



# FMi 31, 73, 106, 201, 301 and 402 Series Transmitters

FM Only, IBOC Only, and FM + IBOC  
Mode of Operation Setup Guide

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## **FMi 31, 73, 106, 201, 301 and 402 Series Transmitters**

### **FM Only, IBOC Only, and FM + IBOC**

### **Mode of Operation Setup Guide**

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## 1 Purpose of this Document

The purpose of this document is to describe the necessary steps to setup lower powered FMi 31, 73, 106, 201, 301 and 402 Series Transmitters for FM ONLY, IBOC ONLY, and FM + IBOC Modes of Operation.

## 2 Tools / Items Needed

### 2.1 Tools / Items Needed for FMi 31, 73, 106, 201, 301 and 402

- 5/16" Nut Driver
- No. 2 Phillips Screw Driver
- Tuning Tool
- Average Power Meter (capable of handling transmitter RF Output power)
- Power Meter (capable of handling transmitter RF Output power)
- Spectrum Analyzer (HP4396B or Equivalent)
- 50 Ohm Termination (capable of handling transmitter RF Output power)
- Personal Computer with Windows HyperTerminal Communication program installed
- Null Modem Cable

### 2.2 Estimated Setup Time

Providing that you have the tools listed above, it will take approximately 15 - 30 minutes to complete the setup.



## 3 FMi 31, 73, 106, 201, 301 and 402 Modes of Operation

All FMi Series Transmitters are tested at the factory in FM ONLY, IBOC ONLY, and FM + IBOC Modes of Operation. Depending upon the customer sales order, the transmitter will be set in one of these three modes prior to shipment. If it is desired to change the transmitter's mode of operation, the steps in this document **MUST** be strictly followed to ensure that the Transmitter and the Exciter are not damaged.

### 3.1 FM ONLY

See Section 4.0 to setup the FMi Transmitter for **FM ONLY** mode of operation. This section describes the necessary hardware jumper settings required for the transmitter to operate in FM ONLY mode as well as Forward Power calibration requirements.



**CAUTION!! PLEASE READ CAREFULLY!**

**FMi transmitters may NOT be switched between FM ONLY and the other two modes of operation "On The Fly"! Attempting to do so WILL result in serious damage to the Transmitter and Exciter!**

### 3.2 IBOC ONLY

See Section 5.0 to setup the FMi Transmitter for IBOC ONLY mode of operation. This section describes the necessary hardware jumper settings required for the transmitter to operate in IBOC ONLY mode as well as Forward Power calibration requirements.

After proper setup, FMi Series Transmitters may be switched "**On the Fly**" between **IBOC ONLY** and **FM + IBOC** Modes of Operation.

**NOTE:** The Forward Power Meter on the front panel of the transmitter will only be accurate for the mode of operation for which the transmitter was calibrated for.

### 3.3 FM + IBOC

See Section 6.0 to setup the FMi Transmitter for FM + IBOC mode of operation. This section describes the necessary hardware jumper settings required for the transmitter to operate in FM + IBOC (Hybrid) mode as well as Forward Power calibration requirements.

After proper setup, FMi Series Transmitters may be switched "**On the Fly**" between **IBOC ONLY** and **FM + IBOC** Modes of Operation.

**NOTE:** The Forward Power Meter on the front panel of the transmitter will only be accurate for the mode of operation for which the transmitter was calibrated for.

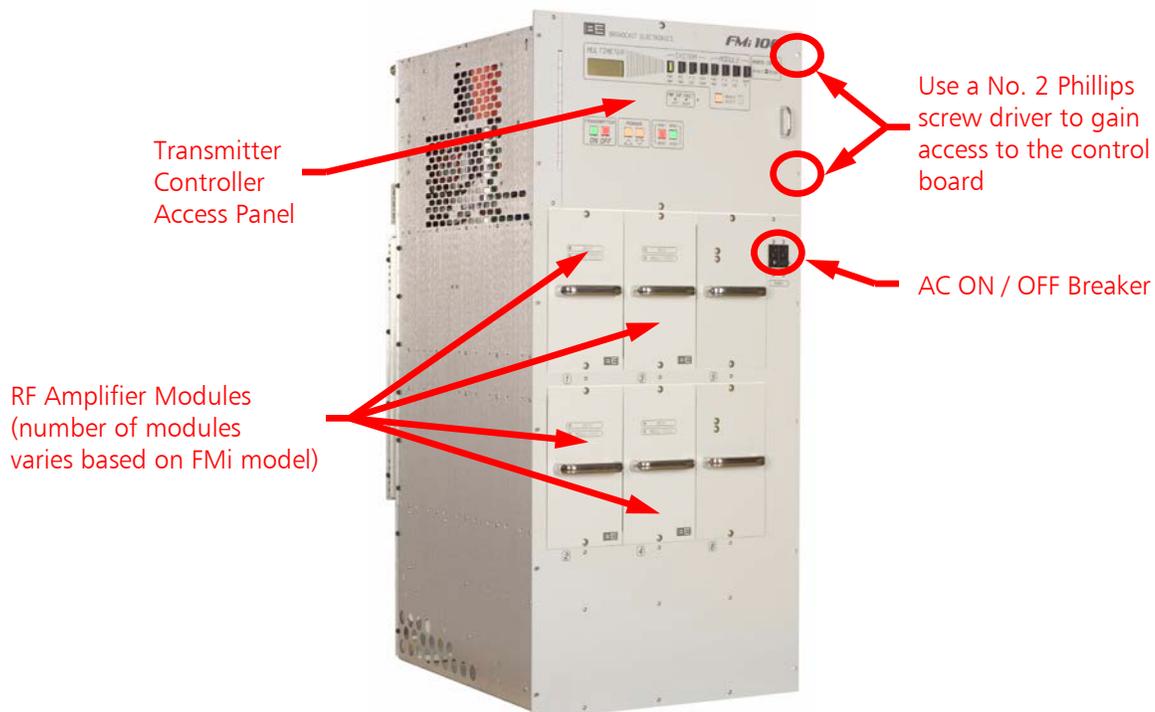


## 4 FM ONLY Mode of Operation Setup

### 4.1 FM ONLY Jumper Settings

**Step 1** – Turn the front panel AC Breaker to OFF and disconnect AC Power from the transmitter.

**Step 2** – Using a No. 2 Phillips Screwdriver, remove / open the control access panel and locate Transmitter's Control Board (P/N 919-0563-XXX) as shown in Figure 3.



**Figure 1 – Typical Low Power FMi Transmitter**

**Step 3** - With AC power disconnected, verify / set the following Transmitter Control Board (P/N 919-0563-XXX) Jumper Settings. See Figures 2 and 3 for Jumper reference.

Jumper	Position	Jumper	Position
P724	2 and 3	P725	2 and 3
P727	1 and 2	P728	1 and 2

**Figure 2 – Control Board Jumper Settings for FM ONLY Operation**

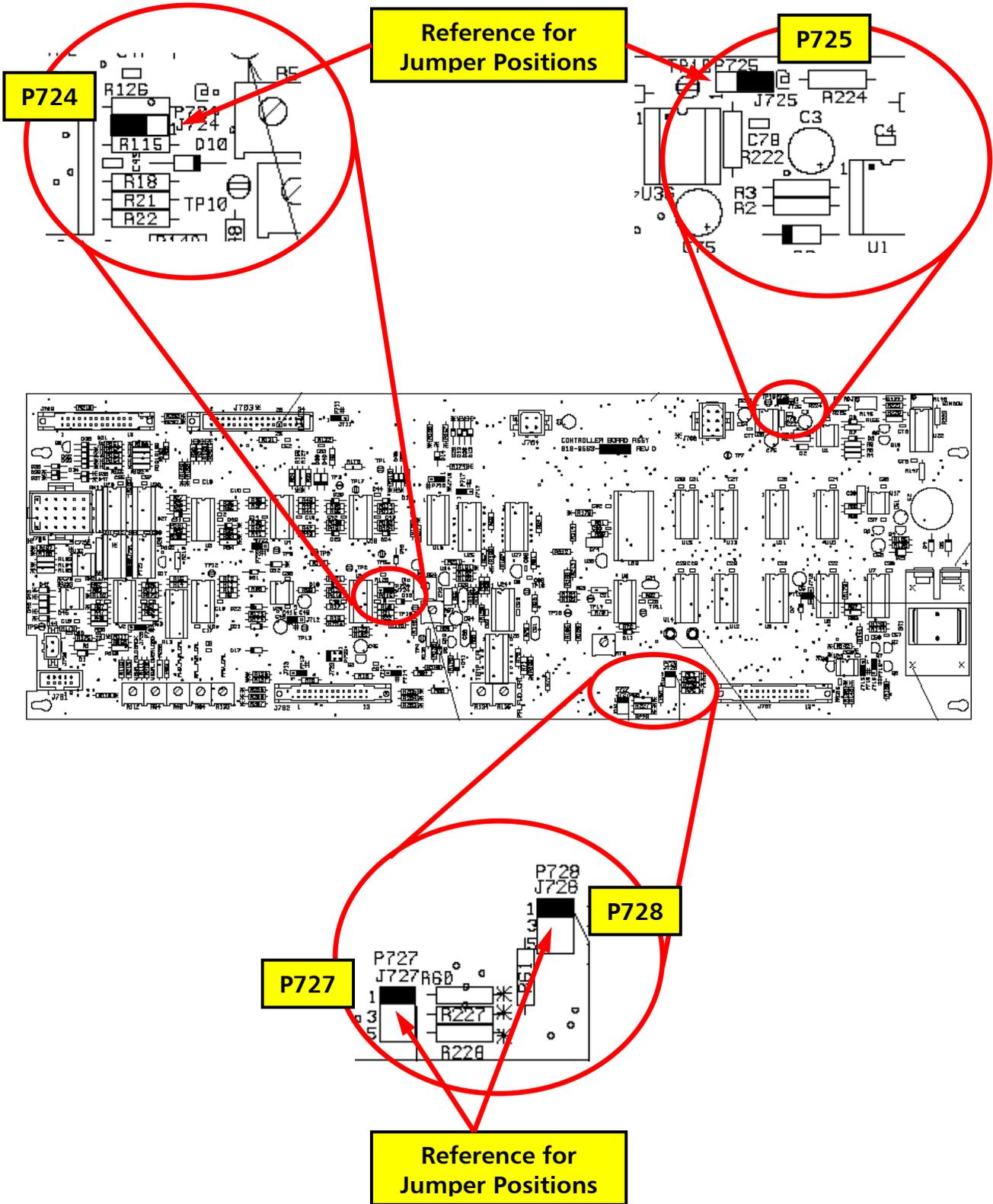
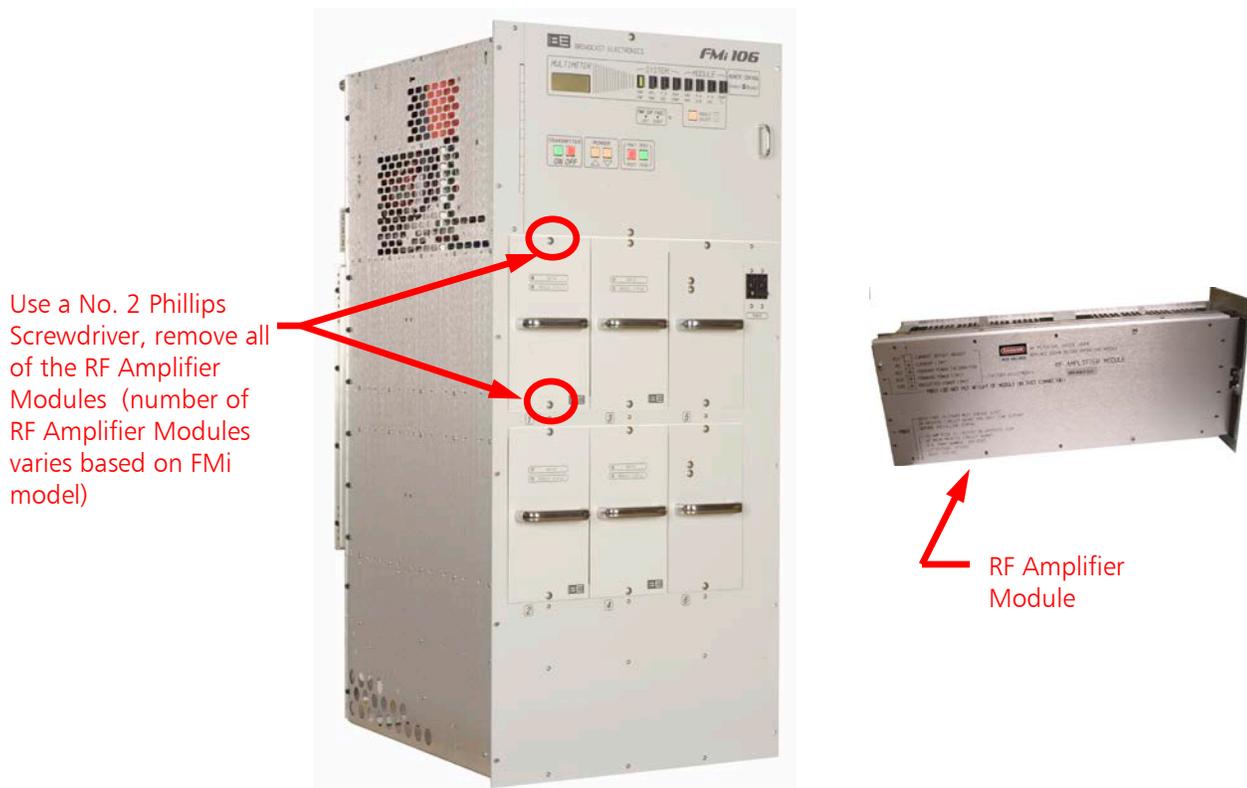


Figure 3 – Control Board Jumper Locations for FM ONLY Operation



**Step 4** - Using a #2 Phillips screwdriver, remove all of the RF Amplifier Modules from the transmitter.



**Figure 4 – RF Amplifier Module Removal – Typical All FMI Transmitter Models**

**Step 5** – Locate the Logic Board (P/N 919-0417-012) on each RF Amplifier Module.



**Figure 5 – RF Amplifier Module Logic Board Location**

**Step 6** - Verify / set the Logic Board (P/N 919-0417-012) Jumper Settings on all RF Amplifier Modules. See Figures 6 and 7 for Jumper reference.

