

Liquid Core Patch Antenna with Broadband Frequency Agility

A dynamic liquid core antenna with broadband frequency and polarization agility

Dr. Maxwell from Georgia Tech Research Institute has developed a dynamic liquid core antenna with broadband frequency and polarization agility. The frequency bandwidth agility capability of this antenna is achieved by using a liquid dielectric instead of a solid dielectric. Dr. Maxwell has come up with a design to insert the liquid dielectric in a specially designed cylinder that sits between the topside patch and the bottom ground plane elements of conventional patch antenna. This invention can be used to support techniques for direction finding and geo-location of radio frequency emission sources.

Summary Bullets

- Broadband frequency agility that stretches from mid-LF to mid-EHF
- Adaptable design to products that need significant frequency agility
- Ability to provide fractional tunable capability of 8.5:1 surpasses the 1.67:1 capability for current reactively tuned patch antennas

Solution Advantages

- Broadband frequency agility that stretches from mid-LF to mid-EHF
- Adaptable design to products that need significant frequency agility
- Ability to provide fractional tunable capability of 8.5:1 surpasses the 1.67:1 capability for current reactively tuned patch antennas
- Provides adaptive and dynamic control of other antenna parameters

Potential Commercial Applications

- Frequency - transmitting devices in the vicinity
- IED (Improvised Explosive Devices) that use frequency devices for triggering purposes
- Wireless infrastructure (base station, access points, etc.)

Background and More Information

Indoor reception of wireless signals has always been a problem. Current antenna technology has limited tuning capability. This limitation requires custom antennas to be designed and manufactured for different applications and products. An antenna with a wider frequency range than currently achievable will allow for improved performance and lower costs since the same antenna can be used for different applications with no or little customization. Additionally, applications or products that use multiple antennas to attain a required frequency can do so using a single DLCP antenna.

Inventors

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Publications

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Images

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