

## **Intrabody Communication Using Different Ground Configurations in Digital Door Lock**

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**Abstract :** Intrabody communication (IBC) is a new way of transferring data using human body as a medium. Minute current can travel through human body without any harm. IBC can remove electrical wires for human area network. IBC can be also a secure communication network system unlike wireless networks which can be accessed by anyone with bad intentions. One of the IBC systems is based on frequency shift keying modulation where individual data are transmitted to the external devices for the purpose of secure access such as digital door lock. It was found that the quality of IBC data transmission was heavily dependent on ground configurations of electronic circuits. Reliable IBC transmissions were not possible when both of the transmitter and receiver used batteries as circuit power source. Transmission was reliable when power supplies were used as power source for both transmitting and receiving sites because the common ground was established through the grounds of instruments such as power supply and oscilloscope. This was due to transmission dipole size and the ground effects of floor and AC power line. If one site used battery as power source and the other site used the AC power as circuit power source, transmission was possible.

**Keywords :** frequency shift keying, ground, intrabody, communication, door lock

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