

Design and Simulation of Mobile Signal Jammer Circuit

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Abstract - A mobile signal jammer is an advanced electronic device engineered to interfere with and disrupt communication signals within a designated radius. Primarily designed to thwart the functioning of mobile phones, GPS systems, and other wireless devices, signal jammers operate by emitting radio frequency waves that overpower and block the targeted signals. The portability of these devices makes them particularly versatile, allowing users to deploy them in various contexts, ranging from classrooms and cinema halls to prisons and military operations. The technology behind signal jammers involves a combination of radio frequency engineering and signal processing. These devices exploit vulnerabilities in wireless communication protocols, effectively creating a localized electronic "noise" that renders nearby devices unable to establish or maintain connections. While signal jammers find applications in deterring unauthorized mobile phone usage in restricted areas or preventing GPS tracking, their usage raises ethical and legal concerns. One major consideration is the potential impact on privacy, as signal jamming indiscriminately affects all devices within its range, regardless of their owners' intentions. Additionally, the disruption of communication signals poses a risk to public safety, particularly in emergency situations where reliable communication is paramount. The legality of signal jammers varies globally, with many countries strictly regulating or outright prohibiting their use due to these concerns. In conclusion, the abstract touches upon the technological intricacies of signal jammers, their diverse applications, and the ethical and legal dilemmas associated with their use. It emphasizes the need for a balanced approach that considers individual privacy and public safety within the evolving landscape of wireless communication.

Key Words: Mobile communication; Signal jamming; wireless jamming; Frequency range; Blocking network; jamming devices; square wave.

1. INTRODUCTION

In the rapidly evolving landscape of telecommunications, the importance of mobile devices has become an integral aspect of modern life. While the seamless connectivity afforded by mobile networks has undoubtedly enhanced communication, it has also given rise to concerns related to privacy, security, and public order. One controversial technology that has emerged in response to these concerns is the mobile signal jammer.

A mobile signal jammer is a device designed to disrupt or block mobile communication signals, preventing the transmission of voice, text, and data between mobile devices and cellular towers. The use of signal jammers raises complex ethical, legal, and technological questions, making it a subject of considerable debate and scrutiny.

This paper aims to provide a comprehensive examination of mobile signal jammers, exploring the underlying technologies, their potential impacts on communication networks, and the various regulatory perspectives governing their usage. By delving into the technical turn of signal jamming devices, we seek to elucidate the mechanisms through which these devices operate and the extent of their interference with mobile signals.

Furthermore, the paper will critically assess the implications of signal jamming on public safety, emergency services, and individual privacy [1]. Understanding the potential risks and benefits is crucial for policymakers, network operators, and the general public in order to make informed decisions regarding the deployment and regulation of mobile signal jammers.

In addressing the regulatory landscape, the paper will explore international and regional laws governing the use of signal jammers, taking into account the diverse approaches adopted by different countries [2]. This comparative analysis aims to shed light on the challenges associated with formulating effective regulatory frameworks that balance the need for security with the preservation of individual rights and public communication infrastructure.

As technology continues to advance, the discussion surrounding mobile signal jammers remains pertinent, requiring ongoing evaluation and adaptation of regulatory measures. This paper trials to contribute to the discourse by providing a comprehensive overview of the technology, impact, and regulatory considerations associated with mobile signal jammers using NE555 IC.

1.1 LITERATURE REVIEW:

Albert koti kwanshah, 2018 Design and implementation of a GSM mobile detector and jammer. The document discusses the design of a pocket-sized GSM jammer device that transmits signals on the same frequency as the GSM system, preventing cellular phones from receiving and transmitting signals to the base station. The device uses a combination of analogue components to generate and amplify the necessary

