

EXHIBIT 10
OPERATING MANUAL

The Ultimate Business Tool



An FCC Certified
Private FM Radio Station

LPB[®]

Manufacturers of Professional Broadcast Transmitters Since 1960



Introduction and Getting Started

The FCC and You

Thank you for choosing the FM ADvantage, the ultimate business tool. The FM ADvantage has been designed to allow any user, regardless of broadcast experience, to set up and operate their own radio station. The folks at the FCC have provided us with the opportunity to run small local radio station broadcasts FOR PROFIT under Part 15 of their rules. The FM ADvantage has been designed to operate at the maximum field strength allowed by the FCC rules and has been granted FCC Certification for operation under Part 15.239 of the rules. In order to comply with Part 15.239 devices carry and FCC ID label, which you will find on the bottom of the unit.

The FM ADvantage Package

The FM ADvantage was designed to reach the maximum limits with a minimum headache. The transmitter is a complete unit with a fixed antenna and supplied AC power adapter. In order to set up the system you will need an audio input device. This can be a CD player, Cassette Deck, MiniDisc Player, a Digital Repeater, or even a full broadcast studio. In the interest of convenience, and portability, we suggest that a MiniDisc player is your best choice as it will provide large amounts of storage and good audio quality for a very low cost.

Selecting Your Audio Source

Before you select your audio source, think about how often you want to change your messages. If you plan to record 3-10 minutes of audio, and only change the message every month or more, you should consider a custom recorded CD. This will give you the best audio consistency of any of the options, and provide you with an excellent archive copy. You can make your own CDs, or have them produced at nearly any local recording studio (grab the phone book), generally for under \$100. Portable CD players are generally on sale for under \$60 and can be thrown away when they fail.

If you need to change messages on a regular basis, such as 4 times a month or more, a MiniDisc is a better choice. You can even use an auto-reversing cassette deck!

Digital repeaters may seem like a convenience, but most of them lack the audio quality of the CD, MiniDisc and Cassette. The costs to achieve these high levels of audio quality for a digital repeater are more than triple the cost of the FM ADvantage!!



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Getting Started and Setting Up

Setting up the Transmitter

Selecting the location to setup your transmitter is the most critical part of the system. Since the FCC restricts your coverage, you need to make every effort to place the transmitter in the highest and clearest location possible. FM systems perform best with height and limited obstructions (especially metal) between the transmitter and intended receiver.

•Indoors

If you are using the system indoors, it should be placed in the highest location available, and in a window (if possible). If you have an attic which is wood framed and a wooden or shingle roof, you can place the system in an attic as well. Windows offer the least resistance to the FM signal, so they should be your primary focus. For indoor installations the audio source and the transmitter can be located in the protected environment of the building without concerns for durability. It is always best to keep the audio and transmission units separated from each other. If possible, you could place the transmitter in a metal tray (such as a cookie sheet) on some blocks and place the audio source underneath this. In some cases, inexpensive audio players may be sensitive to the radiating FM signal. This installation method will shield the audio source from the transmitter.

• Outdoors

Outdoor installations require weatherproof casing of the system. We can provide a roof mounting kit which includes a weatherproof enclosure and mounting tripod. You can make your own enclosures, or purchase them from home supply shops as well. Keep in mind that the transmitter and audio source need to be safe from weather, and the devices may generate heat over time. The idea setup would have the audio source located inside the building and a shielded audio line (available at home stores and audio dealers) running from there to the transmitter. The transmitter will also require AC power, so try to determine a good route for power to the transmitter when considering a roof mount.

Picking a Frequency

Once you have determined the location for the transmitter and its audio and power cabling, you can set it up for broadcasting. To do so, you need to determine the frequency for your operation. The FCC rules **prohibit** you from operating on the same frequency as a local licensed station. In order to determine which space on your FM dial to use we suggest using the digital FM radio in your car. Starting at the bottom of the dial (87.9MHz FM) tune the radio one channel at a time and note where there are quiet spaces. Your best bet will probably be between 87.9 and 92.1MHz as this is a section of the band reserved for licensed



Setting Up Your Frequency and Audio

non-commercial stations. These often have lower power levels than commercial stations. Once you have found a few of the quietest spots, try setting your radio to them and turning it on and off. This will ensure that the car radio does not have a "quieting" feature which often mutes stations which are weak or noisy. Pick the best (quietest) of these channels and now you can set up the transmitter.

