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## **CIRCUIT DESCRIPTION**

### **1. RECEIVER SECTION**

Radio Frequency signal received by the antenna (ANT1), passing through the Low Pass Filter (L1,L18, C31,C165,C191). The RF signal is then amplified by Low Noise Amplifier Q26 and passes through a Band Pass Filter of FL1. The filtered signal within the range of 462 MHz – 467 MHz is then mixed with the first local oscillator signal from the Voltage Controlled Oscillator (VCO) circuit (Q29,Q31, D11, L24) through Q27, a portion of VCO signal is then feedback to the PLL IC (IC9) for phase comparison generating a stable RX frequency, the output signal is filtered by FL3 (21.7 MHz) which is the first Intermediate Frequency (IF) . The IF signal is fed to the discriminator IC9 pin 41 which is then mixed with the second local oscillator supplied by crystal X2 (21.25 MHz) to produced a reduced second IF signal which is then filtered by FL2 (LTM450HTU). Demodulated signal is recovered through correct and the internal discriminator circuit of IC9. The recovered Audio signal is outputted at pin 26 of IC9, the fully recovered audio signal is then further amplified by Power Amplifier IC5. An audible sound is therefore produce by the speaker SPK1.

### **2. TRANSMITTER SECTION**

PTT switch (SW19) when pushed triggers the Transmitter Circuit “ON”, the voice signal generates by the surrounding noise passes through the microphone MIC1 where mechanical to electrical transformation occurs, the electrical transformed signal is then filtered by Q40. The output signal is Modulated by a modulator circuit with a varactor diode D11 and L24. The external components from Q31,Q29 form a VCO Circuit which generates the required oscillating frequency for transmission, a portion of this signal is feedback to the PLL IC9 pin 46 for phase comparison in order to produce a stabilized TX frequency. The modulated signal is then amplified by a Cascaded Amplifier Circuit Q28 and 32 and again amplified by Q42 to produce a sufficient Radio Frequency signal emitted by the Antenna (ANT1).

### **3. CALL TRANSMISSION**

By pushing the CALL key, a signal is detected by the CPU (IC4), a CALL data is then produced by the CPU. This data passes through the Low Pass Filter Q40 and modulated by the varactor diode D11 and L24. The signal follows it's conventional transmission section path through the antenna.

### **4. BATTERY LOW DETECTION**

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Battery Low Detection is controlled by the CPU pin 36 as detected on the LCD 1, however a voltage divider circuit R173,174 and R184 serve as the stabilize reference voltage for the CPU to process its detection.

## **5. SQUELCH DETECTION**

Supported by the linear IC circuit (IC9), a resistor R216 sets the level of detection as a comparator circuit interface with the CPU.

## **6. POWER SUPPLY**

Supply voltage of 3.8 Volts dc is needed to power “ON” the whole circuitry, by Lithium Ion Rechargeable battery pack.

## **7. Battery Charging**

Battery Charging by DC adaptor through the ear jack and CPU pin 6 monitoring the charging status and once its fully charged the Q37 turn off to stop the charge to protect battery from its over charge.

## **FREQUENCY CHART**

CHANNEL	FREQUENCY (MHz)	CHANNEL	FREQUENCY (MHz)
1	462.5625	12	467.6625
2	462.5875	13	467.6875
3	462.6125	14	467.7125
4	462.6375	15	462.5500
5	462.6625	16	462.5750
6	462.6875	17	462.6000
7	462.7125	18	462.6250
8	467.5625	19	462.6500
9	467.5875	20	462.6750
10	467.6125	21	462.7000
11	467.6375	22	462.7250