Jumper	Position	Jumper	Position
P1	1 and 2	P2	1 and 2
P3	1 and 2	P4	1 and 2
P5	1 and 2		

**Figure 6 – RF Amplifier Logic Board Jumper Settings for FM ONLY Operation**



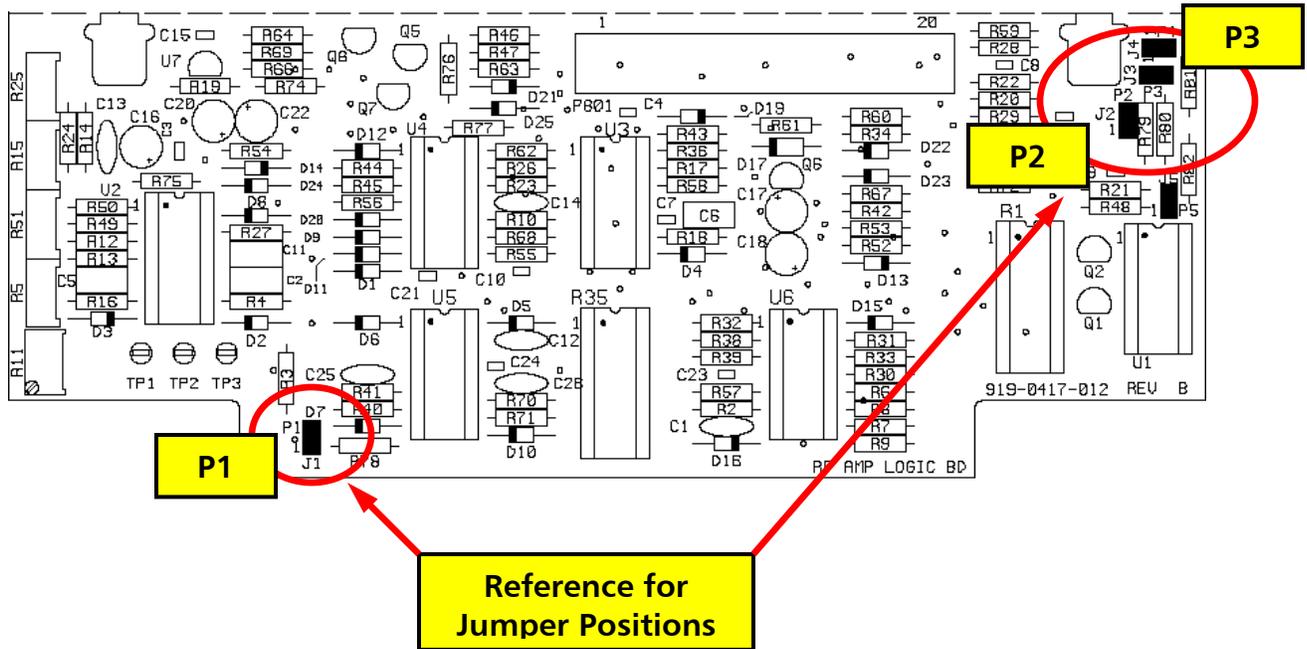


Figure 7 – RF Amplifier Module Logic Board Jumper Locations for FM ONLY Operation

**Step 7** – Use a No. 2 Phillips Screwdriver and a 5/16” nut driver and remove the covers from the RF Amplifier Modules.

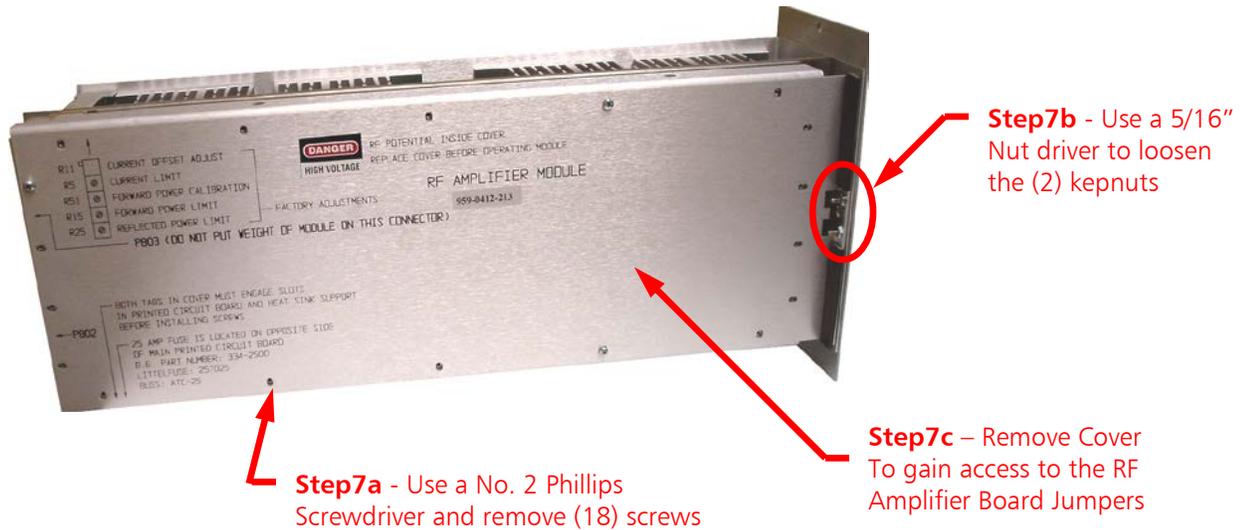


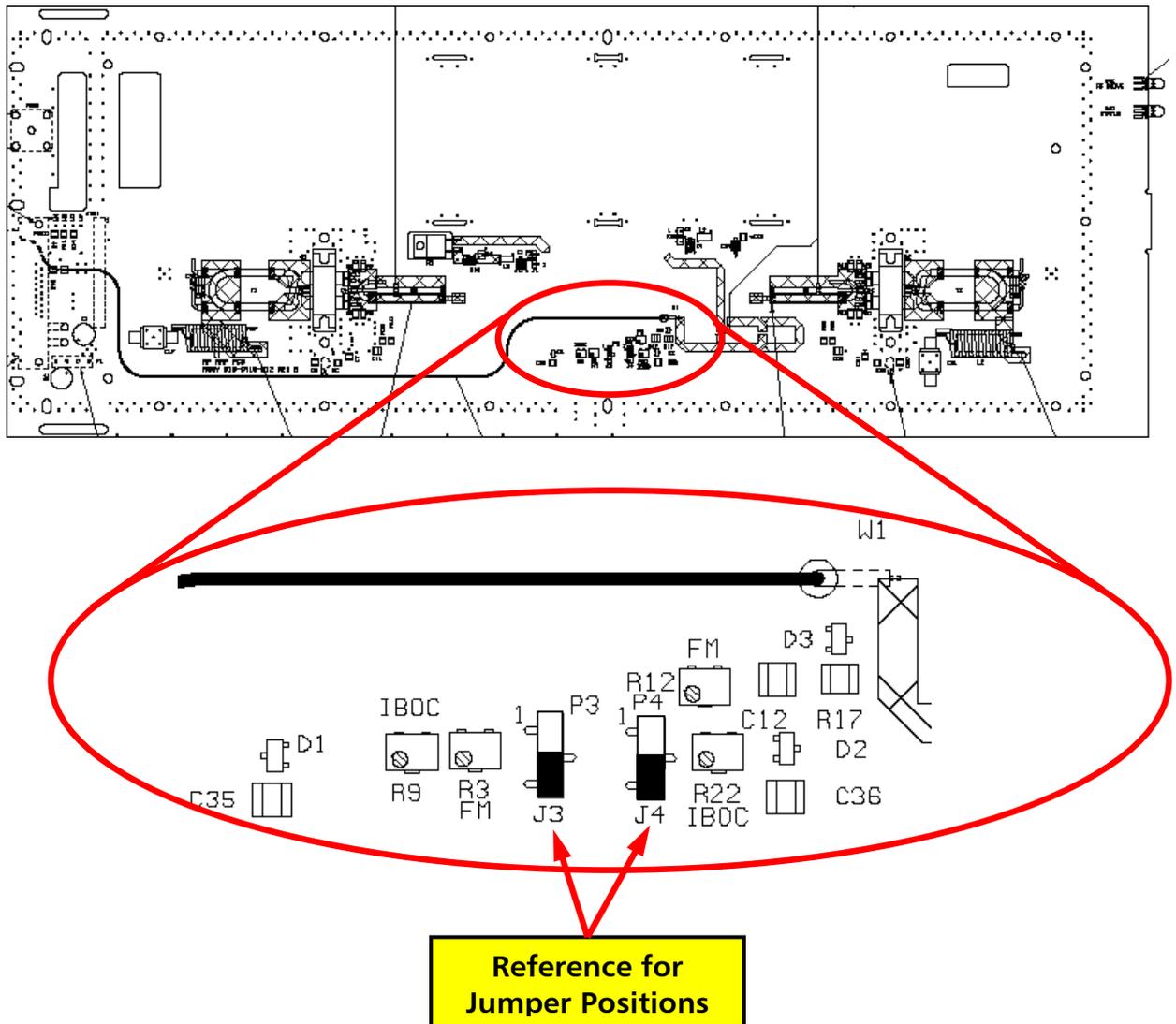
Figure 8 – RF Amplifier Module Cover Removal



**Step 8** – On each RF Amplifier Module, verify / set the jumpers on the RF AMP Board (P/N 919-0416-010), as shown in Figures 9 and 10.

Jumper	Position	Jumper	Position
P1	1 and 2	P2	1 and 2
P3	2 and 3	P4	2 and 3

**Figure 9 – RF Amplifier Board Jumper Settings for FM ONLY Operation**



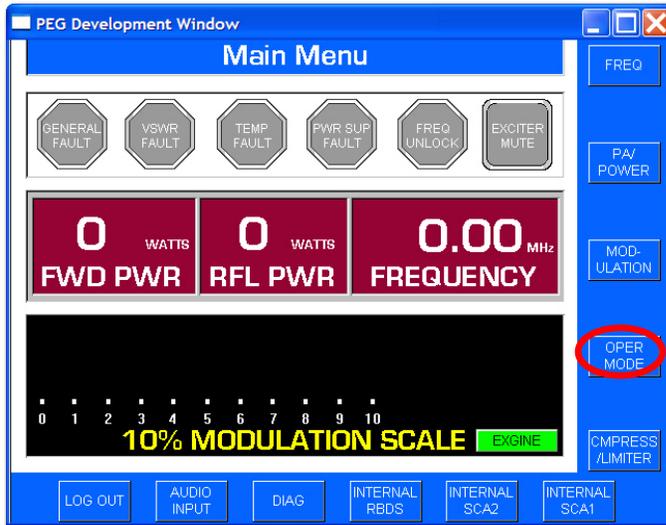
**Figure 10 – RF Amplifier Board Jumper Locations for FM ONLY Operation**

**Step 9** – Install RF Amplifier Module covers, tighten all hardware, and reinstall the modules in the transmitter.



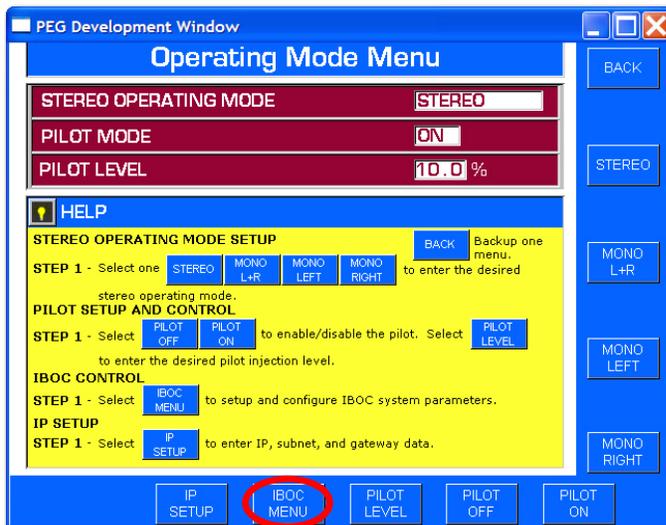
**Step 10** – Connect AC Power to the Transmitter and turn the front panel AC Breaker to ON.

**Step 11** – With AC power applied and the transmitter **MUTED**, go to the FXi Exciter GUI and select **OPER MODE** from the Main Menu.



