Cell Phone Operated Mobile Bug Using Microcontroller

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Abstract: Now a days the most problem of world is unauthorized use of mobile phones in prohibited areas like confidential rooms, prisons, colleges, schools, hospitals, petrol bunks etc. There is great need to limit the use of cell phone at particular places and at particular times. Hence, the use of intelligent mobile phone detector is guaranteed. The main scope of this project is to develop an embedded system, which is used to detect the use of mobile in our surrounding using microcontroller and sends information to monitor section using zigbees. The objectives of the system are- To develop an embedded system, which is used to detect the mobile in our surrounding using microcontroller and sends information to monitor section using zigbees. To prevent use of mobile phones in confidential rooms, etc.

Keywords: Signal Comparator, AT89S52 Microcontroller, Zigbees, Buzzer, LED.

I. INTRODUCTION

Now a days the most problem of world is unauthorized use of mobile phones in prohibited areas like confidential rooms, prisons, colleges schools, etc.There is great need to limit the use of cell phone at particular places and at particular times. Hence, the use of intelligent mobile phone detector is guaranteed.

Here we try to prohibit the unauthorized use of mobile phones. So, we would like to build a detector, that should sense the presence of an activated mobile phone in a particular distance and it should indicate it by alarming.

The circuit can detect both incoming and outgoing calls, SMS even if the mobile phone is kept in the silent mode. The moment when the mobile detector detects a signal from an activated mobile phone, it starts alarming and the led blinks and it is also indicated through the LCD display. The alarm continues until the signal transmission gets off. By using zigbees we will transmit message to monitor section.

II. PROPOSED DESIGN

This handy cell phone detector, pocket-size mobile transmission detector or sniffer can sense the presence of an activated mobile cell phone from a distance of one and-a-half meters. So it can be used to prevent use of mobile phones in confidential rooms, etc. This project is implemented using AT89S52 microcontroller interfaced with a signal comparator circuit, buzzer and led. The system uses a compact circuitry built around flash version of AT89S52 microcontroller with a non-volatile memory. Programs are developed in embedded c. 8051 Programmer is used to dump the code into the microcontroller.

III. IMPLEMENTATION

This project is implemented 8051 based At89s52 developed board interfaced with comparator, zigbee and buzzer. An ordinary RF detector using tuned LC circuit is not suitable for detecting signal in the GHz frequency band used in mobile phones. The transmission frequency of mobile phone ranges from 0.9 to 3 GHz with a wavelength of 3.3 to 10cm. So a circuit detecting giga hertz signals is required for a mobile bug. Here the circuit uses a 0.22uF disk capacitor (C3) to capture the RF signals from the mobile phone. The lead length of the capacitor is fixed as 18mm with a spacing of 8 mm between the leads to get the desired frequency. The disk capacitor along with the lead acts as a small giga hertz loop antenna to collect the RF signals from the mobile phone.

Op-amp IC CA8310 (IC1) is used in a circuit as a current-to-voltage converter with capacitor C3 connected between its inverting and non-inverting inputs. It is a CMOS version using gate-protected p-channel MOSFET transistor in the input to provide very high input impedance, very low input current and very high speed of performance. The output CMOS transistor is capable of swinging the output voltage to within 10mV of either supply voltage terminal. Capacitor C3 in conjunction with the lead inductance acts as a transmission line that intercepts the signals from the mobile phone, this capacitor stores energy and transmits the stored energy in the form of minute current to the input of IC1.This will upset the balance input of IC1 and convert the current into the corresponding output voltage. Capacitor C4 along with high-value resistor R1 keeps the non-inverting input stable for easy swing of the output to high state. Resistor R2 provides the discharge path for capacitor C4. Feed-back resistor R3 makes the inverting input high when the output becomes high. Capacitor C5 (47pF) is connected across

