Technical Description for FRS P660

This TCXO controlled UHF FRS transceiver provides accurate and stable operation. There are three electrical units to support this transceiver function properly. They are as followings:

1. Voltage Regulator;
2. Receiver;
3. Transmitter;

Voltage Regulator :

The transceiver operates with 3 X AA alkaline batteries. When the Volume On/Off switch is turned on, Battery detector circuit Q3 and Q4 check the battery level and Battery Low icon on the LCD is shown on where the battery level is below 3.3 Volt.

The battery supply (4.5 Volt) supply power to the regulators circuit U12, U14, Q7, Q11, Q13 and Q14. These regulator output 3.0 Volt to the digital circuit, analog circuit and the RF circuit.

Receiver :

RF signal is received from the antenna followed by low pass filter L12, L14, C13, C14 and antenna switch D1 and D2. Then, the RF signal is passed through high pass filter C16, C17, C19, C21, C22, L17, and L20 which forms a band pass filter as incorporated with the previous low pass filter. The RF signal is then amplified by Q6 and band pass filter L21, L22, L23 and L24 further band limit the received signal to the mixer Q9. The first IF after the mixer output is passed through a crystal filter Y1and then amplified by Q10.

The local oscillator is made of PLL U1 and transistors Q4, Q5, Q8 and Q11.

The 45MHz IF is fed into the single conversion IF IC U11 which includes 44.545MHz 2nd local oscillator, 2nd mixer, limiting amplifier, discriminator, Squelch and mute control. The audio signal after the discriminator is fed into the CTCSS tone IC where the FM de-emphasis circuit outputs audio signal to the audio amplifier U10 while the CTCSS tone detection circuit acknowledges the CPU U8 to take appropriate logic decision.

Transmitter :

The voice signal picked by the Microphone is passed through the Mic control circuit Q8 and Q9 which acknowledges the CPU U8 the transmission mode is entered. U1 and Q1 form a internal built-in VOX circuit for hand free operation. The voice signal is then fed into the IC U13 where Pre-emphasis, Limiter and low pass filter circuit are included for audio signal processing. The modulating signal is then fed into the TX transmitter Q1 and Q2. The transmitting frequency is generated by the PLL synthesizer U1 and reference oscillator TCXO Y2. The transmitted RF signal is amplified by Q7, Q3, Q2 and Q1 to reach 500mW transmission. The harmonic emissions generated by the amplifiers are filtered by the L9, L13, L25, L14 and L12.