1. FEATURES

This section listes the major features and function of the cordless telephone

1. 32 channel 900MHz Cordless Telephone, automatic selection of the clearest channel
2. Manual channel change capability
3. Compandor noise suppression circuit
4. Antenna : short rubber antenna on handset, swivel antenna on base
5. Low battery alert for the handset
6. Handset battery charging indicator on the base
7. Out of range alert (handset)
8. Battery life
   - Talk time : 5 hours
   - Stand-by time : 3 days
9. Table/Wall convertible (base unit)
10. Hearing Aid Compativel (HAC)
11. Use replaceable handset battery
12. Digital Security :

1.1 CALLER ID FEATURES

1. Caller ID functionality (Type 1)
2. Caller ID with Call Waiting (Type 2)
3. 40 name and number memory
4. 3-line display
5. DELETE keys
6. Dial back from Caller ID record

1.2 Base Keys and indicators

1. page key
2. indicators
   - Charge/Page LED
   - INUSE LED
   - Voicemail LED
3. One RJ-11 jack
4. "T" / "P" Extension switch for Call Waiting ID set to main at factory
5. Charge contacts
6. Swivel antenna
7. Desk/Wall bracket

1.3 Keys

1. Dial keypad
   - PQRS on '7' key
   - WXYZ on '9' key

2-9930A CIRCUIT DESCRIPTION

A. BASE UNIT

1. TEL-LINE INTERFACE
2. RING DETECT
3. POWER SUPPLY
4. AUDIO AMPLIFIER AND COMPANDOR
5. DTMF GENERATOR
6. 20dB/30dB CONTROL
7. DATA COMMUNICATION INTERFACE
8. INTERCOM FUNCTION
9. BASE RF MODULE

B. PORTABLE UNIT

1. LOW BATTERY DETECTION CIRCUIT
2. BUZZER
3. INDICATOR CATEGORY
4. AUDIO AMPLIFIER AND COMPANDOR
5. PORTABLE RF MODULE

A. BASE SET

1. TEL-LINE INTERFACE

TEL-LINE INTERFACE CIRCUIT CONSISTS OF A RELAY, DIODE BRIDGE (D1~D4,)
, TRANSFORMER (T1), AND SPEECH NETWORK CIRCUIT AS FOLLOWS FIG. 1
A DC LOOP IS CONFIGUED WHEN CPU PIN 21 IS SET LOW
THE LOOP CURRENT FLOWS AS FOLLOWS :
TIP->FU1->D1->D2-R1-T1-D3-RINS

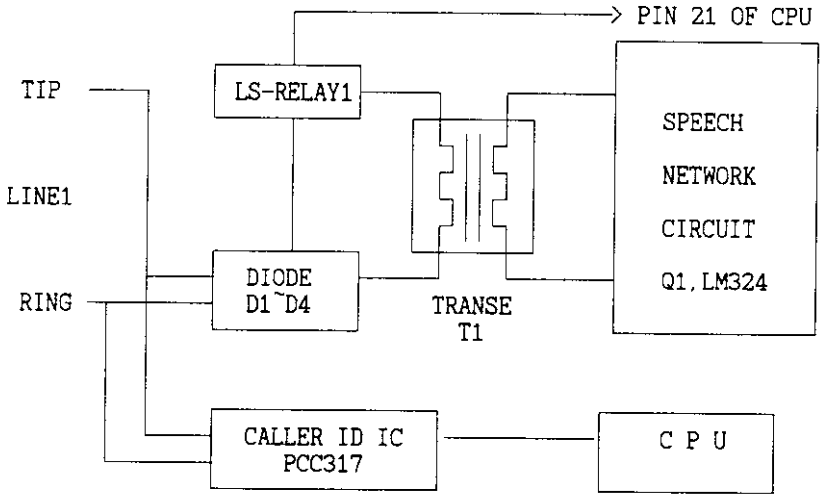


FIG. 1

2. RING DETECT

THE RING SIGNAL SUPPLIED BETWEEN T19 AND RING PASSES THROUGH THE FLLOWING PROCEDURES AND IS DETECTED BY THE CPU.

