Military Pager System

Group Lead: Aditya Mehta

Group Members:

Om Hingu	Nihar Prajapati
Shubhi Jain	Om Bharti
Huda Ansari	Devangi Patel
	Darsh Kadakia

Introduction

Pager System:

- One-way or two-way text communication device.
- Originally used in hospitals, industries, and emergency services.

Military Pager System:

- Operates without public mobile networks.
- Secure, long-range communication between field units.
- Designed for rugged environments and low power use.

LoRa Module Overview

- LoRa = Long Range, low power wireless technology.
- Frequency: 433 MHz / 868 MHz / 915 MHz.
- Range: Up to 10 km in open field.
- Modulation: Chirp Spread Spectrum (CSS) for robustness.

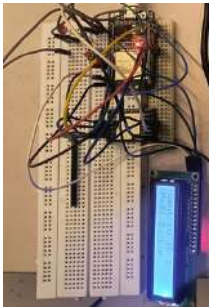
Comparison: GSM vs LoRa ESP32 Pager

GSM Module:

- Needs SIM and network coverage.
- Higher power consumption.
- Possible network outages in remote areas.

LoRa ESP32 Pager:

- Works without mobile network.
- Long-range (up to several km).
- Lower power consumption.



Node Algorithm

```
Start / Power On
Initialize LoRa module and LCD (if present)
Set node role: Sender or Receiver
if Incoming message detected then
    Display message on LCD
else
    if Role = Sender then
        Read input message
        Transmit via LoRa
    end if
end if
Repeat process continuously
```

Base Station Algorithm

1: Start / Power On
2: Initialize LoRa module and LCD
3: Listen for incoming messages
4: Relay message to target node
5: Send acknowledgment to sender
6: Repeat process continuously

Results and Future Scope

Results:

- Successful Node → Base Station → Node communication.
- Reliable messaging in network-less environments.