ABSTRACT

Femtocell technology is low-power base station that based on wireless for indoor cellular access. In implementation, femtocell network using various backhaul such of them, xDSL, FTTH, BWA and VSAT-IP. Very Small Aperture Terminal (VSAT) is a term used to describe the terminals of small satellite earth stations used to data transmission, image or voice via satellite. The aim of VSAT is to access femtocell in rural area. Therefore, in this final project showed the performance of VSAT IP as backhaul in femtocell.

In this final project has been carried out trial or testing activities and configuration femtocell network using VSAT-IP backhaul installed on STO Jalan Cagak Subang, as a remote site. This location can't access Internet because 2G or 3G signal is not exist anymore because it includes a blank spot areas.

The result of this research show the value of Es / No is 8.5 dB in current measurement, while in link budget calculations Es / No obtained 8.92 dB. The available bandwidth is 1.5 Kbps - 4.5 Kbps while measure voice bandwidth in idle condition, and 55 Kbps ï 60 Kbps while the voice is connected. In 4 voice (voice channels maximum) bandwidth measurement obtained bandwidth range 240 Kbps - 250 Kbps. On a video call bandwidth measurements obtained range 230 Kbps - 240 Kbps. In the measurement bandwidth for download service with 4 parallel user obtained maximum bandwidth 1.8 Mbps, minimum bandwidth 651.5 Kbps, and avarage bandwidth 1.2 Mbps and troughput obtained 1 Mbps. In upload services obtained range between 400 Kbps - 500 Kbps and troughput obtained 450 Kbps. In SMS and MMS measurement obtained SSR (*SMS Success Rate*) 100 % dan *MMS Success Rate* 100%. From measurements of transmission parameters, link budget, and femtocell service, femtocell backhaul using VSAT-IP can be said has good performance and appropriate with FAP required standard for femtocell services.

Key words: VSAT-IP, Femtocell, Backhaul, Performance