The combination of PET and SPECT in one device may have clinical and economic advantages. The PET/SPECT camera developed as a joint venture between CPS Innovations, Knoxville, TN, and Siemens Medical Systems, Hoffmann Estates, IL, is a fully 3-D system with 511 keV transmission sources. The detector is based on a NaI-LSO phoswich scintillator. The individual LSO and NaI crystals have a size of 4.3 X 4.3 10 mm(3). The 12 x 12 crystal blocks are read out by 2 x 2 in photomultiplier tubes, arranged in a low cost quadrant sharing system. The purpose of this paper is to illustrate phoswich detector setup and to evaluate the detector performance for both modes, PET, and SPECT. The quadrant sharing method and the two crystal layers require special algorithms to find the individual crystal regions and distinguish them from light cross talk caused by adjacent blocks. The base for this procedure is a position profile acquired with a flood source. The mean energy resolution for the NaI(Tl) crystal layer was 13.1% (FWHM) at 140 keV and 15.7% (FWHM) at 511 keV for the LSO crystal layer. For the PET setup the average time resolution was 3.4 ns (FWHM). A daily quality check showed a very stable detector condition. Peak shifts due to room temperature changes were very little for both modes and both crystal layers.