**Figure 11 – FXi Main Menu**

**Step 12** – Select **IBOC MENU**.



**Figure 12 – FXi OPER MODE Menu**

**Step 13** – Select **FM ONLY**.



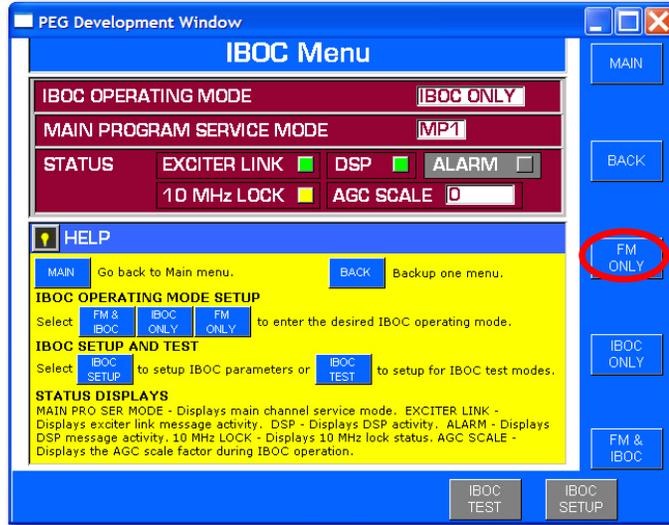


Figure 13 – FXi IBOC Menu

Step 14 – Return to the Main Menu of the Exciter and select **PA/POWER** Menu.

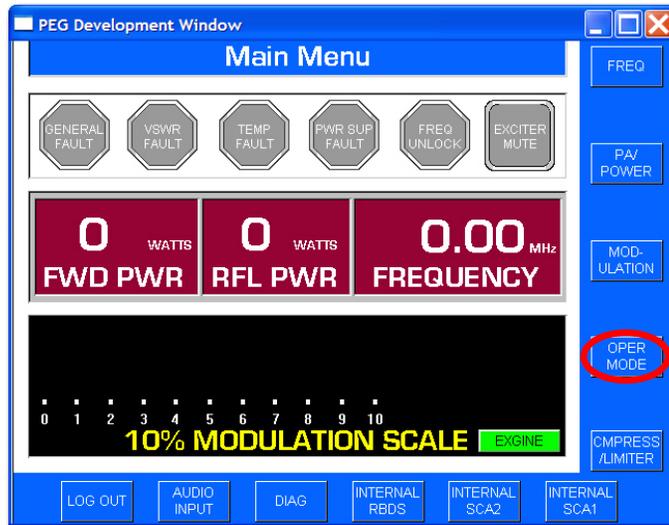
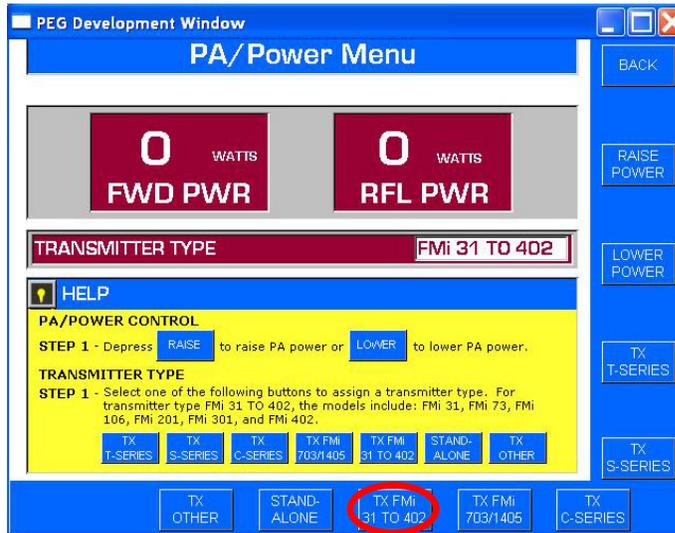


Figure 14 – FXi Main Menu



**Step 15** – From the PA/ POWER menu of the exciter, select **TX FMI 31 TO 402**.



**Figure 15 – FXi PA/POWER Menu**

## 4.2 FM ONLY Forward Power Calibration

- Step 1** – Ensure the output of the transmitter is connected through a Power Meter and a 50 Ohm termination (both capable of handling the RF Output Power of the transmitter).
- Step 2** – Press the "ON" control/indicator on the front panel of the transmitter. Verify the exciter "Un-mutes" (the Exciter Mute indicator on the FXi Main Menu GUI should be Gray if un-muted as shown in Figure 17).
- Step 3** – Adjust the FXi Exciter's Forward Power (see the chart in Figure 16 for your specific Transmitter).

FMi Transmitter	FXi Exciter FM ONLY Forward Power Setting
FMi 31	20W
FMi 73	40W
FMi 106	80W
FMi 201	120W
FMi 301	175W
FMi 402	220W

Figure 16 – Exciter Drive Setting for FMi Series Transmitters

**Step 3a** – From the FXi GUI Main Menu select **PA/POWER**.

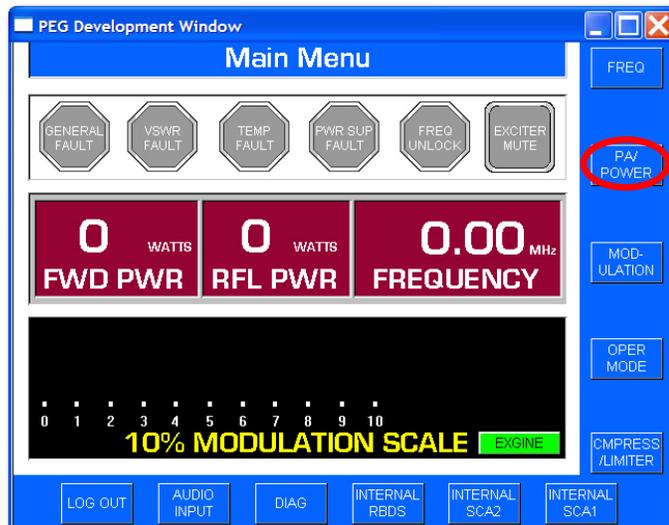


Figure 17 – FXi Main Menu

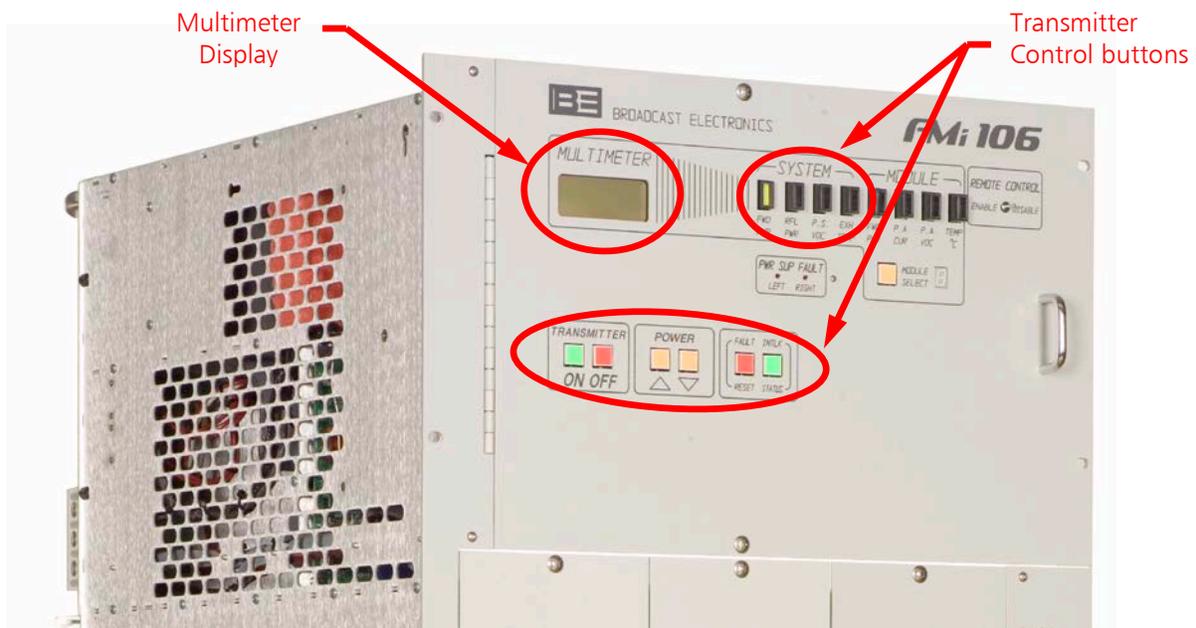


**Step 3b** – Next, select **RAISE POWER** or **LOWER POWER** and set the Forward Power out of the Exciter (see the chart in Figure 16 for your specific transmitter).



**Figure 18 – Fxi PA/POWER Menu**

**Step 4** – Depress the **FWD PWR** control push button, on the control panel of the transmitter, to display the transmitter forward power.



**Figure 19 – Typical Low Power FMi Transmitter Control Panel**



**Step 5** – Calibrate the forward power.

**Step 5a** – Press the POWER raise control, on the front panel of the transmitter, until the Power Meter (capable of handling the RF Output Power of the transmitter) indicates (see the table in Figure 20 for your specific Transmitter) watts.

NOTE: The RAISE and LOWER controls will illuminate when pressed.

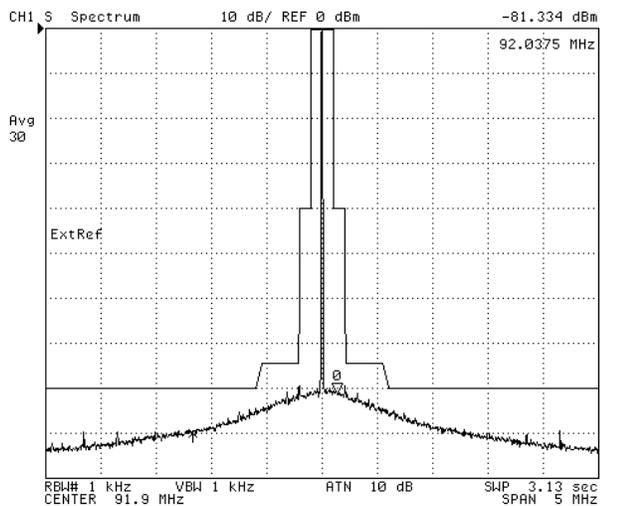
**Step 5b** – Adjust R49 FWD POWER Cal, on the control board, until (see the table in Figure 20 for your specific Transmitter) watts are displayed on the front panel Multimeter and Power Meter simultaneously.

NOTE: Due to the AGC circuit, it may be necessary to repeatedly readjust the POWER controls and R49 until the Power Meter and the transmitter LCD both indicate (see the table in Figure 20 for your specific Transmitter) watts.

FMi Transmitter	FMi Transmitter FM ONLY Forward Power Calibration Setting
FMi 31	500W
FMi 73	1000W
FMi 106	2000W
FMi 201	3000W
FMi 301	4000W
FMi 402	5000W

**Figure 20 – FMi Series Transmitter Forward Power Calibration Setting**

**Step 6** – The following figure shows a representation of the un-modulated FM ONLY spectrum.



**Figure 21 – Un-modulated FM ONLY Spectrum**

This completes the setup of the low power FMi transmitter for "FM ONLY" Mode of Operation.



### 4.3 Set an Average Power Meter Reference in FM ONLY Mode (for IBOC ONLY and FM + IBOC forward power calibrations)

NOTE: This section pertains to setting a reference for future IBOC forward power calibrations.

- Step 1** - Connect an Average Power Meter (capable of handling the RF Output Power of the transmitter) to the SAMPLE output on the rear of the transmitter.
- Step 2** - Press the POWER lower control, on the front panel of the transmitter, until the Power Meter (capable of handling the RF Output Power of the transmitter) is at the "IBOC ONLY" power setting, in watts, for your specific FMi transmitter (see the chart in Figure 22 for the appropriate value).
- Step 3** - Denote the Average Power Meter (capable of handling the RF Output Power of the transmitter) reading in dBm (this will be used to calibrate an Average IBOC Power).
- Step 4** - Press the POWER raise control, on the front panel of the transmitter, until the Average Power Meter (capable of handling the RF Output Power of the transmitter) is at the "FM + IBOC" power setting, in watts, for your specific FMi transmitter (see the chart in Figure 22 for the appropriate value).
- Step 5** - Denote the Average Power Meter (capable of handling the RF Output Power of the transmitter) reading in dBm (this will be used to calibrate an Average FM + IBOC Power).
- Step 6** - Press the "OFF" control/indicator on the front panel of the transmitter.

FMi Transmitter	IBOC ONLY Power Setting	FM + IBOC Power Setting (-20dBc)	FM ONLY Power (shown here for reference only)
FMi 31	140W	350W	500W
FMi 73	280W	700W	1000W
FMi 106	560W	1400W	2000W
FMi 201	840W	2100W	3000W
FMi 301	1200W	2800W	4000W
FMi 402	1500W	3500W	5000W

Figure 22 – Power Settings for IBOC ONLY and FM + IBOC Forward Power Calibration



## 5 IBOC ONLY Mode of Operation Setup

NOTE: Ensure that the FM ONLY MODE OF OPERATION, SET AVERAGE POWER METER REFERENCE section has been completed before continuing.

### 5.1 IBOC ONLY Jumper Settings

**Step 1** – Turn the front panel AC Breaker to OFF and disconnect AC Power from the transmitter.

**Step 2** – Using a No. 2 Phillips Screwdriver, remove / open the control access panel and locate Transmitter's Control Board (P/N 919-0563-XXX) as shown in Figure 23.