'strobe' (pin8) and 'null' inputs (pin1) of IC1 for phase compensation and gain control to optimize the frequency response. When the mobile phone signal is detected by C3, the output of IC1 becomes high and low alternately according to the frequency of the signal as indicated by LED1. This triggers mono-stable timer IC2 through capacitor C7. Capacitor C6 maintains a base bias of transistor T1 for fast switching components R6 and C9 produce very short time delay to avoid audio nuisance. Assemble the circuit on a general-purpose PCB as compact as possible and enclose in a small box like junk mobile case. As mentioned earlier, capacitor C3 should have a lead length of 18mm with lead spacing of 8mm.Carefully solder the capacitor in standing position with equal spacing of the leads. The response can be optimized by trimming the lead length of C3 for the desired frequency. You may use a short telescopic type antenna. Use the miniature 12V battery of a remote control and a small buzzer to make the gadget pocket-size. The unit will give the warning indication if someone uses mobile phone within a radius of 1.5 metres.

IV. ADVANTAGES

[1] Low Cost
[2] Automated Operation
[3] Low Power Consumption.

V. APPLICATIONS

i.   Illegal activity (Coordinating robberies, control of gangs from prisons etc)
ii. National Security (Cell phones eaves dropping in Embassies, and unauthorized use in government buildings)
iii. It is useful where the use of mobile phone is prohibited like petrol pumps and gas stations, historical places, religious places and court of laws.
iv. This is a feature rich product that also detects the newer phones: 4S, 3G, 4G LTE, CDMA, CDMA2000, GSM, .etc with provisions made for emerging protocols and standards.

BLOCK DIAGRAM
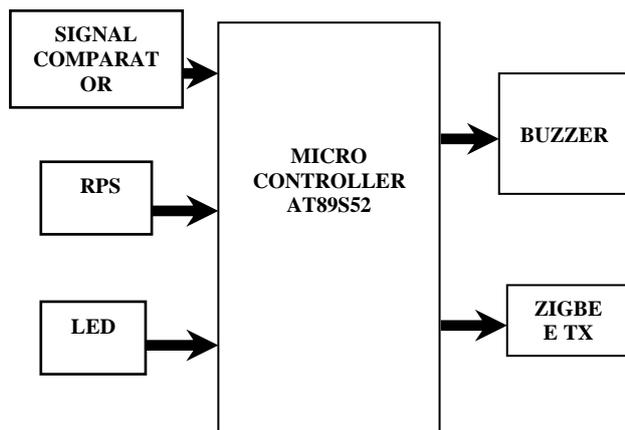
Fig 1: Transmitting Section
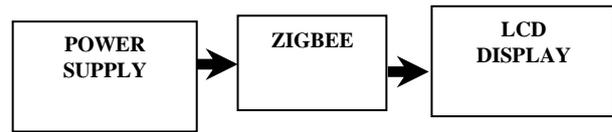
Fig 2: Receiving Section
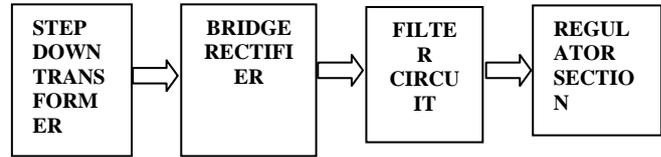
Fig 3: Power Supply

III. CONCLUSION

This pocket-size mobile transmission detector or Sniffer can sense the presence of an activated mobile cell phone from a distance of one and-a-half meters. So it can be used to prevent use of mobile phones in private meetings, defence establishments, confidential rooms, Military camps and sends information to administration room.

Fig 4: Original Prototype

REFERENCES

[1]. Mobile Phone Sniffer track down mobile phones using this handy directional finder Design by B. Kainka.
[2]. Applying Packets Sniffer by Ghossoon., M.W. Al Saadoon College of Administrative Sciences, Applied Science Ass. Prof. Manager Center of D&R for Lecturer Staff, University Kingdom of Bahrain, Manama.
[3]. The 8051 microcontroller and embedded systems by Mazidi.
[4]. www.wikipedia.org
[5]. www.atmel.com
[6]. www.8051projects.com