Operation Description of R/C Spymobile car

The equipment under test (EUT) is an R/C Spymobile (vehicle part) which contains a transmitter operating at 27.145 MHz (3 times of 9.0483 MHz) and a receiver operating at 49.435 MHz. The transmitter is controlled by a 9.0483 MHz crystal. The receiver is controlled by a 49.435 MHz crystal. The car is powered by 3 x 1.5V AAA size batteries. When forward/backward signal is received, it will move forward or backward. When left/right signal is received it will turn left or right. When it receive signals from the controller. The vehicle part can also transmit audio signal from the microphone through the transmission circuit to the controller. If the vehicle is idle for 10 minutes, it will automatically shut off and the red LED indicator will turn off.

Referring to the circuit design, the circuit description is listed as follows:

- U4 and associated circuit act as the decoder
- Q7, Q9 – Q19 and associated circuit act as the motor driver
- Y1, U2 and associated circuit act as the oscillator for the receiver
- Q3, Y2, C11, C13, Q2, T1, C7 and associated circuit act as the oscillator for the transmitter and as 3 times frequency multiplier
- Q1, L6, C4 and associated circuit act as the transmitter RF amplifier
- L1, L3, L4, the antenna coil, C42, C43 and associated circuit act as the antenna matching network
- U3 and associated circuit act as the encoder
- C31, D1 and associated circuit act as the “Bi-Bi” signal circuit processor
- L7, C46 and associated circuit modulate the RF signal
- U1, Q8 and associated circuit act as the microphone signal amplifier and control