Helix Antenna that Powers and Communicates with Implanted Medical Devices Omnidirectional, Wireless Design Facilitates Data Transmission and Recharging

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Technology description

This omnidirectional, wireless helix antenna provides power to implanted medical devices and capsule endoscopes, while allowing these devices to better relay health information for easier diagnosis and treatment. Every year in the U.S., more than $85 billion is spent on implanted medical devices, including $5.5 billion and $4.5 billion on defibrillators and pacemakers, respectively. These implanted devices and other medical technologies, such as wireless capsule endoscopes, need to be able to communicate information back to healthcare providers who use this data to diagnosis illnesses and make treatment decisions. Wireless capsule endoscopes allow for better visualization of the gastrointestinal tract than traditional endoscopes. Their performance, however, suffers from antennas that provide spotty coverage. University of Florida researchers have addressed this problem by developing a durable dual mode antenna with improved efficiency and omnidirectional radiation capabilities and wireless power transmission.

Technology

Researchers at the University of Florida have designed a dual-functional helix antenna with wireless communication and power receiving capabilities for medical implants. The antenna is designed on a flat liquid crystalline polymer (LCP) substrate and rolled up into a cylindrical shape. This cylinder operates as a far-field antenna for wireless communication and also serves as an inductive element for near-field wireless power transmission. The antenna can be used to charge the sensor using the wireless charging station or a cellphone with wireless power delivery capability such as near field communication (NFC).

Application area

A wireless, rechargeable antenna that facilitates the communication of health information by implanted medical devices and capsule endoscopes

Advantages

Allows wireless capsule endoscopes and implanted medical devices to function better, enhancing healthcare providers' ability to diagnose and treat disease
Provides omnidirectional radiation capabilities, reducing the risk of signal loss
Enables both data communication and power transmission in a single antenna device, removing the need for a second antenna
Contains a rechargeable power supply, allowing for the development of smaller medical devices that require fewer batteries

Institution

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