UNIT 4: FM RADIO

UNIT STRUCTURE

4.1 Learning Objectives
4.2 Introduction
4.3 Concept of FM
4.4 FM Radio in India
4.5 Let us sum up
4.6 Further readings
4.7 Answers to check your progress
4.8 Possible Questions

4.1 Learning Objectives

After going through this unit you should be able to:

- Explain the concept of FM radio
- Discuss about FM radio in the context of India

4.2 Introduction

In the last three units we have discussed in detail about radio, its history, growth and about the national radio broadcaster in the country, i.e., about All India Radio. Now, all of you must be quite familiar to FM radio, particularly given the popularity it has gained over the past few years.

But, you may not be very clear about the technical aspect of FM radio as a method of broadcasting radio waves. Therefore, in this unit we will learn the technical concept of FM radio and certain other relevant aspects of FM radio.

So, let us begin by learning about the two methods of radio broadcasting – AM and FM. After that we will go into the details of FM broadcasting.

4. 3 Concept of FM (Frequency Modulation)

It is very important for all of you to understand that there are two principal methods for broadcasting radio waves. They are:

- Frequency modulation or FM
- Amplitude Modulation or AM

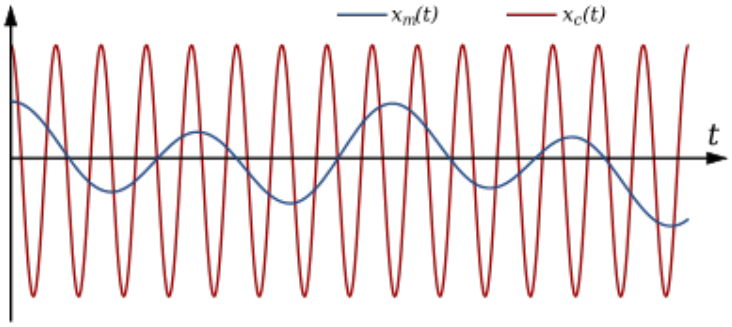
(Modulation is the process by which the information to be transmitted is impress
radio waves which serve as the carriers.)

In case of AM, the amplitude of the carrier wave is modulated while the **fr**
remains the same. (You will learn more about AM in unit 7)

Frequency: It is the number of cycles per unit time, i.e., the number of waves that pass a fixed place in a given amount of time. The unit if frequency is hertz (hz).

In case of FM, the frequency of the wave varies while the **amplitude** remains the same. FM was devised to overcome the problem that A.M. reception was susceptible to noise interference.

Amplitude: It is the distance between the medium and the peak point of a wave.



It's virtually immune to any type of external interference, it has a greater dynamic range, and it can handle sounds of higher and lower frequencies. This is why music, with its much greater frequency range than the human voice, sounds better on FM radio.

On the downside frequency modulation requires a wider bandwidth than amplitude modulation by an equivalent modulating signal, but this also makes the signal stronger against interference. Frequency modulation is also tougher against simple signal amplitude fading phenomena. As a result, FM was chosen as the modulation standard for high frequency, high fidelity radio transmission. In earlier stage BBC insisted on calling FM radio "VHF radio" which is quite logical because commercial FM broadcasting uses a well-known part of the VHF band. In certain countries, expressions referencing the more familiar wavelength notion are still used in place of the somewhat mysterious modulation technique name .FM receivers inherently exhibit a phenomenon called capture, where the tuner is able to clearly receive the stronger of two stations being broadcast on the same frequency. Problematically, however, frequency drift or lack of selectivity may cause one station or signal to be suddenly overtaken by another on an adjacent channel. Frequency drift typically constituted a problem on very old or inexpensive receivers, while inadequate selectivity may plague any tuner.

An FM signal can also be used to carry a stereo signal. However, this is done by using multiplexing and de-multiplexing before and after the FM process, and is not part of FM proper. FM is a so-called angle modulation scheme, which was inspired by phase modulation but has proved to be more useful partly for its ease of generation and decoding.

FM broadcasting is characterized by uniformity of reception both during day and night. It also provides noise free listening besides the advantages of repeatability of frequency, high

fidelity, captures effect and possibility of introducing stereophonic transmission and RDS (Radio Data Service).

While the commercial F.M. broadcasts occupy 200 KHz (Kilohertz) channels throughout the 88 - 108 MHz (Megahertz) band, the A.M. radio band or short wave broadcasting is carried out with the 10 KHz (or 9 KHz) band.

In 1930s, a very important development took place in the field of broadcasting, when Edwin H. Armstrong invented the FM radio. FM radio could overcome the interference (static) problem of AM radio and hence it gained much popularity.

