

Hi - Fi Alert Security System Through GSM Wrist Watch - Device

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Abstract- Now-a-days there is a great increase in crime rate. Owe to this an electronic watch dog is needed to prevent the crime or to catch the evidence even user in a remote area. The main objective of this paper is to protect oneself from any sort of dangerous situation. It is majorly useful for women. The GWWD (GSM Wrist Watch Device) is used to alert police personnel, relatives, or any TV news channel as per the user's immediate choice. The SIM which is used in this device can access any network i.e. it is has the portability because to overcome the abrupt transitions in network connectivity i.e. this device works as emergency numbers. The present paper gives a view on the features of mobile and GSM system, its functioning and operation advantages, disadvantages with in view of the present technology.

Keywords - GWWD, GSM, GPS, MMS, mobile, autofocus, Hi- Fi

I. INTRODUCTION

The GWWD is a very use full device in a present IT enabled corporate busy business world. The GWWD is enabled with four buttons watch or mobile with GSM feature. It works very effectively and efficiently when users in a dangerous position like threatening physically and any other attacks. This gives immediate and secure help from any of the user's choice like police, relatives or TV channels. When the user is assumed that someone is going to attack him/her or accidentally met with any dangerous situation then the user can press on/capture button. On / capture is a double through switch when this is pressed the device is going to on state, by pressing second time cameras(C1, C2, C3, and C4) captures the images from four directions. Cameras used in this GWWD are using Auto Focus feature [2], [3], [4]. Auto Focus system works by emitting a signal to illuminate or estimate the distance between camera and subject. The active auto focus system is used in this GWWD. . The captured images will be sent to

the concerned person as per the choice opted by the user through MMS. The number can be opted by subscriber. When B1 is pressed images will be sent to police control room where button1 is feeded with police control room number. When B2 is pressed images will be sent to required personal number. When B3 is pressed images will be sent to required TV channel, the channel can be opted by subscriber by taking the permission of particular TV channel. Form the data of images we can identify the exact location through GPRS and we can alert near police mans simultaneously we can get the evidences regarding incident. The SIM which is used in this device can access any network i.e. it is has the portability because to overcome the abrupt transitions in network connectivity i.e. this device works as emergency numbers.

In this paper remaining work divided as follows, in section II we briefly discuss the functioning of GWWD, in section III we are evaluating the Global System for Mobile communications (GSM), in section IV concludes the paper.

II. FUNCTIONING OF GWWD

The functioning of this GWWD as follows with block diagram .This device consists of GSM Device which includes cameras, SIM card, four buttons and functioning explaining as follows.

Network) MSISDN = Country Code + National Destination Code + Subscriber number

e.g. 63 + 0918 + 8889999 Maximum length is 15 digits.

International Mobile Subscriber Identity (IMSI) is the subscriber number used over radio path for all signaling in the GSM PLMN. This number is stored in SIM (Subscriber Identity Module), HLR (Home Location Register, and VLR (Visitor Location Register). $IMSI = MCC + MNC + MSIN$

= Mobile Country Code + Mobile Network Code + Mobile Identification Number

[3 digit] [2 digit]
[11 digit]

e.g. 502 + 19 + 2345451

Temporary Mobile Subscriber Identity (TMSI) is used for the subscriber's confidentiality. Since the TMSI has only local significance (within MSC/VLR) the structure of the TMSI can be chosen by the Vendor. But the size must be 1/2 of the size of IMSI. Each time a mobile request for location updating or call setup, MSC/VLR allocates to the IMSI a new TMSI, so the TMSI is used on the signaling path, protecting the IMSI identity. Plus since the TMSI is half the size of IMSI, we can page twice the amount compared to IMSI.

Location Area Identity (LAI) is used to uniquely identify each location area in the GSM PLMN. When the system receives an incoming call it knows in which location area it should page the mobile and does not page the entire network. $LAI = MCC + MNC + LAC$

= Mobile Country Code + Mobile Network Code + Location Area Code

[3 digit] [2 digit]
[1 to 65 536]

e.g. = 502 + 20 + 60001

Cell Global Identity (CGI) is used for cell identification within the GSM network. $CGI = MCC + MNC + LAC + CI$

= Mobile Country Code + Mobile Network Code + Location Area Code + Cell Identity

e. g. = 502 + 20 + 60001 + 50001

Base Station Identity Code (BSIC) is used to distinguish co channel Frequency used in the neighboring cell.

