fashion, such as disclosed in U.S. Pat. No. 5,175,867 to Wejke et al. Either the base station or the mobile station can perform the evaluation in the up-link or the down-link, and in the preferred embodiment the mobile station MS performs the evaluation. The mobile station MS performs measurements on other carrier frequencies during the idle part of the compressed mode frame since during this time it is not required to listen to the base station to which it is currently linked. The measurements are relayed to the network RNC (through the currently linked base station or base stations), providing the means for a mobile assisted handover (MAHO).

The compressed mode is used only intermittently at a rate determined by the network RNC. The network RNC determines the frequency of use of the compressed mode based on a variety of factors, such as the relative broadcast conditions as affected by weather and other interfering factors, and the relative call density. Most frames still use normal mode transmission in typical situations.

The variation in total transmitted power from a base station can be smoothed by staggering (spreading in time) the deployment of compressed mode over a number of users in a certain time span. Since signal strength measurement on another carrier frequency is likely to require only a fraction of a frame, the duty cycle can be made high, thereby reducing the variation in the power transmission.

Execution of a call handover is handled in the compressed mode in a preferred embodiment of the present invention. After deciding on handover to a new base station broadcasting on another carrier frequency, the compressed mode is entered. Communication with the old base station **BS1** is maintained while establishing a new link during the idle part of the frame. By using the present invention for synchronization complete synchronization with the new base station **BS2** is obtained, establishing a new link. The handover is completed by dropping the old link and returning to normal mode transmission. By keeping the old link after the new link is synchronized, communication to both base stations simultaneously can be employed (establishing macro-diversity on one or more carrier frequencies). This scheme for seamless inter-frequency handover can be used for both up-and down-links.

The duty cycle can be varied according to the requirements for obtaining synchronization. However, if simultaneous communication (macro-diversity) is used, a duty cycle of about 50% is preferred.

The present invention combined with use of normal and compressed mode frames provides the ability to exploit the advantages of slotted transmission/reception in hierarchical cell structures while using DS-CDMA. It is possible to measure other carrier frequencies, thereby providing reliable handover decisions. Further, handover execution between carrier frequencies can be made seamless by establishing a new link before releasing the old one. This can be done without the need for two receivers. There are other reasons other than call handover for using macro-diversity, such as maintaining a high quality communication link with a mobile station when the mobile station is traveling in an area that has high radio interference. This could be, for example, when the first base station **BS1** is the base station of a microcell, whereas the second base station **BS2** is a macrocell or an umbrella cell encompassing the coverage area of the microcell. As the mobile station MS goes through the microcell, various obstacles such as buildings can interfere with the signal originating from the first base station **BS1**. Therefore, a redundant signal is transmitted from the macrocell **BS2** to assure clear communication quality. However, the primary purpose of macro-diversity is call handover.

U.S. patent application Ser. No. 08/075,892 filed Jun. 14, 1993, abandoned for Willars et al., herein incorporated by reference, offers further details on compressed mode DS-CDMA.

While particular embodiments of the present invention have been described and illustrated, it should be understood that the invention is not limited thereto since modifications may be made by persons skilled in the art. The present application contemplates any and all modifications that fall within the spirit and scope of the underlying invention disclosed and claimed herein.

What is claimed is:

1. A method of code division multiple access for cellular communication systems, said method comprising the steps of:

broadcasting signals on communication channels;

establishing a first call link between a first base station and a mobile station;

measuring a difference in time between the reception in said mobile station of at least one signal on a common control channel of at least one neighboring base station and a signal on a common control channel from said first base station;

initiating a second call link between said at least one neighboring base station and said mobile station;

delaying transmission of at least one of a communication signal that is to be sent from said first base station and a communication signal that is to be sent from said at least one neighboring base station in accordance with said difference in time between the reception of said signals measured in said mobile station;

transmitting said communication signal that is to be sent from said first base station and said communication signal that is to be sent from said at least one neighboring base station over first and second call links, respectively; and

receiving, in said mobile station, said communication signals transmitted over said first and second call links, respectively, within a predetermined time period.

2. A method according to claim **1**, wherein said communication signals are transmitted according to a frame structure.

3. A method according to claim **2**comprising the further step of transmitting communication signals from said first base station in a compressed mode wherein a frame of data includes an information part and an idle part, thereby allowing said mobile station to perform said step of measuring during said idle part of a compressed mode frame.

4. A method according to claim **1**, wherein said establishing step includes the step of informing said first base station about a first time offset to be applied for transmission of signals over said first call link;

and wherein said measuring step includes the steps of measuring the difference in time between reception in said mobile station of a signal on a non-time offset channel on which signals are transmitted without a time offset from said at least one neighboring base station and reception of a signal on a channel on which signals are transmitted without a time offset from said first base station with which said mobile station is currently linked;

dispatching the measured values to a network controller;

informing said at least one neighboring base station about a second time offset for transmitting signals from said at least one neighboring base station with which said second call link is to be established on an assigned channel;