CIRCUIT DESCRIPTION

Model: GH9407/GH9408

1 Base

a. RF Transmitter Section – RF Board

Compressed audio signal is frequency modulated through the varactor diode D3, D4. Di
D4 choke coil L5 and the external components formed the voltage controlled oscillator ci
the transmitter part. This circuit generates the TX VCO frequency. A portion of this sign
back to the PLL IC's pin1 (FIN1) for phase comparison. Once the phase of oscillation st
the PLL circuit generates the error voltage necessary for the VCO to oscillate at the
transmitter's RF frequency. The VCO circuit impedance is matched with the succeedin
through the transistor Q5 that also acts as the buffer amplifier. RF pre-amplifier Q2 and a
Q7 boosts the signal for transmission. This amplified RF signal is trimmed to the
frequency band by BPF2403 so as not to interfere with the receiver circuit. The transm
signal is then propagated through the antenna.

b. RF Receiver Section - RF Board

The Base Unit antenna receives RF signal. Band Pass Filter BPF2475 trims the signa
desirable frequency band. Transistor Q6 & Q3 is a low noise amplifier that boosts the R
to a specific level for mixing. PLL IC1 (KB8825) is used as a Universal Phase Lock Loop
The frequency from the Voltage Controlled Oscillator (VCO) D1, is fed back to the PLL IC
pin 16 (FIN2) for phase comparison. During channel scanning or turning the unit on, c
phase of oscillation stabilized (locked), the PLL circuit generates the first local oscillator fr
for down-converting the received RF signal into the first IF frequency 10.7MHz. This pr
accomplished through the IF mixer circuit Q3. Q1 is used for matching the impedanc
mixer circuit with the succeeding circuits. The resulting IF signal is kept constant by the
FL1 to 10.7MHz which is then mixed with the second local oscillator frequency 11.
(derived from X1 & C47) to produced a much lower IF frequency. This lower IF freq
further filtered by IF Filter FL4 to produce a more stable signal of 450KHz. Quadratur
detection is accomplished internally by the Narrow-band Detector IC2 (KA3361) with th
L7. The recovered audio frequency can be taken from IC2 audio output pin9. Double co
of received signal is utilized to improve the image frequency rejection of the unit.

c. Transmitter Audio Section – Main Board

Audio Frequency signal from the telephone line is compressed through the compressor
IC4 to minimize the transmission noise. The degree of compression depends on the exte
combinations. AGC is also utilized by IC4 to avoid shock noise caused by abrupt change
levels. The compressed audio is filtered and amplified for better acoustical performance.

d. Receiver Audio Section – Main Board

The compressed Audio Frequency signal is passed through passive RC filters for compliance. The filtered audio is then fed to the Compander IC4 for expansion thus re the original Audio signal with noise filtered out. Q1 are used as buffer circuit. Transi (A94) isolates the high-voltage telephone line to the rest of the circuit. Q2 (A94) is also a hybrid transformer to create a two-way path for audio transmission to and reception f telephone line.

2 Handset

a. RF Transmitter Section – RF Board

Refer to portion 1.a for this section. All circuit performance is the same except that Ba Filter BPF2403 be changed to BPF2475 for the handset transmission.

b. RF Receiver Section – RF Board

Refer to portion 1.b for this section. All circuit performance is the same except that Ba Filter BPF2475 be changed to BPF2403 for the handset reception.

c. Transmitter Audio Section – Main Board

Audio Frequency signal from the handset or from the headset microphone is compressed the compressor part of IC2 to minimize the transmission noise. The degree of comp depends on the external RC combinations. AGC is also utilized by IC2 to avoid shoc caused by abrupt change of audio levels. The compressed audio is filtered and ampl better acoustical performance. Q5 is a switching transistor that controls the power supply TX RF part.

d. Receiver Audio Section – Main Board

The compressed Audio Frequency signal is passed through passive RC filters for compliance. The filtered audio is then fed to the Compander IC2 for expansion thus re the original Audio signal with noise filtered out. Q3 act as audio amplifier to sufficiently d handset speaker. Q1, Q6 and Q8 are switching transistors that control the power supply RF part, the Compander part and the AF amplifier respectively. An earphone jack is prov an optional headset unit for handsfree conversation on the handset.

3 OTHERS (Handset)

a. Charging and Reset Controls

Recharging the handset battery is accomplished by putting the handset on the cradle detects this action and sends a command to the CPU for proper exchange of securit Switching SW4 to the RING OFF mode can extend Battery life.

b. Ring Detection

When the handset receives the ring command from the base unit, the CPU will send buzz
to the ringer amplifier Q201 that drives the Buzzer.

