ABSTRACT

Title	:	GLOBE TELECOM'S BTS POWER MODEL FOR LINK BUDGET SOLUTION
Researcher	:	MORENA P. VILLANUEVA
Adviser	:	EVELYN Q. RAGUINDIN, PECE
Degree	:	**Master of Engineering** **Major in Electronics and Communications Engineering**
Date	:	May 2006

This project entitled "Globe Telecom's BTS Power Model for Link Budget Solution" is based on industry immersion at Radio Network Engineering & Optimization Wireless Network Engineering of Globe Telecoms. The trainee optimizes the Base Transceiver Station (BTS) Power by providing a model for Link Budget solution that is aimed to solve BTS stations that are undergoing an imbalance link.

Record shows that there are Base Transceiver Stations that have a configured power but are suffering from an imbalance system. Imbalance system is a situation that a BTS experiences when its link is not balance thereby affecting the whole system. This is because it introduces interference and may cause financial losses. Link is a connection between the BTS and a Mobile Station (MS). Practically as the BTS and MS interacts, the link should be balance

enough for them to communicate effectively. A balanced link pertains to an equivalent path loss experienced by both. Meaning the path loss experienced by the BTS (downlink path loss) should be the same with the MS (uplink path loss). Ideally in a balanced link, the difference between the uplink path loss and the downlink path loss is equal to zero. In cases that this does not happen, interference occurs.

Link balance is continuously monitored by the network through the Base Station Controller, where most of the Base Transceiver Stations are connected. Database would show BTS's that are operating in an unacceptable range of link balance. Acceptable range is within +/- 5 dB. Unfortunately, there are sites that do not fall within the permissible range. This study attempts to provide a solution model to make these sites comply with the standard through antenna gain to compensate for the imbalance of the link.

A Link Budget is needed for the formulation of antenna gain to make the link balance. The Link Budget describes the maximum amount of signal extension or attenuation that can be tolerated while maintaining a communication link between the transmitting and receiving devices during a mobile call. Several parameters, including the BTS power and Antenna gain, are used to produce possible ranges of antenna gain. Though these high gain antennas are available, other parameters in the link budget can be manipulated for the maintenance of a balanced link.