ABSTRACT

At this time, a mobile communication system has an important role in supporting activities in the indoor or the outdoor . But the outdoor cellular network does not maximized in covering area inside the building. To solve this, need the construction of an indoor cellular network. To build an indoor cellular network effectively and efficiently, so carried out the integration of indoor GSM network, indoor CDMA network, indoor WCDMA network, and WiFi (Wireless Fidelity).

The simulation in the research is using RPS (*Radiowave Propagation Simulation*) software with indoor propagation model. COST 231 Multiwall propagation model is fit to use in the finishing of the research because it count in the wall's loss so that the result of the calculation close to a real condition. With link budget calculation we get maximum three antenna indoor that needed to covered Bidakara 2 building in 20th floor. The simulation in the research is using RPS (Radiowave Propagation Simulation) software with indoor propagation model. COST 231 Multiwall propagation model is fit to use in the finishing of the research because it count in the wall's loss so that the result of the calculation close to a real condition. With link budget calculation we get maximum three antennas indoor that needed to covered Bidakara 2 building in 20th floor.

Using the calculation of link budget there are three antenna indoor that needed to cover Bidakara 2 building in 20th floor. And from the simulation we get where antenna indoor should be placed covering almost all the area with a good signal quality, that is approximately -70 dBm. But these things causing the variaty of SIR value, from 0 dB to 40 dB so there's a lot of interference happens.

Keyword: **GSM** *indoor*, **CDMA** *indoor*, **WCDMA** *indoor*, *WiFi*, *COST 231 Multiwall, link budget*