ABSTRACT

Information technology development has made increase of data communication. C-band frequency used until now, will not afford user requirement. Solution for the problem is using Ka-band frequency, alto Ka-band frequency isn't easy to applied. Many factor influence it, such as rain attenuation, cloud attenuation, gaseous atmosphere attenuation, scintillation attenuation, and depolarization.

On this final assignment being studied about propagation of Ka-band frequency. The main problem is rain attenuation. Calculation of rain attenuation using prediction models, such as ITU-R-618-5, ITU-R-618-6, Global-Crane, and Simple Attenuation model (SAM).

On this studies, LEO satellite is being use especially teledesic satellite which have global coverage. To serve Indonesia from12,95^{o}LU to 12,95^{o}LS need 6 satellites at 1375 Km of altitude and minimum elevation angle of 40^{o}, coverage of 1 footprint effectively 13,619952 x 10^{6} Km^{2} wide and visibility time 4,791 minutes.

Calculation of rain attenuation used on 8 cities, confirm attenuation availability at 99,99% is 139,75 dB uplink (Global crane), 73,66 dB downlink (SAM). maximum Cloud attenuation 1,27 dB uplink, 0.56 dB downlink. Maximum gaseous atmosphere attenuation 2.21 dB uplink, 1,81 dB downlink. Maximum scintillation attenuation 0,95 dB uplink, 0,75 dB downlink. System specification are VSAT antenna diameter of 0,8 meters with power transmitter of 1 watt, HUB antenna diameter of 5 meters with power transmitter 5 watt, can cover user with bit rate inbound of 2 Mbps and outbound of 64 Mbps at worst condition (minimum elevation angle and rainy) with availability of 99,2 %