1.2 Frequency Allocations for Satellite Services

Allocating frequencies to satellite services is a complicated process which requires international coordination and planning. This is carried out under the auspices of the *International Telecommunication Union* (ITU).

To facilitate frequency planning, the world is divided into three regions:

Region 1: Europe, Africa, what was formerly the Soviet Union, and Mongolia

Region 2: North and South America and Greenland

Region 3: Asia (excluding region 1 areas), Australia, and the southwest Pacific

Within these regions, frequency bands are allocated to various satellite services, although a given service may be allocated different frequency bands in different regions. Some of the services provided by satellites are:

Fixed satellite service (FSS)

Broadcasting satellite service (BSS)

Mobile satellite services

Navigational satellite services

Meteorological satellite services

There are many subdivisions within these broad classifications; for example, the FSS provides links for existing telephone networks as well as for transmitting television signals to cable companies for distribution over cable systems. Broadcasting satellite services are intended mainly for direct broadcast to the home, sometimes referred

to as *direct broadcast satellite* (DBS) service [in Europe it may be known as *direct-to-home* (DTH) service]. Mobile satellite services would include land mobile, maritime mobile, and aeronautical mobile. Navigational satellite services include *global positioning systems* (GPS), and satellites intended for the meteorological services often provide a search and rescue service.

Frequency Bands

- Different kinds of satellites use different frequency bands.
  - L–Band: 1 to 2 GHz, used by MSS
  - S-Band: 2 to 4 GHz, used by MSS, NASA, deep space research
  - C-Band: 4 to 8 GHz, used by FSS
  - X-Band: 8 to 12.5 GHz, used by FSS and in terrestrial imaging, ex: military and meteorological satellites
  - Ku-Band: 12.5 to 18 GHz: used by FSS and BSS (DBS)
  - K-Band: 18 to 26.5 GHz: used by FSS and BSS
  - Ka-Band: 26.5 to 40 GHz: used by FSS