

## MODEL NUMBER ALLOCATION

Presently, we have a large number of models within each of our various model number series of cordless telephones.

Our clients continually request slightly different cosmetic variations of each registered model such as a different case color .

In order to control all of these permutations, it is constantly necessary to assign and file, with the FCC, new model numbers to cover these cosmetic variations.

**Since all models, within a series of cordless telephones, are electrically and functionally identical, varying only in cosmetic detail** and to avoid the need to constantly file, with the FCC, to register additional model numbers for cosmetic purposes, we request to register our models as listed tradenames and model numbers:

TRADENAMES		MODEL NUMBERS
BELLSOUTH	}	D(HAC) MH9920(0)(Y)    D(HAC) MH9925(0)(Y)
AMERITECH		D(HAC) MH9921(0)(Y)    D(HAC) MH9926(0)(Y)
BELL ATLANTIC		D(HAC) MH9922(0)(Y)    D(HAC) MH9927(0)(Y)
PACIFIC BELL		D(HAC) MH9923(0)(Y)    D(HAC) MH9928(0)(Y)
UNISONIC		D(HAC) MH9924(0)(Y)    D(HAC) MH9929(0)(Y)

**MH9920 series are 900Mhz Cordless Telephone , Caller ID with Speakerphone**

NOTE:            (0) Zero                                    =            Additional charger base  
suffix "Y" can be added to the model number to represent color  
variation, can be any letter/s of the alphabet as follows  
(but not limited to this list) such as :

"No suffix"	=	Gray case
B/BK	=	Black case
HG/VHG	=	Green case
W	=	White case
R	=	Red case
RB	=	Red/Black case
PL	=	Pearl white case

such that :

MH9920	-	Model MH9920 is the standard model in gray case
MH9920B	-	Model MH9920 in black case
MH9920HG	-	Model MH9920 in green case

# FREQUENCY OF 1602 P.L.L

- \* CHANNEL SPACE : 25KHz
- \* 1st I.F. : 10.7 MHz
- \* 2nd I.F. : 450KHz
- \* TCXO(X-TAL) : 11.15MHz

CH	BASE(MHz)		PORTABLE(MHz)	
	TX	LOCAL(10.7)	TX	LOCAL(10.7)
1	902.125	936.825	926.125	891.425
2	902.150	936.850	926.150	891.450
3	902.175	936.875	926.175	891.475
4	902.200	936.900	926.200	891.500
5	902.225	936.925	926.225	891.525
6	902.250	936.950	926.250	891.550
7	902.275	936.975	926.275	891.575
8	902.300	937.000	926.300	891.600
9	902.325	937.025	926.325	891.625
10	902.350	937.050	926.350	891.650
11	902.375	937.075	926.375	891.675
12	902.400	937.100	926.400	891.700
13	902.425	937.125	926.425	891.725
14	902.450	937.150	926.450	891.750
15	902.475	937.175	926.475	891.775
16	902.500	937.200	926.500	891.800
17	902.525	937.225	926.525	891.825
18	902.550	937.250	926.550	891.850
19	902.575	937.275	926.575	891.875
20	902.600	937.300	926.600	891.900
21	902.625	937.325	926.625	891.925
22	902.650	937.350	926.650	891.950
23	902.675	937.375	926.675	891.975
24	902.700	937.400	926.700	892.000
25	902.725	937.425	926.725	892.025
26	902.750	937.450	926.750	892.050
27	902.775	937.475	926.775	892.075
28	902.800	937.500	926.800	892.100
29	902.825	937.525	926.825	892.125
30	902.850	937.550	926.850	892.150
31	902.875	937.575	926.875	892.175
32	902.900	937.600	926.900	892.200
33	902.925	937.625	926.925	892.225
34	902.950	937.650	926.950	892.250
35	902.975	937.675	926.975	892.275
36	903.000	937.700	927.000	892.300
37	903.025	937.725	927.025	892.325
38	903.050	937.750	927.050	892.350
39	903.075	937.775	927.075	892.375
40	903.100	937.800	927.100	892.400

# CIRCUIT DESCRIPTION OF MH9921 V4

## **1. BASE UNIT :**

The demodulated signal, resulting from Double Super Heterodyne system, which appears at output pin no.5 of cn1 is sent to IC6 pin no.15 for Expansion.

The expanded audio signal is sent to the telephone line via hybrid Transformer HY1.

