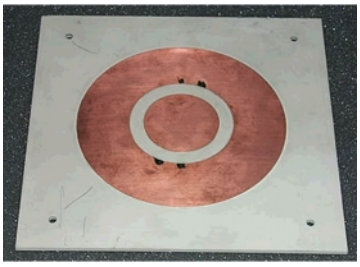
ANNULAR RING ANTENNA ARRAY



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DESCRIPTION

The Annular Ring Antenna Array is a novel, two element GPS adaptive array capable of simultaneously nulling out multiple jammers. This is accomplished by placing a "spatial ring null" over a complete 360º in azimuth at a pre-selected elevation angle, which is generally selected to be the horizon where most jammers are expected to be located. The array consists of an outer annular ring microstrip patch enclosing a centrally located circular microstrip patch. The outer ring is used as the reference element and the inner patch as the auxiliary element. Signals received by both elements are combined with an adaptive network generating a ring null near the horizon. This array can also be used as a GPS multipath-limiting antenna by nulling out the LHCP component of the combined pattern at the horizon and also for eliminating co-site interference in airborne platforms.

FEATURES

- The outer annular ring patch element is resonant in the TM_{41} mode but is excited to generate a TM_{11} RHCP modal pattern.
- The inner circular patch is also excited in the TM_{11} RHCP mode. Both elements of the array have co-phasal currents allowing the formation of a spatial ring null.
- The dielectric substrate for both patch antennas in the prototype array is 0.1" thick Rogers 6010 LM. The diameters of outer and inner patch elements are 4.5" and 1.36", respectively.
- Bandwidth: 24 MHz for 2:1 VSWR
- 2.5 dB gain for the outer reference ring patch element
- Spatial Ring Null over a 360º azimuth angle at the horizon
- Dual stacked patch configuration allows operation at both L_1 and L_2
- By nulling out LHCP signals at horizon this array can be used as a GPS multipath limiting antenna

APPLICATIONS

Low-cost adaptive conformal antenna system for small airborne platforms and military ground vehicles

FOR FURTHER INFORMATION CONTACT:

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INVOLVES ARMS EXPORT CONTROL REGULATIONS