TELEX

RADIO DISPATCH PRODUCTS

Model IP-25300 IP-223
EF Johnson RS5300 Interface
Technical Manual

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CHAPTER 1

Software and Hardware Configuration

General

The IP-25300 Radio Interface is designed to connect a IP-223 Ethernet Adapter Panel to an EF Johnson RS5300 mobile radio. The IP-223 provides radio control for Zone/Channel change, Monitor, Scan, and Clear/Secure operation.

The radio PTT ID and Emergency PTT ID for incoming calls are decoded and displayed on the console. Zone/Channel and RS485 address data is entered at the Per Line Setup screen. Figure 2 shows a typical screen with EF Johnson information

NOTE: IP-25300 radio control is available in C-Soft and IP-223 Software Versions 3.000 and higher.

Multicast Address Configuration

The IP-223 must be configured for Local mode to control the IP-25300. Configuration is accomplished in the Telex System Manager application. Set up the desired IP-223 lines for local radio control and enter the IP Address and port numbers using Telex System Manager.

NOTE:

- For more information, see the Telex System Manager Technical Manual (P/N LIT000259000). This document is available for download at www.telex.com/Downloads/.
- For more information about C-Soft or console configurations, see the applicable technical manual.

Navigation: Open Telex System Manager.

IP-223 Multicast Setup

To **configure the IP-223 for Local control**, do the following:

1. In the Processed Devices pane, select the **IP-223 to configure**.
2. Click the **Multicast** tab.
   The Multicast page appears.
3. Select the **Enable** check box for the line to configure.
4. From the Type drop down menu, select **Local**.
5. In the Line Name field enter **a name** for the line.
6. In the Rx Multicast Address field, enter the **Rx Multicast Address**.
7. In the Port field, enter the **port number** for receive audio.
8. In the Tx Multicast Address field, enter the **Tx Multicast Address**.
9. In the Port field, enter the **port number** to transmit audio.

