Abstract: In this paper, a new illation of the principle of PWP (Pressure Wave Propagation) method is presented, and the results, after comparing the PWP method with the PEA (Pulsed Electro-Acoustic) method, indicate that the two methods very resemble with each other in physics. In order to testify the conclusion, the measurement of space charge distribution in XLPE by using the combined system of piezo-PWP/PEA has been corried out, and the experimental results confirm the conclusion.