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## PORTABLE SIGNAL JAMMER

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**Abstract:** This report presents the design, implementation, and testing of a cell phone jammer. The jammer will be working at GSM 900 and thus jams the three well-known carriers in India (Airtel, BSNL, VI, Jio, and Reliance). The designed jammer could be successful in jamming the various carriers in India as will be shown at the end of this report. Nowadays, mobile (or cell) phones are becoming essential tools in our daily life. Here in India, for example, with a rather low population (around 1 billion), various cell phone carriers are available. Needless to say, the wide use of mobile phones could create some problems as the sound of ringing becomes annoying or disruptive. This could happen in some places like conference rooms, law courts, libraries, lecture rooms, and mosques. One way to stop this disrupting ringing is to install a device in such places which will inhibit the use of mobiles, i.e., make them silent. Such a device is known as a cell phone jammer or “Signal jammer”, which is some kind of electronic countermeasure device that can block the frequencies transmitted by cell phone towers and towers phone. The technology behind cell phone jamming is very simple. The jamming device broadcasts an RF signal in the frequency range reserved for cell phones that interferes with the cell phone signal, which results in a “no network available” display on the cell phone screen. However, recently, there has been an increasing demand for cell phone jammers. In this project, a device that will jam GSM 900 services and all other frequencies is to be designed, built, and tested.

Keywords: Signal Jammer, Portable Jammer, Network Security, GSM Jammer, Cellphone.

## INTRODUCTION

Communication is one of the necessities for human beings to live connected in this vast world. The traces of communication are first found in the ancient Persian kingdom where fire is used to communicate between distant places, it is followed by communication ways like pigeon post, and traditional postal service, followed by wired communication like telegram and telephone, and finally the introduction of wireless communications. With the introduction of wireless communication, there came the introduction of mobile phones which changed the world into a global village where distance is no matter an obstacle to communication. Nowadays every communication device is either directly or indirectly using wireless communication.

Jammers work by outputting an RF signal at the same frequency expected by the device that's being jammed, but at a higher power compared to the normal signal. The jamming signal itself is usually random noise or a pure signal. The device being jammed will then receive the higher power signal which is from the jammer, and then the devices can no longer function correctly. The jamming signal itself is usually random noise or a pure signal.

Jamming devices were first put into use by the military and armed forces' technical department. This interest comes from the fundamental objective of denying the successful transport of information from the sender (tactical commanders) to the receiver (the army personnel), and vice-versa. That being said, nowadays, mobile phones have become an essential tool in our daily life. Here in India, for example, with a rather High population (around 1.25 billion), a large number of mobile network carriers are available such as Airtel, Aircel, VI, Jio, Reliance, etc, which operate at GSM 900 frequency bands. Needless to say, the wide use of mobile phones could create various problems, but the sound of a ringing phone becomes annoying at certain times. This could happen in some really important public places thereby putting you in the limelight. Hence one simple way to stop this annoyance at some really important places is to install a device in such places which will inhibit the use of mobiles, i.e., make them obsolete. Such a device is known as a cell phone signal jammer, which is some kind of electronic countermeasure device. The technology behind cell phone jamming is very simple. The jamming device broadcasts an RF signal in the frequency range reserved for cell phones that interferes with the cell phone signal, which results in a "no network available" display on the cell phone screen. All phones within the effective radius of the jammer are silenced.

It should be mentioned that cell phone jammers are illegal devices in most countries.

According to the Federal Communications Commission (FCC) in the USA: "The manufacture, importation, sale, or offer for sale, of devices designed to block or jam wireless transmissions is prohibited". However, recently, there has been an increasing demand for portable cell phone jammers across the globe, with that being said one should note that what we are presenting is concerns gaining knowledge and mainly for educational purposes only and that there is no intention for us to manufacture

or sell these devices in India, or elsewhere. In this project. Using the device causes extensive disruption and involvement in the mobile signal operation, by affecting coverage and degradation of service for customers. In some cases, mobile users may not be aware of the blockade of their terminals as the above may not be evident until you make a call, in the case they receive a warning network is not available, seeing this affected their rights to access services, while not receive any communication on their mobile until they depart from the affected area. Considering the serious damage generated in the network and the allocation of user rights, it is understood critical control restricts the supply of these teams, as well as limiting its sole use and exceptionally for public security cases such as in prisons.

