

## **ABSTRACT**

The availability of quality services in every place is important for customers. Such as in Tamansari Parama Building, access to high-speed data services is needed because the building as an office building. The cellular network performance inside the Tamansari Parama Building is unstable due to the lack of cellular antenna installed in the building so that it uses external signals and the building material is difficult to penetrate by external signals.

Femtocell is a solution that can be used for coverage areas and provides access to services customers in Parama Tamansari Building. The design of this LTE network is simulated using RPS software for Simulation of RSL and SIR . This design starts with the determination of the femtocell system specifications, then observes the location, survey the literature, then from the results of information collection, the design of coverage and capacity is carried out by determining the number of cells. Also used is the Distributed Antenna System (DAS) method to find out the details of the placement of the antenna.

From the results of the design it is needed that is 49 FAP which needs to be installed in the Tamansari Building. Then from the simulation for the Basement floor to the 16th floor, the average RSL results at the lowest percentage is 95.09% and the highest is 99.18% so that it meets the KPI standard which is above 90% for each floor. Likewise with SIR, each floor that has met the KPI standard above 90%, which has an average SIR which is the lowest with 96.76% and the highest is 98.24%..

**Keywords:** Femtocell, SIR, RSL, RPS, DAS