CLAIMS

1. An antenna system, comprising:

a first substrate, the first substrate being a dielectric substrate;

a first patch on a first surface of the dielectric substrate;

a plurality of first parasitic elements on the first surface of the dielectric substrate;

a second patch on a second surface of the dielectric substrate, wherein the first and second patches are coupled to form a first capacitor with the dielectric substrate;

a plurality of second parasitic elements on the second surface of the dielectric substrate, wherein the first and second parasitic elements are coupled to form a plurality of second capacitors with the dielectric substrate;

a second substrate coupled to the first substrate;

a ground layer on a first surface of the second substrate; and

an antenna feed coupled to the second substrate.

2. The antenna system of claim 1, further comprising:

a plurality of third parasitic elements on a second surface of the second substrate, wherein the third parasitic elements are electrically connected to the first and second parasitic elements.

3. The antenna system of claim 2, further comprising:

a reflector attached to the second surface of the second substrate.

4. The antenna system of any one of the preceding claims, further comprising:

a plurality of spacers maintaining a separation between the first and second substrates.

5. The antenna system of any one of the preceding claims, further comprising a power divider or combiner electrically connected to the antenna feed, wherein the antenna feed comprises a plurality of antenna ports and wherein the power divider or combiner is configured to equally split an input power between the antenna ports or combine the input power from the antenna ports.

6. The antenna system of claim 5, wherein the power divider or combiner is a Wilkinson power divider or combiner.

7. The antenna system of claim 5 or 6, wherein each of the antenna ports comprises a radiating element electrically connected to the power divider or combiner.

8. The antenna system of claim 7, wherein the radiating element is electrically connected to the power divider or combiner by a rod.

9. The antenna system of claim 8, wherein each of the antenna ports further comprises an enclosure housing the rod and securing the radiating element to the second substrate.