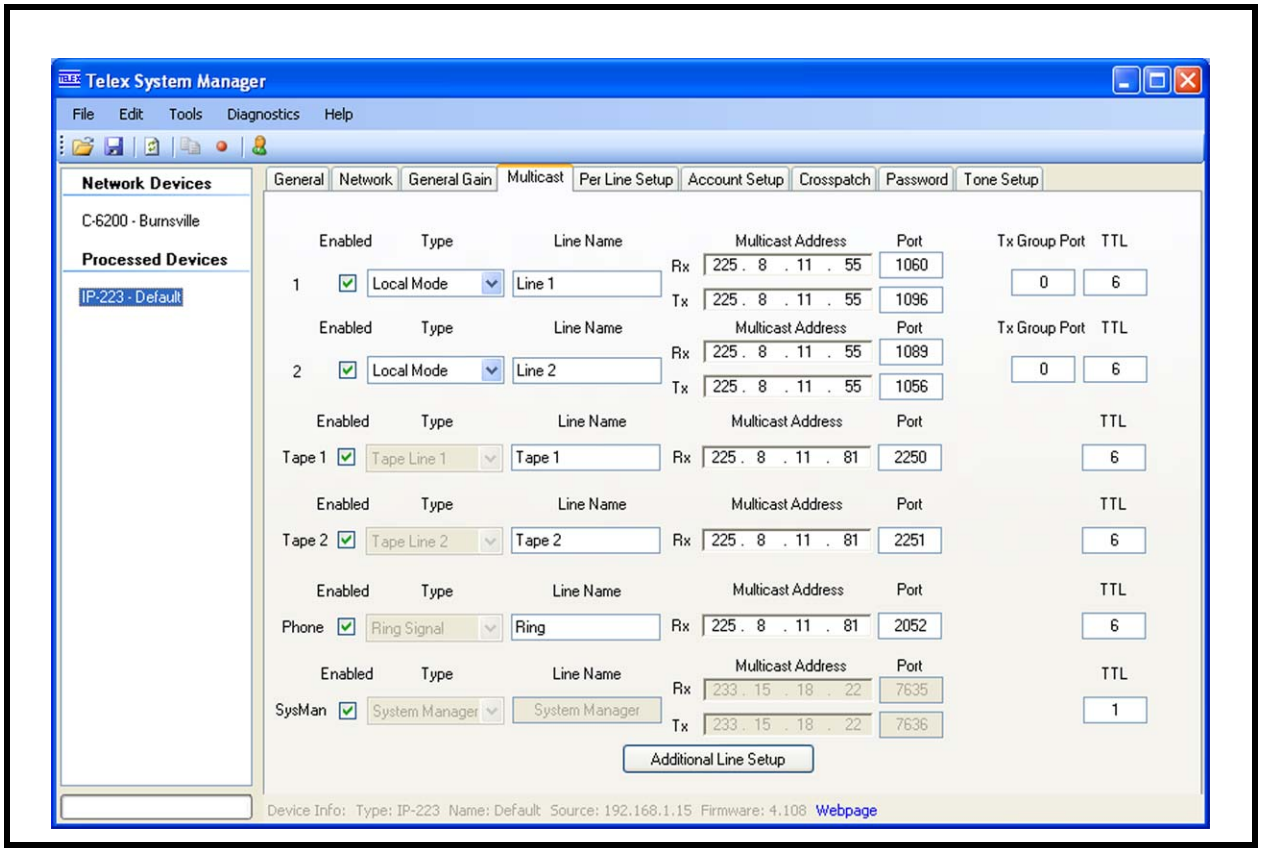

FIGURE 1. Telex System Manager—Multicast Address Setup

Front and Rear Panel Connections

Front Panel LEDs

Front Panel LED indications are as follows:

Power - *Green LED indicates power to the IP-25300.*

RS485 BUSY - *Red LED indicates activity on the radio RS485 bus.*

RS485 XMIT - *Red LED indicates the IP-223 is sending data to the radio.*

Rear Panel Connector

There is a single connector on the rear of the IP-25300. All connections terminate on the DB25.

Pin Number	Signal	Pin Number	Signal
1	+12VDC	14	RS485 B
2	IP-223 Transmit Data	15	PTT
3	IP-223 Receive Data	16	RS485 Busy
4	RS485 A	17	Radio Ground
5	Ground	18	EFJ Mic Audio
6	EFJ Mic Audio	19	EFJ Speaker Audio
7	EFJ Speaker Audio	20	NC
8	PTT	21	PTT Common
9	DIGI2 RS485 Busy	22	NC
10	NC	23	DIGI3 RS485 XMIT
11	Ground	24	IP-223 RX+
12	IP-223 RX-	25	IP-223 TX+
13	IP-223 TX-	Shield	Ground

IP-223 Setup

Jumper Settings

Line Number	Jumper Number	Balanced 600 Ohm
Line 1	J3, J9, J11, J16, J21	B position
Line 2	J25, J28, J29, J19, J20	B position

Line Number	Jumper Number	600 Ohm Rx Termination
Line 1	J14	A position
Line 2	J24	A position

Line Number	Jumper Number	Serial Port Communications Local Mode—EFJ5300
Line 1	J14	A position
Line 2	J24	A position

Per Line Setup

Once the Multicast Address Setup and jumper configuration is complete, the per line options and CTCSS must be configured.

To **configure the per line setup**, do the following:

1. While in Telex System Manager, select the **IP-223 to configure** from the Processed Devices pane.
   The login window appears.
2. Enter the **username** and **password** for the IP-223.
   The IP-223 configuration notebook appears.
3. Click the **Per Line** tab.
   The Per Line page appears.
4. From the Per Line page, click **Configure**.
   The Per Line Setup window appears.
5. Click the **Options** tab.
   The Options page appears.
6. From the options page, select **EF Johnson 5300** from the Mode drop down menu.
   The RS485 drop down menu appears.
7. From the RS485 drop down menu, select a value from **2–7**.

   NOTE: The default value for this field is *2*. Unless additional equipment is connected to the EFJ-25300 radio, the default value does not need to be changed.
8. Click the **CTCSS** tab.
   The CTCSS page appears.
9. From the System Spin Box, set the value from **1–32**.
10. From the Channel Spin Box, set the value from **1–16**.
11. Click **OK**.
    The Per Line Setup window closes.

