Patrick Harrington
ECEN 2420
On-Site Homework 10
April 8, 2013

1 Power Amplifier

1.1 Receiver Switch

First, the receiver switch was built in order to protect the Rx circuitry when the transmitter is active. The schematic of the filter is shown in Figure 1.1.

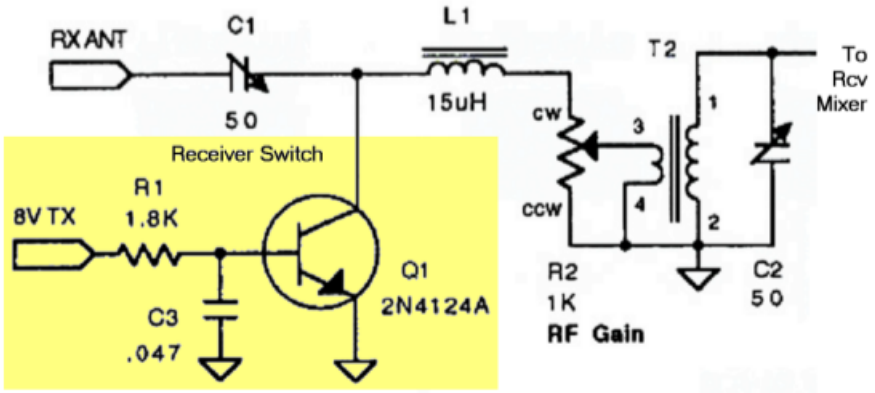

Figure 1: Rx Switch

After the installation of the switching circuitry, the power amplifier was then build according to the schematic shown in Figure 1.1.

1.2 Measurements

Output Voltage V_0	Output Power P	Supply Power P_0	Efficiency η

1.3 Plotting η v.s. P

In Figure 1.3, the efficiency η is plotted against the output power P. In Figure 1.3, the gain of the power amplifier was plotted against the input RF Voltage.

2 Transmit Mixer

Next, the Transmit Mixer was build and tested. Its schematic is shown in the following Figure.

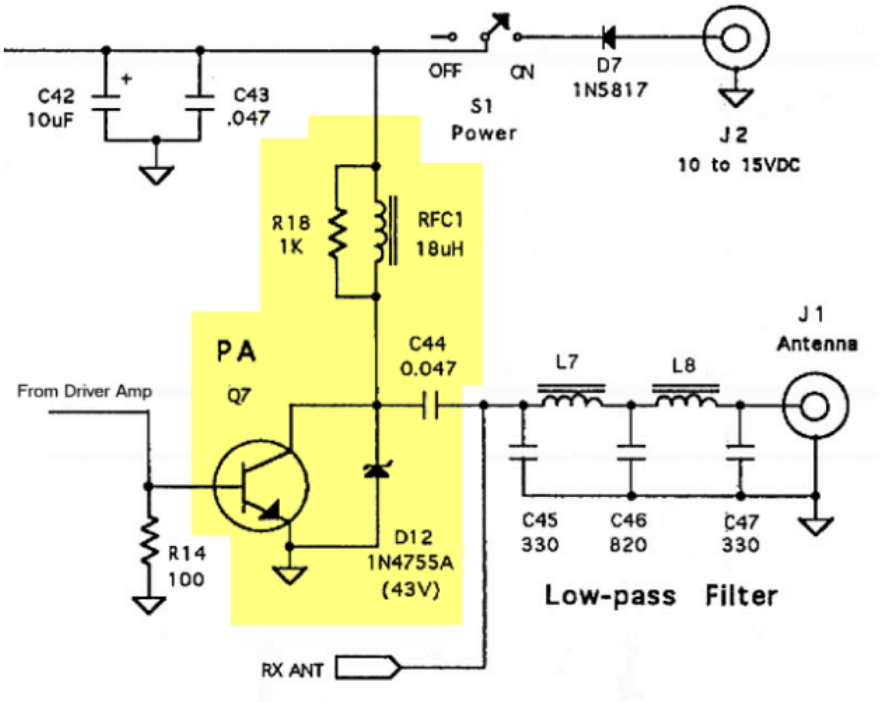

Figure 2: Power Amplifier

Figure 3: Plot of Efficiency η v.s. Output Power P

Figure 4: Plot of Gain v.s. input RF Voltage

2.1 Initial Set of Measurements

All components except $C_3 1$ were soldered. Next, $C_3 4$ was adjusted to get a max voltage level at $\boxed{V}$. Next, the resonant frequency was measured across the crystal and inductor and found to be $\square$

After these final measurements, $C_3 1$ was soldered in.

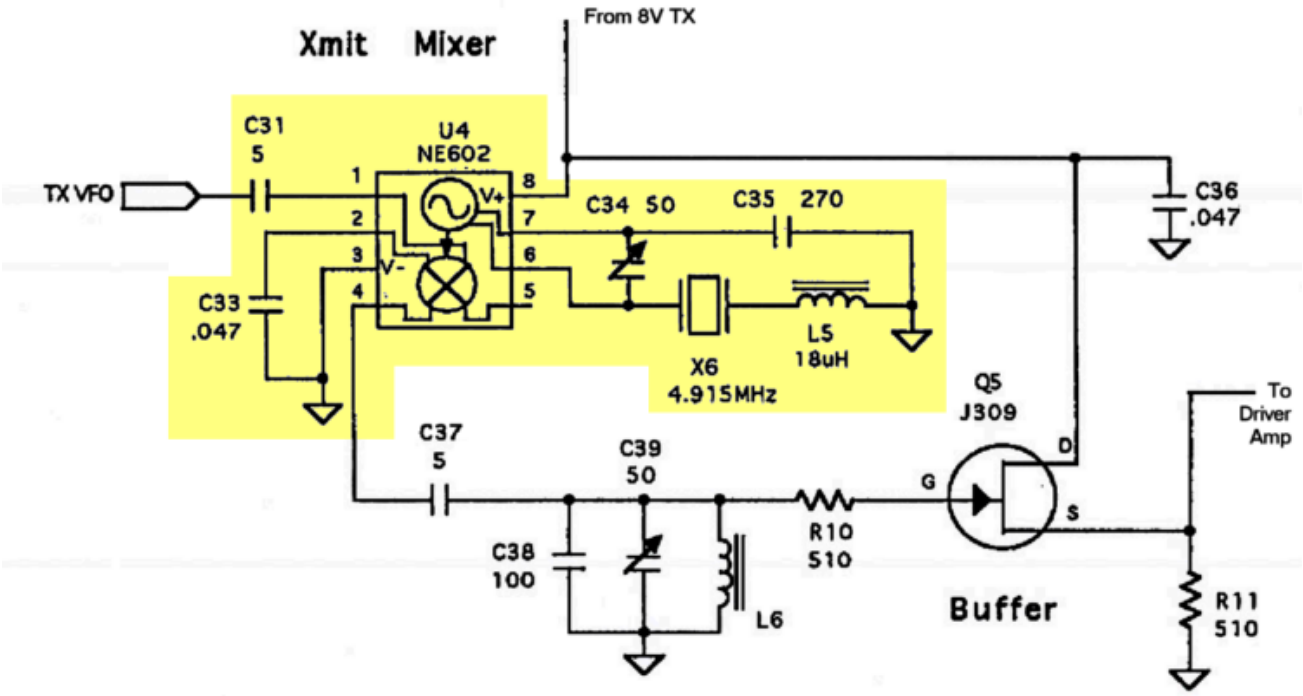

Figure 5: Transmitter Mixer