



## **Operational Description**

The transmitter is a low powered, hand held unit for remote controlling the car door/warning horn. See the function descriptions in attached. The transmitter is powered by a 3-volt battery. It is designed to be operated on a single fixed frequency at 315MHz. See the attached block diagram and schematic.

There are 4 buttons to trigger the integrated circuit (U3) that produces the digital control signals. U3 is a code hopping encoder designed for secure Remote Keyless Entry (RKE) that combines a hopping code generated by a nonlinear encryption algorithm, a serial number, and status bits to create a secure transmission code that are stored in EEPROM array.

The transmitter uses ASK technique that is achieved by on/off of internal power amplifier in U2. U2 consists of a fully integrated voltage-controlled oscillator (VCO), a divide-by-32 divider (div32), a phase-frequency detector (PFD) and a charge pump. An external loop filter at LF (Pin 1 & 16) determines the dynamic behavior of the PLL and suppresses reference spurious signals. The VCO's output signal feeds the power amplifier (PA). RF signal power is ASK-modulated by applying activation code generated from U3 (Pin 12) to U2 (Pin 9). The open-collector differential output (Pin 12 & 13) is used to directly drive a loop antenna (integral pattern antenna) through C3 and C4.

The transmitter is manually operated by the buttons pushed and will automatically deactivate within one second after the button pushed. This feature is incorporated by the signal at U2 (Pin 6, Enable Tx) generated from U3 (Pin 10).

All tuning and verification are performed by the manufacture and there are no adjustments required by the user. No external ground is required or used with this transmitter.