The demodulated data code from CN1 Pin no.7 is Generated by IC1B. Its output is connected to CODE Input Pin no.60 of IC2.

The Audio signal receiving from TELE LINE is input to IC6 Pin no.8 for compression.

The compressed audio signal from Pin no.3 of IC6 is connected to CN1 Pin no.11 of CN1 modulation.

Pin no.62,5 of IC2 is the output port for data codes that should be transmitted to the handset. the data code is connected to Pin no.11 of CN1 for modulation.

CAS signals from tel-line are filtered by AMP IC101B and fed to codec IC102 pin no.4 for decoding and then, converted digital signal transmit to dsp chip ic 102.

Comparing the code is correct, DSP (IC103) send CAS detection code to cpu(IC2).

After that,ack code from cpu transmit to CO (central office) through tel-line and, CO. Send FSK signal to Base tel-line for final confirmation of Caller ID. FSK is AMP & filterd by IC 105b and fed to codec ic102,next routines for FSK are same as CAS routine.After detection df FSK,CPU generates information commamd (including name,address,telephonenumber,time,date)and transmit the data to Handset through RF section.

Stand-by mode : FSK signal detected by IC 105B after ringing is fed to codec(IC102)pin4, and next routines and poerations are the same as FSK detection at talk-mode.

Ext-inuse : In case branch phone is used IC105d7c detect using the branch phone and send the logic-hi signal to CPU.

At the moment, Base LED start blinking and Handset LCD displays "EXT-INUSE".

Relay controlling is done by Pin no.27 of IC2.

Ring signal monitored by PC1 (PHOTO COUPLER IC) is detected by Pin no.28 of IC2 resulting a data code to the handset.

DTMF dialling is generated by IC2 pin 24 this signal output through the base of Q2.

When the handset is placed on the base cradle, the charging is detected by Pin no.58 of IC2 sends data codes to handset for security code setting.

When the handset is far away from base unit, squelch circuit of IC1C operates and Pin no.8 of IC1C goes "HI".

This will be detected by the micro processor and after 20 sec. go to Stand by mode.

The power to the base unit is supplied by IC7 (5V REGULATOR IC).

The power to the base RF module is supplied by IC9 (5V LOW CURRENT REGULATOR IC).

The power to the base CODEC and DSP supplied by IC8 (5V REGULATOR IC).

## **2. SPEAKER PHONE MODE**

The audio signal receiving from tel-line is input to IC101B Pin no.6 and fed to CODEC IC102 for converted digital signal transmit to DSP IC103 is connected to IC102 for converted analog signal transmit to AUDIO AMP (IC107).

The audio signal receiving form MIC is input to IC101A Pin no.2 and fed to CODEC IC 102 for converted digital signal transmit to DSP IC103 is connected to IC102 for converted analog signal send the tel-line.

## 1). RX PART

THE RECEIVER FRONT-END CONTAINS A BAND PASS FILTER, AN RF LOW NOISE AMPLIFIER, A BAND PASS FILTER, A ACTIVE TRANSISTOR MIXER, A MONOLITHIC CRYSTAL FILTER AND 10.7MHz IF AMPLIFIER.

ALSO IT INCLUDES

BUFFER AMPLIFIERS FOR THE GENERATION OF LOCAL OSCILATOR POWER.

THIS FRONT-END RECEIVER RECEIVES AN RF SIGNAL FROM THE ANTENNA. AND RF SIGNALS WITHIN THIS FREQUENCY RANGE IS 926.125MHz;-927.100MHz PASS THROUGH RF AMP (Q303,Q306) AND BAND PASS FILTER.

AFTER PASSING THROUGH THE BAND PASS FILTER, THE SIGNAL IS MIXED WITHIN 1st LOCAL FREQUENCY FROM VOLTAGE CONTROLLED OSCILLATOR.

THE SIGNAL IS AMPLIFIED ON THE IF AMP TRANSISTOR (Q305)AND THE SIGNAL PASS THROUGH THE MONOLITHIC CRYSTAL FILTER (10.7MHz).

AFTER THE IF SIGNAL PASS THE MCF FILTER, THE SIGNAL ENTER BY THE FM IF (INTERMEDIATE FREQUENCY) IC.

AND THE SIGNAL IS MIXED IN THE FM IF IC (DBL5018).

THE SIGNAL PASS THROUGH THE CERAMIC FILTER (450KHz).

THE OUTPUT SIGNAL IN THE FM IF IC STREAMS FROM THE AF-OUT TEMINAL OF THE CONNECTOR TO THE BASE.

