

## **Optimization of spiral circular coils for bio-implantable micro-system stimulator at 6.78 MHz ISM band**

### **ABSTRACT**

Unique design of inductive coupling links is very essential in designing batteries bio-implantable devices. This paper, introduce a small size and efficient spiral circular coils (pancake) at 6.78 MHz to be used for bio-implantable devices. A mathematical model for the proposed coil is developed based on the number and width of turns for each coil to determine the outer and internal dimension by summation the width, number of the turns and spacing between them for each coil. The proposed coils are designed using commercial HFSS software. The results shows that the omnidirectional radiation patterns of the proposed coils is constant and stable and can be used for batteries bio-implantable devices.

**Keyword:** Inductive links; Bio-implantable devices; Coils design; ISM band