LPB Communications, Inc.
960 Brook Road, Unit 5
Conshohocken, PA 19428 USA
1-877-LPB-COMM
www.lpbinc.com

Radiating Cable FM - FAQ

An increasing number of college radio stations and others are broadcasting to a limited area in FM stereo (or FM mono) using a special radiating (leaky) coaxial cable, without any requirement for FCC licensing, completely in compliance with the FCC Rules. LPB, Inc has designed a special Radiating Cable System, using proprietary components, which will permit colleges to broadcast on (and slightly off) campus in open air FM. These systems need to be carefully designed in order to meet the FCC requirements and offer maximum coverage on the campus.

Q. How Do We Do It?

There are two kinds of Radiating Cable FM Systems : The Standard and the CATV Distributed. Simple enough. If you don't have a CATV system or any kind of closed campus TV, then your system resembles Carrier Current in distribution. Using a phone line (2 for Stereo) to each major building group, and an FM Stereo Modulator in each central building, the system feeds a series of amplifiers and radiating cable antennas spread through the buildings. A modulator can feed multiple cables and amplifiers as well. Please contact LPB for help on these systems as the design affects the total cost. In many cases you do not need a system in each building for coverage. If your campus has a Cable TV system head end, either your own system or the local cable company's, you can use that (with permission) for distribution of your modulated FM signal. If you are already a CaFM station you know how this works. You simply put the FM signal into the Cable TV system and tap off in the dorm rooms. Well, with the Radiating Cable System, we just tap once per building and amplify the signal into our Radiating Cable System, providing open air FM throughout the building. Again, please ask for assistance on the system designs.

We are also working on distribution via fiber optic systems as we have done with Carrier Current systems. Ask if you are interested in such a system.

Q. But We Want A "Real" FM Station...

Who doesn't? But realistically, most markets are pretty crowded now, and only getting more so. You also have to maintain a licensed station with an awful lot more care and attention than most people realize. You must maintain regular on-air hours, comply with all monitoring and broadcast regulations, maintain Emergency Broadcasting Systems, and other headaches. These headaches can include making sure someone 20 miles away isn't offended when you play Nine Inch Nails on Sunday morning! This is why we created Radiating Cable FM.

Q. What about the New LPFM licenses?

Well, it certainly looked like a great plan for schools, then the Congress passed a plan that crippled it. As of this date, no licenses have actually been granted for LPFMs, despite filings that are as much as a year old already. Don't hold your breath. Some of the schools in remote locations will have a shot at a limited LPFM license. Those in a major metropolitan area can forget about a license. Even those in suburban areas, for the most part, are unlikely to benefit from LPFM rules. Keep your fingers crossed that the folks in support of LPFM can reverse the Congressional plan, but don't place any big bets on it!

Q. What's The Big Deal?

Broadcasting using radiating cable offers a number of advantages by comparison with an over-the-air Noncommercial Educational FM Station licensed by the FCC. First, there is no licensing procedure, associated cost, or processing delays. Second, the frequency is not limited to the Educational Band (88.1- 91.9 MHz), but is permitted in the full 88.1 to 107.9 MHz FM Band. Third, there are no restrictions on the broadcast of commercial advertising. Fourth, using radiating cable is typically less expensive, often much less expensive than a licensed Noncommercial Educational FM transmission system.

Q. Yeah, But What Are The FCC Rules?

The FCC Rules place two requirements on the operator (radio station) of special radiating coaxial cable in the FM band, and one on the equipment supplier.

Operation may not cause any interference to a licensed broadcaster, or to any other service authorized by Part 15 of the FCC Rules [15.5(b)]. Compliance is accomplished by choosing a frequency which is locally quiet (i. e., you cannot hear anything on it). Choice of a frequency must be done quite carefully in the band 88.1 to 107.9 MHz, to avoid any existing licensed Station, and any current Construction Permit to build a new licensed FM Station. Part 15 requires that you cease operation, and change to an unused frequency, immediately if you present the licensed broadcaster any interference, interpreted as any difficulty in receiving the licensed station anywhere within or near its licensed 1mV/m protected contour.

The field strength shall not exceed 250 µV/m (microvolts per meter) at a distance of 3 meters from the radiating cable [15.239(b)]. An understanding of the nature of the field strength in the vicinity of our ÒantennaÓ (the radiating cable) is the key to an appreciation of why and how FM stereo radiating cable broadcasting is successful.

More Technical Stuff...

Note that the permitted field strength is 250 µV/m at 3 meters from the radiator. Mathematically, the product of the field strength and distance is constant, equal to 750. That is, at 30 meters, the field strength is 750/30 = 25 µV/m; at 50 meters, it is 750/50 = 15 µV/m; and at 75 meters, field strength is 750/75 = 10 µV/m.

The final measurement is important, since a portable (Walkman-type) radio can discriminate FM to about 10 µV/m, when the FM signal should become indistinguishable from background noise. A good component stereo receiver can pick up clear FM stereo at 10 µV/m. 75 meters is approximately 250 feet. So coverage distance for FM, under ideal conditions, may be 250 feet on either side of the radiating cable, a 500 foot wide zone. Ideal conditions include a completely quiet FM frequency, no interference of any sort, and open-air transmission with no impeding objects.

In the real world, ideal conditions are quite rare, and floors and walls of buildings can cause the signal strength to be dramatically reduced. Still, we have encountered conditions when FM stereo radiating cable on the sixth floor of a high-rise dorm provided clear signal on the first floor, and also on the seventeenth floor, over 110 feet away, through 11 stories of floors and walls.

Fortunately, FM stereo radiating cable systems are modular in nature; more coverage can be added later without affecting anything already in place.

The FM System must be Certified by the FCC in compliance with the technical specifications of Part 15. The "As Built" system must be adjusted, on site, to meet the general requirement (FCC Part 15.239) that emissions at a distance of 3 meters from the radiator do not exceed the level of 250µV/m. This measured compliance by a professional engineer then becomes the "Certification".

Since it could be difficult to make the proper measurement with a calibrated antenna within the confines of buildings, the FCC agreed with LPB that it was practical to take the compliance measurements outside the building at a distance of 3 meters from the building. This will ensure that there will be no interference to licensed broadcasters. This test must be performed with properly calibrated equipment. Note that it is possible that a local Professional Engineer has access to a calibrated field intensity meter, and could make these measurements for the station. Those measurements would then be filed with LPB.

Q. Okay, You Got Me, What Do You Need Now?

LPB has a simple form and list of information required to help develop quotations for a campus system. This service is FREE, because we were there once too, and know that appropriating money is a real pain for school stations. We also offer on-site services for stations who need it ($400/day plus expenses) or for those who cannot be sorted out from the information provided. In some cases we recommend that LPB personnel be on-site for the installation process and the final field strength measurements. If you do not have a certified professional engineer with a calibrated field intensity meter that you can coerce into measuring the installed system, LPB can come to the campus and do so for you.

You have two choices for FM - Licensed with all the headaches, or unlicensed with saved money, reduced headaches, and a chance to make and sell commercials to help fund your station! By running a radiating cable system, you still have FM coverage, but now you can run the station as a regular broadcast station, and see what its like in the "real world" of radio.

For more information, please call, fax or email us, or printout and complete the Campus Radio Survey form and send it to us. Thanks!