Circuit Operation Description

2166-A TX is a transmitter of wireless mouse which mainly consists of IC U1 (for power supply), IC U2 (microprocessor for radio transmission) and IC U3 (for optical function).

IC U2 works with 3V supplied to its pin 4 via circuit of battery BAT, L, D1, pin 27 of U1 and filter capacitor C12. Oscillator X2 connects to pins 1 and 3 of U2 with frequency 76.8 kHz. Pins 5, 6 and 7 connect to buttons of Left, middle and right of the mouse. Coder connects to pin 16 and pin 17, when the coder is rotated, its signal is coded by sensing 3V volt at pin 16 and pin 17 in turn. Pin 22 connects to ID switch, when it pressed down, pin 22 gets an ID signal (3V). Pin 10 and pin 11 produce oscillating frequency 27.042 MHz. All signal received by U2 are coded and output to C5 via pin 12 to get a modulated signal with central frequency 27.045 MHz, tolerance $\pm$ 3 kHz. The signal is input to pin 9 to be amplified, then output at pin 8 and matched by a circuit consisting of C11, L3, C13, C16 and C17 to be transmitted by PCB antenna. Pin 25 detects battery voltage via R5 and R4. When battery voltage is low, D5 flashes via pin 20. Pin 26 detects if voltage stable via R3 and R2.

IC U3 works with 4V supplied to its pin 13 via BAT, L2, D2 and C7. U3 outputs 3.3V at pin 7, C14 and C12 are filter capacitors. Pin1 9 and 11 connect oscillator X4 for time control. Pin 6 drives LED D4. Pin 14 connects to a resistor to control max. current of D4. When a light of D4 is reflected to U3 from a surface of a table, U3 internal optical components detect and calculate the moving speed and the moving direction of the mouse. The signal is sent to U2 via pins 1 and 16 of U3. U2 will process the signal to get it transmitted.