frequency, effectively blocking incoming and outgoing calls, SMS, and video transmission .[3]. S. Raja ratna, 2015 survey on jamming wireless networks: attack and prevention surveys. The paper provides an overview of jamming in wireless networks, discussing relevant works, jamming techniques, types of jammers, prevention techniques, and challenges in comparing anti-jamming techniques.[4].Segun aina , 2022 implementation of a low cost cellular network jammer. The project aims to design a low-cost cellular network jammer using Faraday's cage of conductive mesh approach to block mobile phone usage within a specified area without disrupting communication channels outside of its range.[5].Diana starovoytova madara, 2016, Design and testing of a mobile phone jammer. The document discusses the design of a low-cost mobile phone jammer to address the issue of inappropriate use of cell phones in restricted areas. The jammer works by releasing noise at the same frequency as the mobile service provider, overpowering and disrupting the user's signal. It is made using simple components and has been shown to block signals from various service providers without interfering with other communication means.[6].Miss Priti y. Unratkar, 2019 Design and performance of a mobile jammer .The paper discusses the design and functionality of a cell phone jammer, which is used to prevent mobile communication in restricted areas without interfering with communication channels outside its range. It highlights the widespread use of mobile phones and the need to restrict their usage in places like libraries, study rooms, and medical centers to maintain silence and prevent disturbances.[7].Zomble Raoul, 2020 implementing and testing of a mobile jammer at esatic. The document discusses the design and implementation of a mobile phone jammer to prevent cheating during national exams in Côte d'Ivoire. The jammer uses the Denial of Service (DOS) technique to block communications on 2G, 3G, and 4G networks operated by national operators. The project recommends using higher capacity power amplifiers for effective range, especially for DCS 1800, UMTS 2100, and LTE 2600.[8]. Saurabh singh,2017 Blocking of signal using jammer. The paper "Blocking signal using signal jammer" by Saurabh Singh Shows the design and testing of a GSM-900 mobile jammer. This paper also showed the need of a stable power supply for the effective use of the jammer .[9]. Mobile and personal communications commite of the radio advisory board of Canada. The paper "Use of jammer and disabler. Devices for blocking PCS, Cellular & Related Service" by Mobile & Personal Communications Committee of the Radio Advisory Board of Canada shows the requirements needed for making a mobile jammer and also briefly explained about the different components that are used in the circuit.[10]. The paper " Overview of the global systems for mobile communications "byJohn Scourias Focused on the history of GSM(Groupe special mobile) and how the communication system is devolped and the structure of the GSM network ,how it works.[11]. Alparthi pardhasaradhi, 2013 signal jamming and its modern applications. The paper "Signal jamming and it's Modern applications" by Alparthi

Pardhasaradh focused on how radar jamming is used to guide enemies missiles and their jet planes. How radio signals were jammed during world war times to prevent nuisance among the citizens and to protect them.[12].

1.2 WORKING OF JAMMER:

Similar to radio jammers, cell phone jammers operate by broadcasting the same radio frequencies as cell phones [13]. This generates enough interference prevents a cell from reaching a cell phone. By emitting radio waves on the same frequencies as mobile phone use, mobile jammers prevent the use of mobile phones. Mobile phone communications with communication towers are sufficiently hampered as a result for the phones to be rendered useless. All mobile phones will signal no network incoming calls are prevented as if the mobile phone is off when mobile jammers are activated. All mobile phones will immediately re-establish communications and resume full service once the mobile jammers are turned off. Based on several conditions, mobile jammers' effects can vary greatly.

2. DESIGN:

The jammer design includes a capacitor, resistor, inductor, transistor, and NE555 timer IC to block the signal and amplify the generated signal from 800 MHz to 1.4 GHz, the same as a cell phone signal [14].

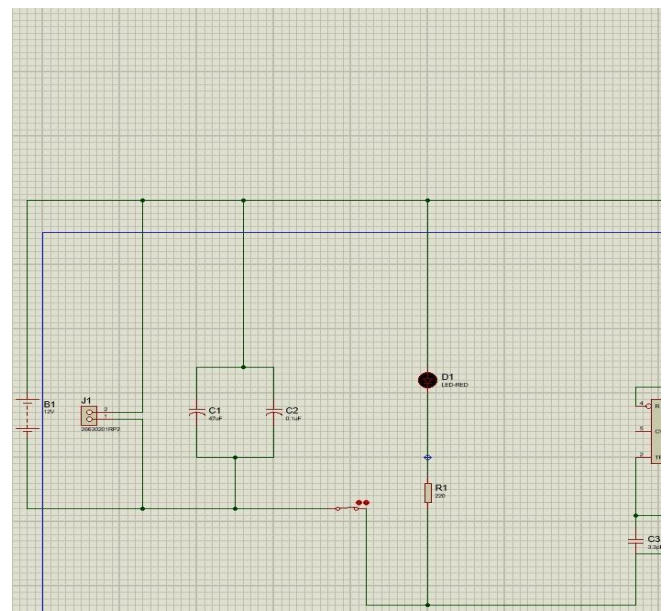


Fig 1- Design of Jammer

3.SIMULATION:

Porteous software was used to simulate the jammer. All the components are placed perfectly int the Porteous software. Then, all components are connected as per requirement. we

have three major components which are playing important role to jam the signal of mobile phone.

3.1 SIMULATION PARAMETERS:

Sl. No	Parameters name	Speciation's
1	555TimerIC	Generate Square waves
2	Resistors	220Ω,5.6KΩ,6.8KΩ,10KΩ,
3	Capacitors	2pF,3.3pF,4.7pF,47pF,0.1μF
4	LED	Indicates status of circuit
5	Coils	3-turn,4-turn,24awg
6	BF495	Amplifies generated signal
7	Switch	ON/OFF the circuit
8	Battery	9V supply voltage