Moving on to the radio service in the U.S. the Yankee Network, located in New England was the pioneer in FM broadcasting. Broadcasting began in 1939 on a routine basis from this station. Since a special receiver was needed to listen to FM radio it did not pose a significant threat to the AM broadcasting industry. At that time the frequencies were not same as today and 42 to 50 MHz were used for FM broadcasting. However the frequencies changed to 88 to 108 MHz, after World War II ended. The AM radio owners, to some extent, had imposed this change with an aim to turn down the serious threat posed by the FM broadcasting, which they had already realized.

FM radio on the new band had to begin from the ground floor. Commercially it was not much used by the radio listeners until the 1960s. The AM stations, or their owners, acquired FM licenses and often broadcast the same programming on the FM station as on the AM station which is termed as **simulcasting**. This practice was however limited by the FCC in the 1970s and by the 1980s; FM gained the floor in the urban areas. This was because almost all new radios included both AM and FM tuners (without any government mandate), In spite of all this, AM remained as the favourite medium of the rural masses because of its greater range.

CHECK YOUR PROGRESS - A

1. What are the two principle methods of broadcasting radio waves?

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2. What do you mean by the term modulation?

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3. Who invented FM radio

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4.4 FM RADIO IN INDIA

With the beginning of the (FM) revolution in India, the country now seems to be at the threshold of true democratization in the field of radio communication. The country is now on the road of radio's golden age with the revival of the once dying airwaves. The advent of FM radio has added a lot towards the reform of the radio profession. In 1947, India had only six radio stations under a central government-run structure. But now this picture has totally changed to a huge number of 5,000 stations in a more decentralized system.

“Use of the airwaves, which is public property, must be regulated for its optimum use for public good for the greatest number. Broadcasting is a means of communication and, therefore, a medium of speech and statement. Hence in a democratic polity, neither any private individual, institution or organization nor any government can claim exclusive right over it. Our Constitution also forbids monopoly either in the print or electronic media." This significant judgment by Supreme Court Justices P.B. Sawant and S. Mohan in February 1995 raised new hopes for radio's revival.

This historic judgment of the Supreme Court led towards many debates and discussions on privatization of radio broadcasting. A time slot for FM broadcasting in All India Radio stations is a recent happening. However this was done two years prior to the judgement that is in 1993. Thereafter the government announced a new FM policy in 1999. Proposals were invited from the private commercial broadcasters to apply for licenses through this policy. FM broadcasting could quickly spread in as many as 40 cities in the country. In all, 110 channels having 10-kilowatt radio transmitters were given licenses for opening FM channels. Within a period of two years private broadcasting attained a stable position in India.

The main advantage of FM is its reception quality and with privatization it has become a new mode of radio transmission. It is broadcast in the purely participatory way. Most of the private FM channels depend on the taste of the listeners. However the tastes are often cultivated by the market which is first offered on the plate by the FM channels. All the FM channels are total entertainment. And even when they offer information it is more lifestyle information or information of the Hindi Film Industry. It can be understood looking at the listener's profile as the channels are located in the urban centres.

At present there are 185 FM relay stations in the country. Among these 139 are run by the government-owned All India Radio, and 46 by semi-government and private broadcasters. FM service of AIR has two channels - FM Rainbow and FM Gold. There are 12 FM Rainbow channels and 4 FM Gold Channels. The programme content of these channels is mainly popular Indian and Western music, compered in a vivacious and contemporary style and therefore highly popular with the urban youth. News bulletins and current affairs programmes are also broadcast from these channels.

The government has plans to raise the number of FM radio stations in the country. Since the initial license fee system made profit-making difficult the government now plans to find a way to help the FM stations in becoming commercially viable. Many discussions were made to open up FM stations to foreign direct investment (FDI) and for its privatization. However, despite all these efforts, the image of FM radio remains that of a medium of entertainment and not of a powerful communication tool. Till date, the private broadcasters

are not allowed to broadcast news, but this picture could change in the next phase of privatization.

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Commercial radio has the potential to be profitable as the revenue of commercial FM services in the country has shown rapid increase in the past two years. In 2008 out of the total budget for media advertising in India, radio received a mere two percent or Rs. 1,500 million. FM radio earned revenue worth Rs. 500 million. Meanwhile the revenue share of FM radio has been steadily growing for the last five years since FM is now being perceived as a regional entertainment medium. On the other hand, community radio is considered to be advertisement free because it is run by nonprofit organizations, the source of revenue being primarily through donations. The Task Force on Information and Broadcasting, set up for the Tenth Five Year Plan, reported that community radio should be run as a public (that is nonprofit) service much like the U.S. Public Broadcasting Service (PBS). This has however been reviewed by Rakesh Kakkar, the Telecom Regulatory Authority of India's adviser on broadcasting. According to him, every one hour of community radio broadcasting should have five minutes of advertisement time, so that it becomes financially sustainable for the broadcaster.

