ACTIVE CELL PHONE DETECTION AND DISPLAY USING

ATMEGA-8 MICROCONTROLLER

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ABSTRACT

Cell phones have brought the world closer. Communication has become a lot smoother with the ease of using cell phone technology. It has made it possible for a person located in a remote place to communicate with a person across the globe in a fraction of a second. However the proliferate use of cell phones has somewhat made it obligatory for us to dig a way out to prevent its usage in restricted or high security areas. This paper deals detection of GSM signals and displaying it on a LCD screen with the help of a ATmega-8 microcontroller. This device will ameliorate the attempt to maintain information security in restricted areas and prevent the breach of potent data.

KEYWORDS: Cell Phone Detector, GSM Signal, Atmega-8, Communication, Restricted Areas

INTRODUCTION

Cell phone technology is one that is ubiquitous and is progressing by every passing day.The rapid proliferation of cell phones at the beginning of the 21st century eventually raised problems such as their potential use to invade privacy or contribute to rampant and egregious academic cheating. In addition public backlash was growing against the intrusive disruption cell phones introduced in daily life.

A very common scenario is one of students operating cell phones in examination halls where its use is obviously restricted. The examiners have to personally go the student and check his pockets or desks for any cell phone. With the help of a cell phone detector the examiner will know if a cell phone is active and can take action immediately.

The Intelligent Mobile phone detection project is an advanced device which finds various applications in the modern fields of communication and surveillances. This work is very useful for the private meetings, examination hall, defence establishments, military camp, Hospitals; Petrol pumps etc., where the uses of an active Mobile Communication (GSM) device are prohibited.

DESIGN OBJECTIVES

The objective includes building a mobile detector to locate a phone within a range of 4-5meters and display on a LCD screen on detection.

DESIGN SPECIFICATIONS

The frequency range up to which the detector is able to detect signals is about 0.9-3 GHz.

Basic Block Diagram
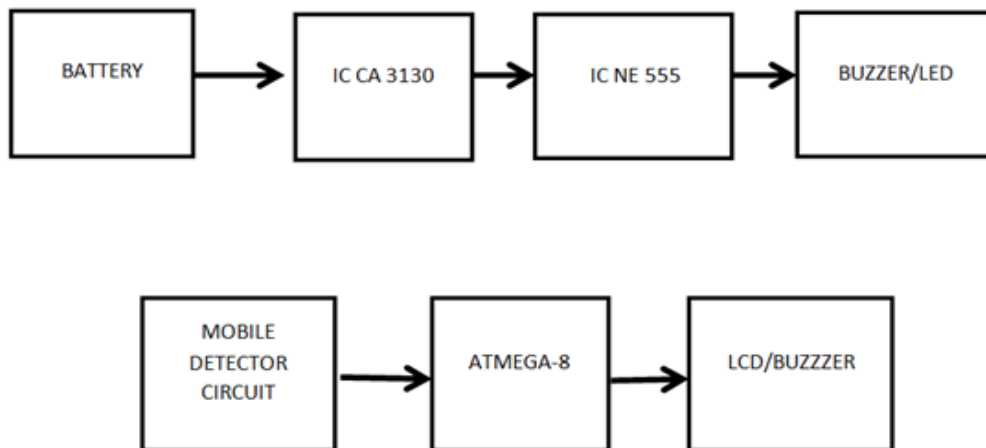
Figure 1: Block Diagram of Cell Phone Detector

Circuit Diagram
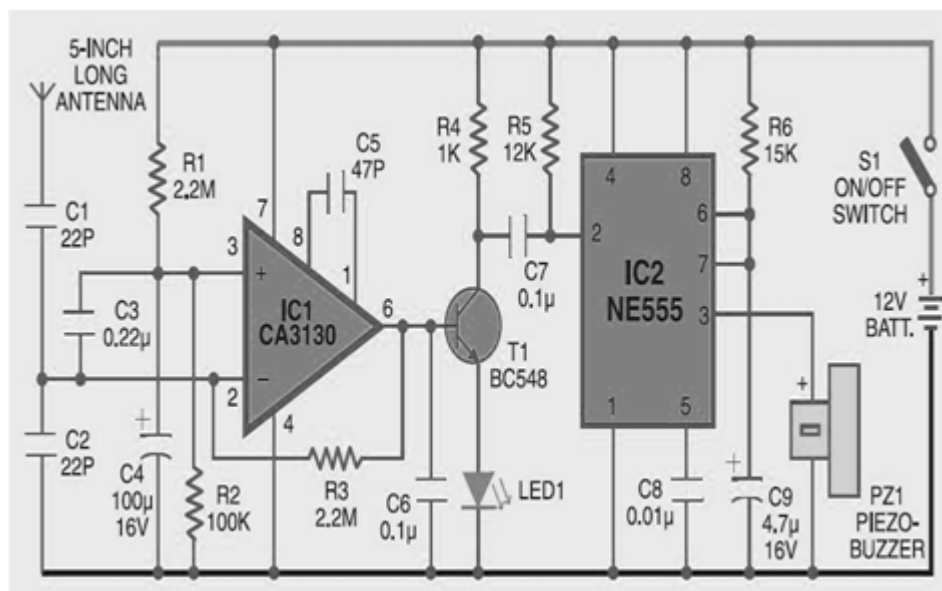
Figure 2: Mobile Detector Circuit

MOBILE DETECTOR WORKING

- Capacitor C3 in conjunction with the lead inductance acts as a transmission line that intercepts the signals from the mobile phone.

- This capacitor creates a field, stores energy and transfers the stored energy in the form of current to the inputs of IC1. This will upset the balanced input of IC1 and convert the current into the corresponding output voltage.

- Op-amp IC CA3130 (IC1) is used in the 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 transistors in the input to provide very high input impedance, very low input current and very high speed of

performance.

- 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. Feedback resistor R3 makes the inverting input high when the output becomes high. Capacitor C5 (47pF) is connected across 'strobe' (pin 0 and 'null' inputs (pin 1) 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 monostable timer IC2 through capacitor C7. Capacitor C6 maintains the base bias of transistor T1 or fast switching action. The low-value timing components R6 and C9 produce very short time delay to avoid audio nuisance.

Figure 3: Interfaced Circuit

Interfacing Section

An input from the mobile detector section is provided to the ATmega-8 microcontroller. On detection a message saying " MOBILE PHONE DETECTED " is displayed on the LCD screen.

Design Specifications

Interfacing is done via **AVR using ATmega8 microcontroller**. ATmega8 is 8-bitAtmel with 8KBytes In-System Programmable Flash. 32×8 General Purpose Working Registers. Up to 16MIPS Throughput at 16MHz.

FUTURE SCOPE

- Improving the range: - If a preamplifier stage using JFET or MOSFET transistor is used as an interface between the capacitor and IC, range can be increased.

- Being able to detect Bluetooth transfers.

- Current system is designed only for 2G/3G systems. A 4G complaisant system is to be developed.

CONCLUSIONS

During tests and exams the use of mobile phones is prohibited, for the students could use it to send answers to each other.By using a Cell phone-detector this kind of malpractice can be avoided. The presence of a Cell phone-detector can work in a preventing way, because when a Cell phone-detector is present, the use of mobile phones does not stay unnoticed.

Just like within theatres the use of mobile phones is not allowed. The Cell Phone Detector can be used to prevent use.

While refuelling at a petrol station, the use of mobile phones is prohibited, because the mobile signals can interfere with the refuelling equipment and because a small spark within the mobile phone could set fire to possible gasoline vapour. With the cell phone-detector this risk is pointed out to the offending customer.

It is often distracting to be called during a meeting. Also, confidential conversation can be overheard by using cell phones, especially by those with a spy function (when someone calls that phone it automatically is picked up without ringing, so that the person on the other end of the line can hear conversations in the room where the spy phone is placed).By using a cell phone-detector you can be assured that this is not the case.

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