CLAIMS

What is claimed is:

1. A method for media access control optimization for long distance wireless communication between an airborne platform and a surface base station, the method comprising:

receiving an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmitting an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier.

2. The method as recited in claim 1, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

3. The method as recited in claim 2, further comprising performing a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data.

4. The method as recited in claim 3, further comprising maintaining a list of active transmitters.

5. The method as recited in claim 4, further comprising removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a

set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

6. The method as recited in claim 4, further comprising adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.

7. The method as recited in claim 1, wherein the data portion and the token are independently modulated.

8. A method for media access control optimization for long distance wireless communication between an airborne platform and a surface base station, the method comprising:

maintaining a list of active transmitters;

receiving an incoming beamform signal, wherein the incoming beamform signal includes a data portion and a token, wherein the data portion and the token are independently modulated, and wherein the token identifies a subsequent transmitter, and wherein the identifying the subsequent transmitter includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data;

adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter

transmitting an outgoing beamform signal, wherein the outgoing beamform signal includes a data portion and a token;

performing a timeout check, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data; and

removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission

from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

9. A media access control optimization system for long distance wireless communication between an airborne platform and a surface base station, the system comprising:

an antenna configured to:

receive an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmit an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier.

10. The system as recited in claim 9, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

11. The system as recited in claim 10, further comprising a processor configured to perform a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data.

12. The system as recited in claim 11, wherein the processor is further configured to maintain a list of active transmitters.

13. The system as recited in claim 12, wherein the processor is further configured to remove a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity

from the particular transmitter, failure to receive a return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

14. The system as recited in claim 12, wherein the processor is further configured to add a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.

15. The system as recited in claim 9, wherein the data portion and the token are independently modulated.

16. A method for media access control optimization for long distance wireless communication between a surface platform and a base station, the method comprising:

receiving an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmitting an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier.

17. The method as recited in claim 16, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

18. The method as recited in claim 17, further comprising performing a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data.

19. The method as recited in claim 18, further comprising maintaining a list of active transmitters.

20. The method as recited in claim 19, further comprising removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

21. The method as recited in claim 19, further comprising adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.

22. The method as recited in claim 16, wherein the data portion and the token are independently modulated.

23. A method for media access control optimization for long distance wireless communication between a surface platform and a base station, the method comprising:

maintaining a list of active transmitters;

receiving an incoming beamform signal, wherein the incoming beamform signal includes a data portion and a token, wherein the data portion and the token are independently modulated, and wherein the token identifies a subsequent transmitter, and wherein the identifying the subsequent transmitter includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data;

adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter

transmitting an outgoing beamform signal, wherein the outgoing beamform signal includes a data portion and a token;

performing a timeout check, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data; and

removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

24. A media access control optimization system for long distance wireless communication between a surface platform and a base station, the system comprising:

an antenna configured to:

receive an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmit an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier.

25. The system as recited in claim 24, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

26. The system as recited in claim 25, further comprising a processor configured to perform a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data.

27. The system as recited in claim 26, wherein the processor is further configured to maintain a list of active transmitters.

28. The system as recited in claim 27, wherein the processor is further configured to remove a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

29. The system as recited in claim 27, wherein the processor is further configured to add a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.

30. The system as recited in claim 24, wherein the data portion and the token are independently modulated.

Claims

1. A method for media access control optimization for long distance wireless communication between transmitters and receivers associated with a surface platform and a base station, the method comprising:

receiving an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmitting an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier, wherein the data portion and the token are independently modulated, with the token being modulated at a lower rate than the data portion.

2. The method as recited in claim 1, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

3. The method as recited in claim 2, further comprising performing a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if a subsequent transmitter fails to transmit according to the transmit timing data.

4. The method as recited in claim 3, further comprising maintaining a list of active transmitters.

5. The method as recited in claim 4, further comprising removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a

return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

6. The method as recited in claim 4, further comprising adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.

7. A method for media access control optimization for long distance wireless communication between transmitters associated with a surface platform and a base station, the method comprising:

maintaining a list of active transmitters;

receiving an incoming beamform signal, wherein the incoming beamform signal includes a data portion and a token, wherein the data portion and the token are independently modulated, and wherein the token identifies a subsequent transmitter, and wherein the identifying the subsequent transmitter includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data;

adding a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter

transmitting an outgoing beamform signal, wherein the outgoing beamform signal includes a data portion and a token, wherein the data portion and the token are independently modulated, with the token being modulated at a lower rate than the data portion;

performing a timeout check, wherein the timeout check indicates failure if the subsequent transmitter fails to transmit according to the transmit timing data; and

removing a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a set

number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

8. A media access control optimization system for long distance wireless communication between transmitters and receivers associated with a surface platform and a base station, the system comprising:

an antenna configured to:

receive an incoming beamformed signal, wherein the incoming beamformed signal includes an incoming data portion and an incoming token, wherein the incoming token includes a subsequent transmitter identifier; and

transmit an outgoing beamformed signal, wherein the outgoing beamformed signal includes an outgoing data portion and an outgoing token, wherein the outgoing token includes a subsequent transmitter identifier, and wherein the data portion and the token are independently modulated, with the token being modulated at a lower rate than the data portion.

9. The system as recited in claim 8, wherein the subsequent transmitter identifier includes at least one of identification of which transmitter is to transmit next, length of time the next transmitter should transmit for, and a transmit timing data.

10. The system as recited in claim 9, further comprising a processor configured to perform a timeout check after transmitting the outgoing beamform signal, wherein the timeout check indicates failure if a subsequent transmitter fails to transmit according to the transmit timing data.

11. The system as recited in claim 10, wherein the processor is further configured to maintain a list of active transmitters.

12. The system as recited in claim 11, wherein the processor is further configured to remove a particular transmitter from the list of active transmitters in response to at least one of an explicit request from the particular transmitter, a period of inactivity from the particular transmitter, failure to receive a return transmission from the particular transmitter a set number of times, and failure to receive the return transmission from the particular transmitter at a particular failure rate.

13. The system as recited in claim 11, wherein the processor is further configured to add a particular transmitter to the list of active transmitters when the incoming transmission is received from the particular transmitter.