ABSTRACT

Recent developments in mobile communication were very fast and tightened the competitions among GSM provides to extent their services' networks to remote and hard accessed areas in other to increase their customers. Satellite communication system as a media transmission that could provide the proper solution in facilitating the GSM network is widely known as VSAT.

Under the VSAT, the uses of power and bandwidth are very important. Limited power and bandwidth in transponder is the main problem of satellite communication. To solve the problem, a coding technique widely known as Turbo Product Codes (TPC) is used to reduce power consumptions without reducing the BER quality, and 16-QAM modulation technique is used to reduced bandwidth use.

In this final assignment, the author analyzed the parameters serving as observation objects during field studies at BTS Rantau Pulut and BSC Banjarmasin, by comparing the result at field studies and the result of calculation and simulation by AHA TPC Simulation Software. That is by comparing the BER generated by TPC 16-QAM rate 3/4 and 8-PSK in simulation with the BER generated at field studies and comparing the Eb/No, C/N, transmit power, and bandwidth required in calculation with the result at field studies.

Results show that field performances generated by the TPC 16 -QAM on PT. CSM's VSAT media transmission, by 2048 kbps rate and Eb/No. 8.5 dB, were $0.1x10^{-9}$ BER requiring 960 kHz bandwidth , based on simulations and calculations performed.