Setting Your Frequency on the FM ADvantage (Transmitter OFF)

In order to perform final setup and test you will need a radio receiver, ideally a "boombox" type with a digital tuner and speakers. This will let you monitor your frequency and listen to your audio as you make final adjustments. A fixed radio is easier to work with than a portable with earphones.

The transmitter has a small hatch on the bottom. Open this cover and you will see four identical rotary switches with small knobs. These are your frequency selection switches. Refer to the chart at the end of this booklet to determine the correct setting for your frequency. Rotate the knobs to set the correct frequency, noting that the number codes are seen through the small cover window. Remember that this is a code, it is not a direct readout of your frequency. For example, if you wish to use 89.7MHz, you would set the rotary switches at 3-1-5-3. Once you have set up the frequency, you can set the transmitter in place, connect it to audio and power and work on the audio side of things.

Before setting up your audio levels, connect the transmitter and audio source together, and dial the audio level as low as it will go. Once you have done this, you may power up the transmitter and audio source.

Mono or Stereo?

Your immediate question is "why not stereo?". There are some benefits to mono broadcasting, the main one being that the typical radio can receive a mono signal up to 3 times further than a stereo one. Stereo signals are more likely to suffer from interference, known as multipath, in metropolitan areas. On the downside, some car radios will ignore mono signals unless they are specifically tuned in, or a "DX" or "Mono" button is pushed. The FM ADvantage can be run in either setting by using the switch on the side.

Setting Your Audio Levels (Transmitter ON)

Now is the time to turn on your monitoring device (boombox, etc...) and set it to listen to your frequency. Begin playing your audio source now. Adjust the output level of your audio



Setting Up Your Frequency and Audio

source until the audio is clear on your monitor. Raise or lower the levels to determine the highest level of audio you can use without distorting the sound. Once you have a comfortable level, listen for a moment and make certain that there are no peaks in the audio level which will cause distortion. If there are, make sure you reduce the level as much as needed to let the sound stay clear. You are now running your own radio station!

A Note on Connections and Levels

Some audio devices will not have connectors that match to those on the FM ADvantage. The transmitter uses "RCA Phono Jacks" for its inputs. Many of the devices which you will consider for audio sources will have 1/8" or 1/4" phone jacks for their outputs. Any audio store or decent electronics store (esp. Radio Shack, Sandy's, etc...) will have the necessary cables for connecting these devices. The typical cable will be setup for stereo use. If possible, use a complete cable with the correct connectors and do not add adapters to the cables. The inputs to the FM ADvantage are "unbalanced" which means they are not grounded. Your audio input should also be unbalanced. Most of the sources you would consider for use will be unbalanced.

In order to be able to adjust your levels for the input to the transmitter, you will normally be using the headphone output on your audio source. Using the volume control on the source will allow you to adjust to the needed levels.

Operation and Use

The FM ADvantage was designed to get the maximum legal performance under the FCC regulations. Typically this will be a 50 -100ft radius of coverage. Your results will vary based on the location of the transmitter, clarity of frequency and quality of the receiver. Some car receivers have tested as well as 400ft from the transmission point. Keep in mind that this is the exception, not the rule.

There are no content restrictions for your programming. You may sell commercials, make political commentary or play music as you see fit. You are required to abide by the FCC codes of conduct and content such that you restrict "offensive" material. If you are unclear on what is considered "offensive" material, please contact the FCC for these guidelines and information on the "safe harbor period" from 12 midnight to 6 am. The prevailing laws of your community, state and government will still apply to your content and actions.

Questions? Please feel free to contact the factory via phone, fax or email. Also check our website for updated product information <http://www.lpbinc.com>.



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Specifications and Warranty

Warranty

This device is warranted against manufactured defect for 1 year from date of shipment. Simply return the defective unit to LPB for immediate replacement. Improper installation and/or operation will void this warranty. Any modification to this device, its power supply or antenna will void this warranty and may violate FCC regulations.

FCC Certification

This device is FCC Certified for use under Part 15.239. Certification ID # AIU723FM-ST1. Its operation is subject to interference by licensed broadcast stations and it may not provide harmful interference to licensed broadcast stations. This device operates as a secondary service under FCC Part 15.

