ISSN: 2278 – 1323
International Journal of Advanced Research in Computer Engineering &Technology (IJARCET)
Volume 5, Issue 4, April 2016

Body Area Coalescing using Red Tacton Technology

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***Abstract*—The focus on ubiquitous service has brought about the shortening of distances in communication. RedTacton is positioned as the last 1m solution to ultimate close-range communication. Wireless communication creates connections when signals arrive, allowing for easy connections because connectors are unnecessary. However, seen from another aspect, the arriving signals can be intercepted, so security becomes an issue. Wired communication transmits data between two connection points, so interception is difficult and security can be considered to be high. However, connectors and cables are a nuisance. Taking the above points in account, RedTacton is situated directly between wireless and wired communication.**

It is better than wireless LAN as signals don't weaken and where as blue-tooth the communication is more secured and is possible only between two devices. We are working on this field for the better understanding of the subject with intentions to develop the technology further.

***Keywords*: RedTacton, wireless, communication.**

I. INTRODUCTION

While the idea of a "human area network" that works by using weak electrical fields on the surface of the body does creep us out a little, NTT's RedTacton system based on the concept does have a certain appeal. Imagine beaming data from your PDA to that of a business contact just by shaking hands — the data passes from your PDA to your "HAN" and then travels the same route to your counterpart. Imagine a wireless headset that carries music from your audio player to your ears via your skin. Imagine security systems that can track you every time you touch a conductive surface. Okay, NTT's utopian vision for this tech doesn't include that last example. But it does include ID-verification techniques, such as a smart door that can unlock by reading signals from a digital ID card as they're transmitted over your skin. We'll give Redacton the benefit of the doubt for now, but let's just say that some of its potential uses just, well, make our skin crawl.

Red tacton utilizes a point to point network, known as a piconet. The P2P network allows information to be exchanged between two transceivers without the need for a server to store or process information.

RedTacton operates on the idea that optical properties of an electro-optic crystal can vary according to the changes of a person own electric field. After contract with another RedTacton enabled device, the transmitter one wears induces an electric field on the body. Next, the transceiver on the device detects changes in the wearer's electric field which was caused by the device. The devices then communicate and send data by inducing fluctuations in the electric field of the human body. Data is received using a photonic electric field sensor that combines an electro-optic crystal and a laser light to detect fluctuations in the minute electric field.

Imagine holding your digital camera in one hand and touching a printer with your other which initiates the transfer of images from your camera to your printer. In an instant you have downloaded your pictures and are ready to print them out without the need for connecting cables and intermediary devices such as a computer.

II. EXPERIMENTAL SETUP

A) WORKING:

RedTacton takes a different technical approach. Instead of depending on electromagnetic waves or light waves to carry data. RedTacton using weak electric fields on the surface of the body as a transmission medium as shown in figure

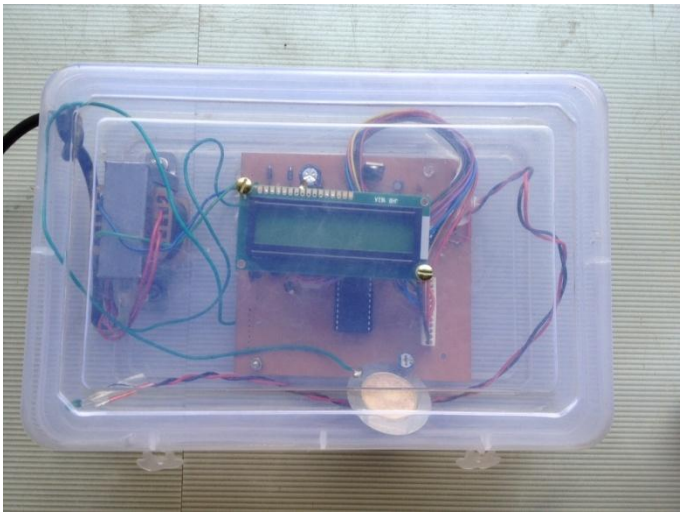


Fig. Transmitter

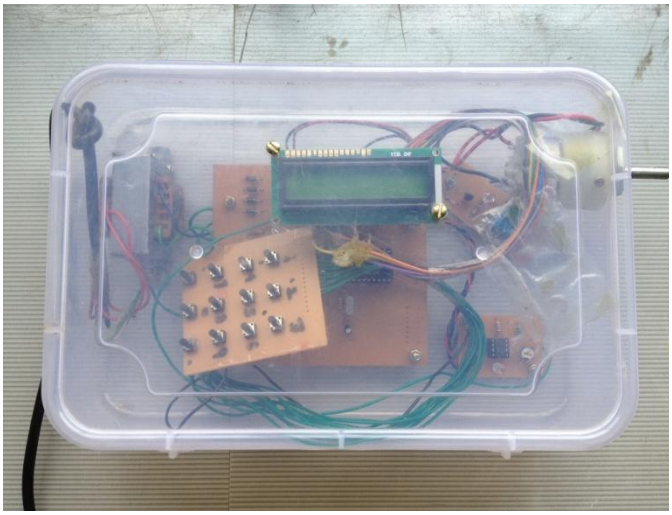


Fig. Receiver

i.) The RedTacton transmitter induces a weak electric field on the surface of the body.
ii.) The RedTacton receiver senses changes in the weak electric field on the surface of the body caused by the transmitter.
iii.) RedTacton relies upon the principle that the optical properties of an electro-optic crystal can vary according to the changes of a weak electric field.
iv.) RedTacton detects changes in the optical properties of an electro-optic crystal using a laser and converts the result to an electrical signal in a optical receiver circuit.

