

Emerging Era in Transmission of Confidential Information

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ABSTRACT: Focusing on the naturalness, inevitability and sense of security conveyed by touching which is called as Red Tacton which could let people transfer data to each other handhelds by means of handshake or a physical contact. Using an embedded transmitter a PDA Red Tacton sends a 5 volts pulse along the surface of body. The human body shunts most of electricity to ground resulting in weak electric field that can be modulated to carry signals. As the receiver is located on the part of the body, the components of a hands free handset or in an acquaintance PDA as it senses modulation in the electric field the receiver decodes them to recover the data. Human Area Network is an important over current wireless technologies such as Bluetooth because users can narrowly limit signal recipients rather than broadcasting to all devices within given range. Using Red Tacton enabled devices music from our digital audio player in our pocket would pass through our clothing and shoot over our body to headphones into our ears. Instead of fiddling around with the cable to connect our digital camera to our computer we could transfer pictures just by touching the PC while the camera is around your neck and since data can pass from one body to another you could also exchange electronics business cards by shaking hands.

KEYWORDS: Bluetooth, Duplex, Photonic Electric Field Sensor

I. INTRODUCTION

We may have imagined the feature as a place crawling with antennas and emitters, due to the huge growth of wireless communications. And it seems that the current means of transferring data might already have a very serious competitor none other than the human body. Thus NTT labs from Japan has announced that it is currently testing a revolutionary technology called “ RED TACTON ”, which use the electric fields generated by the human body as medium for transmitting the data . The chips which will be embedded in various devices contain a transmitter and receiver built to send and accept data in digital format. The chips can take any type of file such as mp3 music file or mail and convert it into the format that takes the form of digital pulse that can be passed and read through a human being electric field .the chip in receiver devices reads these tiny changes and convert the file back into its original format.

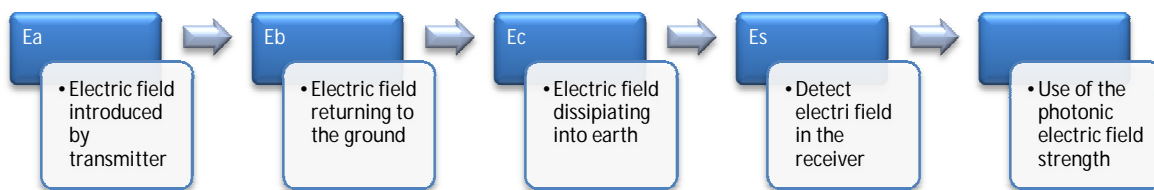
II. REDTACTON

Red Tacton is a new Human Area Networking technology that uses the surface of the human body as a safe, high speed network transmission path. Red Tacton uses the minute electric field emitted on the surface of the human body. Technically, it is completely distinct from wireless and infrared .A transmission path is formed at the moment a part of the human body comes in contact with a Red Tacton transceiver. Physically separating ends the contact and thus ends communication Using Red Tacton , communication starts when terminals carried by the user or embedded in devices are linked in various combinations according to the user's Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs or torso. Red Tacton works natural, physical movements.

III. WORKING PRINCIPLE

Using a new super-sensitive photonic electric field sensor, Red Tacton can achieve duplex communication over the human body at a maximum speed of 10 mbps. The Red Tacton transmitter induces a weak electric field on the surface of

the body. The Red Tacton receiver senses changes in the weak electric field on the surface of the body caused by the transmitter. Red tacton relies upon the principle that the optical properties of an electro-optic crystal can vary according to the changes of a weak electric field. Red Tacton 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. The transmitter sends data by inducing fluctuations in the minute electric field on the surface 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.



III. PICTORIAL REPRESENTATION

The naturally occurring electric field induced on the surface of the human body dissipates into the earth. Therefore, this electric field is exceptionally faint and unstable. The photonic electric field sensor developed by NTT enables weak electric fields to be measured by detecting changes in the optical properties of an electro-optic crystal with a laser beam.



PC card type



Hub type

Data speed: 10 Mbit/s
Protocol: TCP/IP



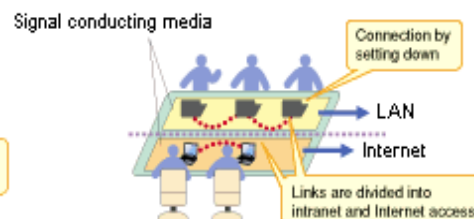
(a) Device communication on one person (portable audio)

(b) Device communication on two persons (electronic name card exchange)

(c) Communication between worn terminal and external embedded terminal (gate system)



(d) Communication from embedded terminal to hand-held terminal (exhibit explanation in a museum)



(e) Inter-terminal communication via conductor (conferencing system)

International Journal of Innovative Research in Science, Engineering and Technology

An ISO 3297: 2007 Certified Organization

Volume 3, Special Issue 2, April 2014

Second National Conference on Trends in Automotive Parts Systems and Applications (TAPSA-2014)

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IV. FEATURES

The naturally occurring electric field induced on the surface of the human body dissipates into the earth. Therefore, this electric field is exceptionally faint and unstable. The photonic electric field sensor developed by NTT enables weak electric fields to be measured by detecting changes in the optical properties of an electro-optic crystal with a laser beam.

