What is claimed is:

1. A method for communications via a communications satellite (120) having an antenna assembly (121) with a plurality of antenna feed elements (128), the method comprising:

providing a communications service via a first plurality of beamformed spot beams (125), the first plurality of beamformed spot beams (125) based at least in part on a first beamforming configuration and a first native antenna pattern (220) of the antenna assembly (121), the first native antenna pattern (220) corresponding to a first defocused position of a feed array assembly (127) of the antenna assembly (121) relative to a reflector (122) of the antenna assembly (121), and the first native antenna pattern (220) comprising a composite of first native feed element patterns (210) of the plurality of antenna feed elements (128);

commanding the communications satellite (120) to change from the first native antenna pattern (220) of the antenna assembly (121) to a second native antenna pattern (220) of the antenna assembly (121), the second native antenna pattern (220) corresponding to a second defocused position of the feed array assembly (127) relative to the reflector (122), and the second native antenna pattern (220) comprising a composite of second native feed element patterns (210) of the plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the plurality of antenna feed elements (128) is associated with one of the first native feed element patterns (210) and one of the second native feed element patterns (210), and wherein the one of the second native feed element patterns (210) is different from the one of the first native feed element patterns (210); and

providing the communications service via a second plurality of beamformed spot beams (125), the second plurality of beamformed spot beams (125) based at least in part on a second beamforming configuration and the second native antenna pattern (220).

2. The method of claim 1, wherein commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an actuator (124) of the communications satellite (120) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220).

3. The method of claim 2, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a spatial adjustment between the reflector (122) of the antenna assembly (121) and the feed array assembly (127) of the antenna assembly (121) comprising the plurality of antenna feed elements (128).

4. The method of claim 3, wherein the actuator (124) is coupled between the reflector (122) of the antenna assembly (121) and the feed array assembly (127).

5. The method of claim 3, wherein commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127) to change from a first length to a second length.

6. The method of claim 5, further comprising:

commanding a secondary actuator (2540) coupled between the feed array assembly (127) and the reflector (122) to provide the second native antenna pattern (220), the commanding of the secondary actuator (2540) causing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124).

7. The method of claim 1, wherein one or both of the first defocused position or the second defocused position is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and a focal region (123) of the reflector (122).

8. The method of claim 2, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an adjustment to a focal region (123) of the reflector (122) of the antenna assembly (121).

9. The method of any of claims 1~~, 2, 3-6, 7, or~~ through 8, wherein the first native antenna pattern (220) is associated with a first boresight direction of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second boresight direction of the antenna assembly (121) that is different from the first boresight direction.

10. The method of any of claims 1 through ~~, 2, 3-6, 7, 8, or~~ 9, wherein the first native antenna pattern (220) is associated with a first native feed element pattern beamwidth of the given antenna feed element (128), and the second native antenna pattern (220) is associated with a second native feed element pattern beamwidth of the given antenna feed element (128) that is different from the first native feed element pattern beamwidth.

11. The method of any of claims 1 through ~~, 2, 3-6, 7, 8, 9, or~~ 10, wherein the first native antenna pattern (220) is associated with a first amount of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121), and the

second native antenna pattern (220) is associated with a second, different amount of overlap of the native feed element patterns (210) of the two or more antenna feed elements (128) of the antenna assembly (121).

12. The method of any of claims 1 through ~~, 2, 3-6, 7, or~~ 8, further comprising:

adjusting an orbital characteristic of the communications satellite (120), wherein providing the communications service via the second plurality of beamformed spot beams (125) comprises providing the communications service according to the adjusted orbital characteristic.

13. The method of any of claims 1 through ~~, 2, 3-6, 7, or~~ 8, wherein the communications satellite (120) is at a same geostationary orbital position while providing the communications service via the first plurality of beamformed spot beams (125) and while providing the communications service via the second plurality of beamformed spot beams (125).

14. The method of any of claims 1 through ~~, 2, 3-6, 7, or~~ 8, wherein:

the communications satellite (120) is at a first geostationary orbital position while providing the communications service via the first plurality of beamformed spot beams (125);

commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises commanding the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the communications satellite (120) is at the second geostationary orbital position while providing the communications service via the second plurality of beamformed spot beams (125).

