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B.A. (HONS.) Mass Communication III Year

Sub. – INTRODUCTION TO AUDIO VISUAL MEDIA Paper I

Syllabus

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Subject – INTRODUCTION TO AUDIO VISUAL MEDIA Paper I

Unit-I	Brief History of radio and FM channels
Unit-II	Radio: as a medium of mass communication, Characteristics, Ownership, Listeners
Unit-III	Types of Microphone & its Placement
Unit-IV	Layout of Radio studio & its Acoustics
Unit-V	Voice Modulation, Mixers, Sound Editing software



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Introduction to audio visual media paper 1

Unit 1

Brief history of radio and FM channels

Samuel Morse's invention of telegraph in 1842 prompted scientists to find out ways to transmit messages over air. In 1895, Italian inventor Guglielmo Marconi succeeded in the effort. For further development of the mechanism, he started the Marconi Company in England and started commercial production of radio transmitters for military purpose. Marconi's device was sophisticated by Reginald Fessenden and started transmission of sound over radio transmitters, instead of textual signals.

It was US inventor Lee De Forest who made radio transmission much clearer with his Audion vacuum tube. He also envisaged stations sending continuous music, news and other programmes over radio waves. The idea came to be known as Broadcasting. The first radio stations were set up in Pittsburg, New York and Chicago in the 1920s. Following the USA, European countries also started radio stations for broadcasting news and entertainment content. The colonial powers like Britain and France set radio stations in Asian and African countries in the early years of 20th century.

RADIO BROADCASTING

Radio is everywhere as the signals reach every nook and cranny. It is wonder to hear that there are 6.6 radio receivers on average in American homes. Indian officer radio broadcaster All India Radio reaches 98.25 percent of the population of India. Remember that India is the second largest populated country in the world. According to an estimate, there 111 million radio sets in Indian households.

John Vivian, describing the ubiquity of radio, says: " People wake up with clock radios, jog with headset radios, party with boom boxes and commute with car radios. People listen to sports events on the radio even if they are in the stadium."



According to Arbitr on, a company that surveys radio listenership, more people receive their morning news from radio than from any other medium.

RADIO IN INDIA

Radio Broadcasting was pioneered in India by the Madras Presidency Club Radio in 1924. The Club worked a broadcasting service for three years, but owing to FINANCIAL difficulties gave it up in 1927. In the same year (1927) some enterprising businessmen in Bombay started the Indian Broadcasting Company with stations at Bombay and Calcutta. This company failed in 1930, in 1932 the Government of India took over broadcasting. A separate department known as Indian Broadcasting Service was opened.

The Service was later designated 'All India Radio' (AIR) and was placed under a separate Ministry-the Ministry of Information and Broadcasting. The AIR is controlled by a Director General, who is assisted by several Deputy Directors and a Chief Engineer.

Broadcasting, in its significance, reach and impact, constitutes the most powerful medium of mass communication in India. Its importance, as a medium of information and education is particularly great in a vast and developing country like India where the reach of the printed word is not very wide or deep. While the total circulation of all the newspapers in India, including both English and Indian language papers, is around 8 million, there are, according to a recent estimate, nearly 400 million (out of a total population of 625 million) potential listeners to All India Radio.

Broadcasting in India is a national service, developed and operated by the Government of India. All India Radio (also known as Akashvani) operates this service, over a network of broadcasting stations located ail over the country. As a national service, catering to the complex needs of a vast country. All India Radio



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seeks to represent in its national and regional programmes, the attitudes, aspirations and attainments of all Indian people and attempts to reflect, as fully and faithfully as possible, the richness of the Indian scene and the reach of the Indian mind.

AIR Network

Starting with 6 broadcasting stations in 1947, the AIR today has a network of 82 broadcasting stations. The 82 radio stations, grouped into five zones, are the following: North Zone: Ajmer, Allahabad, Aligarh, Bikaner, Delhi, Gorakhpur, Jaipur, Jodhpur, Jullundur, Lucknow, Mathura, Rampur, Simla, Udaipur and Varanasi; East Zone: Agartala, Aizawl, Bhagalpur, Calcutta, Cuttack, Dibrugarh, Gauhati, Imphal, Jeypore, Kohima, Kurseong, Ranchi, Pasighat, Patna, Sambalpur, Shillong, Silchar, Siliguri, Tawang and Tezu; West Zone: Ahmedabad, Bhopal, Bhuj, Bombay, Gwalior, Indore, Jabalpur, Nagpur, Panaji, Parbani, Pune, Raipur, Rajkot and Sangli; South Zone: Alleppey, Bangalore, Bhadravati, Calicut, Coimbatore, Cuddapah, Dharwar, Gulbarga, Hyderabad, Madras, Mysore, Pondicherry, Port Blair, Tiruchirappalli, Tirunelveli, Trichur, Trivandrum, Vijayawada and Vishakhapatnam; and Kashmir Zone: Jammu, Leh and Srinagar.

