CLAIMS

What is claimed is:

1. A multimode antenna, comprising:

a low band antenna comprising a first low band radiating structure and a second low band radiating structure each configured to radiate low band radio frequency signals in a low band resonant frequency range;

a high band antenna comprising a first high band radiating structure and a second high band radiating structure each configured to radiate high band radio frequency signals in a high band resonant frequency range;

a first port electrically coupled to the first low band radiating structure and the first high band radiating structure;

a second port electrically coupled to the second low band radiating structure and the second high band radiating structure;

a first component that decouples the first low band radiating structure from the first high band radiating structure by suppressing low band radio frequency signals from entering the first high band radiating structure, suppressing high band radio frequency signals from entering the first low band radiating structure, or both; and

a second component that decouples the second low band radiating structure from the second high band radiating structure by suppressing low band radio frequency signals from entering the second high band radiating structure, suppressing high band radio frequency signals from entering the second low band radiating structure, or both.

2. The multimode antenna of claim 1, comprising an isolation device coupled to the first low band radiating structure and the second low band radiating structure to isolate at least in part the first low band radiating structure from the second low band radiating structure.

3. The multimode antenna of claim 2, wherein the isolation device causes common mode currents and differential mode currents in the first low band radiating structure and the second low band radiating structure which when combined isolates at least in part the first low band radiating structure from the second low band radiating structure.

4. The multimode antenna of claim 2, wherein the isolation device comprises one or more variable reactive elements to adjust an electrical length of the isolation device, thereby controlling a level of isolation between the first low band radiating structure and the second low band radiating structure.

5. The multimode antenna of claim 1, comprising an isolation device coupled to the first high band radiating structure and the second high band radiating structure to isolate at least in part the first high band radiating structure from the second high band radiating structure.

6. The multimode antenna of claim 5, wherein the isolation device causes common mode currents and differential mode currents in the first high band radiating structure and the second high band radiating structure which when combined isolates at least in part the first high band radiating structure from the second high band radiating structure.

7. The multimode antenna of claim 5, wherein the isolation device comprises one or more variable reactive elements to adjust an electrical length of the isolation device, thereby controlling a level of isolation between the first high band radiating structure and the second high band radiating structure.

8. The multimode antenna of claim 1, wherein one of the first low band radiating structure, the second low band radiating structure, or both comprise an aperture tuner to adjust the low band resonant frequency range.

9. The multimode antenna of claim 8, wherein the aperture tuner comprises one or more variable reactive elements to adjust the low band resonant frequency range.

10. The multimode antenna of claim 1, wherein one of the first high band radiating structure, the second high band radiating structure, or both comprise an aperture tuner to adjust the high band resonant frequency range.

11. The multimode antenna of claim 10, wherein the aperture tuner comprises one or more variable reactive elements to adjust the high band resonant frequency range.

12. The multimode antenna of claim 1, wherein the first component comprises a first filter and a second filter.

13. The multimode antenna of claim 12, wherein the first filter suppresses at least in part the low band radio frequency signals from entering the first high band radiating structure, and wherein the second filter suppresses at least in part the high band radio frequency signals from entering the first low band radiating structure.

14. The multimode antenna of claim 1, wherein the second component comprises a first filter and a second filter.

15. The multimode antenna of claim 14, wherein the first filter suppresses at least in part the low band radio frequency signals from entering the second high band radiating structure, and wherein the second filter suppresses at least in part the high band radio frequency signals from entering the second low band radiating structure.

16. The multimode antenna of claim 1, wherein the low band antenna structure comprises a first antenna type, wherein the high band antenna structure comprises a second antenna type, and wherein the first antenna type is dissimilar to the second antenna type.

17. A method, comprising:

electrically coupling a first lower frequency radiator of a first antenna to a first upper frequency radiator of a second antenna via a shared first port;

electrically coupling a second lower frequency radiator of the first antenna to a second upper frequency radiator of the second antenna via a shared second port;

suppressing, at least in part, with at least one first filter, first signals of the first lower frequency radiator from entering the first upper frequency radiator, second signals of the first upper frequency radiator from entering the first lower frequency radiator, or both; and

suppressing, at least in part, with at least one second filter, third signals of the second lower frequency radiator from entering the second upper frequency radiator, fourth signals of the second upper frequency radiator from entering the second lower frequency radiator, or both.

18. The method of claim 17, comprising:

coupling at least one first aperture tuner to one of the first lower frequency radiator, the second lower frequency radiator, or both for adjusting a first resonant frequency range of the first lower frequency radiator, a second resonant frequency range of the second lower frequency radiator, or both; and

coupling at least one second aperture tuner to one of the first upper frequency radiator, the second upper frequency radiator, or both for adjusting a third resonant frequency range of the first upper frequency radiator, a fourth resonant frequency range of the second upper frequency radiator, or both.

19. The method of claim 17, comprising coupling an isolation device to the first lower frequency radiating structure and the second lower frequency radiating structure to isolate at least in part the first lower frequency radiating structure from the second lower frequency radiating structure.

20. The method of claim 19, wherein the isolation device comprises an element electrically coupled to the first lower frequency radiating structure and the second lower frequency radiating structure, and wherein the isolation device is tunable to change an electrical length of the element.

21. A machine-readable storage medium, comprising instructions, wherein execution of the instructions causes a processor to perform operations comprising:

tuning a first resonant frequency of a first antenna; and

tuning a second resonant frequency of a second antenna,

wherein the first antenna is electrically coupled to the second antenna via a shared port, and

wherein signals generated by one of the first antenna or the second antenna are suppressed at least in part with at least one filter.

22. The machine-readable storage medium of claim 21, wherein the signals are suppressed by a filter that isolates the first antenna from the second antenna while being electrically coupled via the shared port.