CLAIMS

1. A satellite communication system comprising:

   a satellite access node (SAN) comprising an optical transmitter configured to multiplex a plurality of optical channel signals at respective optical wavelengths into an optical signal, each optical channel signal being digitally modulated or radiofrequency (RF) modulated to convey user traffic for one or more user coverage areas, the SAN further comprising a lens for transmitting the optical signal; and

   a satellite comprising:

   an optical receiver configured to receive the optical signal and demultiplex the optical signal to obtain the plurality of optical channel signals;

   circuitry configured to generate a plurality of analog electrical signals, each analog electrical signal carrying the user traffic conveyed by a respective one among the plurality of optical channel signals;

   a plurality of antenna inputs, each antenna input corresponding to a respective one among a plurality of user spot beams and each user spot beam corresponding to a respective one among a plurality of user coverage areas; and

   a switch matrix responsive to switch control commands, to selectively control which analog electrical signals among the plurality of analog electrical signals are coupled with which antenna inputs among the plurality of antenna inputs.

2. The system of Claim 1, wherein there are more user spot beams than there are optical channel signals multiplexed in the optical signal, and wherein the satellite communication system is configured to time multiplex user traffic multiple user coverage areas onto a same optical channel signal, and control the switch matrix to couple the analog electrical signal corresponding to the same optical channel signal to different

ones among the antenna inputs according to the time multiplexing of the user traffic for the multiple user coverage areas.

3. The system of Claim 1, wherein the satellite is configured to receive the switch control commands from the SAN or generate the switch control commands via onboard processing.

4. The system of Claim 1, wherein the optical receiver includes a steerable lens for orienting the lens towards the SAN as a selected SAN from among two or more SANs, and wherein the satellite communication system is configured to select the selected SAN from among the two or more SANs according to optical link.

5. The system of Claim 1, wherein the satellite communication system provides feeder link diversity based on the satellite having two or more optical receivers for receiving respective optical signals from two or more SANs comprised in the satellite communication system, and wherein the switch matrix is configured to control which optical signal is used to provide the user traffic transmitted by the satellite via the plurality of user spot beams.

6. The system of Claim 5, wherein the satellite communication system is configured to control which optical signal is used to provide the user traffic transmitted by the satellite via the plurality of user spot beams, based on optical link quality, and wherein the switch matrix is controlled to switch from a first optical signal from a first SAN to a second optical signal from a second SAN, in dependence on optical link qualities of the first and second optical signals.