A. TOUCH:

A communications path can be created with a simple touch, automatically initiating the flow of data between a body-centric electronic device and a computer that is embedded in the environment. For example, two people equipped with RedTacton devices could exchange data just by shaking hands. A wide range of natural human actions - grasping, sitting down, walking, or standing in a particular place - can be used to trigger RedTacton to start a networked process.

B. BROADBAND & INTERACTIVE:

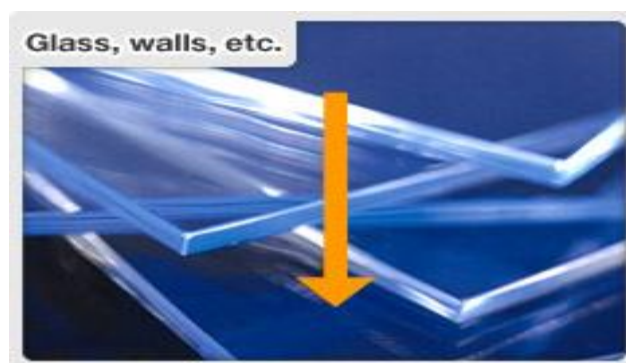
Using a RedTacton electro-optic sensor, two-way communication is supported between any two points on the body at a throughput of up to 10 Mbps. Communication is not just confined to the surface of the body, but can travel through the user's clothing to a RedTacton device in a pocket or through shoes to communicate with a RedTacton device embedded in the floor. Unlike wireless technologies, the transmission speed does not deteriorate even in the presence of large crowds of people all communicating at the same time in meeting rooms, auditoriums or stores. Because the body surface is the transmission path, increasing the number of connected users directly increases the available number of individual communication channels. Duplex, interactive communication is possible at a maximum speed of 10Mbps.

Because the transmission path is on the surface of the body, transmission speed does not deteriorate in congested areas where many people are communicating at the same time. Taking advantage of this speed, device drivers can be downloaded instantly and execute programs can be sent.

C. TRANSMISSION THROUGH ANY MEDIA:

RedTacton can utilize a wide range of materials as a transmission medium, as long as the material is conductive and dielectric, which includes water and other liquids, various metals, certain plastics, glass, etc. Using ordinary structures such as tables and walls that are familiar and readily available, one could easily construct a seamless communication environment at very low cost using RedTacton.

But there is one limitation on the length of the conductor to be propagated, on installation locations, and on the thickness of the dielectric to be passed through.



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SYSTEM SAFETY:

A.No current flowing in to the human body redtacton devices:

RedTacton uses the electric field that occurs naturally on the surface of the human body for communication. Transmitter and receiver electrodes are covered with an insulating films. No current flows into the body from the RedTacton transceiver.

B.Displacement current occurring in the body is small enough:

There is no current flowing from the RedTacton transceiver; however, the body indirectly receives a minute electric field. This causes electrons already present inside the body to move, creating a minute displacement current. This displacement current is similar to those occurring in everyday life.

V.ALTERNATIVE APPROACH

We find a drawback in this emerging trend of security and efficiency. We noticed that there is possibility of accessing the data by unauthorized users since the mode of transmission is through human body. In order to maintain the highly confidential information we have the idea of implementing BIOMETRIC sensors in the device in addition. This is a developing trend and hence before its completion we would like to add up our views to this secure system. It can be made safer by using the skin patterns of the user. Also sharing of data will be easier and remains untraceable for others. Since this is the common doubt that arises for each individual we done with this. Also we believe it as the most advanced and safest mode of transmitting data.

VI.CONCLUSION

The applications of RedTacton are enormous, medical security and data transfer are just the start. Conferencing can be enabled without the use of wiring, and walls and desks and doorknobs can be conduits for data transfer. In education the applications are endless from lesson outlines to administrative forms data could be transfered quickly and easily without pedagogical intervention. This technology seems to be a glimpse into the future. At first it will be limited in use and fairly expensive, but as it becomes more widespread we could see the extinction of the key and ID card as we know them today. Imagine walking up to your house, reaching for a doorknob which automatically unlocks the door, and walking right in. No more fumbling around for keys. That's a future we'd like to live in. This technology definitely stands out with perfection, when transfer of data is fast, feasible and more importantly reliable. So, in few years from now everything is going to fall under this super technology.

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