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## ABSTRACT

The phenomenon of cellular communication technology development as though will not ever stop. Nowadays, companies that are involved in cellular communication, especially those uses the GSM network, compete to increase the performance of their network, both from the aspect of the quality of the signal and the coverage area. Besides that, the use of wi-fi in public areas is also getting higher as the increase of the individual needs of fast and easy communication in the environment.

The fast development and growth of the GSM network and wi-fi in the community's environment, especially in big cities, attract writer's attention to look for the interconnection between them. The matter so that afterwards provide a basis for the writer to carry out the research and analyze the effect that is resulted in by the existence of the wi-fi injection towards the performance of the GSM. The injection is carried out by making use of picocell GSM equipment that was built in a location or the building.

Different from hot spot service that only use independent access point, this service offers several benefits for the users, including wi-fi coverage area that is wider than hot spot's, because anywhere the user is in, as long the area is still in the GSM network coverage then this service can be enjoyed.

The measurement is done before and after injecting wi-fi 2.4 GHz signal into GSM system antenna. Parameters that will become writer's observation object when carrying out field study are Rx Level and the quality in recipient side (Rx Quality), that represent the value of BER. Besides paying attention to the quality of the GSM signal, wi-fi performance is also need to be paid attention too in applying this service. Wi-fi parameters that become the observation focus are the value of Rx level, SNR, and also ping test results that is carried out to access point.

From the making of this final assignment is expected to be known the comparison between the performance of the GSM network before the existence of the wi-fi effect and after having wi-fi effect.