# Network Parameters Report


## Submitted by - **R SRIDHARSHINI**

**RA2211030050020**

**BTECH CSE CS**


## Introduction

This report provides a detailed breakdown of the key network parameters collected from the Field Test Mode on a mobile device. Each parameter plays a crucial role in determining how the device interacts with both cellular and Wi-Fi networks. The report also highlights the significance of these parameters in ensuring proper connectivity, performance, and security.

## 1. IMEI (International Mobile Equipment Identity)

- **Explanation**: The IMEI is a unique code assigned to every mobile phone. It acts like a fingerprint for the device, helping network providers identify and verify it. The IMEI number is also important for blocking stolen devices and preventing unauthorized access to mobile networks.
- **Sample Value**: **358732091234567**

The IMEI number helps ensure that only verified and authorized devices can connect to the mobile network, protecting users and providers from potential fraud or theft.

## 2. MAC Address (Media Access Control Address)

- **Explanation**: A MAC address is a unique identifier assigned to your device's network interfaces, such as Wi-Fi and Ethernet. It's used to ensure that data is sent to the correct device within a local network, making it essential for secure and accurate data communication.
- **Sample Value**: **48:32:A1:CB:91**

MAC addresses play an essential role in maintaining secure connections in local networks, helping manage communication between devices in environments like home Wi-Fi networks.

## 3. IP Address (Internet Protocol Address)

- **Explanation**: An IP address is a numerical label assigned to devices on a network. It ensures that data is delivered to the right place, allowing your device to communicate with other devices on both local networks and the internet. IP addresses can be either local (private) or public (internet-facing).
    - **Local IP Address**: **192.168.1.105**
    - **Public IP Address**: **123.45.67.89**

IP addresses are crucial for directing online traffic, ensuring data flows seamlessly between your device and servers across the web.

# 4. Network Operator/Brand

- **Explanation**: The network operator refers to the cellular service provider responsible for your mobile network connection. This provider ensures access to voice calls, messaging, and internet services, while also determining the quality of your network connection based on coverage and service plans.
- **Sample Value**: **Airtel**

Your network operator plays a vital role in delivering consistent service quality, with factors like coverage and service type (e.g., 4G or 5G) influencing your connectivity experience.

# 5. Network Type

- **Explanation**: The network type represents the generation of mobile technology your phone is connected to, such as 4G LTE or 5G. It determines the speed, latency, and overall performance of your mobile data connection.
- **Sample Value**: **4G LTE**

A 4G LTE connection provides fast data speeds suitable for a variety of activities, from streaming videos to making video calls, ensuring a smooth user experience.

# 6. Signal Strength (Measured in dBm)

- **Explanation**: Signal strength is measured in dBm (decibels per milliwatt) and indicates the power of the cellular signal your device is receiving. A stronger signal results in better call quality and faster internet speeds. The closer the number is to zero, the better the signal.
- **Sample Value**: **-85 dBm** (Good signal)

A strong signal is essential for uninterrupted connectivity, and a value like -85 dBm reflects a reliable connection for most tasks, whether calling or using mobile data.

# 7. Download/Upload Bandwidth

- **Explanation**: Download and upload bandwidth measure how fast your device can receive (download) or send (upload) data over the network. Higher bandwidth means faster speeds, which directly affect activities such as browsing, streaming, and file transfers.
    - **Download Speed**: **35 Mbps**
    - **Upload Speed**: **8 Mbps**

Good bandwidth ensures that you can efficiently browse the internet, upload videos, or stream content without interruptions or lag.

# 8. Mobile Location Information (LAC - Location Area Code and CID - Cell ID)

- **Explanation**: LAC (Location Area Code) and CID (Cell ID) are parameters that identify the location of the mobile network tower your device is connected to. This information is essential for managing how your phone communicates with nearby towers as you move around, ensuring uninterrupted service.
    - **LAC**: **54012**
    - **CID**: **1234567**

These codes help cellular networks optimize connectivity and signal quality as your device moves between different cell towers during travel or daily activities.

# Conclusion

This report provides an overview of the most critical network parameters that influence the performance and security of mobile devices. Each of these parameters—from IMEI to signal strength—plays a significant role in ensuring that mobile devices remain securely connected to the network while providing the user with optimal service quality.

### Summary of Network Parameters:

| Parameter | Sample Value |
|---|---|
| **IMEI** | 358732091234567 |
| **MAC Address** | 48:32:A1:CB:91 |
| **Local IP Address** | 192.168.1.105 |
| **Public IP Address** | 123.45.67.89 |

| | |
|---|---|
| **Network Operator** | Airtel |
| **Network Type** | 4G LTE |
| **Signal Strength** | -85 dBm |
| **Download Speed** | 35 Mbps |
| **Upload Speed** | 8 Mbps |
| **Location Area Code (LAC)** | 54012 |
| **Cell ID (CID)** | 1234567 |

This report reflects the key network parameters obtained through Field Test Mode, offering insights into the technical aspects of mobile connectivity and performance.