

# 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  $60^\circ$  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

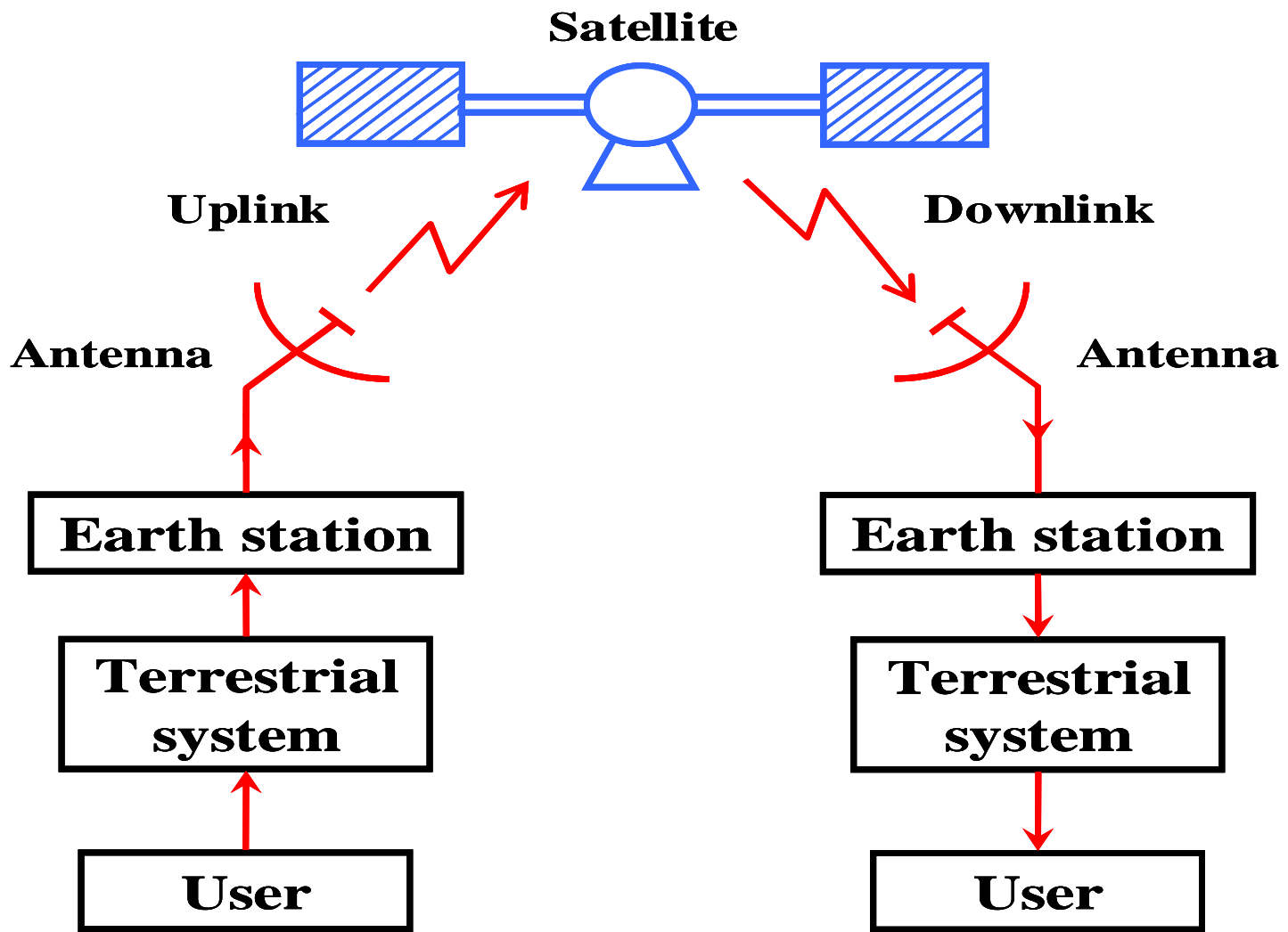
- ITU(International Telecommunication Union)
- IFRB(International frequency registration board)
- CCIR( International Radio Consultative Committee)
- CCITT(International Telegraphy and Telephone Committee )
- General secretarial is located in Geneva

