

WHAT IS CLAIMED IS:

1. An antenna for connection to a ground plane and a source terminal, comprising:

top and bottom substantially parallel vertically-spaced apart planar elements, wherein the top element comprises first and second substantially parallel edges, and wherein the bottom element comprises first and second substantially parallel edges, and wherein the first edge of the top element and the first edge of the bottom element are substantially vertically aligned, and wherein the second edge of the top element extends beyond the second edge of the bottom element, the second edge of the top element for connection to the source terminal;

a side planar element disposed substantially perpendicular to the top element and the bottom element, wherein the side element is connected to the first edge of the top element and the first edge of the bottom element; and

a meanderline conductor comprising a first end for connecting to the ground plane and a second end connected to the second edge of the bottom element.

2. The antenna of claim 1 wherein the top element, the bottom element, and the side element radiate and receive electromagnetic energy.

3. The antenna of claim 1 wherein the meanderline conductor comprises a substantially L-shaped conductor further comprising a short leg and a long leg, wherein a terminal end of the short leg comprises the second end of the meanderline conductor, and wherein the short leg extends upwardly from the bottom element in the direction of the top element, and wherein the long leg extends proximate along and spaced apart from the top element.

4. The antenna of claim 3 wherein a dielectric material is disposed within an area wherein the meanderline conductor is spaced apart from the top element.

5. The antenna of claim 4 wherein the dielectric material comprises air.

6. The antenna of claim 4 wherein the dielectric material imparts slow wave characteristics to the meanderline conductor.

7. The antenna of claim 1 wherein the bottom element further comprises a notch formed in the second edge thereof, wherein the notch comprises a notch edge substantially parallel to the second edge of the bottom element, and wherein the second end of the meanderline conductor is connected to the notch edge.

8. The antenna of claim 1 wherein the second edge of the top element comprises a tapered edge such that a width of the top element narrows in a direction away from the first edge of the top element.

9. The antenna of claim 8 wherein the tapered edge comprises a parallel segment parallel to the first edge of the top element and further comprises first and second angled segments forming an angle with the parallel segment, wherein the angle is determined in response to desired resonant frequency characteristics of the antenna.

10. The antenna of claim 1 further comprising a ground plane substantially parallel to the top element and connected to the first end of the meanderline conductor.

11. The antenna of claim 10 wherein the top element extends beyond the ground plane.

12. The antenna of claim 11 wherein a distance that the top element extends beyond the ground plane is determined in response to desired frequency response characteristics of the antenna.

13. The antenna of claim 1 wherein a length of the bottom element relative to the length of the top element is determined in response to desired frequency response characteristics of the antenna.

14. The antenna of claim 1 wherein the top element comprises a first generally rectangular region and a second generally triangular region, and wherein the first edge of the top element forms an edge of the rectangular region and the second edge of the top element forms an edge of the triangular region.

15. An unbalanced U-shaped antenna structure comprising a source terminal and a ground terminal, the antenna structure comprising:

a short leg planar element;

a long leg planar element;

an intermediate leg planar element connecting the long leg element and the short leg element in a substantially perpendicular orientation;

an elongated meanderline conductor having a first end connected to a free end of the short leg element and having a second end comprising the ground terminal; and

wherein the free end of the long leg element comprises the source terminal.

16. The antenna structure of claim 15 further comprising a ground plane connected to the ground terminal and extending substantially parallel to the short and the long leg elements.

17. An antenna comprising;

a first substrate comprising a dielectric core, first and second opposing conductive surfaces and a first edge;

wherein the first conductive surface comprises a first ground plane and a first element in insulative relation to the first ground plane;

wherein the second conductive surface comprises a second ground plane, a second element in insulative relation to the second ground plane, and a meanderline conductor connected to the second ground plane and comprising a terminal end adjacent the first edge of the first substrate;

wherein the first and the second ground planes are electrically connected;

a third element disposed substantially perpendicular to the first edge of the first substrate and extending above the first substrate, wherein the third element is electrically connected to the first element and to the terminal end of the meanderline conductor.

18. The antenna of claim 17 wherein the third element is spaced apart from the second element to form an insulating gap therebetween.

19. The antenna of claim 17 wherein the third element is electrically connected to the second element.

20. The antenna of claim 17 wherein the second element is bifurcated by the meanderline conductor.

21. The antenna of claim 17 wherein the first element comprises a top radiating element, the second element comprises a bottom radiating element and the third element comprises a side radiating element.

22. The antenna of claim 17 wherein the third element comprises a second substrate further comprising a dielectric core and third and fourth opposing conductive surfaces, wherein the third and the fourth conductive surfaces are electrically connected.

