5200 Auto Club Dr.
Dearborn, Michigan 48126
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Re: Certification for Lear Corporation
TPM Low Frequency Initiator
FCC ID: KOBHL05TPM
IC: 3521A-HL05TPM

DESCRIPTION OF OPERATION

GENERAL DESCRIPTION OF LOW FREQUENCY INITIATOR

The product for which certification is pursued will be manufactured for Hyundai / Kia Motor Company by Lear Corporation for automotive applications. The module is intended to cause nearby Tire Pressure Monitor (TPM) sensor units to report tire information such as pressure and temperature, along with battery information to a central receiving module. This device is called a low frequency initiator (LFI).

The LFI transmitter contains a ferrite antenna loopstick and a printed circuit board assembly. The one piece exterior housing is a molded plastic with the ferrite antenna molded integral to the housing. The Hyundai / Kia / Lear #, FCC ID #, and IC # laser etched into the plastic. The PCB is inserted to the housing and is sealed to keep all foreign materials out.

TECHNICAL DESCRIPTION

The LFI is a slave device on a control bus, and is only active when commanded to operate by the TPM central receiver unit. A coded command signal is sent from the TPM central receiver to an LFI to cause it to operate. Upon reception of this coded command, the LFI microprocessor is activated, confirms the integrity of the coded command signal, performs some diagnostic tests on the LF driver IC and antenna network (e.g. check for shorted antenna network) and then issues a response signal via the control bus back to the TPM central receiver. If the LFI passes all diagnostic tests (approx 50mS in duration) it then begins to generate a modulated LF waveform and applies this to the LF driver IC. The LF driver IC amplifies this low level waveform to an amplitude sufficient to cause the ferrite loopstick antenna to radiate. The modulated LF waveform is then transmitted by RF to the TPM Wheel Electronic sensor(s) for approximately 5 seconds. The LF waveform is OOK modulated on a 125 KHz carrier and radiated by an on board antenna. The data code is pulse width modulation format to express bits “0” and “1”. The carrier frequency and modulation rate are both stabilized by the same 0.05% (worst case) ceramic resonator. The antenna is a ferrite-core loopstick integral to the molded plastic housing.