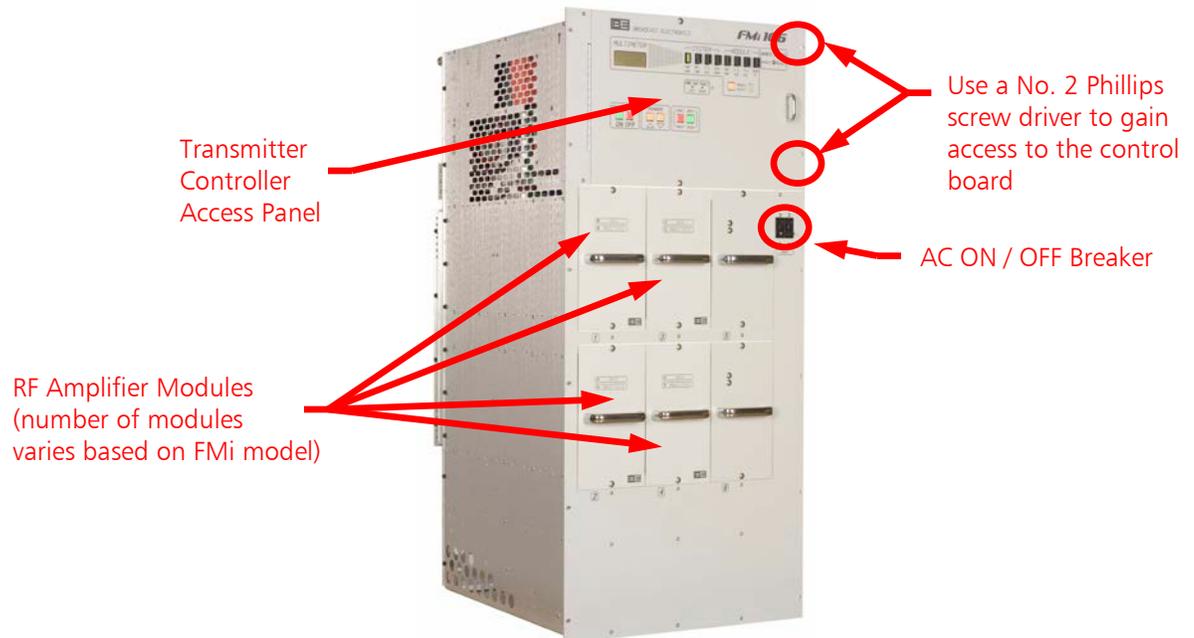


Figure 23 – Typical Low Power FMI Transmitter

**Step 3** - With AC power disconnected, verify / set the following Transmitter Control Board (P/N 919-0563-XXX) Jumper Settings. See Figures 24 and 25 for Jumper reference.

Jumper	Position	Jumper	Position
P724	1 and 2	P725	1 and 2
P727	3 and 4	P728	3 and 4

Figure 24 – IBOC ONLY Mode Jumper Settings

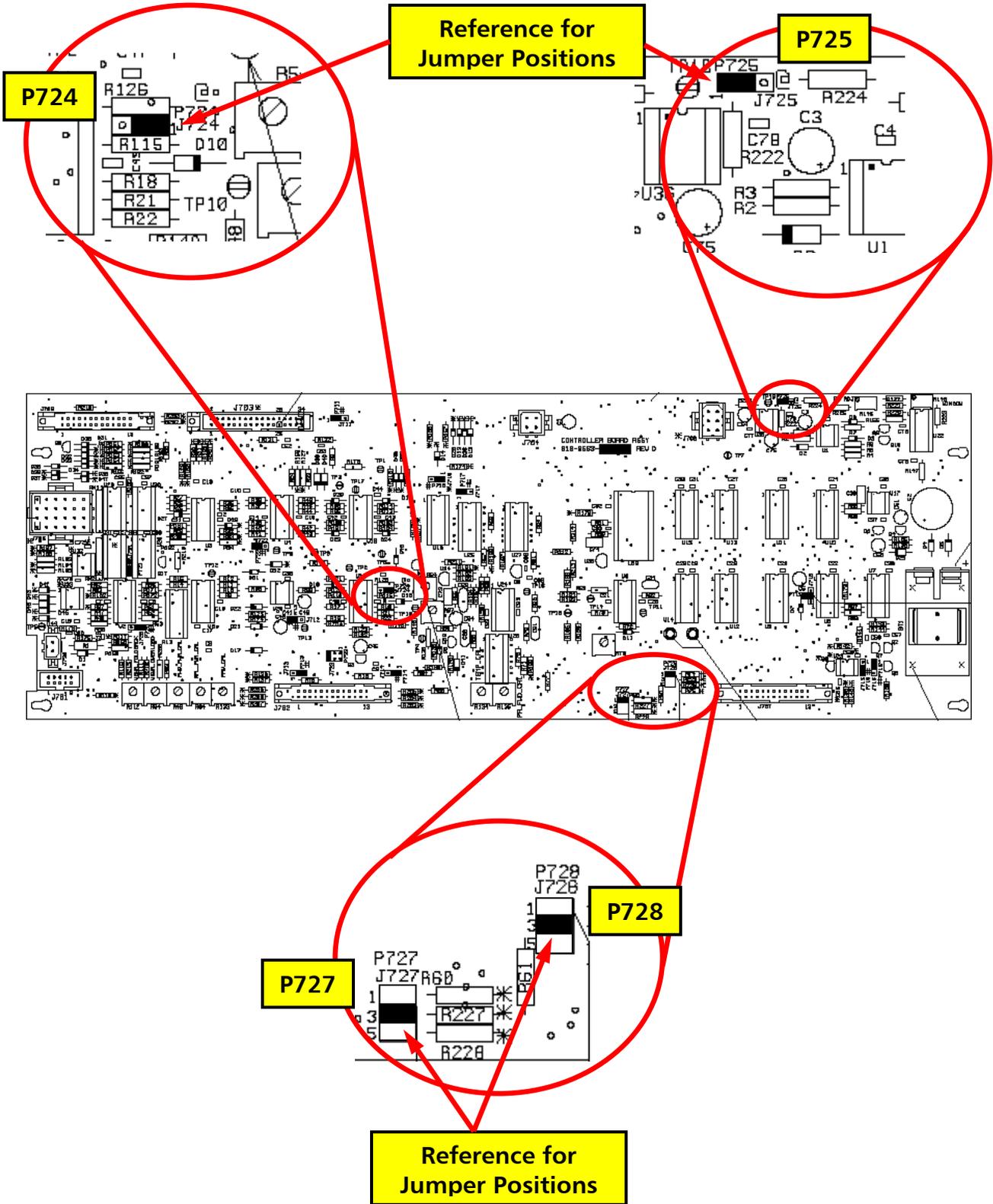
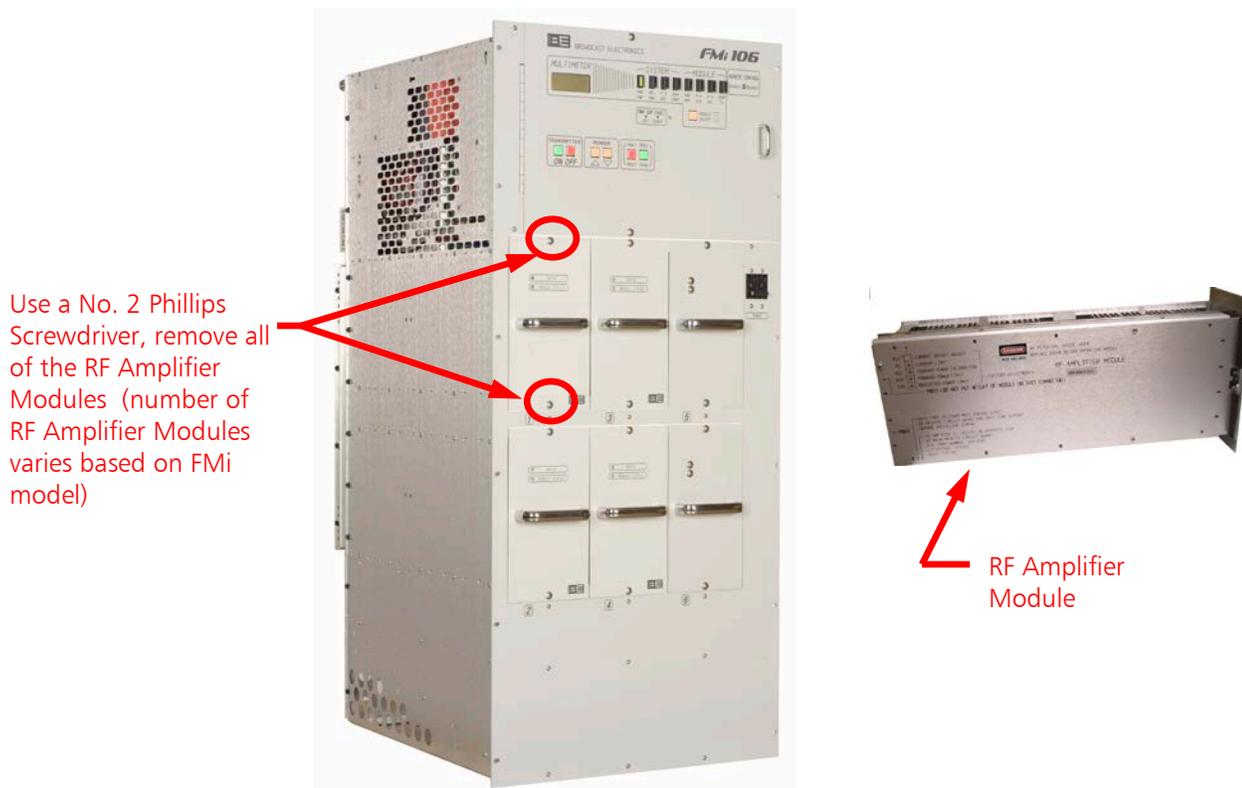


Figure 25 – Control Board Jumper Locations for IBOC ONLY Operation



**Step 4** – Using a #2 Phillips screwdriver, remove all of the RF Amplifier Modules from the transmitter.



**Figure 26 – RF Amplifier Module Removal – Typical All FMI Transmitter Models**

**Step 5** – Locate the Logic Board (P/N 919-0417-012) on each RF Amplifier Module.



**Figure 27 – RF Amplifier Module Logic Board Location**

**Step 6** – Verify / set the Logic Board (P/N 919-0417-012) Jumper Settings on all RF Amplifier Modules. See Figures 28 and 29 for Jumper reference.

Jumper	Position	Jumper	Position
P1	1 Only	P2	1 Only
P3	1 Only	P4	1 and 2
P5	1 and 2		

**Figure 28 – RF Amplifier Module Logic Board IBOC ONLY Mode Jumper Settings**



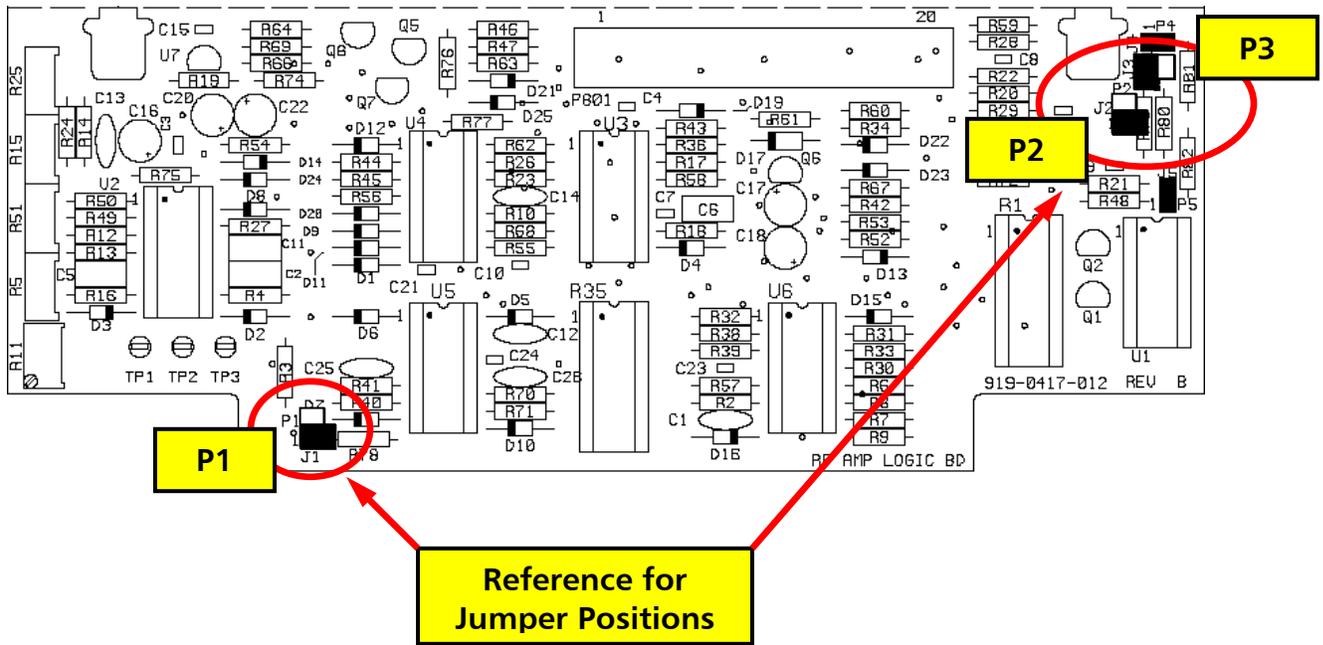


Figure 29 – RF Amplifier Logic Board Jumper Locations for IBOC ONLY Operation

**Step 7** – Use a No. 2 Phillips Screwdriver and a 5/16” nut driver and remove the covers from the RF Amplifier Modules.



