Circuit description of CYBORG-RF Main

1. Base RF Unit

When the voltage of TX-B+ terminal which is connected to the MPU control unit is applied to high, the transmitter is activated and the RF signal is radiated through Antenna. The Encoded Data from MPU control board is applied to the stage of FM MOD OSC (Q3,L8,C23,L9,C24,L10,D2), and modulated to FSK signal which frequency is 49.75277 MHz, and converted to the triple frequency of 149.2593 MHz. The signal is fed to the LC tuning circuit (L7,C19) and filtered the unwanted signals, and fed to the Tripler Amp Stage (Q2,L6,C14). The final frequency is converted to 447.775 MHz and also tuned through the L.C tuning circuit (L5,C10) and fed to the final Power Amplifier Stage (Q1,L4,TC1). The signal is filtered and matched there Impedance by the Antenna Matching circuit (L3,C2,C3,C4) and radiated from the Antenna through the T/R Switching stage (D1,D3).

When the voltage of RX-B+ terminal is applied to high, the receiver circuit is activated. The FSK modulated RF signal induced from the antenna is fed to LPF (L11,L12,C33) and amplified by the receiver RF amplifier stage (Q4,CF4), also this signal is mixed by the 1st Mixer amplifier stage (Q6), and converted the 1st LO frequency to the 1st IF frequency (10.7 MHz).

The 1st LO stage is consisted of the 2-stage, the X-tal OSC/Tripler stage (Q10,L16,C67,L18,C71) is directly oscillated the frequency of 47.375 MHz, and tripled to the frequency of 142.125 MHz. The signal is tuned by the LC tuning circuit (L15,C63), and fed to the tripler amplifier stage (Q8,L14,C58). The 1st LO frequency is 437.075 MHz.

The 1st IF signal from the 1st Mixer stage is compensated the loss of the IF filter by the compensated amplifier stage (Q7), is fed to the FM IF IC (U1). This signal is mixed with the 2nd LO frequency (10.245 MHz) and converted to the 2nd IF frequency of 455 KHz. The signal is filtered by the Ceramic BPF (CF2), and amplied by the internal Limiter/amplifier stage of the FM IF IC, and demodulated the AF signal by the Discriminator coil (T1). The signal is wave-shaped through the LPF stage (R14,25,26,C49,51) and fed to the internal Data Amp stage and converted to the digital data. The Data is fed to the MPU control unit through the RX-Data terminal.

2. Base Main Unit

The transmitting and receiving mode of the RF module is controlled through the connector by TX Switch (Q2,Q4) and RX Switch (Q1,Q3). The coded data from the FSK data terminal is decoded and stored to the EE-PROM (U2). The status of input code is displayed through the output devices, and the staus information corresponding to the input button's code is transmitted through the RF module.

The input and output drivers is transferred the conditions of the shock sensor, door pin switch, trunk pin switch, key input port etc. to the MPU (U3), the results of processing the MPU is performed to alarm, start, door lock/unlock, start kill, light flashing, trunk release. etc.

All function is stopped by the Valet switch.