15. The method of any of claims 1 through ~~, 2, 3-6, 7, 8, 9 to 12, 13, or~~ 14, wherein the communications satellite (120) comprises a second antenna assembly (121) with a second plurality of antenna feed elements (128), the method further comprising:

providing the communications service via a third plurality of beamformed spot beams (125) using the second antenna assembly (121), the third plurality of beamformed spot beams (125) based at least in part on a third beamforming configuration and a third native antenna pattern (220) of the second antenna assembly (121), the third native antenna pattern (220) comprising a composite of third native feed element patterns (210) of the second plurality of antenna feed elements (128).

16. The method of any of claims 1 through ~~, 2, 3-6, 7, 8, 9 to 12, 13, 14, or~~ 15, wherein providing the communications service via the first plurality of beamformed spot beams (125) or providing the communications service via the second plurality of beamformed spot beams (125) comprises one or both of:

providing a first plurality of signals between a plurality of access node terminals (130) and the communications satellite (120); and

providing a second plurality of signals between the communications satellite (120) and a plurality of user terminals (150).

17. The method of any of claims 1 through ~~, 2, 3-6, 7, 8, 9 to 12, 13, 14, 15, or~~ 16, wherein the first beamforming configuration comprises applying a first beamforming weight set to a first plurality of feed element signals carried via the plurality of antenna feed elements (128), and the second beamforming configuration comprises applying a second beamforming weight set to a second plurality of feed element signals carried via the plurality of antenna feed elements (128), different from the first beamforming weight set.

18. A system (100) for communications via a communications satellite (120), the communications satellite (120) having an antenna assembly (121) with a plurality of antenna feed elements (128), the system (100) comprising:

means for providing a communications service via a first plurality of beamformed spot beams (125), the first plurality of beamformed spot beams (125) based at least in part on a first beamforming configuration and a first native antenna pattern (220) of the antenna assembly (121), the first native antenna pattern (220) corresponding to a first defocused position of a feed array assembly (127) of the antenna assembly (121) relative to a reflector (122) of the antenna assembly (121), and the first native antenna pattern (220) comprising a composite of first native feed element patterns (210) of the plurality of antenna feed elements (128);

means for commanding the communications satellite (120) to change from the first native antenna pattern (220) of the antenna assembly (121) to a second native antenna pattern (220) of the antenna assembly (121), the second native antenna pattern (220) corresponding to a second defocused position of the feed array assembly (127) relative to the reflector (122), and the second native antenna pattern (220) comprising a composite of second native feed element patterns (210) of the plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the plurality of antenna feed elements (128) is associated with one of the first native feed element patterns (210) and one of the second native feed element patterns (210), and wherein the one of the second native feed element patterns (210) is different from the one of the first native feed element patterns (210); and

means for providing the communications service via a second plurality of beamformed spot beams (125), the second plurality of beamformed spot beams (125) based at least in part on a second beamforming configuration and the second native antenna pattern (220).

19. The system (100) of claim 18, wherein the means for commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

means for commanding an actuator (124) of the communications satellite (120) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220).

20. The system (100) of claim 19, wherein the actuator (124) of the communications satellite (120) comprises:

means for providing a spatial adjustment between the reflector (122) of the antenna assembly (121) and the feed array assembly (127) of the antenna assembly (121) comprising the plurality of antenna feed elements (128).

21. The system (100) of claim 20, wherein the means for providing a spatial adjustment between the reflector (122) and the feed array assembly (127) is coupled between the reflector (122) and the feed array assembly (127).

22. The system (100) of claim 20, wherein the means for providing the spatial adjustment between the reflector (122) and the feed array assembly (127) is a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127).

23. The system (100) of claim 22, further comprising:

means for providing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124).

24. The system (100) of claim 23, wherein the means for providing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124) is coupled between the linear actuator (124) and the reflector (122).

25. The system (100) of claim 23, wherein the means for providing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124) is coupled between the linear actuator (124) and the feed array assembly (127).

26. The system (100) of claim 18, wherein one or both of the first defocused position or the second defocused position is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and a focal region (123) of the reflector (122).

27. The system (100) of claim 19, wherein the actuator (124) of the communications satellite (120) comprises:

means for providing an adjustment to a focal region (123) of a reflector (122) of the antenna assembly (121).

28. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, or~~ 27, wherein the first native antenna pattern (220) is associated with a first boresight direction of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second boresight direction of the antenna assembly (121) that is different from the first boresight direction.

29. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, 27 or~~ 28, wherein the first native antenna pattern (220) is associated with a first native feed element pattern beamwidth of the given antenna feed element (128), and the second native antenna pattern (220) is associated with a second native feed element pattern beamwidth of the given antenna feed element (128) that is different from the first native feed element pattern beamwidth.

30. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, 27, 28, or~~ 29, wherein the first native antenna pattern (220) is associated with a first amount of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second, different amount of overlap of the native feed element patterns (210) of the two or more antenna feed elements (128) of the antenna assembly (121).

31. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, or~~ 27, further comprising:

means for adjusting an orbital characteristic of the communications satellite (120), wherein the means for providing the communications service via the second plurality of beamformed spot beams (125) is operable according to the adjusted orbital characteristic.

32. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, or~~ 27, wherein the means for providing the communications service via the first plurality of beamformed spot beams (125) and the means for providing the communications service via the second plurality of beamformed spot beams (125) are operable at a same geostationary orbital position.

33. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, or~~ 27, wherein:

the means for providing the communications service via the first plurality of beamformed spot beams (125) is operable at a first geostationary orbital position of the communications satellite (120);

the means for commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises means for commanding the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the means for providing the communications service via the second plurality of beamformed spot beams (125) is operable at the second geostationary orbital position of the communications satellite (120).

34. The system (100) of claim 33, wherein the means for commanding the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position comprises:

means for commanding an actuator (124) of the communications satellite (120) to move from the first geostationary orbital position to the second, different geostationary orbital position.

35. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, 27, 28 to 31, 32, 33, or~~ 34, wherein the communications satellite (120) comprises a second antenna assembly (121) with a second plurality of antenna feed elements (128), the system (100) further comprising:

means for providing the communications service via a third plurality of beamformed spot beams (125) using the second antenna assembly (121), the third plurality of beamformed spot beams (125) based at least in part on a third beamforming configuration and a third native antenna pattern (220) of the second antenna assembly (121), the third native antenna pattern (220) comprising a composite of third native feed element patterns (210) of the second plurality of antenna feed elements (128).

36. The system (100) of any of claims 18 through ~~, 19, 20 to 25, 26, 27, 28 to 31, 32, 33, 34, or~~ 35, wherein the means for providing the communications service via the first plurality of beamformed spot beams (125), or the means for providing the communications service via the second plurality of beamformed spot beams (125), or both, comprises:

means for providing a first plurality of signals between a plurality of access node terminals (130) and the communications satellite (120); and

means for providing a second plurality of signals between the communications satellite (120) and a plurality of user terminals (150).

37. The system (100) of any of claims 18, 19, 20 to 25, 26, 27, 28 to 31, 32, 33, 34, or 35, wherein:

the means for providing the communications service based at least in part on the first beamforming configuration comprises:

means for applying a first beamforming weight set to a first plurality of feed element signals carried via the plurality of antenna feed elements (128); and

the means for providing the communications service based at least in part on the second beamforming configuration comprises:

means for applying a second beamforming weight set to a second plurality of feed element signals carried via the plurality of antenna feed elements (128), different from the first beamforming weight set.

38. A communications satellite (120) for providing a communications service via a plurality of beamformed spot beams (125), the communications satellite (120) comprising:

an antenna assembly (121) operable for communicating signals of the plurality of beamformed spot beams (125), the antenna assembly (121) comprising a feed array assembly (127) having a plurality of antenna feed elements (128) for communication of the signals, a reflector (122) for reflecting the signals communicated between the feed array assembly (127) and one or more target devices (130, 150), wherein the antenna assembly (121) provides a native antenna pattern (220) via the feed array assembly (127) that is a composite of native feed element patterns (210) of the plurality of antenna feed elements (128), and wherein the native antenna pattern (220) is selectable from among a plurality of native antenna patterns (220), each of the plurality of native antenna patterns (220) corresponding to a defocused position of the feed array assembly (127) relative to the reflector (122) and having a native feed element pattern (210) associated with a given antenna feed element (128) that is different relative to another of the plurality of native antenna patterns (220) for the given antenna feed element (128); and

a controller (2805) for controlling the antenna assembly (121) for selecting the native antenna pattern (220) from among the plurality of native antenna patterns (220), wherein the plurality of beamformed spot beams (125) are based at least in part on a beamforming configuration and the selected native antenna pattern (220).

