

RT-1446 Phone Patch.

The RT-1446 has a very good phone patch built in. For set up and adjustment of the phone patch, refer to the airforce training document, [stm2e1x3-206n.pdf](#), and start reading at page 92. To save you scrolling through it I've cut and pasted their instructions below. I'll let you read through it, there is more there than you need, but the following cautions and notes apply:

CAUTION! do not hook phone patch wires directly to regular telephone circuits, or any telephone circuit that has a ringing voltage. The patch is not built to deal with the high ringing voltages. In most cases this will mean do not use the 2 wire connection.

Position the switch on top of the audio interface board to the 4 WIRE position. You must remove the top cover of the radio and the switch is positioned just inside the radio from the terminal block (TB1).

What 4 wire means is two wires for TX audio, two wires for RX audio. These are balanced 600 Ohm inputs and outputs. 2 wires uses the same two wires in both directions. This is handy if running a remote off field wire, but in our case we have no need to do this. Stick with 4 wire because the handset on your telephone is wired in four wire and that is where we will be hooking up.

You will need a telephone to hook the patch into. I use a TA-312 field phone (they work as regular phones, pic on bottom of page). If using another phone, I would suggest a older style desk phone, one that still has a big transformer inside and wires on terminal blocks that are easy to deal with. The phone is necessary because it isolates your patch from the phone system and ringing voltages. You will be dealing with the handset audio from the phone.

The TA-312 has a GRC style plug on the top. That plug is for another handset, or touch tone pad, or other accessory. I use that plug to connect the phone patch in the radio to the phone. The concept is the same if your using a TA-312 or another phone, your hooking the phone patch to the handset speaker and microphone. The old Bell System desk phones are good for this because of the easy terminal blocks inside. The TA-312 because of the plug.

Remember 4 wire is balanced audio, like balanced transmission line. Do not go grounding one side, or making a "common" wire and invent some kind of three wire. If you must shield the wire from the radio to the phone, then use four wire or more shielded cable and ground the shield at the transceiver and float the other end.

Adjust the patch per the instructions below. You may use the VOX or select TX from the front panel. If you use VOX then your VOX must be adjusted to the patch.

It is important to adjust the patch so there is not too much audio running into the telephone system from your radio as that will play havoc with the phone system.

AUDIO PATCH is used when connection to a 2-wire or 4-wire telephone is necessary. There is no compression circuit associated with this input. Both the incoming and outgoing phone patch audio levels are metered and adjusted via front panel controls.

FRONT PANEL LEVEL ADJUSTMENTS

There are two front panel adjustments for the VOX circuit:

VOX and ANTIVOX. The VOX adjustment sets the threshold for the audio level required to trigger the transmitter keyline.

The ANTIVOX circuit is there to prevent the receive audio from keying the radio.

To set the VOX threshold, connect MIC to the front panel jack and speak into the microphone. Adjust the VOX potentiometer

until the transmitter keys. To align the ANTIVOX circuit, start by selecting the VOX feature. With no audio, adjust the ANTIVOX potentiometer counterclockwise until the transmitter keys. When this happens, turn the ANTIVOX clockwise until it unkeys. The VOX and ANTIVOX adjustments interact with each other so you may have to repeat several times to suit your needs.

Use PATCH RCV and PATCH XMIT maintenance controls to set the levels to and from 2-wire/4-wire external telephone patch connections, respectively. Use TB1 on the rear of the transceiver to establish phone patch circuits. A telephone line is provided for use. If the line provider does not know whether the line is 2- or 4-wire, you have to figure it out. Most telephone lines are 2-wire; therefore, you should connect the telephone lines to TB1-2 and 3. If you have a 4-wire phone line, use TB1-1 through 4. The polarity of the 2-wire line does not matter. However, when using a 4-wire line, you cannot mix the line IN with the line OUT. This means there are two wires for receive and two wires for transmit. The polarity of the transmit and receive lines does not matter. However, you cannot connect a receive line with a transmit line or vice versa. Another important thing to remember is that the screws on TB1 are fragile. Take care when connecting wires to the terminal

board.

The normal adjustment of the PHONE RCV is such that voice peaks observed on the PATCH meter are **-10dBm**. This level may be adjusted upward if the phone user reports weak received audio. The purpose of the PATCH function is to allow a user to operate the radio using a telephone. You must key the radio unless VOX operation is used.

The MIC control is active when the audio source is MIC. The MIC control adjusts the input transmit audio levels. 0dBm is the normal setting. Anything above that causes excessive noise to be transmitted during speech pauses.

Use line adjustments when equipment other than the RCU is used with the transceiver. The adjustment allows you to set the line level anywhere from -20 to +10dBm. The RCU is connected to the transceiver via J9 and has internal adjustments for the line.

METER EXPLANATIONS

The "S" scale gives an indication of received signal strength and ranges from S3 (-100dBm) to +60dBm. This scale is automatically selected when in the receive mode and the meter is set to FWD, REF, or VSWR.

The AUDIO meter gives an indication of transmit audio signal strength. The scale ranges from -20dBm to +10dBm. The

nominal level is 0dBm.

The LINE meter gives an indication of the receive line audio signal or the remote line input signal when keyed. The scale ranges from -20dBm to +10dBm.

The PATCH meter gives an indication of the PATCH input signal (TX) or PATCH output signal (RX). The meter indication for XMIT occurs when the transceiver is keyed. The scale is from -20dBm to +10dBm.

The FWD meter gives an indication of forward output power of the transceiver. The scale is from 0 to 150 Watts. With the 500 or 1000W LPA connected, the scale is multiplied by 10. It also gives an indication of received signal strength because the "S" scale is automatically selected when the FWD meter is selected.

The REF meter gives an indication of the transmit reflected power. The scale is the same as the FWD.

The VSWR meter gives an indication of the VSWR. The scale ranges from 1 (1:1) to 4 (4:1).

The AFSK meter shows relative center frequency with an arrow indicating midscale and a bar showing offsets to the left or right. This meter reading is correct only when the average mark and space signals of the incoming signal are equal. A steady mark or space does not yield an accurate reading.



TA-312 field phone. Notice plug coming out of top of phone. This goes to the phone patch.