

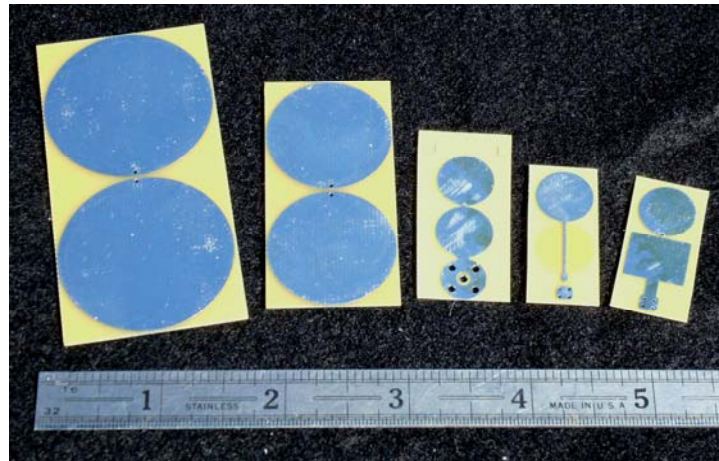
Planar Disk Antennas

Kent Britain WA5VJB/G8EMY



Twenty years ago I got a new Icom R7000 receiver and built a Planar Disk antenna for it. After all these years it's still hanging from a rafter in the attic connected to that same R7000.

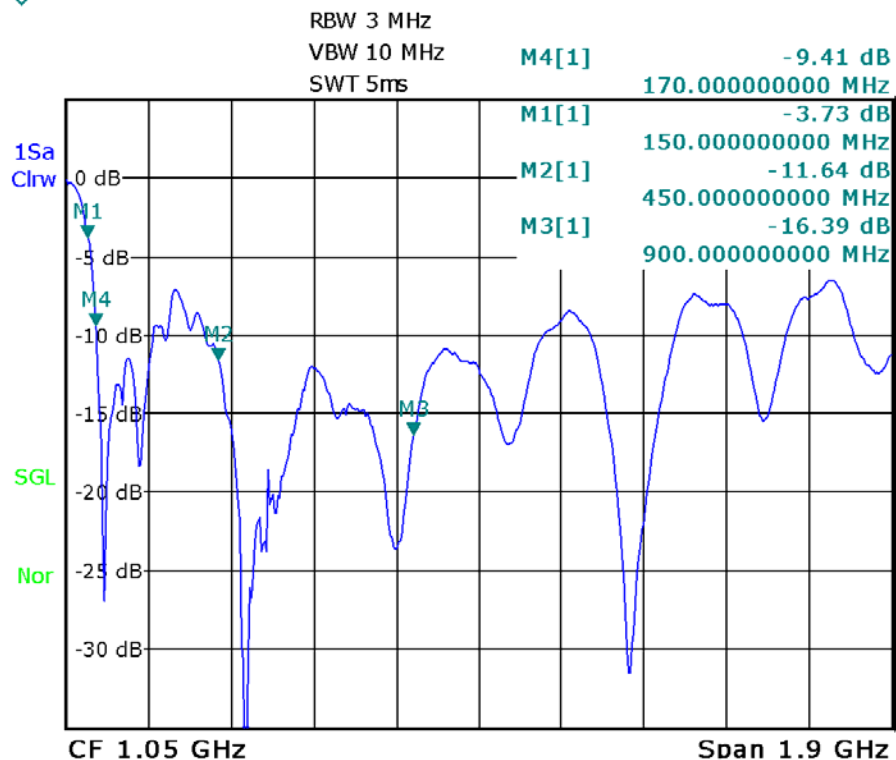
Theory is simple enough, just two disks mounted very close to each other and coax soldered at the gap between the two disks. Lowest frequency is determined by the size of the disks. About $1/4^{\text{th}}$ wave wide at the lowest frequency. As frequency goes up, the gap between the disks become two exponential slots much like a Vivaldi Antenna or a Ridged Horn. The closer the gap, the higher the max usable frequency. 2 to 1 SWR Bandwidths of 10 to 1, or more, are easy enough. It is this wide bandwidth that makes Planar Disks very popular for UWB (Ultra Wide Bandwidth) applications.



Various PCB Versions for Ultra Wide Band and Pulse Use

Build your own:

Go down to your local Dollar store and find two Pizza Pans about 18" in diameter. The plated steel ones are easier to solder to than the Aluminum ones. Mount them about 1/16 inch apart and solder the coax shield to one pan, and the coax center to the other pan right at the gap. A Circle – Square works about the same, so a Pizza Pan and Cookie sheet is another way to go. You have just built a 2 Meter to 1296 MHz all band vertical that covers everything in between as well.



100-2000 MHz Return Loss Plot of the Large Planar Disk Antenna in the 1st Photo
-10 dB equals a 2 to 1 SWR