B)The Competition- Currently, many popular technologies exist in the marketplace which provide similar functions to RedTacton technology. The first is Bluetooth. Bluetooth is also a short range frequency allowing users to transmit data within approximately a 10M range. Bluetooth, however, is unsecure. The signal can be tapped into and used by others. As mentioned previously, Zigbee, IrDA, and UWB are also potential competitors.
Other Obstacles- The most obvious barrier to entry is that the cost and time to develop Personal Area network technology is very expensive. Second, as a new technology Personal Area networks need to gain popularity among users to help pull the technology into the marketplace instead of having it pushed upon them. Additionally, widespread marketing campaigns will need to be developed to highlight the benefits of PAN technology to facilitate its adoption. Finally, this technology will not likely be very useful until a large number of people and devices have adopted it which means a significant time investment.

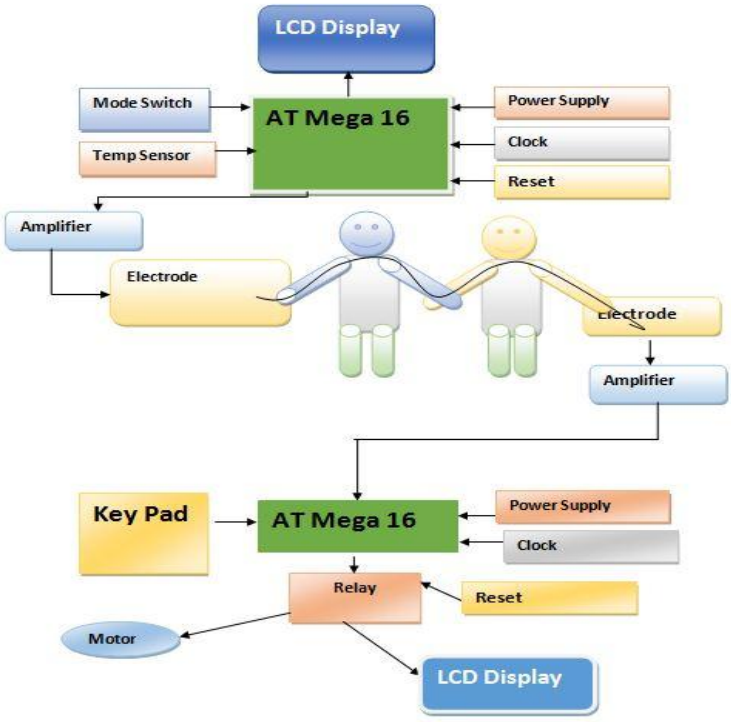
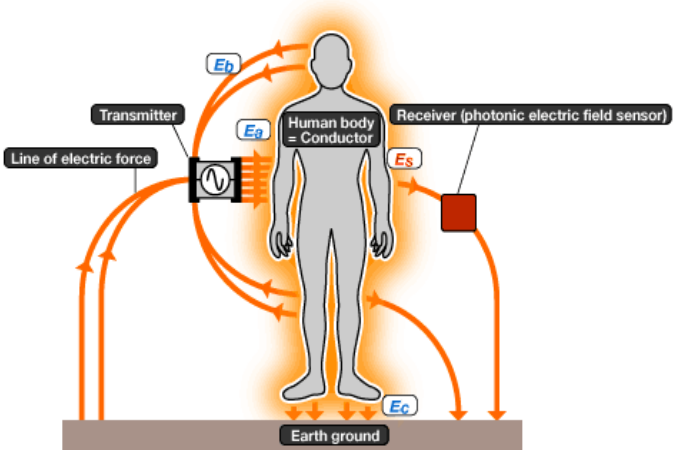


Fig. Block Diagram

III. APPLICATIONS

Applications - Minimization of human error, marketing applications, customization of automobiles, industrial monitoring.



- Security Applications - Automatic user authentication and log-in with just a touch.
- ID and privileges are recorded in a mobile RedTacton device.
- Corresponding RedTacton receivers are installed at security check points.
- The system can provide authentication and record who touched the device.
- User Verification Management : Carrying a mobile RedTacton-capable device in one's pocket, ID is verified and the door unlocked when the user holds the doorknob normally.
- Secure lock administration is possible by combining

personal verification tools such as fingerprint ID or other biometric in the mobile terminal.

IV. ADVANTAGES

i.) RedTacton does not require the electrode to be in direct contact with the skin.
ii.) High-speed communication is possible between any two arbitrary points on the body.
iii.) Body-based networking is more secure than other broadcast systems, such as Bluetooth which have high range of about 10m.
iv.) Network congestion due to fall in transmission speed in multiuser environments is avoided.
v.)Superior than Infrared technology
vi.)Superior than Wi-Fi.

V. CONCLUSION

From this we concluded that, for the fast growing world, everything need to be fast, sophisticated, accurate, precise and all this requirement in unambiguous connectivity of a full filled by this system. The BAN system takes the advantage of existing networking technologies thus reducing implementation cost, simple and easy installation of a Body Area Network at consumer side. The BAN system proven to provide more effective, reliable and efficient wireless automatic communication and notification through the use of a physical network, thus reducing the operation cost.

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