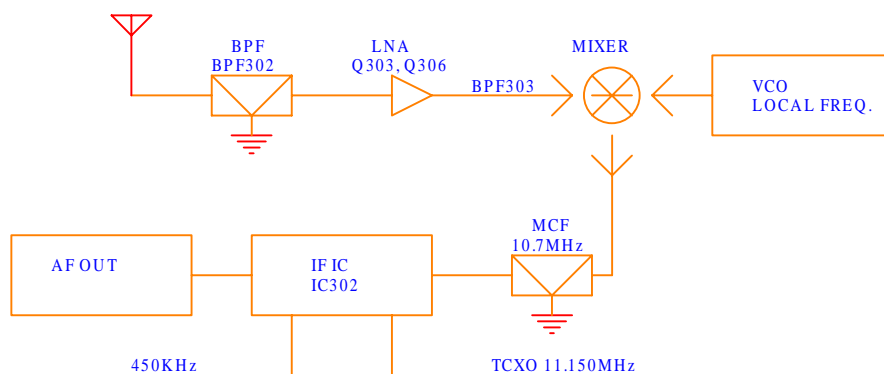


FIG.1

## 2). TX PART

THE SIGNAL IS MADE TO THE PORTABLE, ENTER BY THE AF-IN TERMINAL OF THE CONNECTOR.  
THE SIGNAL SEND THE MOD TERMINAL OF THE TX VCO.  
THE SIGNAL IS MIXED IN THE TX VCO  
MIXING THE RF SIGNAL, THE RF SIGNAL ADJUST THE TRIMMER CAPACITOR (VC301).  
THE RF SIGNAL ENTER BY THE TRANSMISSION POWER AMP TRANSISTOR (Q301,Q302)  
THE SIGNAL IS AMPLITUDE IN THE TR Q301,302.  
ENTER BY THE BAND PASS FILTER.  
THE RF SIGNAL PASS THROUGH THE BAND PASS FILTER, TOWARDS THE ANT.  
THE LAST TRANSMISSION RF SIGNAL IS 902.125MHz;-903.100MHz

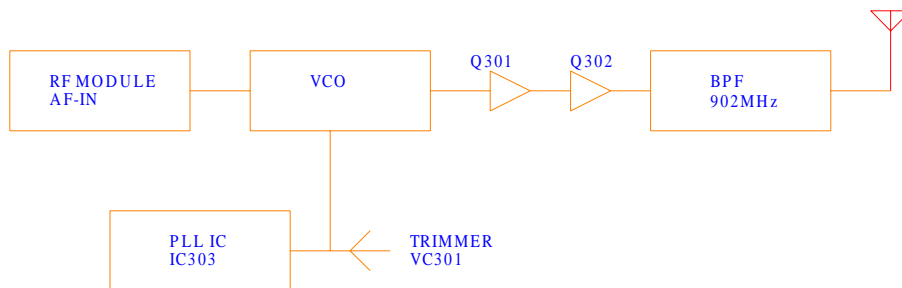


FIG. 2

## **2. HANDSET MAIN :**

The demodulated signal, resulting from Double Super Heterodyne system, which appears at output Pin no.5 of CN1 is connected to IC4B Pin no.15 Expander input.

The audio output from IC4B Pin no.19 is finally amplified by Q3 and a.c coupled to the Receiver unit with HAC compatibility.

The demodulated data code from CN1 Pin no.5 is fed to IC1B Pin no.1 of IC7B is connected to (DATA IN) Pin no.26 of IC1.

Voice signal from C-MIC is coupled to Pin no.8 of IC4.

The voice signal is compressed by IC4 & output Pin no.3 is connected to Pin no.11 of CN1 for modulation.

Pin no.29 of IC1 is the output port for data code that should be transmitted to the base unit. This data code is connected to the Pin no.11 of CN1 for modulation.

Lcd Display operation is monitored by pin no. 1-5,31-49,66-100.

During the charging, it is detected by IC1 Pin no.23.

Key board operation is monitored by Pin no.50-57 of IC1.

Key Tone and the ringing from Pin no.61,62 of IC1 drives the BUZZER.

## 1). RX PART

THE RECEIVER FRONT-END CONTAINS A BAND PASS FILTER, AND RF LOW NOISE AMPLIFIER, A ACTIVE TRANSISTOR MIXER, A MONOLITHIC CRYSTAL FILTER AND 10.7MHz "IF" AMPLIFIER. ALSO IT INCLUDES BUFFER AMPLIFIERS OR THE GENERATION OF LOCAL OSCILATOR POWER.

