CLAIMS

1. A method of operating a communication device (1300, 1500) having a controller (1309) operatively connected to a plurality of transceivers (1301, 1305; 1503, 1505, 1511) co-located within the device including a first transceiver (1301, 1503) and a second transceiver (1305, 1507, 1511), wherein the first transceiver receives signals on one or more channels within a first frequency band (301) and the second transceiver transmits signals on one or more channels within a second frequency band (303), wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border (309) and a nonadjacent border (311, 313), the method comprising:

operating the first and second transceivers concurrently in a frequency division multiplexing mode of operation whereby interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of filtering;

the controller detecting (1401, 1601) which one or more channels of the second frequency band are being used by the second transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting (1403, 1405; 1603, 1605) one or more of a radio frequency, RF, band selective transmit filter of the second transceiver and a RF band selective receive filter of the first transceiver to create a first guard band that is located more in the first frequency band than in the second frequency band;

if none of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting (1409, 1411; 1611, 1613) one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the second frequency band than in the first frequency band.

2. The method of claim 1, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

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adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.

3. The method of claim 1, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band.

4. The method of claim 3, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the transmit filter of the second transceiver such that a corner frequency of the transmit filter is within the second frequency band at a second spectral distance from the adjacent border of the first frequency band, wherein a spectral distance between the corner frequency of the transmit filter of the second transceiver and the corner frequency of the receive filter of the first transceiver is sufficient to create a guard band between the first and second frequency bands.

5. The method of claim 3, wherein adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is located at the adjacent border of the first frequency band.

6. The method of claim 1, comprising:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then the controller causing the first transceiver to operate

(1407; 1607, 1609; 1707) in a way that avoids receiving channels located within the first guard band.

7. The method of claim 1, wherein the first and second frequency bands being adjacent one another means that an adjacent border of the first frequency band is within 20MHz of an adjacent border of the second frequency band.

8. The method of claim 1, wherein the receive filter is a band selective filter that has a pass band whose bandwidth is narrower than a bandwidth of the first frequency band, and wherein adjusting the receive filter comprises adjusting a frequency location of the receive filter pass band.

9. The method of claim 1, wherein the receive filter comprises:

a plurality of band selective filters (801, 803; 1101, 1103, 1105, 1107), each passing a different portion of the first frequency band;

a switching arrangement (605; 805, 807; 1119, 1123) operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a receive path of the first transceiver.

10. The method of claim 1, wherein the transmit filter comprises:

a plurality of band selective filters (801, 803; 1101, 1103, 1105, 1107), each passing a different portion of the second frequency band;

a switching arrangement (805, 807; 1119, 1123)operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a transmit path of the second transceiver.

11. A method of operating a communication device (1300, 1500) having a controller (1309) operatively connected to a plurality of transceivers (1301, 1305; 1503, 1505, 1511) co-located within the device including a first transceiver (1301, 1503) and a second transceiver (1305, 1507, 1511), wherein the first transceiver receives signals on one or more channels within a first frequency band (301) and the second transceiver transmits signals on one or more channels within a second frequency band (303), wherein the first and second

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frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border (309) and a nonadjacent border (311, 313), the method comprising:

operating the first and second transceivers concurrently in a frequency division multiplexing mode of operation whereby interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of filtering;

the controller detecting (1702) which one or more channels of the first frequency band are being used by the first transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting (1703, 1705) one or more of a radio frequency, RF, band selective transmit filter of the second transceiver and a RF band selective receive filter of the first transceiver to create a first guard band that is located more in the second frequency band than in the first frequency band;

if none of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting (1709, 1711) one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the first frequency band than in the second frequency band.

12. A communication device (1300, 1500) that comprises a plurality of transceivers (1301, 1305; 1503, 1505, 1511) co-located within the device including a first transceiver (1301, 1503) and a second transceiver (1305, 1507, 1511), comprising a controller (1309, 1513) for operating the communication device, wherein the controller is operatively connected to the plurality of transceivers including the first transceiver and the second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band (301) and the second transceiver transmits signals on one or more channels within a second frequency band (303), wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border (309) and a nonadjacent border (311, 313), the controller comprising:

circuitry (809, 1011) configured to operate the first and second transceivers concurrently in a frequency division multiplexing mode of operation whereby interference at

the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of filtering;

circuitry (811, 1009) configured to detecting which one or more channels of the second frequency band are being used by the second transceiver and based on an outcome of the detecting, causing the communication device to perform:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of a radio frequency, RF, band selective transmit filter of the second transceiver and a RF band selective receive filter of the first transceiver to create a first guard band that is located more in the first frequency band than in the second frequency band;

if none of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the second frequency band than in the first frequency band.