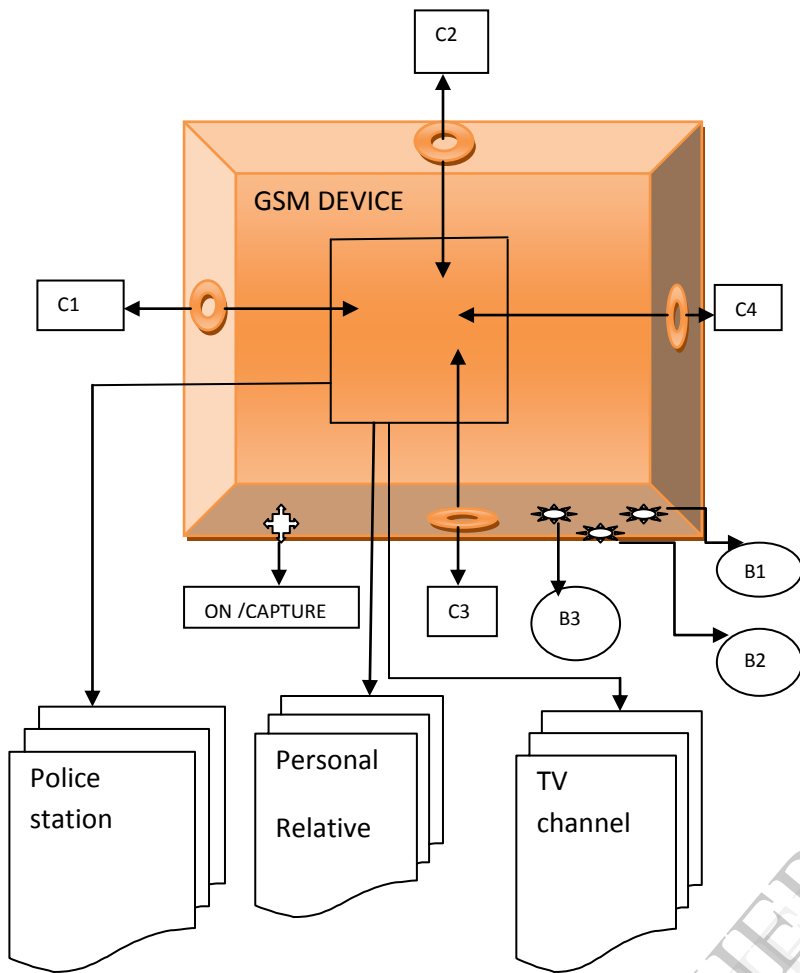


Fig 1: GSM wrist watch device block diagram

When user expects an unfortunate critical movement immediately switch on the device by pressing on/capture button in Fig1. when on/capture button pressed by two times then automatic cameras (c1, c2, c3, c4) which are attached with the GSM device starts capturing the pictures of surroundings. the cameras which will be used in this device are automatic cameras with autofocus adjustment and can take photos in a dim light atmosphere also. These pictures from cameras are processed in GSM Device and device is ready to send the messages. When images are captured by cameras they are ready to send and wait for mobile number to send. when B1 is pressed all images of surroundings are forwarded to nearby police station, after receiving these images the police personal can immediately alert the near police station. The particular location can be identified through GPS (Global Positioning System) where that GWWD is located. Location can be identified as follows

Mobile Stations ISDN Number (MSISDN) is the mobile number used in a GSM PLMN (Public Land Mobile

BSIC = NCC + BCC= Network Color Code + Base Station Color Code

[1 to 7]

[1 to 7]

III.GLOBAL SYSTEM FOR MOBILECOOMUNICATIONS (GSM)

GSM is the most successful digital mobile telecommunication system in the world today. Digital system which is known as Group Speciale Mobile (GSM), a fully digital system was found in 1982 to avoid coexisting with analog mobile phone system with Digital system, second generation of GSM. Later this system is re named as Global System for Mobile Communications (GSM) [1]. The architecture of GSM Network along with added elements is shown in Fig 2 and Table 1 gives the parameters of GSM systems. The MS and the BSS communicate across the Um interface, also known as the air interface or radio link. The BSS communicates with the Network Service Switching center across the A interface.

In a GSM network, the following areas are defined:

- **Cell:** Cell is the basic service area: one BTS covers one cell. Each cell is given a Cell Global Identity (CGI), a number that uniquely identifies the cell.
- **Location Area:** A group of cells form a Location Area. This is the area that is paged when a subscriber gets an incoming call. Each Location Area is assigned a Location Area Identity (LAI). Each Location Area is served by one or more BSCs.
- **MSC/VLR Service Area:** The area covered by one MSC is called the MSC/VLR service area.
- **PLMN:** The area covered by one network operator is called PLMN. A PLMN can contain one or more MSCs.

