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Drive In Theater FAQ

Q: Please provide some general background information on your company and it's involvement with drive-in theater radio sound.

A: LPB was founded in 1960 to develop and manufacture low power broadcast (hence LPB) transmission systems for campuses. These included military bases, educational facilities, campgrounds and drive-in theaters. Our systems were used in a lot of drive-ins as a great way to avoid adding speakers in expansion areas, or remodeling. We provide systems that allow for retrofitting as well as new construction. We put enough systems in drive-ins that we developed Radio-Cine packages specifically for the market, and even coded transmitters with a "D" at the end to designate them as drive-in designs.

Q: If a drive-in owner wishes to add radio sound as a customer option, along with the in-car speakers, or someone wishes to reopen a long-closed drive-in and use radio sound as their only system for broadcasting the soundtrack, are there any special issues that need to be addressed prior to installing a radio system (i.e., assessing proximity to homes or businesses, determining if there is free space on the AM or FM dial as appropriate, etc.)?

A: The primary issue is free space on the local radio dial. Obviously, most drive-ins will be outside of a major metro area (like Philly or Chicago, etc...) but there will still be a lot of radio activity. The best way to find frequency spaces is to sit on the property with a digital tuner (car radio) and flip through the band (AM and FM) looking for gaps. This should be done at night when the movies would normally play. AM is probably going to have more space in most areas. Also, AM now expands up to 1700kHz, so check the entire band from 530-1700kHz on your radio.

Q: What components does a drive-in radio transmitter system consist of?

A: Depending on the system you can have a variety of options. The basic system components are a transmitter and an antenna. The configuration depends on AM or FM and a few other choices. I'll divide it into the most common choices for a drive-in (these are in price order) :

FM Vertical Antenna : the system consists of a small self-contained transmitter with outdoor mounting enclosure for placement outside of the booth (on the roof). FCC restrictions keep coverage limited to about 100ft so it may not be enough for many drive-ins. Packaged system \$595. The frequency is adjustable by the user.

AM Carrier Current : the system connects into the existing AC wiring or speaker wiring throughout the facility and uses that as an antenna. Typically this system will be 2 components and cost about \$1200. Preset at the factory for frequency.

AM Radiating Cable : the system uses a coaxial cable as the antenna. Typically this is either buried in the field or run around the projection building (we work with the client to configure this). Most systems are about \$1600. Preset at the factory for frequency.

AM Vertical Antenna : the system includes a transmitter and antenna that mount on the booth, and a power supply which gets installed in the booth. This can push signal (legally) outside the property, so it would need to be adjusted to keep signal inside the facility. A package system is \$1800. The frequency is adjustable by the user.

FM Radiating Cable : the system is similar to the AM version, but a bit more expensive. Typically about \$2500. The frequency is adjustable by the user. Stereo/mono capable.

Q: What is the distance that a theatre may broadcast without an FCC license?

A: A tricky question. The rules are different for each of the above systems. Basically, the FM systems are the most restricted in coverage, typically to about 100ft from the antenna. Those theaters out there with booming FM systems face FCC fines of \$2500 or more when they get caught. The radiating cable systems are configured to reach the limits of the facility. The AM vertical antenna is legally capable of nearly 1/2 mile of coverage. Carrier current systems are designed to reach the facility limits. A more important issue is do you really want the signal leaving the property?

Q: Where can a drive-in owner find the FCC regulations that govern low power broadcasting? Did I once see a reference to "Chapter 15" or "Part 15" or something of that nature?

A: Part 15 of the FCC rules is available on their website www.fcc.gov. It is confusing and MANY of the parts do not show all of the reference materials and sections that also apply. The most important thing is that the systems and/or components MUST be FCC certified under Part 15 to be legal.

Q: Can a drive-in owner ensure that their transmitter does not allow non-paying people outside the theatre to tune in the frequency and watch the movies from nearby cars or houses?

A: Yes and no. The systems can be designed, installed and adjusted to reduce the chance of anything leaking off the property. However, these are broadcasts and a neighbor with a big enough receiving antenna COULD get the signal if they worked at it. Of course, the equipment would cost more than going to the movies and they would miss the experience of the drive-in...

Q: Are there any special considerations if a drive-in has multiple screens and wishes to install radio sound in each field?

