

49. 860 MHz Receiver Operational Description

The Crazy Chopper is a TMH™ (6.0V NiCD) powered, radio controlled toy vehicle. It is designed to operate on a single fixed frequency in the 49.82 – 49.90 MHz band. See the attached block diagram and schematic.

The vehicle receiver receives and demodulates the AM transmitted signal from the transmitter, using a standard super-regenerative AM receiver/demodulator circuit comprised of ANT, Q4, L1, L2, L3 and associated passive components. L2 is a tunable core slug inductor that is used to tune the receiver for maximum sensitivity. The output of the AM receiver/demodulator is AC coupled to a high input impedance CMOS inverter stage of the U2 decoder IC biased into their linear region through C11, C14, C18, C47, C14, C20, R20, R22, R19, R21, which amplify, filter and shape the data. After the last inverter stage the incoming waveform is a digitized enough to be fed into the SI pin for on-chip decoding.

A Zener regulator circuit comprised of C1, C4, Z1 C2, C3, Q1, R2, and R1 creates the supply voltage, VDD for the super-regenerative radio, decoder IC and Comparator section.

Drive motors M1 and M2 are controlled by the U2 RX2G decoder IC, low power switching transistors Q5, Q6, and Q12, Q13 and a high power H-bridge comprised of Q2, Q3, Q7, Q8, and Q10, Q11, Q14, Q15 respectively. D2, D3, and D9, D10, are current sense diode that permit a proportional sense voltage to be developed above them that is proportional to the amount of current through the bridge. When a high current pass through R36 or R37, there will be a high signal fed into C24 and C16. After these two capacitors are charged, they will turn ON Q9 and Q16 which will pull low the signal to the two Motors. As long as the user keep pressing the button, Q9 and Q16 will keep at 'ON' stage until user release the button and let C24 and C16 to discharge.