cell under consideration. This has the effect of reducing subscriber units in neighboring cells that are potentially overloaded. Subscriber units in neighboring cells are encouraged to transfer to the present cell having excess capacity by monitoring the broadcast channel signal levels of the cells. This encourages subscriber units located in adjacent cells to initiate a handoff to the cell when the broadcast channel signal level at the subscriber unit exceeds a predetermined relative level. Increasing the broadcast channel signal level also encourages subscriber units located in the outer areas of adjacent cells near the cell under consideration to seek initial access to this cell.

Task **112** determines if the broadcast channel signal level is at a maximum level and therefore cannot be increased even though there may be excess capacity. When task **112** determines that the broadcast channel signal level of the cell is not at a maximum level, task **114** increases the broadcast channel signal level by some predetermined amount. Preferably, task **114** increases the broadcast channel signal level 1dB or 2dB. In one embodiment, task **114** may increase the broadcast channel signal level of the cell until the demand for communication services increases to a desirable level, or the maximum broadcast channel signal level is reached. In another embodiment of the present invention, task **114** may increase the broadcast channel signal level of the cell until the demand for communication services in neighboring cells is reduced by some amount to achieve a satisfactory level.

Task **116** stores the broadcast channel signal level setting. The stored broadcast channel signal level setting is used as either a start or end value for a particular planning interval as appropriate.

Task **118** determines if the end of the particular planning interval has been reached, and if not, procedure **100** repeats tasks **104** through **116** until the planning interval is over. Thus, during any particular planning interval, the satellite dynamically adjusts the broadcast channel signal level in response to changes in subscriber unit demand for communication services. After each planning interval, task **118** returns to task **102** which may further adjust the broadcast channel signal level for a predicted demand during the next planning interval.

FIG. **11** shows a flowchart of procedure **200** performed by a subscriber unit suitable for use in a preferred embodiment of the present invention. Procedure **200** is desirably initiated whenever a subscriber unit requests access to communication system **10** (FIG. 1). Procedure **200** is preferably performed until the communication service is terminated. Task **202** acquires a broadcast channel which informs the subscriber unit of various acquisition channels. As discussed previously, when a subscriber unit desires access to a cellular communication system, the subscriber unit initiates an acquisition protocol on one of the acquisition channels. If there is capacity to handle the subscriber unit, the communication system issues the subscriber unit a traffic channel on which the subscriber unit may then communicate with the system.

In task **204**, the subscriber unit receives issuance of the traffic channel and begins communicating with the communication system. Preferably at the same time a traffic channel is issued, the subscriber unit also receives a list of candidate handoff cells in task **206**. In the preferred embodiment where low-Earth orbit satellites are used, a subscriber unit will be required to be handed off to a next cell at least every nine minutes. In this embodiment, the candidate handoff cells would include the cell or cells from another satellite that are expected to next pass over the location of the subscriber unit. Candidate handoff cells may also include adjacent cells of the same satellite. Desirably, the list of candidate handoff cells includes the broadcast channel frequencies for all broadcast channels associated with each candidate handoff cell.

In task **208**, the subscriber unit monitors the broadcast channel signal quality (for example, the received signal level or signal to noise ratio) of the broadcast channel of the cell in which the subscriber unit resides. In task **210**, which is desirably performed in parallel with task **208**, the subscriber unit monitors the broadcast channel signal quality of at least some of the candidate handoff cells. Task **212** compares the broadcast channel signal quality of its cell with that of the candidate handoff cells. Task **214** determines which broadcast channel has the best signal quality. If the present cell within which the subscriber unit is communicating has the best broadcast channel signal quality, it does not initiate a handoff request to another cell, and task **216** instructs the subscriber unit to remain communicating within its present cell. Tasks **208** through **214** are repeated until the broadcast channel signal quality of a candidate handoff cell exceeds that of the present cell by some predetermined amount. In another embodiment of the present invention, tasks **208** through **214** may be repeated until a broadcast channel signal quality of any other cell (i.e., not necessarily a candidate handoff cell) exceeds that of the present cell by some predetermined amount.

When a broadcast channel signal quality of a candidate handoff cell exceeds that of the present cell, task **218** selects that cell as the first choice candidate handoff cell. In task **220**, the subscriber unit initiates a handoff request to the first choice candidate handoff cell. Task **222** determines if the hand-off to the new cell has been successful. If the handoff request is successful, tasks **204** through **222** are repeated for the new cell in which the subscriber unit is communicating. If the handoff is unsuccessful, for example, when the first choice candidate handoff cell does not have excess capacity, task **216** instructs the subscriber unit to remain communicating within its present cell.

Having thus described the present invention, it is apparent that the present invention provides a means and method whereby cell loading in a cellular communication system may be managed by controlling the signal level of the broadcast channel and having subscriber units responsive to the broadcast channel signal level. It should be appreciated that there has been provided a novel way for cell management of satellite cellular communication system without which the capabilities of orbiting satellites communications systems would be severely hindered.

While the invention is described in terms of specific examples and with specific preferred embodiments, it is evident that many alternatives and variations will be apparent to those skilled in the art based on the description herein, and it is intended to include such variations and alternatives in the claims that follow.

What is claimed is:

1. A method of controlling cell loading in a cellular communication system having a plurality of cells wherein each cell has a traffic channel for two-way communication with a subscriber unit and a broadcast channel that is monitored by said subscriber unit for messages directed to said subscriber unit, said method comprising the steps of:

communicating within one of said cells on said traffic channel with said subscriber unit, said subscriber unit monitoring a signal level of said broadcast channel associated with said cell;