

Ultrasound transmission computer tomography (USCT) has come as a promising alternative to standard X-Ray imaging in medical diagnosis. The process of steering and focusing the acoustic pulses is known as beamforming. The aim of this work is to reconstruct 3D sound speed maps and investigate the effect of focusing on them. Focusing improves the signal to noise ratio (S/N) and potentially reduces the influence of diffraction. Presently the work has been limited to 2D and up to focusing of receiver elements only and later it can be extended to 3D and for the sender focusing also. The author tried the various combinations focusing on a one sender and different number of receivers to estimate the optimal number of receiving elements that can give better focusing results for different level of noise in synthetic data. Presently the trial of algorithm has been tested on synthetic data only. Root mean square error was used as a measure for the comparison of estimated and calculated time of flight (TOF).