39. The communications satellite (120) of claim 38, wherein the antenna assembly (121) comprises:

an actuator (124) coupled between the reflector (122) and the feed array assembly (127) for providing a spatial adjustment between the reflector (122) and the feed array assembly (127), wherein the controller (2805) is operable to control the spatial adjustment for providing the native antenna pattern (220).

40. The communications satellite (120) of claim 39, wherein each of the plurality of native antenna patterns (220) is based at least in part on a respective relative distance between the reflector (122) and the feed array assembly (127).

41. The communications satellite (120) of claim 40, wherein, for at least one of the plurality of native antenna patterns (220), one or more of the plurality of antenna feed elements (128) of the feed array assembly (127) is located between the reflector (122) and a focal region (123) of the reflector (122).

42. The communications satellite (120) of claim 39, wherein the actuator (124) is a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127), and the controller (2805) is operable to command the linear actuator (124) to change in length for providing the selected native antenna pattern (220).

43. The communications satellite (120) of claim 42, further comprising a secondary actuator (2540) coupled between the feed array assembly (127) and the reflector (122) to provide the selected native antenna pattern (220), the secondary actuator (2540) providing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124),

wherein the controller (2805) is operable to command a selected change in the relative position between the feed array assembly (127) and the reflector (122) about ~~an~~ the axis different from ~~an~~ the axis of the linear actuator (124).

44. The communications satellite (120) of claim 38, wherein the antenna assembly (121) comprises:

an actuator (124) integrated with the reflector (122) for providing an adjustment to a focal region (123) of the reflector (122), wherein the controller (2805) is operable to control the adjustment to the focal region (123) for providing the native antenna pattern (220).

45. The communications satellite (120) of claim 44, wherein each of the plurality of native antenna patterns (220) is based at least in part on the focal region (123) having a respective relative distance to the reflector (122).

46. The communications satellite (120) of claim 45, wherein at least one of the plurality of native antenna patterns (220) is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and ~~a~~ the focal region (123) of the reflector (122).

47. The communications satellite (120) of claim 44, wherein each of the plurality of native antenna patterns (220) is based at least in part on the focal region (123) having a respective shape.

48. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46, or~~ 47, wherein the controller (2805) is configured to control the antenna assembly (121) based at least in part on an orbital position of the communications satellite (120), or a change in an orbital position of the communications satellite (120), or a change in orbital path of the communications satellite (120), or a change in attitude of the communications satellite (120), or a combination thereof.

49. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, or~~ 48, wherein at least two of the plurality of native antenna patterns (220) are associated with different respective native antenna pattern coverage areas (221).

50. The communications satellite (120) of claim 49, wherein at least two of the respective native antenna pattern coverage areas (221) are at least partially overlapping.

51. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, 48, 49, or~~ 50, wherein at least two of the plurality of native antenna patterns (220) are associated with different respective boresight directions of the antenna assembly (121).

52. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, 48, 49 to 50, or~~ 51 wherein at least two of the plurality of native antenna patterns (220) are associated with different respective native feed element pattern beamwidths of the given antenna feed element (128).

53. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, 48, 49 to 50, 51, or~~ 52, wherein at least two of the plurality of native antenna patterns (220) are associated with different respective amounts of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121).

54. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, or~~ 48, wherein the antenna assembly (121) is configured to provide the communications service via different native antenna patterns (220) at a same geostationary orbital position.

55. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, or~~ 48, wherein:

the communications satellite (120) is operable to provide the communications service via a first native antenna pattern (220) at a first geostationary orbital position;

the controller (2805) is operable to ~~commanding~~ command the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the communications satellite (120) is operable to provide the communications service via a second native antenna pattern (220) at a second geostationary orbital position.

56. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, 48, 50, 51 to 54, or~~ 55, further comprising:

a second antenna assembly (121) operable for communicating second signals of the communications service, the second antenna assembly (121) comprising a second feed array assembly (127) having a plurality of second antenna feed elements (128) for communication of the second signals, wherein the second antenna assembly (121) provides a third native antenna pattern (220) via the second feed array assembly (127) that is a composite of third native feed element patterns (210) of the plurality of second antenna feed elements (128), and wherein the third native antenna pattern (220) is selectable from among a plurality of second native antenna patterns (220), each of the plurality of second native antenna patterns (220) having a third native feed element pattern (210) associated with a given second antenna feed element (128) that is different relative to another of the plurality of second native antenna patterns (220) for the given second antenna feed element (128).

