

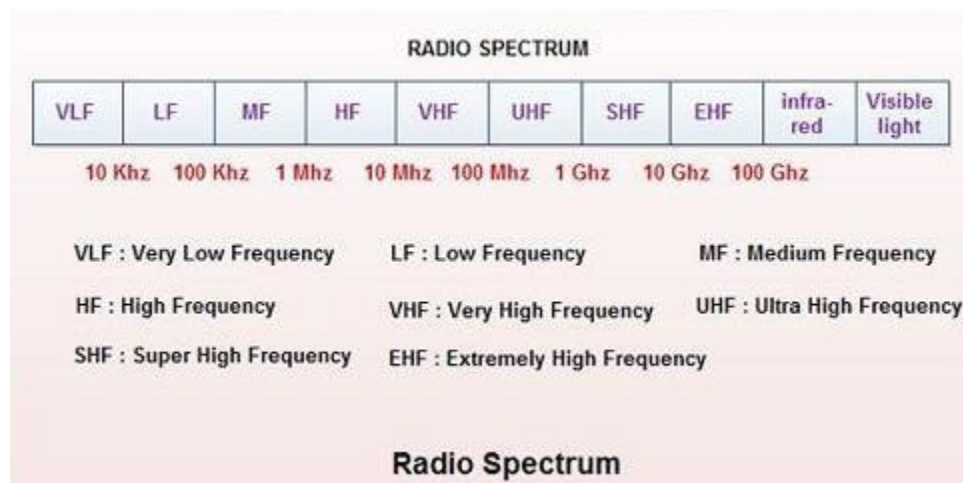
UNIT 5

Wireless Communication

- Cellular Radio
 - Telephony (GSM)
 - VSAT
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Cellular Radio

- **Cellular radio** has other popular names as *cellular mobile* or *mobile phone*.
- Radio is basically a device, which uses receiver and transmitter
- Wireless communication can also be carried out without using radio
- The interference caused by high power line to radio transmission is also an example of wireless communication though it is termed as noise.
- Inductive and conductive circuits and devices can communicate wirelessly for limited distance with less reliability and implementation problem.
- Therefore, these techniques cannot be termed as radio transmission.
- A cellular system is the communication system that divides a geographic region into sections, called cells, each having its own dedicated frequency.
- For digital communications, several competing cellular systems exist. These are Global System for Mobile Communication (GSM), CDMA etc.



Telophony (GSM)

- In the beginning around 1980s, analog cellular telephone systems were developing in Europe and each country was developing its own system and thus making them confined within their country boundaries.
- Later on, the need for an European public land mobile system was realized. In 1982, the Conference of European Posts and Telegraphs (CEPT), formed a study group called the Groupe Special Mobile (GSM) to develop a pan-European standard With the objectives of providing good subjective speech quality, support for international roaming etc.
- The proposed system was expected to meet certain criteria as mentioned below:
 - Good subjective speech quality
 - Low terminal and service cost
 - Support for international roaming
 - Ability to support handheld terminals
 - Support for a range of new services and facilities

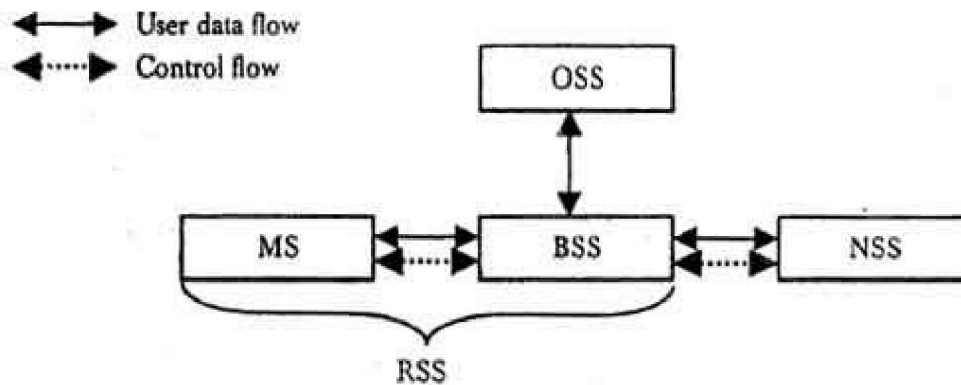
General Features of GSM

- GSM (Global System for Mobile Communications) is a second-generation (2G) digital mobile telephones standard using a combination Time Division Multiple Access (TDMA) and Frequency Division Multiple Access (FDMA) to share the bandwidth among as many subscribers as possible.
 - GSM provides only 9.6 kbps data connection
 - GSM digitizes and compresses voice data, then sends it down a channel with two other streams of user data, each in its own time slot. It operates at either the 900, 1800 or 1,900 MHz frequency bands
 - The access methods and [protocols](#) for GSM may be from X.25 or X.32

GSM Subscriber Services

- SMS
- Call forwarding
- Voice mail
- Fax mail
- Barring of outgoing and incoming calls conditionally
- Call hold
- Call waiting
- Conferencing
- Closed user groups

GSM consists of many subsystems, such as the Mobile Station (MS), the Base Station Subsystem (BSS), the network and switching subsystem (NSS) and the Operation Subsystem (OSS). Mobile Station (MS), the Base Station Subsystem (BSS) together forms a radio subsystem.



An overview of GSM architecture

VSAT

- Low cost business terminals with small antennas (generally less than 2 metres in diameter) are often termed Very Small Aperture Terminals (VSATs).
- These are usually perceived as being two way data terminals, though strictly speaking many of the systems used for data broadcast are really one-way VSATs
- Taking the USA as an example, approximately half of all installed VSATs are only used for one way data links
- *A more general definition is that a network is a VSAT network if it consists of a large high performance hub earth station (with an antenna of up to 9 m in diameter) and a large number of smaller, lower performance terminals.*

