CLAIMS

1. A spiral antenna comprising:

an antenna substrate having a first surface and a second surface;

two or more spiral conductors disposed on the first surface of the antenna substrate, each of the spiral conductors ~~antennas~~ having a first end which defines an inner radius of the spiral conductor and a second end which defines an outer radius of the spiral conductor;

a feed circuit substrate disposed over the second surface of the antenna substrate; a feed circuit disposed in or on said feed circuit substrate;

a vertical launch feed line having a first end coupled to the first end of each spiral conductor and a second end coupled to the feed circuit; and

a vertical launch feed line Faraday wall surrounding the vertical launch feed line

wherein the feed circuit substrate includes a first ground plane and a second ground plane.

2. The spiral antenna of claim 1, wherein the vertical launch feed line Faraday wall has a cylindrical shape disposed between the first ground plane of the feed circuit substrate and the first surface of the antenna substrate.

3. The spiral antenna of claim 1, wherein the feed circuit includes two feed lines, a first end of a first spiral conductor of the two or more spiral conductors being coupled to a first feed line and a first end of a second spiral conductor of the two or more spiral conductors being coupled to a second feed line.

4. The spiral antenna of claim 3, wherein the vertical launch feed line ~~circuit~~ Faraday wall surrounds the two feed lines.

5. The spiral antenna of claim 1, further comprising a feed circuit Faraday wall disposed between the first and second ground planes of said feed circuit substrate and ~~the~~ around the feed circuit.

6. The spiral antenna of claim 2, further comprising a feed circuit Faraday wall disposed between the first and second ground planes of the feed circuit substrate and around the feed circuit.

7. A spiral antenna comprising:

an antenna substrate having a first surface and a second surface;

two or more spiral conductors disposed on the first surface of the antenna substrate, each of the spiral conductors ~~antennas~~ having a first end which defines an inner radius of the spiral conductor and a second end which defines an outer radius of the spiral conductor;

a feed circuit substrate disposed over the second surface of the antenna substrate, the feed circuit substrate having a first ground plane and a second ground plane;

a feed circuit disposed in or on said feed circuit substrate; and

a feed circuit Faraday wall disposed between the first and second ground planes of said feed circuit substrate and ~~the~~ around the feed circuit.

8. The spiral antenna of claim 7, further comprising a vertical launch feed line having a first end coupled to the first end of each spiral conductor and a second end coupled to the feed circuit.

9. The spiral antenna of claim 8, further comprising a vertical launch feed line Faraday wall surrounding the vertical launch feed line.

10. The spiral antenna of claim 9, wherein the vertical launch feed line Faraday wall has a cylindrical shape disposed between the first ground plane of the feed circuit substrate and the first surface of the antenna substrate.

11. The spiral antenna of claim 10, wherein the feed circuit includes two feed lines, a first end of a first spiral conductor of the two or more spiral conductors being coupled to a first feed line and a first end of a second spiral conductor of the two or more spiral conductors being coupled to a second feed line.

12. The spiral antenna of claim 11, wherein the vertical launch feed line ~~circuit~~ Faraday wall surrounds the two feed lines.

13. An additive manufacturing technology ~~AMT~~ processing for fabricating a spiral antenna comprises:

(a) removing conductive material from an antenna substrate to form two or more conductive spirals on the substrate;

(b) at a first end of each conductive spirals ~~conductor~~, forming an opening in the substrate which extends from a first surface to a second opposing surface of the substrate;

(c) forming an opening which surrounds each of the openings which terminate at the~~a~~ first end of each conductive spirals ~~the spiral~~, said opening having a cylindrical shape; and

(d) filling each of the opening with a conductive ink so as to form conductive signal paths and conductive walls in the antenna substrate.

14. The method of claim 13, wherein removing conductive material, forming an opening in the substrate, and/or forming an opening which surrounds each of the openings includes a milling technique.

15. The method of claim 13, further comprising forming a conductive vertical launch that is coupled to the spiral antenna and the signal paths.