THIS FRONT-END RECEIVES AN RF SIGNAL FROM THE ANTENNA. AND RF SIGNALS WITHIN THIS FREQUENCY RANGE IS 902.125MHz;-903.100MHz PASS THROUGH RF AMP (Q306,Q303) AND BAND PASS FILTER.

AFTER PASSING THROUGH THE BAND PASS FILTER, THE SIGNAL IS MIXED WITHIN 1<sup>st</sup>LOCAL FREQUENCY FROM VOLTAGE CONTROLLED OSCILLATOR. THE SIGNAL IS AMPLIFIED ON THE IF AMP TRANSISTOR (Q305) AND THE SIGNAL PASS THROUGH THE MONOLITHIC CRYSTAL FITER (10.7MHz) AFTER THE IF SIGNAL PASS THE MCF FILTER, THE SIGNAL ENTER BY THE FM IF (INTERMEDIATE FREQUENCY) IC.

AND THE SIGNAL IS MIXED IN THE FMIF IC (DBL5018).

THE SIGNAL PASS THROUGH THE CERAMIC FILTER (450KHz).

THE OUTPUT SIGNAL IN THE FMIF IC STREAMS FROM THE AF-OUT TERMINAL OF THE CONNECTOR 1 TO THE PORTABLE MAIN.

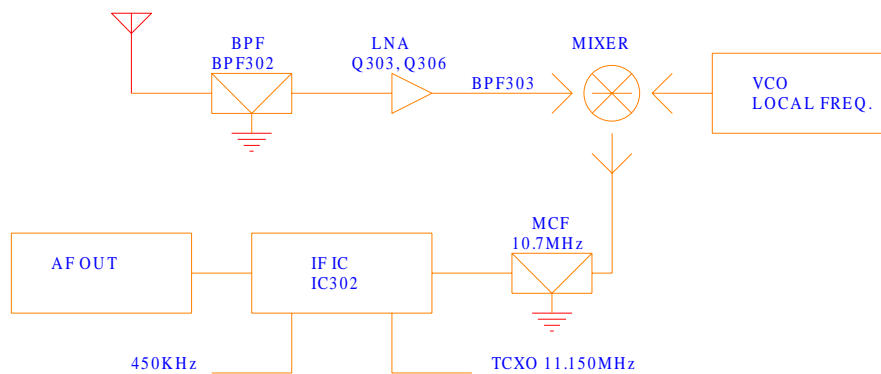


FIG.3



## 2). TX PART

THE SIGNAL IS MADE TO THE PORTABLE, ENTER BY THE AF-IN TERMINAL.  
THE SIGNAL SEND THE MOD TERMINAL OF THE TX VCO.  
THE SIGNAL IS MIXED IN THE TX VCO  
MIXING THE RF SIGNAL, THE RF SIGNAL ADJUST THE  
TRIMMER CAPACITOR (VC301).  
THE RF SIGNAL ENTER BY THE TRANSMISSION POWER  
AMP TRANSISTOR (Q301,Q302)  
THE SIGNAL IS AMPLITUDE IN THE Q301,Q302.  
ENTER BY THE BAND PASS FILTER.  
THE RF SIGNAL PASS THROUGH THE BAND PASS FILTER, TOWARDS THE ANT.  
THE LAST TRANSMISSION RF SIGNAL IS 926.125MHz;-927.100MHz.

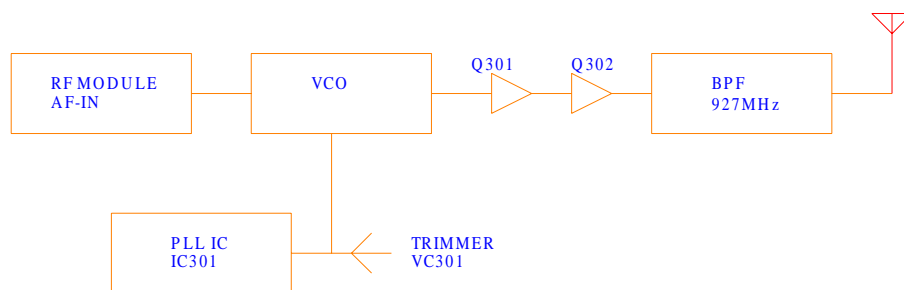


FIG. 4