12. Select **Tools|Firmware Update** from the menu bar.
The Firmware Update window appears.
13. From the Destination pane, select the **IP-223** to write the configuration to.
The Write Firmware button is active.
14. Click **Write Firmware**.
The Configuration is permanently saved to the IP-223.

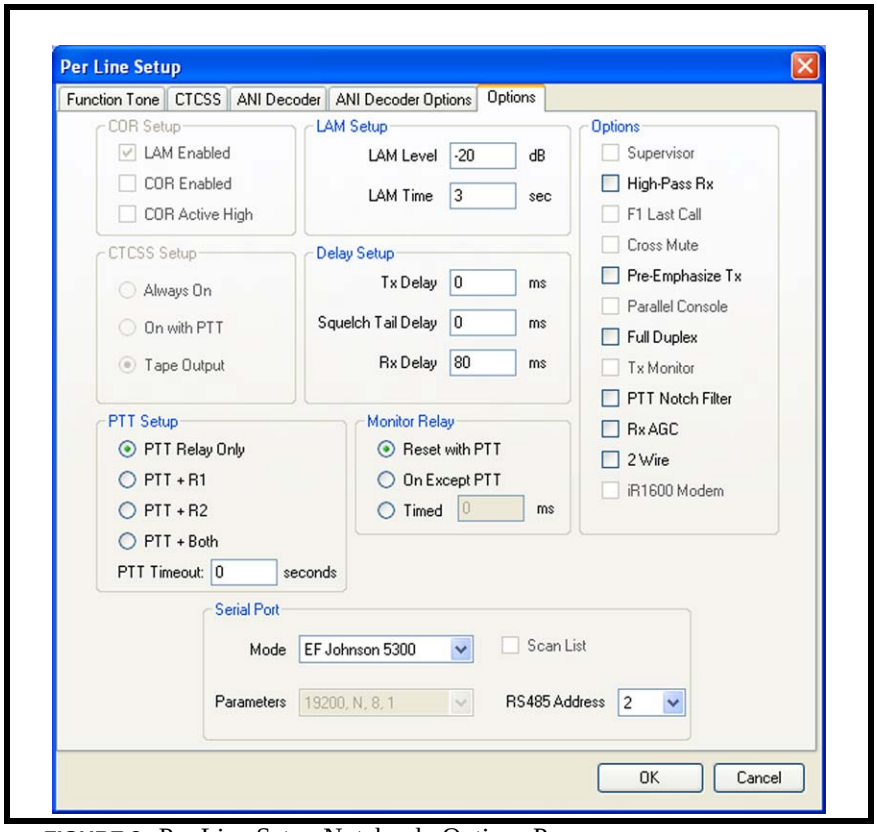

FIGURE 2. Per Line Setup Notebook–Options Page

Cables

IP-25300 Configuration Cable

The IP-25300 configuration cable, shown in Figure 3, ships with the IP-25300 unit and is used to connect the IP-223, IP-25300, and the EF Johnson RS5300 radio.

FIGURE 3. IP-25300 Configuration Cable

Each connector is labeled with the connection destination (i.e. To IP-223, EFJ5300, etc.), see Figure 4. One or both radio ports on the IP-223 may be used.

DB-9 Splitter Cable

If both ports are used, a DB-9 splitter cable is required to route serial channel one and two to the respective IP-25300.

NOTE: Purchase the Telex DB-9 splitter cable from the factory (P/N 301953000).

FIGURE 4. IP-25300 Cable Connectors

EF Johnson RS5300 Radio Setup

The 25-pin option connector, EF Johnson P/N 5972002245, is required to connect internally to J6 and J8 on the PPC logic board.

NOTE:

- The operating parameters for the EF Johnson RS5300 radio are programmed from the PC ConfigureÆ application (version 1.28 or later) provided by EF Johnson.
- The radio must have firmware version 4.4.21 or later, installed.

When the cable and radio are shipped, the connections within the radio must to be moved, follow the step by step instructions to accomplish

Cable Connections

The following cable connections are shown in Figure 5, Figure 6, Figure 7 and Figure 8.

