CIRCUIT DESCRIPTION
Model: 2225/2215

a. Receiver Section

Radio Frequency signal received by the antenna (ANT1), passing through the Low Pass Filter (L2-L3, C30-C31). The RF signal is then amplified by Low Noise Amplifier Q2 and passes through a Band Pass Filter FL1 (465MHz). 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 (Q19-Q21, D8, L17) through Q11, a portion of VCO signal is then feedback to the PLL IC (IC5) for phase comparison generating a stable RX Frequency, the output signal is filtered by FL2 (21.7 MHz) which is the first Intermediate Frequency (IF) and is then amplified by Q14. The IF signal is fed to the discriminator IC (IC2) pin 16 which is then mixed with the second local oscillator supplied by crystal X2 (21.25 MHz) to produced and reduced second IF signal. Demodulated signal is recovered through correct adjustment of IF coil (L13) and the internal discriminator circuit of IC2. The recovered Audio signal is outputted at pin 9 of IC2 and then processed through filtering done by U3-D circuit, the fully recovered audio signal is then further amplified by Power Amplifier U3-A. An audible sound is therefore produce by the speaker SPK1, which can be varied from minimum to maximum through the key function (up/down) and process by the CPU IC6.

b. Transmitter Section

PTT switch 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 a Band Pass Filter U3-A, D, and C. The output signal is Modulated by a modulator circuit with a varactor diode D8 and L17. The external components from Q19-Q21 form a VCO Circuit, which generates the required oscillating frequency for transmission; a portion of this signal is feedback to the PLL IC5 pin 14 for phase comparison in order to produce a stabilized TX frequency. The modulated signal is then amplified by a Cascaded Amplifier Circuit Q17 and Q18 and again amplified by Q24 to produce a sufficient Radio Frequency signal emitted by the Antenna (ANT1).

c. Call Transmission

By pushing the **CALL** key, a signal is detected by the CPU (IC6), a **CALL data** is then produced by the CPU. This data passes through the Band Pass Filter U1-C and modulated by the varactor diode D2 and L8. The signal follows it’s conventional transmission section path through the antenna.

d. Continuous Tone Coded Squelch Signal Protocol

Once the unit is set to the corresponding Channel and CTCSS code at TX mode a tone is continuously generated from CPU through R96 and R103 and then passes through U1C for filtering and amplification. Then the Coded Tone signal follows its conventional transmission section path. During receiving mode once the Coded Tone signal matched with the set Code the CPU acknowledges and RX mute will disabled and RX will be active.

e. Battery Low Detection

Battery Low Detection is controlled by the IC6 as detected on the LCD1, however a voltage divider circuit R50 and R51 serve as the stabilize reference voltage for the IC6 to process its detection.

f. Squelch Detection

Supported by the linear IC circuit (IC2), a variable resistor VR1 sets the level of detection and Diode D11 acts as a comparator circuit interface with the CPU IC6.

g. Power Supply

Supply voltage of 6 Volts dc is needed to power “ON” the whole circuitry, by four (4) batteries “AAA” size.

FREQUENCY CHART

CHANNEL DISPLAY	CHANNEL TYPE	FREQ (MHz)	POWER (Watts)	CHANNEL DISPLAY	CHANNEL TYPE	FREQ (MHz)	POWER (Watts)
1	*GMRS/FRS*	*462.5625*	213.8mW	12	FRS	467.6625	162.18mW
2	*GMRS/FRS*	*462.5875*	213.8mW	13	FRS	467.6875	162.18mW
3	*GMRS/FRS*	*462.6125*	213.8mW	14	FRS	467.7125	162.18mW
4	*GMRS/FRS*	*462.6375*	213.8mW	*15*	*GMRS*	*462.5750*	213.8mW
5	*GMRS/FRS*	*462.6625*	213.8mW	*16*	*GMRS*	*462.6250*	213.8mW
6	*GMRS/FRS*	*462.6875*	213.8mW	*17*	*GMRS*	*462.6750*	213.8mW
7	*GMRS/FRS*	*462.7125*	213.8mW	*18*	*GMRS*	*462.5500*	213.8mW
8	FRS	467.5625	162.18mW	*19*	*GMRS*	*462.6000*	213.8mW
9	FRS	467.5875	162.18mW	*20*	*GMRS*	*462.6500*	213.8mW
10	FRS	467.6125	162.18mW	*21*	*GMRS*	*462.7000*	213.8mW
11	FRS	467.6375	162.18mW	*22*	*GMRS*	*462.7250*	213.8mW

CTCSS CODE FREQUENCY CHART

CODE	FREQUENCY (Hz)	CODE	FREQUENCY (Hz)
1	67.0	20	131.8
2	71.9	21	136.5
3	74.4	22	141.3
4	77.0	23	146.2
5	79.7	24	151.4
6	82.5	25	156.7
7	85.4	26	162.2
8	88.5	27	167.9
9	91.5	28	173.8
10	94.8	29	179.9
11	97.4	30	186.2
12	100.0	31	192.8
13	103.5	32	203.5
14	107.2	33	210.7
15	110.9	34	218.1
16	114.8	35	225.7
17	118.8	36	233.6
18	123.0	37	241.8
19	127.3	38	250.3