TIP - FU1 - C76 - OPTO COUPLER(IC8)-RING
→CPU PIN61

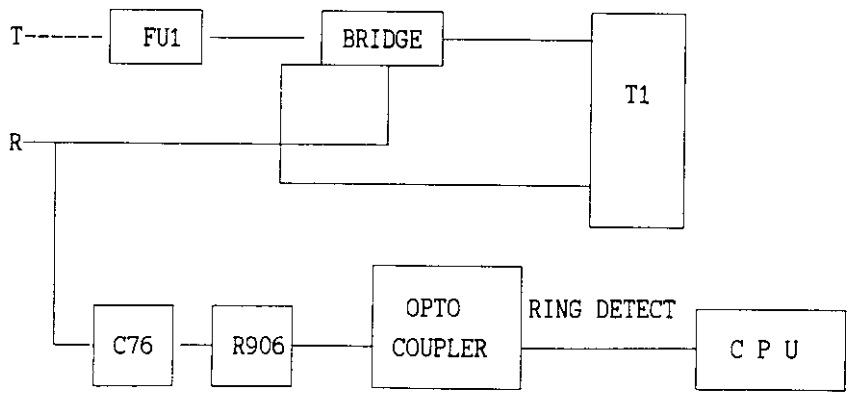


FIG. 2

3. POWER SUPPLY

3-1 THE OUTPUT VOLTAGE OF IC6 IS REGULATED 5V AND THIS VOLTAGE IS USED BY MAIN SUPPLYIING VOLTAGE OF CPU AND TX,POWER.

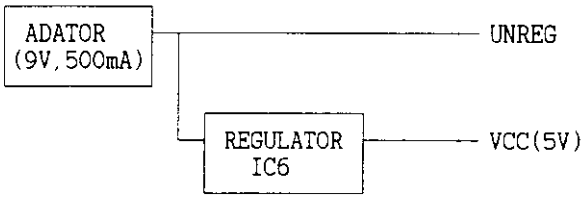


FIG.3

4. AUDIO AMPLIFIER AND COMPANDOR

4-1 TX PART:

THE TRANSMITTED SIGNALS FROM TELEPHONE LINE ARE FEED TO COMPANDOR IC(IC3) THROUGH THE AUDIO AMPLIFIER AND THE RECEIVED SIGNALS FROM TELEPHONE LINE ARE ALSO FEED TO AUDIO AMPLIFIER THROUGH THE SPEECH NETWORK CIRCUIT.

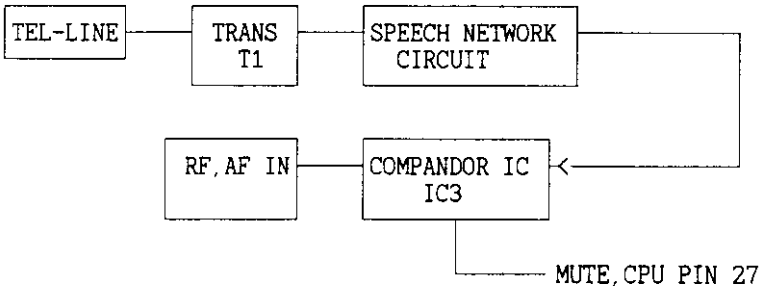


FIG.4

4-2 RX PART:

THE RECEIVED SIGNALS FROM AF OUT OF RF MODULE, FEED TO COMPANDOR FOR NOISE ELIMINATION.
THIS SIGNAL THROUGH MATCHING TRANS ALSO FEED TO TELEPHONE LINE THROUGH THE SPEECH NETWORK CIRCUIT TO TRANSFER TO OTHER PARTY.

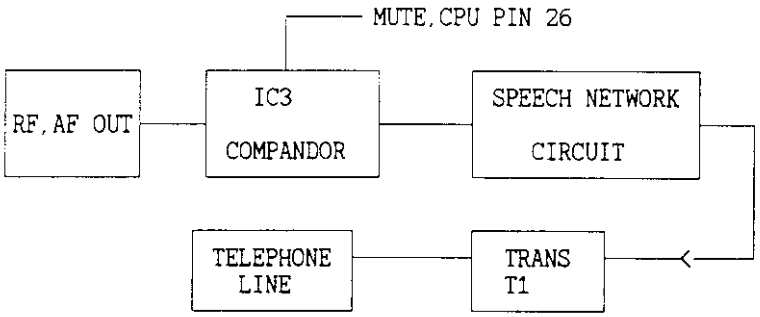


FIG. 5

5. DTMF GENARATOR

THE IC1(CPU) DTMF GENARATOR IS INTENDED TO PROVIDE DUAL-TONE MULTI-FREQUENCY (DTMF) FOR TONE DIALLING SYSTEM.
THE DTMF SIGNAL THROUGH SPEECH NETWORK CIRCUIT OUTPUT TEL-LINE.

