

## CLAIMS

What is claimed is:

1. An antenna structure, comprising:
  - a conductive cover of an electronic device;
  - a first antenna element for converting between first electromagnetic signals and first electrical signals, wherein the first antenna element comprises a first slotted opening formed in a first portion of the conductive cover, wherein first locations on first edges of the first slotted opening of the first antenna element define first antenna ports;
    - first conductive lines coupling the first antenna ports to a circuit of the electronic device;
    - a second antenna element for converting between second electromagnetic signals and second electrical signals, wherein the second antenna element comprises a second slotted opening formed in a second portion of the conductive cover, wherein second locations on second edges of the second slotted opening of the second antenna element define second antenna ports; and
      - second conductive lines coupling the second antenna ports to the circuit of the electronic device.
2. The antenna structure of claim 1, wherein the first slotted opening and the second slotted opening comprise slots formed through the conductive cover.
3. The antenna structure of claim 1, further comprising a coupling element comprising a third portion of the conductive cover having a third slotted opening formed therein, wherein the third slotted opening connects the first slotted opening to the second slotted opening.

4. The antenna structure of claim 3, wherein the coupling element causes differential currents and common mode currents flowing through the first antenna element and the second antenna element to increase signal isolation between the first antenna ports of the first antenna element and the second antenna ports of the second antenna element.

5. The antenna structure of claim 3, wherein the first slotted opening has a first end and a second end, wherein the second slotted opening has a third end and a fourth end, and wherein a distance between the first slotted opening and the second slotted opening is closest between the first end and the third end, or between the second end and the fourth end.

6. The antenna structure of claim 3, further comprising a non-conductive material filling one of the first slotted opening, the second slotted opening, the third slotted opening, or a combination thereof.

7. The antenna structure of claim 6, wherein the non-conductive material filling the third slotted opening comprises a color scheme of a portion of the conductive cover and does not allow light to pass.

8. The antenna structure of claim 6, wherein the non-conductive material comprises a translucent material.

9. The antenna structure of claim 8, further comprising a lighting source attached inside of the conductive cover, wherein light from the lighting source is visible through one of the first slotted opening, the second slotted opening, the third slotted opening, or any combination thereof.

10. The antenna structure of claim 1, wherein the conductive cover is one of a front cover, a back cover, or a combination thereof.

11. The antenna structure of claim 1, wherein the electronic device transmits the first electromagnetic signals via the first antenna element and receives the second electromagnetic signals via the second antenna element.

12. The antenna structure of claim 1, wherein the first antenna element converts between first electromagnetic signals and first electrical signals at a first frequency, wherein the second antenna element converts between second electromagnetic signals and second electrical signals at a second frequency, and wherein the first frequency and the second frequency are different.

13. The antenna structure of claim 1, wherein an inside surface of the conductive cover is coated with an insulating material, and wherein the first and second conductive lines are routed on the insulating material along the inside surface of the conductive cover.

14. The antenna structure of claim 13, further comprising a first opening and a second opening formed in the insulating material, wherein the first opening enables the first conductive line to connect to the first port and the second opening enables the second conductive line to connect to the second port.

15. A communication device, comprising:

a conductive cover;

an antenna structure comprising a first portion of the conductive cover having a first slotted opening formed therein, wherein the first portion forms a first antenna element for converting between first electromagnetic signals and first electrical signals, and wherein first locations on first edges of the first slotted opening of the first antenna element define first antenna ports; and

a circuit communicatively coupled to first antenna ports of the first antenna element via first conductive lines, wherein the circuit performs operations comprising:  
transmitting the first electronic signals into the first antenna element; and  
receiving second electronic signals from the first antenna element.

16. The communication device of claim 15, wherein the antenna structure further comprises a second portion of the conductive cover having a second slotted opening formed therein, wherein the second portion forms a second antenna element for converting between second electromagnetic signals and second electrical signals, wherein second locations on second edges of the second slotted opening of the second antenna element define second antenna ports, and wherein the circuit is further communicatively coupled to second antenna ports of the second antenna element via second conductive lines.

17. The communication device of claim 16, wherein the antenna structure further comprises a coupling slotted opening in the conductive cover, wherein the coupling slotted opening connects the first slotted opening to the second slotted opening, and wherein the coupling slotted opening causes differential currents and common mode currents flowing through the first antenna element and the second antenna element to increase signal isolation between the first antenna ports of the first antenna element and the second antenna ports of the second antenna element.

18. The communication device of claim 17, further comprising a non-conductive material filling one of the first slotted opening, the second slotted opening, the coupling slotted opening, or a combination thereof.

19. A method, comprising:

transmitting or receiving, by a device comprising a circuit, first electric signals from a first slot antenna element, wherein the first slot antenna element converts signals between the first electric signals and first electromagnetic signals, wherein the first slot antenna comprises a first portion of a conductive cover of the device having a first slotted opening formed therein, wherein first conductive lines couple the circuit of the device to first locations on first edges of the first slotted opening; and

receiving or transmitting, by the device, second electric signals from a second slot antenna element, wherein the second slot antenna element converts signals between the second electric signals and second electromagnetic signals, wherein the second slot antenna element comprises a second portion of the conductive cover having a second slotted opening formed therein, wherein second conductive lines couple the circuit of the device to second locations on second edges of the second slotted opening.

20. The method of claim 19, wherein the device further comprises a third portion of the conductive cover having a coupling slotted opening formed therein, wherein the coupling opening connects from the first slotted opening to the second slotted opening, wherein the coupling slotted opening causes differential currents and common mode currents flowing through the first slot antenna element and the second slot antenna element to combine in a manner that increases signal isolation between a first port at the first locations on the first edges of the first slotted opening of the first slot antenna element and a second port at the second locations on the second edges of the second slotted opening of the slot second antenna element.