

Agenda Item: 5
Source: Golden Bridge Technology, Inc.
Title: Hard Handover
Document for: Proposed draft text for Hard Handover Procedure

1. Hard Handover

1.1. Abstract

The order of diversity in W-CDMA is higher than N-CDMA. So, the gain of soft handover over hard handover will not be as much in W-CDMA as compared to N-CDMA.

Hard handover shall be used for intra-frequency as well as inter-frequency handoff for various services. The hard handover scheme will reduce the complexity of the infrastructure as well as that of the mobile station. The fast search capability and fast neighbor detection is key to favorable performance in these schemes. Compressing the data and increasing the data rate within a frame or two facilitates lossless handover.

1.2. Hard Handover Physical Layer Procedures

1. Mobile Station (MS) monitors all Base Stations (BS) in neighbor list.
2. MS sends RSSI measurements to its controlling BS.
3. Controlling base station decides to handoff (procedure based).
4. Controlling base station notifies MS and target base station.
5. The target BS notifies both the controlling BS and the MS of the scrambling code and channelization code for the mobile station.
6. The controlling base station notifies the MS, target BS and the switch of the time of handoff.

Source: Excerpts from harmonized WP-CDMA RTT as submitted on 8 January 1999 by WP-CDMA Committee (TR46.1/TIPL.5) to the ITU.

7. At the pre-determined time, the MS starts transmitting the frame, which has PC bits at higher rate (TBD), as well as rate information indicating the rate of the next data frame. The rate information is negotiated before the break. The MS ramps up the power from the beginning of the frame.
8. At a pre-determined time, the target BS starts transmitting the PC/RI frame to the MS at the initial open loop power level. The power will be ramped up in a stepwise fashion. The PC bits will be +1 while there is no response from the other side.
9. The MS and the target BS send a single PC frame, compress the next data frame and begin transmitting the data frames subsequent to the PC frame.
10. Subsequent frames are not compressed.

See **Figure 1**: Hard Handover Physical Layer Procedure.

Figure 1: Hard Handover Physical Layer Procedure