Specifications

Operating Range	87.9MHz to 107.9MHz
FM Carrier Frequency Tolerance	$\pm 75\text{kHz}$ deviation (75kHz = 100% modulation)
19kHz Pilot Frequency Tolerance	$\pm 2\text{Hz}$
38kHz Subcarrier Suppression	>50dB below equivalent 100% modulation
Pre-emphasis	75 μ seconds
Audio Frequency Response	$\pm 1\text{dB}$ from 50Hz to 15kHz
Total Harmonic Distortion	<0.5% from 50Hz to 15kHz
Stereo Separation	>30dB from 50Hz to 15kHz
Audio Input Impedance	600 Ω
Audio Input Level	-10dBm

Information subject to change without prior notice due to continuing product development



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Setting Your Frequency

A B C D					A B C D					A B C D					A B C D					A B C D				
88.1	3	0	0	4	92.1	3	4	0	4	96.1	4	0	0	4	100.1	4	4	0	4	104.1	5	0	0	4
88.3	3	0	2	2	92.3	3	4	2	2	96.3	4	0	2	2	100.3	4	4	2	2	104.3	5	0	2	2
88.5	3	0	4	0	92.5	3	4	4	0	96.5	4	0	4	0	100.5	4	4	4	0	104.5	5	0	4	0
88.7	3	0	5	3	92.7	3	4	5	3	96.7	4	0	5	3	100.7	4	4	5	3	104.7	5	0	5	3
88.9	3	0	7	1	92.9	3	4	7	1	96.9	4	0	7	1	100.9	4	4	7	1	104.9	5	0	7	1
89.1	3	1	0	4	93.1	3	5	0	4	97.1	4	1	0	4	101.1	4	5	0	4	105.1	5	1	0	4
89.3	3	1	2	2	93.3	3	5	2	2	97.3	4	1	2	2	101.3	4	5	2	2	105.3	5	1	2	2
89.5	3	1	4	0	93.5	3	5	4	0	97.5	4	1	4	0	101.5	4	5	4	0	105.5	5	1	4	0
89.7	3	1	5	3	93.7	3	5	5	3	97.7	4	1	5	3	101.7	4	5	5	3	105.7	5	1	5	3
89.9	3	1	7	1	93.9	3	5	7	1	97.9	4	1	7	1	101.9	4	5	7	1	105.9	5	1	7	1
90.1	3	2	0	4	94.1	3	6	0	4	98.1	4	2	0	4	102.1	4	6	0	4	106.1	5	2	0	4
90.3	3	2	2	2	94.3	3	6	2	2	98.3	4	2	2	2	102.3	4	6	2	2	106.3	5	2	2	2
90.5	3	2	4	0	94.5	3	6	4	0	98.5	4	2	4	0	102.5	4	6	4	0	106.5	5	2	4	0
90.7	3	2	5	3	94.7	3	6	5	3	98.7	4	2	5	3	102.7	4	6	5	3	106.7	5	2	5	3
90.9	3	2	7	1	94.9	3	6	7	1	98.9	4	2	7	1	102.9	4	6	7	1	106.9	5	2	7	1
91.1	3	3	0	4	95.1	3	7	0	4	99.1	4	3	0	4	103.1	4	7	0	4	107.1	5	3	0	4
91.3	3	3	2	2	95.3	3	7	2	0	99.3	4	3	2	2	103.3	4	7	2	2	107.3	5	3	2	2
91.5	3	3	4	0	95.5	3	7	4	2	99.5	4	3	4	0	103.5	4	7	4	0	107.5	5	3	4	0
91.7	3	3	5	3	95.7	3	7	5	3	99.7	4	3	5	3	103.7	4	7	5	3	107.7	5	3	5	3
91.9	3	3	7	1	95.9	3	7	7	1	99.9	4	3	7	1	103.9	4	7	7	1	107.9	5	3	7	1

This unit is not for use outside of the broadcast band of 88-108MHz.

To Change the Frequency on the FM ADvantage :

1. Turn unit off.
2. Remove snap-on back cover
3. Change the rotary DIP switches to match the chart above
4. Replace cover.
5. Turn unit on.