In addition, there are three auxiliary studio centers at Vardola, Darbhanga and Shantiniketan and two Vividh Bharati/commercial centers, one at Chandigarh and the other at Kanpur. These cover all the important cultural and linguistic regions of the country.

The expansion of the broadcasting facility remained limited till independence. In 1947 there were only six radio stations in the country. Today there are as many as 82 AIR stations. With two more stations that will start working soon, India's broadcasting network would cover 89 per cent of the population.

Till the end of 1976 radio licenses had reached a colossal figure of nearly 1.74 crores, which fetched revenue of Rs. 23.51 crores. Today the radio network has



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spread to the remote corners of India. It is now possible to bring sense of unity not only political but also cultural among the diverse traditions that enrich our land.

AIR's programme pattern combines three main elements: a national channel providing programmes of countrywide interest and significance, a zonal service from each of the four metropolitan centers (Delhi, Bombay, Calcutta and Madras); and regional services from individual stations each catering to the needs and interests of its respective area.

The principal ingredients of AIR's programme output are Music, Spoken Word, Dramas, Features. News and Current Affairs, Commentaries and Discussion, VividhBharati and its Commercial Service, Farm and Home Broadcasts, Programmes for Special Audiences (like Youth, Women, Children, Industrial Workers and Tribal Population), and Programmes for Overseas Listeners broadcast in the External Services.

To enable AIR to reach all sections of the Indian people, its programmes in the Home Service are broadcast in 20 principal languages. In addition, the External Services of AIR beam their programmes to listeners all over the world in 24 languages.

NEW SERVICES

The News Services Division of AIR through its central and regional news bulletins and its current affairs, commentaries and discussions, provides accurate, objective, speedy and comprehensive coverage of news to listeners at home and abroad.

AIR now broadcasts a total of 239 news bulletins a day, with duration of 32 hours 17 minutes. Of these, 67 are Central bulletins broadcast from Delhi in 19



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languages, with a daily duration of 10 hours 3 minutes; 57 external bulletins (from Delhi) broadcast in 24 languages for a duration of 7 hours 14 minutes and 15 regional bulletins from 34 regional centers (including the Pradeshik desk in Delhi) broadcast in 22 languages and 34 tribal dialects with a total duration of 15 hours every day.

The major sources of news for AIR are its correspondents at home and abroad, the news agencies and the monitoring services, AIR has a total of 206 correspondents. Of these, 111 are part-time.

External Services: AIR made its first broadcast to listeners outside India on October 1, 1939. Today the External Services of AIR broadcast in 25 languages for about 50 hours daily round-the-clock, reaching listeners in widely scattered areas of the world.

VividhBharati: A self-contained service of popular entertainment, known as VividhBharati was started in October 1957 to meet the growing demand for popular music and light features. Commercial advertising was introduced on AIR in November, 1967, from the Bombay-Nagpur channel of Vividh-Bharati on an experimental basis. It was gradually extended to Calcutta (1968); Delhi and Madras-Tiruchirapalli (1969); Chandigarh-Jullundur- Bangalore, Dharwar, Ahmedabad-Rajkot, Kanpur-Lucknow-Allahabad (1970), Hyderabad-Vijayawada (1971) and Bhopal, Indore, Cuttack, Jaipur, Jodhpur, Patna, Ranchi and Trivandrum (1975). Advertisements are accepted in any language as tape-recorded 'spots' of 15 seconds or 30 seconds duration. VividhBharati, an alternative national service of All India Radio, now forms a part of the Central Sales Unit of the Commercial Broadcasting Service. It has also started originating programmes. The total duration of broadcasts of the VividhBharati service is now 12



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hours 45 minutes, on week days and 13 hours 20 minutes on Sundays and holidays. The network covers 29 full-fledged centers and seven partial centers. VividhBharati is also radiated through two powerful short-wave transmitters from Delhi, Bombay and Madras. There has been a steady rise in the gross revenue earned by the commercial services. It went up from Rs. 2.96 crores in 1970-71 to Rs. 6.25 crores in 1975-76 and Rs. 6.50 crores approximately in 1976-77. Since inception and till March 1977 AIR had earned total gross revenue of about Rs. 38.21 crores from its commercial services.

