

- If your audio source has a 1/8-inch headphone jack, insert the adapter's 1/8-inch stereo plug into the audio source's **HEADPHONE** jack.
- If your audio source has a 1/4-inch headphone jack, insert the adapter's 1/8-inch stereo plug into the back of the supplied 1/8-to-1/4-inch stereo adapter. Then insert the adapter into the audio source's **HEADPHONE** jack.

OPERATION

Listening Safely

To protect your hearing, follow these guidelines when you use headphones.

- Set the volume to the lowest setting before you begin listening. After you begin listening, adjust the volume to a comfortable level.
- Do not listen at extremely high volume levels. Extended high-volume listening can lead to permanent hearing loss.
- Once you set the volume, do not increase it. Over time, your ears adapt to the volume level, so a volume level that does not cause discomfort might still damage your hearing.

Using Your Headphones

You can use multiple sets of headphones with each transmitter. We do not recommend using multiple transmitters in the same area.

1. Toggle the transmitter power switch and the transmitter's **POWER** LED indicator lights red. Turn on the audio source.
2. To turn on the headphones, slide **POWER** switch to " **Ž** "position. The **POWER/BATT LOW** indicator lights red.

Note: If the **POWER/BATT LOW** indicator is blinking, the battery level is low and you must replace the alkaline batteries or recharge the rechargeable batteries before use.

3. Put on the headphones and adjust **VOLUME** to the desired listening level.

Note: If you connected the transmitter to an audio source's headphone jack, set the audio source's volume control to its mid-position, then adjust the headphones' **VOLUME** to the desired level.

4. To turn off the headphones, slide **POWER** switch to the opposite of " **Ž** "position.

Notes:

- To preserve battery life, be sure to turn off the headphones when you are not using them.
- If reception is poor even when the batteries are fresh or fully charged and you are near the transmitter, try moving the transmitter to a higher location or moving it away from the audio source.

5. To turn off the transmitter, toggle the power switch and the led turns off.

Note: if you don't use the transmitter, disconnect the adapter.

TROUBLESHOOTING

We do not expect you to have problems with your headphones, but if you do, these suggestions might help.

Problem	Solution
No sound	Be sure the headphones are turned on.
	Replace or charge the headphones' batteries.
	Be sure the AC adapter is plugged in and has power.
	Be sure all cables are securely connected.
	Be sure the audio source is turned on and tuned to an active channel.
	Be sure the source's volume control is turned up.
	Adjust the headphones' volume control.
	Change the position of the transmitter.
Distorted audio	If you connected the transmitter to an audio source's headphone jack, reduce the audio source's volume.
	Charge or renew the headphones' batteries.
	Change the position of the transmitter.

Care

[Wordings for care and maintenance]

SPECIFICATIONS

Transmitter

Carrier Frequency 911.4 – 915.6 MHz

Power Source 12V DC, 250 mA

Modulation Method FM Modulation

Frequency Response..... 80 Hz – 20 kHz (6 dB)

Receiver

Sensitivity <2 μ V (with 20 dB S/N)

S/N Ratio (@ -50dBm) >60 dB (A weight)

Audio Distortion <2%

Max. Audio output > 8 mW

Power requirement 3 AAA alkaline or rechargeable batteries

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

[RS 90-Day Warranty]

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33-1196 Wireless Stereo Headphone Alignment Procedures:

Transmitter Section:

1. BASE BAND BOARD

1) Operating Voltage

Two regulated DC voltage levels can be found within the TX PCB. Both DC 8V and 5V are regulated from the DC jack that is connected to a 12VDC adapter.

Equipment: DVM

- I) Connect a DC source to the adapter input and toggle SW21.
- II) Measure the output voltage at TP6 : 7.8 +/- 0.2V, at TP13 : 5 +/- 0.2V, at TP9 : 3.6 +/- 0.2V

2) The operation of MCU

There is only one channel. By proper programming the PLL IC by the MCU, the RF carrier can be controlled.

Equipment : CRO

- I) Connect a DC source to the adapter input.
- II) Measure the signal at TP5 in CRO if it is a series of 3.5V pules when connecting test point SW+ to GND.

3) Charging circuit

The unit has an automatic charging circuit. For safety reasons, the trickle charging current has to be less than 0.1C (70mA).

