

1. Direct Broadcast satellites (DBS):

Satellites provide *broadcast* transmissions in the fullest sense of the word, because antenna footprints can be made to cover large areas of the earth.

The idea of using satellites to provide direct transmissions into the home has been around for many years, and the services provided are known generally as *direct broadcast satellite* (DBS) services.

Broadcast services include audio, television, and Internet services.

1.1 Power Rating and Number of Transponders:

From will be seen that satellites primarily intended for DBS have a higher [EIRP] than for the other categories, being in the range 51 to 60 dBW. At a *Regional Administrative Radio Council* (RARC) meeting in 1983, the value established for DBS was 57 dBW (Mead,2000). Transponders are rated by the power output of their high-power amplifiers.

Typically, a satellite may carry 32 transponders. If all 32 are in use, each will operate at the lower power rating of 120 W.

The available bandwidth (uplink and downlink) is seen to be 500 MHz. A total number of 32 transponder channels, each of bandwidth 24 MHz, can be accommodated.

The bandwidth is sometimes specified as 27 MHz, but this includes a 3MHz guardband allowance. Therefore, when calculating bit-rate capacity, the 24 MHz value is used.

The total of 32 transponders requires the use of both *right-hand circular polarization* (RHCP) and *left-hand circular polarization* (LHCP) in order to

permit frequency reuse, and guard bands are inserted between channels of a given polarization.

	1	3	5	RHCP	31
Uplink MHz	17324.00	17353.16	17382.32	...	17761.40
Downlink MHz	12224.00	12253.16	12282.32	...	12661.40

	2	4	6	LHCP	32
Uplink MHz	17338.58	17367.74	17411.46	...	17775.98
Downlink MHz	12238.58	12267.74	12296.50	...	12675.98

1.2 Bit Rates for Digital Television:

The bit rate for digital television depends very much on the picture format. One way of estimating the uncompressed bit rate is to multiply the number of pixels in a frame by the number of frames per second, and multiply this by the number of bits used to encode each pixel.

1.3 MPEG Compression Standards:

MPEG is a group within the *International Standards Organization and the International Electrotechnical Commission (ISO/IEC)* that undertook the job of defining standards for the transmission and storage of moving pictures and sound. The MPEG standards currently available are MPEG-1, MPEG-2, MPEG-4 , and MPEG-

2. Direct to home Broadcast (DTH):

DTH stands for Direct-To-Home television. DTH is defined as the reception of satellite programmes with a personal dish in an individual home.

- ✓ DTH Broadcasting to home TV receivers take place in the ku band(12 GHz). This service is known as Direct To Home service.
- ✓ DTH services were first proposed in India in 1996.
- ✓ Finally in 2000, DTH was allowed.

- ✓ The new policy requires all operators to set up earth stations in India within 12 months of getting a license. DTH licenses in India will cost \$2.14 million and will be valid for 10 years.

Working principal of DTH is the satellite communication. Broadcaster modulates the received signal and transmit it to the satellite in KU Band and from satellite one can receive signal by dish and set top box.

2.1 DTH Block Diagram:

- ✓ A DTH network consists of a broadcasting centre, satellites, encoders, multiplexers, modulators and DTH receivers
- ✓ The encoder converts the audio, video and data signals into the digital format and the multiplexer mixes these signals.

It is used to provide the DTH service in high populated area A Multi Switch is basically a box that contains signal splitters and A/B switches. A outputs of group of DTH LNBs are connected to the A and B inputs of the Multi Switch.

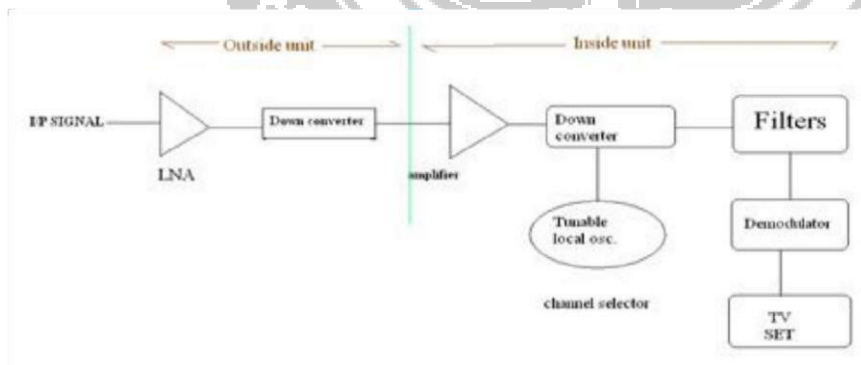


Figure DTH Service

2.2 Advantage:

- ✓ DTH also offers digital quality signals which do not degrade the picture or sound quality.
- ✓ It also offers interactive channels and program guides with customers having the choice to block out programming which they consider undesirable

- ✓ One of the great advantages of the cable industry has been the ability to provide local channels, but this handicap has been overcome by many DTH providers using other local channels or local feeds.
- ✓ The other advantage of DTH is the availability of satellite broadcast in rural and semi urban areas where cable is difficult to install.

3. Digital audio broadcast (DAB):

DAB Project is an industry-led consortium of over 300 companies

- ✓ The DAB Project was launched on 10th September, 1993
- ✓ In 1995 it was basically finished and became operational
- ✓ There are several sub-standards of the DAB standard
 - DAB-S (Satellite) – using QPSK – 40 Mb/s
 - DAB-T (Terrestrial) – using QAM – 50 Mb/s
 - DAB-C (Cable) – using OFDM – 24 Mb/s
- ✓ These three sub-standards basically differ only in the specifications to the physical representation, modulation, transmission and reception of the signal.
- ✓ The DAB stream consists of a series of fixed length packets which make up a Transport Stream (TS). The packets support ‘streams’ or ‘data sections’.
- ✓ Streams carry higher layer packets derived from an MPEG stream & Data sections are blocks of data carrying signaling and control data.
- ✓ DAB is actually a support mechanism for MPEG.& One MPEG stream needing higher instantaneous data can ‘steal’ capacity from another with spare capacity.