However, we believe that in this particular case, the real solution is that the controls should be increased and that the prison authorities in each country take necessary measures to prevent the introduction and use of cell phones in those precinct measures. On the other hand, it has been increasingly widespread for these teams' private use, generating direct damage to mobile users, and companies have acquired and paid millions of dollars for the use, development, and exploitation of a valuable and finite well radio spectrum and network deployment. It will also be important to establish promptly far the responsibility of the dealer's telecommunication solution for the damages to the signal arriving.

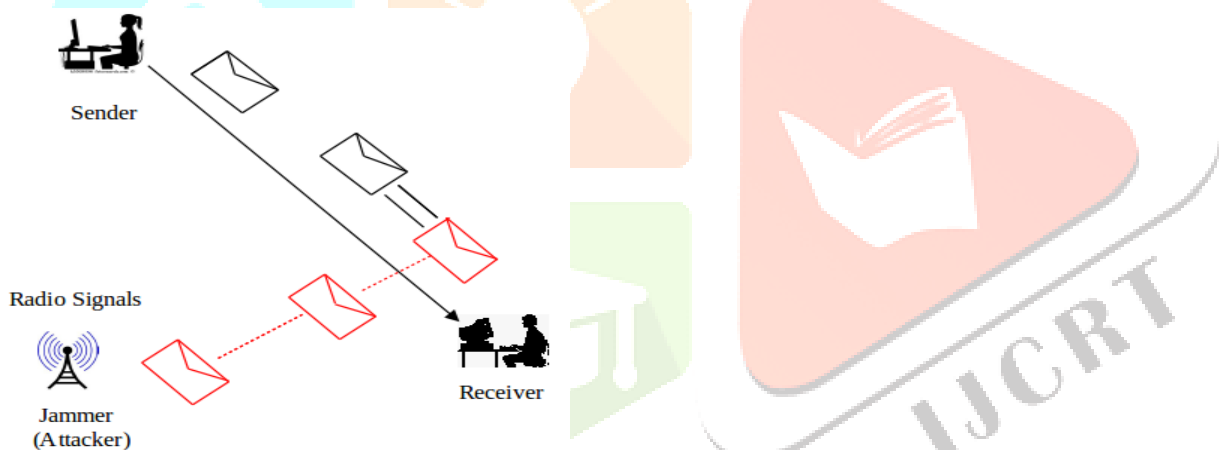


Fig 1 Working of the jamming device

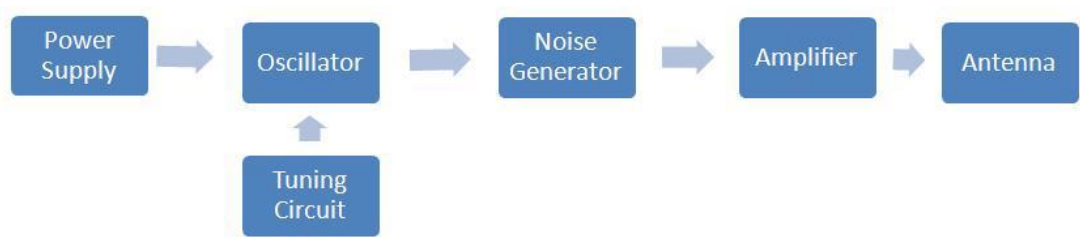


Fig 2. Block Diagram of a Jammer

## The main features of the project

1. User-friendly operation.
2. veritably easy to operate.
3. Switch ON-OFF.
4. Conditioning display on the Phone display.
5. Jammer activation using a relay switch

## What is “Signal Jammer”?

A Jammer is a device that blocks transmissions by creating hindrance. The jammer emits signals in the same frequency range that cell phones use, and within the range of a jammer, a cell phone stoner may lose its signal. Jammers are generally undetectable, and druggies may witness minimum goods similar to poor signal reception. The most common types of this form of signal jamming are arbitrary noise, arbitrary palpitation, stepped tones, chanter, arbitrary reconciled modulated CW, tone, rotary, palpitation, spark, recorded sounds, suckers, and sweep through. Signal Jammer was first developed for law enforcement and the service to intrude on dispatches between culprits and terrorists. Some were also designed to balk the use of certain ever-exploded snares.