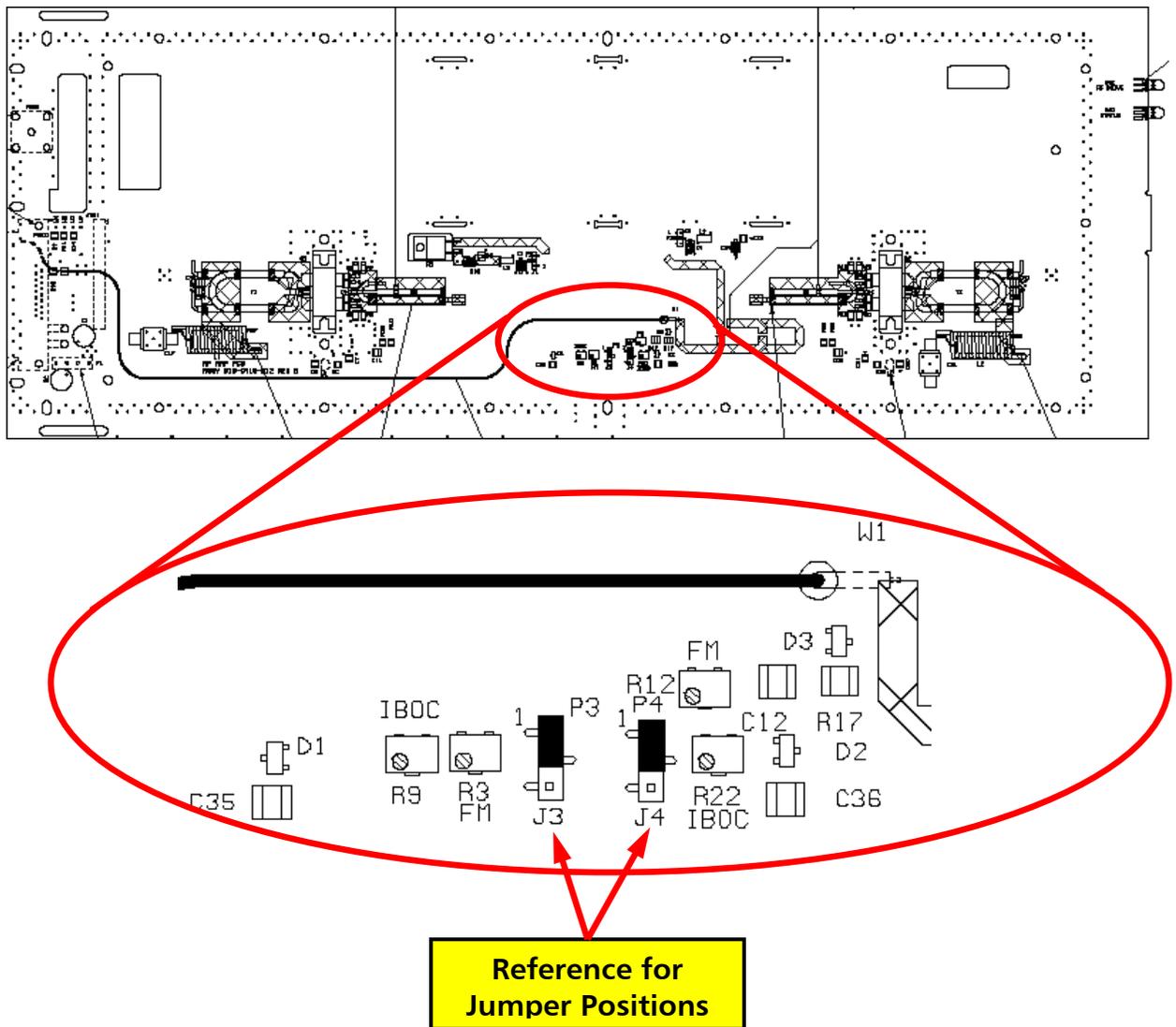
Figure 30 – RF Amplifier Module Cover Removal



**Step 8** – On each RF Amplifier Module, verify / set the jumpers on the RF AMP Board (P/N 919-0416-010), as shown in Figures 31 and 32.

Jumper	Position	Jumper	Position
P1	1 and 2	P2	1 and 2
P3	1 and 2	P4	1 and 2

**Figure 31 – RF Amplifier Board Jumper Locations for IBOC ONLY Operation**

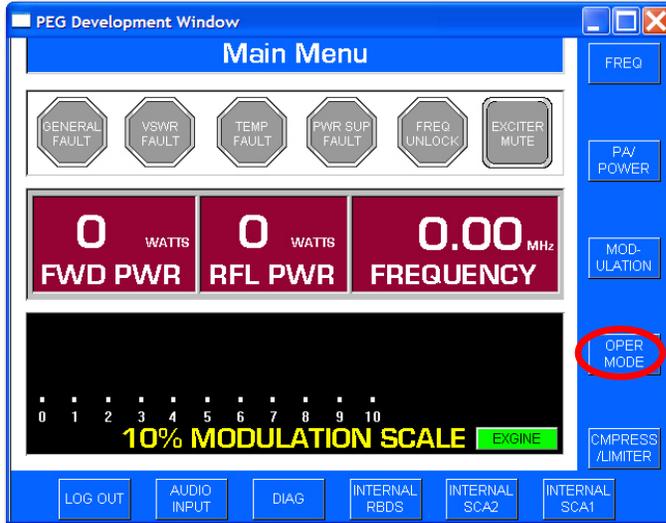


**Figure 32 – RF Amplifier Board Jumper Locations for IBOC ONLY Operation**



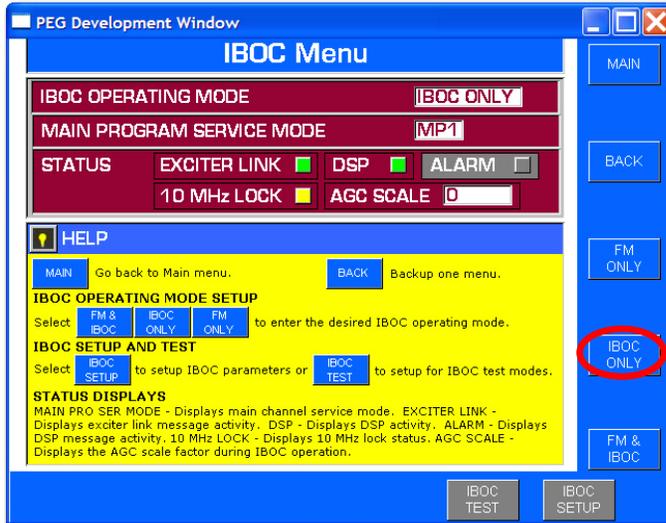
**Step 9** – Install RF Amplifier Module covers, tighten all hardware, and reinstall the modules in the transmitter.

**Step 10** - With AC power applied and the transmitter muted, go to the FXi Exciter Main GUI and select **OPER MODE**.



**Figure 33 – FXi Main Menu**

**Step 11** - From the OPER menu of the Exciter, select **IBOC ONLY** mode.



**Figure 34 – FXi IBOC Menu**

## 5.2 IBOC ONLY Forward Power Calibration

**Step 1** – Ensure the output of the transmitter is connected through an Average Power Meter and a 50 Ohm termination (both capable of handling the RF Output Power of the transmitter).

**Step 2** – Press the "ON" control/indicator on the front panel of the transmitter. Verify the exciter "Un-mutes" (the Exciter Mute indicator on the FXi Main Menu GUI should be Gray if un-muted as shown in Figure 35).

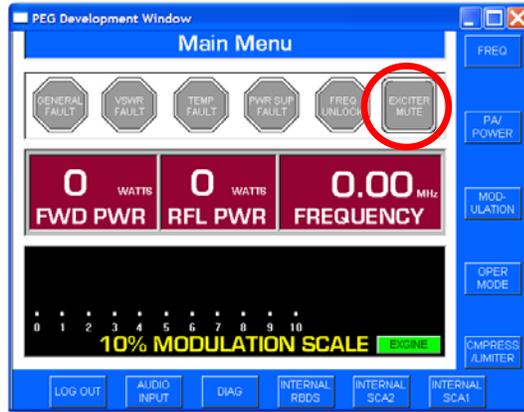


Figure 35 – FXi Main Menu

**Step 3** – Depress the **FWD PWR** control push button, on the control panel of the transmitter, to display the transmitter forward power.

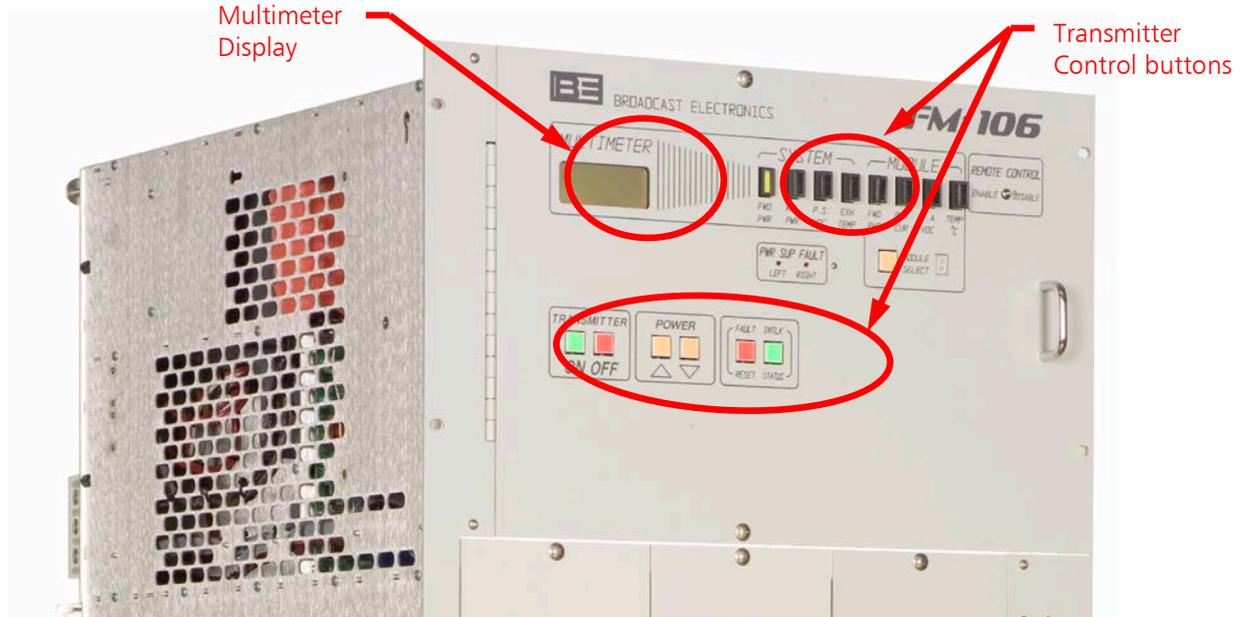


Figure 36 – Typical Low Power FMI Transmitter Control Panel

**Step 4** – Calibrate the forward power.

**Step 4a** – Using the raise and lower buttons, on the front panel of the transmitter, adjust the Forward Power for (see chart in Figure 37 for setting for your specific transmitter) until the desired value is displayed on the transmitter LCD front power meter. (The RAISE and LOWER controls will illuminate when pressed.)

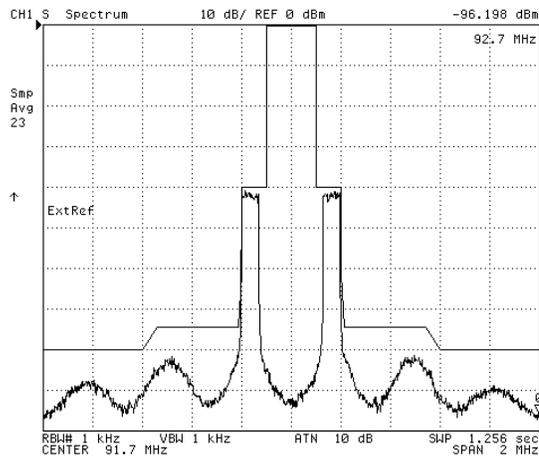
NOTE: The RAISE and LOWER controls will illuminate when pressed.

FMi Transmitter	FMi Transmitter IBOC ONLY Forward Power Calibration Setting
FMi 31	140W
FMi 73	280W
FMi 106	560W
FMi 201	840W
FMi 301	1200W
FMi 402	1500W

**Figure 37 – FMi Series Transmitter Forward Power Calibration Setting**

**Step 4b** – Adjust R49 FWD POWER Cal, on the control board, until the Average Power Meter displays the same reading as was obtained in Step 3 of Section 4.2, Set an Average Power Meter Reference in FM ONLY Mode.

**Step 5** – The following figure shows a representation of the un-modulated IBOC ONLY spectrum.



**Figure 38 – Un-modulated IBOC ONLY Spectrum**

This completes the setup of the low power FMi transmitter for “IBOC ONLY” Mode of Operation.



## 6 FM + IBOC Mode of Operation Setup

NOTE: Ensure that the FM ONLY MODE OF OPERATION, SET AVERAGE POWER METER REFERENCE section has been completed before continuing.

### 6.1 FM + IBOC Jumper Settings

**Step 1** – Turn the front panel AC Breaker to OFF and disconnect AC Power from the transmitter.

**Step 2** – Using a No. 2 Phillips Screwdriver, remove / open the control access panel and locate Transmitter’s Control Board (P/N 919-0563-XXX) as shown in Figure 39.

