



ELECTRONICALLY RECONFIGURABLE 1-BIT PHASE QUANTIZATION PHASED ARRAY ELEMENT

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WARF: P210442US01

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The Invention

UW researchers have a new ultra-wideband, electronically reconfigurable reflectarray antenna design with 1-bit phase quantization. One of the innovative features of this design is that it achieves electronic reconfigurability using only a single PIN diode switch and has a simplified implementation mechanism. The proposed reflecting unit-cell consists of an antenna placed on top of a ground plane and a reflecting-mode phase shifting circuitry employing a single PIN diode switch positioned below the ground plane. The unit cell has an antenna and a reflecting circuit using open-ended transmission lines. When the unit cell is illuminated with an incident electromagnetic wave, the wave is entirely reflected with a phase shift that can be adjusted electronically (between $0^\circ/180^\circ$) by controlling the PIN diode switch. This structure can provide a $0^\circ/180^\circ$ phase shift with a maximum error of $\pm 20^\circ$ with a bandwidth exceeding 82% (3.45-8.25 GHz).

Additional Information

For More Information About the Inventors

- [John Booske](#)

Tech Fields

- [Information Technology: Networking & telecommunications](#)

For current licensing status, please contact Michael Carey at mccarey@warf.org or 608-960-9867