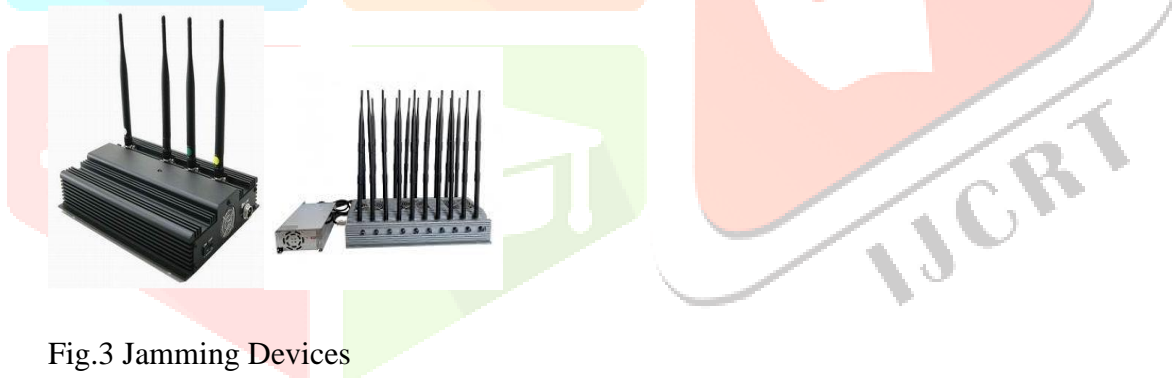


Fig.3 Jamming Devices

## Scope

As in utmost Asian countries, signal blockers of colorful kinds, aren't available.

therefore, cafes, shops, theatres, playhouses, fiscal institutions, and others, install blockers so that guests or workers don't use the terminal within its installations. The issue of mobile signal blocker has been treated at different times by the GSMA and have covered different aspects of their use, from nonsupervisory aspects to security counteraccusations. An important case, we see with great concern is questions about the limitations of mobile services in incarcerations in Honduras, Guatemala, and other countries in the region. Although used in incarcerations isn't a new practice, this approach has not yet been in the debates of the GSMA. Operators of mobile networks made large investments to give content and capacity by installing radio base stations. thus, the magpie use of blockers affects these investments

because guests can not make use of mobile services in the ranges of these blockers. To this end, this document has been agreed upon with assiduity, and other supranational bodies

GSMA to give a common position including the counteraccusations for the end stoner, which can be participated with

telecommunications ministries and controllers. Cell phone jamming bias can be used firstly for law enforcement and the

service to intrude dispatches by culprits and terrorists.

## Literature Survey

In exploration, we set up that the fashion used in current jammers is a complex bone compared to our fashion because our idea of jamming through diapason deformation proves to be simpler, easier to fabricate, and cost-effective. In their fashion, a voltage-controlled oscillator( VCO) plays a major part in generating the jamming frequency. Cell phone jamming bias is a volition to more precious measures against cell phones, similar to Faraday cops, which are most suitable as erected- in protection for structures. The mercenary operations were apparent, so over time numerous companies first contracted to design jammers for government use and switched over to vend these biases to private realities. Since also, there has been a slow but steady increase in their purchase and use, especially in major metropolitan areas. The ways used in utmost marketable jammers are grounded on noise attacks. A cell phone jammer is a fully analog circuit. It's a step-by-step procedure for designing a mobile phone jammer.

## GSM Architecture

GSM provides data and voice communication throughout a wide geographic area. GSM system divided large geographic areas between India into small radio areas( cells) that are connected ( Microwave oven connection). Each cell content area has one or several transmitters that communicates with mobile telephone within its content area. In the GSM system, the mobile handset is approach the mobile phone jamming system called the Mobile station( MS). A cell is formed by the Base Transceiver Station( BTS) content area, which serves the MS in its content area. Several BTS together are controlled by one Base Station Controller( BSC). The BTS and BSC together form Base Station Subsystem( BSS). The trolled business of the mobile station in their separate cells is routed through a switch called Mobile Switch Center( MSC). Connection forming or terminating from an external telephone( PSTN) is handled by a devoted Gateway Mobile Switching Center( GMSC).

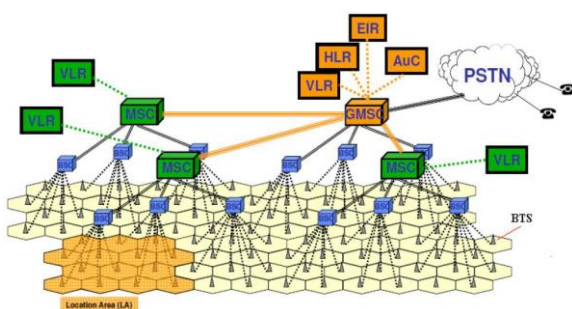
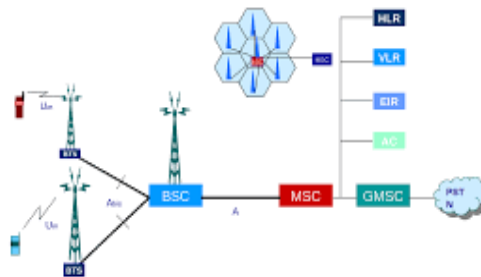