A: Yes. You should work with a qualified AM or FM broadcast engineer (or LPB) to make certain that the design and installation takes these features into account. LPB can even combine multiple channels of FM on our radiating cable systems, so that you could run multiple language versions at the same time on different frequencies! Yes, hiring fully qualified engineering people is more expensive than the local ham radio "expert", but we do this for a regular job, not a hobby! After 40 years of drive-in theater systems, I think we are getting the hang of it ;)

Q: How easily can frequencies be changed?

A: The AM vertical antenna and both FM systems have field changeable frequency controls. The other AM systems use a crystal. The crystals can be changed at the theater, but there are limits to how far from the original frequency you can move without making changes to the transmitter at the factory. We'll be happy to offer suggestions before you buy!

Q: How often should a transmitter be serviced to keep it performing at an optimum level?

A: Most customers send the transmitters in to our factory once per year, for a \$60 service checkup. This is really not needed in most cases but it doesn't hurt. If the environment for the transmitter is clean and the wiring is done well, they can run forever. We have tube transmitters we built in 1960 that are still running just fine. The only real concerns for the durability of the transmitter are AC power conditioning and lightning protection. We offer a variety of power conditioning solutions and can help with lightning protection (not prevention!).

Q: Many drive-ins that broadcast their sound use both AM and FM systems. Is one better suited for broadcasting motion picture soundtracks than the other?

A: FM has a greater audio bandwidth in both the transmitter and the receivers so it tends to sound better, but well processed AM can sound great too. A lot of it depends on the quality of the source audio. If it is very limited or running on a very old projector, the audio quality will be very similar on AM and FM. We can discuss that with specific customers when they call. Again, a lot will depend on the available frequencies in the area.

Q: What is the difference between FM sound and FM Stereo sound?

A: Stereo is really useless unless the projector audio is stereo. Stereo typically reduces the coverage distance for a system as well. Many car receivers are up to 3x more capable of picking up mono audio. Basically, if you have a good stereo audio system in the projector, then it might be worth running the system in stereo.

Q: Does an owner need to make any special modifications to their sound heads or other equipment if installing a radio sound system?

A: Yes and no. Some systems will not require anything special and some will. This needs to be discussed individually based on the existing equipment at each location. In most cases, some simple audio distribution will be needed if the audio is still going to PA or field speakers.

Q: How long does it normally take to install a system?

A: All of the systems, except radiating cable, are pretty easily done in a few hours. Radiating cable will depend on the location and installation method. I would expect no more than 3 days for most any radiating cable system.

Q: What type of antenna is required for AM sound? FM sound?

A: The radiating cable is one antenna type for AM and FM. The other systems all include their antennas. The biggest is 8ft for the AM vertical antenna system, but it is a very thin whip that will not interfere with viewers.

Q : Do theatre owners have to be concerned about the transmitter's signal drifting, thus causing the patrons to lose sound or requiring them to retune their radios?

A: Not with LPB's FCC Certified systems. We use crystals and phase-lock technology to ensure that the systems stay right where you set them. Many of the illegal systems and kits that are for sale are not stable especially with temperature changes. If your system is drifting it is almost guaranteed that it is not approved by the FCC!

Q : Will the conversion to red light source optical sound readers require modifications to radio sound broadcast systems?

A : Not as far as I understand them. It is still a matter of the output audio from the system to the transmitter, but I don't anticipate major changes being required ...

Q: Who should owners interested in installing a radio sound system contact at LPB Communications for additional information? Phone number? E-mail?

A: Me (John Deveck) to start. Once we get further along they will probably speak with one of our technicians about other issues.

Phone is 610-825-4100
Fax 610-825-4047
Email jdevcka@lpbinc.com
Web www.lpbinc.com.

We also have an engineering office in Los Angeles you can contact :

Richard Burden
Phone 818-340-4590
Fax 818-884-8840.

Q: Is there anything else you would like to add regarding this topic?

A: Beware of people bearing illegal transmitters! They can get you into a LOT of trouble with the FCC! There has been a lot of talk about the "Low Power FM Rules" at the FCC. They have not been passed yet and may never be. No one should be selling you FM equipment for use under these rules - They don't exist! Once the rules have passed, or not, we will have information on our website. We are working with the FCC on this issue and will keep you up on the developments.

Q: I realize that some of the above questions are almost self-explanatory, but the article will be read by some new drive-in owners who are just learning the business. Therefore, having even these simple questions answered might be of help to them.

A: No problem. Simple questions are the most important ones. If they get bad info from the simple questions, it will just snowball!

Interview 08/20/99

Q: Randy Loy (United Drive-In Theatre Owners Association and Drive-In Theatre Fan Club)

A: John Deveck (VP of Sales, LPB Communications)