

Site Specific Assessment of Node B using Key Service Quality Indicators over 3

Periodic service quality monitoring of a deployed cellular communication network by means of an innovative expert-driven field test analysis provides an in-depth understanding of the status and performances of the network as well as of the statistical behaviour of the user population. Such knowledge allows for a better engineering and operation of the whole network, and specifically the early detection of hidden risks and emerging troubles. In this paper, an experimental performance assessment of Node B based on key quality parameters considered for design, planning and network optimization was carried out via drive test at Ugbor avenue, BIU Campus and Gapiona avenue, all located in G. R. A, Benin City. It was established that the E_c/I_0 range measured for BEN 035 (BIU) indicates that the BS will be able to support services demanded by more subscribers accessing the network. Proper tuning is required on this BTS to eliminate the possibility of noise interference by this BS on nearby BSs when the loading is low. It was discovered that the QoS is very poor in the environs of BEN026, with the result that UEs will not be able to access data due to rapid data rate decreases, network login difficulty, difficulty in call initiation, no network, and high call drop rate. Hence the CPICH power level should be adjusted so that base station can provide service to users; however this does not guarantee that the interference caused by other nearby base stations is within the acceptable range to establish the session. At BEN 098 (Gapiona avenue) the E_c/I_0 is below the standard which is -9 dB for data which low means the QoS at Gapiona avenue is very poor and can only serve for voice calls with no data capacity whatsoever. The bond between RSSI/RSCP and E_c/I_0 performance at the different measurement locations of Node B were also assessed. It was observed from the results that E_c/I_0 degrades when RSSI/RSCP decreases. Degrading E_c/I_0 can be an indication of increased other cell interference which will also increase the need for downlink traffic power.