Fig 4 Basic Network Architecture

## Base Station Center (BSC)

BSC is a high-capacity switch with radio communication and mobility control capabilities. The function of BSC is including radio channel allocation, location update, and handover, timing advance, power control, and paging. Figure 5 shows the armature of the GSM network, the BSC is the center of different

GSM - Architecture



Base Transceiver Stations(BTS).

Fig 5. GSM Architecture

## Main functions of the Base station center

Control the handset between its BTSs. Switch business and signaling to/ from the BTSs and MSC. Manage the connection between BTS's MSC.

## Base Station Transceiver Architecture

A BTS is radio transceivers stations that communicate with the mobile station. It's the backend of the BSC. further BTS is generally placed at the center of a cell. It is transmitting power that defines the size of a cell. Each BTS contains TRX's called radio, each radio has a single frequency.

## Problem Statement

Cell phones are far and wide these days and it's great to be suitable to call anyone at any time. Unfortunately, classrooms shopping promenades, tabernacles, Libraries, and Hospitals all suffer from the spread of cell phones because not all cell phone druggies know when to stop talking to make sure that the use of mobile phones is excluded when it does so the signal jammer will an important part. To overcome this problem we proposed this design idea.

## Project Objectives

The design involves the design and development of cell phone jammers to block all the cell phones within the designated area, this device will disrupt cellular communication concerning the following. The system should be suitable to operate in the 900 MHz band and other frequencies. It'll be having a thirty-cadence effective blocking radius. We can give security to V.I.P. from the anti-social elements. Using cell phone

jammers we can maintain law and order for maintaining peace. By cell phone jammers we can not disturb other people in public places like cafes, and shopping places. It's veritably necessary to use cell phone jammers in Naxal- stressed feared places. This helps the authorities to work their duty softly.

## Motivation

This design is designed and constructed for educational purposes only as a partial fulfillment of the conditions for the award of a Bachelorette of Engineering degree in Information Technology Engineering from Savitribai Phule Pune University. No marketable interest was attached to this work.

The time that will be taken to come up with this design will be from Jan 2022 to March 2023.

In this design, we used Global System for Mobile Dispatches( GSM) frequency Band of 900- MHz, and we considered all the down-link frequencies since it uses lower power compared to the up-link frequencies.

Some corridors of our design were also modified from the being designed to make us achieve our objects.

If this design is put into public consumption it can be useful in the following ways;

The main provocation behind this idea and design is to make our systems secure and make India important.

Can be suitable to maintain complete silence in the library and lecture hall

Can also avoid fraud in examination halls and disturbances in classrooms through the use of mobile phones.

It can give a fully calm and peaceful atmosphere in places like Hospitals, Kirks, courtrooms, and numerous others.

## System Architecture

The proposed system is an IOT-grounded tackle system that can be penetrated by druggies for any jamming purpose in the world. The system is furnishing a platform similar to secure the particular area where cell phones weren't necessary to be used with multiple options.

This device will help marketable or government associations secure their systems, This system will fully secure any cell phone exertion that's banned in the jammer area. The system aims to grant authorization to the particular stoner that the jammer device proprietor wants. So that

the device will be having every cell phone detail and IP address to our software side that can give you the honor to grant particular device allowance. The main idea of this design is to make a tackling device with some software part that can block the signal frequents fully so that cell phone druggies won't be suitable to interact with their cell phones due to losing the network This system will be useful in multiple operations like conference halls, test halls, tabernacles, promenades, etc. To design and come up with a system that would block the use of mobile phones by transmitting radio swells of the same frequencies as that of the mobile phone causing hindrance between the mobile phone and the Base Transceiver Station, hence the mobile phone displays " NO NETWORK" on the screen. To make a powerful force that will distribute power to another corridor of the system for operation.

### Specific Objectives :

To construct the Intermediate frequency section which helps to induce the tuning frequency signal to be fed in the RF section.

To construct the Radio frequency section which helps to induce RF signal that would produce hindrance with signal from BTS to block transmission between mobile phone and BTS.

To integrate the different sub-systems above to form one single system, that's the GSM mobile phone jammer device.

