Walky-talky in this website is world 1st verified walky-talky project without using coil. Walky talky is very interesting and attain grabbing project for electronics hobbyist. Communication is done without any physical connection and mobile network up range of 500 meter. Almost all communication devices utilize coil which is burden for electronics hobbyist. So, we design this circuit without using any coil.

Circuit Descriptions of walky-talky

The entire circuit of walky-talky is divided into two main section transmitter and receiver section.

Transmitter section:- Transmitter section utilize IC NE566 (IC_4) as VCO (Voltage Control Oscillator) for generating frequency about 30 KHz. Resistor R_{24} with Capacitor C_{24} used as frequency components for frequencies determination. Voice is pick-up by mike (MIC_1) and changed it into equivalent electrical signal. Signal from microphone is amplified by transistor T_4 and given to pin no 5 0f IC_4. NAND gate N_1 with crystal oscillator XT_4 finalizes the output from pin 3 of IC_3. Lastly, signal from

NAND N_2 through N_3 and N_4 given to antenna for transmission.

Receiver section: – Transmitted signal from another walky-talky is received from same antenna which is used for transmission. Field effect transistor T_1 boosts the received signal and make more powerful and send to amplifier section made from transistor T_2 and T_3 with crystal oscillator XT_1 through XT_3. Detector section is made from diode D_1, Capacitor C_6 and resistor R_{12}. 30 KHz frequency is obtained from detector section. Frequency of Phase Locked Loop IC NE565 (IC_1) is adjusted by capacitor C_9, resistor R_{17} and variable resistor VR_1. Amplifier IC LM386 (IC_2) is used to amplify the signal and given to speaker.

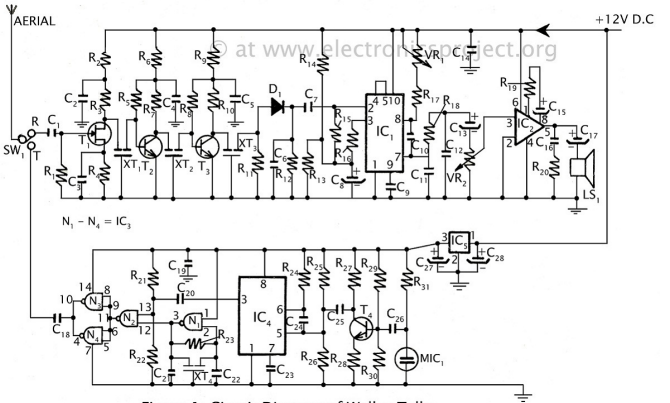

Figure 1: Circuit Diagram of Walky-Talky

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R_1 = 47 KΩ

R_2 = 100 Ω

R_3, R_4, R_{11}, R_{27} = 2.2 KΩ

R_5 = 330 KΩ

R_6, R_{10} = 560 Ω

R_7 = 1 KΩ

R_8 = 220 KΩ

R_9 = 100 Ω

R_{12}, R_{15}, R_{16} = 4.7 KΩ

R_{13}, R_{31} = 10 KΩ

R_{14} = 15 KΩ

R_{17} = 1.8 KΩ

R_{18} = 1.2 KΩ

R_{19} = 1 KΩ

R_{20} = 4.7 Ω

R_{21}, R_{22} = 100 KΩ

R_{23} = 120 KΩ

R_{24} = 5.6 KΩ

R_{25} = 22 KΩ

R_{26} = 150 KΩ

R_{28} = 330 Ω

R_{29} = 220 KΩ

R_{30} = 47 KΩ

VR_1 = 4.7 KΩ

VR_2 = 22 KΩ

Capacitors

C_1, C_6, C_{10}, C_{24} = 1 KpF

C_2, C_4, C_5 = 47 KpF

C_3 = 20 KpF

C_7, C_9, C_{23}= 2.2 KpF

C_8 = 4.7 µF/16V

C_{11} = 22 KpF

C_{12}, C_{16} = 0.1 µF

C_{13} = 2.2 µF/16 V

C_{14}, C_{19}, C_{25}, C_{26} = 0.22 µF

C_{15} = 10 µF/16V

C_{17} = 220 µF/16V

C_{18}, C_{20} = 10 KpF

C_{21}, C_{22} = 68 pF

C_{27} = 1000 µF/16V

C_{28} = 10 µF/16V

Semiconductors

IC_1 = NE565 (Phase Lock IC)

IC_2 = LM386 (Amplifier IC)

IC_3 = CD4011 (Quad 2-input NAND Gate IC)

IC_4 = LM566 (Voltage Controlled Oscillator)

IC_5 = LM7812 (Voltage Regulator)

T_1 = BFW10

T_2, T_3 = BF194

T_4 = BC148

D_1 = 1N4148

Miscellaneous

XT_1 – XT_4 = 10.7 MHz crystal

SW_1 = Single pole double throw switch

LS_1 = 8Ω speaker

MIC_1 = Condenser microphone

Areal