13. The apparatus of claim 12, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.

14. The apparatus of claim 12, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band.

15. The apparatus of claim 14, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard

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band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the transmit filter of the second transceiver such that a corner frequency of the transmit filter is within the second frequency band at a second spectral distance from the adjacent border of the first frequency band, wherein a spectral distance between the corner frequency of the transmit filter of the second transceiver and the corner frequency of the receive filter of the first transceiver is sufficient to create a guard band between the first and second frequency bands.

16. The apparatus of claim 14, wherein adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is located at the adjacent border of the first frequency band.

17. The apparatus of claim 12, comprising:

circuitry configured to respond to any of the detected one or more channels of the second frequency band being adjacent the first frequency band by causing the first transceiver to operate in a way that avoids receiving channels located within the first guard band.

18. The apparatus of claim 12, wherein the first and second frequency bands being adjacent one another means that an adjacent border of the first frequency band is within 20MHz of an adjacent border of the second frequency band.

19. The apparatus of claim 12, comprising the receive filter, wherein the receive filter is a band selective filter that has a pass band whose bandwidth is narrower than a bandwidth of the first frequency band, and wherein adjusting the receive filter comprises adjusting a frequency location of the receive filter pass band.

20. The apparatus of claim 12, comprising the receive filter, and wherein the receive filter comprises:

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a plurality of band selective filters (801, 803; 1001, 1003; 1101, 1103, 1105, 1107), each passing a different portion of the first frequency band;

a switching arrangement (605; 805, 807; 1007; 1119, 1123) operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a receive path of the first transceiver.

21. The apparatus of claim 12, comprising the transmit filter, and wherein the transmit filter comprises:

a plurality of band selective filters, each passing a different portion of the second frequency band;

a switching arrangement operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a transmit path of the second transceiver.

22. A communication device (1300, 1500) that comprises a plurality of transceivers (1301, 1305; 1503, 1505, 1511) co-located within the device including a first transceiver (1301, 1503) and a second transceiver (1305, 1507, 1511), comprising a controller (1309, 1513) for operating the communication device, wherein the controller is operatively connected to the plurality of transceivers including the first transceiver and the second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band (301) and the second transceiver transmits signals on one or more channels within a second frequency band (303), wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border (309) and a nonadjacent border (311, 313), the controller comprising:

circuitry (809, 1011) configured to operate the first and second transceivers concurrently in a frequency division multiplexing mode of operation whereby interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of filtering;

circuitry (811, 1009) configured to detect which one or more channels of the first frequency band are being used by the first transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of a radio frequency, RF, band selective transmit filter of the second transceiver and a receive filter of the first transceiver to create a first guard band that is located more in the second frequency band than in the first frequency band;

if none of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the first frequency band than in the second frequency band.

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What is claimed is:

1. A method of operating a communication device having a controller operatively connected to a plurality of transceivers including a first transceiver and a second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band and the second transceiver transmits signals on one or more channels within a second frequency band, wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border and a nonadjacent border, the method comprising:

operating the first and second transceivers concurrently in a frequency division multiplexing mode of operation wherein interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of band select filtering;

the controller detecting which one or more channels of the second frequency band are being used by the second transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of a transmit filter of the second transceiver and a receive filter of the first transceiver to create a first guard band that is located more in the first frequency band than in the second frequency band;

if none of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the second frequency band than in the first frequency band,

wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.

2. The method of claim 1, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard

band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band.

3. The method of claim 2, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the transmit filter of the second transceiver such that a corner frequency of the transmit filter is within the second frequency band at a second spectral distance from the adjacent border of the first frequency band, wherein a spectral distance between the corner frequency of the transmit filter of the second transceiver and the corner frequency of the receive filter of the first transceiver is sufficient to create a guard band between the first and second frequency bands.

4. The method of claim 3, wherein adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent from the adjacent border of the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is located at the adjacent border of the first frequency band.

5. The method of claim 1, comprising:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then the controller causing the first transceiver to operate in a way that avoids receiving channels located within the first guard band.

6. The method of claim 1, wherein the first and second frequency bands being adjacent one another means that an adjacent border of the first frequency band is within 20 MHz of an adjacent border of the second frequency band.

7. The method of claim 1, wherein the receive filter is a band selective filter that has a pass band whose bandwidth is narrower than a bandwidth of the first frequency band, and wherein adjusting the receive filter comprises adjusting a frequency location of the receive filter pass band.

8. The method of claim 1, wherein the receive filter comprises:

a plurality of band selective filters, each passing a different portion of the first frequency band;

a switching arrangement operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a receive path of the first transceiver.

9. The method of claim 1, wherein the transmit filter comprises:

a plurality of band selective filters, each passing a different portion of the second frequency band;

a switching arrangement operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a transmit path of the second transceiver.

