Dosimetrical characteristics of a new p-type scanning diode detector from Sun Nuclear was evaluated by intercomparison with the Scanditronix scanning diode and ionization chamber in a water tank. For electron beams, the new diode agrees with the Scanditronix electron diode to within 0.5 mm for all electron energies studied (6 MeV – 22 MeV). For open and wedged photon beams, PDD measured with the new diode agrees with the ion chamber and Scanditronix photon diode for small field sizes ($\leq 10\times10$ cm^2) under 6 and 15 MV, but is different from ionization chamber results for square field sizes larger than 20×20 cm^2 and for depths larger than 10 cm (for 6 MV ~(3.1±1.1)%, for 15 MV ~(1.85±0.2)% at depth of 10 cm). The scanning diode detector exhibits energy dependence, changing 10% over the photon energy range between Co-60 and 20 MV. The energy dependence is smaller (~4 %) for electron nominal energy range between 6 and 20 MeV. Open and wedge photon profiles measured with the new diode agrees with the ionization chamber and the Scanidironix diode for both 6 and 15 MV. However, the wedge photon profiles measured by the new scanning diode are little higher outside of beam collimation. We will also present result for output factors measured with the new diode in water for both photon and electron beams.