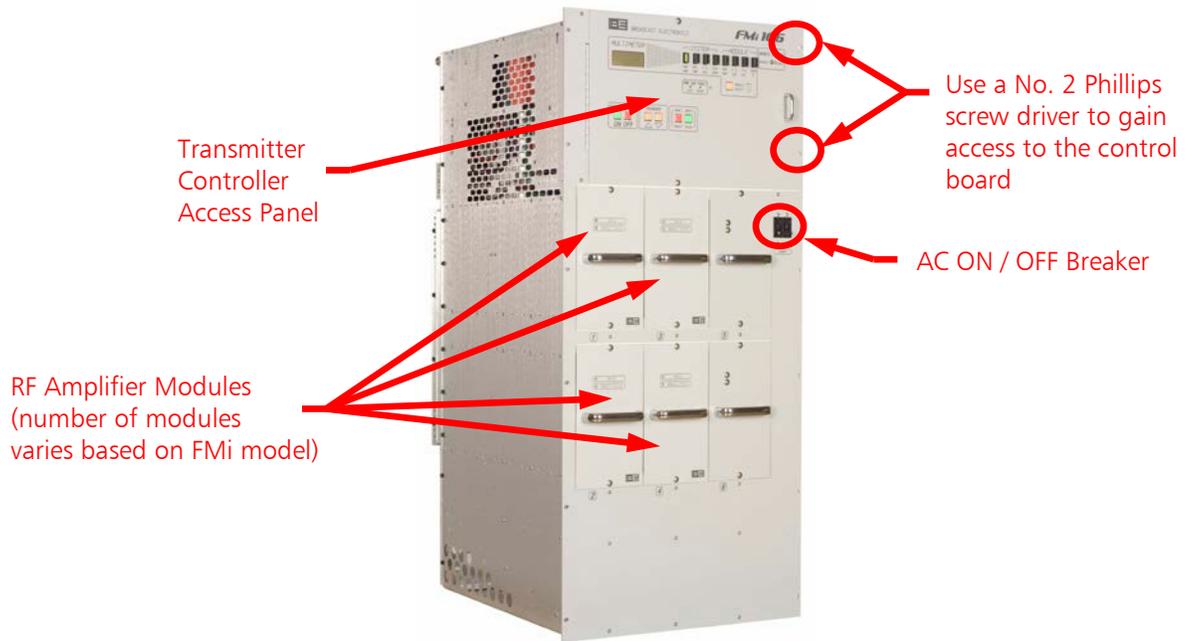


Figure 39 – Typical Low Power FMi Transmitter

**Step 3** - With AC power disconnected, verify / set the following Transmitter Control Board (P/N 919-0563-XXX) Jumper Settings. See Figures 40 and 41 for Jumper reference.

Jumper	Position	Jumper	Position
P724	1 and 2	P725	1 and 2
P727	5 and 6	P728	5 and 6

Figure 40 – FM + IBOC Mode Jumper Settings

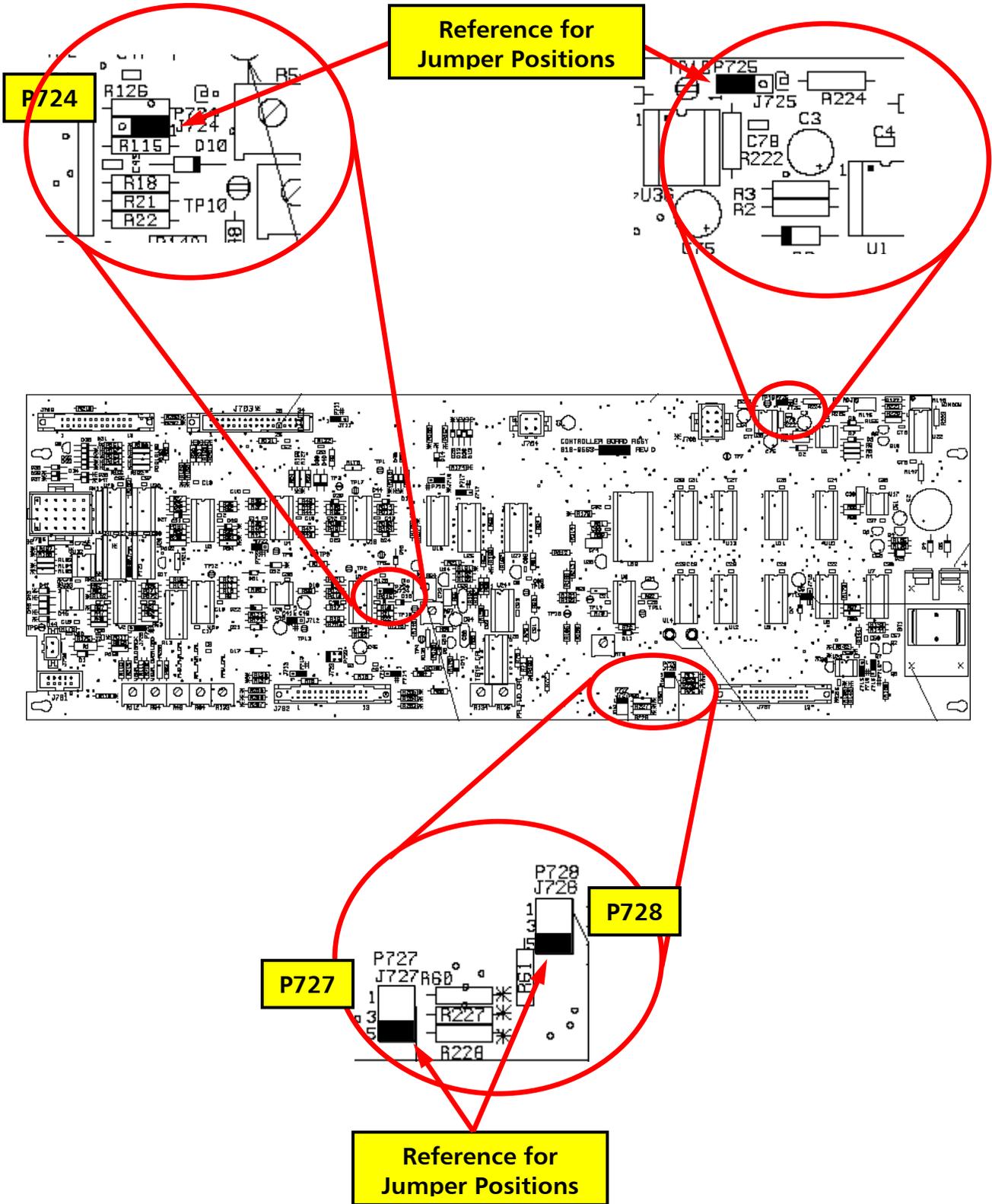
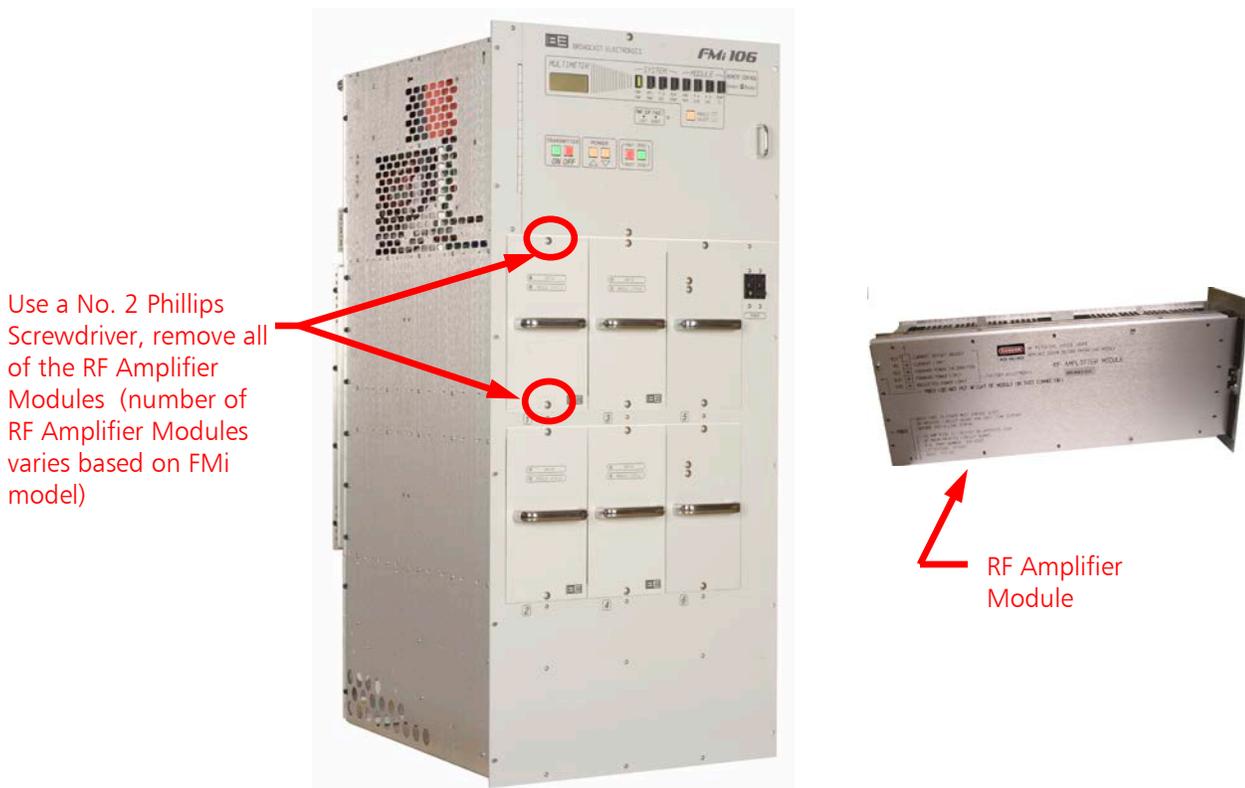


Figure 41 – Control Board Jumper Locations for FM + IBOC Operation



**Step 4** – Using a #2 Phillips screwdriver, remove all of the RF Amplifier Modules from the transmitter.



**Figure 42 – RF Amplifier Module Removal – Typical All FMI Transmitter Models**

**Step 5** – Locate the Logic Board (P/N 919-0417-012) on each RF Amplifier Module.



**Figure 43 – RF Amplifier Module Logic Board Location**

**Step 6** – Verify / set the following RF Amplifier Logic Board (P/N 919-0417-012) Jumper Settings. See Figure 2 for Jumper reference. Note: It will be necessary to remove the modules from the transmitter using a #2 Phillips screwdriver.

Jumper	Position	Jumper	Position
P1	1 Only	P2	1 Only
P3	1 Only	P4	1 and 2
P5	1 and 2		

**Figure 44 – RF Amplifier Module Logic Board Jumper Settings**



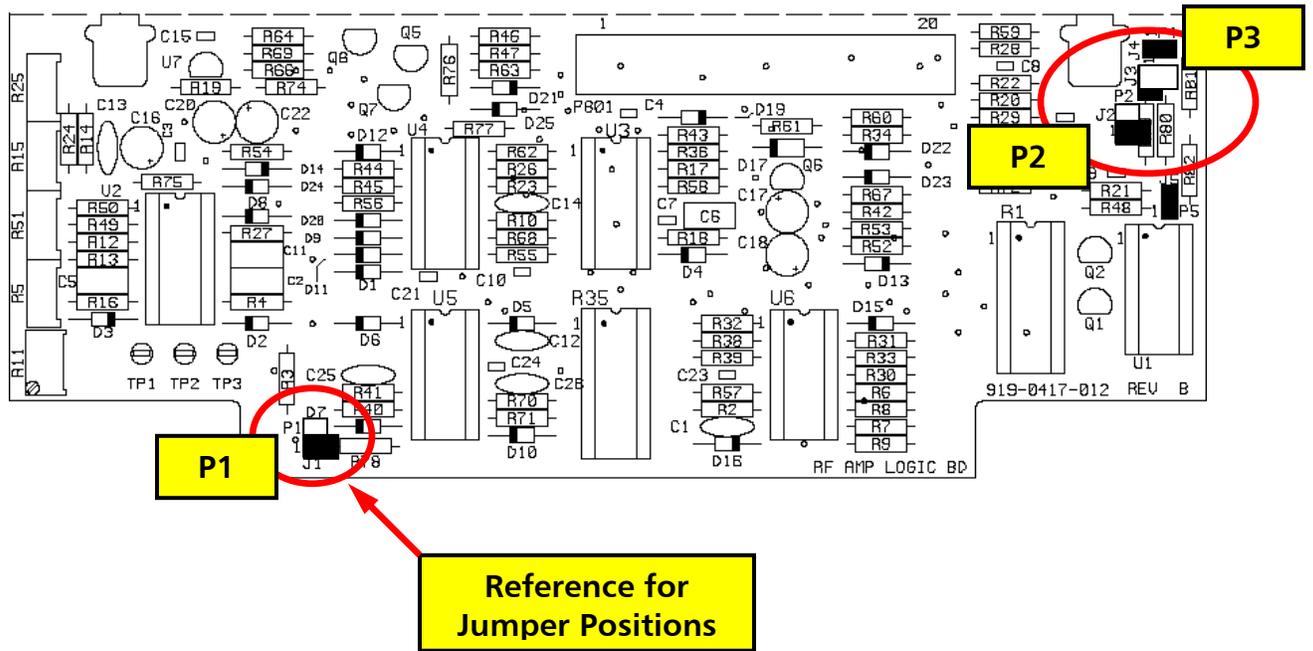


Figure 45 – RF Amplifier Module Logic Board Jumper Settings

**Step 7** – Use a No. 2 Phillips Screwdriver and a 5/16” nut driver and remove the covers from the RF Amplifier Modules.