# 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...

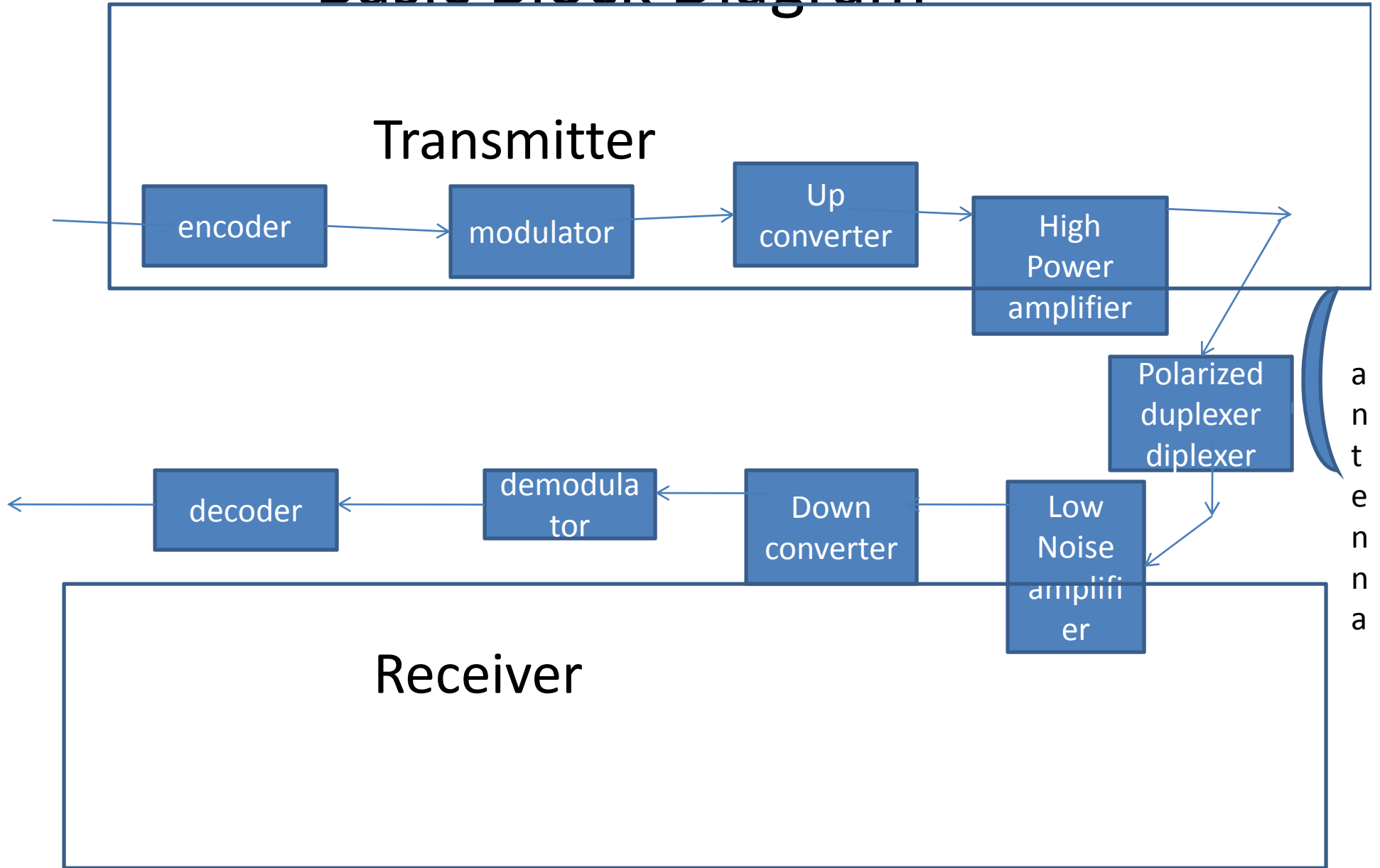
- 6/4 GHz bands:
  - Most popular
  - Fewer propagation problems
  - RF components are easily available
  - Rain attenuation is not a serious problem
  - Sky noise is also low
  - Receiver with lower noise temperature

# 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.

# Assignment – 2

- What are synchronous satellites? Explain in detail.
- Discuss Satellite Frequency Allocation and Band Spectrum in detail for different purposes.
- Give neat and clean block diagram of satellite communication system and explain each section in detail.