### Project Methodology

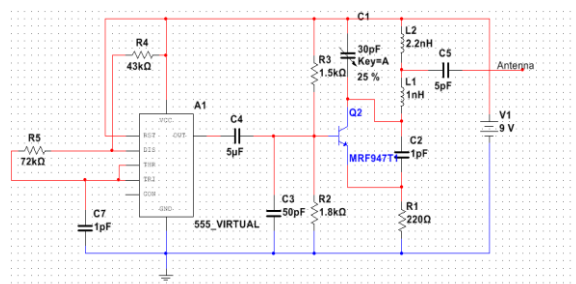
After reviewing the literature, we had to draw a methodical plan of action that helped us with how, where, and when to execute every exertion. The factors of this plan of action include;

### Research

Through exploration, we were suitable to dig deep into our design. For illustration, we understood its operation, what should be done to make it work, and all that we needed to achieve the ideal of the design.

### Design

This is also another exertion we had in our plan of action. Under design, factors like the cost of the factors, the gates of each element in the circuit, adaptation, and revision of the being design, and time demanded to complete the design were all put under consideration as we shall see details in the supplements of this report. Other factors of this plan of action include; system perpetration, system testing, and others that we were suitable to carry out.



Jammers can broadcast on any frequency and are effective against AMPS, CDMA, TDMA, GSM, PCS, DCS, iDEN, and Nextel systems. Old-fashioned analog cell phones and moment's digital bias are inversely susceptible to jamming. a cell phone is the same as jamming any other type of radio communication. A cell phone workshop by communicating with its service network through a cell palace or



base station. Cell halls divide a megacity into small areas or cells. A jamming device transmits on the same radio frequency as the cell phone 900 MHz dismembering the communication between the phone and the cellphone base station in the city. It's called a denial service attack. The jammer denies service of the radio diapason to the cell phone druggies within range of the jamming device. Aged jammers occasionally were limited to working on phones using only analog or aged digital mobile phone norms. Newer models are similar to the double and triadic band jammers that can block all extensively used systems( AMPS, iDEN, GSM, etc.) and are indeed veritably effective against newer phones which hop to different frequencies and systems when obruded with. The power of the jammer's effect can vary extensively grounded on factors similar as propinquity to halls, inner and out-of-door settings, presence of structures and geography, and indeed temperature and moisture play an important part.

## Software/Hardware Requirements

### Hardware :

- Capacitors
- Integrated circuit
- Inductors
- Resistors
- Battery
- Transistors
- Jumper wires
- Circuit boards
- Solder wire
- Multisim software for circuit design
- Soldering gun
- Solderless breadboard
- Digital Multimeter

### Software's:

- React
- PHP
- Python
- SQL
- Android Studio

## Applications

**In Military applications:** Nowadays any disturbances caused by terrorists are antisocial elements caused by using cellular phones and other wireless communication technologies. So there is a huge scope for using Jammers in military applications. There are incidents where the military of Pakistan country avoided many bomb blasts by using cell phone jammers as many bombs are detonated by using cell phones.

**In Normal Day-to-Day Life:** As many countries considered jamming an illegal activity and don't support private jamming there are some places like movie theaters, hospitals, and shopping malls where we can use the jammers to avoid disturbances. In important meetings, signal jammers are used to avoid the leakage of information before officially announcing it.

**Gas stations, the air entrainment station, the fuel depot, and the flammable explosive chemical warehouse, the refinery, the petrified factory, and so on need safety to protect the place:** May avoid changing suddenly the detonation which the signal radiative generation Static electricity spark but causes, the fire. Posts the prohibition to dial the handset sign, does not have the initiative, this kind of accident all has the appearance in national many gas stations, to safeguard these important situations the security to be supposed to take the precautionary measure.

**Governments, the enterprise's each kind of conference room:** May avoid the handset ting disturbs and answers when the telephone breaks the leader to speak but interrupts its person holding a meeting

**Hospitals:** Might avoid the goon machine hour but causing the doctor to the hospital precision instrument equipment disturbance to misdiagnose has delayed the rescue patient, as well as was surgery doctor to answer the handset telephone disturbance attention underwent the surgery to doctor the patient to be extremely disadvantageous.

**Courts:** May avoid the handset ting the disturbance, maintains the court conference site the dignity and the sacredness.

**Libraries, New Bookstore:** May avoid the handset ting and answer the telephone the noise builds to study the study peaceful environment.

**Theatres:** As the upscale recreation area, eliminates the handset ting noise to be possible to maintain the audience to the appreciation of the program the interest.

