

## **Abstract**

*5G is one of the evolution of telecommunication technology which is able to provide high Quality of Service (QoS) with very low latency and provide data access speed more than 1 Gbps [1]. 5G require mobile data offloading schema that one of the implementation use femtocell technology. Measurement bandwidth availability is one important part in the initiation process of mobile data offloading. The aim is to ensure smooth traffic engineering data to run optimally.*

*In this research, measure and analyzing of the availability of bandwidth on backhaul femtocell-based 5G network using active measurement techniques with methods Probe Gap Model. In addition , measurements were taken using the method Probe Rate Model to provide a comparison of the results of that methods. Tests scenario use office scenario with maximum 500 users and public scenario with maximum 2500 user. Probe Gap Model based tool use Spruce and Probe Rate Model tool use Assolo. Data traffic running on the femtocell backhaul generated by Spirent Traffic Generator which also serves as a verifier of the output of Spruce and Assolo. From the result, Spruce provide 94,833 Mbps bandwidth availability with 7,71% mean absolute percentage error in office scenario and 81,599 Mbps bandwidth availability with 5,66% mean absolute percentage error in public scenario. Assolo provide 47,849 Mbps bandwidth availability with 49,69% mean absolute percentage error in office scenario and 85,524 Mbps bandwidth availability with 64,63% mean absolute percentage error in public scenario.*

**Keywords :** *5G, mobile data offloading, femtocell backhaul, bandwidth availability*