



Exhibit #1

Adaptive Array Antenna for Personal Communication Services

Cwill Telecommunications, Inc. has developed a novel wireless communication protocol based on adaptive array antennas (smart antennas). The goal of the protocol is to increase the capacity of bandwidth by the order of ten, when compared with the existing commercialized digital wireless communication protocol, such as GSM, IS-54/136, or IS-95. The secondary goal is to apply a minimum amount of transmission power to cover the pre-defined area. The major benefits by using the minimum transmission power are two folds, 1) lower cost on the overall system, and 2) less interference among neighbor cells in the cellular communications.

The experimental system consists of a base station and multiple mobile stations. The system employs Synchronous Code Division Multiple Access (SCDMA) as a basic channel access method. The uplink and downlink work in the same frequency range with the different time slots, also called Time Division Duplex (TDD). The antenna array in the base station receives the signals from mobile stations and electronically combines the signals from the elements of the antenna array in the specified time period. In the transmission phase, the received signals are used for generating transmission weighting pattern and direct magnetic wave to the specified mobile stations.

The objectives of the experiment are to verify the performance of the protocol in two aspects: capacity and minimum power transmission.

The experimental system is the first commercialized adaptive array antenna wireless communication system in the world. This is not explored virgin island in the wireless communication industry. The experiment has a significant meaning for improving the channel quality, increasing capacity, and reducing the overall system cost. It represents a trends in wireless communication research and it is an unique way to improve the system performance in the next generation of wireless communication systems.



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