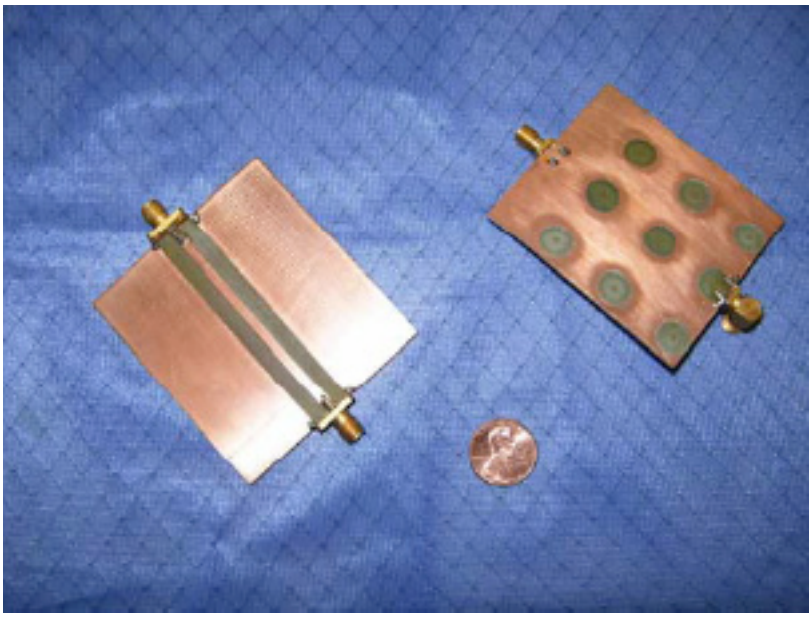
John F. Kennedy Space Center's Photonic Bandgap Shielding Technology



BENEFITS

- Low Cost Design
- Easy to Implement
- Increases Battery Life
- Reduces Antenna Size
- Reduces Electromagnetic Interference

technology ■ opportunity

The National Aeronautics and Space Administration (NASA) seeks partners interested in the commercial application of the Photonic Bandgap Shielding Technology. NASA's Kennedy Space Center is offering companies licensing or partnering opportunities in the development of this innovative technology.

Researchers at NASA Kennedy Space Center have developed a novel, low-cost electromagnetic interference (EMI) shielding technique that acts as a lowpass or a bandgap filter. The technology is used to reduce the power consumption in a patch antenna. Patch antennas are simple antennas used in many consumer electronics such as cell phones and GPS units. Currently, about half (3dB) of the power to the antenna goes into heating the surface surrounding it. This invention reduces the heating effect by decreasing the surface currents surrounding the antenna and eliminating about 2dB of that wasted energy. This innovation allows the construction of antennas that consume half the power of current designs. The antenna can be manufactured thinner and this frees up valuable device space.

APPLICATIONS

- Wireless consumer electronics using patch antennas including cellular phones and GPS units
- Electronics requiring shielding such as motherboards and wireless routers
- Microwave and other transmission towers

TECHNOLOGY STATUS

- ☐ Patent pending
- ☐ U.S. patent
- ☐ Copyrighted
- ☑ Available to license
- ☐ Available for no-cost transfer
- ☐ Seeking industry partner for further codevelopment

Technology Details

The technology can be used to control selected frequencies of electromagnetic waves in a planar area. Radio Frequency semiconductors and high-speed digital signals generate electromagnetic waves that create noise in nearby traces and digital components. This technology can isolate specific components on, or regions of, an integrated circuit board, preventing EMI being propagated across these boundaries. This obviates the need for methods currently being used for EMI reduction such as separation of high-speed traces, differential signaling, and metal shielding.

Partnership Opportunities

All NASA licenses are individually negotiated with the prospective licensee, and each license contains terms concerning commercialization (practical application), license duration, royalties, and periodic reporting. NASA patent licenses may be exclusive, partially exclusive, or nonexclusive. If your company is interested in the Photonic Bandgap Shielding Technology, or if you desire additional information, please reference Case Number KSC-13314 and contact:

Jeff Kohler
NASA Kennedy Space Center
Phone 321.861.7158
Fax 321.867.2050
E-mail: Jeffrey.A.Kohler@nasa.gov