WIRELESS TV HEADPHONE CIRCUIT

A Mini Project report

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ABSTRACT

This circuit allows you to watch your favourite TV programmes late at night without disturbing other family members. As against imported stereo wireless TV headphones, these are cheaply available. The unit is basically a simple FM transmitter T1 acts as an audio preamplifier. Transistor T2 works as an FM oscillator and modulator in conjunction with other passive components. Trimmer capacitor VC1 connected across inductor L1 can be varied to achieve the desired frequency.

Most modern TV’s are equipped with audio-in/out and video-in/out RCA sockets. Using an RCA-to-RCA cord, connect the audio output of the TV to transmitters input. Adjust the gain of the audio preamplifier with the help of preset VR1 for clear reception in a portable FM receiver equipped with ear phone socket. This transmitter draws only a few milliamperes of current and doesn’t require on/off switch. It can be fabricated on a small piece of stripboard.
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1. INTRODUCTION

If you want to watch TV during night times it will be a disturbance for other family members. This circuit is useful in order to get out of this problem by using headphones instead of speakers.

Wireless communication means the transfer of information without the use of enhanced electrical conductors. The purpose of this circuit can be achieved by using both radio frequency or infrared waves generated from a transmitter place near the sound source. But it is efficient to choose the radio frequencies because they will give you much more flexibility to change how and where you listen.

In these days people willing to spend lots of money on their home theatre systems and speakers. But speakers has high cost. So, the cheaper option will be wireless TV headphones. They can be used effectively upto 20 feet.
2. List of Components:

T1_______________ Transistor BC547

T2_______________ Transistor BF494

R1_______________ 47 kilo-ohm

R2_______________ 150 kilo-ohm

R3_______________ 3.9 kilo-ohm

R4_______________ 2.2 kilo-ohm

R5_______________ 1.5 kilo-ohm

R6_______________ 470-ohm

R7_______________ 10kilo-ohm

R8_______________ 330-ohm

VR1______________ 47kilo-ohm

C1_______________ 100uF,16V electrolytic

C2,C3_____________ 1uF,16V electrolytic

C4_______________ 0.001uF, ceramic

C5_______________ 68pF, ceramic

C7_______________ 33pF, ceramic
C8____________ 4.7pF, ceramic

C9____________ 10pF, ceramic

VC1____________ 20pF, trimmer

L1____________ 4-6 turns of enameled copper wire on 4mm diameter air core

J1_____________ jack or earphone connector
3. Circuit diagram

![Circuit Diagram]

*SEE TEXT*
4. Circuit operation:

There are three components that work together to create and transmit a signal to where it can be recorded or amplified. The first part is the actual microphone. It can be very tiny and clip around your ear. The second part is the wireless microphone is the transmitter. The final component, the antenna broadcasts that signal to a short distance.

The unit is basically a simple FM transmitter housed in a plastic or metal enclosure. Transistor T1 acts as an audio preamplifier. Transistor T2 works as an FM oscillator and modulator in conjunction with other passive components. Trimmer capacitor VC1 connected across inductor L1 can be varied to achieve the desired frequency. Inductor L1 comprises 4 to 6 turns of closely wound 25SWG enameled copper wire on 4mm dia.air core. A 20-30cm long wire serves as an antenna.

Most modern TV’s are nowadays equipped with audio-in/out and video-in/out RCA sockets. Using an RCA-to-RCA cord, connect the audio output of your TV to the transmitter’s input. Adjust the gain of the audio preamplifier with the help of preset VR1 for clear reception in a portable FM receiver equipped with an earphone socket.

This transmitter draws only a few milliamperes of current and doesn’t require on/off switch. It can be fabricated on a small piece of stripboard.

Notes:

- Transistor acts as an audio preamplifier and amplifies input audio signals obtained at jack J1 from TV.
- The gain adjustment is provided by preset VR1.
- Other passive components like resistors and capacitors provide proper biasing of transistor T1.
- The amplified signals are then filtered by capacitors C3,C4 and resistor R7 and fed to transistor T2 which is here working as FM oscillator and modulator.
The transmitted frequency must be in the range of 88-108Mhz which comprises FM band.

Applications:

- Televisions
- Radio receiver
- Cassette player
- Walkman
6. Conclusion:

The purpose of this circuit can be achieved by using both radio frequency or infrared waves generated from a transmitter place near the sound source. But it is efficient to choose the radio frequencies because they will give you much more flexibility to change how and where you listen. It is the best process to watch the TV without disturbing other persons and it can be heard upto 20 feet.
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