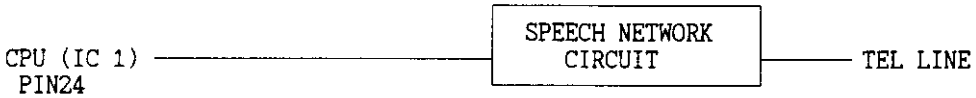


FIG. 6

6. 20dB CONTROL

RSSI LEVEL (20 dB) OUTPUT FROM THE IF CIRCUIT THROUGH IC4D OPAMP OUT OF IS DETECTING BY PIN 43 OF CPU.

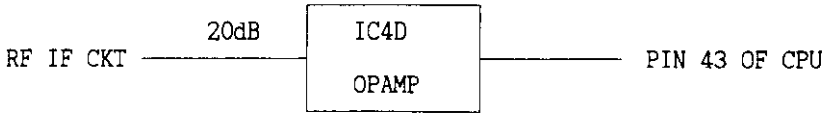


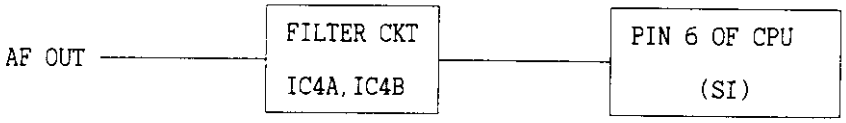
FIG. 7

7. DATA COMMUNICATION INTERFACE.

* DATA COMMUNICATION IS OPERATED SERIAL OUTPUT

7-1 PIN 6 (SI) OF CPU :

DATA SIGNAL WILL RECEIVE FROM THE PORTABLE UNIT AS THROUGH FILTER CIRCUIT IC4A, 4B AND DATA SIGNAL INPUT PIN 6 (SI) OF CPU



7-2 PIN 7 (SO) OF CPU :

DATA SIGNAL WILL SEND TO THE PORTABLE UNIT AS THROUGH PIN 7(SO) OF CPU

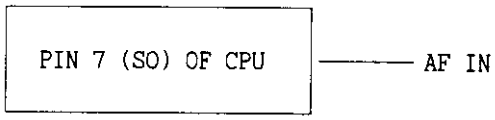


FIG. 8

8. PAGING FUNCTION

PAGING FUNCTION CAN BE SELECTED EITHER FROM BASE TO PORTABLE UNIT. THE INTERCOM FUNCTION CAN BE ENABLED BY PRESSING THE PAGE KEY IN THE BASE SET.

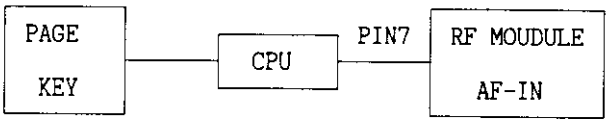


FIG. 9

9. BASE RF MODULE

9-1. RX PART

THE RECEIVER FRONT-END CONTAINS A BAND PASS FILTER, AN RF LOW NOISE AMPLIFIER, A SAW 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 ~ 927.675MHz PASS THROUGH RF AMP (Q301) AND BAND PASS FILTER, SAW FILTER.
AFTER PASSING THROUGH THE BAND PASS FILTER AND SAW FILTER, THE SIGNAL IS MIXED WITHIN 1'ST LOCAL FREQUENCY FROM VOLTAGE CONTROLLED OS CILLATOR.
THE SIGNAL IS AMPLIFIED ON THE IF AMP TRANSISTOR (Q303) 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) I C.
AND THE SIGNAL IS MIXED IN THE FM IF IC (MC3361).
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 301 TO THE BASE.

