prefer to purchase airtime at a lower cost with a corresponding limitation on the availability of communication resources, e.g., on a non-interfering basis with primary subscriber services. As such, a preemption technique that allows a communication system to provide premium services, is desirable.

According to an embodiment of the present invention, a special acquisition class designation is utilized such that a high-speed data terminal identifies its terminal type and application requirements in an acquisition message. An acquisition message from a high-speed data terminal utilizes priority bits to identify preemption requirements. In a typical application, these priority bits are passed to a serving gateway, which is responsible to convey the information to each satellite that is serving a particular area before channel resources are assigned. In a preferred embodiment, special acquisition and handoff queues are provided within a given satellite to ensure priority processing for high-priority high-speed data terminals.

Another aspect of the present invention is directed to ensuring that higher priority terminals are always allowed onto the system. In this situation, it may be necessary to preempt current subscriber services to provide communication channels for the high priority terminals. Preferably, low priority high-speed data terminals are preempted before premium subscriber services, e.g., voice services. An example of a typical low priority terminal is a remote test station telemetry terminal, which may be located adjacent oil pipelines, oil rigs and other structures. This type of terminal typically collects telemetry data and receives control data from a central controller.

Turning to FIG. **4**, illustrated is a flowchart of a preemption routine **400** that utilizes special acquisition class designations, in an acquisition message, to provide high-speed data terminals priority access to a narrowband communication system. In step **402**, routine **400** is initialized. Next, in decision step **404**, routine **400** determines whether an acquisition request has been received. If so, control transfers from step **404** to step **406**. Otherwise, control loops on decision step **404**. In step **406**, routine **400** reads the priority bits of the acquisition message. From step **406**, control transfers to decision step **408**, where routine **400** determines whether a high priority request had been received. If so, control transfers from step **408** to step **412**. Otherwise, control transfers from step **408** to step **410**. In step **410**, routine **400** proceeds with normal channel assignment, at which point control returns to decision step **404**.

In decision step **412**, routine **400** determines whether channels are available to service the high priority request. If so, control transfers from decision step **412** to step **418**. In step **418**, routine **400** assigns the requested channels to the high-speed data terminal, at which point control returns to step **404**. If enough channels are not available to service the high-speed data terminal, in decision step **412**, control transfers to step **414**. In step **414**, routine **400** may cause information to be temporarily stored within special acquisition and/or handoff queues provided within a given satellite **12**, which ensure priority processing for high-priority high-speed data terminals. When required, lower priority subscribers are preempted such that a requested amount of channels can be provided to the high-speed data terminal. Next, in step **416**, routine **400** assigns the preempted channels to the higher priority subscriber. From step **416**, control transfers to step **404**.

In summary, a routine has been described which allows a high-speed data terminal priority access to a narrowband communication system.

Channel Assignment to Minimize High-speed data Terminal Complexity

When designing high-speed data terminals, the complexity of the high-speed data terminal communication chipset can be reduced if a receiver, located within the high-speed data terminal, utilizes contiguous channels. This reduces the range of frequencies that the receiver must sweep and demodulate (during a guard slot), and typically reduces the complexity of the receiver. One receiver design utilizes a single time-slot of multiple contiguous channels. Another receiver design utilizes multiple time-slots of multiple contiguous channels. As an example, a system that implements twelve channels and four time-slots can be serviced by a receiver that utilizes three channels when each of four time-slots (e.g., TS**1**, TS**2**, TS**3** and TS**4**), associated with each channel, is utilized. Utilizing this design, only three demodulators are required. If a different channel is utilized for each of the twelve channels, then each channel must have to have its own demodulator (which would require twelve demodulators).

One of ordinary skill in the art, will readily appreciate that a three channel demodulator is considerably less complex than a twelve channel demodulator. As such, a technique, which prefers channel assignments with the same frequency access and adjacent time-slots, is desirable.

Turning to FIG. **5**, an assignment scheme, which requires a receiver to have a maximum tuning range of six channels (i.e., channels CH**2** through CH**7**), is shown. In this example, channels CH**3**–CH**6** are utilized to transfer information during TS**1**. Between TS**1** and TS**2**, the receiver retunes all channels to an adjacent channel. Between TS**2** and TS**3**, a high-speed data terminal receiver retunes all channels by two channels. Between TS**3** and TS**4**, the receiver of the high-speed data terminal retunes all channels to an adjacent channel. In summary, utilizing adjacent time-slots reduces the required tuning range of a given receiver. However, as noted above, eliminating retuning between time-slots is desirable in that a minimum number of channels have to be demodulated and no retuning is required between time-slots. This allows the number of channels in a given high-speed data terminal receiver to be reduced.

In a typical satellite system, a minimal channel allocation that is typically made on a per beam basis is a reuse unit. To mitigate interference when assigning frequencies for a high-speed data terminal, it may be desirable to assign channels from different reuse units, such that if a time-slide occurs, not all of the assigned channels will have interference. One of ordinary skill in the art will readily appreciate that such an implementation increases the frequency range that a given receiver must be capable of tuning.

While principles of the invention have been described above in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation on the scope of the invention.

What is claimed is:

1. A method for providing high-speed data services in a narrowband communication system, the narrowband communication system communicating with a high-speed data terminal and at least one communication node, the method comprising the steps of:

dividing an available communication frequency spectrum into a primary service band and a secondary service band, wherein the available communication frequency spectrum is a narrowband frequency spectrum;

assigning narrowband uplink channel, narrowband downlink channels and uplink channels associated with the high-speed data terminal to the primary service band; and