

CIRCUIT DESCRIPTION FOR MODEL SBC SC765

(PHL-765-USA) 28 Feb., 2000

1. TRANSMITTER SECTION (Baby Unit)

RF Frequency Oscillator

L2, L3, D8, C53 and built in IC U3 circuit functions as a VCO oscillator. The frequency is determining by L2, L3, D8 and C53. Y1 (or Y2) function as the reference oscillation which will compare with the divided frequency of VCO oscillation in PLL circuit in IC U3 to obtain the stability frequency.

RF Amplifier and Power Amplifier

RF pre-amplifier and power driver is located built in IC U3. Q10 is the RF power amplifier.

Circuits for Suppression of Spurious Radiation

RF power output from IC U3 is fed to Q10. The output of Q10 coupled to the antenna through triple 'LC' and 'PI' network (C36-C38, C45, C50, L4-L6) 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, R39 is selected to provide about 500mV/m output power.

Modulation and Response

Q7-Q9 is MIC amplifier. The amplified audio signal from Q9 output is fed to D7, D7for making F3E type modulation. VR1 is selected in alignment to ensure the deviation. C27, C28 and R30 are used to determine the transmit response.

Circuit for limiting Modulation

Q4-6, D5 and D6 give the auto MIC control circuit. When the modulating voltage is excessive, the DC voltage will be obtained which turns on Q5 and Q4. This feedback system keeps the maximum modulation.

Hidden Tone Oscillator and Modulation

Q3, C64, C65, C66, R49, R58, R31, R40 and VR2 combines hidden tone oscillator that the frequency is about 19Khz. VR2 is used to alignment the hidden tone

frequency. The hidden tone output signal from the output of Q3 fed D7 to modulate.

Voice Control Hidden Tone Oscillator

Q11-Q13 functions as the voice control hidden circuit. When there is the voice which the sound level is larger than one reference level, the emitter of Q13 will appear DC voltage which is over 0.6V. So Q13 goes to ON that make the pin 3 of U1C obtain the high level. This high level voltage fed to Q14 base, then the hidden oscillator goes to ON. When no voice or the voice is less than one reference level, Q13 goes to OFF. U1C, R55, R56, D4 and C63 functions as one oscillator which make the hidden tone goes to ON per five second for confirming both baby and parent connected.

Battery Low detection and Indication

D1 functions the power indicator. When the power goes to ON by switch S1, the LED D1 light. D2, R4-R6, Q2, U1A and U1B function as the battery low detection circuit. When the battery is down to some level, Q2 goes to OFF, the oscillation U1A will make LED D2 flashing. In the normal status, LED D2 is OFF.

Power Supply

U2 is a regulator that the out DC voltage is 4.0V. This stable output is used to feed to mic amplifier circuit, U3 and tone oscillation.

2. RECEIVER SECTION (Parent Unit)

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

Local Oscillator

IC U2 functions as a local oscillation. D1, C14 and built in U2 combined the VCO circuit. XT2 (or XT3) functions as the reference oscillation that will compare with the divided frequency of the local oscillation in the PLL circuit built in IC U2 to obtain the stability frequency.

RF amplifier

RF signal from antenna is fed to the base of Q1 and Q2. Q1 and Q2 are two stages RF amplifier. The output from the collector of Q2 is given to the base of Q3 for the mixing.

Mixer Circuit

Q3 functions as the mixer.