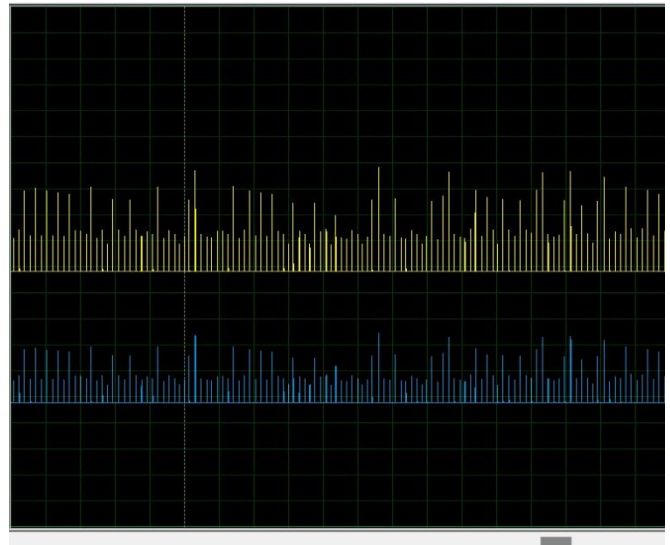
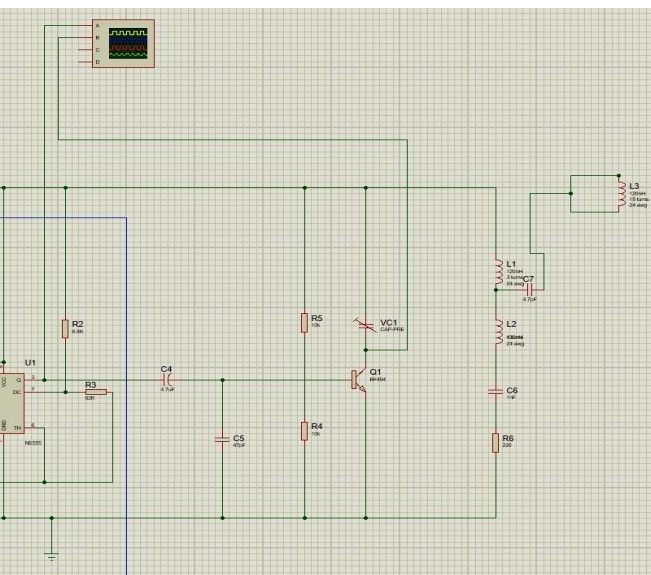


Fig 2– Output Circuit

5. CONCLUSIONS

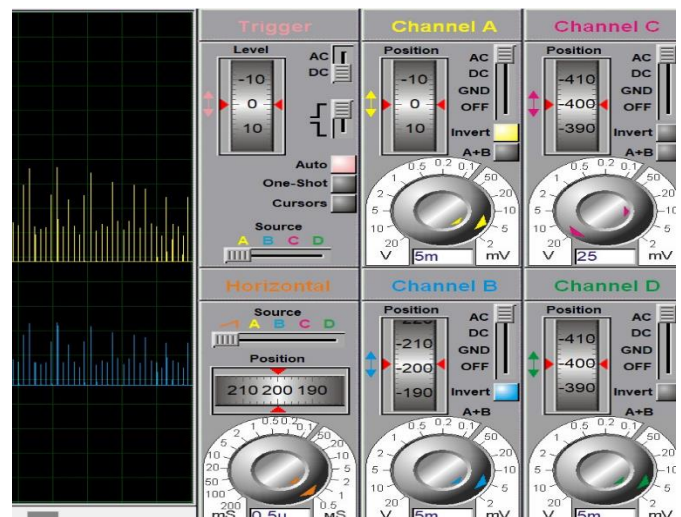
In conclusion, the project focused on designing a mobile signal jammer circuit, a device aimed at disrupting mobile communication within a specified range. The objective was to comprehend the underlying principles of signal jamming and develop a functional circuit capable of achieving this purpose. The circuit design involved understanding key components such as amplifiers, oscillators, and filters, and their roles in signal jamming.

The research and experimentation were successful in creating a prototype circuit that effectively disrupted mobile signals within a targeted area. The design considered aspects like frequency bands, power levels, and signal modulation, ensuring a reliable jamming performance. However, it's important to note that the use of signal jammers raises ethical and legal concerns, as it interferes with communication systems and violates privacy rights.



4. RESULT ANALYSIS:

In this circuit the contains 555 timer produces a steady square wave signal while it is in use. The BF495 transistor then amplifies this signal before feeding it to the antenna's coils. By carefully adjusting the frequency, the trimmer capacitor, resistors, and capacitors are set up to ensure that the jamming signal matches the frequency of the intended communication signals. When a jammer is turned on, electromagnetic interference in the intended frequency band is released, thereby blocking the nearby mobile phone signals [15]. The status of the jammer is visually verified by the LED indication. Users need to be aware that in many places, utilizing these gadgets may be against the law and unethical.



Future work may entail exploring alternative technologies that address the ethical implications and adhere to legal regulations. Additionally, enhancing the circuit's efficiency, portability, and adaptability to different signal frequencies could further improve its utility in controlled and authorized applications, such as in preventing unauthorized phone usage in sensitive areas.

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