

ABSTRACT

The implementation of LTE (Long Term Evolution) technology is still uneven, especially in the Rumah Mode Bandung area, this area is not well covered by existing eNodeB, so users in the area cannot access the LTE network properly. There are several major problems related to cellular usage, including coverage and capacity issues. Capacity refers to the ability of a cellular network to increase user throughput while simultaneously accessing services. Capacity issues are becoming more serious with the significant increase in internet usage, especially with the emergence of applications and services that consume large bandwidth. This requires cellular networks to continue to update their infrastructure and technology to support current and future user needs. Active Antenna Unit (AAU) can improve the quality of cellular communication services by increasing RSRP and SINR Coverage, as well as user throughput capacity. AAU, which is a combination of RRU (Remote Radio Unit) and an integrated antenna to make it simpler, is expected to reduce space usage and facilitate data transmission. This study also includes an analysis of the limitations and challenges in implementing AAU (Active Antenna Unit) technology. The installation of Active Antenna Unit (AAU) in the Rumah Mode Bandung area was carried out to improve the quality of the network that experienced bad coverage and blank spot problems. The test results showed a significant improvement in several network performance parameters. The average RSRP (Reference Signal Received Power) value improved by 4.57 dBm, from -84.28 dBm to -79.71 dBm. In addition, the average SINR (Signal-to-Interference-plus-Noise Ratio) value also increased by 2.22 dB, from 5.28 dB to 7.5 dB. This improvement also had an impact on the increase in average throughput, which increased by 5729 Kbps, from 48792 Kbps to 54522 Kbps. These results indicate that the installation of AAU has a positive impact on signal quality and network capacity in the tested area.

Keywords: AAU, RSRP, SINR, LTE, Throughput user, Rumah Mode Bandung.