TECHNICAL DESCRIPTION OF TRANSMITTER, FUNCTIONAL BLOCK DIAGRAM

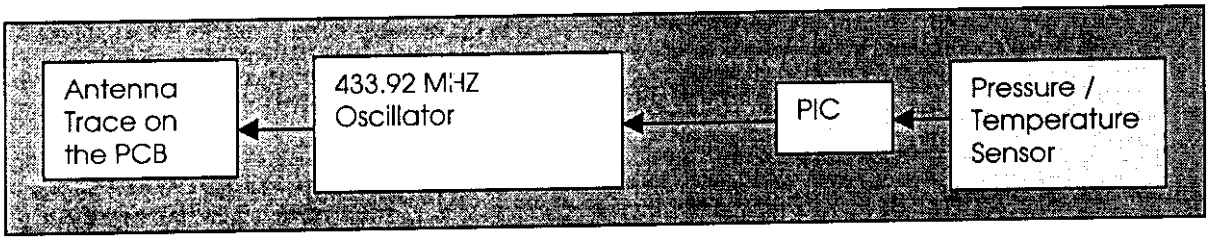
Grantee: SmarTire Systems, Inc.

FCC ID: NAT TX433BP

Technical Description of the 433 MHZ PassCar Transmitter

The SmarTire Passenger Car Tire Monitoring System (TMS) includes a transmitter mounted on the rim of a tire. The transmitter transmits the tire pressure once every 30 seconds during the rotation of the tire. Every 1.5 minutes it transmits the temperature of the tire. If the tire is stationary the transmitter turns off, due to the acceleration switch in the circuit.

Functional Block Diagram of 433 MHZ Passenger Car Transmitter



The circuit is a pulsed AM, Saw stabilized, Colpitts type oscillator at 433.92 MHZ. The PIC generates the data to the oscillator to produce a pulsed AM transmission. When the data pulse is high, from the PIC, the transmitter is turned on and when the data pulse is low the transmitter is turned off. A small feedback capacitor between the collector and the base of the transistor is used to sustain the oscillations of the transmitter at the frequency of the saw resonator. The output is then fed to a PCB trace antenna of a specified length.

General Technical Specifications of the Transmitter

Center Frequency of the transmitter	: 433.92 ± 75 KHZ
Average Power of transmission	: 7387 uv / meter measured at 3 meters
Direct output power of transmitter	: 1 mW
Mode of transmission	: Pulsed AM (ASK)
Number of packets per burst	: 10 Data packets (1 burst) every 30 seconds
Data Rate	: 2.5 KBPS (Bi-Phase format)
Temperature Range	: -40 to 85 ©
Frequency tolerance over temperature	: ± 70 KHZ