

Study on Safety Distance Model of fleet based on
vehicle communication

(resumes)

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ABSTRACT

- ▶ This report presents the design, implementation, and testing of a cell-phone jammer. This jammer works at GSM 900 and thus jams the three well-known carriers , (etesalat, Du, Vodafone,). The designed jammer was successful in jamming the various carriers in dubai 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 dubai, for example, with a rather low population (around 1 milluon), 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 disrupting. This could happen in some places like conference rooms, law courts, libraries, lecture rooms and mosques. One way to stop these disrupting ringing 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 cell phone jammer or “GSM jammer”in the car, which is basically 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. However, recently, there has been an increasing demand for portable cell phone jammers. In this project, a device that will jam GSM 900 services is designed, built, and tested

My research goal ;

HOW?

- The device will already know the area of the car therefore it will automatically connect or disconnect the phone when in range (as long as the car is switched on).

The wire that will connect to the car battery. As long as the wire is connected the device will automatically turn work when the car is switched on

- The device will cut the wifi signal through a server which doesnt allow a phone to wifi access, however it does allow it to have signal access so the phone can still receive and make phone calls (incase of an emergency).
- How will the device connect to the phone and cut the signal?

The device connects to the phones inside the vehicle through an online server (which is the perimeter of the car) not allowing online service but allowing signal.

This is the device that will hold the artificial intelligence which will automatically cut wifi signal from a mobile phone which is detected within the device range

More about communi

- ▶ 1) why ?
 - Many accidents worldwide are caused due to the distractions our phones cause us. Therefore this will not allow the driver to have access to wifi through their phone, leading them to focus on the road more. The aim is a decrease in road accidents.
 - Communi (a shortcut for the word communications) is a device which cuts WIFI signal from smartphones when entering a car. The communi device connects to the car through the car battery, it connects to the car and reads the data of the car, it also turns on/off as the vehicle is turned on/off..

Introduction

- ▶ 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 Dubai, for example, with a rather high population (around 1.25 billion), a large number of mobile network carriers are available such as Du, Vodafone, Etisalat, 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, make them obsolete. Such a device is known as cell phone signal jammer, which is basically some kind of electronic countermeasure device. The technology behind cell phone jamming is very simple.

History ;

- ▶ The rapid proliferation of cell dates back to the early twenty first century, close to a state of ubiquity which finally raises problems, such as its potential use to invade privacy or contribute to academic cheating. In addition, public reaction has been growing against that communicator device for its irruption in daily life. While the analog cellular phone often suffered from poor reception, and could even be disconnected by simple interference such as high frequency noise, the digital phone increasingly sophisticated, has led such switches also to develop into more elaborate devices. Cell phone interference, are the most expensive alternative measure, such as the Faraday cage, most of which is suitable

to protect building structures. They were originally developed for law enforcement, and the military could disrupt communications between criminals and terrorists. Some were also designed for the use of certain explosives detonated remotely. Civilian applications were evident, so that over time, many companies originally contracted to design inhibitors which the government use, they chose to sell these devices to private entities. Since then, there has been a slow but steady increase in purchase and use, especially in major metropolitan areas. In most parts of the world using a blocker frequency (technically known as inhibitors of frequency) is regulated by the central government, and its use is only allowed for public forces and government agencies. The technique used in most of the commercial jammers is based on noise attack. In the previously designed cell-phone jammers, designers came up with an electronic device that acts as a transmitter to transmit electromagnetic signals of respective frequency and higher power as used by GSM/DCS systems.

Scope of Signal Jammer;

- ▶ As in most Asian countries, signal blockers of various kinds, are not available. Thus, restaurants, shops, theatres, cinemas, financial institutions and others, install blockers in , and added in car's also order that customers or employees do not use the terminal within its facilities. The issue of mobile signal blocker has been treated at different times by the GSMA and have covered different aspects of their use, from regulatory aspects to the security implications.

Project Objectives;

- ▶ The project 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 with



respect to the following:

- Operate in the 900MHz band.
- It has a two meter effective blocking radius.

Description ;

- ▶ Signal Jammer: Devices that prevent mobile computers from communicating with radio stations' mobile operator, not allowing people to take calls or data transfer (SMS, Internet access, etc.) when they will drive .These devices act by emitting a radio signal in different frequency bands (eg 850MHz and 1900MHz) covering all mobile telecommunications technologies (2G, 3G, 4G, Satellite, etc.) as well as any other radio communication as example television

Disconnecting blockers:

- ▶ Operators are facing cases of use of inhibitors more complex to analyze and detect signal. Even if their location is known, they face not only the reluctance of the entities that install these devices to turn them off but regulations also contain mechanisms or streamlined procedures for quick disconnect.

Decrease Quality Network:

- ▶ Since the signal blockers cannot physically be limited to a specific area, a deterioration in service delivery around the place where they are installed is detected, a fact that goes against service initiatives that are promoting regulators, the right of users to access services and operators to make efficient use of spectrum, the case is especially critical in the buildings where they are installed inhibitors within the city limits

of big cities.

In addition, in some markets, operators are sanctioned if the established indicators meeting

the service is not provided. It must take into account that in some countries in the region

has even begun to make measurements of service provided by operators using applications

that measure accessibility and the number of dropped calls. In these cases, look for alternative solutions to signal inhibitors or exempt the affected areas of compliance with

the technical conditions prescribed by the regulator.

Free space loss ;

The free-space loss (or path loss) is given by:

$$\text{Path loss (dB)} = 32.44 + 20 \log d \text{ (km)} + 20 \log f \text{ (MHz)}$$

The maximum free space loss (worst case F) happens when the maximum frequency is used in the above equation. Using 1880 MHz gives: $F \text{ (dB)} = 32.44 + 20 \log 0.01 + 20 \log 1880$ which gives $F = 58 \text{ dB}$.

System Design of Signal Jammer ;

► Power calculations

Here, we need to find the power that is needed to be transmitted to jam any cell phone with driving

within a distance of around 10 meters for DCS. From the above considerations, we can find

the required output power from the device, as follows: Using $\text{SNR} = 9 \text{ dB}$ and the maximum

power signal for mobile receiver $= -15 \text{ dBm}$, gives $J = -24 \text{ dBm}$. But, our goal is to find the

output power from the device, so when we add the free space loss to the amount of power

at the mobile receiver we get our target:

$$\text{Output power} = -24 \text{ dBm} + 58 \text{ dB} = 34 \text{ dBm}$$

Results ;

As we tested our jamming device, the result was a full success. The device was able to jam the three cell phone carriers: etesalat, Du. The effective jamming range was around 0-5 meters. This is more than what it was designed for. The reason is that in our calculations, we considered the worst case of having the cell phone in the car when start draiving . It is expected that as the distance between the cell phone and the draiving increases, the effective jamming distance will increase