

Circuit Description

1 PRODUCT DESCRIPTION

The GH3060 is a 2.4GHz 40 Channels Analog Modulation Cordless Phone with FM/AM Radio, Type I, II Caller ID and Full-duplex speakerphone. The unit is capable of either tone or pulse dialing.

The handset unit consists of a keypad with twelve standard keys (0,.. 9, * and #), six function keys (Calls, Del, Memo, Flash, Redial, Volume), and one channel switch key. A Talk key is provided to control pick/release telephone line in a toggle base.

The base unit has a page key, which is used to page the handset unit. It also has some radio and alarm function keys and a speaker key.

2 BASE UNIT

CPU

The host of base unit is the CPU(U2). It has two system clocks: 32.768KHz for power down mode and 3.579MHz for normal mode. It controls the RF signal transmitting and receiving for wireless communication with handset, FM/AM receiver control for radio function, alarm function and signal path control. It also handles LCD display, keyboard and switches scanning, and power managements.

The chip, besides, in charge of Caller ID and Call ID on Call Waiting detection, DTMF generation, ring detection and line states control.

Radio

The heart of the Radio part is U8(TEA5757H). It is a integrated FM/AM stereo radio circuit including a auto tuning function. It finish the FM/AM signal receiving, mixing and demodulation with its associated parts.

FM signal receiving path is performed by ANT, L130, C99, C100, D20, VC3, C128, C71, L1, etc.

FM oscillator consists of D21, VC4, C126, C72, L2, etc.

AM signal receiving path is performed by Bar antenna, D11, VC1, C124, C430, etc.

AM oscillator consists of D15, VC2, C127, C76, C77, T1, etc.

RF module

The RF module is mainly formed by RF IC(U2); low loss amplifier Q26, Q27, FLT2; RX mixer, Q28; IF amplifier Q29, F2, F3; RX VCO, Q30, D2; TX VCO, Q23, D1 and frequency tripler Q24; power amplifier Q25, FLT1.

The most important part of the module is RF IC(U2) that provide TX, RX PLL for VCOs, demodulator, Compandor, battery level detect, mic per-amplifier and receiver power amplifier. It is controlled by CPU via serial linking.

In the receiving path, the RX signal is filtered and amplified on LNA and then converted to IF signal 10.7MHz at the mixer. An 8xxMHz signal is generated on RX VCO, which is controlled by RX PLL and feed into mixer to mix the IF signal. The signal is demodulated and expanded on RF IC(U2) to reproduce audio signal.

In the transmitting path, the audio signal is converted to 8xxMHz signal on TX VCO, which is controlled by TX PLL. The signal is tripled to 2.4GMz RF signal on frequency tripler. Finally, the RF signal is amplified and filter then feed to antenna.

Continental Conair Limited 2.4GHz Clock Radio Cordless Phone With CID & FCC ID:LBBGH3060
Speakerphone

Line Interface Circuit

The circuit includes Q2, SW1, T2 and associated parts. It also includes the ringing detection circuit (U4, D6, D7, D8); line state control circuit(SW1, Q2); sidetone circuit(Q6, R34, R35, C25, C27) and amplifier(Q7).

Power supply and battery low detection

The power is supplied from AC/DC adaptor which gives 10VDC from 120VAC mains. The voltage from the adaptor is coupled to Q8, Z1, and regulated to 5VDC, the voltage supplies the power to CPU and Radio circuit. The 10VDC power pass through the regulator U3(LM7808) and is regulated to 8VDC, this voltage supplies the power to power amplifier U5 and radio tuning circuit. And meantime, the 10VDC power pass through the regulator U1(LM7805)and is regulated to 5VDC, this voltage supplies the power to RF circuit.

The circuit is backed up by one 9v alkaline battery. The battery is disconnected from the supply rail by D27 when the AC main presents. The backup battery supplies the power to CPU when there is a power failure.

If 9v battery is low, Q17 is turned off and output a high signal to CPU.

Speakerphone and power amplifier

The circuit includes U6 (34118), U5(TDA2822) and associated parts in order to achieve the function of audio signal receiving and transmitting, amplification, background noise monitor .

3 HANDSET UNIT

CPU

The heart of base unit also is the CPU, HU1. It has two system clocks: 32.768KHz for power down mode and 3.579545MHz for normal mode. It controls the RF IC on RF module for wireless communication with base unit. It also handles LCD display, keyboard scanning, LEDs control, buzzer control and power managements.

RF module

The RF module is mainly formed by RF IC(U2); low loss amplifier Q26, Q27, FLT2; RX mixer, Q28; IF amplifier Q29, F2, F3; RX VCO, Q30, D2; TX VCO, Q23, D1 and frequency tripler Q24; power amplifier, Q25, FLT1.

The most important part of the module is RF IC that provide TX, RX PLL for VCOs, demodulator, Compandor, battery level detect, mic per-amplifier and receiver power amplifier. It is controlled by CPU via serial linking.

In the receiving path, the RX signal is filtered and amplified on LNA and then converted to IF signal 10.7MHz at the mixer. An 8xxMHz signal is generated on RX VCO, which is controlled by RX PLL and feed into mixer to mix the IF signal. The signal is demodulated and expanded on RF IC to reproduce audio signal. Finally, the audio signal is amplified on power amplifier and connects to receiver or headset via headset jack.

In the transmitting path, the audio signal is converted to 8xxMHz signal on TX VCO, which is controlled by TX PLL. The signal is tripled to 2.4GMz RF signal on frequency tripler. Finally, the RF signal is amplified and filter then feed to antenna.