

Synch. Sat. Contt...

- Satellite provides continuous coverage .
- Ground station is of sufficiently low cost.

Disadvantages

- Time delay
- Not useful for global coverage, for small mobile phones and data transmission, typically used for radio and TV transmission
- bad elevations in areas with latitude above 60° due to fixed position above the equator

Communication Satellite

- Synchronous Satellite used for communication are called communication satellite.
- Classification
 1. Territorial coverage:
(global, regional, or national)
 2. Types of services :
fixed, mobile, maritime, aeronautical, point to point , broadcasting

International Regulation and Frequency Coordination

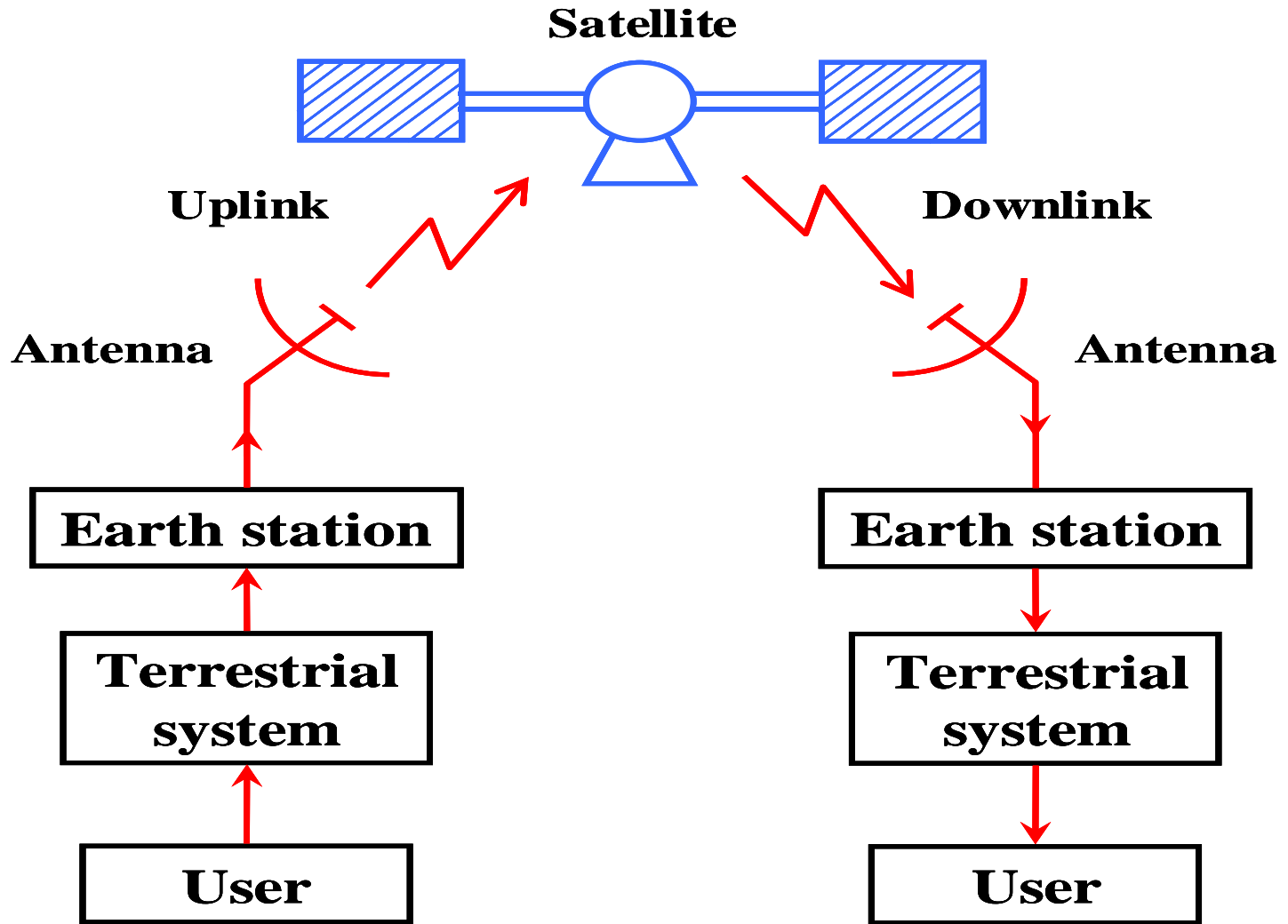
- ITU(International Telecommunication Union)
- IFRB(International frequency registration board)
- CCIR(International Radio Consultative Committee)
- CCITT(International Telegraphy and Telephone Committee)
- General secretarial is located in Geneva

Satellite Frequency Allocation and Band Spectrum

| | Down link band MHz | Uplink Band MHz |
|---------------------|--------------------|-----------------|
| UHF –military | 250- 270 (Approx) | 292-312(approx) |
| C-band- commercial | 3700-4200 | 5925-6425 |
| X band – Military | 7250- 7750 | 7900-8400 |
| Ku band –commercial | 11700-12200 | 14000-14500 |
| Ka band –Commercial | 17,700- 21200 | 27500-30,000 |
| Ka band -Military | 20200-21200 | 43500-45500 |

Satellite Frequency Allocation and Band Spectrum

- Frequencies 40-300 GHz are for satellite communication
- Frequency -806Mhz- 265 GHz for mobile Satellite services
- Frequency range allocated for meteorological aids/meteorological satellites
1668.4-7550 MHz



Block diagram of satellite communication.

