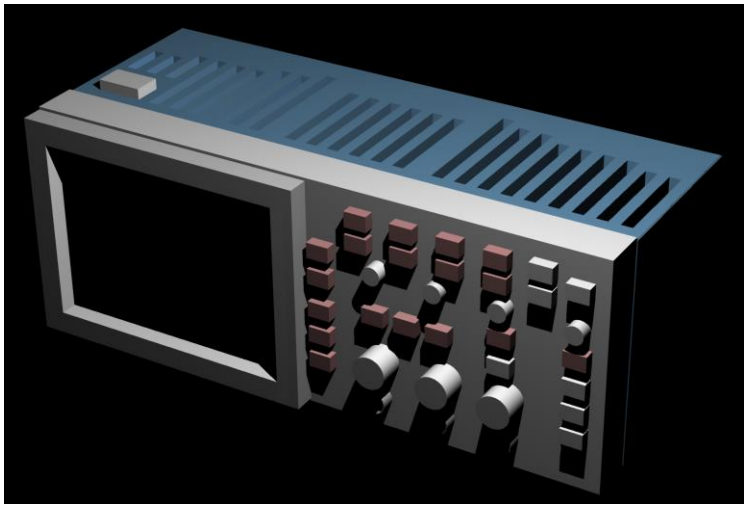
PMT Testing

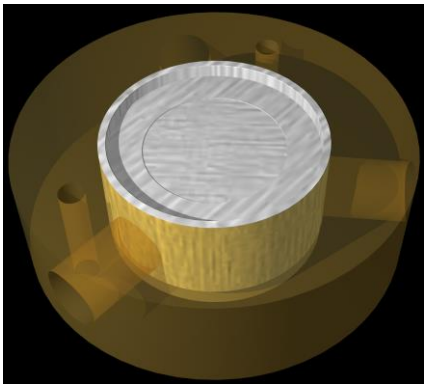
Alpha Testing

Supplies needed

Oscilloscope



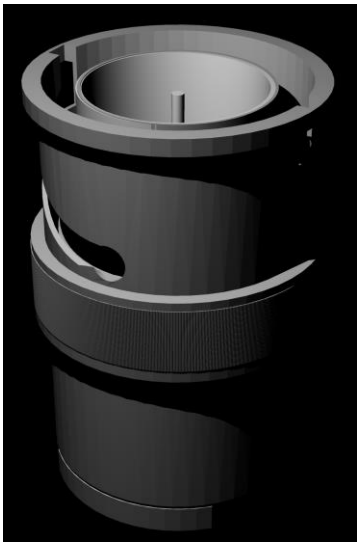
Alpha Source



Black Covering (PBC pipe wrapped in electrical tape)

Signal Splitter (T Connector)

Terminator



1. Using the thin black electrical tape (¾ inch wide), tape the alpha source to the photomultiplier tube. (Make sure the correct side of the source is facing the tube window)

2. Place the cap over the window and tape it to the sides of the tube using the thick electrical tape (2 inch wide). Make sure it is securely taped to the tube to avoid light leaks.

3. The T connector is already on the oscilloscope with a 50 ohm terminator on one end. Plug the signal cable into the other end. A drawing of an oscilloscope is on the next page.

4. Plug the high voltage cable into a power supply. Turn it on and slowly increase the voltage until the display reads 1300V.

5. Look for the signal on the oscilloscope. (Good: 1V/div and 250ns/div. Bad: 100mV/div and 25ns/div)

6. Record the PMT number and the average height and width of the signal as seen on the oscilloscope. Record the noise band as with Monkey Box testing (pages 34-35). Sketch a scope image.

7. Using pliers, wiggle the signal and the high voltage cables close to the solder joints on the tube to see if the signal does these two things:
   a. If the cables must be held in a certain position for the signal to appear.
   b. If the signal becomes noisy once the cables are wiggled.

8. Record any problems noticed with the PMT and set aside to be fixed if necessary.

9. Slowly decrease the voltage on the power supply to zero and turn off. Disconnect the tube from the oscilloscope and power supply. Remove the alpha source.

Important notes:

1. Never connect or disconnect the PMT from the power supply if the supply is on.
2. Always turn the power up and down SLOWLY.
3. Never expose the uncovered tube window to outside light (room, outdoors, etc) while the tube is being powered by the power supply.