

## **ABSTRACT**

*Mosque is foremost a place of worship for Muslims. Based on function, mosque is categorized as a room for speech. All worship activities at mosque such as reciting of Holy Quran and Friday sermon need a good acoustic performance. Therefore, having good acoustic performance is an important feature in mosque. Beside affected by shape, material surface, and dimension of the room, room acoustic also affected by characteristics and loudspeaker placement. The objective of the research is to investigate the effect of loudspeaker placement on the optimization of acoustic performance in mosque. Masjid Syamsul Ulum (MSU) located at Telkom University was taken as object study of this research. MSU has square shape with surface area is 576 m<sup>2</sup>. Several acoustics parameters are simulated in each mosque such as Sound Pressure Level Distribution, Reverberation Time (RT), Definition (D50), Speech Transmission Index (STI), and Sound Strength (G). There are four different loudspeaker placement modes which are simulated in each mosque. The simulation results show that the optimal loudspeaker placement in MSU is modes 2 (loudspeakers placed in front side) with the RT value is 0.52 dB, STI is 0.74, and 78,18 % of D50.*

*Keywords : acoustics parameter, mosque, speech intelligibility, loudspeaker.*