57. The communications satellite (120) of any of claims 38 through ~~, 39 to 40, 41, 42 to 44, 45, 46 to 47, 48, 50, 51 to 54, 55, or~~ 56, wherein providing the communications service via ~~one or both of the first plurality of beamformed spot beams (125) or the second~~the plurality of beamformed spot beams (125) comprises:

providing a first plurality of signals between a plurality of access node terminals (130) and the communications satellite (120); and

providing a second plurality of signals between the communications satellite (120) and a plurality of user terminals (150).

58. The communications satellite (120) of ~~claim~~ any of claims 38 through 57, further comprising a beamforming network (710) of the communications satellite (120), wherein ~~applying the beamforming weight set~~the beamforming configuration comprises applying ~~the~~ a beamforming weight set at the beamforming network (710) of the communications satellite (120).

59. The communications satellite (120) of claim 58, wherein the beamforming configuration comprises applying ~~a~~ the beamforming weight set to a plurality of feed element signals carried via the plurality of antenna feed elements (128).

60. A method for communications at a communications satellite (120) having an antenna assembly (121) with a plurality of antenna feed elements (128), the method comprising:

transmitting a first plurality of feed element signals generated from a first plurality of spot beam signals according to a first beamforming configuration and a first native antenna pattern (220) of the plurality of antenna feed elements (128), the first native antenna pattern (220) corresponding to a first defocused position of a feed array assembly (127) of the antenna assembly (121) relative to a reflector (122) of the antenna assembly (121), and the first native antenna pattern (220) comprising a composite of first native feed element patterns (210) of the plurality of antenna feed elements (128);

commanding a change from the first native antenna pattern (220) of the plurality of antenna feed elements (128) to a second native antenna pattern (220) of the plurality of antenna feed elements (128), the second native antenna pattern (220) corresponding to a second defocused position of the feed array assembly (127) relative to the reflector (122), and the second native antenna pattern (220) comprising a composite of second native feed element patterns (210) of the plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the plurality of antenna feed elements (128) is associated with one of the first native feed element patterns (210) and one of the second native feed element patterns (210), and wherein the one of the second native feed element patterns (210) is different from the one of the first native feed element patterns (210); and

transmitting a second plurality of feed element signals generated from a second plurality of spot beam signals according to a second beamforming configuration and the second native antenna pattern (220) of the plurality of antenna feed elements (128).

61. The method of claim 60, wherein commanding the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an actuator (124) of the communications satellite (120) for providing the change from the first native antenna pattern (220) to the second native antenna pattern (220).

62. The method of claim 61, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a spatial adjustment between a reflector (122) of the antenna assembly (121) and the feed array assembly (127) of the antenna assembly (121) comprising the plurality of antenna feed elements (128).

63. The method of claim 62, wherein the actuator (124) is coupled between the reflector (122) of the antenna assembly (121) and the feed array assembly (127).

64. The method of claim 62, wherein commanding the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127) to change from a first length to a second length.

65. The method of claim 64, further comprising:

commanding a secondary actuator (2540) coupled between the feed array assembly (127) and the reflector (122) to provide the second native antenna pattern (220), the commanding of the secondary actuator (2540) causing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124).

66. The method of claim 60, wherein one or both of the first defocused position or the second defocused position is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and a focal region (123) of the reflector (122).

67. The method of claim 61, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an adjustment to a focal region (123) of the reflector (122) of the antenna assembly (121).

68. The method of any of claims 60 through ~~, 61, 62 to 65, 66, or~~ 67, wherein the first native antenna pattern (220) is associated with a first boresight direction of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second boresight direction of the antenna assembly (121) that is different from the first boresight direction.

69. The method of any of claims 60 through ~~, 61, 62 to 65, 66, 67, or~~ 68, wherein the first native antenna pattern (220) is associated with a first native feed element pattern beamwidth of the given antenna feed element (128), and the second native antenna pattern (220) is associated with a second native feed element pattern beamwidth of the given antenna feed element (128) that is different from the first native feed element pattern beamwidth.

70. The method of any of claims 60 through ~~, 61, 62 to 65, 66, 67, or 68 to~~ 69, wherein the first native antenna pattern (220) is associated with a first amount of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second, different amount of overlap of the native feed element patterns (210) of the two or more antenna feed elements (128) of the antenna assembly (121).