Equipment: DVM

- I) Power on the unit and connect a resistor 100ohm at CH+ and CH-.
- II) Measure the voltage drop across the resistor by a DVM.
- III) Voltage drop should be 5.8V+/-0.4V

4) Audio circuit

The Audio signal should be input from two on-board RCA connectors, with signal level of 500mVrms. Before feeding the audio signal to the RF module for FM modulation, the base band signal will pass through the compander ICs U1 and U2 (KA8512) for better ultimate audio signal-to-noise ratio. The modulation depth will be controlled by two variable resistors VR1 and VR2.

Equipment Audio signal generator, CRO

- I) Power on the unit and connect the audio signal generator with a signal of frequency 1KHz level 500mV rms to JK1 and JK2.
- II) Measure the signal Frequency response at TP12 connected one resistor 15K to GND.
- III) Measure the signal Frequency response at TP11 connected one resistor 15K to GND.
- IV) The Spec. : 70Hz -8 +/- 2db, 20KHz 7+/-2db
- V) Solder the three shielding cases.

2. RF BOARD

The RF module consists of two VCOs operating at the frequency 911.4 to 915.6MHz. The core resonating elements of each VCO are L406 and L404. By changing the inductance of L406 and L404, the center frequency of each VCO can be varied. The voltage control elements of the VCOs are realized by two varactor diodes VD401 and VD402. The VCO is phase locked to a crystal oscillator generated from the PLL chip U401. The accuracy of the transmission frequency is same as the reference 16MHz crystal X401. The output frequency of RF transmission can be accurately trimmed by the tweaking variable capacitor VC401. The two VCO output are then buffered by two RF amplifiers. The amplified output would be combined before feeding to the antenna.

1) Two VCO adjustments

Equipment: Spectrum analyzer, DVM

- I) TX RF module should be soldered to the good main board
- II) Power on the unit and measure the voltage at TP6 of the base band board if it is 7.6 +/- 0.4V and the voltage at TP9 of the base band if it is 3.6 +/- 0.2V.
- III) Connect the spectrum analyzer to the antenna feed point
- IV) Set the spectrum analyzer to 915.6MHz, span = 20kHz
- V) Use a DVM to measure the voltage at VT1 of the RF board.
- VI) Adjust the 4T air coil L406 inductance, such that the VCO voltage at VT1 of the RF board is 2.4V +/- 0.2V
- VII) Adjust VC401, until the RF frequency is 915.6MHz +/- 400Hz at 25C
- VIII) Measure the RF power, it should be 3 +/- 3dBm
- IX) Change the spectrum analyzer to 911.4MHz
- X) Measure the VCO voltage at VT2
- XI) Adjust the inductance of air coil 4T L404, until the VCO voltage at VT2 of the RF board is 2.4V +/- 0.2V
- XII) Measure the RF power, it should be 3 +/- 3dBm
- XIII) Solder the three shielding cases and re-test the two RF power : 3 +/- 3dBm, the difference is less than 3dBm, RF frequency : 915.6MHz +/- 500Hz at 25C, VCO voltage at VT1, VT2 : 0.7 – 2.8V.

2) Audio input circuit on TX unit

The Audio signal should be input from two on-board RCA connectors, with signal level of 500mVrms. Before feeding the audio signal to the RF module for FM modulation, the base band signal will pass through the compander ICs U1 and U2 (KA8512) for better ultimate audio signal-to-noise ratio. The modulation depth will be controlled by two variable resistors VR1 and VR2. With 1kHz audio frequency of level 500mV rms, the RF carrier FM deviation should be 30kHz.

Equipment: Modulation analyzer, Audio signal analyzer

- I) Connect the TX board to the modulation analyzer
- II) Connect the Audio signal generator to WHITE RCA connector
- III) Audio signal generator settings: 1KHz output, 500mV rms
- IV) Modulation analyzer settings: Center at 911.4MHz, Frequency filter at 300Hz – 3KHz
- V) Adjust VR1 until FM deviation = 30 +/- 0.2kHz
- VI) Test Frequency response : 70Hz 1 +/- 3 dB 20KHz 1 +/- 3dB
- VII) Connect the Audio signal generator to RED RCA connector
- VIII) Modulation analyzer settings: Center at 915.6MHz