**Tests places, examination center:** May cease the examinee, monitor an exam the personnel to cheat using modern communication facilities.

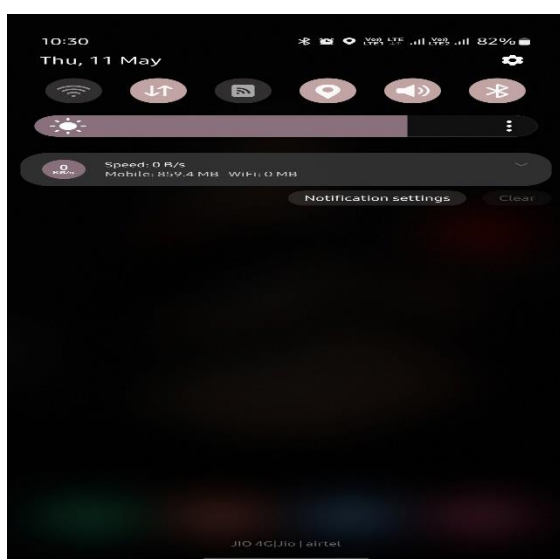
**Disrupting Enemy Communication:** In military operations, jammers can be used to disrupt enemy communication and prevent the enemy from coordinating their activities effectively. This can give the jammer's side a significant advantage in battle.

**Preventing Criminal Activity:** In law enforcement operations, jammers can be used to prevent criminals from communicating with each other, making it more difficult for them to carry out illegal activities.

**Enhancing Privacy:** In some situations, such as high-security government facilities or private meetings, jammers can be used to ensure that communication signals are not intercepted by unauthorized individuals.

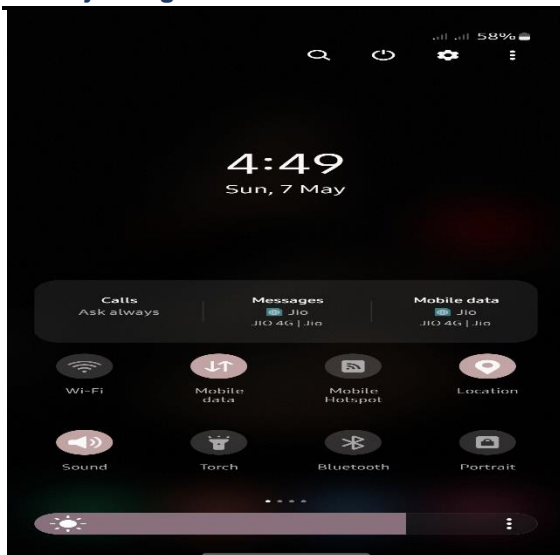
**Protecting Intellectual Property:** In some industries, such as movie theaters or recording studios, jammers can be used to prevent unauthorized recording or transmission of copyrighted material.

## Test-Cases



Img: Signal Before turning ON the jammer

The image given above has been taken at the time of trial, this image gives an idea about how the jammer will work when the signal jammer will be turned ON. The image shown above shows the before the state of turning the Jammer ON.



Img: Signal After turning ON the jammer

The second image shows the network symbol is gone and the cell phone showing “Reduced Signal Strength” on the device after turning on the signal jammer.

We were expecting the result that shows “No Network” on a mobile screen.

## Future Work

Increasing the precision of frequency jammers to target specific frequencies while avoiding interfering with other frequencies.

Developing jamming techniques that are resistant to countermeasures.

Creating jamming systems that can be easily integrated into existing communication systems.

Researching the impact of frequency jamming on both electronic systems and humans, to better understand the potential risks and consequences of using jammers.

## Conclusion

Today there is expeditious growth in technology, for example in the mechanical industry, building and construction industry, food supplement industry, medical industry, sports industry, and electrical and electronics industry to mention but a few, is, therefore, no doubt that every technology has got its advantages and disadvantages.

With no exception, mobile phone communications have become one of the leading forms of communication with its ever-growing technology. For instance; they can support Games, online videos, e-commerce, and video conferencing social media like Facebook, Whatsapp, and Twitter, to mention but a few. All these have made mobile phones be used everywhere which become disruptive in some places like churches, Mosques, meeting places, courtrooms, road use, examination rooms, etc.

Therefore the main objective of this project was to design and build a system that can block the use of a mobile phone in such places where their use is not required by transmitting radio waves of the same

frequencies as that of the mobile phone causing interference between mobile phone and the Base Transceiver Station, hence the mobile phone displays "NO NETWORK" on the screen.

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