Development

In the mid-1990s, India began privatizing FM frequencies. Licenses were given to three major FM broadcasters, Radio One, Radio Mirchi and Radio City. New Delhi, Kolkata, Chennai, Bangalore and Mumbai were the “Big Five” metros to have the first private channels.

Later the small tourist destination of Goa was the sixth place in this country of one billion where private players got FM slots. Till 2002, only ten players had won licenses to operate 37 channels in 19 cities. Bennett Coleman & Company won the maximum bids, with licenses to operate radio stations in 12 centres. These were followed by stations in Bangalore, Hyderabad, Andhra Pradesh, Hyderabad, Jaipur and Lucknow.

Today the biggest hype after the cable television revolution is certainly the FM radio. The radio stations at United States and Europe are, to some extent, facing a hard time due to falling of advertising rates and severe competition from the internet. But the scenario in

India in this regard is completely different. The industry appears to have gained momentum with private FM radio stations experiencing revenue growth of 30 per cent in the 2007-2008 fiscal year (according to a survey by Ernst and Young). One of the biggest Indian media companies Bennett Coleman and Co has even bought Virgin Radio of the United Kingdom for $105 million. The new owners will add one of the UK's premier radio addresses to a corporate crown that includes The Times of India, the world's largest selling English newspaper.

The value of this deal by Bennett Coleman and Co. may not be high, compared with other high-profile Indian ventures outside the country. But it is a sign of Indian radio business being crossing the borders of the subcontinent. Indeed, long after radio's heyday in the West, now has arrived the golden age of Indian radio industry.
A major reason for radio's late-bloom was its late start since 1995; Indian radio consisted of a government-owned station on the AM side and another government-owned station on the FM side. It was basically a government controlled channel. The limits of creativity were set by extremely stringent government information broadcasting laws.
But today, in India, there are more than 214 FM stations. The numbers are expected to increase soon with more FM radio stations coming up in the smaller cities in the second phase.

Policy on FM

- The Indian policy on FM presently states that the FM broadcasters are required to pay a One-Time Entry Fee (OTEF). This fee is valid for the entire license period of 10 years.
- Registration under the Indian Companies Act, 1956 is compulsory for a company to bid and to obtain permission for an FM channel. On the other hand, those who are ineligible for this entire process include, religious bodies or their controlled/associated companies, political bodies or their controlled/associated companies, advertising agencies or their controlled/associated companies, trusts, societies, non-profit organizations controlled/associated companies.

- Every applicant is allowed to run only one channel per city. This is only when the total number of channels allocated to the entity is within the overall ceiling of 15% of all allocated channels in the country.
- It is mandatory for every permission holder to follow the AIR Program and Advertising Code as amended from time to time.
- The foreign holding, is 20% for broadcasting, which comprises institutional investment for FM radio.

The Telecom Regulatory Authority of India (TRAI) has proposed raising the foreign direct investment limit in private FM radio stations. This increase can be from 20% to 26%. The Authority also suggests to permit those channels to broadcast news.

The private FM radio companies are obliged to gain the approval of the Ministry of Information and Broadcasting (I & B) before broadcasting news capsules.

The foreign holding, comprising institutional investment for FM radio, may go up to 26% for news broadcasting and 49% for non-news broadcasting. Presently, foreign holding stands at 20% for both.

Presently there are 183 functioning FM stations in the though licenses were issued 266 stations. During the next phase TRAI has planned to open around 700 FM stations across 237 towns.

Content

Many of the giants of FM broadcasting in India are either big media houses or newspaper chains. The issue is that news broadcasting has not yet been permitted through FM stations. But the media houses are making strong appeal for this. However the Ministry of Information and Broadcasting has approved private FM Channels to broadcast news and current affairs programmes exclusively produced by Akashvani. The proposal has not yet

been signed by the cabinet minister. Yet there are chances of FM news broadcasting within a couple of years

FM radio is meant mainly for providing the listeners with musical shows. Music in FM ranges mostly within modern styles specially film music. However genres like classical Indian music, ghazals and various regional styles are played only in non-prime time.

Market view

New private FM channels of India are all set to change the advertising scenario. Radio provides 7% to 8% of the total advertiser expenditures around the world. But In India, it is less than 2% at present.

Current allocation process

Currently the government had offered in 338 frequencies in bidding. Out of these about 237 were sold. This is the second of bidding going on for allocation of FM frequencies. There are chances for rebidding of unsold frequencies quite soon. There are also plans to include smaller towns and cities under the FM extension in the third phase.

The two giants of communication, Reliance and South Asia FM (Sun group) tried to bid for most of the 91 cities in India to acquire FM license. However they were allowed only 15% of the total allocated frequencies. And they had to surrender over 40 licenses.

