[0005] In some embodiments, the first filter is configured to pass a first cellular frequency band that corresponds to the first radio access network. In further embodiments, the second filter is configured to pass a wireless local area network frequency band that corresponds to the second radio access network. In yet further embodiments, the reconfigurable multiplexer further includes a third filter implemented between the switching network and a third bi-directional port that is associated with a third radio access network. In yet further embodiments, the third filter is configured to pass a second cellular frequency band that corresponds to the third radio access network, the wireless local area network frequency band being between the first cellular frequency band and the second cellular frequency band. In yet further embodiments, the switching network is configured to couple any combination of the first filter, the second filter, and the third filter to the signal port simultaneously. In further embodiments, the controller controls the switching network to provide a respective signal path between the signal port and any one or more of the first bi-directional port, the second bi-directional port, and the third bi-directional port.

[0006] According to a number of implementations, the present disclosure relates to a front end architecture that includes a reconfigurable multiplexer including a switching network having multi-path operability and connectability to a signal port and a filter assembly implemented between the switching network and a plurality of bi-directional ports associated with a plurality of radio access networks, wherein each one of the plurality of bi-directional ports is associated with one of the plurality of plurality of radio access networks. The front end architecture also includes an amplifier assembly coupled to the filter assembly, the amplifier assembly configured to amplify signals received from the filter assembly. The front end architecture also includes a controller implemented to control the switching network to provide respective signal paths between the signal port and any permutation of one or more of the plurality of bi-directional ports.

[0007] In some embodiments, the filter assembly includes at least one filter configured to pass signals within a wireless local area network frequency band. In some embodiments, at least one signal path from the filter assembly to one of the plurality of bi-directional ports does not pass through the amplifier assembly. In further embodiments, the at least one signal path corresponds to a radio access network associated with a wireless local area network frequency band. In further embodiments, the front end architecture further includes a

duplexer configured to receive signals that pass through the at least one filter of the filter assembly. In further embodiments, the controller is further configured to control the duplexer.

[0008] In some embodiments, the filter assembly includes a first plurality of filters, each of the first plurality of filters being configured to pass signals within a respective cellular frequency band; and a second plurality of filters, each of the second plurality of filters being configured to pass signals within a respective wireless local area network frequency band. In further embodiments, the front end architecture also includes a duplexer associated with each of the second plurality of filters.

[0009] According to a number of implementations, the present disclosure relates to a wireless device that includes a diversity antenna and a triplexer configured to receive signals from the diversity antenna and to provide signals in a first frequency range along a first path and to provide signals in a second frequency range along a second path. The wireless device also includes a first reconfigurable multiplexer coupled to the first path from the triplexer at a first signal port, the first reconfigurable multiplexer including a first switching network and a first filter assembly implemented between the first switching network and a first plurality of bi-directional ports associated with a first plurality of radio access networks, wherein each one of the first plurality of bi-directional ports is associated with one of the first plurality of radio access networks. The wireless device also includes a first amplifier assembly coupled to the first filter assembly, the first amplifier assembly configured to amplify signals received from the first filter assembly. The wireless device also includes a second reconfigurable multiplexer coupled to the second path from the triplexer at a second signal port, the second reconfigurable multiplexer including a second switching network and a second filter assembly implemented between the second switching network and a second plurality of bi-directional ports associated with a second plurality of radio access networks. The wireless device also includes a second amplifier assembly coupled to the second filter assembly, the second amplifier assembly configured to amplify signals received from the second filter assembly. The wireless device also includes a controller implemented to control the first switching network to provide respective signal paths between the first signal port and any permutation of one or more of the first plurality of bi-directional ports and to control the second switching

WHAT IS CLAIMED IS:

1. A reconfigurable multiplexer comprising:

a switching network including multi-path operability and connectability to a signal port;

a first filter implemented between the switching network and a first bi-directional port that is associated with a first radio access network;

a second filter implemented between the switching network and a second bi-directional port that is associated with a second radio access network; and

a controller implemented to control the switching network to provide a respective signal path between the signal port and each of either or both of the first bi-directional port and the second bi-directional port.

2. The multiplexer of claim 1 wherein the first filter is configured to pass a first cellular frequency band that corresponds to the first radio access network.

3. The multiplexer of claim 2 wherein the second filter is configured to pass a wireless local area network frequency band that corresponds to the second radio access network.

4. The multiplexer of claim 3 further comprising a third filter implemented between the switching network and a third bi-directional port that is associated with a third radio access network.

5. The multiplexer of claim 4 wherein the third filter is configured to pass a second cellular frequency band that corresponds to the third radio access network, the wireless local area network frequency band being between the first cellular frequency band and the second cellular frequency band.

6. The multiplexer of claim 5 wherein the switching network is configured to couple any combination of the first filter, the second filter, and the third filter to the signal port simultaneously.

7. The multiplexer of claim 4 wherein the controller controls the switching network to provide a respective signal path between the signal port and

any one or more of the first bi-directional port, the second bi-directional port, and the third bi-directional port.

