

CIRCUIT DESCRIPTION FOR MODEL 8814 (TFY-8814-USA)

1. TRANSMITTER SECTION (Baby Unit)

RF Frequency Oscillator

L3, L4, D2, C31 and built in IC U3 circuit functions as a VCO oscillator. The frequency is determined by L3, L4, D2 and C31. Y1 (or Y2) functions as the reference oscillation which will compare with the divided frequency of VCO oscillation in PLL circuit IC U3 to obtain the stability frequency.

RF Amplifier and Power Amplifier

RF pre-amplifier and power driver is located built in IC U3. Q4 is the RF power amplifier.

Circuits for Suppression of Spurious Radiation

RF power output from IC U3 is fed to Q4. The output of Q4 coupled to the antenna through triple 'LC' and 'PI' network (C40-C41, C42, C43, C44, L4, L5) which serves both to match and reduce harmonic to adequate level. The RF maximum power is 500mV/m at 3meter.

Circuits for Limiting Power

During alignment, R29 is selected to provide about 500mV/m output power.

Modulation and Response

U1A-U1B is MIC amplifier. The amplified audio signal from pin1 of U1A output is fed to D2 for making F3E type modulation. C19, C20 and R19 are used to determine the transmit response.

Circuit for limiting Modulation

Q2 and Q3 give the auto MIC control circuit. When the modulating voltage is excessive, the DC voltage will be obtained on the emitter of Q2 that turns on Q3. This feedback system keeps the maximum modulation.

Battery Indication

LED1 functions as the power indicator. When the power goes to ON by switch S1, the LED1 light.

Power Supply

U2 is a regulator that the out DC voltage is 3.0V. This stable output is used to feed to mic amplifier circuit, U3 and RF amplifier.

2. RECEIVER SECTION (Parent Unit)

The receiver is a conversion superheterodyne with the local oscillator at frequency higher the received frequency to produce the IF 10.7Mhz.

Local Oscillator

IC U6 functions as a local oscillation. D2, C69, L8, L9 and built in U6 combined the VCO circuit. X1 (or X2) functions as the reference oscillation that will compare with the divided frequency of the local oscillation in the PLL circuit built in IC U6 to obtain the stability frequency.

RF amplifier

RF signal from antenna is fed to the base of TR14. TR17 is second stages RF amplifier. The output from the collector of TR17 is given to the base of TR15 for the mixing.

Mixer Circuit

TR15 functions as a mixer.

IF amplifier

TR16, TR18, CF1 and built in IC U5 functions as the IF amplifier that which the IF signal output is fed to demodulation circuit built I IC U5.

Demodulation

XT1 is discriminator which and the built circuit of IC U5 function as the demodulation circuit.

Audio Power Amplifier and Volume Control

The audio amplifier is built in IC U5. Pin 24 of U5 is the input pin of audio amplifier. The Audio output from pin27 of U5 fed to speaker. VR1 is the volume control.

RF Level Indication

IC U1 and Led LD2-LD8 function as RF received level indication.

Out – of – Range detector

When the unit haven't receive the signal from the transmitter unit, the pin 23 of U5 output the noise that is fed the band passed amplifier (U4A and U4B), and then noise is transferred to DC by TR23 to make TR28 goes to ON through TR8 and TR27. Then red LED ON. When the unit received the signal, the transistor TR29 goes to ON and TR28 to OFF, so the green LED ON and the red LED OFF.

Regulator

IC XC1 is a regulator designed in the parent unit to provide constant voltage onto RF amplifier, local oscillator and mixer circuit.

Low Battery Detector and Cut-Off

Low Battery Detector consists of TR12. When the battery low, the transistor TR12 OFF and TR13 ON, so the green LED off and red LED ON. Transistor TR2, TR10 and TR11 is used to cut-off the discharge of the rechargeable batteries.