4 OTHERS (Base):

a. Hook Switching and Dialing

Hook switching and pulse dialing is accomplished by the Transistor Q3 (A44) which is co
by the CPU. DTMF signal from the ladder circuit R65-R70 to the CPU is filtered and amp
U1-D.

b. Over-voltage Protection

Fuse F1 and varistor Z1 act as high current and high voltage protectors for the teleph
interface. In case of presence of voltage surge across the telephone line, Z1 decre
resistance and dumps the line voltage to a safe level. Fuse F1 opens when excessive cu
present on the line thus protecting both the user and the line interface.

c. Battery Charging & Code Setting

Battery charging commences when IC2 PIN14 detects the presence of the handset on
D25 & C29 form the reset circuit in conjunction with the charge detect circuit to comm
CPU to change the security code. When the reset circuit is activated, the CPU will sen
security code to the handset selecting among 65536 combinations.

d. Ring Detection

Incoming ring signal is detected by the U1-A. Diode D3-D6 and R8 set the level o
detection. The CPU checks the frequency of the ring signal, and when valid, sends the
command to the speaker or to the Handset.

e. Power Supplies

Diode D11 ensures uniform polarity for the entire circuit. IC1 regulates the voltage to +5
the rest of the circuit. Transistor Q8 controls the power supplied to the TX part of the RF

f. Squelch Detection

In conjunction with the 3361 IC (IC2 of the Base RF), fixed resistor sets the level o
detection and U1-B acts as the comparator circuit whose composite output is the RSSI si
the CPU.

g. RX Data

Commands from the Handset is filtered and re-constructed by the Schmitt trigger circu
The composite output is the RX Data that is input to the CPU for validation and processing

- END -

2.4GHz FREQUENCY CHART

GH9407/GH9408

BASE			HANDSET		BASE			HANDSET	
CH	**TX**	**RX**	**TX**	**RX**	**CH**	**TX**	**RX**	**TX**	**RX**
1	**2400.570**	2472.230	**2472.230**	2400.570	**26**	**2402.978**	2474.643	**2474.643**	2402.978
2	**2400.666**	2472.327	**2472.327**	2400.666	**27**	**2403.074**	2474.740	**2474.740**	2403.074
3	**2400.763**	2472.423	**2472.423**	2400.763	**28**	**2403.171**	2474.836	**2474.836**	2403.171
4	**2400.859**	2472.520	**2472.520**	2400.859	**29**	**2403.267**	2474.933	**2474.933**	2403.267
5	**2400.955**	2472.616	**2472.616**	2400.955	**30**	**2403.363**	2475.029	**2475.029**	2403.363
6	**2401.052**	2472.713	**2472.713**	2401.052	**31**	**2403.460**	2475.126	**2475.126**	2403.460
7	**2401.148**	2472.809	**2472.809**	2401.148	**32**	**2403.556**	2475.222	**2475.222**	2403.556
8	**2401.244**	2472.906	**2472.906**	2401.244	**33**	**2403.652**	2475.319	**2475.319**	2403.652
9	**2401.341**	2473.002	**2473.002**	2401.341	**34**	**2403.749**	2475.416	**2475.416**	2403.749
10	**2401.437**	2473.099	**2473.099**	2401.437	**35**	**2403.845**	2475.512	**2475.512**	2403.845
11	**2401.533**	2473.195	**2473.195**	2401.533	**36**	**2403.941**	2475.609	**2475.609**	2403.941
12	**2401.630**	2473.292	**2473.292**	2401.630	**37**	**2404.038**	2475.705	**2475.705**	2404.038
13	**2401.726**	2473.388	**2473.388**	2401.726	**38**	**2404.134**	2475.802	**2475.802**	2404.134
14	**2401.822**	2473.485	**2473.485**	2401.822	**39**	**2404.230**	2475.898	**2475.898**	2404.230
15	**2401.919**	2473.581	**2473.581**	2401.919	**40**	**2404.327**	2475.995	**2475.995**	2404.327
16	**2402.015**	2473.678	**2473.678**	2402.015	**41**	**2404.423**	2476.091	**2476.091**	2404.423
17	**2402.111**	2473.774	**2473.774**	2402.111	**42**	**2404.519**	2476.188	**2476.188**	2404.519
18	**2402.208**	2473.871	**2473.871**	2402.208	**43**	**2404.616**	2476.284	**2476.284**	2404.616
19	**2402.304**	2473.968	**2473.968**	2402.304	**44**	**2404.712**	2476.381	**2476.381**	2404.712
20	**2402.400**	2474.064	**2474.064**	2402.400	**45**	**2404.808**	2476.477	**2476.477**	2404.808
21	**2402.497**	2474.161	**2474.161**	2402.497	**46**	**2404.905**	2476.574	**2476.574**	2404.905
22	**2402.593**	2474.257	**2474.257**	2402.593	**47**	**2405.001**	2476.670	**2476.670**	2405.001
23	**2402.689**	2474.354	**2474.354**	2402.689	**48**	**2405.097**	2476.767	**2476.767**	2405.097
24	**2402.786**	2474.450	**2474.450**	2402.786	**49**	**2405.194**	2476.863	**2476.863**	2405.194
25	**2402.882**	2474.547	**2474.547**	2402.882	**50**	**2405.290**	2476.960	**2476.960**	2405.290

SECURITY CODE INFORMATION

The GH9407/GH9408 50 channel cordless telephone uses a digital coding security system to prevent unauthorized use of telephone line by other cordless phones nearby. It has 65,536 possible security code combinations. Each combination of the code is randomly generated every time the handset is picked up.

Communication between Handset and the Base unit may not be possible in any of the following situations:

1. After a power failure.
2. After relocating the Base unit by disconnecting the AC adaptor.
3. After replacing the Handset battery.
4. The Handset goes out of range from the Base unit.

To reset, place the Handset on the Base unit for 2 to 3 seconds.

FCC ID: ***O63GH9407LD02***