National Programme: Started in July 1952, the weekly National Programme of Music provides an opportunity to listeners to hear well-known exponents of Hindustani and Karnataka music. It has helped in a better understanding of the two systems prevalent in the North and the South. At suitable intervals, programmes based on recordings of old masters are also featured in this programme.

The medium of the drama is utilized for popularising the Economic Programme. A special series of short plays on various themes including the Economic Programme, Family Planning, Dowry and anti-Casteism are regularly broadcast.

FM

FM broadcasting began on 23 July 1977 in Chennai, then Madras, and was expanded during the 1990s, nearly 50 years after it mushroomed in the US.[4] The country first experimented with private FM broadcasts in the small tourist destination of Goa and the large metropolitan areas of Delhi, Kolkata, Mumbai and Chennai. These were followed by private stations in Bangalore, Hyderabad, Jaipur and Lucknow. Until 1993, All India Radio, a government undertaking, was the only radio broadcaster in India. The government then decided to privatise the radio broadcasting sector.[citation needed] It sold airtime blocks on its FM channels in Indore, Hyderabad, Mumbai, Delhi, Kolkata, Vizag and Goa to private operators, who developed their own program content. The Times Group operated its brand,



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Times FM, till June 1998. After that, the government decided not to renew contracts given to private operators. Instead, in 2000, the government announced the auction of 108 FM frequencies across India, opening up the FM broadcasting industry to private competition. Radio City Bangalore, started on July 3, 2001, is India's first private FM radio station.[5] It launched with presenters such as Vera, Rohit Barker, Seetal Iyer, Jonzie Kurian, Geeta Modgil, Suresh Venkat, and Chaitanya Hegde and Priya Ganapathy on the weekends.[6] The Times Group rebranded their radio operations, establishing the Radio Mirchi brand. The first Radio Mirchi station began broadcasting on October 4, 2001 in Indore. Indian policy currently states that these broadcasters are assessed a one-time entry fee (OTEF), for a license period of 10 years. Under the Indian accounting system, this amount is amortised over the 10-year period at 10% per annum. The annual license fee for private broadcasters is either 4% of revenue share or 10% of reserve price, whichever is higher. India's earlier attempts to privatise its FM channels ran into rough weather when private players bid heavily and most could not meet their commitments to pay the government the amounts they owed.

Unit -II

Radio as a medium of mass communication: characteristics, ownership, listeners

RADIO – AS A MEDIUM OF MASS COMMUNICATION

You probably know the story of Sanjay in the Mahabharata who described the war to Dritharashtra who could not see. Sanjay could 'see' the war with his divyadrishti or his divine eye. Probably you can call Sanjay as the first 'radiobroadcaster'.

Suppose you are in a far flung area near the Himalayas on 26th January. You have a radio with you and you tune into the running commentary of the Republic Day Parade. You would know exactly what is happening in Rajpath in Delhi. The commentator (like Sanjay in the Mahabharata) will describe the details of



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the parade and as you listen, your imagination takes you to the Republic Day Parade. So that is radio for you. Wherever you are, you can listen to the near by radiostation. You can listen to music, news and other programmes. Now that you have

commercial radio stations, you can listen to round the clock chatting and music. And if you tune into All India Radio, almost every hour, you can listen to news and other programmes.

TERMS USED IN BROADCASTING

- Audience: The group of people whom radio or media reaches for a particular programme.
- Listener/s: A person or a group of people who form the target audience of radio programmes.
- Broadcaster: a person who presents or announces programmes over radio for the public.
- Broadcasting: any communication or transmission of any message or signal to the public through electronic apparatus.
- Tuning into radio: You have to switch on your radio and tune into the station you want to listen to.
- Live broadcast: It means a programme being broadcast directly without any pre-recording or the sounds made at the moment of broadcast.
- Pre-recorded programme: The programme recorded on magnetic tape, phonographic discs or compact disc for broadcasting it later.
- Script : The written copy of the words to be spoken during a radio programme.



