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Red TACTON-Innovation of Human Area Networking

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ABSTRACT

"RED TACTON" is the new innovative technology used in human body as a communication network. It is named as Human Area Networking (HAN). It is developed by NTT (Nippon Telegraph and Telephone Corporation) in Japan. RED TACTON uses the weak electric field generate from the human body to transmitting the data. This technology uses the surface of human body for safe and high speed transmission path. The human body acts as a transmission medium supporting IEEE 802.3 half-duplex communications at 10Mbit/s. It is completely differ from the other wireless network technologies. RED TACTON is safe and high speed. It is harmless. RED TACTON chip consist of transmitter and receiver for send and accept the data in digital form. In this paper, discuss about working principles, different applications and features of RED TACTON with other network technologies.

Keywords:- Human Area Networking, NTT, RED TACTON.

I. INTRODUCTION

Communication plays an important role in digitized world who are all connected digitally. Communication is made between person to person, person to object and object to object. But these communications have a security problem and need a speed and data transfer security. Intra body communication was introduced by IBM in 1960. All researches reported these technologies have two limitations.[1] They are

1) Operation range through the human body is limited to a few tens of centimeters.
2) Communication speed is only 40 bits/s. These two limitations are overcome by Japanese NTT by introducing the "RED TACTON".

This corporation using photonic electro-optic sensor to transmit the electric field from the surface of the human body and it came up with Human Area Networking (HAN). RED TACTON means "Touch-Act-On" that means action triggered by touching device. RED TACTON uses IEEE 802.3 standard to achieve a data transfer rate of 10 Mb/s. RED TACTON transceiver uses the electric field emitted by surface of the human body to transmit the data into digital messages signal. By using the optical crystal and laser beam technology converts the electric field and transmit as a signal for receiver. It is harmless, safe and fast. It is completely differ from other network technologies. There is no hacker between the communications.

Communication starts when the body contact with the transceiver by physical or natural movement of the human body. If the communication start with body means the transmission path will be formed in our human body. Communication with transceiver is just fixed in any surface of our body like hand, fingers, toes, clothes and shoes. It is not affected to the human body. It is fully covered with insulated film. Using RED TACTON any type of files can be transfer such as mp3 music file, mail, business cards; phone numbers that can be send and accept through human being electric field. The RED TACTON transceiver device makes changes of weak electric field from the surface of the human body using photonic electric field sensor developed by NTT.[2]

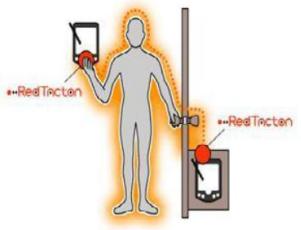

Fig 1: RED TACTON

II. HOW RED TACTON WORKS

RED TACTON transmitter creates the minute electric field gave off/given off from the surface of the human body by using the photonic sensor. RED TACTON(accomplishes or gains with effort)both the half duplex and full duplex communication over the human body at the speed of 10 Mb/s. RED TACTON using the electric field to produce the desired signals used for transmission. RED TACTON receiver receives the weak electric field from the human body affected by the transmitter. During the transmission of weak electric field, that affects the electrical property of electro-optic crystal. RED TACTON depends on the norm that the optical properties of an electro-optic crystal can change according to the changes of a weak electric field.[3]

The causes in the electro-optic crystal can be changed and detected by using the laser beam. Finally these changes can convert the electrical signal to the receiver circuit. Data is send by transmitter by causing different variations in electric field. These data are received by using photonic sensor. Electric field from the human body is scatters into earth. Therefore, this electric field is weak and unbalanced. The photonic electric field sensor established by NTT. It enables weak electric fields to be restrained by identifying fluctuations in the properties of an electro-optic crystal with a laser beam.

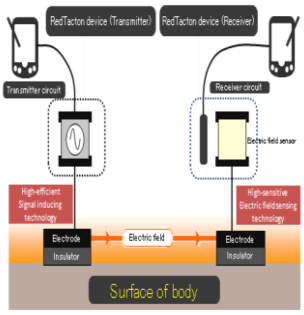

Fig 2: Block diagram of RED TACTON

III. RED TACTON TRANSCEIVER

The signal from the connecting point is sent to both the circuits such as data sense circuit and transmitter circuit. Circuit of data sense intellects the signal from the interface and if the data is present means it passes the control signal to the transmitter which stimulates the transmitter circuit. The transmitter circuit changes the electric field on the surface of our human body. This change in the electric field from the transmitter circuit is detected by the electro-optic sensor and laser beam technology. The outcome of the electro optic sensor is assumed by the detector circuit; finally it reaches the receiving RED TACTON device. [5]

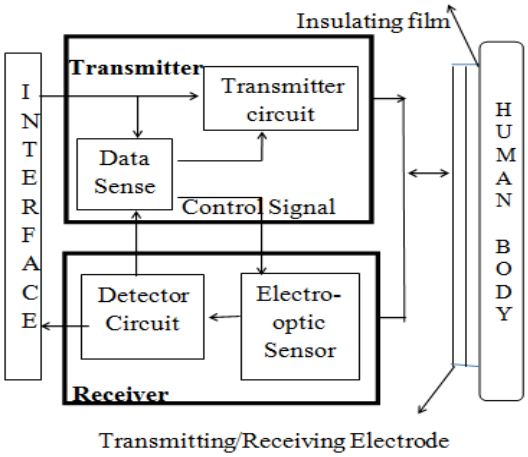

Fig 3: RED TACTON circuit

IV. WORKING PROCEDURE

Instead of using electromagnetic waves or light waves to carry data, use:

- RED TACTON consumptions weak electric fields from the surface of our body as a transmission medium.
- "RED TACTON be dependent upon the principle that the optical properties of an electro-optic crystal differ according to the changes of a weak electric field"
- The weak electric fields transmitted through our body to a RED TACTON receiver circuit, where the weak electric field affects the optical properties of an electro-optic crystal.[4]
- Detecting the causes of optical properties and it is changed by using laser beam and finally it converts to the receiver circuit as a digital signal messages.

