

Working Of Cell Phones

Cell phones or cellular phones are so called as they cover compartmentalized, cell like areas. The origin of the Cell phone can be traced back to the year 1973 when Motorola came up with World's first cellular portable telephone which was commercialised as Motorola DynaTAC 8000X.

These days, new cell phones are being added at a rapid pace. The parts of them typically consist of following: circuit board; antenna; keyboard; LCD - liquid crystal display; battery; microphone; speaker.

In recent times, they are available with a wide range of functions. To list a few functions, depending on the type of cell phone you choose: store contact information; keep track of appointments; set reminders; prepare to-do lists; send/receive e-mail; play games; send text messages (sms); access to internet; watch and enjoy TV; built-in calculator; integration with other devices like GPS receivers, MP3 players, etc.

Cell phones, operating on radio frequency, have come up with an innovative cellular approach to counter limited availability of RF spectrum. Now, several cell phone towers are used to cater to a large geographic area.

Each tower (base station), covers a circular area called a cell. A large region is split into a number of cells allowing different base stations to use the same channels/frequencies for communication. This enables thousands and thousands of mobile telephone users to share far fewer channels.

Another important aspect is that, phones need less power to transmit to reach any base station as each base station covers a smaller area. Reducing the required transmit power reduces the size of the battery and thereby the weight of the phone. This has led to miniaturization of cell phones which would not have been possible without the cellular technology.

When you use your cell phone, following things happen. First the phone locates base station having strongest signal, and requests for a channel assignment. The base station permits channel assignment and the call gets accepted. The call is then forwarded to the local telephone network if it is to a regular phone otherwise it is transmitted through the cellular network. The call is then sent to its destination through the telephone network.

When the cell phone is switched on, SID (System Identification Code) on the control channel compares it to the SID programmed into the phone. If the SIDs match, the phone understands that the cell is communicating with home system. The phone sends a registration request, along with the SID and the MTSO keeps track of the phone's location in a database. If the SID on the control channel does not match the SID of your phone, then the phone is in roaming.

The three technologies commonly used by 2G cell phone networks for transmitting information: frequency division multiple access (FDMA); time division multiple access (TDMA); code division multiple access (CDMA).

GSM (Global System for Mobile communications) implements TDMA, to connect to the specific service providers in different countries. GSM uses subscriber identification module (SIM). SIM stores all the connection data/identification numbers needed to access a particular wireless service provider.

Standard 2.5G protocols used widely are GPRS, EDGE to name a few. Some latest 3G protocols are: Universal Mobile Telecommunication Service (UMTS); Wideband Code-Division Multiple Access (WCDMA); High-Speed Downlink Packet Access (HSDPA); Evolution Data Maximized (EVDO).

A few popular cell phone models in the market have been offered by Nokia, Ericsson, Motorola, Samsung, LG, etc. with each model with its own range of collections. The year 2008 may be a high watermark in the cell phone history with Nokia N-Gage 2, HTC Dream, Apple iPhone 2, BlackBerry Touchscreen, Sony PlayStation Phone which are expected to be launched.

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