8. A front end architecture comprising:

a reconfigurable multiplexer including a switching network having multi-path operability and connectability to a signal port and a filter assembly implemented between the switching network and a plurality of bi-directional ports associated with a plurality of radio access networks, wherein each one of the plurality of bi-directional ports is associated with one of the plurality of radio access networks;

an amplifier assembly coupled to the filter assembly, the amplifier assembly configured to amplify signals received from the filter assembly; and

a controller implemented to control the switching network to provide respective signal paths between the signal port and any permutation of one or more of the plurality of bi-directional ports.

9. The front end architecture of claim 8 wherein the filter assembly includes at least one filter configured to pass signals within a wireless local area network frequency band.

10. The front end architecture of claim 8 wherein at least one signal path from the filter assembly to one of the plurality of bi-directional ports does not pass through the amplifier assembly.

11. The front end architecture of claim 10 wherein the at least one signal path corresponds to a radio access network associated with a wireless local area network frequency band.

12. The front end architecture of claim 9 further comprising a duplexer configured to receive signals that pass through the at least one filter of the filter assembly.

13. The front end architecture of claim 12 wherein the controller is further configured to control the duplexer.

14. The front end architecture of claim 8 wherein the plurality of bi-directional ports includes a first and a second plurality of bi-directional ports, and the filter assembly includes a first plurality of filters implemented between the switching network and the first plurality of bi-directional ports, each of the first plurality of filters being configured to pass signals within a respective cellular frequency band; and a second plurality of filters implemented between the switching network and the second plurality of bi-directional ports, each of the second plurality of filters being configured to pass signals within a respective wireless local area network frequency band.

15. The front end architecture of claim 14 further comprising a duplexer associated with each of the second plurality of filters.

16. A wireless device comprising:

a diversity antenna;

a triplexer configured to receive signals from the diversity antenna and to provide signals in a first frequency range along a first path and to provide signals in a second frequency range along a second path;

a first reconfigurable multiplexer coupled to the first path from the triplexer at a first signal port, the first reconfigurable multiplexer including a first switching network and a first filter assembly implemented between the first switching network and a first plurality of bi-directional ports associated with a first plurality of radio access networks, wherein each one of the first plurality of bi-directional ports is associated with one of the first plurality of radio access networks;

a first amplifier assembly coupled to the first filter assembly, the first amplifier assembly configured to amplify signals received from the first filter assembly;

a second reconfigurable multiplexer coupled to the second path from the triplexer at a second signal port, the second reconfigurable multiplexer including a second switching network and a second filter assembly implemented between the second switching network and a second plurality of bi-directional ports associated with a second plurality of radio access

networks, wherein each one of the second plurality of bi-directional ports is associated with one of the second plurality of radio access networks;

a second amplifier assembly coupled to the second filter assembly, the second amplifier assembly configured to amplify signals received from the second filter assembly; and

a controller implemented to control the first switching network to provide respective signal paths between the first signal port and any permutation of one or more of the first plurality of bi-directional ports and to control the second switching network to provide respective signal paths between the second signal port and any permutation of one or more of the second plurality of bi-directional ports.

17. The device of claim 16 wherein the second plurality of radio access networks includes at least one radio access network corresponding to a wireless local area network frequency band.

18. The device of claim 16 wherein the triplexer is further configured to receive signals from the diversity antenna and to provide signals in a third frequency range along a third path.

19. The device of claim 18 wherein the second multiplexer is coupled to the third path from the triplexer at a third signal port, the second reconfigurable multiplexer including a third switching network that receives signals from the third signal port and directs them to a third plurality of bi-directional ports associated with a third plurality of radio access networks.

20. The device of claim 19 wherein the third plurality of radio access networks includes at least one radio access network corresponding to a wireless local area network frequency band.

21. A diversity receiver module comprising:

a packaging substrate configured to receive a plurality of components;

a reconfigurable multiplexer implemented on the packaging substrate, the reconfigurable multiplexer including a switching network including multi-path operability and connectability to a signal port, a first filter

implemented between the switching network and a first bi-directional port that is associated with a first radio access network, and a second filter implemented between the switching network and a second bi-directional port that is associated with a second radio access network; and

a controller implemented on the packaging substrate, the controller configured to control the switching network to provide a respective signal path between the signal port and each of either or both of the first bi-directional port and the second bi-directional port.

22. The module of claim 21 wherein the second radio access network corresponds to a wireless local area network frequency band.

23. A wireless device comprising:

a primary antenna;

a diversity antenna spaced apart from the primary antenna, the diversity antenna configured to receive wireless signals corresponding to a plurality of radio access networks;

a diversity receiver module in communication with the diversity antenna, the diversity receiver module including a packaging substrate configured to receive a plurality of components, the diversity receiver module further including a reconfigurable multiplexer implemented on the packaging substrate, the reconfigurable multiplexer including a switching network including multi-path operability and connectability to a signal port, a first filter implemented between the switching network and a first bi-directional port that is associated with a first radio access network of the plurality of radio access networks, and a second filter implemented between the switching network and a second bi-directional port that is associated with a second radio access network of the plurality of radio access networks; and

a controller configured to control the switching network to provide a respective signal path between the signal port and each of either or both of the first bi-directional port and the second bi-directional port.

24. The device of claim 23 wherein the second radio access network corresponds to a wireless local area network frequency band.