

## Satellite Radio Elements

The three main components of satellite radio are Satellites, Radio receivers and the repeaters installed on the ground. The XM satellite radio uses two satellites namely Rock and Roll. These two satellites are placed at an angular distance of thirty five degrees from each other. They are placed in the geostationary earth orbits which are at the height of thirty seven thousand kilometers from the earth's surface. The satellites placed in these orbits are called geostationary satellites. The satellites placed at this altitude in a circular equatorial orbit appear to remain motion less in the sky, so there is no need to track these satellites in the sky. Geostationary earth orbit satellites are high flying and they have become a multi billion dollar business. All the countries in the world are in race for orbital space and to earn dollars, so they are investing their time and money in this.

With current technology it is unwise to have geostationary satellites placed much closer than two degrees in the three sixty degrees equatorial plane to avoid interference. If the satellites are placed without sufficient work space complications and problems will be there? With the spacing of two degrees there can only be one hundred and eighty of the satellites in the sky at once. Not more than this number of satellites can be placed due to the technical reasons. However each transponder can use multiple frequencies and polarization to increase the available bandwidth. To prevent total chaos in the sky orbit slot allocation is done by ITU. This process is highly political with countries barely out of the Stone Age demanding there orbit slots adding more complications in orbit allocation. The fight commercial telecommunication is not the only application present in the market. Television broadcasters, governments, very big organizations and the military also want a piece of the orbit slot. New competitor in this run is the satellite radio.

The S band is operational area. The bandwidth of this band is seventy mega hertz. The modern satellites are very large and consume several kilowatts of electric power produced by the solar panels. The effects of the solar, lunar and planetary gravity tend to move them away from there assigned orbit slots and orientations, an effect countered by on -board rocket motors. Particular this fine tuning activity is called Station Keeping. However when the fuel for this has

The first geostationary satellite had a single spatial beam that illuminated about one third of the earth's surface called its foot print. With the enormous decline in the price, size and power requirements of micro electronics a much more sophisticated broadcasting strategy came into use. Every satellite is equipped with multiple antennas and multiple transponders.

## About the Author

Tymon Hytem has worked in the electronics field for the past 15 years. He enjoys helping people decide on electronic gadgets from telephones to [XM Radio](#) and choosing the perfect [XM Satellite Radio](#) system for their needs.

Source: <http://www.spivo.com/articles>