71. The method of any of claims 60 through ~~, 61, 62 to 65, 66, or~~ 67, further comprising:

adjusting an orbital characteristic of the communications satellite (120) prior to transmitting the second plurality of feed element signals.

72. The method of any of claims 60 through ~~, 61, 62 to 65, 66, or~~ 67, wherein the communications satellite (120) is at a same geostationary orbital position while transmitting the first plurality of feed element signals and while transmitting the second plurality of feed element signals.

73. The method of any of claims 60 through ~~, 61, 62 to 65, 66, or~~ 67, wherein:

the communications satellite (120) is at a first geostationary orbital position while transmitting the first plurality of feed element signals;

commanding the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises commanding the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the communications satellite (120) is at the second geostationary orbital position while transmitting the second plurality of feed element signals.

74. The method of any of claims 60 through ~~, 61, 62 to 65, 66, 67, 68 to 71, 72, or~~ 73, wherein the communications satellite (120) comprises a second antenna assembly (121) with a second plurality of antenna feed elements (128), the method further comprising:

transmitting a third plurality of feed element signals generated from a third plurality of spot beam signals according to a third native antenna pattern (220) of the second plurality of antenna feed elements (128), the third native antenna pattern (220) of the second plurality of antenna feed elements (128) comprising a composite of third native feed element patterns (210) of the second plurality of antenna feed elements (128).

75. The method of any of claims 60 through ~~, 61, 62 to 65, 66, 67, 68 to 71, 72, 73, or~~ 74, wherein transmitting the first plurality of feed element signals or the second plurality of feed element signals comprises one or both of:

transmitting feed element signals to a plurality of access node terminals (130); or

transmitting feed element signals to a plurality of user terminals (150).

76. The method of any of claims 60 through ~~, 61, 62 to 65, 66, 67, 68 to 71, 72, 73, 74, or~~ 75, wherein the first plurality of feed element signals are determined based at least in part on applying a first beamforming weight set to the first plurality of spot beam signals, and the second plurality of feed element signals are determined based at least in part on applying a second

beamforming weight set to the second plurality of spot beam signals, the first beamforming weight set being different from the second beamforming weight set.

77. A communications satellite (120) comprising:

Means for transmitting a first plurality of feed element signals generated from a first plurality of spot beam signals according to a first beamforming configuration and a first native antenna pattern (220) of a plurality of antenna feed elements (128), the first native antenna pattern (220) corresponding to a first defocused position of a feed array assembly (127) of the antenna assembly (121) relative to a reflector (122) of the antenna assembly (121), and the first native antenna pattern (220) comprising a composite of first native feed element patterns (210) of the plurality of antenna feed elements (128);

means for commanding a change from the first native antenna pattern (220) of the plurality of antenna feed elements (128) to a second native antenna pattern (220) of the plurality of antenna feed elements (128), the second native antenna pattern (220) corresponding to a second defocused position of the feed array assembly (127) relative to the reflector (122), and the second native antenna pattern (220) comprising a composite of second native feed element patterns (210) of the plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the plurality of antenna feed elements (128) is associated with one of the first native feed element patterns (210) and one of the second native feed element patterns (210), and wherein the one of the second native feed element patterns (210) is different from the one of the first native feed element patterns (210); and

means for transmitting a second plurality of feed element signals generated from a second plurality of spot beam signals according to a second beamforming configuration and the second native antenna pattern (220) of the plurality of antenna feed elements (128).

78. The communications satellite (120) of claim 77, wherein the means commanding the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

means for commanding an actuator (124) of the communications satellite (120) for providing the change from the first native antenna pattern (220) to the second native antenna pattern (220).

79. The communications satellite (120) of claim 78, wherein the means for commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

means for commanding a spatial adjustment between a reflector (122) of the antenna assembly (121) and the feed array assembly (127) of the antenna assembly (121) comprising the plurality of antenna feed elements (128).

80. The communications satellite (120) of claim 79, wherein the actuator (124) is coupled between the reflector (122) of the antenna assembly (121) and the feed array assembly (127).

81. The communications satellite (120) of claim 79, wherein the actuator (124) comprises a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127).

82. The communications satellite (120) of claim 81, further comprising:

means for commanding the linear actuator (124) to change from a first length to a second length.

83. The communications satellite (120) of claim 81, further comprising:

a secondary actuator (2540) coupled between the feed array assembly (127) and the reflector (122).