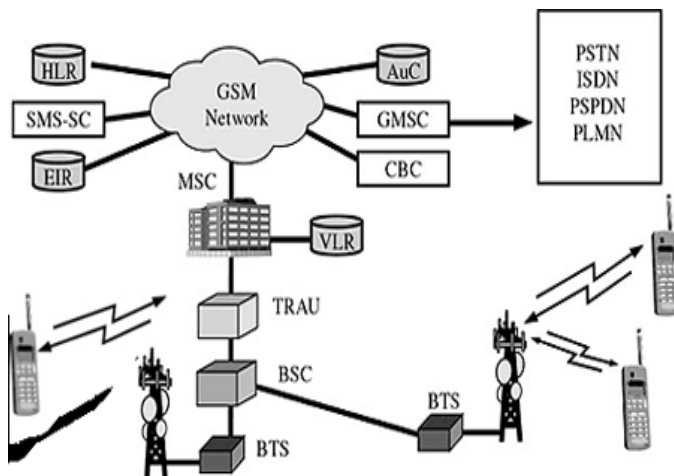


Fig 2 GSM architecture

Table1: The details of GSM system

Parameter	Gsm900	Dcs1800
Uplink	890-915 MHz	1710-1785 MHz
Downlink	935-960 MHz	1805-1880 MHz
Duplex distance	45 MHz	95 MHz
Carrier separation	200 kHz	200 kHz
Number of channels	1,2,.....123,124	512,513.....884,885
Access method	TDMA	TDMA

GSM provides Mobile services and it provides the integration of different voice and data services. Inter working with existing networks services are classified as three types.

a) Bearer services: These services permit transparent and non transparent, synchronous and asynchronous data transmission. GSM allows data rates up to 9600 bits/sec. for non voice services. Using transparent and non transparent services GSM specifies several bearer services for interworking with PTSN, ISDN and PSPDN which are available worldwide. Data transmission can be full – duplex, synchronous with data rates of 1.2, 2.4, 4.8and 9.6 Kbits/sec. (or) full duplex asynchronous from 300 -9600 bits/sec.

b) Tele services: GSM mainly focuses on voice oriented tele services. These services comprise encrypted voice transmission, message services and basic data communication with terminals as known from the PSTN (or) ISDN.GSM offers emergency number service. This number is mandatory for all providers and free of charge and this connection has highest priority. GSM offers transmission of Short Message Service (SMS) of up to 160 characters, sending and receiving of SMS is possible during data (or) voice transmission. It offers MMS (Multi MEDIA Message Service) to transmit large pictures (GIF, JPG, and WBMP)

c) Supplementary services: GSM provides like user identification, call redirection or forwarding of ongoing calls. The fundamental feature of GSM is the system always knows where a user currently is, and the same number is

valid throughout world. The HLR always contains information on the current location.

Multiple Access Techniques allows many subscribers to use the same communication medium. There are three kinds of basic Multiple Access Techniques “FDMA, TDMA and CDMA”. GSM system adopts FDD-TDMA (FDMA and TDMA together).FDMA uses different frequency channels to accomplish communication. The whole frequency spectrum available is divided into many individual channels (for transmitting and receiving) , every channel can support the traffic for one subscriber or some control information.TDMA accomplishes the communication in different timeslots. A carrier is divided into channels based on time. Different signals occupy different timeslots in certain sequence i.e. many signals are transmitted on the same frequency in different times

IV. CONCLUSION

There is chance to misuse this kind of advanced device by antisocial element community at certain situations followings instructions are suggested to overcome such kind of misuse. This may be used for amusement by such crazy, mischievous people. SIM which is inserted in device should to provide by authenticated persons and it should be sold through authorized persons only. Those who Misuse of this device should be prosecuted and punished siviourly.

This system is a proposal to alert the security system through GSM device. People can be self secured and

protected by police personal or relatives immediately by using this kind of device .it is also useful to catch the culprit with live evidence so that we can save investigation time as well as investigation cost.

In India, with advent of AADHAR CARD (a unique identification card) getting a person’s data base become easier and simpler of every person is available. From the received images or pictures of GWWD we can match with the database of that particular location and we can easily identify the persons who were involved in that incident and who were present in that situation. This mechanism and procedure we can save the investigation time, we can save expenditure when any incident is occurred. A person can be saved and protected by using this device whenever he anticipates any vulnerable or hostile situation. This is more useful for women especially working group in the present globalised world. This device can be offerble by any common man as there is rapid use of mobile phones as an extension of human body.

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