10. A method of operating a communication device having a controller operatively connected to a plurality of transceivers including a first transceiver and a second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band and the second transceiver transmits signals on one or more channels within a second frequency band, wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border and a nonadjacent border, the method comprising:

operating the first and second transceivers concurrently in a frequency division multiplexing mode of operation wherein interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of band select filtering;

the controller detecting which one or more channels of the first frequency band are being used by the first transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of a transmit filter of the second transceiver and a receive filter of the first transceiver to create a first guard band that is located more in the second frequency band than in the first frequency band;

if none of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of the

transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the first frequency band than in the second frequency band,

wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.

11. A controller for operating a communication device that comprises a plurality of transceivers including a first transceiver and a second transceiver, wherein the controller is operatively connected to the plurality of transceivers including the first transceiver and the second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band and the second transceiver transmits signals on one or more channels within a second frequency band, wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border and a nonadjacent border, the controller comprising:

circuitry configured to operate the first and second transceivers concurrently in a frequency division multiplexing mode of operation wherein interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of band select filtering;

circuitry configured to detect which one or more channels of the second frequency band are being used by the second transceiver and based on an outcome of the detecting, causing the communication device to perform:

if any of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of a transmit filter of the second transceiver and a receive filter of the first transceiver to create a first guard band that is located more in the first frequency band than in the second frequency band;

if none of the detected one or more channels of the second frequency band are adjacent the first frequency band, then adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the second frequency band than in the first frequency band,

wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.

12. The apparatus of claim 11, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent border of the first frequency band.

13. The apparatus of claim 12, wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the second guard band that is located more in the second frequency band than in the first frequency band comprises:

adjusting the transmit filter of the second transceiver such that a corner frequency of the transmit filter is within the second frequency band at a second spectral distance from the adjacent border of the first frequency band, wherein a spectral distance between the corner frequency of the transmit filter of the second transceiver and the corner frequency of the receive filter of the first transceiver is sufficient to create a guard band between the first and second frequency bands.

14. The apparatus of claim 12, wherein adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is less than the first spectral distance from the adjacent from the adjacent border of the first frequency band comprises:

adjusting the receive filter of the first transceiver such that the corner frequency of the receive filter is located at the adjacent border of the first frequency band.

15. The apparatus of claim 11, comprising:

circuitry configured to respond to any of the detected one or more channels of the second frequency band being adjacent the first frequency band by causing the first

transceiver to operate in a way that avoids receiving channels located within the first guard band.

16. The apparatus of claim 11, wherein the first and second frequency bands being adjacent one another means that an adjacent border of the first frequency band is within 20 MHz of an adjacent border of the second frequency band.

17. The apparatus of claim 11, comprising the receive filter, wherein the receive filter is a band selective filter that has a pass band whose bandwidth is narrower than a bandwidth of the first frequency band, and wherein adjusting the receive filter comprises adjusting a frequency location of the receive filter pass band.

18. The apparatus of claim 11, comprising the receive filter, and wherein the receive filter comprises:

a plurality of band selective filters, each passing a different portion of the first frequency band;

a switching arrangement operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a receive path of the first transceiver.

19. The apparatus of claim 11, comprising the transmit filter, and wherein the transmit filter comprises:

a plurality of band selective filters, each passing a different portion of the second frequency band;

a switching arrangement operatively coupled to the plurality of band selective filters to enable only one of the band selective filters to be included within a transmit path of the second transceiver.

20. A controller for operating a communication device that comprises a plurality of transceivers including a first transceiver and a second transceiver, wherein the controller is operatively connected to the plurality of transceivers including the first transceiver and the second transceiver, wherein the first transceiver receives signals on one or more channels within a first frequency band and the second transceiver transmits signals on one or more channels within a second frequency band, wherein the first and second frequency bands are adjacent one another so that each of the first and second frequency bands has an adjacent border and a nonadjacent border, the controller comprising:

circuitry configured to operate the first and second transceivers concurrently in a frequency division multiplexing mode of operation wherein interference at the first transceiver caused by transmissions of the second transceiver is mitigated, at least in part, by means of band select filtering;

circuitry configured to detect which one or more channels of the first frequency band are being used by the first transceiver and based on an outcome of the detecting, performing:

if any of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of a transmit filter of the second transceiver and a receive filter of the first transceiver to create a first guard band that is located more in the second frequency band than in the first frequency band;

if none of the detected one or more channels of the first frequency band are adjacent the second frequency band, then adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create a second guard band that is located more in the first frequency band than in the second frequency band,

wherein adjusting one or more of the transmit filter of the second transceiver and the receive filter of the first transceiver to create the first guard band that is located more in the first frequency band than in the second frequency band comprises:

adjusting the receive filter of the first transceiver such that a corner frequency of the receive filter is within the first frequency band at a first spectral distance from the adjacent border of the first frequency band.