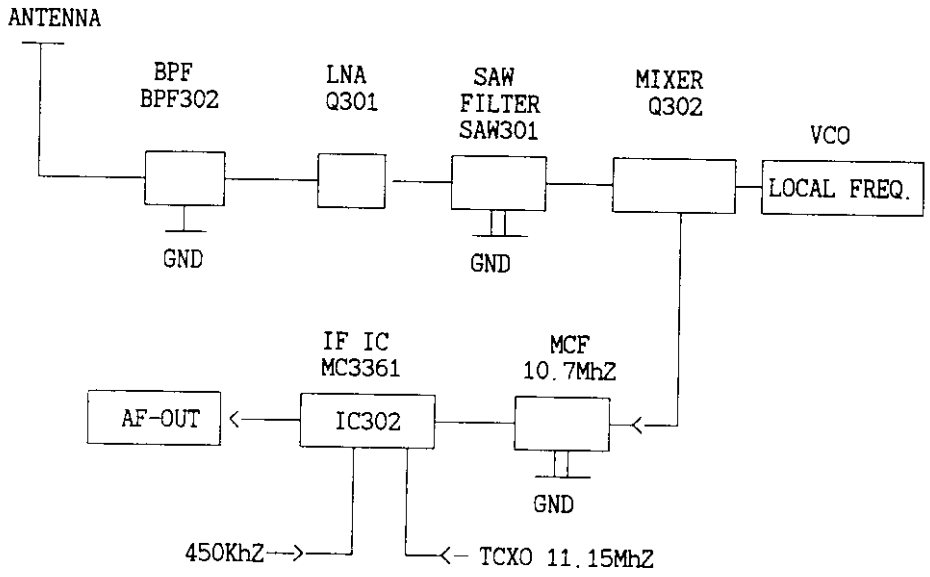


FIG.10

9-2. TX PART

THE SIGNAL IS MADE TO THE PORTABLE, ENTER BY THE AF-IN
TERMINAL OF THE CONNECTOR 301
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 TRANSMITION POWER
AMP TRANSISTOR (Q304,Q305)
THE SIGNAL IS AMPLITUDE IN THE TR Q304,305.
ENTER BY THE BAND PASS FILTER.
THE RF SIGNAL PASS THROUGH THE BAND PASS FILTER, TOWARDS THE ANT.
THE LAST TRANSMITTION RF SIGNAL IS 902.152MHz~903.675MHz

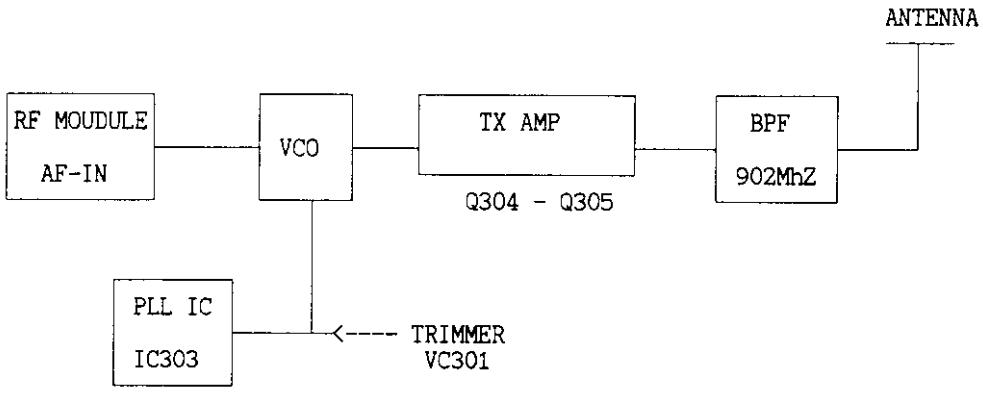


FIG. 11

B. PORTABLE UNIT

1. LOW BATTERY DETECTION CIRCUIT

TRANSISTOR Q6,Q7 IS CONTROLLED BY BATTERY VOLTAGE.
IF THE VOLTAGE OF BATTERY PACK IS BELOW 3.3V, CHANGED FROM HIGH TO LOW AT PIN 10 OF IC5 THEN CPU BECOMES TO RECOGNIZE TO LOW VOLTAGE OF BATTERY PACK