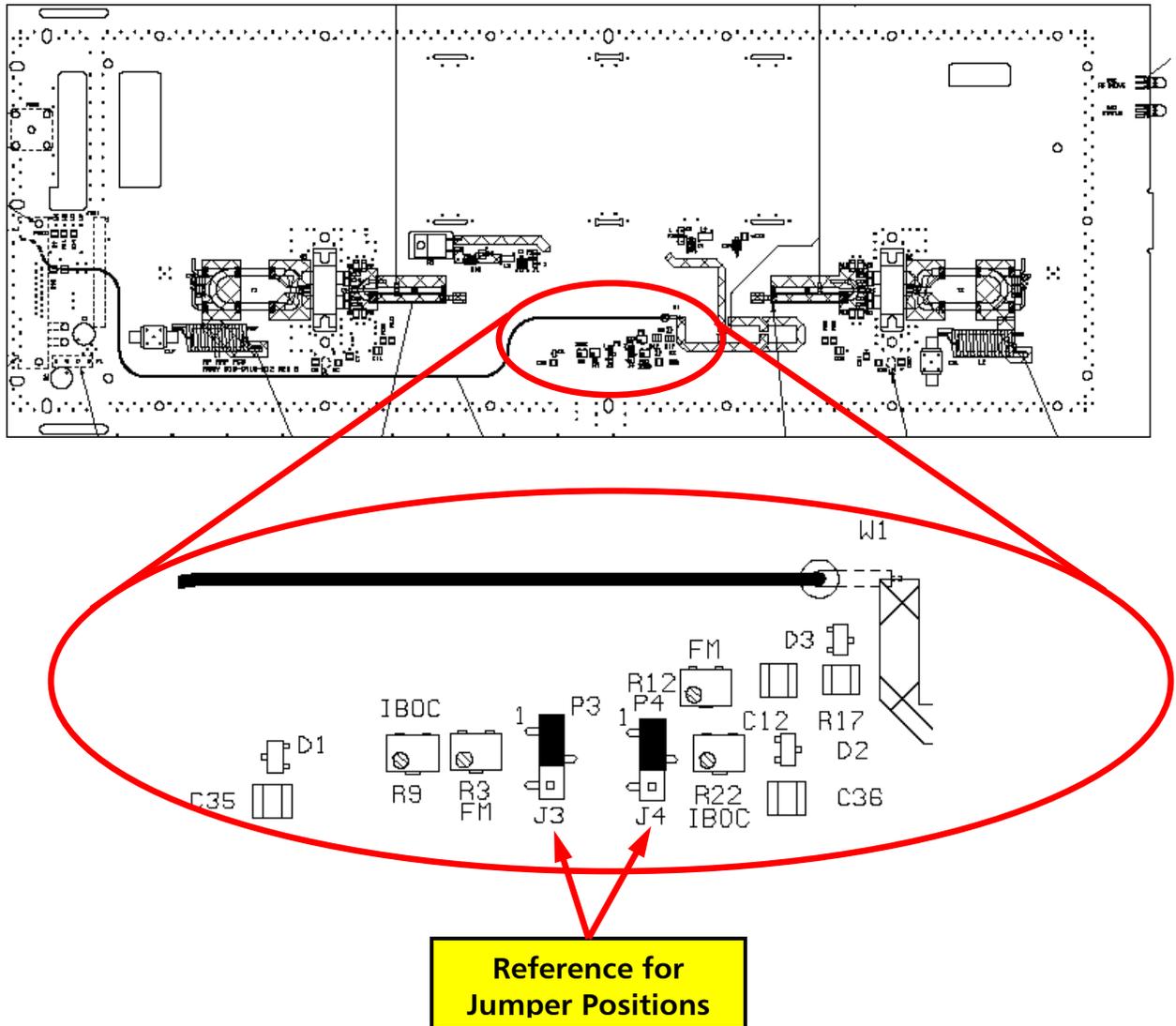
Figure 46 – RF Amplifier Module Cover Removal



**Step 8** – Verify / set the following RF Amplifier Module RF AMP Board (P/N 919-0416-010) Jumper Settings. See Figure 47 and 48 for Jumper reference.

Jumper	Position	Jumper	Position
P1	1 and 2	P2	1 and 2
P3	1 and 2	P4	1 and 2

**Figure 47 – RF Amplifier Board Jumper Locations for FM + IBOC Operation**

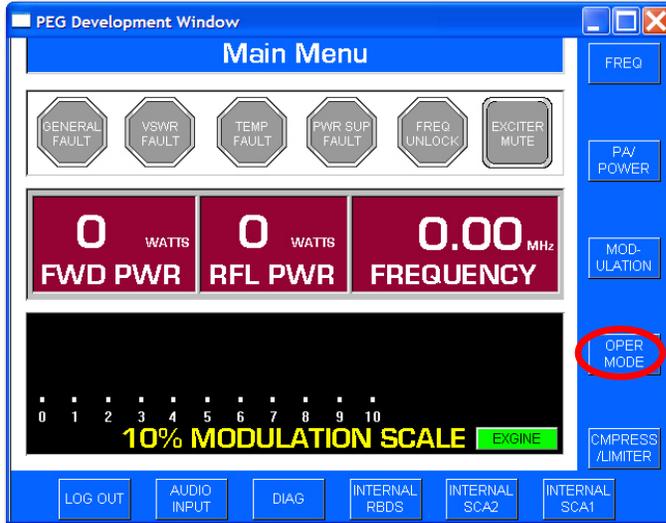


**Figure 48 – RF Amplifier Board Jumper Locations for FM + IBOC Operation**



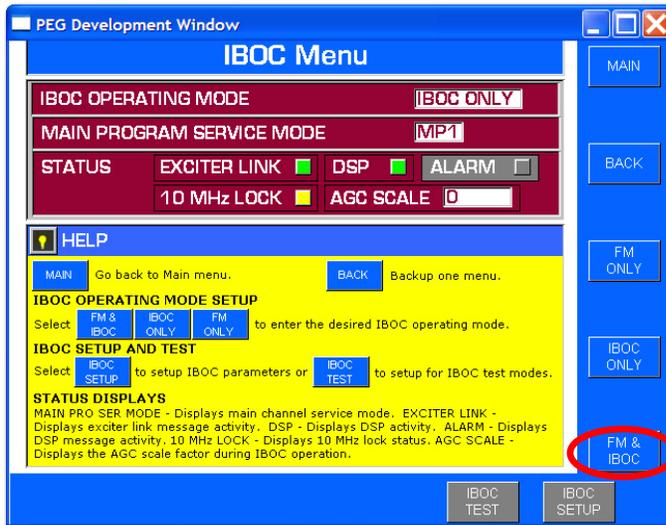
**Step 9** – Install RF Amplifier Module covers, tighten all hardware, and reinstall the modules in the transmitter.

**Step 10** – With AC power applied and the transmitter muted, go to the FXi Exciter Main GUI and select **OPER MODE**.



**Figure 49 – FXi Main Menu**

**Step 11** – From the OPER menu of the Exciter, select **FM + IBOC** mode.



**Figure 50 – FXi IBOC Menu**

## 6.2 FM + IBOC Forward Power Calibration

**Step 1** – Ensure the output of the transmitter is connected to a 50 Ohm termination (capable of handling the RF Output Power of the transmitter).

**Step 2** – Press the "ON" control/indicator on the front panel of the transmitter. Verify the exciter "Un-mutes" (the Exciter Mute indicator on the FXi Main Menu GUI should be Gray if un-muted as shown in Figure 51).

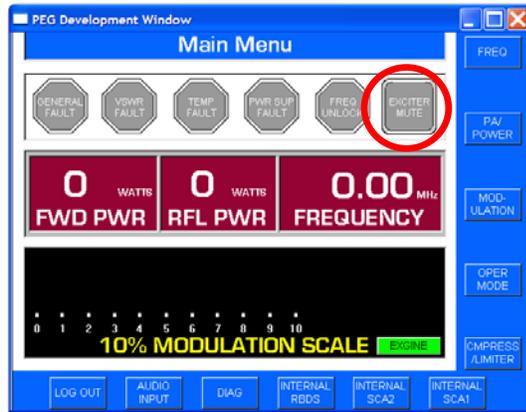


Figure 51 – FXi Main Menu

**Step 3** – Depress the FWD POWER control push button, on the front panel of the transmitter, to display the transmitter forward power.

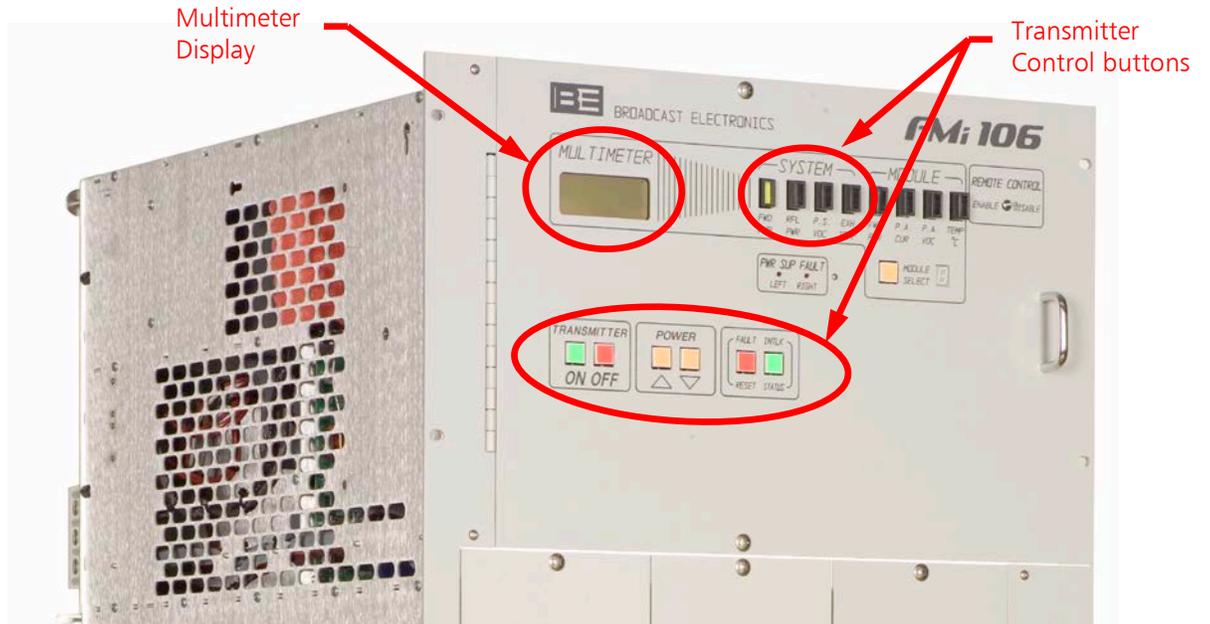


Figure 52 – Typical Low Power FMi Transmitter Control Panel

**Step 4** – Calibrate the forward power.

**Step 4a** – Using the raise and lower buttons, on the front panel of the transmitter, adjust the Forward Power for (see chart in Figure 53 for setting for your specific transmitter) until the desired value is displayed on the transmitter LCD front power meter. (The RAISE and LOWER controls will illuminate when pressed.)

NOTE: The RAISE and LOWER controls will illuminate when pressed.

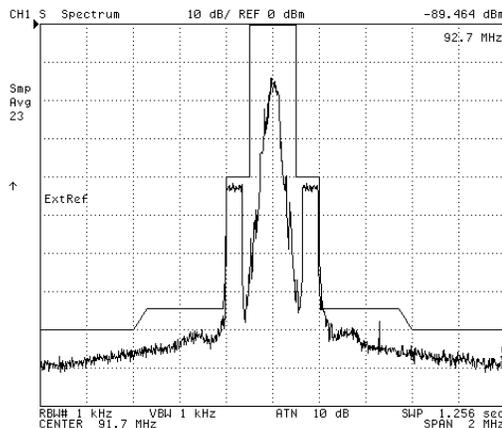
FMi Transmitter	FMi Transmitter FM + IBOC ONLY (-20dBc) Forward Power Calibration Setting
FMi 31	350W
FMi 73	700W
FMi 106	1400W
FMi 201	2100W
FMi 301	2800W
FMi 402	3500W

**Figure 53 – FMi Series Transmitter Forward Power Calibration Setting**

**Step 4b** – Adjust R49 FWD POWER Cal, on the control board, until the Average Power Meter (capable of handling transmitter RF Output power) displays the same reading as was obtained in step 5 Section 4.2 of the FM ONLY MODE OF OPERATION, SET AVERAGE POWER METER REFERENCE section.

NOTE: Due to the AGC circuit, it may be necessary to repeatedly readjust the POWER controls and R49 until the Average Power Meter (capable of handling transmitter RF Output power) and the transmitter LCD indicate (see chart in Figure 53 for setting for your specific transmitter) watts.

