CLAIMS

What is claimed is:

1. An antenna, comprising:

a radiating element configured in a bent monopole arrangement to provide a vertical polarization such that an omni-directional radiating characteristic is achieved;

a feed;

a feeding structure extending from the radiating element to the feed;

a ground plane;

a supporting structure configured to support the feeding structure;

a first substrate, wherein the radiating element is disposed on one side of the first substrate;

a second substrate, wherein the ground plane is disposed on one side of the second substrate; and

a plurality of stubs extending from the radiating element to the second substrate, and arranged around the supporting structure,

wherein the plurality of stubs are non-shorted to the ground plane to avoid forming a loop antenna.

2. The antenna of claim 1, wherein the radiating element comprises a plurality of slots formed at or edged from each side of the radiating element to increase an effective current path length of the radiating element.

3. The antenna of claim 2, wherein the plurality of slots increase a primary resonant frequency of the antenna.

4. The antenna of claim 1, wherein the radiating element is arranged substantially parallel to the ground plane.

5. The antenna of claim 4, wherein a surface area of the radiating element is smaller than the ground plane.

6. The antenna of claim 1, wherein the supporting structure is a cylindrical structure extending from the radiating element to a supporting substrate or plate.

7. The antenna of claim 1, wherein an arrangement of the plurality of stubs enlarges an impedance bandwidth of the antenna.

8. The antenna of claim 7, wherein the impedance bandwidth of the antenna is determined by a distance from the plurality of stubs to edges of the first substrate.

9. A method of providing an antenna, comprising:

bending a pole of the antenna to form a radiating element and a feeding structure, the feeding structure extending from the radiating element to a feed, wherein the radiating element provides a vertical polarization such that an omni-directional radiating characteristic is achieved; and

providing a ground plane, wherein the radiating element is arranged substantially parallel to the ground plane, wherein the bending the pole further forms a supporting structure that supports the feeding structure, wherein the radiating element is disposed on one side of a first substrate, wherein the ground plane is disposed on one side of a second substrate; and

providing a plurality of stubs extending from the radiating element to the second substrate, the plurality of stubs being arranged around the supporting structure, and wherein the plurality of stubs are non-shorted to the ground plane to avoid forming a loop antenna.

10. The method of claim 9, further comprising:

etching a plurality of slots at each side of the radiating element to increase an effective current path length of the radiating element.

11. The method of claim 10, wherein the plurality of slots increase a primary resonant frequency of the antenna.

12. The method of claim 9, wherein a surface area of the radiating element is smaller than the ground plane.

13. The method of claim 9, wherein the supporting structure is a cylindrical structure extending from the radiating element to a supporting substrate or plate.

14. The method of claim 9, wherein an arrangement of the plurality of stubs enlarges an impedance bandwidth of the antenna.