1. Open bottom **radio access panel** and locate the **cable assy (P/N 5972002245)**.

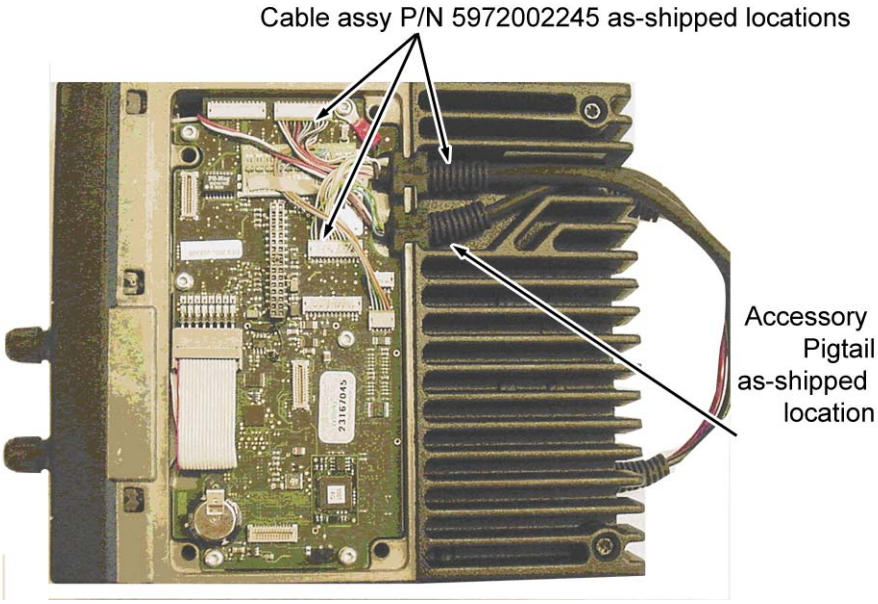

FIGURE 5. RS5300 Bottom Access Panel

2. Lift out **cable assy** from the pass-thru channel and relocate the **Accessory Pigtail**.

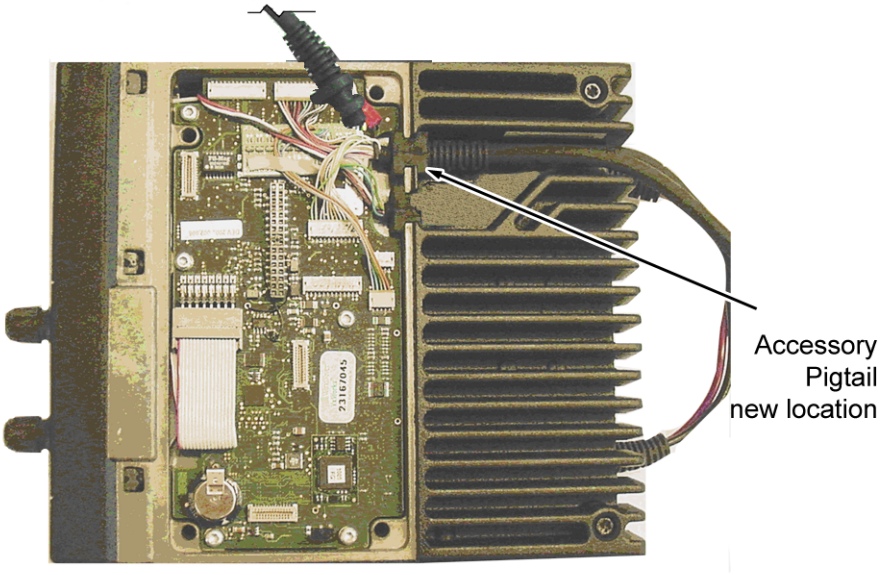

FIGURE 6. RS5300 Accessory Pigtail Cable Relocation

3. Disconnect the **cable assy** from this header.
4. Cut the **black ground lug wire**.

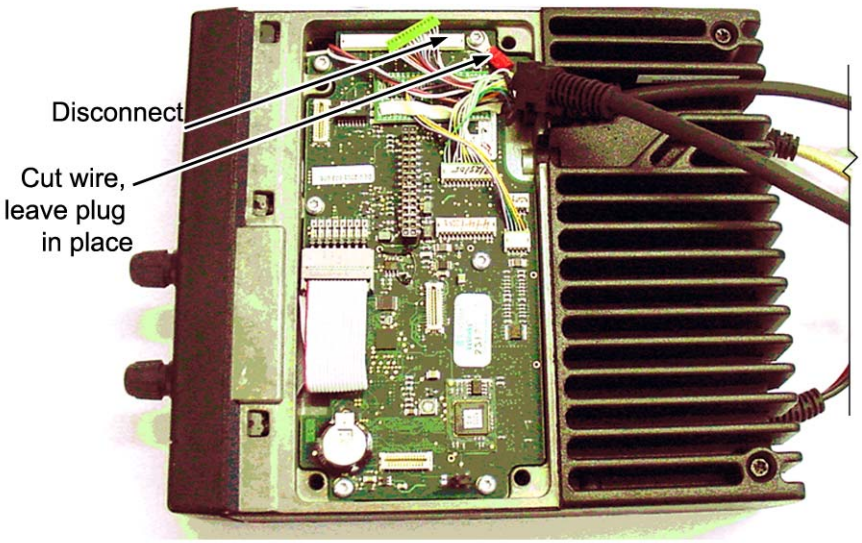

FIGURE 7. Disconnect and Lug Wire

5. Press cable assy into the **open pass-thru channel**.
6. Connect the cable assembly into new **header location.**
7. Replace the **panel cover**.

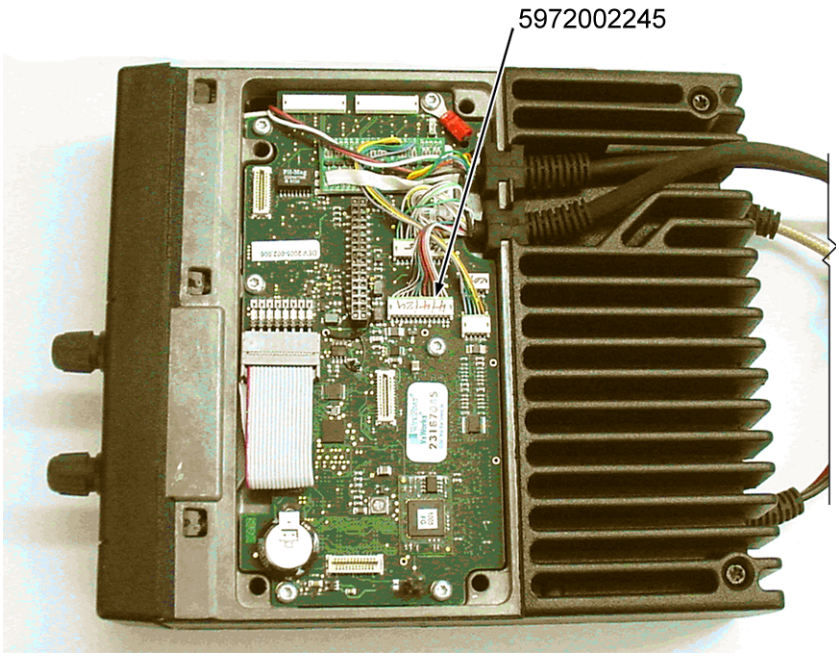

FIGURE 8. New Header Location

PC Configure

Radio Button Locations

In addition to the channel type, talk groups and frequencies dictated by the specific installation, radio buttons F4, F5 and F6 are required to be specifically programmed for control by C-Soft. Figure 5 Shows the location of each control button on the RS5300 radio.

NOTE: PC Configure software version 1.28 or later is required for setup.

Program the radio buttons using PC Configure as follows:

F4 - **Clear/Secure**

F5 - **Scan On/Off**

F6 - **Monitor**

PTT ID - Set the display time of the PTT ID and emergency PTT ID to **Inf**

NOTE: The IP-223 decodes and sends the incoming PTT ID and Emergency PTT ID to the console. The radio must be programmed to display the PTT ID upon receipt of the call.

