

Moscow Institute of Electronic Technology

Department of Electronics and Computer Technologies,
Biomedical Engineering

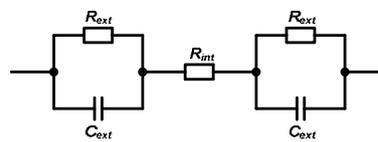
Konstantin Pavlov

The first step towards creation of system for data transmission through the human body

2009

Conducting properties of the human body

2



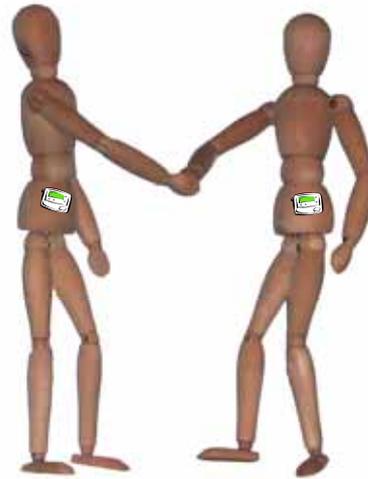
$$Z_h = 2Z_{\text{ext}} + R_{\text{int}} = \frac{2}{\frac{1}{R_{\text{ext}}} + j\omega C_{\text{ext}}} + R_{\text{int}}$$

$$Z_h = \sqrt{\frac{4R_{\text{ext}}(R_{\text{ext}} + R_{\text{int}})}{1 + \omega^2 R_{\text{ext}}^2 C_{\text{ext}}^2} + R_{\text{int}}^2}$$

Body Area Network (BAN) technology

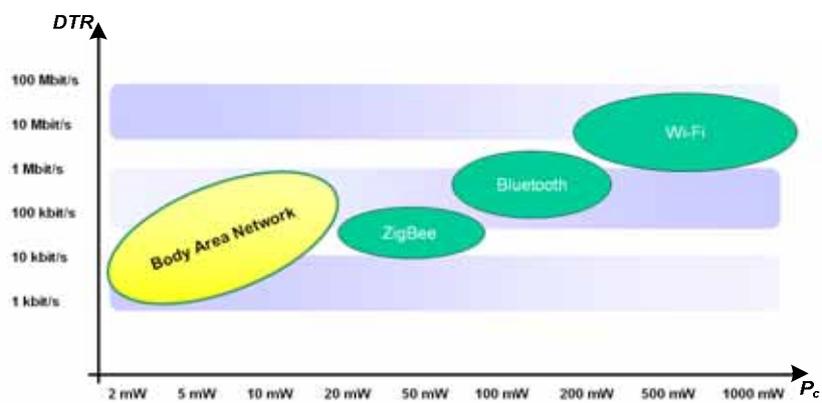


a) Data transfer between mobile devices



b) Exchanging business cards through a handshake

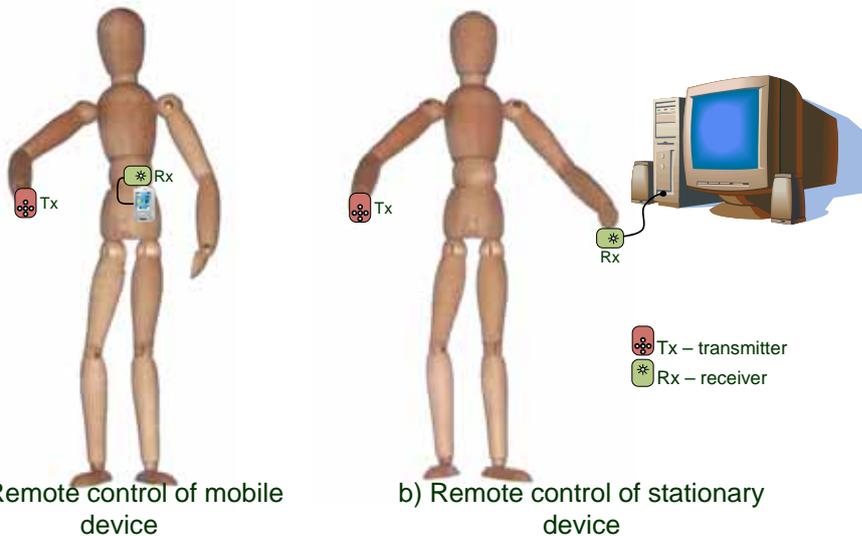
Power consumption (P_c) and data transfer rate (DTR) comparison of BAN and short-range radio technologies



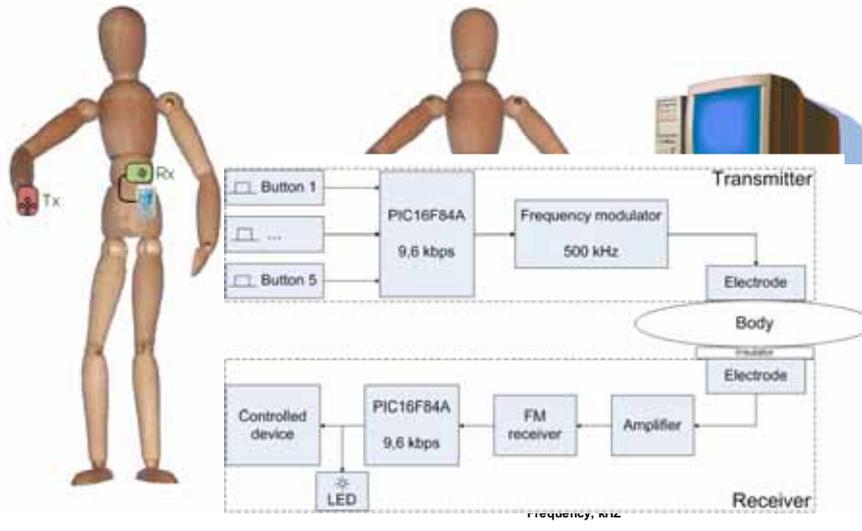
BAN technology applications

- Identification and access control systems;
- Body sensor networks;
- Fitness monitoring;
- Wearable audio devices;
- Remote control;
- Exchanging business cards through a handshake.

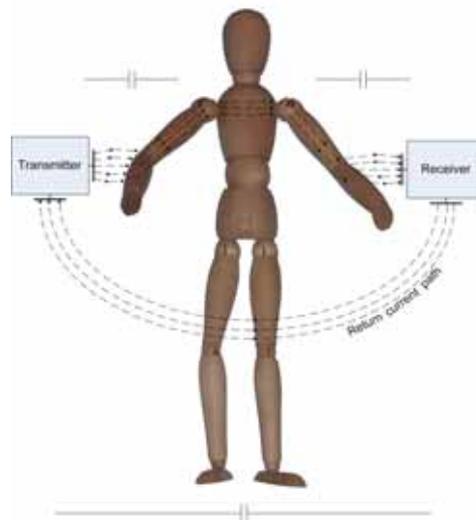
Prototype BAN system



Prototype BAN system



Electrostatic coupling



Future plans

- Increase system's data rate;
- Minimize influence of surrounding environment;
- Improve system for voice transmission.

Thank you for your attention !!!