Viability as a medium for advertising

Radio has many advantages over print or cable TV. The advertisers now rely upon FM radio to a great extent due to its low cost per thousand, its non-intrusive nature and its efficiency for local advertising. FM radio has thus proved itself to be a very reasonable medium of advertising within a very short period.

Radio is a part of most people's everyday lives. It is one of the, if not most, important elements in the development of mass media. The emergence of radio took place in the early 1920's and for the first time it was possible to reach a large number of people at the same time. Radio at first was used in World War I where it served only to transmit important messages to and from certain, specific points. It was after the war when radio started to become commercialized.

Radio has proved its worth and utility both as an informational channel and a catalyst for socio-economic development. It provides healthy entertainment through its various light and humorous programmes. Extension research and other field surveys have given great importance to radio as a credible promoter of a suitable climate for development and progress. Along with this radio has always played an important role in the development of rural masses. Radio is helping to create a favourable climate in which social change can take place and people could be involved in the process.

Radio still remains the main source of news and entertainment in rural areas and this position is likely to continue for many years for obvious reasons like cost-considerations, unavailability of electricity and high rate of illiteracy. A large number of underprivileged people in rural areas still stick to radio.

Thus it can be concluded that radio is a very efficient combination of information, education and entertainment. Through its programmes related to agriculture, health, family planning and nutrition, and on formal and non-formal education, radio has highlighted many social and civic problems and has contributed towards the development of the nation.

CHECK YOUR PROGRESS - B

1. When did all India radio first start allocating time-slots for FM?

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2. When did private broadcasting in India?

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3. What are the two channels of AIR FM service?

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4. Why are FM channels considered to be only a medium of entertainment and not a powerful tool of communication?

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5. The _____, set up for the Tenth Five Year Plan, reported that community radio should be run as a public service.

6. Telecom Regulatory Authority said that every one hour of radio programming should have _____minutes of ad time.

7. Which cities got India's first private FM channels?

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8. Only Companies registered under the _____ Act, 1956 shall be eligible for bidding and obtaining permission for FM Radio channels.

ACTIVITY A

1. Take any FM radio and identify the different kinds of programmes they broadcast. What percentage of the programmes is entertainment-oriented?

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4. 5 Let us sum up

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- There are two principal methods for broadcasting radio waves. They are:
    - Frequency modulation or FM
    - Amplitude Modulation or AM
- F.M. radio is preferred for quality music transmission. F.M. tends to occupy greater bandwidth although narrow band does exist for two-way communication

- The commercial broadcasting through FM is done by 200 KHz (Kilohertz) channels throughout the 88 - 108 MHz (Megahertz) band.
- In 1930s, a very important development took place in the field of broadcasting, when Edwin H. Armstrong invented the FM radio. FM radio could overcome the interference (static) problem of AM radio and hence it gained popularity.

- In the mid-1990s, India began privatizing FM frequencies. Licenses were given to three major FM broadcasters, Radio One, Radio Mirchi and Radio City. New Delhi, Kolkata, Chennai, Bangalore and Mumbai were the “Big Five” metros to have the first private channels.

- Today the biggest hype after the cable television revolution is certainly the FM radio. Music is the essence of FM radio. A beautifully mixed music of Bollywood, Indipop and Western styles can be enjoyed by the listeners.

4.6 Further readings

- Broadcast Management in India- Angela Wadia
- India's Communication Revolution- From Bullock Carts to Cyber Marts: Arvind Singhal and Everett Rogers
- Broadcasting in India: P C Chatterjee

4.7 Answers to check your progress

A)

1) The two principle methods of broadcasting radio waves are:

AM or Amplitude Modulation

FM or Frequency Modulation

2) Modulation is the process by which the information to be transmitted is impressed on the radio waves which serve as the carriers.

3) Edwin H. Armstrong in the 1930s.

B)

1) 1993

2) 2001

3) FM Rainbow and FM Gold

4) FM radio is considered to be merely an entertainment medium and not as a powerful communication tool, because private broadcasters are still not allowed to air news.

5) Task force on Information and Broadcasting

6) 5 (Five)

7) Delhi, Kolkata, Chennai, Bangalore and Mumbai

8) Indian Companies Act.

4.8 Possible Questions

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1. The radio profession is poised for a further leap towards reform with the advent of FM radio. Comment.
2. What are the main points of difference between AM and FM?
3. Radio has proved its worth and utility both as an informational channel and a catalyst for socio-economic development. Justify.
4. Do you think radio is a suitable medium of advertising? Give reasons for your answer.
5. FM radio is better than AM radio. Do you agree? Why?
6. What is the policy of the government in India regarding FM radio?