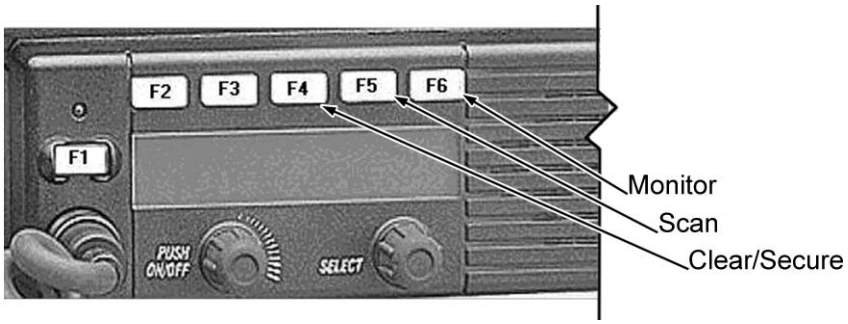

FIGURE 9. EF Johnson RS5300 Radio Button Locations

C-Soft Setup

Multicast Setup

An example, shown in Figure 10, has two (2) lines set up for the radio control.

To **configure the per line setup**, do the following:

1. From the Line Type drop down menu, select **Telex**.
2. The Line Name field enter a **name** for line 1 and line 2.
3. In the RX Multicast Address field enter the same **Rx Multicast Address as the IP-223** for line 1 and line 2.
4. In the TX Multicast Address field enter the same **Tx Multicast Address as the IP-223** for line 1 and line 2
5. Enter an **unique port number** in the Rx Port field for line 1 and line 2.
6. Enter an **unique port number** in the Tx Port field for line 1 and line 2.

NOTE: The range for the Tx and Rx Port fields is *1054* to *65535*.

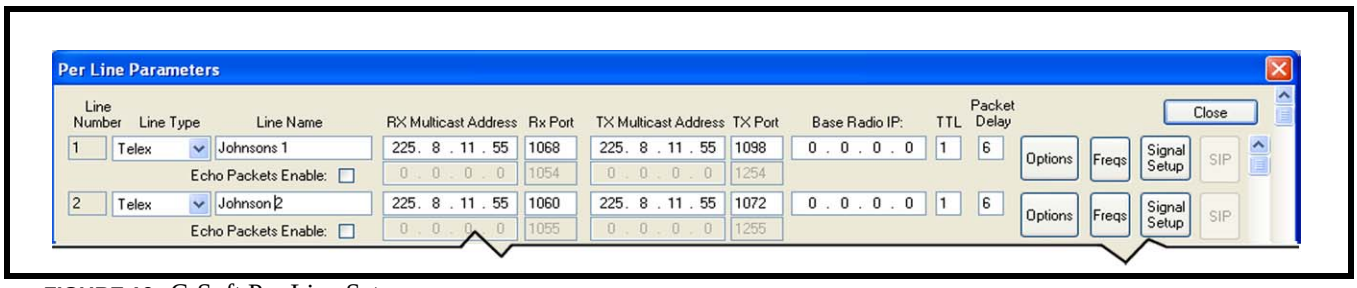

FIGURE 10. C-Soft Per Line Setup

Control Buttons

Figure 7 shows a typical C-Soft screen configuration to control the EF Johnson RS5300 radio. Place a button on the screen then right click to configure any button for a task. Use the UI Element Function pull down menu to assign a function.

The buttons and controls shown are Clear/Secure, Scan On/Off, Zone/Channel change, Select, Mute, Audio level, Instant PTT and Emergency Cancel. Please refer to the C-Soft manual for further details on the button configuration.

The radio buttons must be specifically programmed to respond to the Scan, Clear/Secure and Monitor C-Soft controls. See the section above for radio button assignments.

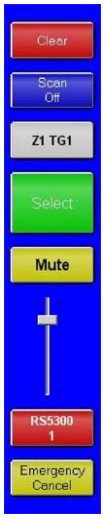

FIGURE 11. C-Soft Control Setup

System Start Up

If the IP-25300 and EF Johnson RS5300 radio are properly connected and configured, the IP-223 displays *JOHNSON* on either the top row (line 1) or bottom row (line 2) at power up or reset to indicate the Johnson radio line is enabled.

Troubleshooting

If ***JOHNSON* dopes not appear on the IP-223 display**, check the following:

1. **Cable connections** as described in “Front and Rear Panel Connections” on page 7.
2. Check **IP-223 jumpers** for the serial communications are set as specified in “IP-223 Setup” on page 8.
3. Check **C-Soft** and **IP-223 Software versions**. (Version 3.000 or later).
4. The IP-223 is enabled for **Local Mod**e and **EF Johnson 5300**.
5. **Power down** the radio, **apply power** only to the IP-223.
6. Once boot up of the IP-223 has occurred (asterisk in upper right corner of display).**turn on the radio**.