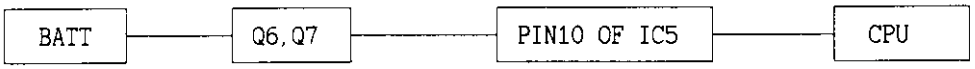


FIG.12

2. BUZZER

BUZZER IS CONTROLLED BY PIN 59 OF CPU DURING RECEIVED RING SIGNAL AND KEY INPUT

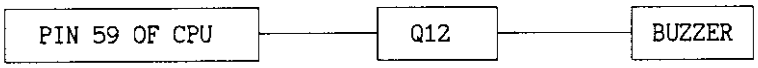


FIG.13

3. INDICATOR CATEGORY

ALL INDICATOR IS DISPLAYED AT LCD WINDOW BY THE CPU CONTROL.

4. AUDIO AMPLIFIER AND COMPANDOR

4-1 TX PART

THE TRANSMITTED SIGNALS FROM MIC ARE FEED TO
COMPANDOR IC7 THROUGH AUDIO AMPLIFIER IC8D
AND SIGNALS INPUT RF MODULE AF-IN

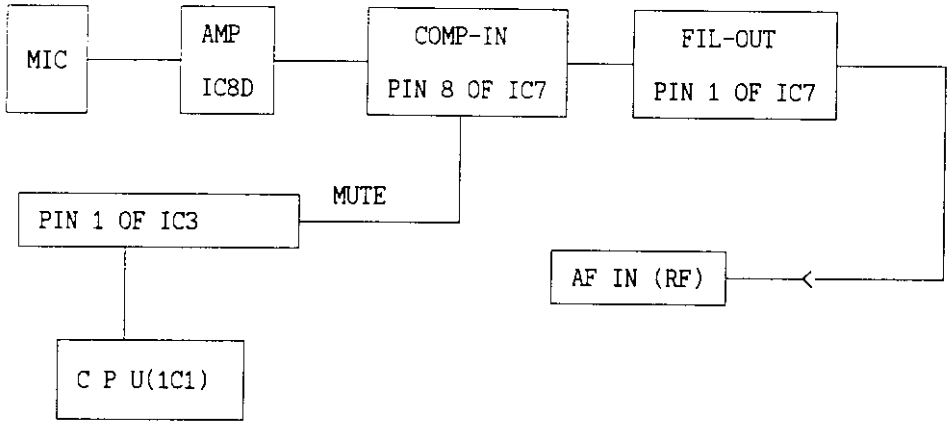


FIG.14

4-2 RX PART

THE RECEIVED SIGNALS FROM AF OUT CONTAIN
SIGNALS AND PASS ONLY THROUGH COMPANDOR FOR
NOISE ELIMINATION AND SIGNAL INPUT AUDIO AMPLIFIER.

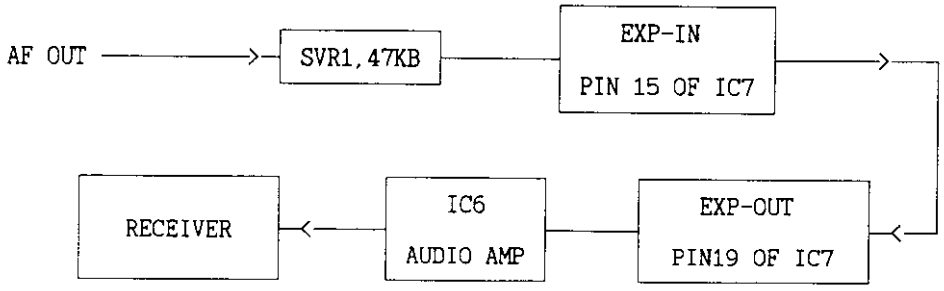


FIG.15

5. PORTABLE RF MODULE

5-1. RX PART

THE RECEIVER FRONT-END CONTAINS A BAND PASS FILTER, AND RF LOW NOISE AMPLIFIER, A SAW FILTER, 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 ~ 903.675MHz PASS THROUGH RF AMP (Q801) AND BAND PASS FILTER.