84. The communications satellite (120) of claim 83, further comprising:

means for commanding the secondary actuator (2540) to provide the second native antenna pattern (220), the commanding of the secondary actuator (2540) causing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124).

85. The communications satellite (120) of claim 77, wherein one or both of the first defocused position or the second defocused position is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and a focal region (123) of the reflector (122).

86. The communications satellite (120) of claim 78, wherein the means for commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

means for commanding an adjustment to a focal region (123) of a reflector (122) of the antenna assembly (121).

87. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, or~~ 86, wherein the first native antenna pattern (220) is associated with a first boresight direction of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second boresight direction of the antenna assembly (121) that is different from the first boresight direction.

88. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, 86, or~~ 87, wherein the first native antenna pattern (220) is associated with a first native feed

element pattern beamwidth of the given antenna feed element (128), and the second native antenna pattern (220) is associated with a second native feed element pattern beamwidth of the given antenna feed element (128) that is different from the first native feed element pattern beamwidth.

89. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, 86, 87, or~~ 88, wherein the first native antenna pattern (220) is associated with a first amount of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second, different amount of overlap of the native feed element patterns (210) of the two or more antenna feed elements (128) of the antenna assembly (121).

90. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, or~~ 86, further comprising:

means for adjusting an orbital characteristic of the communications satellite (120) prior to transmitting the second plurality of feed element signals.

91. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, or~~ 86, wherein the means for transmitting the first plurality of feed element signals and the means for transmitting the second plurality of feed element signals are operable at a same geostationary orbital position.

92. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, or~~ 86, wherein:

the means for transmitting the first plurality of feed element signals is operable at a first geostationary orbital position;

the means for commanding the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises means for commanding the communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the means for transmitting the second plurality of feed element signals is operable at the second geostationary orbital position.

93. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, 86, 87 to 90, 91, or~~ 92, further comprising:

a second antenna assembly (121) with a second plurality of antenna feed elements (128); and

means for transmitting a third plurality of feed element signals generated from a third plurality of spot beam signals according to a third native antenna pattern (220) of the second plurality

of antenna feed elements (128), the third native antenna pattern (220) of the second plurality of antenna feed elements (128) comprising a composite of third native feed element patterns (210) of the second plurality of antenna feed elements (128).

94. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, 86, 87 to 90, 91, 92, or~~ 93, wherein the means for transmitting the first plurality of feed element signals or the means for transmitting the second plurality of feed element signals comprises one or both of:

means for transmitting feed element signals to a plurality of access node terminals (130); or

means for transmitting feed element signals to a plurality of user terminals (150).

95. The communications satellite (120) of any of claims 77 through ~~, 78, 79 to 84, 85, 86, 87 to 90, 91, 92, 93, or~~ 94, wherein the first plurality of feed element signals are determined based at least in part on applying a first beamforming weight set to the first plurality of spot beam signals, and the second plurality of feed element signals are determined based at least in part on applying a second beamforming weight set to the second plurality of spot beam signals, the first beamforming weight set being different from the second beamforming weight set.

96. A method for providing a communications service via a communications satellite (120) having an antenna assembly (121) with a plurality of antenna feed elements (128), the method comprising:

transmitting, to the communications satellite (120), a first set of signals of the communications service for transmission according to a first plurality of beamformed spot beams based at least in part on a first beamforming configuration and a first native antenna pattern (220) of the plurality of antenna feed elements (128), the first native antenna pattern (220) corresponding to a first defocused position of a feed array assembly (127) of the antenna assembly (121) relative to a reflector (122) of the antenna assembly (121), and the first native antenna pattern (220) comprising a composite of first native feed element patterns (210) of the plurality of antenna feed elements (128);

transmitting, to the communications satellite (120), a command to change from the first native antenna pattern (220) of the plurality of antenna feed elements (128) to a second native antenna pattern (220) of the plurality of antenna feed elements (128), the second native antenna pattern (220) corresponding to a second defocused position of the feed array assembly (127) relative to the reflector (122), and the second native antenna pattern (220) comprising a composite of second native feed element patterns (210) of the plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the plurality of antenna feed elements (128) is associated with one of the first native feed element patterns (210) and one of the second native feed element patterns (210),

and wherein the one of the second native feed element patterns (210) is different from the one of the first native feed element patterns (210); and

transmitting, to the communications satellite (120), a second set of signals of the communications service for transmission according to a second plurality of beamformed spot beams based at least in part on a second beamforming configuration and the second native antenna pattern (220) of the plurality of antenna feed elements (128).

