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## ***TECHNICAL NOTE #14***

### ***Interconnection of Cable TV systems and Radiating Cable FM systems***

One of the advantages found with Radiating Cable FM systems is that they can utilize the existing campus Cable TV, or Closed Circuit TV system for distribution. This results in savings of hundreds of dollars per building, by eliminating the need for a separate modulator in each. It also increases the coverage of the system by eliminating the possibility of modulation interference between individual systems.

This application note is written to help you examine the potential for connection of a CATV or Closed Circuit TV system to an LPB Radiating Cable FM system. Important actions and information will be noted in each section with a bold faced text notation. This will help you to use this note as a checklist through the process. If you have any questions not answered in this application note, please feel free to contact LPB for further information. Please read this note thoroughly before proceeding with any actions.

#### **◆ Determine if the FM band is available on the system**

To determine if you can utilize this method of distribution, you will need to find out several things from your campus cable provider or the telecommunications people on campus. First, find out if there is available FM spectrum on the system - in the case of CATV there may not be, or there may be an agreement in place to carry digital programming in the FM band, which will preclude you from using the CATV system.

#### **◆ Determine the requirements of the cable company or system operator**

If there is available space on the FM band, you will need to find out the requirements for connection of your modulator to the system. Some cable companies will require a directional tap in their system so that your FM signal will not follow the cable system into the community. Some will allow you unlimited access. Some of the companies will require a monthly fee to allow you into the system - usually these people can be swayed by pointing out that this is not a good community relations move and you would help promote them if they helped you out... Since they stand to make a lot of money from working with the school, they should be willing to waive a fee to get you into the system. Make sure that you support them back!

#### **◆ Determine the signal levels carried by the system (preferably the FM levels)**

In order to properly design the interconnection of the system we will need to know the actual signal levels for the system. Usually your CATV system engineer or campus contact will be able to tell you the general signal level for the system. Typically they will express this in "dBmV" or in "volts". If you plan to connect the Radiating Cable system to a specific tap location (typically a hallway distribution point for the cable system to go to individual dorm rooms) you will need to have the signal strength at that location. Press for exact information. Ideally, you will be able to get them to give you a measurement of the FM band signal strength at that tap point. The CATV engineer will probably ask what signal level you want. Tell him +50-55dBmV at the tap. He will suggest that that is a bit higher than he usually has, so ask him for the best he can do and we can amplify from there. LPB has connected to some very strange CATV systems, so we have experience with nearly any level they can provide. Just get the location and the level that they can provide at the tap, and we can do the rest.

If you already have a Cable FM station running, you can check the exact station signal strength with the assistance of the CATV service person. This is an ideal situation because you are already using the CATV system for distribution, don't need additional permission for Radiating Cable, and probably already have a working relationship with the cable company.

#### **◆ Determine the locations for tapping into the system, and connection to the radiating cable.**

The connection points for the Radiating Cable system should be determined in each building before proceeding with ordering the system. These points will determine how the Radiating Cable will be routed in the buildings and are crucial for the final equipment determination. It is best to locate the amplifiers for the system in rooms which are not commonly available to students, including maintenance closets and electrical rooms. Frequently you will find electrical, telephone and CATV distribution co-

located in a closet or room on each floor of a dormitory. A discussion with the physical plant staff on campus will help find these quickly.

◆ **Send LPB floor plans showing the entire floor of the dorm and tap location**

By sending us the exact scale drawings of the individual floors, you will allow us to note any changes to the equipment package and also routing of the Radiating Cable. As LPB does not offer installation of CATV cable, we will have to be able to coordinate this work with your physical plant staff. By sending the plans, you enable us to send the exact location information to your installer and also answer additional questions from them. Frequently, the scale floor plans show hallways with enough detail to reduce the cable lengths and to save you money! Please try to send us current scale floor plans, and DO NOT fax them. If you can make copies for us to keep on file, that is great, if they need to be returned just let us know. The size of the prints is not a concern. Typically we received "D" size blueprints or 11 x 17 floor plans. Whatever you have will work, as long as they are to scale and we can read the scale!

◆ **Determine the building structure or special features**

Another important consideration for these systems is the actual structure of the building. If the building is built with layers of steel sheeting between floors, or heavy steel gridwork, there is a reduction in the ability to send FM signals throughout the building. Also, the actual routing for the cable should be done so that it avoids contact with steel (metallic) structure. For example, while an attic installation may be ideal for some buildings, stringing the cable through metal joists there is not. Also, determine if there are drop ceilings in the hallways, which will be used. This will reduce the installation costs and also ease the installation itself. Radiating Cable should NEVER be run inside metallic conduits or strapped directly to pipes.

◆ **Determine the requirements of the school**

There may be building codes, aesthetic considerations or other reasons why the school will attempt to alter your installation plans. It is best to get all of this information from the physical plant before any more work is done. Will the cable be allowed in a drop ceiling? Does it have to be installed in conduit? Does it have to be fire-retardant or plenum rated? All of these are important considerations, which substantially impact the cost of a Radiating Cable system.

◆ **Call LPB!**

If you have questions, or other problems or issues raised by the school PLEASE feel free to contact us. We offer site inspection and installation assistance at a reduced rate to schools. We are happy to discuss the systems with your administration, staff or even the cable guy. Sometimes your buildings are just too strange to put down on paper and you need to get one of our staff on site to make a final design. No problem. LPB has designed hundreds of Radiating Cable FM systems, from prep schools to shopping malls in Taiwan. We can help, and we will do our best to make certain all of the bases are covered before your system ships. This makes everyone's life easier. After all, why go through all this effort if you're not going to do it right?