V. PROTOTYPES

Nippon Telegraph and Telephone Corporation (NTT) has made three prototypes. They are

A. PC Card Transceiver

This is one of the thin devices in the card form. A compact battery supplies the power needed in particularly low power consumption. The services provided by the card terminal are same as that of the existing IC cards. The data management for authentication or certification is functioned by file management and card terminal functions without a supervising device. It acts as a slave in the master slave communication model.

B. Embedded Receiver (Hub Type)

This device is built into a door or gate. The power is supplied by Main AC. Low power consumption is not an important issue. Embedded terminal does not need to function using file management in order for the gate management server to keep user data. It is in need to have a function for connecting to a supervisor. It works with a supervisor. It acts as the master in master slave communication model or a peer in a peer to peer communication model. [6]

C. USB Transceiver (Box Type)

This component is built into a mobile device i.e. Cell Phone. It consumes power from the built in battery of that device. It is used for the same sources as servers any communication between mobile terminal or IC cards. This mobile terminal needs a file management function and a function for connecting to a supervising device.

It has three roles wither a master or slave in master slave communication or a peer in a peer to peer communication. It communicates with other embedded or mobile terminals as a slave and it communicate with other mobile terminal as a master.

VI. APPLICATIONS

There are many applications in RED TACTON technology. This technology is widely used in various applications.

A. One To One Services

To send a quality data from personal information devices damaged on the body to computers fixed in the environment, one-to-one services could be implemented that are personalized to the individual needs of the user.[7]

B. Intelligent Operation of Personal Information

Communication is made by totally human activities and behaviour. The connection of cables, tune frequencies and smart card purpose are not necessary for intelligent operation of personal information.

C. New Performance Configurations

The properties that related in designing and constructing beautiful buildings and structures are becoming a part of transmission medium.[8]

D. Marketing Applications

If a person needs the information about the product or service, just gather it by touching or standing in front of the advertising panel for matching his or her characteristics is automatically displayed and also can get more in-depth information.

E. Security Applications

RED TACTON installed on doors, cupboards and other positions calling for secure access, such that each secure access could be initiated and authenticated with a simple touch. At the same time, all the transaction details and relevant user details could be logged by the security system. [9]

VII. CONCLUSION

The RED TACTON has become a better technology compared with other network technologies. It is connected within short distance to transfer the data as digital messages. The problem of computer hacker is overcome by the RED TACTON technology. Speed of transferring data is cleared by RED TACTON by providing 10 Mbps. The technology is very expensive to implement. It takes more time to get popular among the people in market as it is a new kind of network. Change for the better of RED TACTON technology is a big attainment, which will likely be targeted for use in computer programs such as wireless headset, medical use, security requests, and wireless transmission by applying different activities. Hence let us welcome the technology of RED TACTON for the next generation into our life.

REFERENCES

[1]M. Shinagawa, "Development of Electro-optic sensors for Intra-body Communication," NTT Technical Review, Vol. 2, 2006.

[2]Prof VasantkumarUpadhye "RED TACTON" International Journal of New Innovations in Engineering and Technology, VOL 4, March 2016.

[3] Amruta C. Kulkarni and D.D. Adhire"Android Based Intra Body Communication" (IJAFRC) VOL 1, June 2014.

[4]KakadePriyanka and Khobragade S V "RED TACTON HUMAN AREA NETWORKING" International Journal of Computer and Electronics Research, VOL 2, April 2013.

[5]PrachiMujawar, Mahesh Parihar, Shital N Patil"An Approach towards Human Intra-Body Communication for data transfer" The International Daily Journal, October 2015.

[6]T. G. Zimmerman, "Personal Area Networks: Near-field intra body communication," IBM systems journal, Vol. 35, 1996.

[7]ParagBansal, Amit Kumar Chauhan, ShubhangiJosi, "RED TACTON: Advanced Communication Using Touch Technology" International Journal of Engineering and Science Research, VOL-3, March-2013.

[8]Rahul Shirbhate, Vishal Mogal "Surveyed on RED TACTON: An Innovative Human Area Networking Technology", International Journal of Science and Research, VOL-4, December-2015.

[9]Ashutoshkumar, M.V.N.R. Pavan Kumar, UtkarshKamble, "Overview on RED TACTON Techonology" International Journal of Research in Advent Technology", VOL-2, April-2014.

[10] Yusuf Perwej, PhD A Literature Review of the Human Body as a Communication Medium using RedTacton "*Communications on Applied Electronics (CAE)" ISSN : 2394-4714 Volume 4 – No.9, April 2016*