CLAIMS

What is claimed is:

1. A downhole tool, comprising:

a transmit antenna configured to transmit a signal to a surrounding formation;

a receive antenna configured to receive the signal from the surrounding formation;

a receive amplifier proximate to and coupled to the receive antenna, the receive amplifier configured to provide an amplified signal responsive to the signal received by the receive antenna; and

a single insert electronics carrier including transmit circuitry configured to provide the signal to the transmit antenna, and receive circuitry coupled to the receive amplifier by a conductor;

wherein the electronics carrier is positioned axially away from the receive antenna and the receive amplifier; and

wherein the receive circuitry is configured to receive and process the amplified signal.

2. The downhole tool of claim 1, wherein the receive antenna and the receive amplifier are co-located on a receiver circuit board, or exist in close proximity of a same enclosure.

3. The downhole tool of claim 1, wherein:

the receive amplifier is a first receive amplifier;

the amplified signal is a first amplified signal; and

the receive circuitry comprises a second receive amplifier configured to receive the first amplified signal and provide or process a second amplified signal responsive to the first amplified signal.

4. The downhole tool of claim 3, wherein a gain provided by the first receive amplifier is greater than again provided by the second receive amplifier.

5. The downhole tool of claim 1, wherein:

the receive antenna is a first receive antenna;

the receive amplifier is a first receive amplifier;

the amplified signal is a first amplified signal;

the conductor is a first conductor; and

the downhole tool further comprises:

a second receive antenna configured to receive a signal from the surrounding formation;

a second receive amplifier proximate to and coupled to the second receive antenna, the second receive amplifier configured to provide a second amplified signal responsive to the signal received by the second receive antenna;

wherein the receive circuitry of the electronics carrier is coupled to the second receive amplifier by a second conductor;

wherein the electronics carrier is positioned axially away from the second receive antenna and the second receive amplifier; and

wherein the receive circuitry is configured to receive and process the second am amplified signal.

6. The downhole tool of claim 1; wherein the receive amplifier being proximate to the receive antenna and providing the amplified signal over the conductor to the receive circuitry reduces interference.

7. A method, comprising:

transmitting, by a transmit antenna of a downhole tool, a signal into a surrounding formation;

receiving, at a receive antenna of the downhole tool, the signal from the surrounding formation;

amplifying the signal received by the receive antenna to produce an amplified signal; and

transmitting the amplified signal by a conductor in the downhole tool to an electronics carrier of the downhole tool, wherein the electronics carrier is a single insert, positioned axially away from the receive antenna, and includes transmit circuitry that is configured to provide the signal to the transmit antenna;

wherein the amplified signal is produced proximate to the receive antenna, and before the signal is transmitted by the conductor to the electronics carrier.

8. The method of claim 7, wherein the amplifying is by a receive amplifier co-located on a receiver circuit board with the receive antenna.

9. The method of claim 7, wherein the amplified signal is a first amplified signal, the method further comprising:

amplifying, by receive circuitry of the electronics carrier, the first amplified signal to produce a second amplified signal; and

providing or processing, by the receive circuitry, the second amplified signal.

10. The method of claim 9, wherein a gain to produce the first amplified signal is greater than a gain to produce the second amplified signal.

11. The method of claim 7, wherein:

the receive antenna is a first receive antenna;

the amplified signal is a first amplified signal; and

the conductor is a first conductor;

the method further comprising:

receiving, at a second receive antenna of the downhole tool, a signal from the surrounding formation;

amplifying the signal received by e second receive antenna to produce a second amplified signal; and

transmitting the second amplified signal by a second conductor in the downhole tool to the electronics carrier, wherein the electronics carrier is positioned axially away from the second receive antenna;

wherein the second amplified signal is produced proximate to the second receive antenna, and before the signal is transmitted by the second conductor to the electronics carrier.

12. The method of claim 7, wherein producing the amplified signal proximate to the receive antenna, and before the signal is transmitted to the electronics carrier reduces interference.

13. A receiver sensor of a downhole tool, the receiver sensor comprising:

a receive antenna configured to receive a signal from a surrounding formation of the downhole tool; and

a receive amplifier proximate to and coupled to the receive antenna, the receive amplifier configured to provide an amplified signal responsive to the signal received by the receive antenna;

wherein the receive amplifier is adapted to be coupled to a single insert electronics carrier, including receive circuitry, by a conductor;

wherein the electronics carrier includes transmit circuitry configured to provide the signal to a transmit antenna; and

wherein the receiver sensor is configured to be positioned axially away from the electronics carrier in a downhole tool.

14. The receiver sensor of claim 13, further comprising a circuit board that includes the receive antenna and the receive amplifier.

15. The receiver sensor of claim 13, further comprising an integrated circuit that includes the receive antenna and the receive amplifier.

16. The receiver sensor of claim 13, wherein:

the receive amplifier is a first receive amplifier;

the amplified signal is a first amplified signal that is configured to be again amplified by a second receive amplifier of the receive circuitry.

17. The receiver sensor of claim 16, wherein a gain provided by the first receive amplifier is configured to be greater than a gain provided by the second receive amplifier.

18. The receiver sensor of claim 13, a signal-to-noise ratio of the amplified signal is reduced responsive to the receive amplifier being proximate to the receive antenna and providing the amplified signal over the conductor to the receive circuitry.