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OBJECTIVES OF RADIO

In the first module, you have learnt about the role of mass media. There, we were referring to different forms of mass media like the print media (newspapers, magazines etc.) and electronic media (radio, television etc.) These media have functions which are common.

Have you heard an advertisement on a popular brand of soap or shampoo ? What does it communicate? Through that you have come to know about the brand name of the soap or shampoo. You are informed or told that such and such a product is available in the market.. That advertisement would also tell you what benefits the brand offers.

Let us take another example. The water supply department makes an announcement on radio that there will be no water supply in your village or town the next day morning. So you get ready to face that situation.

Or a message on radio tells you that the following Sunday is 'polio immunisation' day. If you have a small child in your home, with that information received through radio, you decide that the child should be taken to be given polio drops.

You might have heard rural programmes on agriculture on radio. Experts who take part in that programme may explain what precautions are to be taken for crop during a particular season. You learn to do a particular agricultural practice using that information.

Now think of the three examples given above. In the first case, you come to know about the availability of a particular brand of soap or shampoo. It is for you to decide what you want to do with that information. It just informed you. In the second and third example of the announcements about water supply and polio



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immunization also, you are given information. You would agree that this information is of great use.

When it comes to the fourth example of a particular agricultural practice, the information can educate a farmer who has no formal education or training in agriculture. Let us take the example of 'Gyanvani'. This is a radio station through which educational programmes are broadcast for the benefit of learners.

So that we can say-

- Radio – Informs
- Radio – Educates
- Radio Entertains us.

CHARACTERISTICS OF RADIO AS A COMMUNICATION MEDIA

(i) Radio makes pictures: Remember the example of the running commentary on radio of the Republic Day Parade in Delhi? As you heard the commentary, you could visualize or 'see' in your mind what was being described. You could actively 'see' pictures in your mind of the parade even as you listened to the sounds of bands playing patriotic tunes or the sounds of marching and commands. You use your power of imagination as you follow the running commentary.

(ii) The speed of radio : Radio is the fastest medium. It is instant. As things happen in a studio or outside, messages can be sent or broadcast. These messages can be picked up by anyone who has a radio set or receiver which is tuned into a radio station. If you have a television set and cable or satellite connection you may be using a remote to get your favorite channel. These days if you have a satellite connection, you can also receive radio signals of various AIR stations. Otherwise your normal radio set gives the meter or frequency on which various radio stations operate. You are tuned into that station and listen to news that happened



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a few minutes earlier. On the other hand, a newspaper gives you the previous days' news. Of course television can also cover events instantly. But television is a more complex medium where you need light and cameras for any coverage.

(iii) **Simplicity of radio:** Compared to all other media, radio is simple to use. As mentioned in the previous sections, radio needs very simple technology and equipment.

(iv) **Radio is inexpensive:** As it is simple, it is also a cheaper medium. The cost of production is low and a small radio can be bought for as low a price as say fifty rupees.

(v) **Radio does not need electric power supply:** You can listen to radio using dry battery cells even if you do not have electric power supply or a generator. So in a country like ours, where electricity has not reached every where, radio is a great blessing.

(vi) **A radio receiver is portable:** Don't you move your radio set at home from the living room to the kitchen or as you go out some where? You can't do that very easily with television. This facility of moving an object which is called 'portability' gives radio an advantage. These days if you have a car and a radio in it, you can listen to it as you drive or travel. Can you think of watching television, when you drive ?

(vii) **One does not have to be literate to listen to radio :** Unless you are literate, you can't read a newspaper or read captions or text on television. But for listening to radio, you need not be literate at all. You can listen to programmes or news in any language on the radio.

(viii) **For a majority of Indians in the rural areas, radio is the only source of news and entertainment .** Radio news can be heard anywhere using an inexpensive receiver. Even the most economically backward sections can afford to use the medium of radio.



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- Radio is the best medium of entertainment. It provide healthy entertainment to the listeners.
- There is plenty of music of different types available to people.
- The popular types of music are classical, light classical, light, devotional, folk and film music.