**Step 5** – Refer to Figure 54 for a representation of the modulated FM + IBOC spectrum.



**Figure 54 – FM + IBOC Spectrum**



## 7 Switching between IBOC ONLY and FM + IBOC Modes “On The Fly” Via the Front Panel GUI of the FXi Exciter

**Step 1** – Ensure that your Transmitter is currently operating in either **IBOC ONLY** or **FM + IBOC** mode.

**Step 2** – From the FXi Exciter GUI Main Menu, select **OPER MODE**.

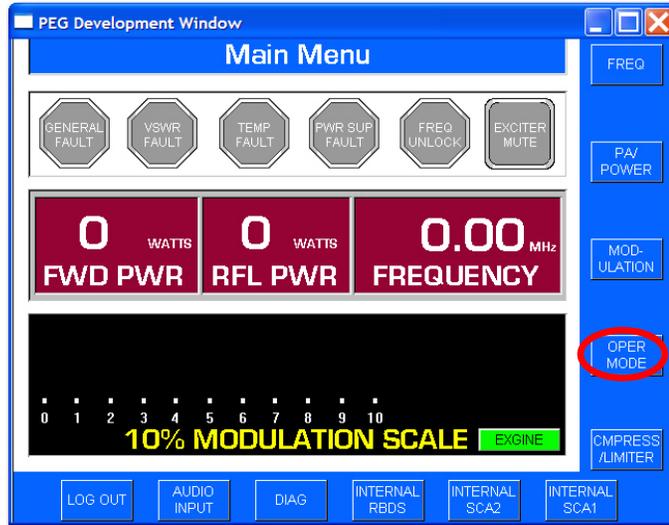


Figure 55 – FXi Main Menu

**Step 3** – Select either **IBOC ONLY** or **FM + IBOC**.

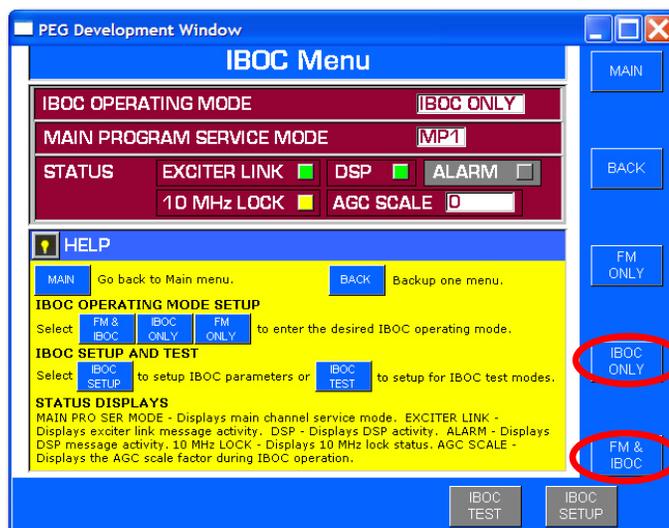


Figure 56 – FXi IBOC Menu

## 8 Switching between IBOC ONLY and FM + IBOC Modes “On The Fly” Via the Exciter’s Remote Control Connector J3

To enable “On The Fly” mode switching via remote control, J3 Pin 11 or J3 Pin 12 must be re-programmed. The default operation of J3 Pin 11 is for “remote raise power” and J3 Pin 12 is for “remote lower power” on the FXi Exciter. Since the output power of the FXi Exciter (in IBOC ONLY or FM + IBOC mode) is controlled by the FMi transmitter, either of these pins may be programmed and used to switch between IBOC ONLY and FM + IBOC modes of operation.

A positive voltage is required to activate the commands, if the factory default jumper has not been changed from providing ground to the remote common. J3 Pins 6 or 7 may be used for the positive voltage required to activate the command.

In this section J3 Pin 11 will be programmed to switch the Exciter from IBOC ONLY to FM + IBOC mode of operation.

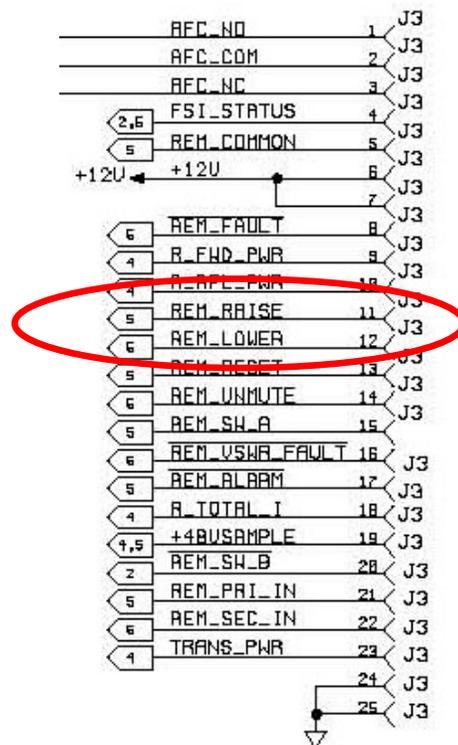
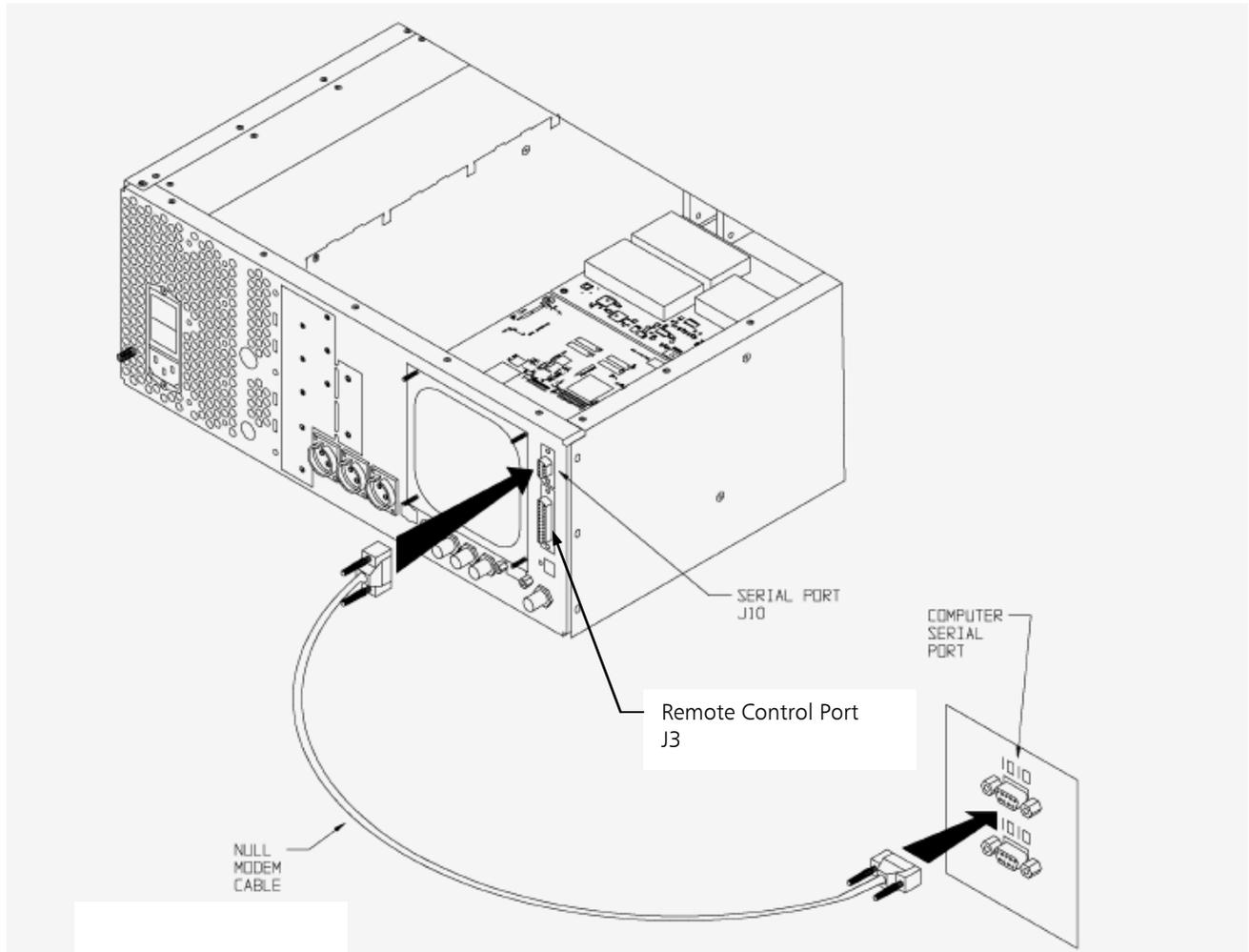
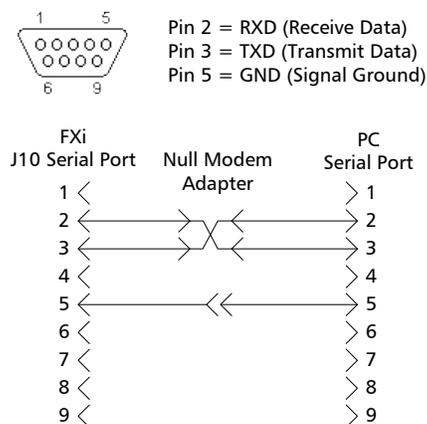


Figure 57 – FXi Remote Control Port Pinout (J3 on rear of the FXi)

**Step 1** – Connect a null modem cable from a PC to the Exciter’s Serial Port J10.



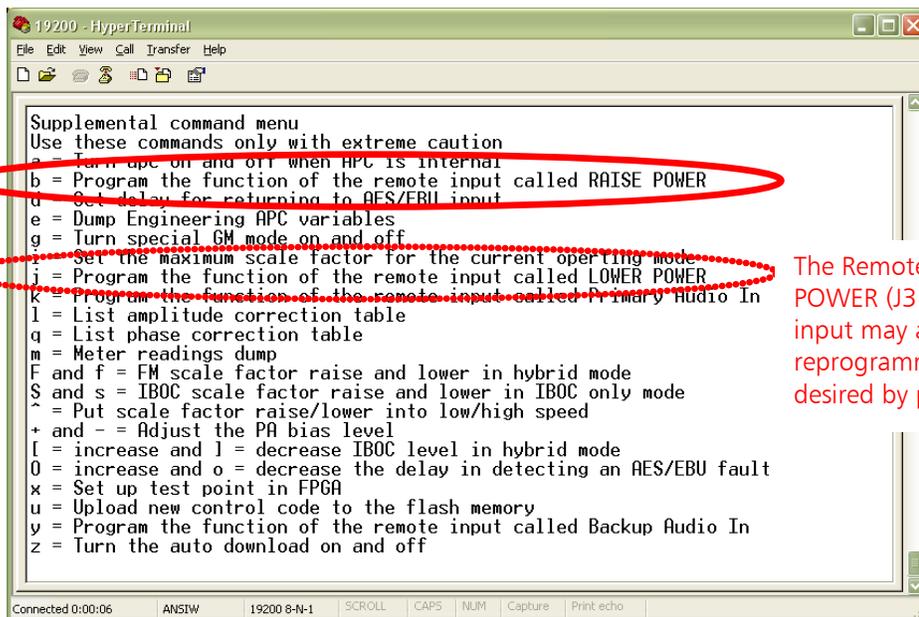
**Figure 58 – PC to FXi Serial Port Null Modem Cable Connection**



**Figure 59 – Serial Cable / Null Modem Adapter Pinout**



- Step 2** – From the Desktop go to: **START-> ALL PROGRAMS-> ACCESSORIES-> COMMUNICATION-> HYPERTERMINAL** and click the mouse.
- Step 3** – The HyperTerminal dialog box should now be displayed. In the **CONNECTION DESCRIPTION** box, enter the name of the shortcut that you want to be created such as *FMI Mode Change*.
- Step 4** – Select and click **OK**.
- Step 5** – The **CONNECT TO** dialog box will now appear. In the **CONNECT USING** dialog box, ensure that the correct COM Port is selected (typically **COM 1** is used) and then click **OK**.
- Step 6** – The **COM1 PROPERTIES** dialog box will appear. Move the cursor to the **BITS PER SECOND** dialog box and select **19200**.
- Step 7** – Move the cursor to the **DATA BITS** dialog box and select **8**.
- Step 8** – Move the cursor to the **PARITY** dialog box and select **NONE**.
- Step 9** – Move the cursor to the **STOP BITS** dialog box and select **1**.
- Step 10** – Move the cursor to the **FLOW CONTROL** dialog box and select **NONE**.
- Step 11** – Select **OK** and the HyperTerminal communication window will appear.
- Step 12** – Enter **Shift+?** to bring up the Supplemental command menu list as shown in Figure 6. Press “b” on the keyboard to program the function of the remote input called RAISE POWER (J3 Pin 11).



**Figure 60 – HyperTerminal Supplemental Command Menu**

**Step 13** – There are four programming options for this remote control pin (J3 Pin 11):

1. Raise Power (factory default setting)
2. FM only mode
3. IBOC only mode
4. FM + IBOC mode

Press the “4” key on the keyboard to program this pin to be used for FM + IBOC operation.

```

19200 - HyperTerminal
File Edit View Call Transfer Help
i = Set the maximum scale factor for the current operating mode
j = Program the function of the remote input called LOWER POWER
k = Program the function of the remote input called Primary Audio In
l = List amplitude correction table
q = List phase correction table
m = Meter readings dump
F and f = FM scale factor raise and lower in hybrid mode
S and s = IBOC scale factor raise and lower in IBOC only mode
^ = Put scale factor raise/lower into low/high speed
+ and - = Adjust the PA bias level
I = increase and l = decrease IBOC level in hybrid mode
O = increase and o = decrease the delay in detecting an AES/EBU fault
x = Set up test point in FPGA
u = Upload new control code to the flash memory
y = Program the function of the remote input called Backup Audio In
z = Turn the auto download on and off

Program the function for the remote input called RAISE POWER
1. Raise power
2. FM only mode
3. IBOC only mode
4. FM+IBOC mode

Old value=1 Please enter the number desired

```

**Figure 61 – HyperTerminal Supplemental Command Menu**

Remote control J3 Pin 11 has now been programmed to tell the FXi Exciter to switch to FM + IBOC mode when activated. A positive voltage is required to activate the command if the factory default jumper has not been changed from providing ground to the remote common. J3 Pins 6 or 7 may be used for the positive voltage required to activate the command (see Figure 3).

Since FMi Transmitters would be normally operating in IBOC ONLY mode, providing a contact closure to this remote input pin on the Exciter will change the transmitter to operate in FM + IBOC mode. Once the contact closure is released, the transmitter will go back to IBOC ONLY mode of operation.

## 9 RF Technical Services Contact Information

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