In-the-Ear Spiral Monopole Antenna for Hearing Instruments

A novel in-the-ear (ITE) antenna solution for hearing instruments that operates at 2.45 GHz is presented. The antenna consists of a quarter wave monopole and a ground plane that are placed in the ear. The simulated path gain $|S_{21}|$ is $-86$ dB and the measured path gain is $-80$ dB. Simulations and measurements show that the antenna covers the entire 2.40 – 2.48 GHz industrial, scientific and medical (ISM) band. It is the first ever ITE-antenna solution that demonstrates the possibility of establishing an ear-to-ear link by using a standard Bluetooth chip.