STRUCTURE OF A RADIO STATION

RADIO OWNERSHIPS

The involvement of policy makers in the control and management of community radio stations which can be regarded as a positive contribution to the medium makes writing on the governance, management and the sustainability of community radio a complex task to embark upon. In order to embark on this, there is need to firmly establish the issue of community radio ownership. This is because there are two types of ownership – government and community - involved in community radio (three types of ownership if we are talking about electronic media as a whole). In view of this, the factors responsible for the effective running of the stations cannot be the same. In the case of community ownership of the radio there must be community representative or Board of Directors to set overall policies. Some major factors that often affect the operation of community radio stations are financial sustainability and ways of generating income; this is because the funding, employment and salary of staff of the station are determined by the owner. In a nutshell, the governance and management factors responsible for the sustainability of government radio and community/people owned radio stations are not the same. Based on the definition of community radio provided in the African Charter on Broadcasting which states:



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“broadcasting which is for, by and about the community, whose ownership and management is representative of the community, which pursues a social development agenda, and which is non-profit”, management and sustainability of a community radio rest with the people of the community. However, in Africa this is not always the case. To tabulate the governance, management and the sustainability of community radio is complex in the sense that most government owned media stations are not positioned to be profit oriented, rather they are established in order to fulfill needs that are crucial to the development and education of the people, and the propagation of government policies. Based on these cases, its management and sustainability rests mainly on the government’s disposition. When a government whose intent is geared towards mass mobilization and education of the community in order to achieve a developmental project is in place, certainly there will be adequate funding and management of the media. However, if the reverse is the case, community radio will not thrive under such policy makers. In order for a government owned community radio to remain operative it will have to broadcast programme that are dictated, vetted and controlled by a representative of the serving government. A public owned community radio has a specific responsibility to broadcast material in the public interest. In a Nigerian Broadcasting Policy Stakeholders Forum held in 2006, three broadcasting media ownership categories were identified:

- Public (represented by a public corporation)
- Commercial (represented by a limited liability company or a public limited company)
- Community (represented by a not-for-profit organization).

Listeners of radio:

Music lovers



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News listeners

Students

Women

Children's

Old age people

Villagers

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UNIT-III

Types of Microphones

There are four types of microphones most commonly used for music, available with either XLR or USB connectivity. When shopping for a new mic, you will typically come across Dynamic, Condenser, Ribbon, and USB models.

Dynamic Microphones



Microphones Dynamic microphones are known to be reliable and extremely versatile. The audio signal generated by a moving coil within a magnetic field makes this type of mic less sensitive to sound pressure levels and high frequencies which means they can take more punishment. They are often used to capture loud sound sources like guitar amplifiers and drum kits. They also tend to be less expensive.

Condenser Microphones



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Microphones Condenser microphones are the most responsive and the best choice for high fidelity recording. They feature a thin conductive diaphragm that sits close to a metal backplate. This configuration works like a capacitor where sound pressure vibrates the diaphragm which creates an electrical charge to produce the audio signal output. The use of capacitance instead of actual moving coils makes these mics ideal for precision recording in the studio. However, condenser microphones are generally more expensive than dynamic microphones and require the use of an external power supply, internal batteries, or phantom power supplied by a mixer.

Ribbon Microphones



Microphones Ribbon microphones were commonly used in the golden age of radio but are making a comeback with more modern production designs. Instead of



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using a diaphragm, they employ a thin metal ribbon allowing them to pick up the velocity of the air and not just air displacement. This design makes them more sensitive to higher frequencies but retains a warm vintage voicing. Newer models work well for live multi-instrument recording in venues where the noise level is not loud. They also work great for getting that vintage vibe when recording.

USB Microphones



Microphones USB Microphones are becoming a popular choice for many applications. Their design contains all the elements of traditional microphones except they include an onboard preamp and an analog-to-digital (A/D) converter. The preamp eliminates the need to be connected to a mixer or external micro preamp while the A/D converter changes the mic's output from analog (voltage) to digital (data), so it can be plugged directly into a computer. This ability makes USB mics ideal for mobile digital recording with DAW software or other recording software.