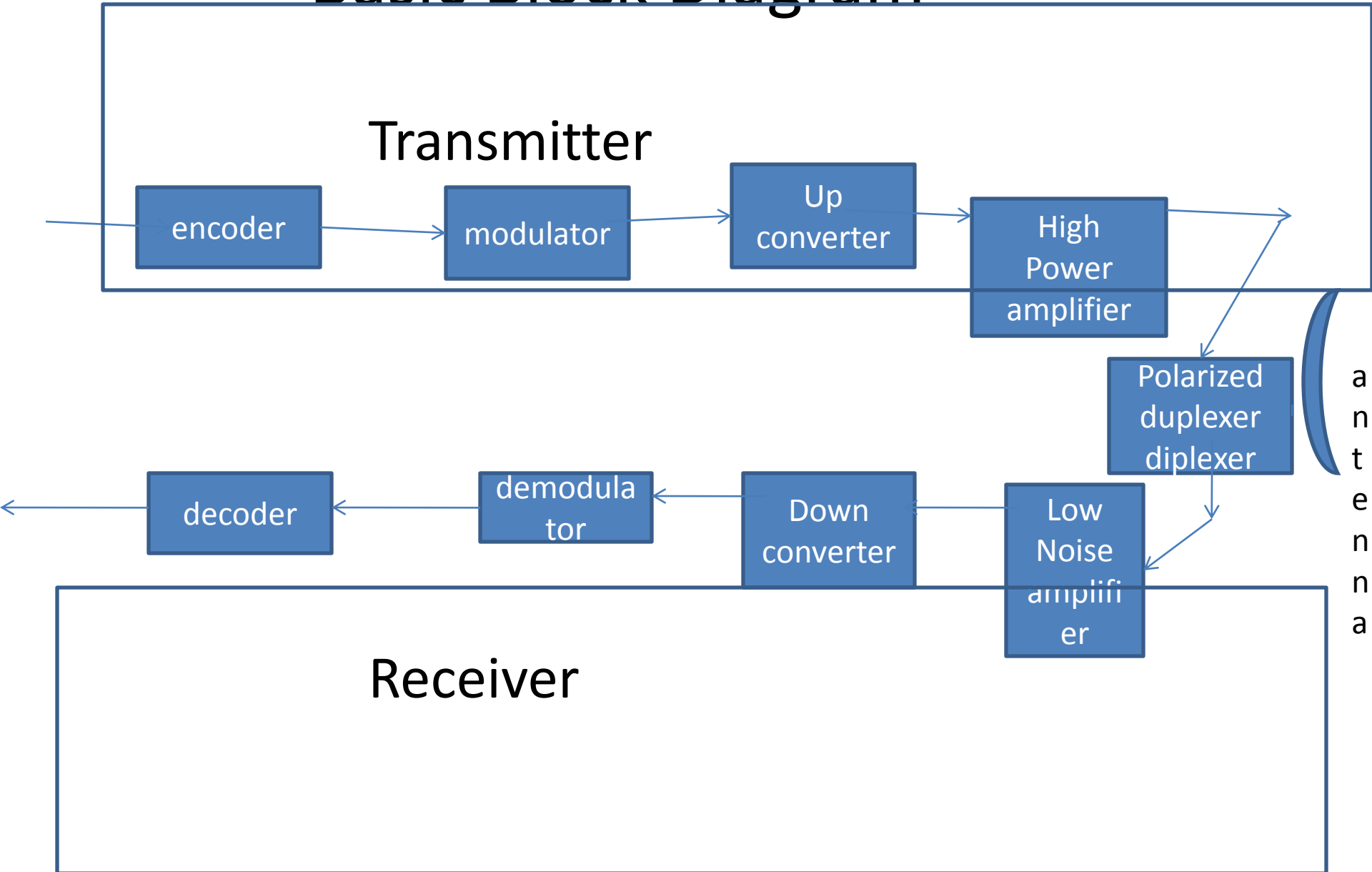
Contt...

- 6/4 GHz bands:
 - Most popular
 - Fewer propagation problems
 - RF components are easily available
 - Rain attenuation is not a serious problem
 - Sky noise is also low
 - Receiver with lower noise temperature

Contt...

- 14/12 GHz band communication satellite
- Uplink (12.75 -14.8) down link (10.7 – 12.3)
- Rain attenuation is a problem
- 20/30 GHz in future

Basic Block Diagram



Advantages of satellite

- The coverage area of a satellite is more.
- Transmission cost of a satellite is independent of the distance from the center of the coverage area.
- Satellite to Satellite communication is very precise.
- Higher Bandwidths are available for use.
- Point – multi point communication.

Disadvantages

- Launching satellites into orbit is costly.
- Satellite bandwidth is gradually becoming used up.
- There is a larger propagation delay in satellite communication.
- If needed to repair, it is nearly impossible.