AFTER PASSING THROUGH THE BAND PASS FILTER, THE SIGNAL IS MIXED WITHIN 1'ST LOCAL FREQUENCY FROM VOLTAGE CONTROLLED OSCILLATOR. THE SIGNAL IS AMPLIFIED ON THE IF AMP TRANSISTOR (Q802) 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 FM IF IC (MC3361). THE SIGNAL PASS THROUGH THE CERAMIC FILTER (450KHz). THE OUTPUT SIGNAL IN THE FM IF IC STREAMS FROM THE AF-OUT TERMINAL OF THE CONNECTOR 1 TO THE HAND.

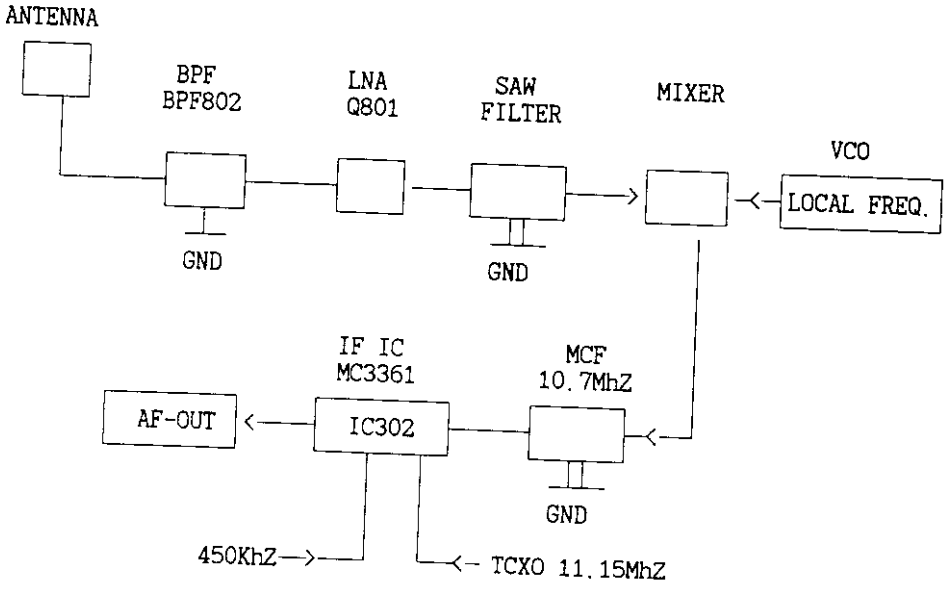


FIG.16

5-2. 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 (VC801).
THE RF SIGNAL ENTER BY THE TRANSMITION POWER AMP TRANSISTOR (Q804,805)
THE SIGNAL IS AMPLITUDE IN THE Q804,805.
ENTER BY THE BAND PASS FILTER.
THE RF SIGNAL PASS THROUGH THE BAND PASS FILTER, TOWARDS THE ANT.
THE LAST TRANSMITTION RF SIGNAL IS 926.125MHz ~ 927.675MHz.

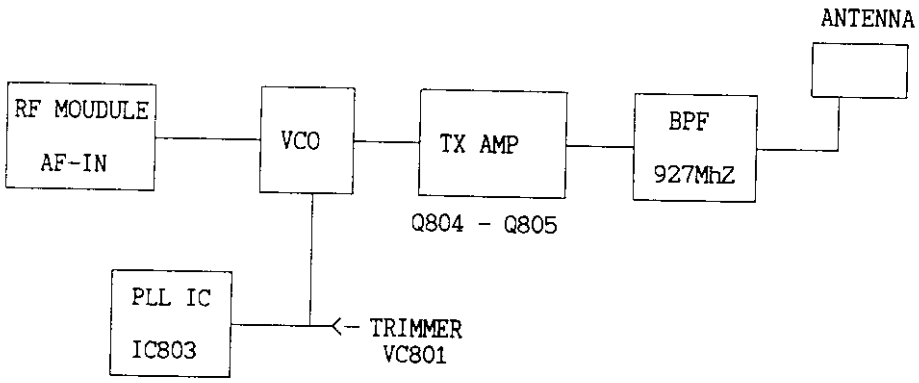


FIG. 17