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Unit IV

The Audio Cyclopedia defines the term acoustics as “ a science dealing with the production, effects and transmission of sound waves; the transmission of sound waves through various mediums, including reflection, refraction, diffraction, absorption and interference; the characteristics of auditoriums, theaters and studios, as well as their design.” We can see from this description that the proper acoustic design of music recording, project and audio-for-visual or broadcast studios is no simple matter. A wide range of complex variables and interrelationships often come into play in the creation of a successful acoustic and monitoring design. When designing or redesigning an acoustic space, the following basic requirements should be considered:

- **Acoustic isolation:** This prevents external noises from transmitting into the studio environment through the air, ground or building structure. It can also prevent feuds that can arise when excessive volume levels leak out into the surrounding neighborhood.
- **Frequency balance:** The frequency components of a room shouldn ’ t adversely affect the acoustic balance of instruments and/or speakers. Simply stated, the acoustic environment shouldn ’ t alter the sound quality of the original or recorded performance.
- **Acoustic separation:** The acoustic environment should not interfere with intelligibility and should offer the highest possible degree of acoustic separation within the room (often a requirement for ensuring that sounds from one instrument aren ’ t unduly picked up by another instrument ’ s microphone).
- **Reverberation:** The control of sonic reflections within a space is an important factor for maximizing the intelligibility of music and speech. No matter how short the early reflections and reverb times are, they will add an important psychoacoustic sense of “ space ” in the sense that they can give our brain



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subconscious cues as to a room ' s size, number of reflective boundaries, distance between the source and listener, and so forth.

■ **Cost factors:** Not the least of all design and construction factors is cost. Multimillion-dollar facilities often employ studio designers and construction teams to create a plush decor that has been acoustically tuned to fit the needs of both the owners and their clients. Owners of project studios and budget-minded production facilities, however, can also take full advantage of the same basic acoustic principles and construction techniques and apply them in cost-effective ways.

STUDIO TYPES Although the acoustical fundamentals are the same for most studio design types, differences will often follow the form, function and budgets of the required tasks at hand. Some of the more common studio types include:

- Professional music studios
- Audio-for-visual production environments
- Project studios
- Portable studios.



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Unit V

To transmit voice over the radio, the audio wave pattern picked up by a microphone is superimposed on the transmitter's carrier wave; the audio wave *modulates* (controls the shape of) the radio wave.

To equip a transmitter to send voice, one needs at least a microphone and a modulator circuit. In the **Radio equipment on NR16020**, the audio waveform picked up by the microphone was amplified in the modulator:

The Model 13C transmitter employed screen-grid modulation of the power amplifier stage. This is a form of low-level modulation in which audio voltage is coupled to the amplifier tube screen grids through a transformer, after being amplified in an audio power stage.

The single audio amplifier stage in this transmitter was driven by audio from a carbon-type microphone, transformer-coupled to the audio tube control grid

Adobe Audition CC

Adobe Audition CC is a professional workstation for audio. It offers you with great digital audio editing experience, waveform, multi-track, and more within the comprehensive toolkit. The features of Adobe Audition CC are-

- Clean-up and restoration of sound in podcasting and sound effect design with precision using editing tools
- From a clip, you can record a punch
- Zoom to the time range of more than one selected clip
- Select and move a track up and down
- Add fade in fade out effect, studio reverb, and change volume
- Music ducking effect where audio of one track automatically lowers when a voiceover is present
- Come with noise reduction features
- Record, mix, and export audio for podcast



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SOUND FORGE

sound forge has been setting the standard for high-end digital audio processing for more than 20 years. The audio editing legend stands for innovation and quality so has become the tool of choice for many globally-successful producers including Grammy winner Ted Perlman. Originally developed in the USA, SOUND FORGE's unique technology is now being further developed by MAGIX, so combines an American pioneering spirit with precision German engineering. Powerful editing tools, extremely fast processing and innovative workflows are what SOUND FORGE audio editors are all about. Experience a new level of audio editing with cutting-edge technology, ease of use, a powerful 64-bit architecture and crystal-clear audio quality.

FilmoraPro is one of the best audio editing software that can give an edge to your videos. Now, perfecting your videos is just a matter of few minutes with FilmoraPro. The features of FilmoraPro include –

- Add only audio to your video if you want
- Correct the pitch of the audio sound in the video and make it perfect
- Merge audio and automatically and sync it with video
- You can select an audio compressor and hit the enhance voice to equalize sound
- You can reduce the background noise from video to enhance the audio quality
- Allows audio transition

Reaper

Reaper is an amazingly professional audio editing software that offers digital audio application and production for computers. It offers complete multi-track audio with editing, MIDI recording, mixing, processing, and mastering tools. The features of Reaper are-



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- Supports a vast range of hardware, digital formats, and plugins
- Script, extend and modify comprehensively
- Highly efficient, fast, and tightly coded
- Install and run from a portable or network drive
- 64-bit internal audio processing
- Import, record, and render to many media formats
- Hundreds of studio-quality effects for processing audio