97. The method of claim 96, wherein transmitting the command to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an actuator (124) of the communications satellite (120) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220).

98. The method of claim 97, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a spatial adjustment between the reflector (122) of the antenna assembly (121) and the feed array assembly (127) of the antenna assembly (121) comprising the plurality of antenna feed elements (128).

99. The method of claim 98, wherein the actuator (124) is coupled between the reflector (122) of the antenna assembly (121) and the feed array assembly (127).

100. The method of claim 98, wherein the command to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a linear actuator (124) coupled between the reflector (122) and the feed array assembly (127) to change from a first length to a second length.

101. The method of claim 100, wherein transmitting the command to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding a secondary actuator (2540) coupled between the feed array assembly (127) and the reflector (122) to provide the second native antenna pattern (220), the commanding of the secondary actuator (2540) causing a change in relative position between the feed array assembly (127) and the reflector (122) about an axis different from an axis of the linear actuator (124).

102. The method of claim 96, wherein one or both of the first defocused position or the second defocused position is associated with one or more of the plurality of antenna feed elements (128) being located between the reflector (122) and a focal region (123) of the reflector (122).

103. The method of claim 97, wherein commanding the actuator (124) to provide the change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises:

commanding an adjustment to a focal region (123) of a reflector (122) of the antenna assembly (121).

104. The method of any of claims 96 through ~~to 101, 102, or~~ 103, wherein the first native antenna pattern (220) is associated with a first boresight direction of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second boresight direction of the antenna assembly (121) that is different from the first boresight direction.

105. The method of any of claims 96 through ~~to 101, 102, 103, or~~ 104, wherein the first native antenna pattern (220) is associated with a first native feed element pattern beamwidth of the given antenna feed element (128), and the second native antenna pattern (220) is associated with a second native feed element pattern beamwidth of the given antenna feed element (128) that is different from the first native feed element pattern beamwidth.

106. The method of any of claims 96 through ~~to 101, 102, 103, or 104 to~~ 105, wherein the first native antenna pattern (220) is associated with a first amount of overlap of native feed element patterns (210) of two or more antenna feed elements (128) of the antenna assembly (121), and the second native antenna pattern (220) is associated with a second, different amount of overlap of the native feed element patterns (210) of the two or more antenna feed elements (128) of the antenna assembly (121).

107. The method of any of claims 96 through ~~to 101, 102, or~~ 103, further comprising:

transmitting a command to adjust an orbital characteristic of the communications satellite (120), wherein transmitting the second set of signals comprises transmitting signals according to the adjusted orbital characteristic.

108. The method of any of claims 96 through ~~to 101, 102, or~~ 103, wherein the communications satellite (120) is at a same geostationary orbital position while transmitting the first set of signals and while transmitting the second set of signals.

109. The method of any of claims 96 through ~~to 101, 102, or~~ 103, wherein:

the communications satellite (120) is at a first geostationary orbital position while transmitting the first set of signals;

the commanding the communications satellite (120) to change from the first native antenna pattern (220) to the second native antenna pattern (220) comprises commanding the

communications satellite (120) to move from the first geostationary orbital position to a second, different geostationary orbital position; and

the communications satellite (120) is at the second geostationary orbital position while transmitting the second set of signals.

110. The method of any of claims 96 through ~~to 101, 102, 103, 104 to 107, 108, or~~ 109, wherein the communications satellite (120) comprises a second antenna assembly (121) with a second plurality of antenna feed elements (128), the method further comprising:

transmitting, to the communications satellite (120), a command to change from a third native antenna pattern (220) of the plurality of antenna feed elements (128), the third native antenna pattern (220) comprising a composite of third native feed element patterns (210) of the second plurality of antenna feed elements (128) to a fourth native antenna pattern (220) of the second plurality of antenna feed elements (128), the fourth native antenna pattern (220) comprising a composite of fourth native feed element patterns (210) of the second plurality of antenna feed elements (128), wherein a given antenna feed element (128) of the second plurality of antenna feed elements (128) is associated with one of the third native feed element patterns (210) and one of the fourth native feed element patterns (210), and wherein the one of the fourth native feed element patterns (210) is different from the one of the third native feed element patterns (210).