NOTE: The IP-223 reset takes 30 seconds, in version 4.0 to accomplish.

Audio Alignment

Receive Audio Alignment

The standard receive audio alignment procedures should be followed for the IP-25300 installation.

To **adjust the receive audio alignment**, do the following:

1. With AGC turned off, inject a **0dBm test tone** into the IP-223 front end.
2. Measure the level at the receive audio test points for **line 1 (TP13)** or **line 2. (TP1)**

NOTE:

- The level should be near, but below 0dBm reference from the test point to ground (TP14, near TP13). This should result in audio levels from the radio at -5dBm to -10dBm as shown in Figure 8.
- A meter can be used if the unit is on the bench top, or if installed, the front panel VU meter can be used.

To **access the VU meter**, do the following:

1. Press and hold the **line** button and then momentarily press the IC button three (3) times.
2. Perform a general **talk test** (best method to ensure a quality connection).

NOTE: The system can be tested with a handset from the front panel as well.

FIGURE 12. IP-223 Receive Alignment

Transmit Audio Alignment

To **adjust the transmit audio alignment**, do the following:

1. At the **IP-223 radio test point** on the front of the unit, measure audio level.
2. Adjust the **TX pot** (near 9–12 o'clock depending on the microphone source) on the IP-223's front panel to -5dBm.

To **adjust the transmit audio alignment to accommodate different microphones**, do the following.

NOTE: This procedure is used to gain more granularity in the pot setting to accommodate different microphones. See Figure 13.

1. From the IP-223 window, click **General Gain Setup**.
   The General Gain Setup window appears.
2. From the Receive Gain drop down menu, select **-3.0dB** for line 1 and line 2.
3. Perform a **talk test** to achieve good audio levels.

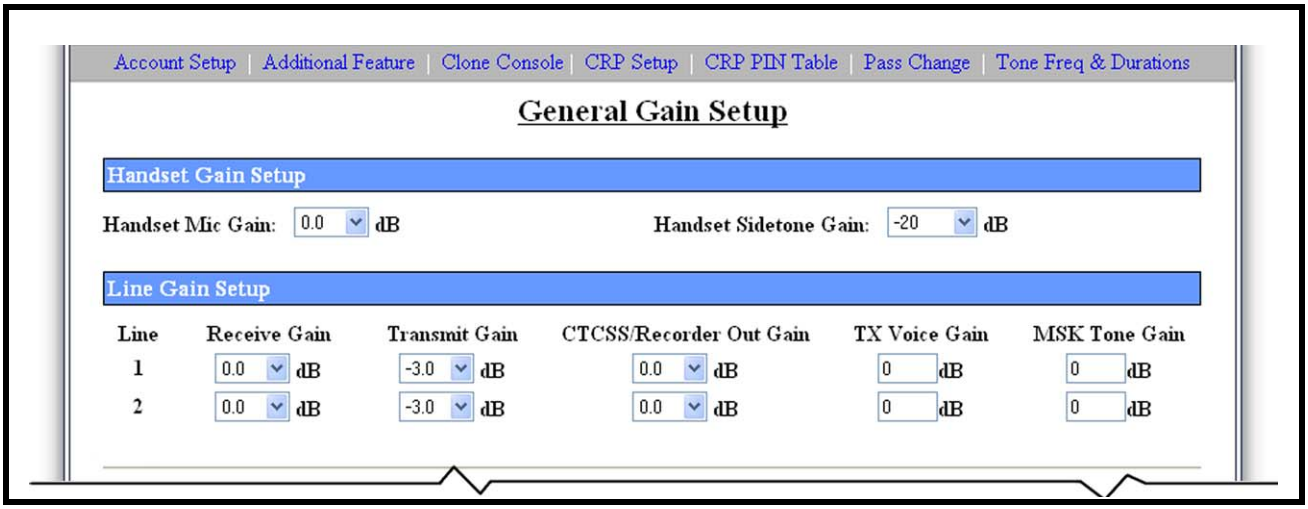

FIGURE 13. General Gain Setup

Notes: