

Signal Jammer in Military Operations

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Abstract: The jamming device broadcasts an RF signal in the frequency range reserved for cell phones that interpose with the cell phone signal, which results in a "no network available" display on the cell phone screen. All phones within effective radius of the jammer are silenced. The activation and deactivation time schedules can be programmed with microcontroller. Mobile jammer is a device that is used to prevent mobile phones from transmitting or receiving signals from the base stations. The mobile phone signal jammer works based upon the principle of radio wave frequency (RF). Here we have jamming techniques, section, microcontroller and GSM unit. The information will forward to the microcontroller, then the regulator will forward the data to GSM and GSM will drive message to the clients whose figures are programmed in GSM and communication will be blocked, after sending the message mobile jammer circuit will activate and signals are jammed or blocked. The 4G mobile phones can be blocked by using the advanced jamming devices.

Keywords: Jammer, GSM, RF, Power Supply

I. INTRODUCTION

Jamming devices were first put into use by the military and armed forces. This interest comes from the fundamental objective of denying the successful transport of information from sender (tactical commanders) to the receiver. Jammers are largely used to prevent bomb detonation or to isolate suspects in hostage situations. In many countries, jammers are illegal, except in the military, law enforcement and other government agencies.

The technology behind jamming is very simple. The jamming device broadcasts an RF signal in the frequency range, in which communication is taking place which results in no signal. Jamming devices overpower the cell phone by transmitting a signal on the same frequency and at a high enough power that the two signals collide and cancel each other out.

Cell phones are designed to add power if they experience low-level interference, so the jammer must recognize and match the power increase from the phone. Cell phones are a full-duplex device, which means they use two separate frequencies, one for talking and one for listening simultaneously

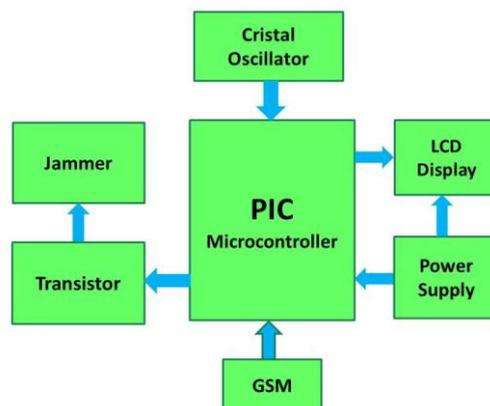
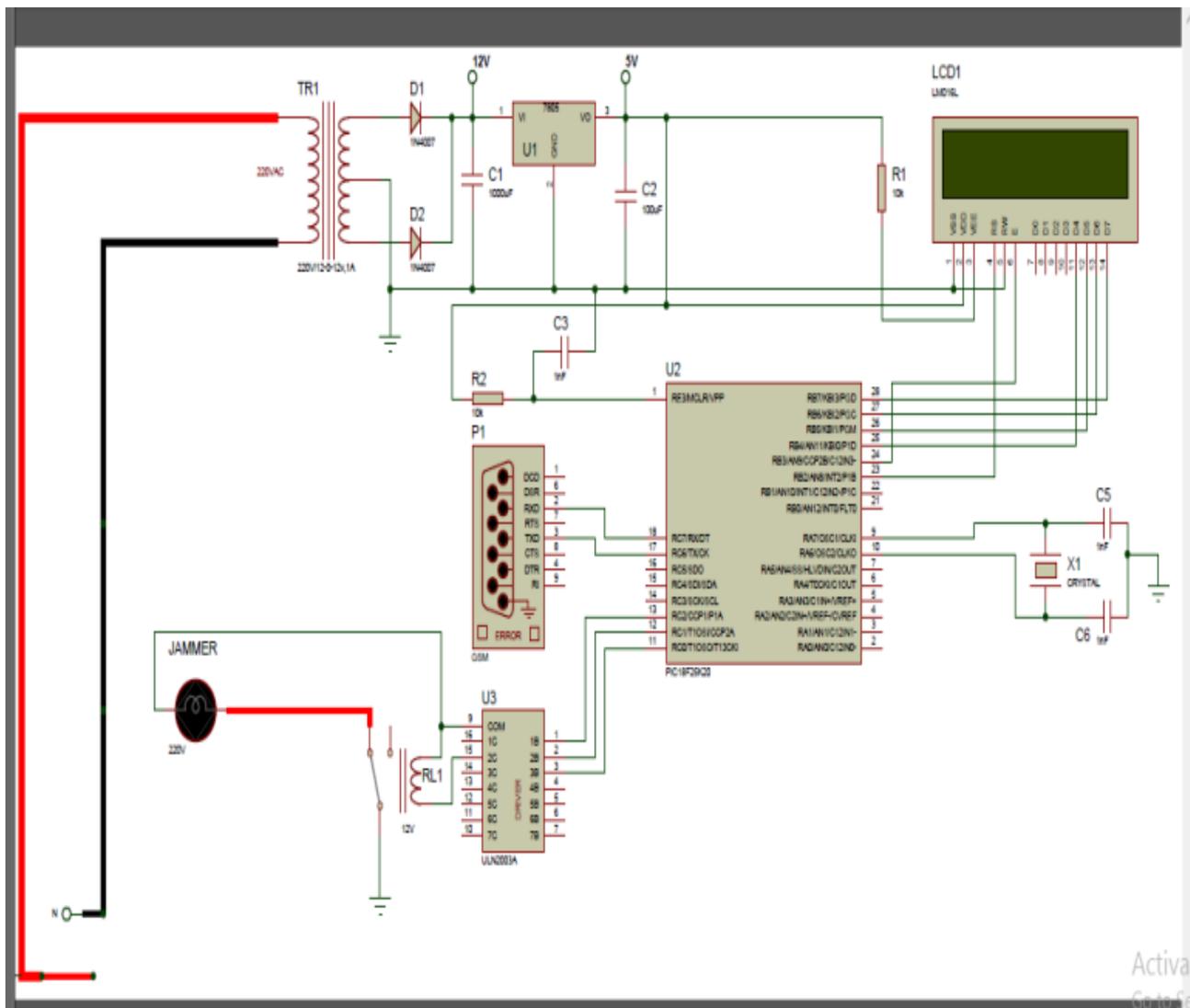


Figure 1: Basic Connection diagram

II. LITERATURE REVIEW

- A. The Design and testing of mobile phone jammer" by Diana Madara International journal of Innovative Systems Design and Engineering www.iiste.org ISSN 2222-1727 (Paper) ISSN 2222-2871 (Online) Vol.7, No.7, 2016 [1] it highlights the design of a simple low cost mobile phone jammer and aims to present a solution for the problem of inappropriate use of the cell phones in restricted areas. The main concept of jamming is the releasing of signal (noise) of the same frequency which is using by mobile service provider to overpower and destruct the user signal.
- B. N. R. Krishniah, "Dual Band"International Journal of Morden Engineering Research (IJMER) Vol.3, Issue 4, Jul-Aug 2013 3. Project report on "Signal Jammer" by Aryan Kumar 2015-16 [2]
The jamming device broadcasts an RF signal in the frequency range reserved for cell phones that interface with the cell phone signal, which result in "no network available" display on the cell phone jammers.



The fig. 2 shows the developed system :

III. Basic Principle

The basic principle is to obstruct the signals of mobile phone of particular area using signal jammer for certain time duration using GSM modem controlled by microcontroller is used to set the time for on and off of jammer These kind of devices give a positive edge over our enemy and totally isolate them. Signal jamming can be very useful to damage the communication network and other defense system. To help our armed forces and government agencies by providing them with these kind of beneficial devices and equipments. Radio-jamming is the deliberate radiation, re-radiation, or reflection of electromagnetic energy for the purpose of disrupting use of electronic devices, equipment, or system. When used, the jammer effectively disables cellular activity between the base station and the device, by creating a temporary "dead-zone" to all cell-phone traffic in their immediate proximity.

IV. system modelling

The system consists of :

1. PIC18F25K20:

PIC is a family of microcontroller made by Microchip Technology. PIC derived from the PIC1650 originally developed by General Instrument's Microelectronics Division. The name PIC initially referred to Peripheral Interface Controller, then it was corrected as Programmable Intelligent Computer. The first parts of the family were available in 1976; by 2013 the company had shipped more than twelve billion individual parts, used in a wide variety of embedded systems. Early models of PIC had read-only memory (ROM) or field-programmable EPROM for program storage, some with provision for erasing memory.

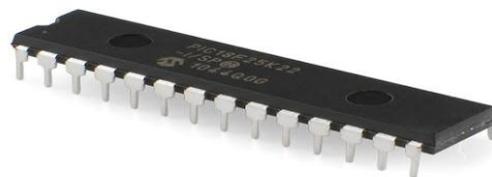


Figure 2: PIC Microcontroller

2. LCD Display:

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix

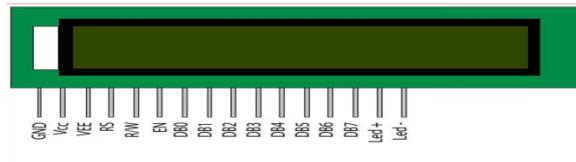


Figure 3: LCD Display

3. Transistor:

The ULN2003A is an array of seven NPN Darlington transistors capable of 500 mA, 50 V output. It features common-cathode flyback diodes for switching inductive loads. It can come in PDIP, SOIC, SOP or TSSOP packaging. In the same family are ULN2002A, ULN2004A, as well as ULQ2003A and ULQ2004A, designed for different logic input levels. A Darlington transistor (also known as Darlington pair) achieves very high current amplification by connecting two bipolar transistors in direct DC coupling so the current amplified by the first transistor is amplified further by the second one.

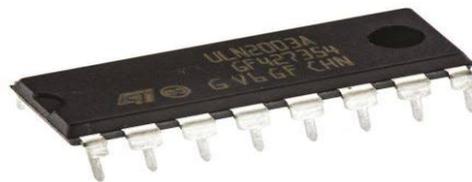


Figure 4: Darlington Transistor.

5. 4. GSM Modem:

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. To perform these tasks, a GSM modem must support an “extended AT command set” for sending/receiving SMS messages, as defined in the ETSI GSM 07.05 and 3GPP TS 27.005 specifications



Figure 5: GSM Modem

V. CIRCUIT CONNECTION & HARDWARE DESIGN

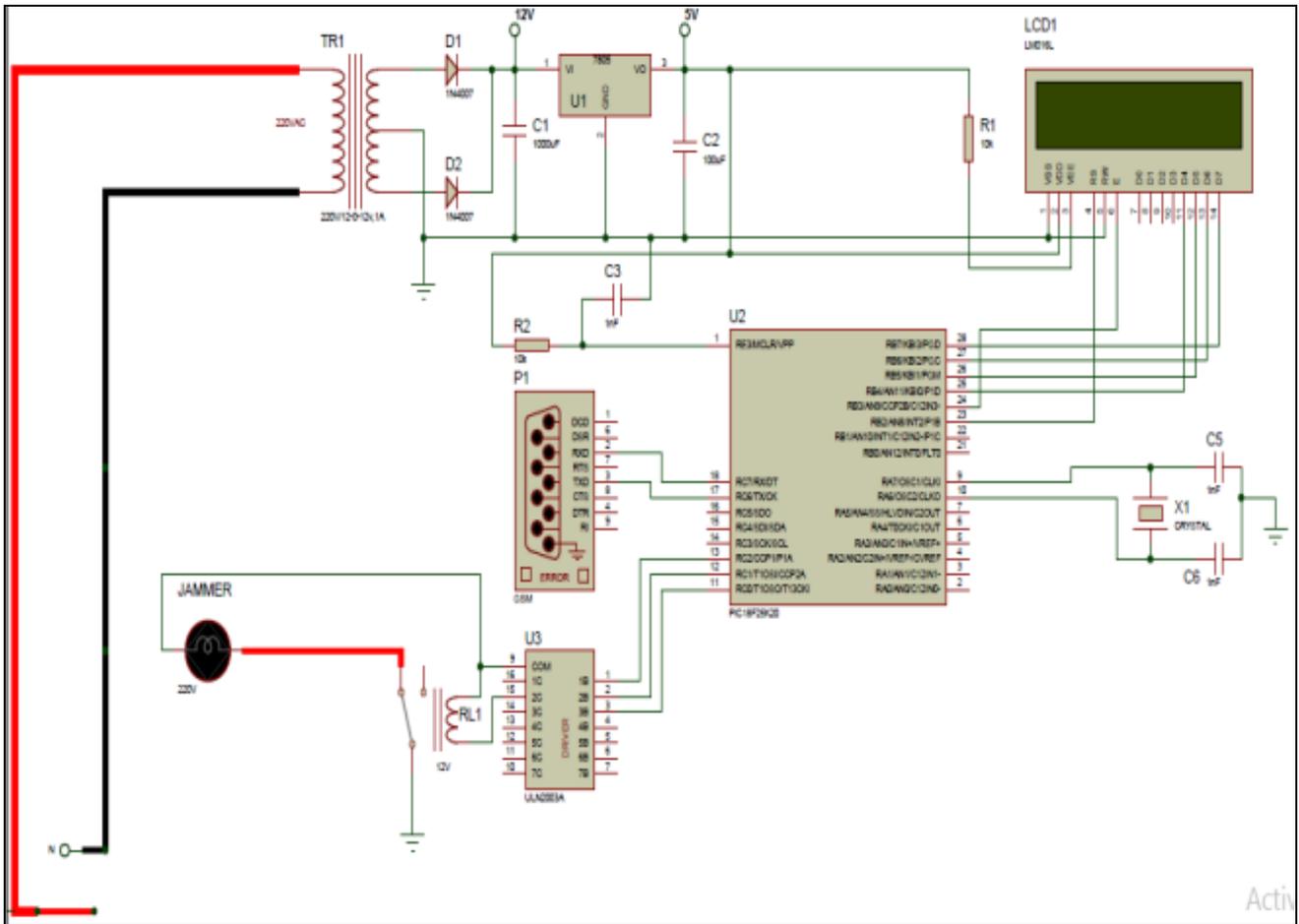


Figure 6: Circuit Connection

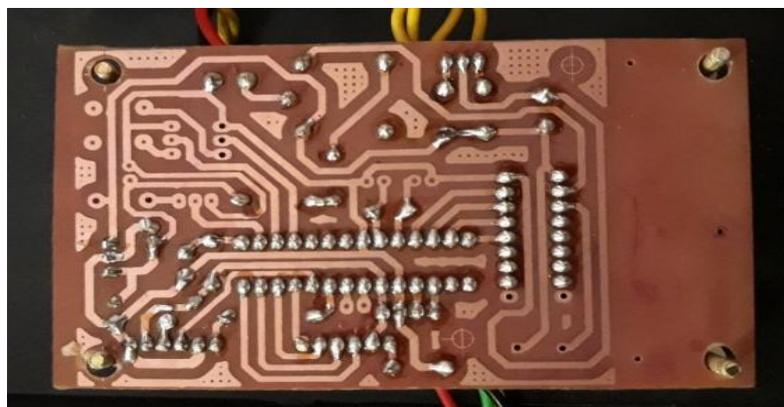


Figure 7: Hardware design-1

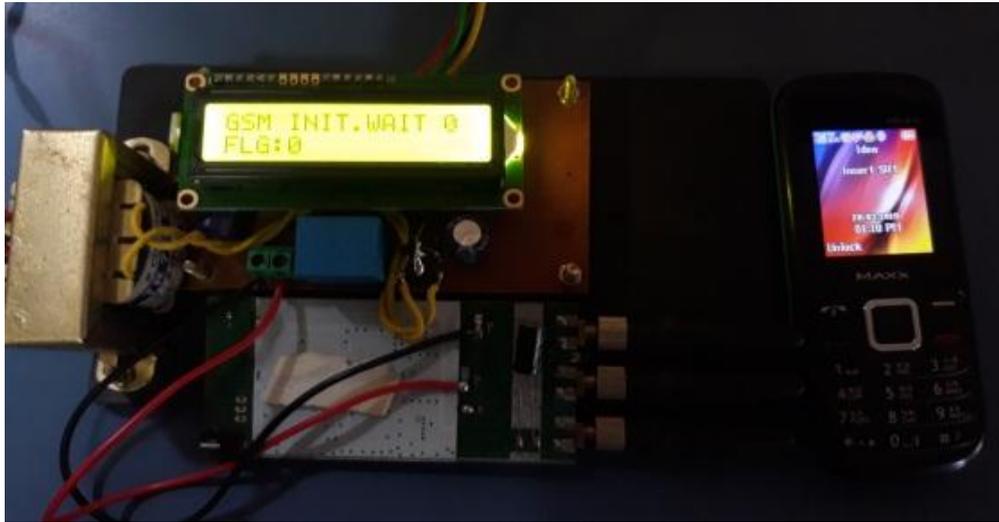


Figure 8: Hardware design-2

VII. RESULT

As we tested our jamming device, the result was a successful one. The device was able to jam the cell phones. Here we considered the worst case of having the cell phone close to the base station where the effective jamming range was around 3-4 meters. It is expected that as the distance between the cell phone and the base station increases, the effective jamming distance will also increase. This is due to the fact that the amount of power reaching the cell phone from the base station decreases as the cell phone moves farther from the base station. If jammer placed where the region covered by more towers and distance between the cell phone and the base station is less, then blocking range will be less.

VIII. CONCLUSION

We have successfully implemented the hardware design and software architecture for Signal Jammer In Military Operations. Every technology has good aspect as well as bad aspect the important thing is, how we are using it. this device can help our armed forces to isolate the enemy post and stop them from calling reinforcement and other important supplies from their base, which will force them to leave the post and it will be easier for are troops to move forward .this can be also used as a explosive device. We have also learned the basics of hardware design through this project. Our design and software work was completed satisfactorily in terms of the actual objective of the work.

IX. Future Scope

- As many countries considered jamming as illegal act and doesn't support private jamming there are some places like movie theatres, hospitals and shopping malls where we can use the jammers to avoid disturbances.
- A future where every car comes with a pre-installed jammer to block your smart phone's operation once the car starts moving is believable. Cell phone jammers are used by prisons to block calls, preventing coordination of gang related activities within the prison and preventing unauthorized communication with the outside world
- Presently, the mobile jammer devices are becoming civilian products rather than electronic warfare devices, since with the increasing number of the mobile phone users the need to disable mobile phones in specific places where the ringing of cell phone would be disruptive has increased.

X. REFERENCES

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